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**ISLAND ARCHAEOLOGY AND THE ORIGINS
OF SEAFARING
IN THE EASTERN MEDITERRANEAN**

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Eurasian Prehistory Guest Editors:

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CHRONOLOGICAL FRAMEWORK

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Abstract

The purpose of this chapter is to provide an introduction to the chronology and the early cultural history of the region for the scholar who may be coming to them for the first time. This chapter presents the chronological framework for understanding the earliest seagoing on a regular basis in the eastern Mediterranean. The various periods from the Epipaleolithic to the pottery Neolithic are summarized and placed in a chronological sequence for the three main regions focused upon in the workshop: the Levant, SE Anatolia, and Cyprus.

Key words: Chronology, Epipaleolithic, PPNA, PPNB, PPNC

“Is it any wonder that the sea should so soon have become one of the living centers of the universe?” Fernand Braudel (2001:25), *The Mediterranean in the Ancient World*.

INTRODUCTION

The chapters collected in this book explore the evidence for the earliest known voyagers in the Eastern Mediterranean. This story has always been intimately linked with the pathway to agriculture and the beginning of the long road to urban civilization in the region. Previous generations of scholars were not very interested in early voyaging; instead, they had focused almost exclusively on the development of agriculture. This is understandable since this is the foundational change that permitted the development of the later urban civilizations, which were the precursors to the modern Western world. Once agriculture became widespread, the consequential population take off meant there was no going back to a pre-agricultural way of life – at least if the culture

in question was going to survive. Thus, as one would expect, the development of agriculture became the fundamental measuring rod for the classification of material culture.

In the eastern end of the Mediterranean, the earliest evidence for voyaging now goes back to the time before agriculture. Much of the evidence used to tell this story is very recent, and archaeologists are still working out the implications of this new material. The three parallel time lines shown in Fig. 1 (for the Levant, Southeastern Turkey and Cyprus respectively) constitute the chronological framework today for understanding the earliest seagoing on a regular basis in the Mediterranean. The chart represents a new chronological framework incorporating discoveries made during the last ten years. The time line for the Levant was provided by Ofer Bar-Yosef; those for the southeast part of Anatolia and the island of Cyprus are based respectively on the chronological table placed at the end of the first volume of the new edition of *The Neolithic in Turkey* (Özdoğan *et al.*, 2011) and the recent syntheses by the French team working on Cyprus (Guilaine *et al.*, 2011; Vigne *et al.*, 2011).

Three Time Lines:

13,000 to 6,000 cal BC

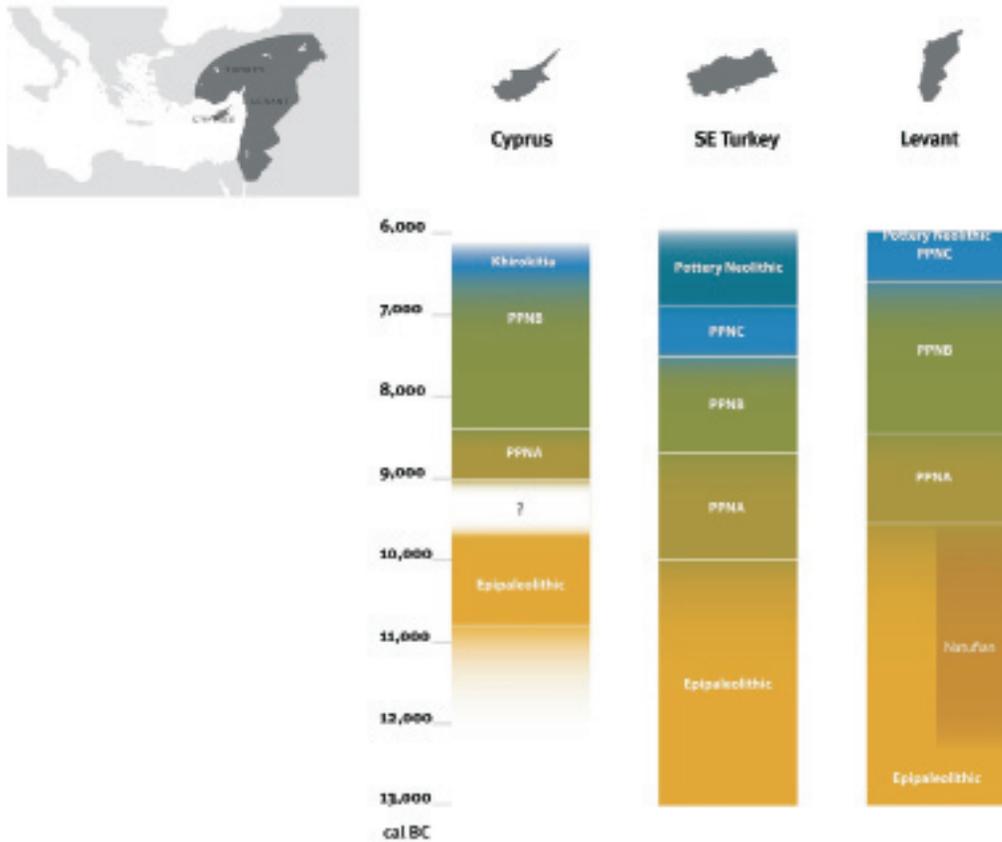


Fig. 1. Visual comparison of chronological frameworks in Cyprus, SE Turkey and Levant

At first glance, the terms and the abbreviations used in this diagram (Fig. 1) make it appear to be rather complex and esoteric, but it is actually quite straightforward. The names and abbreviations in the chart can be misleading because archaeologists use shorthand *cultural* labels that cut across geographical zones to define, in addition, specific *chronological* periods within a particular geographical region. As the chart shows, all three of the geographic areas employ the same basic chronological labels (such as PPNA), but

they have different time ranges in the respective areas. This stems from the fact that certain ideas or cultural traits developed in different regions at somewhat different rates, spreading by means of cross-regional contacts or else through independent development. The purpose of this chapter is to provide an introduction to the chronology and the early cultural history of the region for the scholar who may be coming to them for the first time.

The time frame of these events is marked as a series of numbers or years “cal. BC”. This indicates

that the dates for the various periods are based on radiocarbon dates, which have been “calibrated”. Calibration, in radiocarbon terms, means that the initial dates derived from the ratio of carbon 14 to carbon 12 in once living material have then been reanalyzed or calibrated. This is due to the recent recognition that the levels of carbon 14 in the atmosphere (and therefore absorbed by the living organism) varies to some extent over time. This correction is based on the carbon dating of tree rings of known age (dendrochronology) and other independently dated materials (for example, those with known historical dates) and then calculating how much a “raw” carbon date needs to be adjusted. Thus, calibration can produce a more refined and accurate date than was possible a generation ago. Fig. 2 shows one of the first attempts by Bar-Yosef (2001) to incorporate calibrated radiocarbon dates into a chronological framework for the Near East covering the periods of interest in this book. The differences between Figures 1 and 2 reflect the changes produced by new research in the last decade.

The question mark in the Cypriot time line indicates that we have a gap in our data. At the same time, it denotes that archaeologists think that the cultural developments described under the term PPNA (see below) were brought to the island by migrants from the Levant or southeastern Turkey and may not have developed locally or independently in the context of the first people frequenting Cyprus, who had an Epipaleolithic level of culture and who had a completely different technology for making chipped stone tools than the PPNA. Part of the problem derives from the nature of Cypriot archaeology: neither fish nor fowl. Cypriot archaeology straddles disciplinary and academic boundaries, which one might expect to be its strength; but it is often a weakness too. There is a tendency for the archaeologists who study proto-historic and historic periods to consider Cyprus as peripheral to their core worlds, whether they are Aegean or Levantine oriented. True Cypriot archaeologists over the years have often been only a literal handful. An additional factor is that prehistorians with international experience have commonly had limited exposure to the island as a whole. They tend to concentrate on the fieldwork that they are doing in a given part of the island.

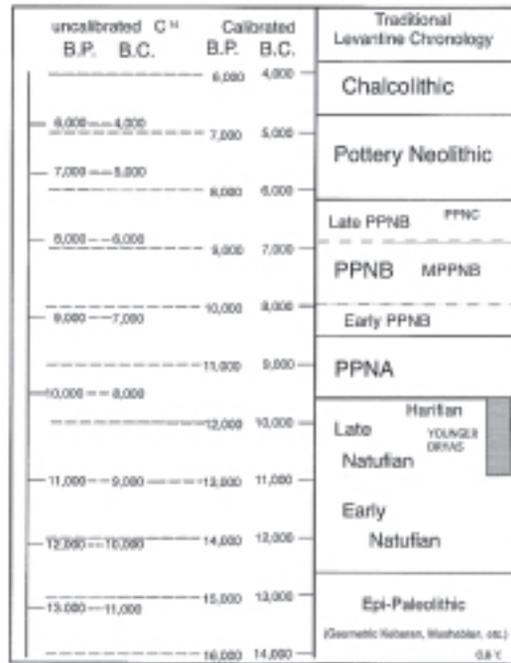


Fig. 2. Levant chronological timetable with calibrated and uncalibrated dates comparison

Indeed, a number of the prehistorians who have worked on the island have also been involved in primary research in other parts of Europe or the Near East. In short, Cyprus may not be the main focus of their interest. To give two examples, Jean Guilaine, the excavator of Shillourokambos, is the premier expert on the Neolithic in France, and Alan Simmons, the excavator of the collapsed rock shelter called Aetokremnos, has directed major research projects in Jordan. Thus, the small community of archaeologists engaged with prehistoric Cyprus often has few good opportunities – the workshop held in Reggio Calabria is a notable exception here – to share new data, to compare notes and to discuss new ideas with one another. In other words, this scholarly isolation has led to a fragmentation of vision with each scholar trying to create a credible picture within his or her own purview but with the lack of a more comprehensive perspective on what is happening on the island in a larger sense.

THE EPIPALEOLITHIC

The term *Epipaleolithic* (final old stone age) indicates that the archaeologist considers the cultural level achieved by the people living at the time so designated to be the final stage of the development of the Paleolithic (the old stone age). In short, it refers to what was happening in the Near East at the end of the last ice age and spans the interval of time between the end of the Upper Paleolithic and the start of the Neolithic, as it is seen at sites of so-called PPNA age in Fig. 1 (more will be said about the Pre-Pottery Neolithic A below). In many parts of Europe and the Mediterranean world, one commonly uses the term *Mesolithic* for the time interval between the end of the Paleolithic (the old stone age) and the start of the Neolithic (the new stone age). However, in the Eastern Mediterranean, Mesolithic is not a term that is used in the literature – in part because of the early appearance of societies whose subsistence economies draw, in part, upon food production or agriculture. Indeed, at Epipaleolithic sites in the Near East, we witness some of the first steps towards plant domestication and animal husbandry. In Syria, a key Epipaleolithic site is Abu Hureyra in the Euphrates Valley (see Moore and Kennett in this issue). The village consisted of small round huts with reed roofs. The small population had a subsistence economy based on hunting, fishing and gathering wild plants. Eventually, its inhabitants began to cultivate some plants, and the settlement experienced year-round occupation, which lasted down to the time of the start of the Younger Dryas (ca. 12,800 years BP). It is now proposed that a cosmic airburst may have kicked off the abrupt change in climate as well as causing a devastating fire at the settlement, which led to its abandonment for a number of years. This cold snap of the Younger Dryas, which lasted for just over a thousand years, is documented in considerable detail by deep ice cores made in the Greenland ice sheet (e.g., Alley, 2000). In the Eastern Mediterranean, archaeologists did not pay much attention to the Younger Dryas until the later years of the 1990s. Today it is a topic of wide interest among climatologists around the world and also archaeologists who study the Epipaleolithic in the Eastern Mediterranean. The Younger Dryas represents a roller coaster ride of climate change

that may have played a significant role – either directly or else indirectly – in the emergence of systems of food production in different parts of the world. In the case of the Eastern Mediterranean, this has recently been summarized in the following words: “During the course of the Younger Dryas, climate change acted both positively as a catalyst setting in motion multiple pathways that would lead in time to agriculture and negatively as an ever-changing bottleneck holding back the full-fledged expression of agriculture” (Ammerman *et al.*, 2011). Of course, this is just a working hypothesis at the present time – a matter that calls for further investigation. At the same time, this climate event may have contributed to the take off in voyaging in the Eastern Mediterranean (Broodbank, 2006; Ammerman, 2010) as well as the extinction of a number of faunal species on the islands of the Mediterranean (see Vigne in this issue). Accordingly, an understanding of the Younger Dryas is often relevant to the study of the Epipaleolithic in the Mediterranean world.

The time line for the Levant includes a separate designation known as the *Natufian* – a subset of the Epipaleolithic in this part of the Eastern Mediterranean. The term *Epipaleolithic* is used for the region as a whole, while the sites of the Natufian culture are concentrated in Israel and Jordan. Archaeologists typically name a culture after the first site where an excavation brought to light a specific set of archaeological remains: Natufian material culture was first identified at a site in the Wadi Natuf near Mount Carmel in Israel. Natufian sites generally are identified on the basis of certain types of chipped stone tools recovered at them. These are described in the archaeological literature as “lunates” because of their crescent-like shape. Usually accompanying the lunates are small bladelets produced by a specialized production method called the “micro-burin technique,” and the bladelets are then retouched (using a specific method called “Helwan”) to form tools. When archaeologists recover such hallmark artifacts at a site, they label it as Natufian. The Natufians lived in round pit houses whose walls were made of stone; sometimes a given structure is preserved up to a meter in height. Toward the end of Natufian times, the huts may cluster together to form what is called a nucleated village.

Before the 1980s, the earliest known site on Cyprus was the 7th millennium cal. BC agricultural village of Khirokitia. In consequence, voyaging was assumed to be a Neolithic activity, a bi-product of the development of agriculture. After nearly two decades of intense research, we now see more clearly the earliest voyagers in the Eastern Mediterranean. Voyages began when sea levels were lower (during the Younger Dryas, the sea may have reached levels some 70 meters lower than today) and in a continuing state of flux.

What we have on Cyprus in the Epipaleolithic period is somewhat different from the mainland sites. For the most part, only rather modest campsites have been found along the coasts of the island so far. For instance, there are now a fair number of early sites on the coastal formations of aeolianite that occur all around the island and also the collapsed rock shelter of Aetokremnos on the Akrotiri Peninsula, which is situated on the coastline as well. All of these sites have microlithic tools, including small thumbnail scrapers, which are made from pebbles and cobbles with a flake technology. Recent survey work of the near shore environment in front of the site of Aspros on the island's west coast shows that one can trace what is found on land today out into the water and recover artifacts from sites that now occur in a submerged position due to sea-level rise. What we still do not have on the island are reliable sites in the interior (except possibly Vrestia-Roudias) that are similar to those on the coast. Nor do we have evidence at this time for a site on Cyprus (either on the coast or in the interior) that "reproduces" what one finds at a good Natufian site or at Abu Hureyra in Syria. Aetokremnos is well dated by a series of radiocarbon dates to the Epipaleolithic and the Younger Dryas. However, it is a site with many open questions: in particular, the interpretation of the remains of some 500 pygmy hippos recovered by the excavation. In short, do the large number of hippo remains found in stratum IV at Aetokremnos represent a natural bone bed, a paleontological deposit, or are they the consequence of hunting the pygmy hippos and, in turn, the extinction of the species on the island according to the line of interpretation known as the over-kill hypothesis? Whether we are dealing with hunter-gatherers who frequented the site on a seasonal basis and who caused the extinction of

the hippos on the island, or instead with the case of coastal foragers who exploited the rich beds of natural bone as a source of fuel for making campfires in a barren shoreline setting at the time of the die-back of trees during the Younger Dryas, is an open question that we discussed at the workshop. In any event, what is clear is that voyagers were making trips in small boat to Cyprus already in the Epipaleolithic times. "These were all places where fisher-foragers made short-term, seasonal visits from the Levantine mainland to exploit resources such as fish, sea-turtles, salt, shellfish, and avifauna. At the same time, they provide evidence for very early seafaring in the eastern Mediterranean" (Knapp, 2013:57).

PRE-POTTERY NEOLITHIC A (PPNA)

"Neolithic" was initially put forward in the 19th century as a term meaning the new stone age: the presence of polished stone implements distinguished it from the old stone age (Palaeolithic) which did not have them. The term then evolved through scholarly usage over a number of generations to stand for the time when plants and animals were domesticated and societies began to have a subsistence economy based on food production. Along with the transformation in subsistence went interrelated economic and social changes, which are now taken to be part and parcel of the new way of life. In the Levant, archaeologists had for some time associated the Neolithic with pottery thanks to the deep excavations carried out at long-inhabited mound sites such as Jericho and Byblos. However, at the base of some of these mounds, it eventually came to light that early farming went back to a time well before the first appearance of ceramics in the Near East. For this reason, the Neolithic was broken down into two major subdivisions linked with the presence or absence of pottery in the archaeological record: hence "Pre-Pottery Neolithic" and "Pottery Neolithic". Then, in turn, each of them would be subdivided further in terms of chronology leading to arcane terms such as PPNA, PPNB and PPNC. In Fig. 1, they are shorthand for the sequence of times running from Pre-Pottery Neolithic A through Pre-Pottery Neolithic B and then on to Pre-Pottery

Neolithic C. Finally, archaeologists working on Cyprus would borrow the terminology from the mainland and throw in a chauvinistic touch by adding the modifier “Cypro” – producing what amounts to a hybrid terminology (for example, Cypro-PPNA). After the PPNA period, the societies that date to the PPNB all practiced some fairly well developed form of early farming, which provides the baseline definition for the Neolithic in the Near East today. However, to reiterate what was said above, the people living in both the PPNA and the PPNB did not yet make pottery. Accordingly, “Pottery Neolithic” is the term used when pottery now enters the picture. “The Neolithic was certainly not a garden of Eden but a world where life was difficult and people knew that they were ‘forever confronted with the Four Horsemen – death, famine, disease and the malice of other men’” (Akkermans and Schwartz, 2003:79, quoting Howells, 1962:160).

The PPNA witnessed the transition to a more fully sedentary way of life and the cultivation of cereals in the Near East. Regional sub-groups or “cultures” can be identified on the basis of variations in the archaeological record. We see both large villages of substantial round or oval huts with populations of more than 100 people and smaller sites with only a few households. The people followed a variety of economic options: a wide range of survival strategies were in play at the same time, including a continuation in the exploitation of some marine resources, cereal cultivation, animal husbandry, and even specialized hunting. Obsidian was traded from Turkey to sites across the region, including the PPNA settlement of Klimonas on Cyprus.

The other PPNA settlement identified on Cyprus is Asprokremnos, and it too is located in the interior. While large amounts of local chert were worked at the site, it has yielded no obsidian so far. The material culture at Klimonas and Asprokremnos are much the same. In fact, they “reproduce” what is seen on the mainland at the end of the PPNA. Although the newcomers arrived by boat, they settled in the interior where they could live in the context of what is called an ecotone: that is, a well-selected and small-scale landscape with a diversity of ecological zones and resources). In short, those who went over to Cyprus at the time clearly knew what they were

looking for. Each site is located in an isolated but well-chosen place where the hunter-cultivators could lead a more or less settled way of life. An interesting note here is that the hunting of wild boar made the main contribution of the meat side to the subsistence economy.

The PPNA is perhaps best known for producing the first examples of ritual monumentality in the region at the site of Gobekli Tepe in southeastern Turkey with its remarkable art and architecture and at the famous tower at the mound site of Jericho in Palestine (see Bar-Yosef in this issue). The people of the PPNA ritually decapitated their dead and buried them within the villages – perhaps indicating belief in the continuity of their presence amongst the living.

PRE-POTTERY NEOLITHIC B (PPNB)

PPNB settlements are true villages of substantial size with an economy based on the full Neolithic package as it is called: that is, a combination of animals (sheep, goats, pig and cattle), cereals (various kinds of wheat and barley) and pulses (lentils and peas), which now have all become domesticated, as shown by the morphology of the various plants and animals. Settlements of this age tend to be located in new places (the mound commonly rests on virgin soil) or else they were re-established after a hiatus as seen at a site such as Jericho. The famous Neolithic village of Catal Hüyük in Turkey was first inhabited during the time of the PPNB. Then with the appearance of ceramics, it went on to flourish in the Pottery Neolithic, when it is well known for its world famous wall paintings. At this time, hunting and gathering continued to make some contribution to the diet during PPNB times. On the other hand, there is little or no evidence for the exploitation of marine shells for food at most PPNB settlements (see Bar-Yosef Mayer in this issue). In addition, this period appears to have witnessed the beginnings of pastoral nomadism. Some aspects of the chipped stone technology were region wide in nature as well. Fig. 3 shows a naviform core and the types of blades produced by working such a core at the PPNB settlement of Shillourokambos on Cyprus. The occurrence of these cores and blades, which are not seen in the PPNA period,

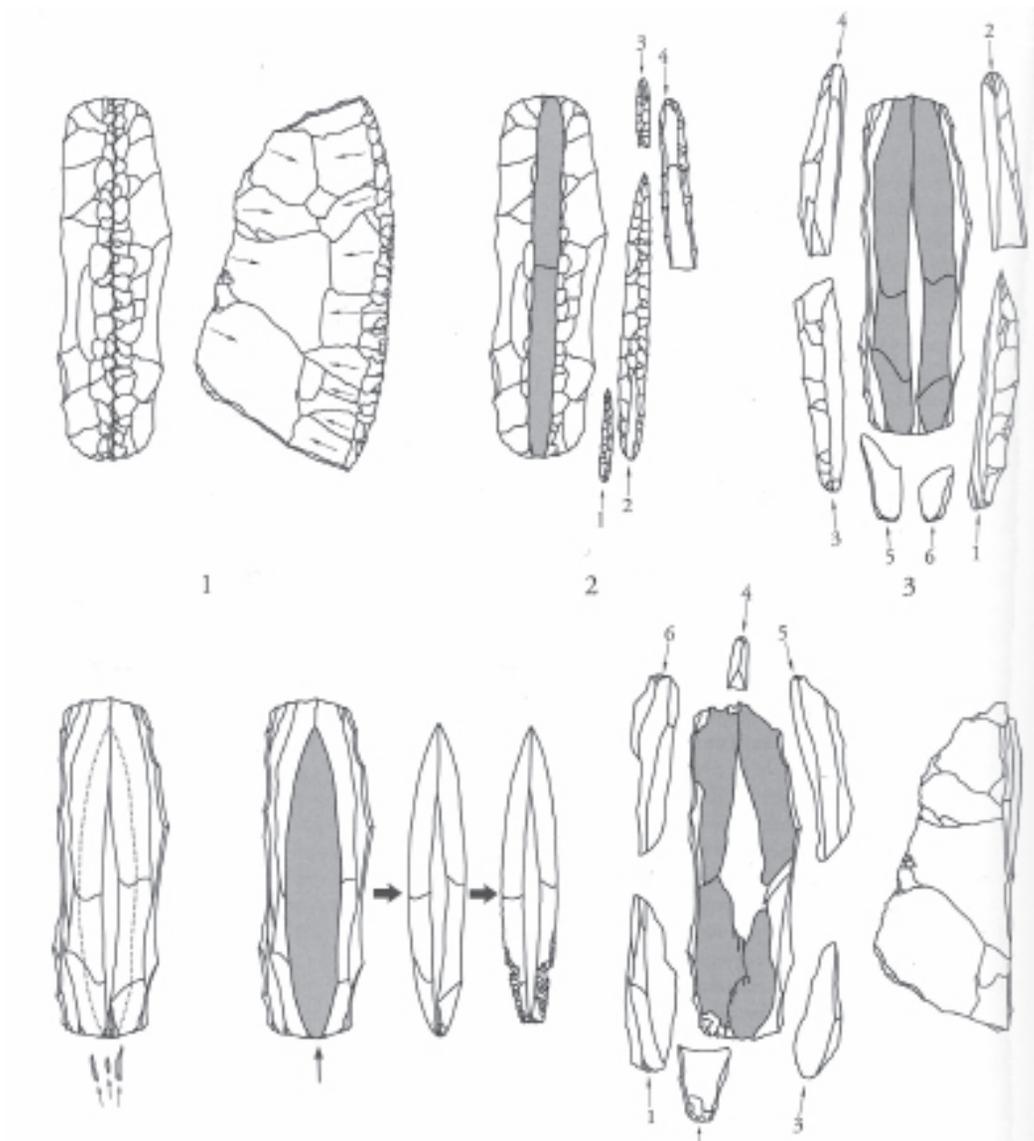


Fig. 3. Shillourokambos, phase A. Reconstruction of the double platform *chaîne opératoire* (based on a core from pit 66) (after J. Guilaine *et al.* 2011: 674)

is accordingly one of the hallmarks of the PPNB (see Briois and Guilaine in this issue). Without going into the details here, the houses belonging to this time are architecturally complex with multiple-room residences. The sophisticated village life of the PPNB was rich in symbolism with figurines, tokens, masks and so forth as we can see in all three of the areas of interest.

PRE-POTTERY NEOLITHIC C (PPNC)

This last subdivision of the Pre-Pottery Neolithic is one of less interest for the purposes of this book. It is included here for completeness. As a term, Pre-Pottery Neolithic C (PPNC) was first applied to sites in the Jordanian highland after the type-site of Ain Ghazal, but it is used today by

some archaeologists in southeastern Turkey as well. This period is marked by a few large sites with many other smaller sites being abandoned. There are indications of over-exploitation of the local environment around the major settlements. An increasing dependence on animal husbandry is coupled with a decrease in the importance of cereals in the subsistence strategy of the PPNC. Wild animals continue to be hunted to supplement the diet. The settlement pattern and the complexity of the larger sites suggest administrative organization. The highly sophisticated plaster statues found at Ain Ghazal provide evidence for a rich and complex system of symbols whose cognitive significance one can only speculate upon. Scholars postulate that the environmental degradation of the PPNC led to social upheaval and even the break up of the mega-sites as social mechanisms began to fail.

Khirokitian is the local name used on Cyprus for what corresponds with the PPNC in the Levant. On the island, the term refers to the specific set of characteristics first identified at the type-site of Khirokitia. There one finds in stone a tightly clustered village of small round houses with defensive works and a square-shaped central communal structure. While there is a highly developed stone vessel industry at Khirokitia, pottery has yet to make its appearance on the island. Surprisingly, Cyprus shows almost no evidence for outside contact at this time. In effect, its cultural history becomes insular and now turns inward.

POTTERY NEOLITHIC

The complexity and sophistication of the cultures belonging to the Pottery Neolithic is a story that largely falls outside the scope of this volume. For this reason, it will only be covered in a few brief words here. As Fig. 1 shows, Anatolia saw the first appearance of the Pottery Neolithic in the Near East. Ceramics now become the hallmark of a given culture. In short, the study of pottery now provides a new line of information and places the archaeologist in a better position to define patterns of variation in time and space. Already the first ceramics are relatively sophisticated in terms of their technology, which developed from

the production of stone vessels and also what are called “white wares” (shaped lime plaster basins). Often rather poorly fired, the earliest ceramic vessels can display considerable variety at the local level. In addition, the wide range of motifs used in decorating them suggests that other classes of material culture, which have not survived such as basketry and textiles, were in all likelihood highly decorated as well. The stone tool industry is now dominated by flakes and not blades; projectile points become less common. There is considerable geographic variation in housing arrangements. Economically, the Pottery Neolithic entails a heavy reliance on cereal production and intensive animal husbandry. This period marks the beginning of the “secondary products revolution” with increasing evidence of dairying. The largest Neolithic settlements are found in Anatolia, including the complex communities at Catal Hüyük and Can Hassan. These sites are agglutinative: that is, the circulation of people from one rectangular house to another is not on the ground floor but on the roof level. The houses are packed together, but open areas used for rubbish disposal have been postulated. Numerous burials have been found within the confines of Catal Hüyük as well as a very large number of what can appropriately be called sanctuaries with wall frescoes, sculpted figures and bull skulls. In contrast, the Levant has smaller settlements and much less evidence for ceremonial material. There is a decrease in long distance trade, and this part of the Near East appears to become marginalized, especially in relation to Anatolia. In a similar fashion, Cyprus is still insular, and we encounter what appears to be a gap of several hundred years in settlement patterns on the island between the time of Khirokitian culture and the Pottery Neolithic.

MOVING WEST

Only a few words will be said in this closing section about the chronology of the Western Mediterranean. In the case of Italy, southern France, Spain and Portugal, there is no evidence for a Pre-Pottery Neolithic. Instead, the Neolithic period opens with the Pottery Neolithic. The first ceramic vessels in the west are all made in

the *impresso* or the impressed ware tradition. At many of the Early Neolithic sites on the mainland of southern Italy, there is good evidence for the circulation of obsidian from volcanic sources on islands in the Tyrrhenian Sea and thus for voyaging from the start of the Neolithic period. On the other hand, little or no evidence is found in Italy for the circulation of obsidian in the time before the Neolithic, which is called the Mesolithic. So in contrast with the eastern end of the Mediterranean, voyaging appears to have had a comparatively late start in this part of the Mediterranean world. Turning to the Aegean Islands and the Greek mainland, where one is dealing with the central part of the Mediterranean, there are a number of pieces obsidian from the island of Melos recovered at the Franchthi Cave from levels that go back to around 10,000 cal. BC. In addition, there is good evidence for obsidian again from Melos at the Mesolithic site of Maroulas on the island of Kythnos, which is carbon dated to around 8,7750 cal. BC (Ammerman, 2010:86). Thus, there is good evidence for pre-Neolithic voyaging in the case of the Aegean Sea, if not in the case of the seas around the Italian Peninsula. One would like to draw a time line for the Aegean like the ones for the Levant, southeastern Turkey and Cyprus (Fig. 1), but it is not really possible to do this at the present time. For the arc of time running from 14,000 to 8,000 years ago, gaps and uncertainties make it difficult to draw with confidence such a time line for the Aegean. This book includes several chapters on the Western Mediterranean – from the Adriatic Sea to the Iberian Peninsula – with the aim of calling attention to the contrast that is now emerging between the eastern end and the western end of the Mediterranean world. In the west, voyaging in pre-Neolithic times, as mentioned above, seems to be more modest in character and to have had a later start than it did in the east. Of course, it is far too soon to draw anything in the way of final conclusions today. What is currently known about sites dating to the time before the Neolithic on the larger islands in the Western Mediterranean (with the possible exception of Corsica and Sicily) is still quite limited. In any event, we need to consider the much slower pace of things in the west and what this may tell us when we step back and look at the Mediterranean world as

a whole. Some of us focus almost exclusively on the important discoveries that are currently being made in the Eastern Mediterranean, which tends to make us short sighted. In other words, we need to develop a broader and more balanced view of what is happening elsewhere in the Mediterranean world.

At this point in time, it is fair to say that there is a reasonably clear pattern when one plots on a map the earliest dates for the appearance of the Neolithic in different parts of the Western Mediterranean. If we start with the case of the Aegean Islands (again in the middle of the Middle Sea and not in the west itself), the oldest site with the full Neolithic package is the site of Knossos on the island of Crete – with a date of about 7,000 cal. BC. Moving then west to southern Italy, the earliest dates for the Neolithic go back to around 6,000 cal. BC. At the same time, we now have much the same age for the earliest Neolithic settlement in Croatia on the eastern side of the Adriatic (see Moore in the next issue). In other words, it took the Neolithic a little more than one thousand years to get from the island of Cyprus to the island of Crete and then another thousand years to reach southern Italy. In the context of what we now know about early voyaging in the Eastern Mediterranean, the spread of early farming between Cyprus and southern Italy is taking place at a rather slow rate (Ammerman, 2011). Then, in moving further west, things start to pick up pace again: the earliest Neolithic sites in different parts of the Iberian Peninsula (all with impressed ware pottery) have C-14 dates that cluster in the time between 5,500 and 5,300 cal. BC (see Zilhão in the next issue). Thus, when it comes to chronology, the contour lines of the big picture indicate that it took some 2,500 years for early farming (the Neolithic package) to make its way from Cyprus in the east to Portugal in the west. This span of time is equivalent to about one hundred human generations. In other words, the Neolithic transition, as it is called, took its time in moving west. Indeed, it is moving a slower pace than we might expect to find on the basis of the seagoing capabilities that have recently come to light on Cyprus. The suggestion here is that something is holding voyaging and the rate of spread of early farming back in the Western Mediterranean. We as archaeologists are just starting to think about

ways to address this paradox. In terms of Neolithic settlement patterns, there are, of course, no mound sites in the Western Mediterranean of the kind that one observes from the Levant to Greece. And on the whole, the settlements of Early Neolithic age in Italy, southern France, Spain and Portugal all tend to be smaller in size than those in the east, and the houses themselves are more modest ones in the west as well.

What comes before the Neolithic in the west is called the Mesolithic period. This is the term that archaeologists in Europe normally use for late hunter-gatherers who led, for the most part, a mobile way of life and whose diet was broadly based, including deer, small game and aquatic resources. In terms of chipped stone tools, microlithics with geometric forms are commonly recovered at Mesolithic sites in the Western Mediterranean. The literal meaning of Mesolithic is “the middle stone age”; the term was first introduced in order to fill in an awkward gap of several thousand between the end of the Upper Palaeolithic and the beginning of the Neolithic in a given area of Europe. The start of the Mesolithic is placed traditionally at the boundary marking the end of Pleistocene (the end of the most recent ice age), when the climate became warmer at the start of the Holocene. Based on the analysis of the deep ice cores in the Greenland ice sheet, the date for the start of the Holocene is now associated with the very end of the Younger Dryas or ca. 9,600 cal. BC. While this may make good sense in terms of the climate history of our planet, it may not work so well when it comes to the describing the local cultural histories of groups of hunter and gatherers. They did not stop and take a short break at the end of the Pleistocene and put on a new hat with Mesolithic written on it so that they could now correctly enter the Holocene. Thus, it is often difficult to identify in a meaningful cultural way the start of the Mesolithic in the Western Mediterranean. Finally, in the west, the term *Epipaleolithic* is sometimes used to indicate a chipped stone assemblage that dates to the time just before the start of the Holocene; in other words, it constitutes the last sub-division of the Final Upper Palaeolithic. In terms of the history of the earth’s climate, it would correspond with the cold snap of the Younger Dryas.

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