

# The Complete Archaeology of Greece

*From Hunter-Gatherers to the 20th Century AD*

John Bintliff

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## Introduction

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This book results from my own exposure, through surface survey in many regions of Greece since the early 1970s, to the incredible richness and variety of Greek archaeology beyond the traditional foci of the Classical Greek and Bronze Ages. As a doctoral student, traveling frequently on the bus from Athens to Navplion in the Peloponnese, I was struck by the diversity of historic landscapes, monuments, and ruins which I passed through. Isolated Byzantine churches far from any village, or the crumbling Medieval castellated walls of the Acrocorinth, seemed to hint at another kind of Greek archaeology from that found in popular textbooks. Since then, so much has developed in our archaeological understanding of the whole span of Greek Prehistory and History, from the Palaeolithic to the Early Modern era, that it seemed to me timely to make a first attempt at a synthesis of the key points both for the student and for the general reader fascinated by Greece, its past, its landscape, and its people.

David Clarke, in his iconoclastic textbook for a more truly scientific "New Archaeology," *Analytical Archaeology* (1968), admitted candidly that inventing, and at the same time composing a guide to, a new form of archaeology was rash, premature, but necessary. In humility, and with a nod to this book's reviewers, I feel in the same position regarding this first book, to my knowledge, which treats "The Archaeology of Greece" quite literally. Understandably,

in the scope of 22 chapters, coverage of each phase can only paint the general picture. Period specialists might regret the inevitable superficiality, but hopefully not find erroneous oversimplification. However, my aim is to give the reader, within one volume, an understanding of the development of human society in Greece from the earliest human traces up till the early twentieth century AD. For the contemporary visitor to Greece, whether you are there for a beach-based holiday, or a cultural tour, or as a student, I would like to think that this volume can give you a basis for contextualizing your casual or detailed encounters with museums, Bronze Age palaces, Classical city walls or great intercity sanctuaries, Roman stadia, Byzantine churches, isolated Frankish towers, Ottoman mosques, and traditional villages, without forgetting those ubiquitous broken potsherds that you can find in the open fields or on the shore.

The archaeology of Greece is an ever-expanding tree but with more limited roots (MacKendrick 1962, Snodgrass 1987, McDonald and Thomas 1990, Étienne and Étienne 1992, Schnapp 1993, Morris 1994, Fitton 1996, Shanks 1997, Étienne *et al.* 2000, Whitley 2001, Morris 2004). Its foundation is the investigation of Classical Greece, emanating from Renaissance and Enlightenment scholarship during the fifteenth to eighteenth centuries AD. But precocious beginnings can be dated to Roman times, when the new rulers of the Mediterranean toured the

Aegean Sea to discover that Classical tradition of which they saw themselves as inheritors. An interest in Greek antiquity could link the intellectual Cicero, one of many members of the Roman elite who were educated in Greece, and those Roman former slaves who resettled Corinth a century after its Roman destruction in the second century BC and pillaged Classical cemeteries for items for the Italian antiquities trade. The Romanized Greek travel-writer Pausanias, in the second century AD, represents the ancient model for Baedeker's Early Modern handbook of sites worthy to be visited by foreigners, focusing on major monuments and works of art, with selective historical tidbits to bring them to life (Elsner 1992, Alcock *et al.* 2001).

Ancient Greece and Rome were of fundamental importance for European national identities and a sense of special providence in the time of European world hegemony in the seventeenth to nineteenth centuries (Morris 2004), each civilization providing complementary origin myths for the assumed superior qualities of Western civilization and empires. Apart from the surviving ancient texts, objects of Greco-Roman culture were attributed the same qualities of exceptional sophistication, even as works of genius whenever there was clear artistic merit (not merely temples and sculptures, but vases with painted scenes, and coins). Greek archaeology was essentially synonymous with Classical Greece and with an approach linking ancient texts with Art History, mostly focused on large-scale works of public art or private art objects belonging to the elite of ancient society.

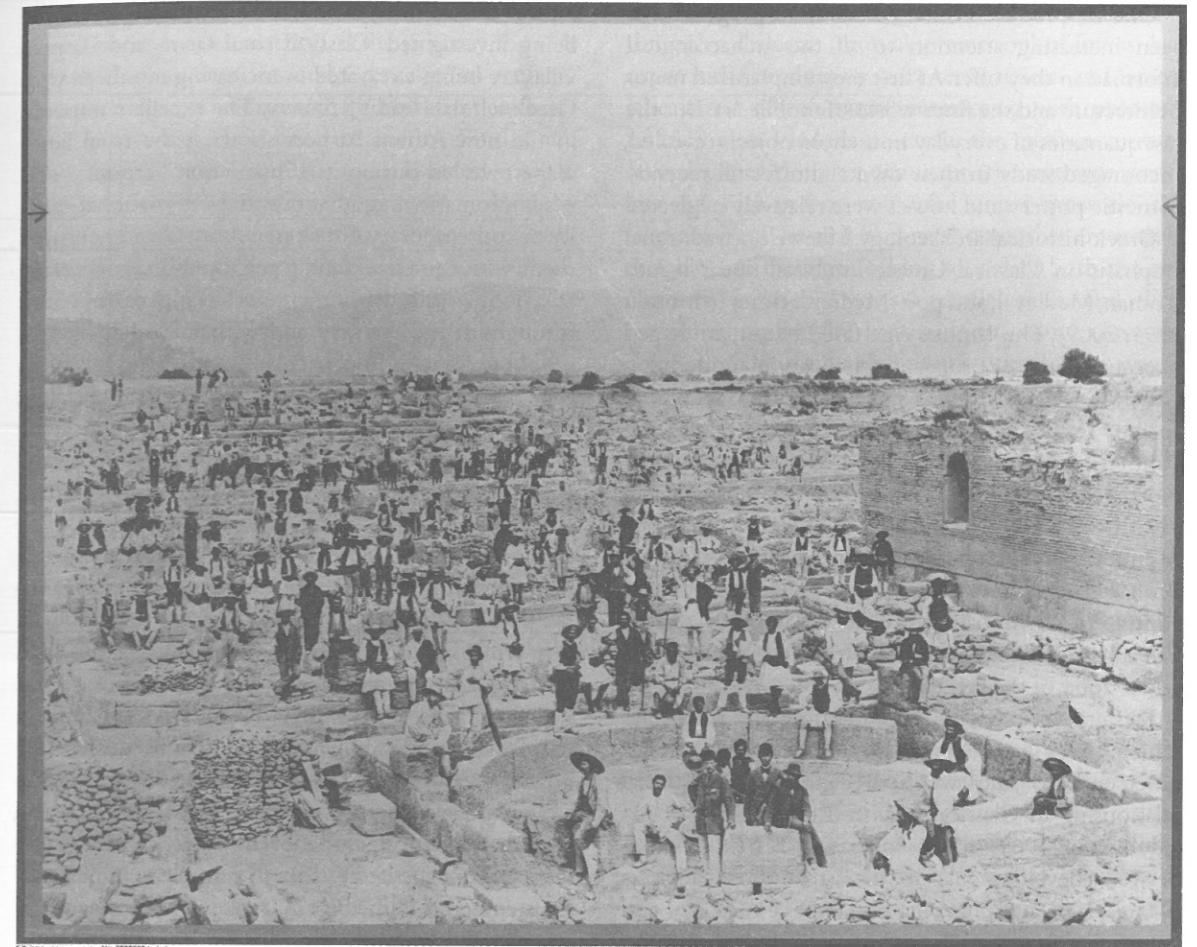
If this led to an emphasis on museum cases filled with fine art, a parallel tradition was rapidly evolving, topographic fieldwork. For educated people whose imagination was stirred by ancient texts describing cities, sanctuaries, and battlefields, but who were unable to travel to Greece to see what was left of these places, a small army of "Travelers" sprang up to offer the fireside reader a taste of modern and ancient Greece (Tsigakou 1981, Angelomatis-Tsougarakis 1990, Eisner 1991). Beginning as early as the fifteenth century (for example Buondelmonti), learned travelers from Western Europe voyaged in increasing numbers to Greece, especially in the nineteenth century, to compose travelogues frequently illustrated by maps and pictures.

The primary aim was to identify major towns and shrines mentioned by Classical sources, record inscriptions, and describe (often with the aim of removing them to Western Europe), works of mobile and immobile art. If the main focus remained Classical and Hellenistic Greece, minor attention was given to Roman sites, and even occasionally to Medieval and later monuments.

The scientific ethos in European scholarship, growing with increasing Enlightenment influence during the eighteenth to nineteenth centuries, led to such detailed Travelers' descriptions that only modern scholars with other aims appreciate such information. Lolling's meticulous guidebook, rejected by Baedeker, has only recently been published (1989). Today the incidental detail on Early Modern villages, and many ancient monuments now lost, make such books invaluable for long-term landscape history (Bennet *et al.* 2000, Bintliff 2007).

During the late nineteenth century, Greek archaeology's scope widened, with the discovery and then systematization of the *pre*-Classical or prehistoric eras, and a rising interest in the history and monuments of the post-Classical eras, which meant Medieval times (the Byzantine and occasionally the Crusader-Frankish periods). The polymath approach which nineteenth-century scholarship aspired to and which could still be accomplished within the limits of available information, reached its peak in Greece in the decades around 1900. For example, young scholars associated with Alan Wace could publish on prehistoric and Classical sites, Byzantine churches (Fletcher and Kitson 1895–1896), Medieval castles (Traquair 1905–1906), Crusader sculpture (Wace 1904–1905), ethnography (Wace and Thompson 1914), and even traditional Cycladic embroidery (Wace 1914). In Turkey, Heinrich Schliemann's Troy project involved the history of metallurgy, regional geomorphological developments, and local epidemiology (Aslan and Thumm 2001).

This was also a critical era in the wider development of the Science of Archaeology, and as a result we see the inception of research excavations at key Aegean sites. Naturally Greco-Roman towns and sanctuaries are the primary focus, with a secondary emphasis on major centers of the newly-discovered Bronze Age civilizations of the Minoan on Crete and the Mycenaean on the Southern Mainland. Yet the



**Figure 0.1** German excavations at the Heroon in Olympia, 1880. In the foreground are Richard Borrmann and Wilhelm Dörpfeld.  
© bpk, Berlin.

open-minded scholarship of this phase allowed the relatively unspectacular Neolithic tell (artificial settlement mound) cultures of Northern Greece to be discovered and excavated by Tsountas (1908), whilst another innovative Greek, Xanthoudides (1924), brought to light the tholos-tomb culture of Crete, an important Early Bronze Age predecessor to the Minoan palatial societies of the later Bronze Age periods.

Most of the twentieth century is dominated by long-term excavation projects, usually the responsibility of one Foreign School of archaeologists. Bronze

Age Mycenae (French 2002) has been investigated by German, British, and Greek expeditions, but more typically the Classical sanctuaries of Delphi (Bommelaer and Laroche 1991) and Olympia (Kyrieleis 2002: see Figure 0.1) remain associated with the French and German Schools. Classical Athens' central square (the *Agora*) (Camp 1986, 2006), and the city of Corinth (Williams and Bookidis 2003), have been essentially American excavations. These major projects have produced bookshelves of specialist monographs representing 100–150 years of ongoing research.



One by-product of these excavation programs has been increasing attention to all the archaeological information they offer. At first they emphasized major architecture and the finer works of mobile art. But the vast quantities of everyday household objects revealed, encouraged study in their own right. Yet till recently domestic pottery and houses were relatively neglected in Greek historical archaeology. Likewise, a traditional emphasis on Classical Greece inhibited research into Roman, Medieval, and post-Medieval times (Mouliou 1994, 2009). The Bronze Age fared better, envisaged as a uniquely "European" civilization underlying Classical Greece. Again, since Classical Greece in ancient texts was basically that of the cities of the Southern Mainland, archaeological research in Northern Greece, Crete, and the other Aegean islands was far more limited till the latter part of the twentieth century, with the exception of major Bronze Age centers, since it was recognized that in contrast the Minoan-Mycenaean (and the related Cycladic) civilizations of the Bronze Age occupied a wider zone of the Aegean.

Despite this broadening of methods and timescales which Greek archaeology adopted between the later nineteenth to mid-twentieth centuries, the special relationship to Classical texts and the History of Art led by the 1960s to an increasing "Great Divide" between developments in "mainstream" archaeology ("The New Archaeology": Greene 2002) and approaches in use in Aegean research (Renfrew 1980, Snodgrass 1985).

In the succeeding generation, there has been considerable integration into mainstream practices, yet the picture at the start of the 2000s remains patchy. Greek national archaeology and that of the Foreign Schools show a mosaic of traditions of work and interpretation. In terms of the more science-focused "New Archaeology" agenda, still only a minority of excavations in the Aegean collect environmental data or "ecofacts" (animal bones, seeds, etc.), or submit human remains for anthropological study. The commonest remnant from the Greek past, the broken potsherd, provides a similar disparity: few field projects publish domestic wares as well as the decorated table and funerary wares. Physical and chemical scientific analysis of artifacts and sites remains a rare addition to traditional forms of excavation and object study. More

radical developments are visible in the types of site being investigated. Classical rural farms and Roman villas are being excavated in increasing numbers, with Greek scholars leading the way. The excellent museum in the new Athens Airport showing the rural landscape revealed during its construction (Tsouni 2001) is symptomatic, and advertises the international quality of contemporary Greek museums. Greater engagement with the Greek and foreign public is occurring at a rapid scale, with the refurbishing of museums throughout the country and with major changes to school textbooks, in particular emphasizing local history and archaeology of all periods. An excellent model for "outreach" from a regional excavation project is offered by Kostas Kotsakis and his team on the Paliambela Project in Macedonia (Kotsakis 2007, cf. also Bintliff 2004a).

Recent interactions between mainstream archaeology and that of Greece have been more positive. Since the 1980s a significant trend in archaeology has been Post-Processualism, which forefronts approaches where Classical archaeology has long been a world leader (Shanks 1997, Morris 2004). These include an emphasis on symbolic representations (essentially artistic creations), and seeing artifacts or architecture as "texts" relatable to the written sources, lifestyles, and mentalities of past peoples.

Also from the late twentieth century new perspectives emerged with the rapid takeoff of archaeological surface survey. Aegean scholarship was always a pioneer in landscape archaeology, but the mapping of ancient sites took on new dimensions with the arrival of regional interdisciplinary survey projects. Pride of place goes to the 1960s Minnesota University extensive survey in Messenia (McDonald and Rapp 1972), followed elsewhere during the 1970s with the first intensive (field by field) surface surveys (Cherry 1983, Bintliff 1994). These latter transect blocks of countryside on foot, recording spreads of surface pottery, lithics, and building material, which mark the disturbed deposits of archaeological sites of all sizes, from a few graves, through farms and villages, to ancient cities of a square kilometer or more (Bintliff and Snodgrass 1988a, Bintliff 2000a, Alcock and Cherry 2004).

In the 1980s, mapping all visible "sites" was supplemented by "siteless" survey, in which the occurrence

of pre-Modern artifacts, rather than "sites" (foci of concentrated human activity), is the primary focus. It appears that much of lowland Greece is "an artifact," since such signs of human activity are almost continuously encountered between settlements (Bintliff and Snodgrass 1988b, Bintliff and Howard 2004). Alongside mapping settlement patterns, period by period, other forms of human impact on the Greek landscape now became apparent. Although some "off-site" debris represents eroded settlements, and the scattering of finds by weather and cultivation, the denser "carpets" probably record intense land use, especially through manuring (still a controversial theory, cf. Alcock *et al.* 1994 with Snodgrass 1994).

Intensive survey from the 1970s onwards discovered that the Aegean countryside is as rich in surface sites of post-Roman as of Greco-Roman and Bronze Age date. Dealing with the surface ceramics of the post-Roman era, and exploring the rich archival resources for these 1500 years, has encouraged vigorous new research into Byzantine, Frankish-Crusader, Ottoman-Venetian, and Early Modern archaeology in Greece (Lock and Sanders 1996, Bintliff 2000b, Davies and Davis 2007).

Turning now to this volume's structure, the core is a period-based overview of material culture and society, preceded by an introduction to the Greek landscape. Where the evidence is very rich, I have split period treatment into a chapter focusing on more "functional" aspects such as demography, settlement patterns, and the forms of material culture, followed by a chapter dealing with "symbolic" or "representational" culture (the ways in which architecture and portable objects can reveal the social order or the mentalities of past societies). Summing-up each period, I have reflected on our knowledge of each era in two ways. Firstly through the approach of French historians called the *Annales* group, where we trace the interaction of processes operating at different timescales. Secondly, I offer a "reflexive" view, with my own reactions to our current "biopic" or scenario for each period.

The French historians who focused their work around the journal *Annales* (1929–present, with various forms of title), most notably Fernand Braudel and Le Roy Ladurie, developed an insightful model of analysis for past societies (Bintliff 1991, Knapp 1992,

Bintliff 2004b). They argued that History is made through a dialectic (mutual interaction) of forces. Any event is the product of short-term actions and factors (the world of *événements*) interacting with processes unfolding on a longer timescale, the medium term of several generations or centuries (the *moyenne durée*), but also with processes at a far longer timescale (the *longue durée*). The real historical outcomes are unpredictable, but through seeking to isolate both the key elements at each layer of parallel time, and their mutual interplay, the historian can come closer to comprehending why the past developed the way it appears to have done. This has been termed "postdiction" by the historian of science Stephen Jay Gould, as opposed to "prediction" (Gould 1989, cf. Bintliff 1999). Significantly, the *Annales* historians see historical processes as combining the actions and beliefs of communities and of individuals, emphasizing that History was made not just by actions and factors of production such as technology or economy, but also by ideas, by symbolic culture and ways of seeing the world (*mentalités*).

The brief injection of my own reflexive response to our current knowledge of each period of Greek archaeology, which rounds off each chapter or chapter-pair, has been encouraged by that aspect of "Post-Processual" archaeological theory which reminds us of the dialectic in which archaeologists and historians are always engaged when they encounter past societies. We cannot help but reflect on the ways a past world differs or compares to our own, and must use our embedded knowledge of the world today to comprehend past worlds. On the other hand, I am far from being a relativist. Our interpretative concepts are certainly influenced by our own lives, but we also have a wealth of anthropology and history to broaden our interpretative models of the past beyond our own meager physical experience, and when you are doing Archaeology and History honestly and attentively, the past will constantly surprise you with evidence you were not prepared for and may have difficulty in making sense of.

This volume involved very wide-ranging reading, and inevitably the time required for its authoring and production processes has meant that quite a few important new books and papers could not be studied and incorporated into the text before you. In addition

there is much more detail that I gathered together which had to be left out due to constraints on this book's length. Happily the publishers Wiley-Blackwell have set up an on-line resource for purchasers of this volume, in which I have been able not only to add an extensive set of additional notes to all the chapters, but also to update the book on some key recent publications.

Color Plate 0.1 has been provided in order to orient the reader to the main provinces of Greece and the key modern and ancient centers, as well as the physical geography of the country.

Finally to help the reader navigate through the many periods of time which a complete Archaeology of Greece should encompass, there follows a basic time-chart.

### General Time Chart for the Archaeology of Greece

These ranges are generalized approximations and at least from the Neolithic onwards different provinces of Greece can vary in detail from these dates. Additionally some periods still remain under controversy over their timespans, especially in the Middle and Late Bronze Age.

- PALAEOLITHIC:** ca. 300,000–400,000 years before present (BP) to ca. 9000 BC  
**EPIPALAEOLITHIC/MESOLITHIC:** ca. 9000 BC to ca. 7000 BC  
**NEOLITHIC:** ca. 7000 BC to ca. 3500/3200 BC  
**EARLY BRONZE AGE:** ca. 3500/3200 BC to ca. 2100/1900 BC  
**MIDDLE BRONZE AGE:** ca. 2100/1900 BC to ca. 1700 BC  
**LATE BRONZE AGE:** ca. 1700 BC to ca. 1200/1100 BC  
**"DARK AGE"/EARLY IRON AGE:** ca. 1200/1100 BC to ca. 800/700 BC  
**ARCHAIC ERA:** ca. 700 BC to ca. 500 BC  
**CLASSICAL ERA:** ca. 500 BC to 323 BC  
**EARLY HELLENISTIC PERIOD:** 323 BC to ca. 200 BC  
**LATE HELLENISTIC TO EARLY ROMAN ERA:** ca. 200 BC to ca. 200 AD

- MIDDLE TO LATE ROMAN PERIOD:** ca. 200 AD to ca. 650 AD  
**"DARK AGE" / EARLY BYZANTINE ERA:** ca. 650 AD to 842 AD  
**MIDDLE BYZANTINE PERIOD:** 842 AD to 1204 AD  
**LATE BYZANTINE/FRANKISH-CRUSADER ERA:** 1204 AD to ca. 1400 AD  
**OTTOMAN PERIOD:** ca. 1400 AD to 1830 AD  
**EARLY MODERN ERA:** 1830 AD to 1950 AD

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## Part I

# The Landscape and Aegean Prehistory

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## The Dynamic Land

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### Introduction

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Greece is a land of contrasts (Admiralty 1944, Bintliff 1977, Higgins and Higgins 1996: and see Color Plate 0.1). Although promoted to tourists for its sandy beaches, rocky headlands, and a sea with shades of green and blue, where Aleppo pine or imported Eucalyptus offer shade, in reality the Greek Mainland peninsula, together with the great island of Crete, are dominated by other more varied landscapes. Postcard Greece is certainly characteristic of the many small and a few larger islands in the Cycladic Archipelago at the center of the Aegean Sea, the Dodecanese islands in the Southeast Aegean, and the more sporadic islands of the North Aegean, but already the larger islands off the west coast of Greece such as Ithaka, Corfu, and Kephallenia, immediately surprise the non-Mediterranean visitor with their perennial rich vegetation, both cultivated trees and Mediterranean woodlands. The Southwest Mainland is also more verdant than the better known Southeast.

The largest land area of modern Greece is formed by the north-south Mainland peninsula. At the Isthmus of Corinth this is almost cut in two, forming virtually an island of its southern section (the Peloponnese). Although in the Southeast Mainland there are almost continuous coastal regions with the classic Greek or Mediterranean landscape, not far inland one soon encounters more varied landforms,

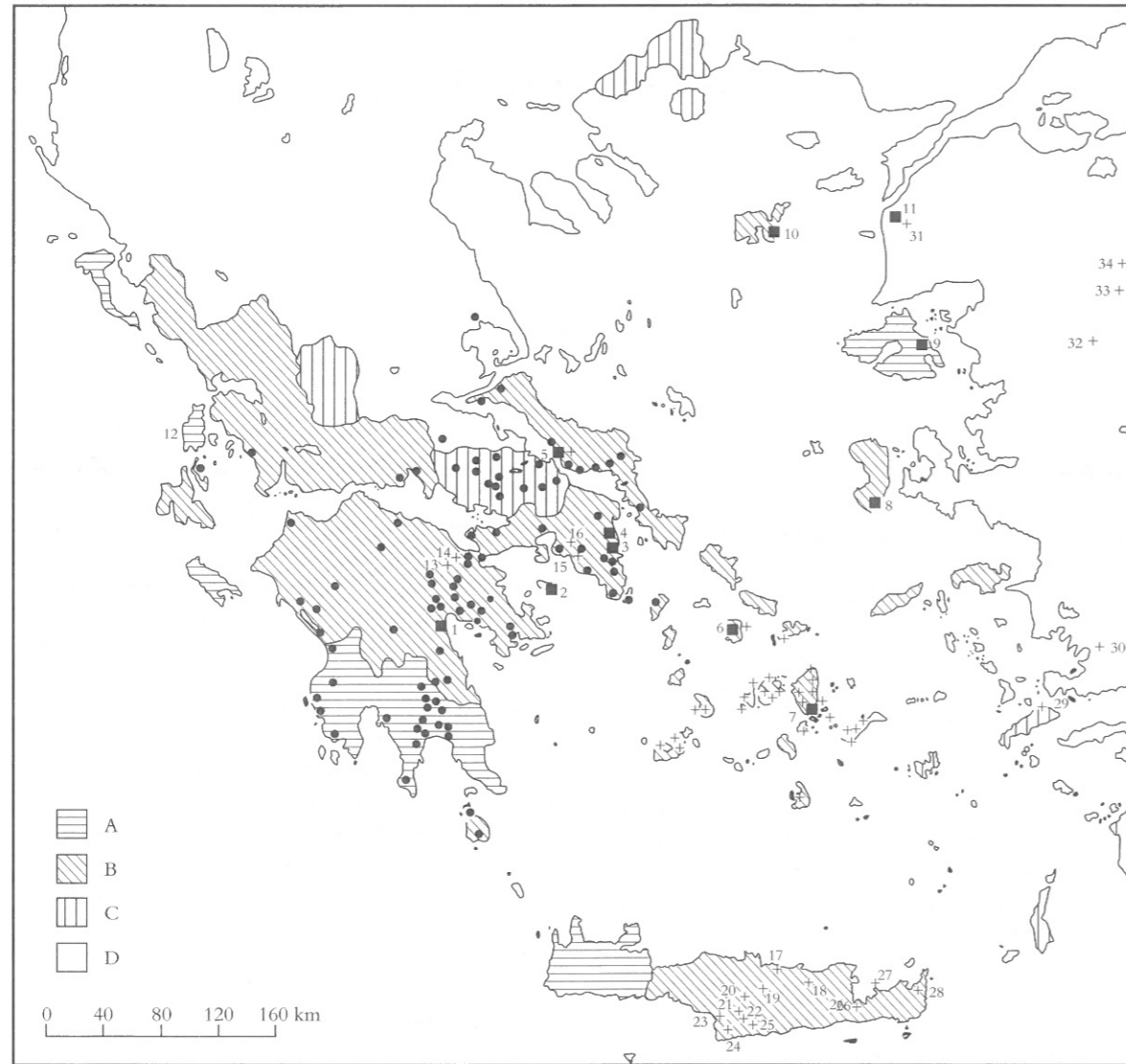
plants, and climate, usually through ascending quickly to medium and even higher altitudes. There are coastal and inland plains in the Peloponnese and Central Greece, but their size pales before the giant alluvial and karst (rugged hard limestone) basins of the Northern Mainland, a major feature of the essentially inland region of Thessaly and the coastal hinterlands further northeast in Macedonia and Thrace. If these are on the east side of Northern Greece, the west side is dominated by great massifs of mountain and rugged hill land, even down to the sea, typical of the regions of Aetolia, Acarnania, and Epirus.

Significantly, the olive tree (Figure 1.1), flourishes on the Aegean islands, Crete, the coastal regions of the Peloponnese, the Central Greek eastern lowlands, and the Ionian Islands, but cannot prosper in the high interior Peloponnese, and in almost all the Northern Mainland. The reasons for the variety of Greek landscapes are largely summarized as *geology* and *climate*.

### Geological and Geomorphological History

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Although there are many areas with very old geological formations (Figure 1.2: Crystalline Rocks), the main lines of Greek topography were formed in recent geological time, resulting from that extraordinary deformation of the Earth's crust called the Alpine

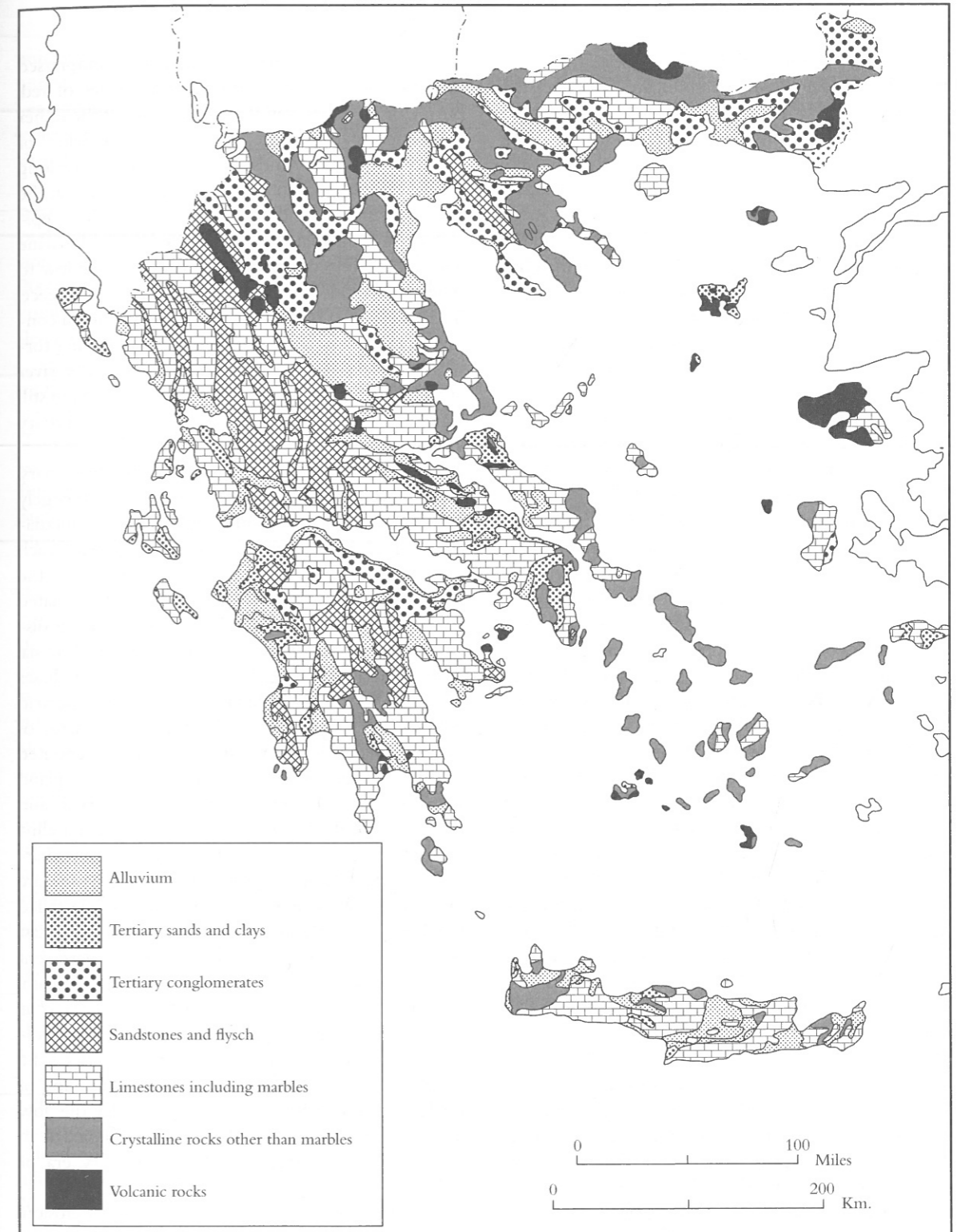


**Figure 1.1** Distribution of the major modern olive-production zones with key Bronze Age sites indicated. The shading from A to C indicates decreasing olive yields, D denotes no or minimal production. Major Bronze Age sites are shown with crosses, circles, and squares.

C. Renfrew, *The Emergence of Civilization* (Study in Prehistory), London 1972, Figure 18.12. © 1972 Methuen & Co. Reproduced by permission of Taylor & Francis Books UK.

Orogeny, or mountain-building episode, which not only put in place the major Greek mountain ranges but the Alps and the Himalayas (Attenborough 1987, Higgins and Higgins 1996). In the first period of the Tertiary geological era (the Palaeogene), 40–20 million years ago, as the crustal plates which make up the

basal rocks of Africa and Eurasia were crushed together, the bed of a large intervening ocean, Tethys, was compressed between their advancing masses and thrust upwards into high folds, like a carpet pushed from both ends. Those marine sediments became folded mountains of limestone (Figure 1.2: Limestone).



**Figure 1.2** Major geological zones of Greece. H. C. Darby et al., *Naval Geographical Intelligence Handbook, Greece*, vol. 1. London: Naval Intelligence Division 1944, Figure 4.



This plate-tectonic compression created an arc-formed alignment of Alpine mountains and associated earthquake and volcanic belts (Figure 1.2: Volcanic Rocks), which begins as a NW-SE line for the Mainland mountain folds, then curves eastwards across the center of the Aegean Sea, as the E-W orientation of Crete illustrates, and also the associated island arc of volcanoes from Methana to Santorini, to be continued in the E-W ridges of the Western Mainland of Anatolia-Turkey (Friedrich 2000). The Ionian and Aegean seas have been formed by differential sinking of those lateral parts of the Alpine arc, creating the Aegean and Ionian Islands out of former mountain ridges, hence their often rocky appearance. But also there have been tectonic ruptures in different alignments, the most notable being that E-W downward fault which forms the Gulf of Corinth. The artificial cutting of the Corinth Canal in 1893 accomplished the removal of the remaining 8 km stretch left by Nature.

These plate-tectonic forces still operate today, since the Aegean region forms an active interface between the southerly African and northerly Eurasian blocks, and is itself an unstable agglomerate of platelets. Where zones of the Earth's crust are clashing, and ride against, or force themselves under or over each other, there are notorious secondary effects: frequent earthquakes and arcs of volcanoes set behind the active plate boundaries (Color Plate 1.1). Recurrent Greek earthquakes are a tragic reality, notably along the Gulf of Corinth, and the same zone curves into Turkey with equally dire consequences. The volcanic arc runs from the peninsula of Methana in the Eastern Peloponnese through the Cycladic islands of Melos and Santorini-Thera. A secondary arc of earthquake sensitivity runs closer to Crete and its mark punctuates that island's history and prehistory. Around 1550 years ago, a violent earthquake through the Eastern Mediterranean elevated Western Crete by up to 9 meters (Kelleter 1991), lifting Phalasarna harbor out of the ocean (Frost and Hadjidaki 1990).

The mostly limestone mountains of Mainland Greece and Crete, as young ranges, are high and vertiginous, even close to the sea. Subsequently these characteristics encouraged massive erosion, especially as sea levels rose and sank but ultimately settled at a relatively low level to these young uplands. As a result, between the limestone ridges there accumulated masses

of eroded debris in shallow water, later compressed into rock itself, flysch, whose bright shades of red, purple or green enliven the lower slopes of the rather monotonously greyscale, limestone high relief of Greece (Figure 1.2: Sandstones and Flysch). For a long period in the next subphase of the Tertiary era, the Neogene, alongside these flysch accumulations, episodes of intermediate sea level highs deposited marine and freshwater sediments in the same areas of low to medium attitude terrain over large areas of Greece. These produced rocks varying with depositional context from coarse cobbly conglomerates of former torrents or beaches, through sandstones of slower river and marine currents, to fine marly clays created in still water (Figure 1.2: Tertiary Sands and Clays, Tertiary Conglomerates).

During the current geological era, the Quaternary, from two million years ago, the Earth has been largely enveloped in Ice Ages, with regular shorter punctuations of global warming called Interglacials, each sequence lasting some 100,000 years. Only in the highest Greek mountains are there signs of associated glacial activity, the Eastern Mediterranean being distant from the coldest zones further north in Eurasia. More typical for Ice Age Greece were alternate phases of cooler and wetter climate and dry to hyperarid cold climate. Especially in those Ice Age phases of minimal vegetation, arid surfaces and concentrated rainfall released immense bodies of eroded upland sediments, which emptied into the internal and coastal plains of Greece, as well as forming giant alluvial (riverborne) and colluvial (slopewash) fans radiating out from mountain and hill perimeters. We are fortunate to live in a warm Interglacial episode called the Holocene, which began at the end of the last Ice Age some 12,000 years ago. Alongside persistent plate-tectonic effects – earthquakes around Corinth, one burying the Classical city of Helike (Soter *et al.* 2001), earthquakes on Crete, and the Bronze Age volcanic eruption of Thera (Bruins *et al.* 2008) – the Greek landscape has witnessed the dense infilling of human communities to levels far beyond the low density hunter-gatherer bands which occupied it in the pre-Holocene stages of the Quaternary era or “Pleistocene” period.

The results of human impact – deforestation, erosion, mining, and the replacement of the natural plant and

animal ecology with the managed crops and domestic animals of mixed-farming life – are visible everywhere, yet certainly exaggerated. Holocene erosion-deposits in valleys and plains are actually of smaller scale and extent than Ice Age predecessors. Coastal change in historic times may seem dramatic but is as much the consequence of global sea level fluctuations (a natural result of the glacial-interglacial cycle), as of human deforestation and associated soil loss in the hinterland (Bintliff 2000, 2002). (In Figure 1.2, the largest exposures of the combined Pleistocene and Holocene river and slope deposits are grouped as Alluvium.)

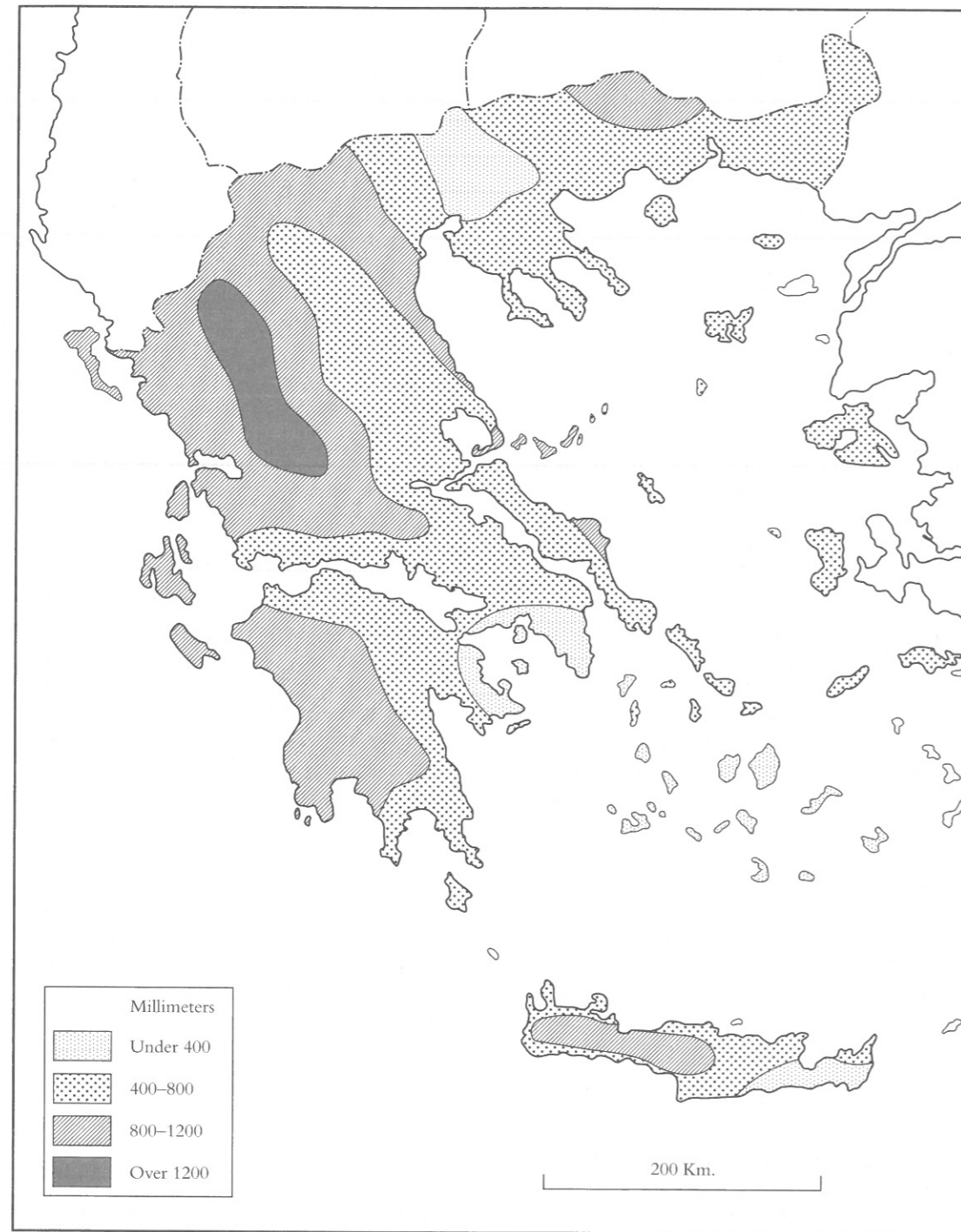
Globally, at the end of the last Ice Age, sea level rose rapidly from 130 meters below present, reflecting swift melting (eustatic effects) of the major ice-sheets (Roberts 1998). By mid-Holocene times, ca. 4000 BC, when the Earth's warming reached its natural Interglacial peak, sea levels were above present. Subsequently they lowered, but by some meters only. However, due to a massive and slower response of landmass readjustments to the weight of former ice-sheets, large parts of the globe saw vertical land and continental-shelf movements (isostatic effects), which have created a relative and continuing sea level rise, though again just a few meters. The Aegean is an area where such landmass sinking has occurred in recent millennia (Lambeck 1996). The Aegean scenario is: large areas of former dry land were lost to rising seas in Early to Mid-Holocene, 10,000–4000 BC, depriving human populations of major areas of hunting and gathering (Sampson 2006). Subsequently Aegean sea levels have risen slightly (around a meter per millennium), but remained within a few meters of the 4000 BC height, allowing river deposits to infill coastal bays and landlock prehistoric and historic maritime sites.

Let me try to give you the “feel” of the three-dimensional Greek landscape. From a sea dotted with islands, the rocky peaks of submerged mountains (Color Plate 1.2a), and occasional volcanoes, the Greek coastlands alternate between gently sloping plains of Holocene and Pleistocene sediments, and cliffs of soft-sediment Tertiary hill land or hard rock limestone ridges. The coastal plains and those further inland are a combination of younger, often marshy alluvial and lagoonal sediments (usually brown hues) (Color Plate 1.2b), and drier older Pleistocene alluvial and colluvial sediments (often red hues) (Color Plate

1.3a). The coastal and hinterland plains and coastal cliff-ridges rise into intermediate terrain, hill country. In the South and East of Greece this is mainly Tertiary yellowy-white marine and freshwater sediments, forming rolling, fertile agricultural land (Color Plate 1.3b), but in the Northwest Mainland hard limestones dominate the plain and valley edges, a harsh landscape suiting extensive grazing. A compensation in hard limestone zones within this hill land, including the Northwest, is exposures of flysch, which vary from fertile arable to a coarse facies prone to unstable “bad-land” topography. As we move upwards and further inland, our composite Greek landscape is dominated by forbidding ridges of Alpine limestone (Color Plate 1.3a), sometimes transformed by subterranean geological processes into dense marbles. Frequently at the interface between hill land and mountain altitudes occur much older rocks: tectonic folding and faulting after the Alpine mountain-building phase has tipped up the original limestone terrain, bringing to light earlier geological formations of the Palaeozoic or pre-Alpine Mesozoic eras. They were joined by post-Orogeny localized eruptive deposits. These are dense crystalline rocks such as schists, slates, and serpentines, whose bright colors and sharp edges trace the borders between the towering grey masses of limestone and the gentler hill lands of Tertiary sandstones or flysch which make up much of the Greek intermediate elevations. The intervention of such impermeable rocks even as thin bands at the foot of limestone massifs commonly forms a spring-line, neatly lying between good arable below and good grazing land above, a prime location for human settlement. The recent volcanic deposits can be fertile arable land, if sufficient rainfall frees their rich minerals to support soil development and plant growth. Finally, in some regions of Greece, mainly the Northeast Mainland, the Orogeny played a limited role, and the mountain massifs are much older dense crystalline rocks.

## Climate

As with its geology, Greece does not have a single climate (Admiralty 1944, Bintliff 1977). Our image of long dry summers and mild winters with occasional rain reflects the focus of foreign visitors on the



**Figure 1.3** Average annual rainfall in Greece.  
H. C. Darby *et al.*, *Naval Geographical Intelligence Handbook, Greece*, vol. 1. London: Naval Intelligence Division 1944, Figure 59.

Southeast Mainland, the Aegean islands, and lowland Crete, where this description is appropriate.

The two key factors in the Greek climate are the country's location within global climate belts, and the dominant lines of Greece's physical geography. Greece lies in the path of the Westerly Winds, so that autumn and spring rainfall emanates from the Atlantic, but is much less intense than in Northwest Europe. The Westerly rainbelt decreases in strength the further south and east you go in the Mediterranean. Most of Modern Greece has the same latitude as Southern Spain, Southern Italy, and Sicily, making all these regions strikingly more arid than the rest of Southern Europe. In summer the country lies within a hot dry weather system linking Southern Europe to North Africa. In winter cold weather flows from the North Balkans.

The internal physical landforms of the country also have a major effect on the distribution of rainfall, snow, and frost, and temperatures through the year. The Alpine Orogeny stamped the Mainland with mountain blocks running Northwest to Southeast. On Crete these ranges swing East-West toward Anatolia, so its high mountains form an island backbone on this alignment, but the relative depression of the Aegean Sea caused a tilting of the island, leaving its western third far more elevated. These Alpine obstacles, rising in the west and central sectors of the Greek Mainland and Crete, force the Westerly rains to deposit the major part of their load along the West face of Greece and in Western Crete, making the Eastern Mainland, the Aegean Islands, and Eastern Crete lie in rainshadow, thus restricting the available rainfall for plants and humans (Figure 1.3).

Temperature, rainfall, and frost-snow also vary according to altitude, and Greece is a land of rapid altitudinal contrasts. No part of the broadest landmass, the Northern Mainland, is more than 140 km from the sea, whilst for the Peloponnese the most inland point is 45 km distant, yet in these short spans one can move (sometimes in a few hours), from sea level to the high mountain zone. With height come lower temperatures and more snow-frost, milder summers, and more severe winters than experienced in the favored summer and winter tourist destinations of the Aegean Islands and coasts of the Southeast Mainland, but in compensation, there is less risk of drought and life-threatening heatwaves. In the drier zones of Greece

drought is a constant threat to crop cultivation and animal-raising, and is frequent enough to pose an adaptive challenge for any past Greek society with a dense population and elaborate division of labor.

The powerful effects of geology and climate in creating the diverse landscapes of Greece are also dominant in the mosaic of natural and artificial vegetation belts which one meets in traveling from South to North, or East to West, and even more clearly from coast to inland mountains.

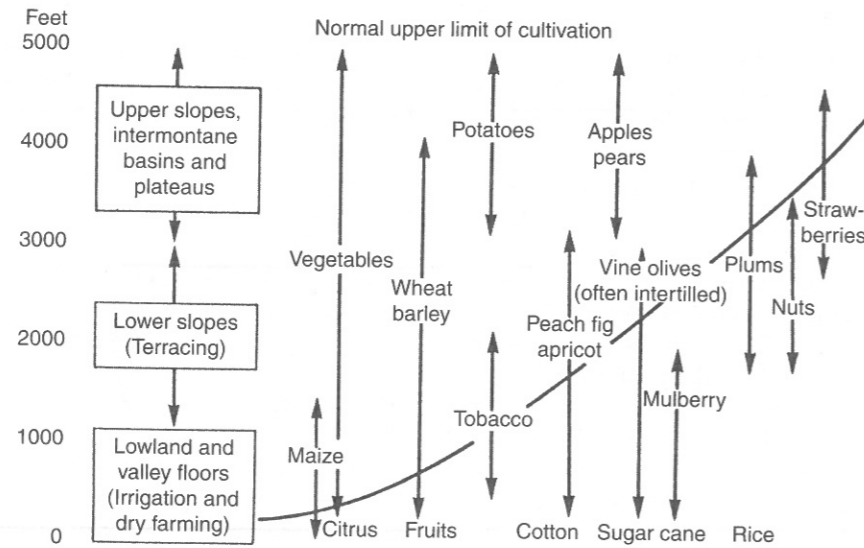
## Vegetation

Climbing to higher altitudes in the Mediterranean produces effects comparable to traveling northwards toward the Arctic, passing out of Mediterranean into temperate, then continental and finally to subarctic climates (Admiralty 1944, Bintliff 1977, Rackham 1983, Kautzky 1993). Average annual temperatures decline, and although summers can be hot they are milder than in coastal lowlands; autumn, spring, and winter are colder and rainier; finally, winter frost and snow increase with height above sea level. The position of the uplands relative to rain-bearing autumn and spring Westerlies modify these effects, also true for the winter cold climate cells which derive from the Balkans. Thus when traveling west and north from the Mediterranean climate zone of the Southeast Mainland coast and its offshore islands, or merely inland and up into the hill land and then mountains, we observe a succession of natural vegetation zones which are related to the main vegetation zones of Europe from its far south to its far north.

Evergreen trees (oaks, olives) give way to mixed evergreen and deciduous trees and shrubs, then deciduous vegetation is gradually displaced by hardy coniferous trees, until finally in the highest or rockiest mountain peaks trees decline and Alpine grasses and low plants dominate. However, this is a picture of typical conditions throughout Greece in the middle of an Interglacial period, and for the Holocene this has been much modified by human impact.

Since people colonized the Greek landscape in large numbers, from the Late Neolithic (ca. 5000 BC), they have modified natural vegetation to assist their farming-herding economy, whilst from the mature





**Figure 1.4** The vertical zonation of crops in the Mediterranean lands. J. M. Houston, *The Western Mediterranean World*. London 1964, Figure 28. Courtesy of J. M. Houston.

Iron Age onwards (ca. 800 BC) intensified mining and timber extraction has increased human impact. In some regions and periods in the past, natural woodland disappeared or was reduced to a patchwork amid a landscape of fields, pastures or mere wasteland. Photographs for much of Greece from the late nineteenth to early twentieth centuries frequently portray treeless, almost lunar landscapes. Fortunately the Greek government in recent decades has implemented increasingly effective reforestation and woodland preservation programs. Redirection of the economy away from extensive sheep and goat raising has dramatically allowed uplands to regenerate tree cover. European Union agricultural policies, and internal pressure to focus Greek farming on highly commercial forms of land use, are also creating divergent paths in the previously cultivated landscape. Open lowlands and areas with plentiful pumped irrigation water are now intensively farmed throughout the year for multiple crops. In contrast, vast areas of hill country where motor and irrigation access are restricted, and fields small, are swiftly reverting to scrubland and bushes. Areas suitable for archaeological landscape survey are increasingly confined by this polarization of land use.

However, human impact from later prehistoric times onwards has always been regionally diversified,

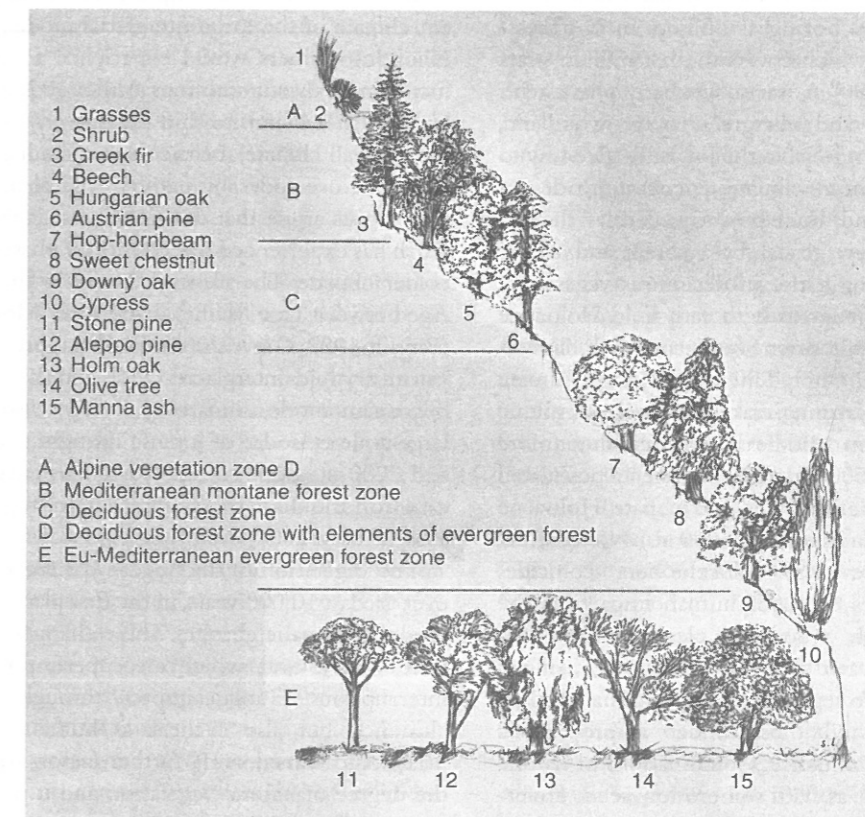
as the “agropastoral” (farmer-herder) economy adapted to local climate and topography (Figure 1.4). In the lowlands and hill lands, to several hundred meters above sea level, natural Mediterranean evergreen woodland, alternating with dry steppe and shrubs where stoniness or aridity prevented tree cover, has become a cultivated “woodland” of evergreen olives, figs, vines, and (after Medieval importation) citrus fruits. Natural grasses and bulbs have been replaced by the favored bread grasses wheat, barley, and the root crops beans, lentils, and melons. From the sixteenth to seventeenth centuries AD onwards, the versatile exotic maize and exotic commercial shrubs cotton and tobacco spread widely. In the cooler hill lands, fruit and nut trees, which were a natural component of the European mixed deciduous-evergreen vegetation, have been favored, such as apples, whilst the milder, wetter climate suited native vegetables and Early Modern imports such as potatoes. In the higher uplands more open landscapes due to climate, culminating in high level grass-bulb landscapes, have been drastically enhanced by human clearance (by fire, axe, and grazing) to make pasturelands, where cooler summers compared to the lowlands have encouraged specialist herders to bring seasonally transhumant domestic flocks.

## Vegetation

The zonal vegetation map of Greece (Color Plate 1.4) demonstrates that topography, geology, and climate collaborate to produce a clear trend in the distribution of typical natural vegetation during a warm period such as our current Interglacial. The drier coastlands and islands, mainly in the South and especially the Southeast, display Mediterranean evergreen, drought-resistant plants. If unaffected by fire, grazing, and cultivation (a minority of the landscape!) one would find savannah or woodland composed of trees like evergreen oak, Aleppo pine, and wild olive. Moving away from the Southeast Mainland coasts and islands, north and west, higher rainfall and often higher relief support mixed Mediterranean evergreen and deciduous woodland species, deciduous oaks, beech, and chestnut. Such mixed vegetation would in the natural state typify

higher land in the South and much of the lower land in the North. Within the great upland zones which constitute Mainland Greece’s rugged interior, Mediterranean vegetation disappears and we find deciduous and increasingly with altitude more continental tree species, such as hardy conifers, the latter dominant as we ascend the mountains. Even without human interference there would be small zones in the uppermost mountain belts with Alpine, non-tree grassland and other low plants. Given the fact that in Greece one can move within a short distance from the dry coastland up into fringing mountains, it is often possible in many parts of Greece to walk in a day from Mediterranean evergreen brushland through deciduous, then coniferous, woodland and see ahead the bare Alpine-plant zone on the crests of the mountains.

For typical, mostly natural, tree species see Figure 1.5. In the Greek lowlands original woodland



**Figure 1.5** Vegetation sequence in Greece, from Mediterranean lowland (right) to inner mountain peaks (left). Modified from J. Kautzky, *Natuurreisgids Griekenland. Vasteland en Kuststreken*. De Bilt 1995, diagram on p. 23.

cover was first removed on a large scale by later Neolithic and Bronze Age times, and the cultivable landscape is considered to have already possessed its Early Modern appearance by Classical Greek times (Bintliff 1977, 1993): a mosaic of open land (dominated by grain crops) and cultivated olive and fig orchards and vineyards. In place of woodland, where agriculture is not found, human impact by fire and grazing, or natural climatic aridity, give rise to three levels of sub-woodland vegetation, in decreasing order of size and ground surface cover

(Rackham 1983): degraded evergreen woodland becomes low shrubland ("maquis"), predominantly prickly oak bushes. More heavily degraded land, or where bare rock is very prominent, supports thin grassland mixed with spiky plants ("steppe"). Finally in the least vegetated zones, the result of maximum human impact or the dominance of bare rock, we find very low, widely-spaced "phrygana" or "garri-gue" vegetation, notable for aromatic fragrances and valued by bees and humans for nourishment and cuisine respectively (sage, thyme).

Pollen analysis documents the evolution of vegetation in Greece, taken from lake and coastal corings. A prediction for a warm epoch or Interglacial, such as our Holocene period, without human interference, comes from a deep boring at Philippi in Northeast Mainland Greece which covers the last million years (Wijmstra *et al.* 1990). A warm, wet early phase, with mixed deciduous and evergreen open woodland, would by mid-interglacial in the lowlands give way to a drier Mediterranean climate, encouraging denser evergreen woodland, then be succeeded, as the era moves toward a new glacial, by a cooler and wetter climate encouraging a rise in deciduous vegetation. This reconstruction agrees with early-mid Holocene pollen cores from the drier Southern Greek climate. Here Bottema (1990) noted increasingly drier climate through the early farming eras of the later Neolithic and Bronze Age, in Middle Holocene times (more pronounced from 5000 to 4000 BC), then a postulated rise in rainfall, or aridity decline, in Late Holocene times (from the Iron Age on, ca. 1000 BC). Nonetheless, since the Middle-Late Holocene era coincides with several phases of major human impact on the landscape, through woodland clearance and the expansion of cultivated crops and managed grazing, it becomes difficult to separate out vegetational changes due to climate and those under anthropogenic (human-inspired) influence. Combinations of natural and human factors, as with soil erosion, seem preferable to comprehend Greek landscapes for these recent millennia (Rackham 1982, Atherden and Hall 1994).

From the Bronze Age till Medieval times, the natural climate seems to have been mostly warm and dry. The Mesolithic hunter-gatherers (see Time Chart in Introduction) would experience the rather different climate of the early interglacial model, whilst the Neolithic farmers would experience a transition to increasingly drier conditions. Although the Earth had probably not begun to shift definitively toward a late interglacial climate, before human-induced Global Warming overrode any natural cyclical patterns, climatologists argue that during the last 2000 years the Earth has experienced several shorter phases of wetter, colder climate. The classic example is the Little Ice Age between Late Medieval and Early Modern times (Bintliff 1982, Grove 2004). Furthermore, within the warm, dry mid-interglacial mode, and the early wetter but warm mode, climatologists have also identified large-scale episodes of intense drought, around 6200 and 2200 BC, both considered as particularly significant for the Eastern Mediterranean region (Weiss 1993, Rosen 2007).

The vegetation of the Aegean has certainly altered over the last 10,000 years, in the first place responding to global climatic changes. These changes form long-term cycles, over which are superimposed smaller interruptions. Human impact, through progressive clearance, but also cyclical, as human populations waxed and waned, are a further factor impacting on the degree of natural vegetation and its type, but we now see that visible alterations may be as much due to natural as to anthropogenic causes, most frequently it seems a combination of these.

## Soils

Greece's semi-arid climate limits its soils (Figure 1.6) from developing a great depth or elaborate mature profiles. Greek soils often remain thin, accumulating slowly, and largely reflect the parent rock and sediment they develop on. Geology is therefore fundamental for soil type distribution. Thus the scattered volcanic districts are echoed by characteristic *Volcanic Soils*, mostly not too fertile as they border the dry Aegean Sea. Far commoner, hard crystalline limestone produces characteristic derived soils (*Limestone Soils*), thin and none too fertile, often patchy between rugged rock. The intermediate hill land of Greece once possessed fertile deep woodland soils, but due to human impact those parts occupied the longest, and farmed continuously, have developed thin stony soils, here mapped along with similar naturally thin soils of the interior mountains (*Stony Mountain Soils* and *bare Rock*); *Terra Rossas* and *Rendzinas* have similar properties and origins (for the former, see Color Plate 1.3a). Only in some zones do better, deeper soils survive extensively (*Brown Forest Soils* and *Mediterranean Dry Forest Soils*) (Color Plate 1.3b). Coastal plains and the drier inland basins, with alluvial and colluvial sediments, have their own fertile but sometimes marshy soils (*Alluvial, Marsh, and Meadow Soils*) (Color Plate 1.2b).

The overall picture reflects the rocky, mountainous topography of Greece, the limited expanses of rocks that make rich soil, the confined zones of plain (excepting Northern Greece), and the dry climate. Greece is not a naturally rich country for farming, reminding us why the Greeks in many eras imported food, notably grain. However, even if we assume that in regions with dense prehistoric and ancient settlement the once deeper soils have been reduced to a thinner form, due to woodland clearance and erosion, these soils can still provide plentiful harvests at subsistence level (Shiel 2000), though hardly for sustained, large-scale export of wheat, barley or vegetables. Moreover, in some areas, soil impoverishment based on a model of constant environmental decline may not hold true at all (James *et al.* 1994). In compensation, the abundant exposures of steep and rocky, thin soils in a dry climate with low frosts make ideal growing conditions for two classic Mediterranean crops, the olive and the vine, the former vital to

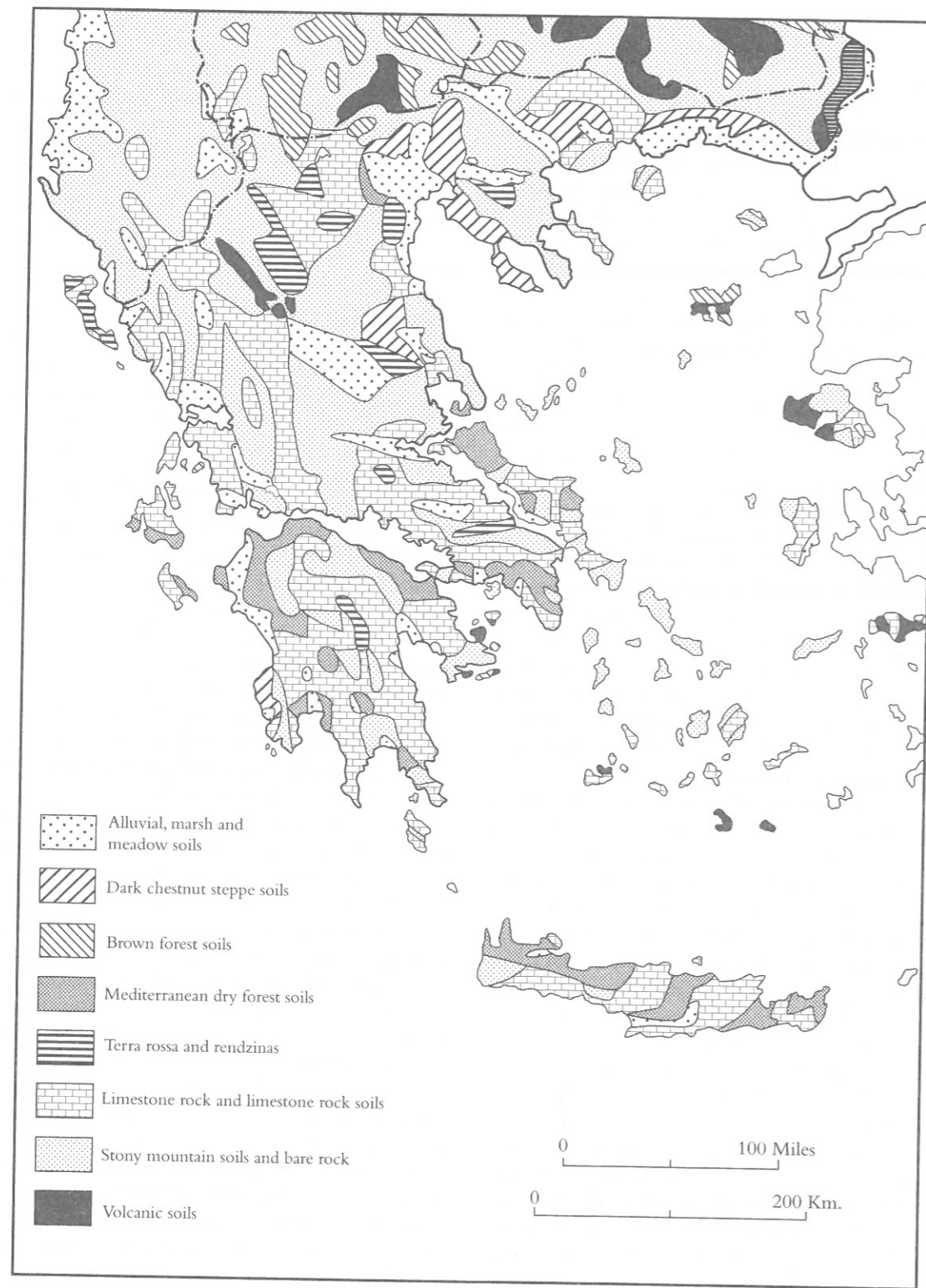
enrich the diet, and both excellent trade crops. Even the "wasteland" of scrub and thin woodland formed till recently a sustainable, fruitful extension of food and raw materials for rural communities (Rackham 1982, Forbes 1997).

## Erosion

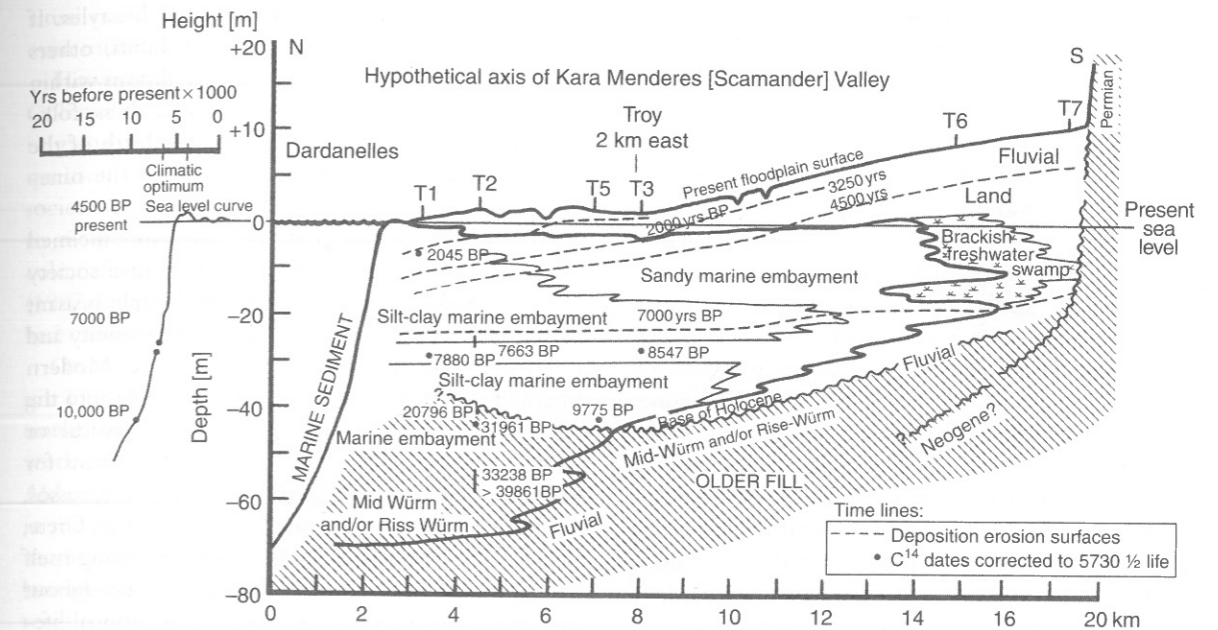
Ever since it was commented on by the Classical philosopher Plato, the erosion of Greece and the resultant lowland sedimentation in valleys and plains was envisaged as a continuous process of landscape transformation, and condemned as negative and anthropogenic in origin (van Andel *et al.* 1986, 1990). With the advent of farming and herding commenced widespread woodland clearance, gaining momentum from prehistoric times into Greco-Roman antiquity. Soils were supposedly stripped or impoverished, sloping landscapes degraded to grazing or even rock. Ports declined as river alluvium bringing eroded debris of hinterland clearance spilled around them, creating a seawards retreating coastline. Even where sensible farmers built terraces to reduce soil loss, cycles of human depopulation apparently led to their neglect, releasing protected soil to flow into rivers.

However, the last 40 years of scientific research into Holocene geomorphology in Greece has revealed a more complex picture than that just depicted, and one where human impact is matched by natural processes (Bintliff 2000, 2002). Firstly, in parts of Greece geology or hyperarid climate restrict woodland cover. Soils here undergo natural weathering, or were always thin. Secondly, in the early Holocene, till 5000 BC, an evolving Interglacial climate stimulated more open landscapes with enhanced natural erosion. Human impact is undoubtedly registered from the later Neolithic period (ca. 5000 BC) onwards, in cycles of woodland clearance followed by regeneration, and in the high population, full land use half of each cycle, such open landscapes also favored soil erosion. But now comes a vital factor, the immediate cause of erosion, which is the weather. Studies have demonstrated that severe erosion is often linked with unusual rainstorms or other highly abnormal weather conditions. Extreme storms may occur once in a lifetime or at even longer intervals.





**Figure 1.6** Soils of Greece.  
H. C. Darby *et al.*, *Naval Geographical Intelligence Handbook, Greece*, vol. 1. London 1944, Figure 7.



**Figure 1.7** Cross-section of the infill of the Plain of Troy, Northwestern Anatolia, since the last glacial era. Note the dominance of marine deposits and of river sediments laid down in a former sea inlet almost to the innermost part of the plain, and the late and superficial progradation (advance) of the modern dry land plain alluvia.  
Author after J. C. Kraft *et al.*, "Geomorphic reconstructions in the environs of ancient Troy," *Science* 209 (1980), 776-782, Figure 3. Reproduced by permission of American Association for the Advancement of Science.

Let us predict how these complex processes might register in the Greek geomorphological (land surface) record. For Early Holocene erosion processes we expect little human responsibility, then in Middle and Late Holocene times (later Greek prehistory till today), cycles of high human population would be irregularly punctuated by erosion phases, whilst even in low population phases occasional, irregular erosion episodes could appear. Most of the time, even during population climaxes, major erosion would be absent. A final qualification is required: pollen analysis shows that considerable expanses of upland Greece remained wooded, with low human populations, till the Early Modern period (Bottema 1974), chiefly in the Northern Mainland. The accumulating Holocene landscape record for Greece corresponds closely: erosion in prehistoric through ancient to Medieval times occurs as a series of irregular, short-lived episodes, set against longer periods of landscape stability marked by soil development (what is called a "punctuated

equilibrium" model). Rare phases of landscape instability, apart from Early Holocene examples, lie within periods of dense human occupation, but fail to correlate with every population climax (Pope *et al.* 2003).  
Finally we must rethink our scenarios for coastline change. Firstly, it is widely forgotten that hill erosion benefits the lowlands through deposition of fertile alluvia and colluvia. Secondly, we must be critical of the view that the frequently observed advance of river deltas into the sea during historic times is clear evidence for ecological mismanagement of the hinterland of the Aegean coasts, due to human deforestation and poor soil conservation. Scientific research reveals a more complex interplay between natural Interglacial processes and human impact. Boreholes through the larger coastal plains of the Greek and Turkish Aegean coasts give comparable cross-sections, illustrating how these plains have been built up since the last glacial period (Figure 1.7). During the last Ice Age, sea levels 130 meters below present, and prolonged millennia of

open landscape with highly erosive climate, produced deep slope and plain sedimentation in the coastlands and well beyond into the present marine shallows (categorized as "Older Fill" in the Figure). In the Early Holocene, swift global ice-sheet melting caused rapidly rising sea levels, outpacing the laying down of eroded sediments in river deltas, which was also drastically reduced in volume as the hinterland became increasingly wooded. Till 4000 BC the sea encroached on coastlines, and although continued natural, and human-related, erosion still brought sediments downstream, these were poured into advancing submarine bays. From this point onwards, two linked processes interacted to reverse this general trend: sea level rise globally slowed down or ceased, with subsequently only minor fluctuations in height, and human clearance from Late Neolithic times onwards became a major, if cyclical, force which exposed large hinterland terrains to potential erosion. Taken together these effects have favored coastal plains advancing on the sea. Historical references certainly match sediment cores for Aegean coastal plains (Brückner 2003, Kraft *et al.* 1977, 1980, 1987), showing dramatic gains in the land even over a few centuries during the last 2500 years. However in cross-section the depth of these historical-era natural-anthropogenic sediments is rarely great, coating a superficial skin on top of much deeper, naturally caused, delta deposits of the earlier Holocene and Ice Age millennia.

### Ethnoarchaeology

The study of "traditional" Greek society as a source for reconstructing everyday life in ancient and prehistoric Greece has long been popular. When Western Travelers began to visit Greece in significant numbers, during the eighteenth and early nineteenth centuries AD, their reaction to Greek countryfolk was frequently negative (Tsigakou 1981, Angelomatis-Tsougarakis 1990). Manners, dress, houses, and education disappointed the visitor seeking the descendants of Pericles or Plato. But whereas those Travelers were educated into a colonial and imperialist condescension toward the rest of the World, by the turn of the twentieth century growing disillusionment with Western achievements encouraged intellectuals to admire a

lost past of pre-capitalist, pre-industrial lifestyles. If the painter Gauguin sought this in Tahiti, others stayed at home and tapped into folk traditions within Western Europe itself (language, music, dress, folklore), a movement developing since the birth of the Romantic Movement around the start of the nineteenth century.

Now Western scholar-travelers were more inclined to cherish the characteristics of conservative society in rural Greece, previously deplored. Simple peasant life, close to an unchanging nature, its spontaneity and semi-pagan rituals, appeared preferable to Modern Life, and surely also suggested a direct insight into the world of the ordinary people of the Classical or Bronze Age landscape. This led Sir Arthur Evans for example, excavator of the Minoan palace at Knossos, to construct a Golden Age in Bronze Age Crete, which later scholarship has difficulty extricating itself from (Bintliff 1984, MacGillivray 2000). Throughout the twentieth century, observations of traditional lifeways in Greece seemed logically linked to our picture of the remoter past, and even in the 1970s and 1980s anthropologists were attached to archaeological teams (cf. Jameson 1976), not just to bring the story of a landscape into the present day, but in the expectation that traditional practices could be extrapolated to the long-term past.

A belief in direct historical continuity played a central role. Only a minority of scholars were attracted by Fallmerayer's nineteenth-century theory that Modern Greeks were largely descended from Slav colonization in post-Roman times. Most assumed that Classical Greek populations survived and dominated ethnically throughout the Medieval and Early Modern eras. The discovery in the 1950s that Late Bronze Age populations, at least on the Mainland, spoke Greek, allowed Greek ethnicity to extend even further back. Renfrew's hypothesis (1987) that the most significant populating of the Aegean occurred with Neolithic farming colonization around 7000 BC, would envisage ancestral Greeks in parts of the country from an astonishingly early date. With such an embedded ethnicity, and the concept that "traditional" Greek countryfolk in the Early Modern period possessed limited horizons, focused on their village and a nearby market town, could one not reasonably suppose that the practices of farming, house-building, social behavior, and

ritual could have changed little over the centuries or even millennia?

However, during the late twentieth century, Post-Colonial thinking (Said 1980), and a growing interest in globalization, led historians and anthropologists to question how untouched and authentic "traditional" societies could be. Almost none was remote enough to escape significant impact from the expansion of colonialism and capitalism. For Greece, Halstead (1987, 2006) challenged the assumption that lifeways had changed little since the Bronze Age.

On my own Boeotia Project, cultural anthropologist Cliff Slaughter radically deconstructed the "traditional" nature of life in the villages where our fieldwork was based (Slaughter and Kasimis 1986). Although the Askra villagers are notorious today as in the poet Hesiod's lifetime in the same valley community (ca. 700 BC), for legal disputes about estate boundaries, ties between antiquity and the present day remain limited and superficial. Farmers depart at dawn for scattered smallholdings, but village incomes chiefly derive from factory work, intensive irrigation using deep machine-pump wells, massive low-interest bank loans, and income earned abroad. It is noteworthy that most Boeotian villagers are descendants of Albanian colonization in the fourteenth and fifteenth centuries AD (Kiel 1997, Bintliff 1995, 2003), and conversations amongst the oldest residents are in Greek laced with this "Arvanitic" dialect, which most rural Boeotians used as their primary tongue into the early twentieth century.

This questioning of "tradition" has nonetheless produced positive effects. Observations from Early Modern Greece can still provide a series of possible ways of life, against which the empirical data for a particular period of antiquity or prehistory can be compared or indeed contrasted (Efstratiou 2007). This is currently the basis for global ethnoarchaeology and experimental archaeology. A common way of managing field crops, such as alternate fallow years, might have been practiced at certain stages of population density in the past, especially when the appropriate technology had become available, but for the same reasons would be unlikely in other periods. Likewise the well-known large-scale transhumance of sheep, goats, and cattle (seasonal long-distance movement of herds especially between uplands and lowlands), a

familiar practice in many parts of the Mainland and Crete, developed in the post-Medieval era in intimate relation to proto-capitalist and later capitalist markets for textile manufacture, and to modern forms of communication enabling long-distance trade in pastoral products. It becomes necessary to account for alternative economic circumstances in earlier periods (such as palace economies), which could have stimulated and supported such an elaborate lifeway in the remoter past, rather than assume, as was the case up to the 1980s, that Aegean transhumance was an unchanging feature of rural life ever since prehistory.

On this historically-contextualized basis, Greek ethnoarchaeology has entered a new phase of indispensable insight-production for researchers into the pre-Modern eras. At the same time, it has given more depth to our understanding of the specific nature of the Early Modern period itself, which has till recently been characterized as an unchanging society representing ancient lifeways rapidly pulled into Western modernity.

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## Hunter-Gatherers

### *The Palaeolithic and Epipalaeolithic in Greece*

#### The Wider Framework

It is helpful to summarize the narrative that relates to the early colonization of Greece by human populations still in the hunter-gather mode of life (Gowlett 1999, 2004). Human beings arose in sub-Saharan Africa 5–8 million years ago (mya), as several species within the hominin genus of *Australopithecus*, and by 2.7 mya had developed a stone tool tradition of Oldowan (chopper-flake) type. Around then a more advanced human genus, *Homo* (with various species, notably *habilis*), arose also in Africa, but soon afterwards groups of this hominid spread to Eurasia (“Out of Africa 1”). The next significant development was the appearance of a new *Homo* species, *erectus*, but this may have developed outside of Africa and recolonized that continent as well as the rest of the Old World (“Out of Africa 2”) (Dennell and Roebroeks 2005, Kohn 2006). It is present in Georgia by 1.8 mya, and by 1 mya occupied a vast area from Spain to China. A major technological advance occurred ca. 1.6 mya with the development and variable diffusion of the Acheulean stone tool industry (typified by handaxes).

By 300–250 thousand years ago (kya) a yet more advanced group of hominid species had emerged within the genus *Homo*, *Homo neanderthalensis*, associated with a stone-tool industry known as the Levallois-Mousterian (typified by broad flakes derived from prepared “tortoise-shell” cores). Probably,

though, these earliest Neanderthals were diverging from *Homo erectus* from 600–500 kya, possibly independently at various points of the Old World. Around 200 kya our own species, *Homo sapiens*, appears as a distinct descendant out of *neanderthalensis*, arguably an African evolutionary development which then retraces the original human spread (thus “Out of Africa 2”) through the entire Old World, before colonizing the New World. But *sapiens* expands into Europe and the Middle East at the expense of *neanderthalensis*. Both species possessed advanced adaptive skills and intelligence, and an elaborate cultural repertoire (formal burials for example), and coped with extreme environments (especially the cold northern latitudes of Eurasia).

In Europe the interaction between human colonization and the diffusion of new technologies is complex (Roebroeks 2001, 2003). *Homo erectus* is found at Europe’s periphery, in Georgia (1.8 mya) and Spain (800 kya), but the associated lithic traditions are contested by researchers. Possibly *erectus* used a wide range of tool types, deposited in different combinations at different parts of sites and at diverse sites, probably including the Acheulean tradition from an early date. However, major colonization of Italy, and north of the mountain barriers of the Pyrenees, Alps, and Balkan massifs into continental and temperate Europe, only really takes off into a permanent and widespread presence ca. 600–500 kya, associated probably with

earliest *neanderthalensis*. Maybe the preceding *habilis* incursions from “Out of Africa 1” into the Middle East, and those subsequent and more significant incursions for Europe by *erectus* (“Out of Africa?”), were not lasting occupations.

This takeoff of significant human diffusion through Europe around 500 kya still displays a diverse culture, with varying proportions of handaxes and chopper-flake industries at individual sites. Nonetheless, the emergence of Neanderthal Man, and the changed scale of human spread over Europe, seem to be fundamentally related: the association emphasizes greater brain-size, increased socialization, and a more pronounced division of gender tasks between cooperating male large-game hunters, and female gatherers and small-game hunters. A focus on hunting larger game may have brought evolutionary selection for bands practicing cooperation in food- and information-sharing, indicating the likelihood that although social groups (bands) might be small for parts of the year, we would also expect to find sites where larger human groups socialized. As part of this new form of human society, language may have arisen.

Although the origin of our own species (*sapiens*) is controversial, most scholars believe that *Homo sapiens* arose in Africa, and broke out into Eurasia around 100 kya, to compete with and finally displace all other human species (“Out of Africa 2”). Probably from within *sapiens* populations a new stone tool technology arose by 50 kya to replace the Levallois-Mousterian of the later Neanderthals (Upper Palaeolithic types: a blade industry from prismatic cores, elaborate bone and antler work, also varied forms of art and personal decoration). In Europe, Neanderthals were alone till the arrival of *sapiens* bearing the new Upper Palaeolithic tools and wider cultural package from around 45 kya. Between then and 25 kya Modern Humans expanded through Europe and the Neanderthals became extinct. However recent reconstructions of the Neanderthal genome from skeletal material show that during this process, significant interbreeding with *sapiens* must have occurred, since modern human populations retain a distinctive if minor genetic inheritance from *neanderthalensis* (Green *et al.* 2010).

Almost all of the period when Modern Humans were a distinct new species globally coincided with the last Glacial era, which witnessed cycles of variable cli-

mate between 100 kya to 12 kya, but reached a climax of cold and arid conditions ca. 20 kya. *Homo sapiens*, with its unique new adaptive intelligence and associated technology and cultural behaviors, seems to have reacted to the Glacial climax and the subsequent dramatic global rewarming and vegetation recovery, that marked the onset of our current Interglacial warm era (the Holocene, 12 kya to present), by elaborating new forms of resource exploitation: a wider use of wild foods (including marine fish and shellfish) (Broad-Spectrum hunter-gathering) and in places an intensive manipulation of wild plant and animal resources (wild cereals and sheep/goat in the Levant, wild cattle in North Africa). In most places there developed at this same final Glacial to early Interglacial (Holocene) time, new stone industries, called Epipalaeolithic or Mesolithic, associated with these complex economic practices (and in Europe and the Levant including small blades mounted in sets as elaborate hunting or harvesting tools). From these adaptive innovations there arose by the early Holocene in widely dispersed regions of the Old and New World, independently, the vital advance of the domestication of plants and animals, which we associate with the Neolithic farming “revolution” (Louwe Kooijmans 1998).

#### The Hunter-Gatherers of Greece

What might we expect to find in Greece for the immense timespan during which hunter-gatherers lived in Europe? Actually little to nothing, when we consider the geological processes which have destroyed or hidden the record of hundreds of thousands of years of human presence in Greece (Runnels 1995, Bailey *et al.* 1999, Perlès 2000, Galanidou and Perlès 2003).

However, if Europe was first colonized by *Homo erectus* 1–2 mya, with a likely entry-point through the Balkans, Greece could have seen human occupation during this period. A very early appearance might associate hominids with a chopper-flake industry, preceding the spread 1.5 mya onwards of the more elaborate Acheulean handaxe industries. But no Greek findspots are this early, or belong to a completely pre-Acheulean tradition. The oldest human activity appears to include handaxes, although no extensive



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site of this “technocomplex” (a toolkit used by many human groups rather than a culture associated with one) has been identified. Instead isolated finds at widespread points of the country, in outcrops of ancient landsurfaces, attest to derivative forms of Acheulean Lower (older) Palaeolithic culture throughout the Greek lowlands. These early handaxes seem late varieties. A “technocomplex” of varying chopper-flake and handaxe forms is likely to be characteristic of European early human settlement sites. Actually two of the best described early Greek sites may reflect such a mixed culture, although their dates are more appropriate for the Middle Palaeolithic. Kokkinopilos in Epirus has a handaxe in a stratigraphy around 150–200 kya, whilst Rodia in Thessaly is a chopper-and-flake industry with perhaps the limited presence of handaxes, ca. 200–400 kya. Secure radiometric dates (absolute dates from physics) for the Greek Palaeolithic only begin around 100 kya.

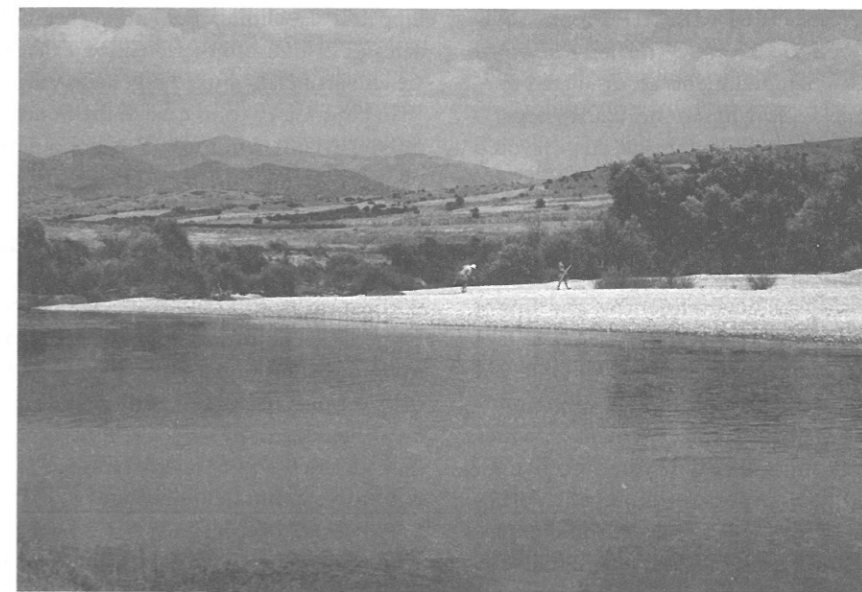
In 2008–2009 a team led by Curtis Runnels of Boston University, the Plakias Mesolithic Survey on Crete, made unexpected Palaeolithic discoveries in southern coastal Crete (Strasser *et al.* 2010). At 11 localities stone tool (lithic) scatters were found in geological contexts indicating an age of 130 kya or older, and belonging to forms typical for late Lower Palaeolithic (Acheulean handaxes and cleavers) and Middle Palaeolithic industries. The significance of this for maritime travel at such a remote period is remarkable, given the lack of known land-bridges between Crete and the Greek Mainland or the Cyclades even in times of low sea level in the Glacial eras.

From this stage of human occupation in Europe, the wider site evidence from the long duration of the Middle Palaeolithic (ca. 300–35 kya), allows reconstruction of the lifeways of Greece’s oldest occupants. Based on the European record, and its general agreement with the Greek material, Middle Palaeolithic hominids in Greece (Neanderthal Man), foraged in small groups, irregularly merging into larger social gatherings (up to about 150 individuals) at times of richest resource profusion. Rather than remaining in one location they ranged over a large annual territory, to coincide with the seasonal appearance of herds of animals or stocks of edible plants in particular areas of the regional landscape, as well as to visit geological outcrops to obtain raw material for tools. Sourcing

the lithics in use has shown that band movements of this kind could extend 100 km.

If there had been later Lower Palaeolithic human colonizers of Greece, they were probably already very early Neanderthals. This distinct species, *Homo neanderthalensis*, competed successfully in the Levant with expanding fully modern *Homo sapiens* from around 100 kya, and then unsuccessfully in Europe after 45 kya, but through interbreeding did contribute to the latter’s genetic make-up. Greece’s first human remains, like its oldest well-dated open air lithic sites, appear to be early Middle Palaeolithic, and come from the Petralona Cave in Northern Greece, probably ca. 300 kya; they may indeed be Neanderthal Man.

It was these later Neanderthal populations in Europe who adopted new technologies which were diffusing through the Old World, significantly expanding stone toolkits beyond handaxes and chopper-flake tools, into more complex tool manufacturing and tool diversity. Around 300 kya, these new forms of stone-tool preparation appear, distinctive for the Middle Palaeolithic era and known collectively as the Levallois-Mousterian tradition. Manufacturing techniques include specially prepared cores with tortoise-shell shaped platforms from which radial flakes are struck. This technology, especially suited for making hafted implements, only appears sporadically in the early Middle Palaeolithic in Greece. More elaborate toolkits known as the mature Mousterian tradition appear in Greece from around 150 kya. A type-site is the cave of Asprochaliko in Epirus, where the oldest excavated levels are ca. 100 kya. Nearby at Kokkinopilos, ancient sediments called Red Beds, which also produced some of the few even earlier Acheulean handaxes, gave finds of open-air Mousterian activity from 150 kya onwards. Mousterian populations on this evidence were till recently argued to have favored the wetter, more varied landscapes of Northwestern Mainland Greece during the final period of the last Interglacial and the first half of the last Ice Age, their sites only appearing in the drier East and South after 55 kya. However, a series of new sites has shifted our focus toward the latter regions, cave sites in the arid and rocky Mani peninsula in the Southern Mainland, Kalamakia and Lakonis, and the most recent finds from the south coast of Crete (Strasser *et al.* 2010). In particular, Lakonis has dense occupation layers dated



**Figure 2.1** Peneios River open valley terraces, Thessaly, with archaeologists recording lithic finds from Palaeolithic hunter-gatherer activity.

Courtesy of Curtis Runnels.

between 100 and 40 kya, including a Neanderthal tooth (Panagopoulou *et al.* 2004).

Fieldwork in the plains of Thessaly (East-Central Greece) offers insights into how Middle Palaeolithic communities used the landscape (Runnels 1989, Runnels and van Andel 1993). Tectonic sinking of these plains has caused gradual lowering of river levels, achieved by their cutting down through much older deposits, but luckily the rivers remained in similar locations. Very ancient river terraces and banks are thus exposed, places where hunters camped, prepared tools and cut up their prey, those animals being attracted to the rivers for water and grazing. Series of such activity foci have been mapped from eroding ancient river-terraces west of the modern town of Larisa. However, these stone tools and animal bones are not found in their original place (*in situ*), but were reworked by changing river channels. Yet geomorphological and stratigraphic study confirms that these remains lie close to the original places of hunters’ activity. The great grassy plains of Thessaly with their large, permanent rivers would have attracted considerable herds of game, a resource underpinning

the economic and social structure of Middle Palaeolithic hominids.

The oldest of the Thessalian early Middle Palaeolithic river-gravel findspots is at Rodia (ca. 400–200 kya), and may form part of the European-wide flexible cultural tradition tying together use of handaxes and chopper-flakes. After a long absence of human activity, a new colonization of this landscape is evidenced by numerous late Middle Palaeolithic or mature Mousterian sites, datable after 60 kya.

Figure 2.1 shows how the Peneios river passes through the Thessalian Plain. Animals moving along the river could be ambushed by hunters and it is in the relict gravel banks and flood deposits eroding by the present riverbank that archaeologists can discover stone tools used by these foragers and the bones of contemporary animals grazing and seeking water.

Increasing evidence identifies locations preferred by Neanderthal hunter-gatherers in choosing where to camp, temporarily or for longer periods, within a seasonal round of several sites (Papagianni 2000). Riversides and coastal marshes and estuaries are selected, whilst the many Middle Palaeolithic sites in



Northwest Greece associated with "terra rossa" sediments termed "Red Beds" were formerly seasonal lakes and marshes, where sediments accumulated during the Pleistocene within limestone (karst) depressions possessing underground drainage. Also favored are locations where the movements of game herds could be monitored without disturbing them, such as rockshelters high above passes and narrow valleys (for example Asprochaliko). Papagianni suggests that in the rich hunter-gatherer environment of the Epiros lowlands, base camps for longer residence lay a day's travel apart (around 30 km), between which occur many smaller lithic sites, evidence of short-lived hunting, gathering or raw material procurement activities. Strontium isotopes from a Neanderthal tooth from Lakonis (see below) suggest that this individual probably foraged over a landscape, at least at some period of its life, at least 20 km from the cave where the body was found (Richards *et al.* 2008).

The Thessaly Mousterian assemblages are late enough to contain possible borrowing from the yet more advanced stone industry, the Aurignacian, which replaces them throughout Europe during the second half of the last Glacial period. This early form of Upper Palaeolithic culture is associated however with the spread of our own species, anatomically modern humans, *Homo sapiens*. Modern humans with Upper Palaeolithic culture probably colonized the Balkans from the Middle East and the Black Sea steppes around 45–30 kya. By 30 kya Neanderthals and the Mousterian have died out throughout Europe, so that Upper Palaeolithic modern humans and their novel toolkits are now the only people and culture throughout the subcontinent.

There is lively debate on the interactions between European Neanderthal and incoming *Homo sapiens* populations, both in terms of physical contact and mixing of cultural traditions. The open-air riverside sites of Middle Palaeolithic hunters in Thessaly occasionally include Upper Palaeolithic tools, but since these deposits are reworked by the river and represent accumulations from many encampments, it is impossible to exclude mixing of older and younger assemblages. Indeed, the cave of Theopetra in Thessaly, probably one base in a seasonal round of camps including open-air river sites, was formerly suggested to show a transitional lithic assemblage between Middle and

Upper Palaeolithic, but now thermoluminescence dates (TL) indicate the likelihood that these deposits are also artificially mixed together (Valladas *et al.* 2007).

In contrast, Lakonis cave in the Southern Mainland, on the Mani peninsula (Panagopoulou *et al.* 2004) offers evidence for Neanderthal populations adopting Upper Palaeolithic tool-types without a break in occupation. Absolute dates (from physical science) and stratigraphy suggest continuity of population and occupation from a dominant Middle to a dominant Upper Palaeolithic assemblage. A Neanderthal tooth from this transitional era confirms the likely acculturation due to contact with Modern Humans. The latest genetic evidence for interbreeding between Neanderthals and Modern Humans agrees very well with these cultural interchanges.

However, this particular period coincided with the worst climate in Europe for more than 100,000 years, the Ice Age climax, 30–20 kya, causing human populations to gather in the far south of the subcontinent to find warmth to survive in, and a sufficient density of animals and plants to live off. Even in Southern Europe only some regions fulfilled these needs, and here Jochim (1987) argues that the close packing of refugee hunter-gatherer groups may have stimulated unparalleled symbolic activity (cave art and mobile art objects). The classic refuges are Southwest France and the Spanish coastal Pyrenees, where less severe climate was linked to proximity to the Atlantic. Greece was not overall such a favored ecological zone during the height of the Glacial, and evidence for early Upper Palaeolithic populations is very slight, notably when compared to Middle Palaeolithic activity. Hyperaridity was the limiting factor. Symptomatic is the virtual absence of open-air sites from the early Upper Palaeolithic, contrasted to the frequency of Middle Palaeolithic examples in regions such as Epirus, Thessaly, and the Western Peloponnese. The exceptional discovery of Lakonis and other recent sites in the coastal South Peloponnese may argue that these environments, as other Mediterranean peninsulas, encouraged refuge occupation: they offered milder temperatures and adjacent extensive coastal plains (now submerged by sea level rises), with marshy river deltas backed by hills with open scrubby vegetation. Larger game recovered from the Lakonis domestic debris include wild cattle, pig, and deer.

After the cold, arid maximum around 18 kya, the final Glacial sees warmth returning to Greece, but more tardily increased moisture. Upper Palaeolithic activity becomes visible again, including the expansion of hunting sites into the now more attractive high uplands, still open and with milder climates (for example in Epirus). A reorientation of hunter-gatherer annual ranges (seasonal movements) and economic strategies occurred. In Thessaly the riverine campsites of the Plain are not in significant use in Upper Palaeolithic or Mesolithic times, although seasonal cave use at long-used locations persists. The raw materials in use for tool-making at Theopetra Cave now shift from local stone, suiting a confined regional annual round, to significant amounts of long-distance imports. This change could reflect expanding trade networks, but in the context of the contemporary evidence for the colonization of the Pindus Mountains by summer hunting bands and the disappearance of the Plain camps, might rather point to lowland foragers now themselves expanding their annual seasonal movements into the uplands, as the lowlands gradually became wooded and less attractive to game herds throughout the year.

A key site for Upper Palaeolithic occupation, although never permanent through the year, is the Franchthi Cave (see Text Box) in the Northeast Peloponnese, a coastal limestone peninsula bordering Koilada Bay. Here there was also Middle Palaeolithic occupation, and a very significant occupation in the Early Holocene (Postglacial) period, when human activity in Greece as a whole has proved difficult to identify. Perlès argues that human use of this spacious, well-located shelter varied from regular seasonal occupation for a variety of hunter-gatherer activities, to sporadic and highly specialized foraging for short periods, so that it was always just one of a series of camps utilized discontinuously for some 100,000 years. Nonetheless, the innovative excavation methods and large scientific staff brought together by Tom Jacobsen has produced one of our best insights into the different ways foragers in Greece could use the same landscape (Jacobsen 1987–2010; Perlès 1999, 2001).

Until recently Franchthi Cave was the only site where the transition from Late Glacial to Early Holocene could be observed. However in Thessaly we now possess the major findspot of Theopetra Cave

was occupied from Middle Palaeolithic to Late Neolithic times, including the period lacking in the Thessalian river camps, the transition from Upper Palaeolithic to early Holocene Mesolithic (Kyparissi-Apostolika 1999, Panagopoulou 1999). Other recent Mesolithic discoveries (Figure 2.2), are Klisoura Cave (Northeast Peloponnese) and the Cave of Cyclope (Sporades Islands).

Theopetra cave lies in limestone hills marking the edge of the western plain of Thessaly and the start of the Pindus Mountains, which here divide West and East Greece. The oldest layers belong to the older Middle Palaeolithic, perhaps even earlier. However the dominant Middle Palaeolithic occupation is a late phase of that tradition, contemporary to the open-air camps studied by previous teams in Thessaly, and belongs to the middle of the Last Glacial (ca. 50–30 kya). Environmental studies portray the Plain as a steppe and the hills and mountains with limited deciduous and more pine woodland: bear and deer are hunted, and probably gathering of edible steppe grasses and legumes occurred. There follows an Upper Palaeolithic occupation from 38 kya till 25,300 BP, when as elsewhere in Greece, the peak cold and aridity of the Glacial caused abandonment; vegetation seems to have been negligible. Reoccupation by late Upper Palaeolithic foragers, 15–11 kya, was followed by an Early Holocene Mesolithic phase dated 10–8 kya. Whereas the warming climate in the former, final Glacial times caused pine and steppe to expand, low moisture still kept this Tardiglacial period very arid. But with the advent of the Early Holocene and the Mesolithic occupation, both high altitude pine and lower altitude oak expanded considerably. The game brought back to the cave, wild goat or chamois (a form of ibex), deer, wild cattle and pig, hare, and birds, and the plants gathered (grasses and legumes), became more plentiful as climate improved from Late Upper Palaeolithic into Mesolithic times, but increasing afforestation encouraged seasonal use of the adjacent uplands.

Like Franchthi, the Theopetra Mesolithic stone-tool assemblage does not resemble adaptive technologies found elsewhere across Europe in response to the spread of modern climate and vegetation, suggesting that Greek landscapes posed particular requirements for survival, and also that the country became isolated from wider cultural developments. There are better

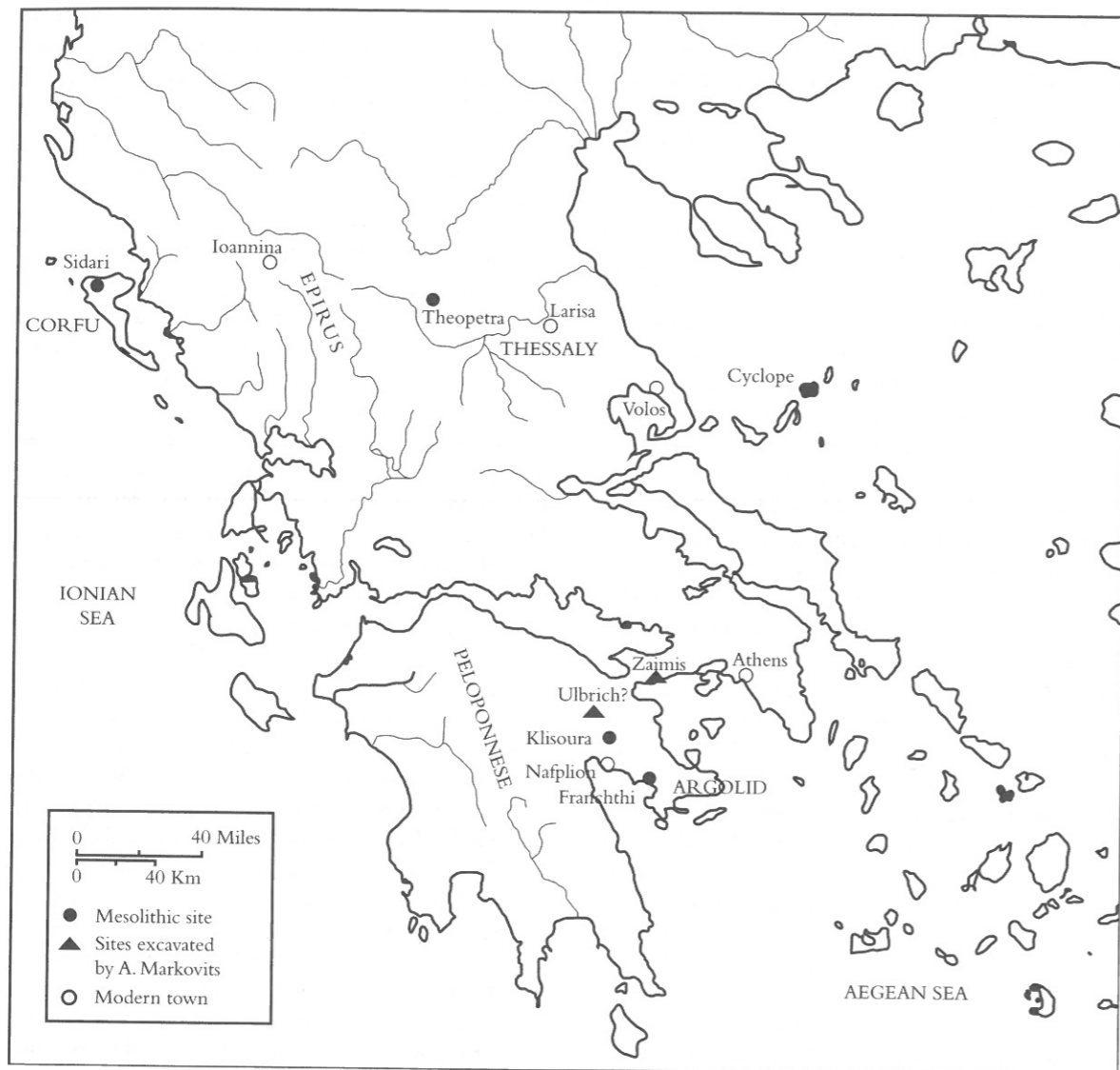


Figure 2.2 Key Mesolithic sites in Greece.

N. Galanidou and C. Perlès (eds.), *The Greek Mesolithic. Problems and Perspectives*. London 2003, Figure 1.1.

parallels, however, over an intermediate geographical scale (Tourloukis and Palli 2009). As in the Balkans as a whole, "Mesolithic" or "Epipalaeolithic" industries tend to replace blades with flake tools.

The long use of the site reflects its very favorable location for exploiting a series of terrain-types, where varied food sources could be tapped. It

remains uncertain if Theopetra was a permanent base-camp, rather than a seasonal camp in an annual range incorporating numerous other locations, as has been argued for Franchthi. Significantly, in the Middle Palaeolithic occupation layers, the raw material for stone tools came predominantly from within a 10km radius; this is a maximum predicted site

### The Franchthi Cave

Franchthi Cave is a large rockshelter in a dry, scrub- and cultivation-covered region, now on the sea and even in the peak of Last Glacial low sea levels, never more than 5km distant. Throughout the Upper and Final Palaeolithic and early Holocene cave occupation, lower marine levels created a plain with a river beside and ahead of the cave, making it much more attractive to occupy than its present barren headland location washed by the sea.

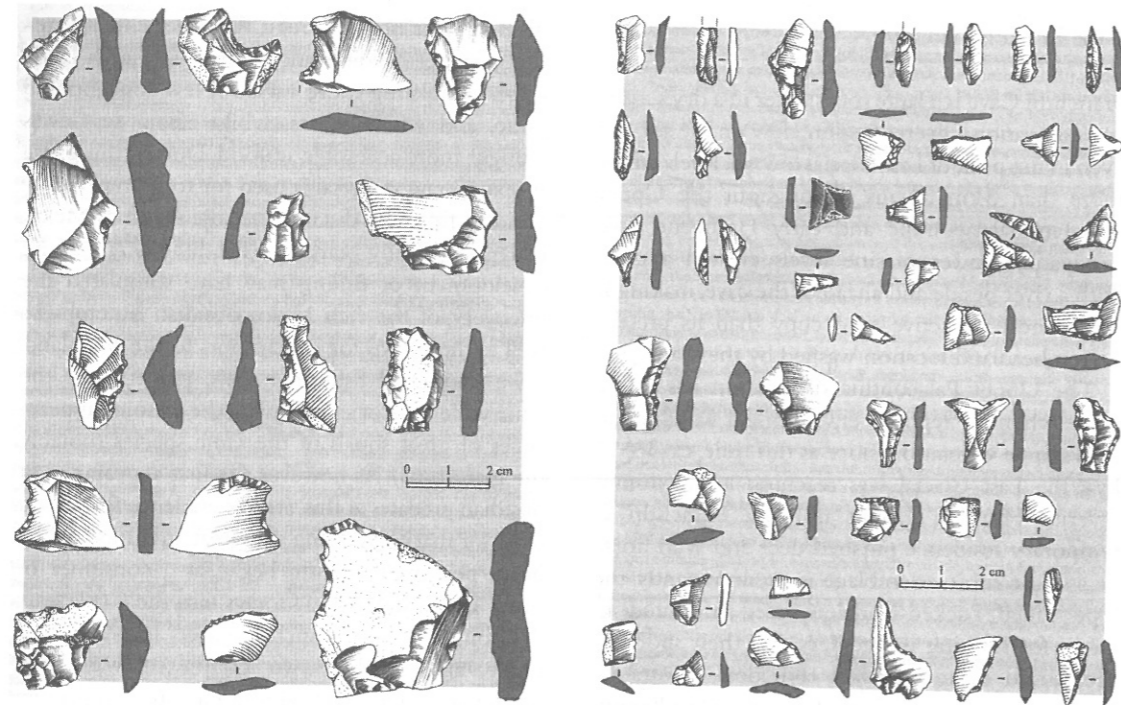
The Upper Palaeolithic occupation has a first phase when the regional environment was dry and cold steppe vegetation, since at this time, ca. 30–17 kya, the Last Glacial was reaching its maximum severity. Hunting groups utilizing Franchthi as temporary residence pursued deer and wild horse or ass (the lithic assemblage is predominantly the type called backed-bladelets, used mounted in wood for hunting projectiles), and their sporadic, short-lived occupation left thin debris. After an abandonment of the site for several millennia, doubtless a response to the Glacial climax, reoccupation around 13 kya is different enough to justify the term Tardiglacial (Late Glacial), whilst changes in culture and economy anticipate those seen elsewhere in Europe where they accompany a new form of life, the Mesolithic.

The stone tool assemblage now diversifies along with far more rubbish build-up, indicating longer use and more varied activities at Franchthi. Wild cattle and goat join the game hunted, and collected seeds include wild vegetables and wild cereals. Furthermore, shellfish and fish are added to the diet. Perlès categorizes these changes ca. 13–10kya as the creation of a "broad-spectrum economy," where in contrast to earlier phases of use at Franchthi, whole domestic units of men, women, and children spent long periods annually living in and in front of the cave, occupied with a wide range of subsistence strategies. Undoubtedly these transformations reflect rising temperatures and moisture as the Glacial waned and global climates were transformed into the current Interglacial, the Holocene, but also to the specific way these changes

affected a site near the coast. A milder climate created a richer Mediterranean scrub-savannah landscape, stimulating more varied if less concentrated game, and edible plants, whilst rising sea levels brought more accessible seafood. During this phase an exotic raw material is used for tool preparation: obsidian from the distant Cycladic island of Melos. I suggested many years ago (Bintliff 1977) that the development of fishing may have stimulated the discovery of the rich Melos obsidian outcrops, as well as the means for its transport to the Mainland, since traditional fishermen have ranged over the same wide territories following the seasonal appearances of great shoals of the same species (notably the giant tuna). As however the first appearance of obsidian predates at this site the evidence for special tools for marine hunting and great amounts of fish-bone, perhaps Franchthi began as a consumer of other Tardiglacial fishing forays into the Cyclades.

Around 10 kya, Franchthi enters its Mesolithic phase, and exhibits two contrasted ways that hunter-gatherers adapted to a climate comparable to today, if perhaps drier. The Lower (older) Mesolithic shows an economy specialized in plant foods and shellfish, with little land game or fish. Stone tools are limited and unsophisticated, largely used for reed- and wood-working. The contemporary dry plant cover supported a low density of game, but this favored legumes and edible wild cereals. Remarkably, this scanty occupation is associated with a cemetery, possibly including collective burials (Cullen 1995). In hunter-gatherer societies in the Tardiglacial and Mesolithic of the Near East and Europe the appearance of formal burial areas seems to mark highly productive foraging at certain locations, often based on a rich resource such as marine, estuarine or lake fauna and flora. Here the ancestors might be placed to signify the centrality of the site for a particular band, and as a territorial claim to its use. Since Franchthi remained just one of a seasonal range of foraging sites, it probably did form a ritual focus in a more varied set of camps, whose totality might have created this kind of stability. Till very recently, such a network eluded discovery (see below).





**Figure 2.3** Upper Mesolithic stone-tool assemblage from Franchthi Cave. Most of the small tools or microliths (right) are related to fishing: tools for preparing nets and traps for the capture of fish and then their processing for eating and storage. Shellfish collection and processing would also benefit from some of these small tools but also from some larger tools (left). The curved trapezoidal arrows however (upper right) could also be used for the land game, red deer and boar, identified in the Cave deposits. Many of the larger cutting and scraping tools (left) would be useful for processing land animals. Plant remains include wild fruits, nuts, and cereals, but no specific tools can yet be associated with these.

C. Perlès, *The Early Neolithic in Greece*. Cambridge University Press 2001, Figures 2.4 and 2.5.

Even scantier activity marks the late ninth millennium BP (before present), Final Mesolithic, but the intervening Upper Mesolithic, earlier ninth millennium, sees the cave occupants take up sea-fishing, especially tuna, as their dominant activity, with supplementary hunting and plant

collection. The tools (Figure 2.3) are largely for catching and processing marine fish. This use of Franchthi was highly seasonal, since fish such as tuna appear at limited times in varied parts of the Aegean coasts, although in impressive shoals.

territory for a hunter-gatherer settlement, although as noted, perhaps other local sites were in use seasonally. In contrast, as noted earlier in this chapter, the Final Palaeolithic and Mesolithic evidence for

long-distance stone imports may show a greatly enlarged yearly territory of exploitation.

The Cyclope Cave on the island of Yourea in the Sporades lies east of Thessaly and has revealed a long

Mesolithic use ca. 8700–7000 BC (Sampson 2006). During the peak of the preceding Ice Age these islands were linked to the Mainland owing to low sea levels, but in this Early Holocene period a smaller channel than today existed, although the import of obsidian from the Cycladic island of Melos to Franchthi Cave before this phase already evidences that adequate boat technology was available in Mesolithic Greece. The economy reflects a “broad spectrum” expansion from traditional Palaeolithic larger game, since fishing (including large species such as tuna), shellfishing, and land mollusc collecting are central sources of nourishment, alongside birds. It is suggested that fish were smoked and dried, whilst the species caught required both open-sea and coastal fishing. The suggestion that the site was used by migratory (“transmerant”) fishermen reinforces the model I proposed for fishing and exotic imports into the final Palaeolithic and Mesolithic at Franchthi.

Another near-Mainland island, Kythnos, in the western Cyclades, has an open settlement with traces of round houses and formal burials of Mesolithic age, and seems to belong to the same expansive Broad-Spectrum economy (Sampson 2006). Significantly, intensive use of marine resources is a Mediterranean trend from the final Glacial and earliest Holocene: on the coasts of Mount Carmel open-air “fishing villages” are known, now submerged by rising sea levels (Galili *et al.* 2002), developing from around 10,000 BP. Also intensive use of marine and freshwater resources is a shared concern with the rest of early Holocene Europe, both in site locations, fauna, and tool specializations (Tourloukis and Palli 2009).

There had been a window of opportunity in the final Glacial and earliest Holocene periods (see Klithi Cave Box below), which had allowed a burst of human exploitation in the high mountains of Greece: there was a warmer climate but still insufficient rainfall to promote the recovery of woodland (afforestation), which would progressively close down open-country hunting and plant-gathering. But now in the mature Holocene such afforestation did occur. Partial compensation came from better stream flow through the year, and the expansion of lake and marsh environments, which offered alternative food sources. Human groups also made increased exploitation of

the sea for fish, shellfish, and marine mammals. However, claims for incipient domestication of the key species of domestic animals and plants, such as wheat and barley, sheep and goats, at sites such as Theopetra and the Cyclope Cave, are suspected by most specialists to be intrusions into Mesolithic layers from later activity at these sites, or in the case of Franchthi (where at an early stage of the excavations a similar local development was voiced), to contacts with contemporary immigrant farming groups in the region.

The mature Early Holocene environment, then, offered much compensation for the loss of large coastal plains now submerged below rising sea levels, and of the previous dry steppe climate with limited woodland supporting game herds but limited plants. In its place came far more running freshwater, with marshes, lakes, varied forms of woodland, and a wider fauna and flora. Replacing a lifestyle of wide-ranging hunter-gatherers of the Palaeolithic phases, Mesolithic foragers could find more localized niches with a mosaic of resources. Our expectation might well be then for favored locations in such a landscape to encourage dense pockets of population. The formal burials in Franchthi Cave in theory seem to suggest that its occupants were indeed part of such a local network of regionally dense hunter-gatherers. As Cullen (1995) comments: “At Franchthi, the concern to preserve the bones of the deceased within the living space may signal an emphasis on the continuity and definition of the social group, a possibility supported by the coinciding appearance of personal ornaments and ochre.” They would have been supported, according to the reconstruction of resources exploited by the Franchthi foragers of this period, by a diet of deer and wild pig, land and marine molluscs, fish, nuts, legumes, and wild cereals.

Fulfilling these expectations, a recent field survey in the coastal region west of Franchthi (Runnells *et al.* 2005) has documented exactly such a dense network of Mesolithic sites (Figure 2.4). Interestingly, Runnells’ success where almost all previous researchers had failed, in showing that Greece did not lack a flourishing Mesolithic population, lay in his reverting to traditional forms of landscape research for hunter-gatherer sites, whilst retaining some state-of-the-art

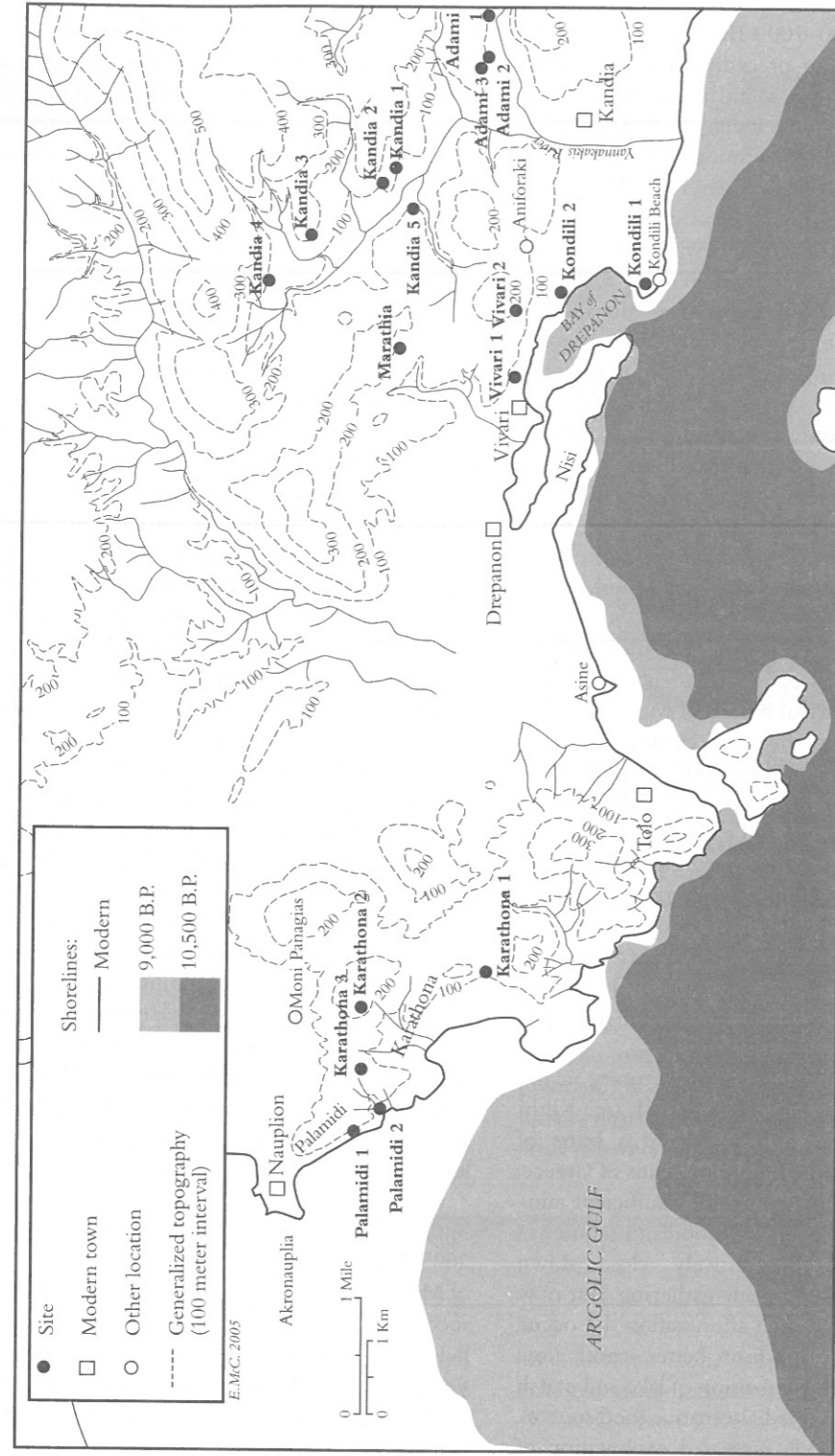


Figure 2.4 Mesolithic settlement system in the Argolid.  
C. Runnels *et al.*, "A Mesolithic landscape in Greece: Testing a site-location model in the Argolid at Kandia," *Journal of Mediterranean Archaeology* 18 (2005), 259–285, Figure 2.

theory. Whilst intensive survey without prior selection of terrain has proven largely unsuccessful in documenting significant lithic findspots for Holocene foragers, seemingly supporting the traditional view of a real poverty of sites and minimal populations, Runnels targeted microlandscapes (small districts) which should in terms of human ecology have offered the ideal locations for contemporary hunter-gatherers. These were minor coastal plains, with springs and streams, marshland and backing hills, in which a similar wide range of land and sea resources would be easily accessible. Fifteen Mesolithic sites were found by scouring the slopes below caves suitable for occupation and in adjacent landscapes (two were in fact open-air sites). Two caves had sufficient debris to suggest lengthy residential use as "base-camps," whilst the remainder might have been part of a mobile strategy of camping temporarily at a series of locations.

Runnels and colleagues have now had equal success applying the same targeted survey in finding the first clear evidence for Mesolithic communities on Crete, where the same locational preferences by the coast were revealed (Strasser *et al.* 2010).

Equally surprising have been the results of recent surface survey in a very different physical environment, the high mountains of Mainland Greece. An international team is investigating how ancient was the traditional use of summer seasonal pastureland in the high mountain plateaux that form the watershed zone in Northern Greece between the western lowlands of Epirus and those on the east in Macedonia and Epiros (Efstratiou *et al.* 2006). At this altitude, 1400–1900 meters above sea level, lie flysch (limestone erosion sediment) basins between rugged limestone, offering excellent summer grazing, whereas in winter they are harsh, inhospitable landscapes, forcing grazing animals to retreat to warmer lower altitudes (or as today to be kept in stalls and given supplementary fodder). The survey team discovered more than 90 open-air lithic findspots, documenting repeated and significant use of these high mountains. The earlier findspots are Middle Palaeolithic, and would suit milder intervals during the earlier phases of the last Glacial, whilst limited Upper Palaeolithic finds agrees with the most severe climate inhibiting regular use.

At the end of the Glacial and in the earliest Holocene, hunters returned with the warming climate, following their quarry of large herds of game, just as we shall see in the uplands of Epirus at the Klithi and Kastritsa rockshelters. However, the inexorable extension of pine and fir forests made such seasonal upland hunting increasingly impractical without woodland clearance.

### The Lifeworld of Hunter-Gatherers in Greece

In future chapters we shall explore the potential of archaeology, and ultimately historical texts as well, to reveal how the peoples of Greece expressed their concepts of society, nature, and religion. In the absence of abundant art, or elaborate ritual, the longest period of Greece's human occupation, Palaeolithic to Mesolithic, poses almost insuperable problems for such an approach. Within Palaeolithic studies, much discussion has occurred as to why only certain regions of European hunter-gatherer settlement are associated with most of its art (such as Southwest France and Pyrenean Spain). One theory, which associates elaborate symbolic representation with enhanced social territoriality in areas relatively heavily populated due to their richer resources in times of severe climate ("refugia," Jochim 1987), might be relevant, since Greece's Upper Palaeolithic occupation (the period of maximum artistic production elsewhere), appears still to be low density. Curtis Runnels' optimistic conclusion that his recent discoveries suggest high levels of Mesolithic population in favored districts of Greece, might predict evidence for increased symbolic territoriality. The burials of Franchthi fit, as does the rise of body-ornament using shell-beads and probably body-ochre.

In the Klithi Cave Box we summarize how one major specialist in this phase of Greek archaeology has offered us both a realistic attempt to maximize our insights into economic and social life, and a personal philosophical viewpoint on what can and cannot be achieved in terms of the mentalities of Greece's remote hunter-gatherer world (Bailey 1997).



### The Klithi Cave: Landscapes of Hunter-Gatherers (Figure 2.5)

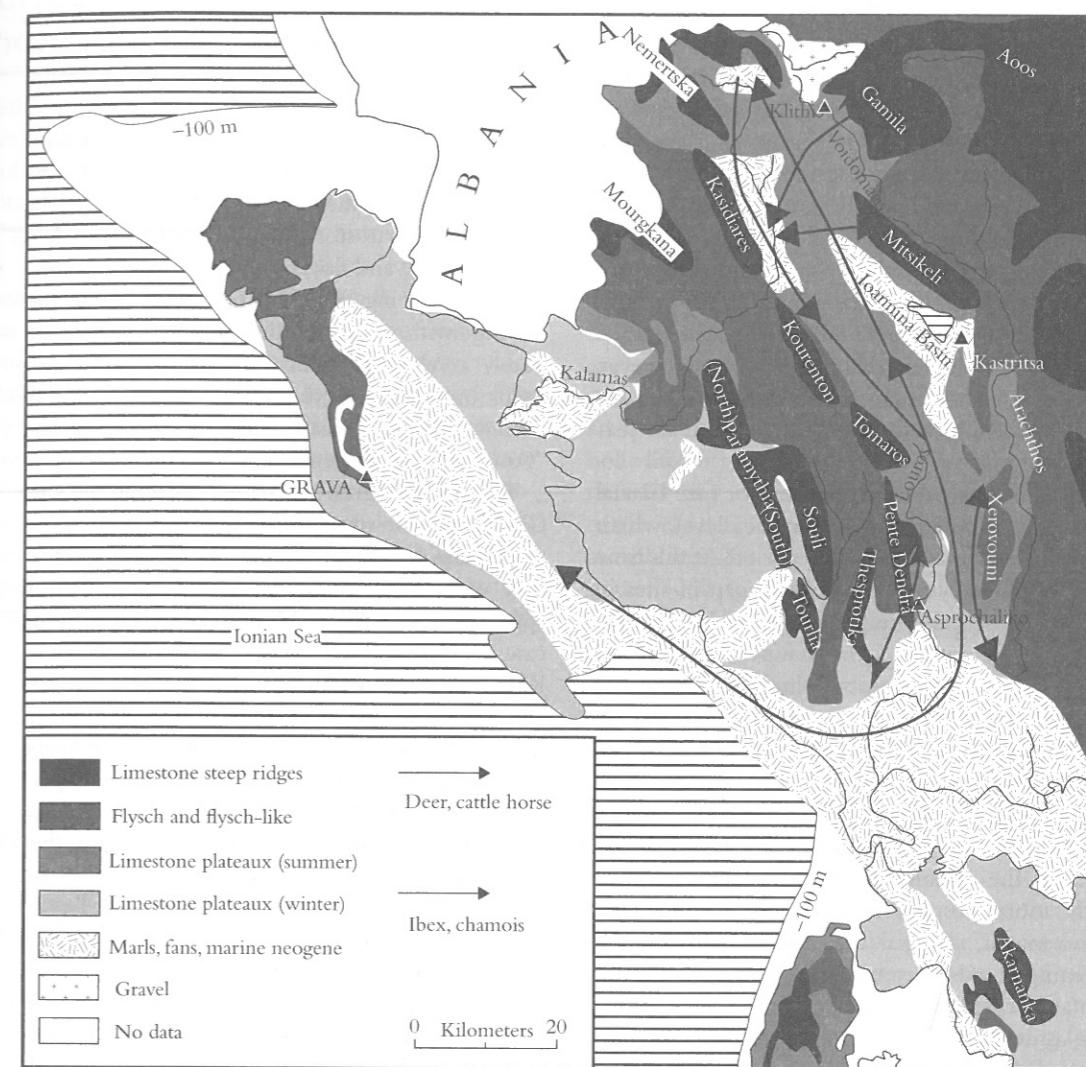
Klithi is a cave in an upland valley of Epirus, Northwestern Greece. Hunters used it primarily in the Tardiglacial (final Glacial) era, 16,500–13,000 BP. These 4000 years fell between the maximum cold peak ca. 20,000 BP and rapid warming and afforestation which occurred after the cave's abandonment. Game caught was open rugged landscape fauna, ibex and chamois, comprising 99 percent of the animal bones. The main activity carried out from Klithi was killing these animals and converting their carcasses into food, artifacts, and clothing. Plants were insignificant in the diet, but in contrast, to the west down in the extensive coastal lowlands, with more woodland and water, flora would have been high in the food supply. The on-site manufacture of tools suits the tasks outlined well. The site itself and its territory calculated using the method of Catchment Analysis (local resource mapping) pioneered by the founder of this project in the 1960s, Eric Higgs, suggest that 5–10 people, less likely 10–20 people, used the cave together. A key factor is length of stay in these uplands (the winter months must be ruled out), so that the lower estimate would fit a stay of 6–9 months, the upper of 3–6 months. There are hints these are families, not a male hunting group. The ideal time to be in these mountains would be spring and autumn when animal herds moved to higher and lower ground, respectively, with the seasons. Nonetheless, resources for hunter-gatherers were always more plentiful in the western lowlands, allowing larger human populations to remain there the whole year, but that landscape is much less explored archaeologically. However the sites that are known there are indeed more plentiful and larger. The model proposed is that most Epirus Upper Palaeolithic hunters stayed in the lowlands (for the permanently resident game and good flora), while a minority of humans plus large numbers of mobile game (deer and horse) transhumed in the warmer half of the year into the eastern uplands to take advantage of seasonal

grazing (though ibex and chamois, the key species exploited at Klithi, are hardy enough to remain in the uplands all year). The seasonal moves allowed both humans and animals to maintain higher regional populations. Other Upper Palaeolithic sites in the Epirus mountains show different specializations and different time uses (see Figure 2.5). The site of Kastritsa, by a mountain lake, is larger and more elaborate than Klithi, and may have formed a summer agglomeration focus for many hunting groups.

After the period of use of Klithi conditions became less favorable for different reasons: trees spread rapidly as the Glacial era faded and the animals hunted moved further up the mountains to find their open habitat. The Mesolithic hunters of the next stage may have focused more on woodland game in the lowlands.

In the 1960s, this project's founder, Eric Higgs, proposed a model of Late Glacial transhumant hunters which he derived from the recent pastoralists (specialist herders) of this region, the Sarakatsani. The main sites located, Asprochaliko, Kastritsa, and Klithi were identified as staging posts in winter–summer movements of hunters following migrant game such as deer and horse. Although some aspects are now disproved, since these sites are not contemporary and have different animal specializations, the general principle survives. Upland Eastern Epirus in the Late Glacial was exploited seasonally from the western lowlands. The human carrying capacity of Eastern Epirus was some 100, but linked seasonally with the west allowed the combined region to nourish 500–1000 hunter-gatherers. Yet most animals and people probably stayed the whole year in the western lowlands. The entire region is large enough for an effective human mating network (for genetic health, calculated at 500 people or more, based on the theories of Wobst 1974).

The oldest upland site, Asprochaliko, is utilized ca. 26,000 BP, then after abandonment marking the climax Glacial millennia, Kastritsa and Klithi higher up come into deployment for the Glacial end phase. This suggests progressive penetration of the mountains as climate eases, succeeded by



**Figure 2.5** The setting of the Klithi Cave and other sites in the Epirus upland and lowland region with likely seasonal moves of game animals. Arrowed routes between uplands and lowlands mark migrations of deer, cattle and horse. Routes purely within the uplands those of ibex and chamois. Low glacial sea levels made Corfu island part of the mainland.

G. Bailey (ed.), *Klithi: Palaeolithic Settlement and Quaternary Landscapes in Northwest Greece*, vol. 2. Cambridge University Press 1997, Figure 30.25.

contraction as the Glacial ends and woodland closes pastures. The Catchment Analysis of all three upland sites shows that they are positioned to watch, without disturbing, herds of game, in a series of basins controlled by strong topographic

features, especially as animals move from one natural grazing area to another. Selection of particular species to hunt can be seen in the different fauna at these caves and from their diversity of lithic tools. Close links between hunting behavior

and the local environmental potential, revealed through site Catchment Analysis, suggest that this is less "environmental determinism" than the results of humans calculating logical means to combine a knowledge of the terrain with the types and frequencies of suitable game.

Over the years, Higgs' use of analogy for the transhumant migration model has been criticized, on the basis that the recent Sarakatsani herders are specialists brought into being by large urban markets and even capitalist commercial systems, making a Palaeolithic parallel implausible. However, exhaustive archaeological analysis concludes that the use of Klithi and other sites is based on seasonal hunting.

An additional causative element for Late Glacial mountain exploration was rising sea level, which occurred after the climax cold period. At this time there is generally an occupational gap in sites in Greece. This seems in part due to loss of the coastal plains with their fresh water, animals, and plants, where contemporary human and animal groups would have been clustered. Generally these lost zones of settlement and exploitation are invisible to us as they are submerged by a sea level rise of 100–130 meters. After the cold climax these landscapes began to vanish to warming seas, whereas the inland mountains became temporarily more hospitable, hence stimulating their increasing, if, seasonal use. Subsequently, as the warming trends became combined with greater rainfall, the Epirus uplands became far less exploitable, as noted earlier: only a fleeting sporadic use of the Megalakkos shelter near Klithi suggests some use of the now wooded mountains of Eastern Epirus. In compensation, the fast recovery of sea levels close to present have allowed the preservation on the modern shore of later Mesolithic coastal camps, such as Sidari on Corfu with shell middens.

Bailey concludes the Klithi monograph with some intriguing thoughts about the nature of history. If there is a long-term narrative of repeated transhumant life in the region for human groups,

the project director is keen to avoid determinism, with humans as robots driven by the nature of the landscape. But at the same time he expresses skepticism toward the focus in contemporary Archaeological Theory on individual human beings, who decide almost on a daily basis how they will control their world and fate. Rather he sees in the Epirus story a co-adaptation of society, climate, fauna, and flora, with the central connecting thread being mobility. For him we are not dealing with "disembodied actors engaged in purely cerebral or symbolic exercises" – a clear attack on the more extreme, anti-ecology wing of current archaeological theorists known as the "Post-Processual" theorists.

The chronological coarseness of data in the Late Glacial, and the surviving samples which focus on more long-lived occupations, mean that application of such currently popular anthropological approaches of a "Post-Modern" kind are in any case infeasible: the individual is not findable. At Klithi the smallest unit of observation is 500 years and that site is part of a system of sites whose total span of use is 100,000 years. This is a landscape dominated by processes too slow for human perception to have comprehended in a single lifetime. No existing archaeological or anthropological theory is ready to deal with this, so it is better for archaeologists to create useful theory to relate to the realities of the data. This study as a whole prefers to take a view where landscapes, plant, animals, and humans evolve together and in constant close relationship. Here events and persons are relevant only in terms of the creation of higher-level entities and behaviors at the group or landscape level and over persistent periods longer than the normal perception of a single person. Acceptance of this philosophy of the past would lead us to rethink both that past and ourselves, allowing us to learn openly from our data rather than be forced endlessly to repeat dogmas derived from preconceived ideologies and philosophies.

I found this synthesis controversial but rather convincing.

## An Annaliste Integration of Processes at Different Timescales

Bailey's reflections on the Palaeolithic of Epirus have already raised the central issues when we try to portray and unravel that interplay of lives and eras, homes and entire landscapes, which lies at the heart of the project of the Annales School of French historians. That was to capture analytically as well as empathetically (involving our emotional engagement), how the past was created and yet experienced by contemporaries. Our time resolution for this chapter is coarse, which allows us an extremely long-term perspective (the *longue durée*) during which various species of hominid spread and perhaps retreated from Greece, and over which traditions of tool-making persisted for unimaginable periods of time with minimal change, whilst their replacement by more complex assemblages was equally spread over eras encompassing untold human generations. Our insight into ways of life (the Annalists' *modes de vie*) has even less sense of time about it: based on ethnography, hunter-gatherers are believed to have followed seasonal rounds over larger or smaller annual territories, responding to shorter and longer-term changes to local ecology, notably the drastic alternations caused by the Ice Age cycles. Even when, in the final phases of hunter-gatherer lifestyles in Greece, symbolic representations might be expected from evidence in other parts of Europe, the Aegean offers little beyond some hints of body ornament. This artistic poverty has been explained through the harsher conditions of subsistence in the region and low absolute population densities.

One ray of light occurs to illuminate life at shorter timescales, the rare finds of deliberate burials, especially the cemetery at the Franchthi Cave. With modern techniques to study diet and disease, and the movements of individuals, it becomes possible to see one human life, at least in its cumulative imprint on that person's physical body (Bintliff 1989). Already some intriguing insights are emerging, and we can expect more as science increases the range and sophistication of its applications to "the biography of the body." The discovery of Middle Palaeolithic human footprints in the Theopetra Cave (Karkanas *et al.* 1999) is another tantalizing if unique contact with

moments in time and specific individuals. Isotope analysis will also reveal the long-term movements of individuals. But otherwise the Aegean era of hunter-gatherer life, more than 99 percent of human occupation, suits those like Bailey with a Darwinian, ecological perspective, but frustrates anyone who would wish to see, if not the experience of life in the short term of a human life (the world of *événements*), yet at least the fluctuations of human behavior in the medium term of a few hundreds of years (the *moyenne durée*). Is it really the case that landscape exploitation did not experience less continuity within a given ecology, and witness more experimentation by human groups? Is our model of effectively static lifestyles and an invisible, and by implication, non-existent symbolic life correct, or merely the product of the sparseness of the evidence? In other parts of Europe, extremely detailed study of our chief data, stone-tool assemblages, has attempted to use these products of human skill to access individuality and diversity, as well as a sense of aesthetics, and perhaps such approaches in the future will take us further into the world of lived experience amongst Greek foragers.

## A Personal View

The world of Palaeolithic studies is very specialized and not for the romantic archaeologist. Where I see Aegean hunter-gatherers come to life, in the absence of an Aegean cave art, is through their movements in the landscape. To understand, as we saw for Franchthi and Klithi, the careful modes of adaptation to the varied terrains of Greece, including their altering form in successive warm and cold, open and wooded, manifestations, gives one a pathway into hunter-gatherer life which has an immediacy sparking one's imagination. To stand at a cave-mouth and be able to tie the views in all directions, with a well-supported model of how that "taskscape" was exploited by the cave's forager occupants, gives one the ability to "people" the Greek landscape for an era for which other forms of reconstruction remain still beyond our capabilities.

This specific route to the past did not come to me immediately, when my first enthusiasm for Archaeology arose as a teenager. Then it was very concrete things, Roman coins, villa mosaics, and vivid



reconstruction drawings of past lifestyles by gifted artists such as Alan Sorrell, which fed my fascination. However, in 1967, I was drawn to watch a black-and-white documentary on BBC television, offering a new perspective on early human life in Greece. Puzzlement followed: much of the program consisted of a bulky, mature, balding figure in shorts, sitting on a rock, expounding his philosophy of the past, with occasional glimpses of students sieving soil, and flocks of goats moving across the landscape. Not, I thought, what I expected Archaeology to be, and beyond my comprehension. In fact this was Eric Higgs, explaining an entirely new way of approaching the Human Past, and illustrating this from his current project in Epirus (Higgs 1967). Watching the same program was another schoolboy, Geoff Bailey, a little older than me, and he *did* understand what was new and exciting about the arrival of the new science of Human Ecology into Archaeology. He wrote to Higgs and joined the Epirus project before going to Cambridge University (where I met him and was later myself to become unavoidably under the spell of Higgsian ecological ideas). After Higgs died it was Bailey who took the Epirus Project to its conclusion and pulled all the threads of almost 40 years research into an outstanding two-volume edited work.

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## 3

## Early Farming Communities

### *Neolithic Greece*

#### Chronology

(In calibrated Carbon 14 dates, that is including corrections to direct dates to allow for atmospheric carbon fluctuations)

Primary phase of Greek Neolithic or First Farmers, the so-called Preceramic, begins ca. 7000 BC

Early Neolithic (EN, ceramics in general use) begins ca. 6500 BC

Middle Neolithic (MN) begins ca. 5800 BC

Early phase of Late Neolithic (LN) begins ca. 5300 BC

Later LN begins ca. 4800 BC

Final Neolithic (FN) begins ca. 4500 BC

Early Bronze Age (EBA) begins ca. 3200 BC

#### Introduction

In the days of the Travelers and topographers, until the late nineteenth century AD Greece's past was confined to Classical (Greek and Roman) antiquities and the monuments of Byzantium. But subsequently, the establishment of a long prehistory for Europe (Greene 2002) encouraged archaeologists working in Greece to search for *its* prehistoric record. Rapidly the standard subdivisions were recognized: Palaeolithic and

Mesolithic (early and later hunter-gatherers), Neolithic (first farmer and herder societies), Bronze Age (mature farmer-herder societies with copper then bronze metallurgy), and Early and Later Iron Age (most recent prehistoric then protohistoric societies, iron-using, on the edge of and then in the first period of historical records). The Aegean was immediately envisaged as promising for prehistoric research, firstly because it bordered the Middle East, considered a major source of European cultural development from the Neolithic onwards, and secondly because ancient

Greek mythology suggested a rich pre-Classical society, with layers of legendary events stretching into a remote past.

Alongside the discovery at this time of Bronze Age palace civilizations on the Mainland (the Mycenaean), Crete (the Minoan), and the small towns of the Cyclades (Cycladic), the most numerous prehistoric earthworks attracting late nineteenth and early twentieth-century fieldworkers were the habitation mounds ("tells," "magoulas," or "tombas") which dotted the great, fertile plains and low hill lands of Northeast Greece. Those in Macedonia and Thrace were still in the Ottoman Empire till 1913 and 1920, respectively, so at first research by Greek and foreign archaeologists focused on the Plains of Thessaly. The former regions opened up to serious investigation only when they became part of the Greek state. Thus it was that the great Greek pioneer Tsountas, and the British team of Wace and Thompson, in Thessaly, subsequently the British scholar Heurtley in Macedonia, revealed that the dominant period when these tell-villages were occupied was that of a spectacular Greek Neolithic, with rich architecture, decorated ceramics, and figurines.

#### The culture-history sequence

Neolithic society represents a remarkable rupture in human occupation of the Aegean. In contrast to the highly localized but scanty remains of mobile hunter-gatherer bands which characterize the Palaeolithic and Mesolithic eras, Neolithic communities seem from the first to have lived (at least for the most part) in permanent villages, with an economy of domestic plants and animals. The roots of that economy and the accompanying material culture lie within older Neolithic communities of the Near East, and it is generally, but not universally, accepted that this whole way of life was introduced to Greece by human colonization out of Anatolia (Asian Turkey) and the Levant (the Eastern Mediterranean coastal countries) (Perlès 2001, Efstathiou 2007; opposed by Kotsakis 2001, 2006a).

The early excavators were already interested in tracing social and economic developments across the Neolithic. Signs of increasing political complexity and technological progress have always been central to archaeologists seeking the origins of modern society

through a series of critical developmental stages, beginning in the remote past (Bintliff 1984). The "Neolithic Revolution" in the Aegean showed one such critical discontinuity compared to preceding foraging peoples. Then, excavated Neolithic tell sites generated evidence for subsequent social evolution, since the sites of Middle Neolithic (MN) Sesklo and Late Neolithic (LN) Dhimini appeared to demonstrate the rise of social stratification and intercommunity warfare, together with the production of elaborate, and traded, fine pottery products. These aspects were highlighted in the 1970s by Theochares, an authority on Thessalian prehistory (1973).

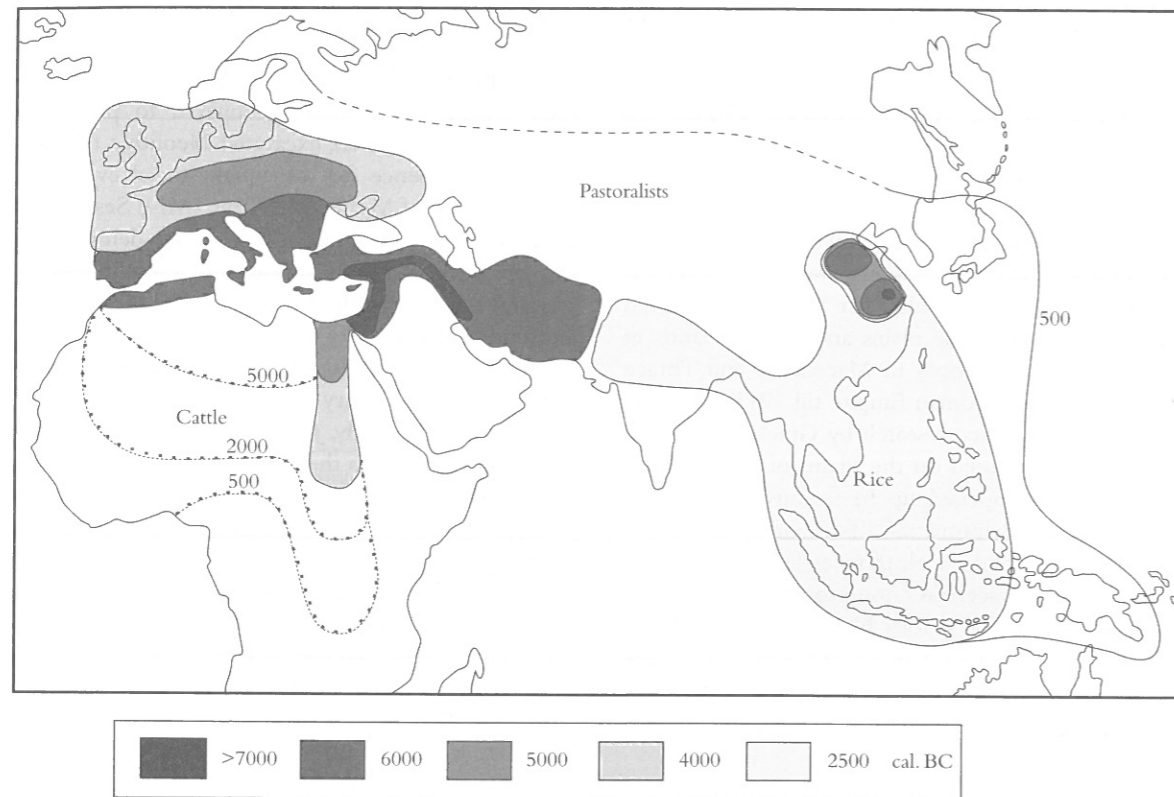
Contemporaneously, John Evans' (1971) exploratory trenches beneath the Minoan Bronze Age palace at Knossos on Crete, revealed a very early colonizing village of farmers at the site. More importantly, this village grew progressively across the long Neolithic era, until, on the threshold of the Early Bronze Age, its size could justify the term "town" (several thousand inhabitants). Might all these unfolding developments of prehistoric Greek society offer insights into the creation of Europe's first civilizations, the Minoan and Mycenaean, within the subsequent Bronze Age period in the Aegean?

#### Origins of the Greek Neolithic

##### The Mesolithic contribution

Till the 1980s, it was orthodoxy that Europe received knowledge of domestic plants and animals from the Near East, in almost all regions through the arrival of immigrant settlers from Anatolia and the Levant and their direct European descendants. Radiocarbon dates showed a progressive diffusion of agropastoralism (farming and herding) and associated culture (ceramics, village life, new forms of lithic tools) from Southeast to Northwest Europe, agreeing with an expanding colonist settlement from that direction (Clark 1965) (Figure 3.1). Only in the outer margins of Europe was there evidence for indigenous hunter-gatherers moving gradually toward the Neolithic way of life, but this could be accounted for by acculturation (educative culture contact) through association with adjacent settlers of Near Eastern origin. The





**Figure 3.1** The spread of Neolithic farming and herding during the Holocene (our current Interglacial, ca. 10,000 BP [before present] till now). Dates are in years BC.

L. Louwe Kooijmans, *Between Geleen and Banpo. The Agricultural Transformation of Prehistoric Society, 9000–4000 BC*. Amsterdam, Archaeology Centre, Amsterdam University 1998, Figure 2.

most recent data confirm this general model (Ammerman and Cavalli-Sforza 1984, Gkiasta *et al.* 2003, Colledge *et al.* 2004).

Nonetheless, Greece might tell a different story. Its lowlands possessed natural semi-open vegetation, wild forms of the Neolithic cereals, pulses, and legumes, and indeed these were intentionally collected by its hunter-gatherers. Wild forms of cattle, goat, and pig were native to the fauna. Aegean Late Glacial and Early Holocene foragers were adopting a Broad Spectrum economy (see Chapter 2), which in the contemporary Near East was a major factor in the development of the agropastoral (farmer-herder) economy in several regions independently. Even if the domestication of plants and animals spread from the Near East to the Aegean, perhaps it was through contacts between early

farmers in the former region and indigenous hunter-gatherers, “acculturation,” rather than via immigration from the East (Kotsakis 2001). The precocious maritime travel demonstrated by the provision of Cycladic obsidian into Mainland forager sites as early as the Upper Palaeolithic, as I suggested a generation ago (Bintliff 1977), perhaps in connection with seasonal pursuit of fish shoals (“transmerance”), might have stimulated knowledge exchange into Greek societies already adapted to more intensive forms of plant and animal exploitation (Sampson 2006).

Perlès’ (2001) counter-arguments on this issue were persuasive. The Mesolithic evidence, when she wrote, indicated sparse populations exploiting dispersed resources of low energy yield. The conditions elsewhere (dense packing of increasingly sedentarized

foragers in high-quality resource localities), that allowed hunter-gatherers to move to a productive Neolithic economy, seemed lacking in Greece. Early Neolithic settlements, excepting a few special cases, lack underlying Mesolithic occupation, and that handful are more plausibly evidence for acculturation of foragers by nearby Neolithic colonists (e.g., the Franchthi Cave, and Sidari on Corfu). The great island of Crete appeared devoid of human occupation till the full Neolithic package arrived, unavoidably externally colonized. Nonetheless, the rapid disappearance of hunter-gathering sites (hunting is a very minor component of the Early Neolithic economy) surely resulted from conversion of indigenous foragers to the agropastoral lifeway, particularly through intermarriage. Significantly, Mesolithic technology and other aspects of material culture are absent from the standard Neolithic assemblage (collection of everyday objects), underlying the domination of the new culture and economy. However, some reverse acculturation would be expected. The high level of use by Neolithic communities throughout Eastern and Southern Greece of Melian obsidian plausibly reflects local knowledge transfer to the colonizers, whilst Perlès speculates that the specialist task of visiting the largely unpopulated Cyclades for this raw material remained with the descendants of indigenous foragers within the new mixed population.

We have extensive knowledge of Neolithic and Early Bronze Age (EBA) boats. Models from various Greek sites and surviving freshwater boat outlines from Macedonian lake deposits can be combined with EBA iconography on pottery. A range of boat types, but all sail-less, can be reconstructed (Broodbank 2000, Marangou 2001a). Tree dugouts, hide-coated light wood structures, and reed bases, all seem likely boat varieties. In 1988 an experimental sailing from Central Greece to Melos in a flat, lake-reed craft with a cypress frame showed the feasibility of such an extended journey.

The recent Mesolithic survey by Runnels *et al.* in the Argolid peninsula (2005), nonetheless, challenges the perception of low-density Mesolithic populations, struggling to survive in unfavorable mid-Holocene landscapes (Kotsakis 2006a). At least in favored localities (niches) with a variety of rich plant and animal food, relatively dense networks of temporary and permanent settlement or camp sites may have existed. On

the other hand, the fact that very extensive parts of Greece do not offer such rich environments prevents us from generalizing from the sheltered coastal bays of the Argolid to repopulate the rest of the country to the same density of hunter-gatherers. Nonetheless, warning us not to underestimate the complexity of Greece’s broad-spectrum foraging populations is the discovery at Maroula (island of Kythnos), of a Mesolithic settlement with round houses and formal burials (Sampson 2006). Most recently, Runnels has repeated his success in a targeted survey in likely ecologies for Mesolithic lifestyles on Crete, discovering a score of Mesolithic findspots on the southwest coast (Strasser *et al.* 2010). Despite all this, the very weak contribution of Mesolithic culture to the succeeding Neolithic, and its strongly exotic elements, would seem to leave the balance of evidence in support of Perlès’ position, where genuine colonization is the dominant factor in the spread of the Neolithic throughout Greece.

#### Near Eastern roots

The vast majority of Early Neolithic sites present a homogenous culture, quite different from preceding Mesolithic assemblages (Perlès 2005). Only immigrants could have brought the range of skills on display: farming, herding, building, stone polishing, pressure flaking, and spinning. Chronology and cultural similarities lead to the inevitable conclusion of Near Eastern colonization. Even the potential for local domestication of many Neolithic plants and animals represents unfulfilled opportunities: Upper Palaeolithic and Mesolithic exploitation in Greece remains at gathering and hunting rather than showing progressive domestication. DNA study confirms this, showing that the domesticated species of Europe are predominantly descended from Near Eastern rather than local breeding stocks (Bollongino and Burger 2007, Brown *et al.* 2009, Tresset and Vigne 2007). Equally significant is the genetic evidence suggesting that Southeastern Europe has been predominantly peopled from the Near East, with increasing contributions from indigenous populations the further west through Europe one travels (Bentley *et al.* 2003).

Yet, there is no total match for the Early Greek Neolithic with any particular Near Eastern region,



leading to the inference that there were multiple founder groups from different parts of the Near East. Plausible overland connections are claimed between Northern Greece and Northern Anatolia (Asian Turkey), and by sea between Crete, Cyprus, and the Levant (Perlès 2005, Efstratiou 2005), and most recently across the Aegean from Anatolia (Ammerman *et al.* 2008).

The timescale of supposed colonization fits neatly into major developments within the Near Eastern Neolithic (Efstratiou 2005, 2007). Although the Greek Early Neolithic (EN) horizon is seventh millennium BC, if we allow for its earlier origin in the Levant and Anatolia, its source cultures should be eighth millennium BC. The complex of related Neolithic groups at this time in those neighboring regions are known as the Pre-Pottery Neolithic B (PPNB). Cauvin (1994) characterizes this as the "great exodus," when farmers expanded from a nuclear zone for early farming in the "Fertile Crescent" into Central Anatolia, the Near Eastern semi-deserts, and the temperate Mediterranean zone. This dispersal coincides with the development of second-generation cereals (for example the more advanced hexaploid wheat), the domestication of pulses (legumes such as beans and peas), and the full package of early domestic animals, especially cattle. The fact that at some Greek sites pottery use in the oldest EN levels is confined to figurines and ornaments, is consistent with the same limited use in the oldest Neolithic cultures of the regions of the Near East and on Cyprus considered ancestral to the Greek Neolithic (the Preceramic Neolithic group).

## Settlement Patterns

### The overall settlement picture

The overall distribution of Neolithic settlements discovered so far in Greece suggests a major role for geographical factors in the spread of early farming communities (Perlès 2001). Topography, climate, and soils favored dense but isolated clusters of settlements in certain regions, with a much thinner cover elsewhere. This argues for a preference amongst early farmers in the landscapes of Greece to occupy areas most comparable to those where the domestication of

plants and animals was first accomplished (a semi-arid climate, open woodland). It excludes the cooler, wetter uplands of West and Central Greece, the arid Southeast Mainland and Cycladic Islands, and points to the intermediate geographical zone of the plains and hills of Central and Northeast Greece. The great lowlands of Thessaly, Macedonia, and Thrace unsurprisingly reveal unparalleled densities of early farming sites, whilst the rest of Mainland Greece has hitherto given more dispersed, lower-density Neolithic settlement patterns, and finally the Cyclades have virtually no settlement until the Final Neolithic period. These generalizations are especially pronounced for the Early and Middle Neolithic, since in later Neolithic times economic developments encouraged population expansion in the rest of Greece, including smaller Aegean islands.

Till these later Neolithic phases, farming was carried out by hand, using hoes and spades. This is very time-consuming, and hard to accomplish if soils are dry for much of the year. Johnson (1996) and Perlès (2001) draw a clear contrast, based on Sherratt's earlier models (1980, 1981), between Northern plains such as the Thessalian, where rainfall was adequate for dry-farming with such technology, and the Southern Mainland, especially the Peloponnese, where village locations were usually constrained to limited sectors of the landscape where well-watered fertile soils occurred near springs, lakes, or marshes. Hence the latter villages were few and far between, creating social conditions opposite to those of densely-settled Thessaly and similar plains further north. Perhaps also, the uneven spread of such desirable resources led in Southeastern Greece to more dispersed and smaller-scale forms of settlement: individual family farms or kin-group hamlets, rather than nucleated (population-concentrating) tell-villages which so far dominate settlement forms in the Plains of Thessaly and beyond.

In the Late and Final Neolithic the basic conditions of the agropastoral life altered fundamentally. Sherratt (1981) argued for a second vital diffusion of agricultural skills at this time (broadly the fifth and fourth millennia BC). In his "Secondary Products Revolution" (2PR), he suggested that two critical improvements to farming and herding arose in the Near East and spread through contact, relatively rapidly, across Europe.

Firstly, a simple "ard" or scratch plough, drawn by cattle, enabled farmers to prepare their fields faster and hence over a larger area, thus making far more use of drier soils even where high water tables were not available (cf. Halstead 1995b). Outside of those lowlands where rainfall had always been high enough to pose few problems for hoes and spades, this innovation allowed farmers in more arid landscapes to move out of the areas they had been restricted to, the semi-wetland sectors, and open up cultivation on the good but hitherto too dry soils lying between rivers, springs, and lakes, the so-called "interfluves."

Secondly there developed a wider use of domestic animals beyond their meat-value, chiefly for wool and dairy products (milk, cheese, yoghurts, etc.). The domestic economy was thereby boosted, as was the value of specializing in larger-scale herding, encouraging settlement in less agriculturally-favorable landscape sectors which were more ideal for grazing, particularly on a seasonal basis (transhumance). In many parts of Greece and the wider Mediterranean, strong seasonal contrasts between hot summer lowlands and cooler uplands, or cold and snowy winter uplands and warmer lowlands, have given rise to seasonal migrations of domestic animals and their herders, well attested since the first historical records. The projection of recent Mediterranean transhumance into the ancient and prehistoric eras has nonetheless been challenged, since arguably Early Modern specialist pastoralism is closely tied to commercial economies and factory production (see Chapters 1 and 2) (Lewthwaite 1981, Halstead 1987, 1996). It now appears, however, that the archaeological evidence does support the development of long-distance pastoral transhumance, especially into the high Greek mountains, from exactly this period onwards, the Late Neolithic (Efstratiou *et al.* 2006), underlining the radical economic changes identified by Sherratt.

Although often criticized, the accumulating empirical evidence in the Near East and Europe remains largely supportive of the Sherratt model. In particular, a radical rise in settlement numbers and an expansion into new sectors of the landscape appear to be striking features of later Neolithic Europe as a whole, not least in Greece. In the Aegean this is the time of the first large-scale colonization of the Cyclades (Davis 1992), and of a clear expansion of population in the Southern

Mainland, on Crete (Branigan 1999), and even in long and densely settled more northerly plains such as in Thessaly (Demoule and Perlès 1993), as well as into the uplands throughout the Greek Mainland.

However, the latest research offers a more complex chronology for the "2PR." Sherratt's dating utilized pictures and texts from the oldest urban societies in Mesopotamia, clearly showing all the components of his agropastoral changes, together with rare but controversial use of artifacts from the rest of the Near East and Europe (animal models, "cheese-strainer" pots, etc.), and changes in the age-structure of domestic animals excavated in settlement contexts (seen as probably indicating the balance of meat production versus a greater emphasis on dairy and textile products). More recently an independent approach has been developed, involving direct analysis of the residues of pottery vessel contents to detect the distinctive traces of milk products (Evershed *et al.* 2008). A large-scale study of early pottery from a wide range of sites has given clear results for the timing and scale of early dairy production from Britain through to the Near East, revising the details of Sherratt's chronology.

If cattle, sheep, goats, and pig were domesticated by the eighth millennium BC in the Near East, at the start of the Neolithic era, already by the later seventh millennium the knowledge of dairying was visible from the Balkans across Anatolia to the rest of the Near East, within the oldest Neolithic cultures. On the other hand, the actual practice remained small-scale at this time, with the notable exception of Northwest Turkey, where from the seventh to sixth millennia BC it was significant. In Romania dairying rose to prominence by 5000 BC, and once the Neolithic had spread to Britain dairying rapidly grew in importance after 4000 BC. The exceptional early foci are associated with a local emphasis on cattle-rearing, suggesting that the first development of dairying was with cows rather than sheep and goats. In line with this more regionally diversified picture for the spread of dairying, faunal analysis of domestic animals at various places in Neolithic Europe, including Knossos (Isaakidou 2006), indicates knowledge, but limited use, of dairying and animal traction (for ploughs or carts) in the earlier Neolithic, preceding widespread, large-scale shifts to these strategies in Final Neolithic and Bronze Age times. Thus despite

the apparent contradiction from the new scientific evidence to the Sherratt model, its main lines seem intact (cf. Halstead 2006b), in that the general use of dairy products probably impacts on the Near East and Europe in the fourth to third millennia BC as he suggested, at a time when the animal bone and artifactual data still seem to support a similar large-scale adoption of the animal-drawn ard-plough.

### Settlement form

The known Neolithic settlements of Greece are dominated by the nucleated tell-village, with dispersed farms and hamlets of non-tell type clearly in a minority. Yet new research suggests that the balance requires significant adjustment. Tells are highly visible and hence became an early focus for archaeologists, whilst “flat sites” require more intensive surface survey, a methodology of recent application and one so far used in just a few Greek landscapes. Site survey is also revealing a greater density of Neolithic settlements outside of the well-known concentrations in Thessaly, Macedonia, and Thrace. Such methods, combined with rescue and research excavations by Greek archaeologists, have now identified flat sites amidst the tell landscapes themselves, including Thessaly. In South-Central Greece, around ancient Tanagra city (Bintliff *et al.* 2006), a complex, probably pre-plough non-tell Neolithic settlement pattern can be reconstructed, composed of nucleated hamlets or villages based on the most fertile expanses of high water table soils, around which a series of small rural sites line the river valley soils up to several kilometers away. The fact that such nucleated settlements in Southern Greece are rarely tells, probably reflects a much lower use of mudbrick and a more mobile settlement network than in the Northern plain tell societies, rather than indicating a less long-lived occupation of such landscapes.

#### General characteristics of tells

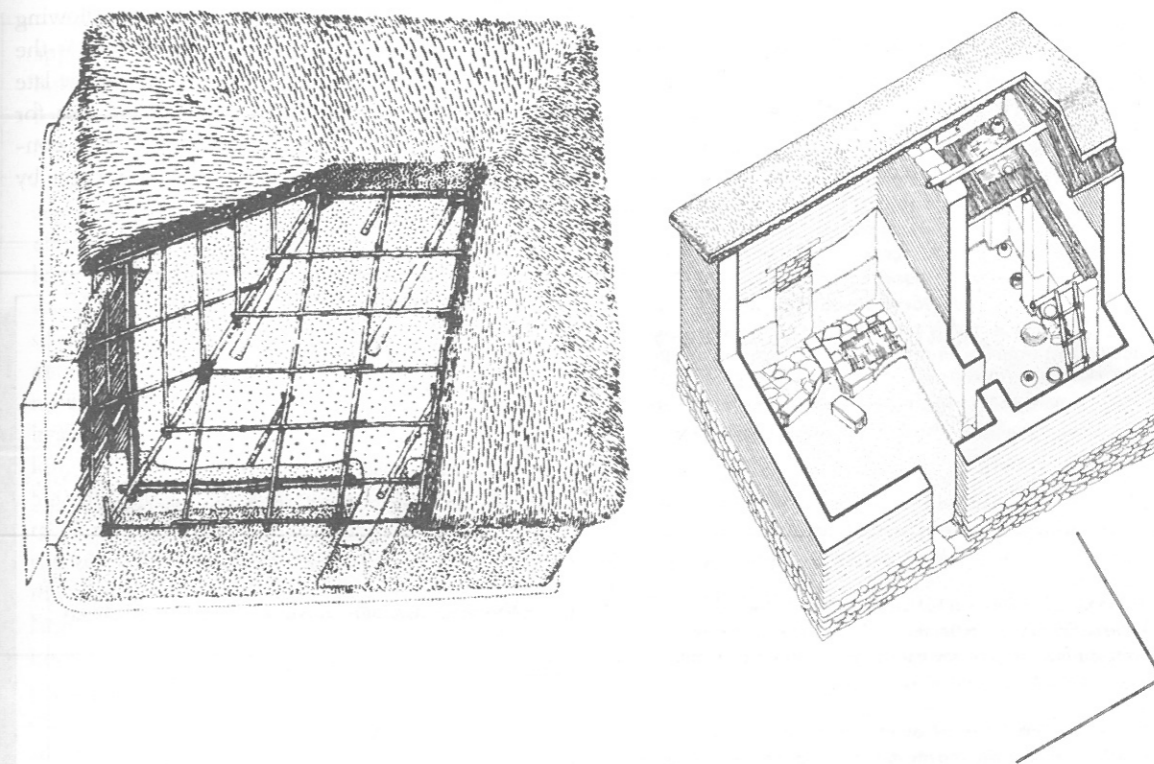
These artificial mounds represent villages with prolonged occupation and the dominance of mudbrick architecture, where over centuries or even millennia new houses are built upon the remains of older and accumulated domestic debris, constantly elevating the village mound. The plains of East Central and

Northeast Greece have revealed through extensive survey remarkable numbers of such early farming settlements (Figure 3.6). The density of such small villages is unusual in Europe and high productivity was needed to sustain them, whilst social conflicts were clearly avoided. How these special landscapes were managed for high, sustainable productivity can be modeled, but more problematic is how such community packing avoided destructive inter-settlement warfare. The fixity of the tell domestic base, creating a radial zone of exploitation of the surrounding countryside in the direction of neighboring villages, and a vertical build-up of successive settlements on top of the original foundation, is contrasted to another form of settlement, commoner outside of the tell landscapes, where flat settlements may have been occupied over shorter periods as a result of regular relocation of the houses and fields of a community. One might expect that the confined tell territory led to a scarcity of building space in the village, whilst the larger occupation area and more extensive land use of flat sites might display open village plans with more scope for gardens, working areas, and stock enclosures.

#### Tells and their settlement plan

Interestingly, tells in Neolithic Greece and related cultures of the North Balkans share many features as regards village layout. Since in the Near East tells were a regular aspect of early farming societies, this form of village life and its associated worldview were also already present in ancestral communities. The striking feature is the ordered nature of living space, a design reinforced by generational replacement of houses on top of, or close to, earlier houses (Chapman 1994). Houses, and structures for storage, workshops or ritual, were separated by narrow lanes, often sharing the same orientation. Seemingly due to the high value of land around the village for subsistence, tells did not expand outwards to allow open space for that variety of inter-house activities which we are familiar with from Early Modern European village-plans: large open areas for communal gatherings of a social, political or ritual nature, household gardens, and stock enclosures.

Chapman argues convincingly that the tell is a powerful ancestral space, a social landmark with a cumulative place-value achieved through long-term



**Figure 3.2** Early Neolithic house from Nea Nikomedeia (left) and Middle Neolithic house from Sesklo acropolis (right). D. R. Theochares, *Neolithikos politismos. Suntomi episkopisi tis neolithikis ston helladiko choro*. Athens 1993, Figures 19 and 48.

community participation, a “habitus” (or traditional way of life, following Bourdieu) of stability. Replacing houses or even whole village-plans on the literal lines of older structures enforced conservatism, and perhaps an atmosphere of unchanging or cyclical time for tell societies. The increasing elevation of tells, usually set against flat plains, over time, emphasized the continuity between people and place. Elites seem normally absent within these small settlements (for exceptions see below), suggesting that the social structure was organized around families and larger kin-groups (lineages). The visual focus in tells is the individual domestic house, generally on a scale suitable for a large nuclear family. Appropriately, excavated tell houses, generally rectangular, rarely show differences from house to house or complex internal spaces. Figure 3.2 contrasts the simple, organic construction huts of Early Neolithic Nea Nikomedeia with a more elaborate Middle Neolithic house from the Sesklo

acropolis; the latter highlights the rare exceptions to this rule.

Halstead (1999b) stresses that the tell is focused on the individual household, usually discretely placed from its neighbors, with a general (but not complete) absence of community spaces (perhaps most village-level social and ritual events took place outside the tell). In stark contrast to Chapman’s communal model of the tell, Halstead prefers a small-scale society composed of competing households.

Halstead’s viewpoint (modified more recently, see below) has the distinct advantage in offering a potential origin for the postulated, if very localised, development in mature to later Neolithic times of higher-status individuals or families. And yet Chapman’s emphasis on these communities as consciously nucleated societies cannot be neglected. If competitive households were central, a more efficient settlement pattern would have dispersed family farms across the



tell's territory, which was small enough for most farms to have been intervisible and to enable social gatherings to occur with little effort at some central point, while offering ideal least-effort access to the family estate.

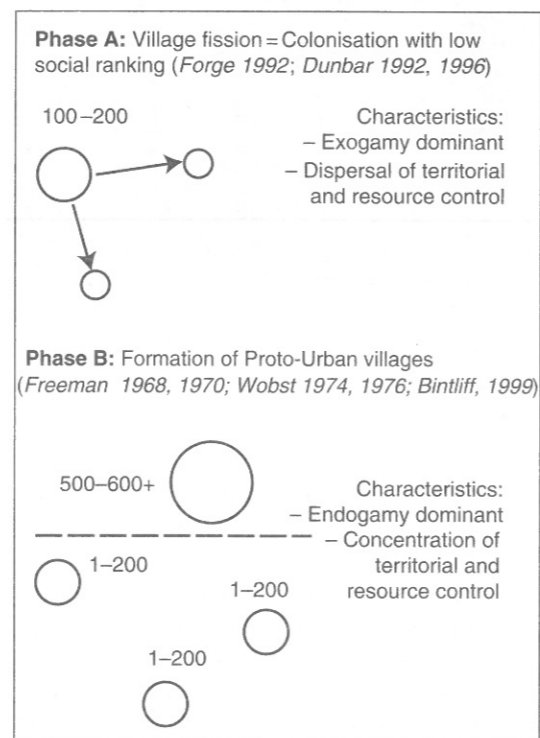
This is the appropriate moment to introduce a set of linked models, offering fundamental insights into Neolithic Greek societies, but also into later

### Fissive and Corporate Communities

Anthropologists studying recent pre-Industrial societies have identified a cross-cultural tendency for human settlements without social classes to break up or undergo "fission" when they reach around 200–300 individuals (Figure 3.3). Below this figure, a "face-to-face" community exists, where everyone knows everyone else at a personal level. Beyond 150 people, this social bonding becomes difficult to sustain, encouraging conflicts and factions, which disrupt the traditional resolution of intracommunal tensions through personal contacts. At this point a common solution is for part of the growing village to break off and found a daughter settlement, often nearby.

If larger nucleated communities succeed in arising, three alternative mechanisms seem to account for almost all examples. The simplest, potentially operating even in Palaeolithic and Mesolithic times, would limit such large gatherings of people to seasonal camps, where many smaller bands agglomerated (gathered together) at times of peak animal or plant availability, to collaborate in great animal drives and exchange marriage partners, exotic raw materials or symbolic ornaments. The second mechanism is to subdivide the growing village into semi-autonomous neighborhoods, each of which stayed within the bounds of face-to-face population size. At a primary level households belonged to a largely self-managed social unit, the neighborhood, then at a secondary level there existed social institutions linking these units into the village as a whole. The third mechanism is that of a vertical rather than horizontal division of the village: management devolves on a social elite,

prehistoric and historic societies in Greece (following Text Box). Their suitability is so striking that at the time of my own application of these ideas in the late 1990s for both early farming societies and also for later periods (Bintliff 1999a), some of the same concepts were being explored for Neolithic Greece by Paul Halstead and Catherine Perlès.



**Figure 3.3** The author's model for fissive and corporate community settlement systems.

J. L. Bintliff, "Emergent complexity in settlement systems and urban transformations." In U. Fellmeth *et al.* (eds.), *Historische Geographie der Alten Welt. Festgabe für Eckart Olshausen*. Georg Olms Verlag, Hildesheim 2007, 43–82, Figure 7.

whose influence reduces but need not abolish the role of the household and neighborhood in social relations. This elite might be one or more powerful households, or merely a council of the senior male heads of households or lineages. Renfrew's pioneer

application (1973) of ethnographic parallels highlighted two forms of elite power which might have occurred in later prehistoric Europe: a "Big Man" system, where an elite family or lineage might dominate a community on the basis of acquired status, wealth or social power (being effective warleaders, or ritual specialists, having large economic surpluses, or controlling extensive social networks); and a "Chiefdom" model, where status arises from inherited positions in a dynastic elite lineage or family. As to why larger communities might arise, Wobst (1974) has argued that a healthy human population can only escape the long-term dangers of inbreeding if it reaches 500–600 people. In face-to-face societies this has to be met through constant exchange of marriage partners with several other nearby small communities, making the alternative, an expansion to a large village, more attractive in this respect. Before knowledge of genetics, the harsh experience of genetic mutations and accumulating levels of disease appear to have led through Darwinian adaptation to a worldwide cultural behavior in which small communities have out-married to survive in the long term.

Returning to "face-to-face" society, physical anthropologist Robin Dunbar (1996) introduced additional arguments. Taking monkeys, apes, different early hominid types, and modern humans, he compared for each group that part of the brain associated with socialization, against their characteristic group size. Dunbar calculated a group size of around 150 people as the upper capacity of advanced humans to socialize effectively with.

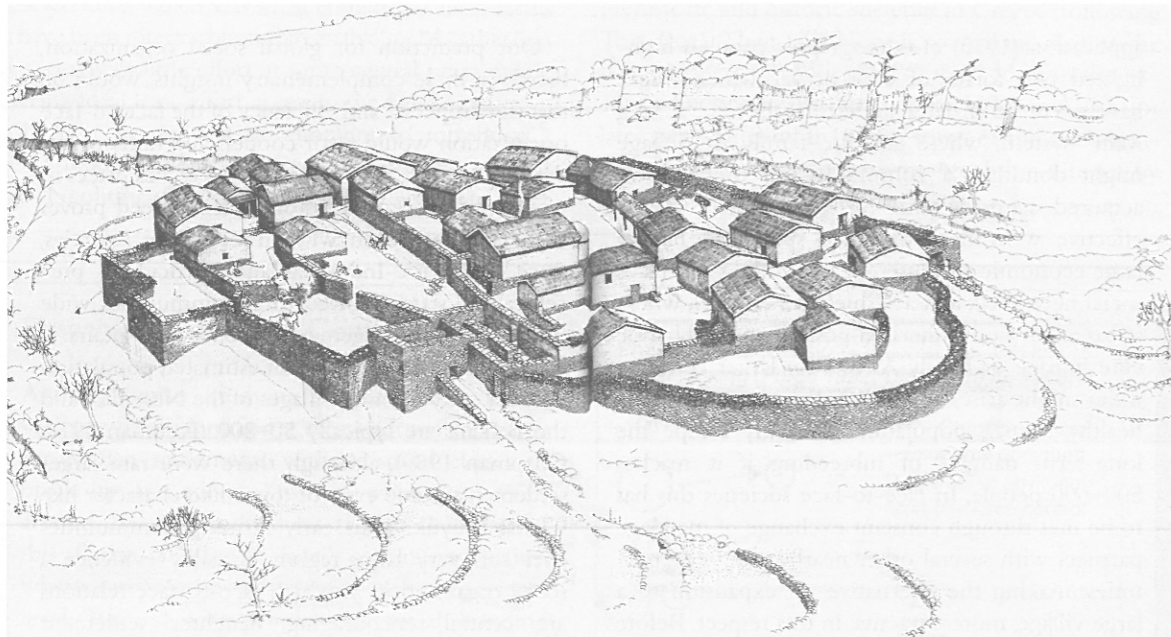
Greek Neolithic villages appear to fit our predictions for face-to-face societies with a broadly egalitarian ethos, with very few (but important) exceptions. Thus for our best-researched landscape, the tell villages in Thessaly, Halstead (1994, 1999b) suggests that small tells probably housed 40–80 people, large ones 120–240. On the other hand, Nea Nikomedeia in

Our prediction for global social organization, based on these complementary insights, would be that the simplicity and efficiency of the face-to-face organization would favor cooperating units of less than 200 people at innumerable times and places in world prehistory and history. Such indeed proves to be the case, even with historic state societies, since many pre-Industrial and particularly pre-centralized states allowed rural communities wide scope for self-management in communal affairs. It is surely not coincidental that estimated population sizes for early farming villages of the Near East and the Balkans are typically 50–200 (Redman 1978, Chapman 1989), although there were rare larger settlements, some even of town-like character like Chatal Hüyük. Thus early farming communities over this very large region plausibly evidence a social organization in which face-to-face relations are central, encouraging daughter settlement creation whenever settlement growth threatened internal cohesion. Since Near Eastern population densities appear to have been usually well below the sustaining capacity of the landscape, the spread of farming settlers which brought colonists to Europe might have been significantly linked to fissioning rather than resource pressures.

However, if a settlement grows beyond the face-to-face parameters, to achieve 500–600 inhabitants or more, not only would there need to be novel mechanisms for the peaceful coordination of such communities (the commonest ways were outlined above), but "emergent complexity" (Bentley and Maschner 2003) occurs, where wholly new socio-political dimensions to such a society become apparent, as explained in a subsequent section.

Macedonia, a tell where extensive excavation has taken place, is claimed by Pyke and Yiouni (1996) to have had even in EN times a population of 500–700 inhabitants. However just 12 percent of the site was dug, and Halstead (1981) downscales this estimation for the 2.4 ha tell site by arguing that many of the houses were not contemporary, and also that only a





**Figure 3.4** Reconstruction of the Upper Town at Sesklo. D. R. Theochares, *Neolithikos politismos. Suntomi episkopisi tis neolithikis ston helladiko choro*. Athens 1993, Figure 43.

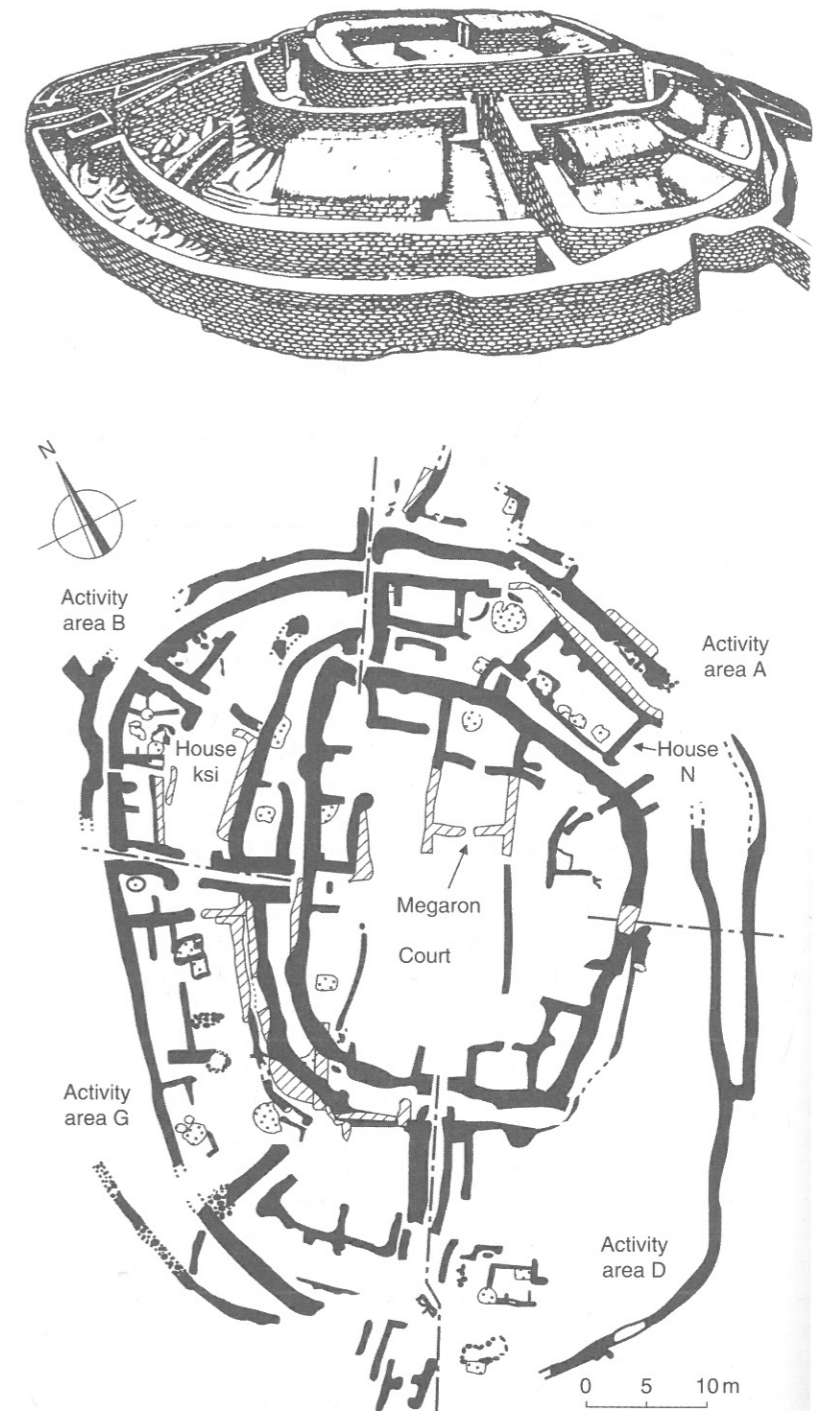
minority of the site was built over, leading to a recalculation of 120–240 inhabitants. Perlès (1999, 2001) has her own formula for relating settlement size to population, but still concludes for Thessalian tells that 100–300 occupants suits all but a few sites.

This analysis favors a position on tell social organization intermediate between Chapman and Halstead: the typical village was normally an effective, small-scale community based on interfamilial cooperation, but households remained independent and distinct units.

### Complex tell societies

Exceptional amongst hundreds of tells mapped or excavated for Neolithic Greece are a small number where special features point to significant changes to the face-to-face model. Amongst the earliest tells excavated were Sesklo and Dhimini in Eastern Thessaly (Tsountas 1908), and their unusual character has led to re-excavations and re-studies of the material.

Middle Neolithic Sesklo (Figure 3.4, reconstruction of the Upper Town) is a giant site, comprising a large lower town and a small upper town (“acropolis”) (Kotsakis 2006b). The Upper Town (Sesklo A), is less than 1 ha, but including the Lower Town (Sesklo B) brings the total settlement to more than 13 ha. The walled “acropolis” boasts far more substantial houses than the more extensive Lower Town. If the entire site was completely occupied by domestic structures, then the population, after Theochares, could have reached 3000 inhabitants. The excavated part of Late Neolithic (LN) Dhimini (Figure 3.5, plan and reconstruction) is notable for the architecture of its central complex. This consists of a series of concentric, if low, walls, with limited space between them, rather few potential living structures fitted amidst these wall circuits, then in the more extensive innermost enclosure a large structure of “megaron” form. The latter is a design with a long popularity into the Bronze Age and Early Iron Age in Greece, comprising a rectangular house subdivided into a sequence of porch, main room, and an optional extra, smaller room at the rear. LN Sesklo



**Figure 3.5** Plan of excavated areas at Dhimini and reconstruction drawing. D. Preziosi and L.A. Hitchcock, *Aegean Art and Architecture*. Oxford University Press 1999, Figures 7 and 8.

significantly also has a large megaron form in the center of what by that phase is claimed to have become an otherwise small settlement on the acropolis.

Tsountas (1908) considered Dhimini as a princely seat, with a ruler's megaron residence protected by concentric three-meter high walls. The social gulf to peasants and retainers was marked by the simple house structures between these walls. Hourmouziadis' re-excavations (1979) made clear that the concentric walls were never lofty, strategic barriers (probably one meter high), representing rather a combination of terraces on the hill to form construction and working zones, and internal divisions of the site to demarcate social or economic sectors. Hourmouziadis hypothesized a first phase for the site with a set of cooperating households, succeeded by the emergence of a dominant elite, signified by the central megaron. However, the area excavated and reproduced as this plan perhaps represents just 10 percent of the entire settlement, with traces of simple dwellings outside the dug zone, so it is premature to draw conclusions on the overall organization of the site (Preziosi and Hitchcock 1999). If the lower settlement around the dug mound was as extensive as thus implied, LN Dhimini would form a closer parallel to MN Sesklo.

The significantly unequal size of houses between upper and lower town at MN Sesklo, followed in the LN at both Sesklo and Dhimini by the evidence for a centrally-located complex structure of megaron form, encourage the claim that social stratification (a formal class division) has emerged at these sites. MN Sesklo is certainly larger and more architecturally diversified than the typical Neolithic village, and our demographic theories outlined above would predict communal integration through horizontal or vertical divisions within its society. Sesklo's small-scale MN "acropolis" compared to its Lower Town, then the LN megaron foci at both sites (more likely to be domestic than temples), arguably present settlements dominated physically and politically by leading families. Strikingly at Sesklo, the LN reoccupation seems to go a step further, with just an area of 0.4 ha on the acropolis in use, taken up by the large megaron building and some associated buildings, and fortified (Demoule and Perlès 1993).

Boundary walls and ditches may also reflect social divisions in tell sites. They enclose some EN and MN villages: occasionally a drainage function appears

possible, whilst their slight nature argues against a defensive purpose. Perhaps they commonly acted symbolically to demarcate the community (Demoule and Perlès 1993). At MN Sesklo the acropolis has a delimiting wall to the Lower Town, also perhaps a social rather than military boundary. Additionally, Sesklo's MN architecture (Kotsakis 1999, 2006b), exhibits striking differences between the "acropolis" buildings and those in the more extensive Lower Town: the Upper Town has a typical tell plan, with distinct houses rebuilt on the same location, creating a deep stratigraphy, whilst in the Lower Town houses shift around the site over time and there is little continuity at any point, and even empty sectors. Moreover the Lower Town houses form blocks with party walls to households. LN Dhimini also appears in some respects to resemble the supposed elite sector at MN Sesklo.

Returning to our earlier discussion, we saw that villages rising above the figure of around 150 people resolve social tensions through either horizontal subdivisions (for example neighborhood semi-autonomy), or vertical subdivisions (the emergence of a governing minority, household or lineage heads, Big Men or Chiefs). At Sesklo, even after downscaling population in the Lower Town (Kotsakis 1999) to allow for its discontinuous occupation, the likely total MN population could be above face-to-face society levels. The evidence for spatial divisions and a higher status sector in the Acropolis meets our predictions. The transformation by the LN era at Sesklo, with a similar form of "elite" centralized plan at nearby LN Dhimini, into a complex focused on a putative dominant large residential structure, may more obviously mark a formal class structure, and by implication a smaller controlling group. At LN Sesklo, however, dependent peasants must be sought in adjacent settlements.

As previously mentioned, Wobst (1974, 1976) has suggested that prehistoric societies had to unite two adaptive concepts to flourish: the fitting of population density to available resources and technology, and marriage exchange within a demographic group large enough to prevent damaging inbreeding. For hunter-gatherers in Palaeolithic-Mesolithic Greece, overall densities seem to have been low (but probably in localized clusters), so that seasonal, multi-band gatherings and perhaps individual mobility across bands were essential to maintain a healthy gene pool.

Intriguingly, Wobst's calculations favored a minimal breeding network of 500–600 people. If most early farming villages remained in the comfortable margins of  $150 \pm 100$  people, then a typical tell village needed regular marriage exchanges with several neighboring settlements. With tells in the great plains of Northern Greece a half hour apart, this posed no difficulty.

Social anthropologists have documented in many diverse societies that when a village reaches a population of around 500, it often appears to alter its sociopolitical and economic behavior, giving rise to a "corporate community" (Bintliff 1999a). Arising from an agglomeration of independent households vying for status, and with strong links to surrounding villages, such novel communities begin to act more like towns or tiny states, centralizing much decision-making and creating stronger barriers to free movement of people and products toward its neighboring settlements. The key factor fostering this transformation is a realignment in marriage customs. Whereas a face-to-face community sends many of its men or women to neighboring communities in return for incoming marriage partners (exogamy), once a village rises to a population at or beyond the level of Wobst's breeding network (500–600 people), it can largely provide its own marriage requirements (endogamy) (see Figure 3.3, Phase B). Now in most rural communities recorded by ethnographers and historians, exogamy is associated with movement of rights over land and/or livestock (bridewealth). The village does not control its own resources, since families in adjacent villages acquire rights over land and the products of land. But when a largely endogamous regime appears, the community can dispose of its resources as it wishes. Since breaching the 200–300 population level normally requires internal political changes, i.e., the family loses power to representatives of neighborhoods (horizontal subdivision) or to elites (vertical subdivision), there can arise a potent metamorphosis in community social organization. The leading members of the enlarged society begin to dispose of communal resources for the benefit of the village as a whole, or even to the personal advantage of its most influential families. The reduced importance of good neighborly relations with adjacent communities can enhance the potential for conflict over territory and other resources.

Increased signs of warfare and the erection of defenses might be observed. Such processes could account for the frequency in many global cultures at diverse periods of a proliferation of small city-states, generally in regular competition or warfare with each other.

I believe that these linked models help us to comprehend the processes at work behind the elite-focused large villages or towns at MN-LN Sesklo and Dhimini, an increase in the fortification of settlements in general during the later Greek Neolithic, and perhaps most significantly, why most scholars see the relentless expansion of the EN village at Knossos on Crete, from an estimated 0.3 ha at its foundation (a few score people?) to 3–5 ha (500–700 people?) by Final Neolithic times (Evans 1971), as a key to its Bronze Age transformation into a palace and city-state center. Sadly the destruction of almost all the remains of the intervening Early Bronze Age settlement at Knossos, as a result of the construction of the First Palace in its final phase, was so severe that we cannot clearly trace the later stages of this process, and too little is known of the Neolithic settlement tested in limited places below the Palace. Yet it is reasonable to suggest that here we are observing the evolution of another corporate community, with a predominance of endogamy, as the social basis for the later emergence of the Knossos state. Whether community expansion was achieved through elaborate cooperation between a number of internal neighborhood communities, as now appears likely for Chatal Hüyük, or through the rise of a political minority controlling communal affairs, awaits future research. But it is surely remarkable that the other great Minoan palace at Phaistos likewise appears to grow from a major Neolithic settlement of 5.6 ha in size, also potentially a "town-like" agglomeration (Watrous 1994).

### Defensive settlements of Final Neolithic times

In recent years, a series of defended hamlets and villages from Southern Mainland Greece, and now the Cyclades, point to conflicts as populations expanded out into a wider range of landscape forms under the influence of plough agriculture, and the widespread adoption of secondary products from domestic animals which encouraged more intensive pastoralism.



Some half dozen small fortified settlements in Attica, for example, have now been discovered (Lohmann *et al.* 2002). Finds of this date from more elaborate Early Bronze Age walled-and-towered sites in the Corinth region might suggest that they also could originate in this period (Tartaron *et al.* 2006). On the island of Andros the site of Strophilos has recently revealed an extensive wall, whilst associated rock-carvings of longboats could hint that piracy was already a possible threat to the pioneer early farmer-herder colonizers of the Cyclades (Renfrew 2004).

### A case study: Neolithic Thessaly

The only region where we have plentiful information concerning Neolithic lifeways on a large scale is Thessaly, in Northern Greece (Perlès 2001, Nanoglou 2001, Halstead 2006a).

#### Demographic considerations

Even in the Early Neolithic the density of tell villages is surprising, with some 120 sites recorded for the whole of Thessaly, whilst roughly as many are known in the succeeding Middle Neolithic. With such numbers, intervillage distances were generally small and each had close neighbors. If the midpoints between villages are likely territorial borders, making contiguous cells from these (Thiessen polygons) is informative (Figure 3.6). With the exception of certain districts (notably the southeastern part of the Eastern Plain), the villages are dispersed rather regularly across the landscape, with an average of 2.5 km distance between them. This allows Perlès to reconstruct a typical village territory as having 450 ha of exploitable fields.

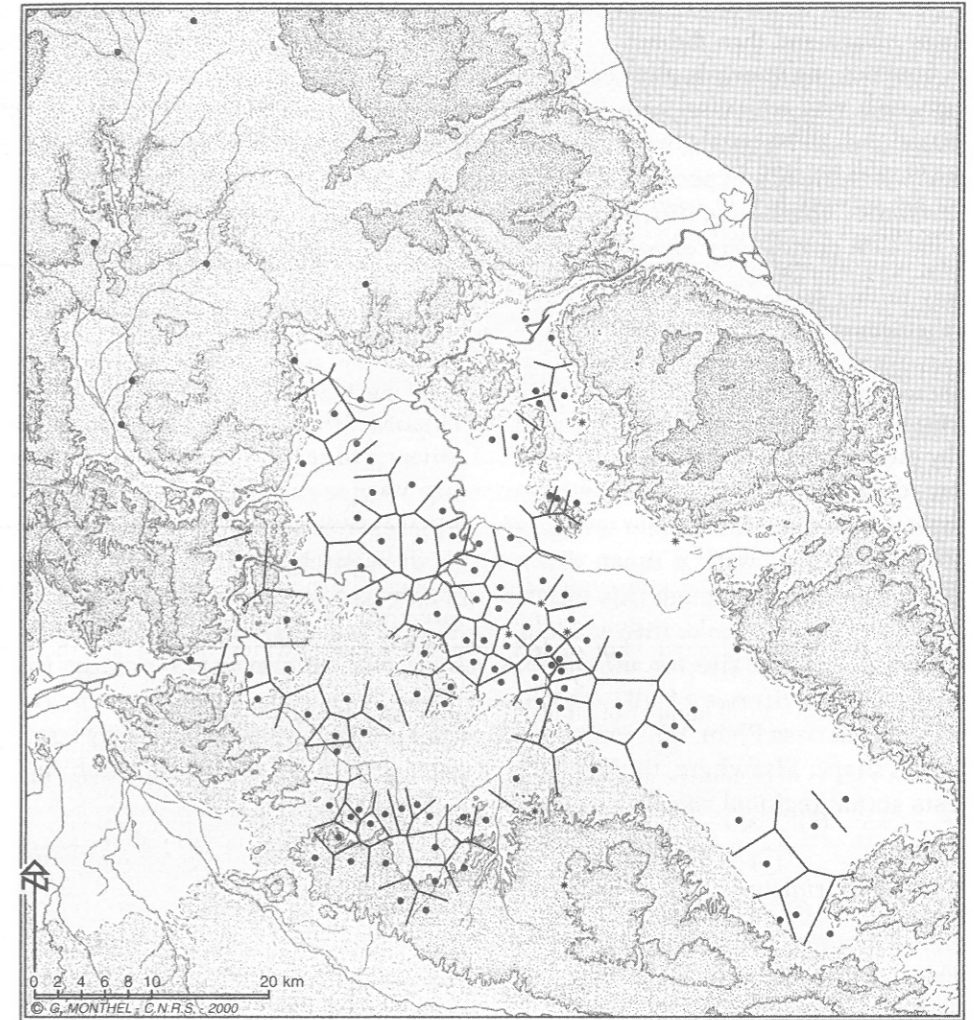
Perlès adopts the social fission model for the origins of this dense network, and on the basis of demographic models used by Ammermann and Cavalli-Sforza (1984) for the dynamics of Neolithic population growth, she points out that theoretically all the Early Neolithic villages in the Eastern Plain and Central Hill Land could have originated in a single pioneer colonizing village, by the process of continual social fission, within a relatively short period of time.

#### Tell site locations

The density of Thessalian Neolithic tells encourages investigation of which locational considerations

affected settlement distribution. Halstead (1994) argued that tells were unevenly spread, clustering where they could exploit several different micro-environments; this reflected a farming economy preferring security to poor yields in just one environment (buffering). In contrast van Andel and Runnels (1995), whilst agreeing that sites cluster, claimed that tells were placed primarily to access land with a high water table (wet bottomlands, valley floodplains), so that spring rain would bring natural irrigation to the soils (a great advantage for hoe cultivators). Perlès' (2001) reanalysis with a larger database prompts revision. The majority of the tells are closely clustered, but their distribution spreads regularly across different environments with little respect for their boundaries. Indeed in Eastern Thessaly almost half the sites do not lie on the Plain at all but in the central Revenia hill land.

Sherratt's thesis (1980), supported by recent analyses from Johnson (1996), and our own fieldwork in Central Greece (Bintliff *et al.* 2006), was that Neolithic farmers in the Balkans, till near the end of that long period, preferred naturally moist, high watertable soils to aid hand cultivation. Thessalian farmers' lack of restricted preferences to site location comes as a surprise. However, there are neglected sectors of Eastern Thessaly where probably the land was too arid or heavy for hoe cultivation (the limited settlement in the south part of the Eastern Plain seems to fit this explanation), whilst the central hills show a division into densely occupied and almost empty areas, which could reflect the operation of the same limiting factors. Secondly, regional rainfall is high compared to Southern Greece, creating large zones where even hoe cultivation would be assisted by adequately rainfed soils. In contrast, the much more arid climate of Southern Greece appears to be associated with a Neolithic settlement pattern which is much lower in density and usually takes the form of linear rather than two-dimensional lattice networks. I consider that this contrast does emanate from drier soils in general further south, constraining early farmers to follow spring-lines and alluvial valleys or the edges of lakes and marshes. Thirdly, the small size of Thessalian tell territories (average radius is 1.25 km), meant that farming was almost at one's door, allowing extremely intensive land use.



**Figure 3.6** Distribution map of EN tells of the Thessalian Eastern Plain and Central Hill Land. The Thiessen polygon analysis suggests territory packing.

C. Perlès, *The Early Neolithic in Greece*. Cambridge University Press 2001, Figure 7.9.

This last distance conforms with mathematical precision to a predictive model (Bintliff 1999a) which was developed to suit the progressive colonization of a fertile landscape on the basis of a fissioning process. The cross-cultural study of agropastoral nucleated settlements, particularly that form of territorial investigation called Catchment Analysis (Vita-Finzi and Higgs 1970) has prompted the suggestion that such communities tend to restrict their exploited territory to a maximum radius of

about 1 hour or 5 km in flat terrain (due to the "friction of distance" which progressively reduces effective labor on one's estate as daily journeys to remoter plots consume more and more time). However, in periods of population growth, with a variety of crops and animals, favorable climate and a reasonably effective technology, and when the settlement is small, the area needed to sustain the village with enough annual surplus for buffering against bad years can be considerably smaller.



Let us create a model which begins with one pioneer colonizing village, and then through an initial social fission from this one outwards, plant a series of similar villages, each with a maximal 5 km radius of territory. Then let such villages send out daughter offshoot villages to infill the land between the first generation. Later the network fissions again and another set of offsprings are inserted into the interstices of the existing network, and so on until it would be likely that any further subdivision of the territories would create settlement hinterlands too small for economic viability. We should note that a perfect infill at geometrically accurate smaller and smaller radii might only be achievable in an ideal landscape (called "isotropic" by geographers), where resource potential was the same in all directions and did not prevent internal colonization from occupying any point on the landscape. In purely theoretical terms the successive generations of settlements in an isotropic landscape would have territorial radii of 5, 5, 3.5, 2.5, and 1.72 km. A village territory of around 1 km or less would usually not be viable under dry-farming conditions, if it was more than a small number of families in size.

Investigation of a series of prehistoric and historical case-studies, using this model, has found remarkable agreement with a recurrence of the radii predicted. Given that much of Eastern Thessaly has been well argued to conform to an isotropic surface, with social fissioning as the main stimulus to settlement colonization, we might expect that the outcome of a long process of infill could stabilize in the range of one of the predicted radii. The average of 1.25 km for Thessaly is close enough to our expected endpoint of territory shrinkage (>1 to <2 km radius) to suggest that the network probably began at a thinner density in the range of 2–3 or 3–4 km radius territories, but continual social fission reached the maximum permissible to sustain communities in the 100–300 population range. However, since colonizing villages would rapidly have settled into face-to-face levels, ideally of 150 inhabitants or less, tells may from a very early stage already have had territories with a closer packing, perhaps half-an-hour or 2–3 km radius, reduced to half that dimension as regional populations rose.

On the basis of the small average territory associated with each tell, Perlès calculates that the average

cultivable sector of 450 ha was adequate to feed a mixed-farming community of some 200 people, with fallowing, crop rotation, cereals, and pulses, supplemented by sheep and goat. Moreover, the high density of communities in Thessaly created a remarkable clustering of people, animals, and demands for raw materials, with a potential for social interactions and also for social conflicts, which Perlès argues must have fostered a very different kind of socio-economic adaptation than that in the low density, dispersed populations of Southern Greece.

The landscapes of Southern Greece appear to have been much less favorable to hoe-cultivators than Thessaly, with the result that known sites are discontinuous and tend to be confined to locations with high water table soils. Johnson (1996) argued therefore that clusters of settlements could not have built up through radial fission. This creates a problem through the need for such small communities to participate in mating networks of 500–600 people or more, raising wider issues of how these apparently isolated Neolithic settlements of Southern Greece arose and interacted. But is our knowledge of the Neolithic outside of Thessaly adequate for such a judgment? Perlès comments that the map of Southern Neolithic sites is surprisingly thin even if we take high water table locations as far more discontinuous than in the North; there are too many potential districts for early farmers which lack known sites. One obvious difference is the high visibility of Thessalian tells, compared to that for site types which seem to have predominated in the South. Although there are Neolithic tells there (famously Lerna in the Peloponnese, and Knossos below the later palace), the accumulating evidence from modern intensive field survey suggests that flat sites, whose existence requires careful scrutiny of individual fields for surface scatters of flintwork and potsherds, are the norm. The limited districts so far subjected to intensive survey in Southern Greece restricts our knowledge of these rare and low-visibility surface sites. Indeed, new evidence suggests that flat settlements may have made up a significant proportion of early farming sites even in the tell landscapes of Northern Greece, but till recently these remained unknown there too, because of their low visibility in contrast to the tells.

### Flat sites and other parts of Greece

The discovery that flat settlement sites were a significant alternative to tells in the Greek Neolithic landscape is recent, although there is a similar dualism in early North Balkan farming communities. Intensive survey followed by test trenching, and rescue excavations (Andreou and Kotsakis 1994, Kotsakis 1999), have registered increasing numbers of flat sites, often 6–20 ha but in some cases as much as 50–100 ha, dramatically contrasted to the typical Thessalian tell of 1–3 ha. However, excavations consistently show such sizes as illusory, since house clusters are scattered over the site with wide spaces between, whilst dwellings were of short duration because the inhabitants shifted house location around the total occupied area (as with most flat sites known in the Balkans). Halstead (1999b) suggests that the contemporary population of tells and flat sites was closely comparable, from around 60 to 200–300 inhabitants. The absence of rebuilding prevented a deep stratigraphy of older house foundations and rubbish, so that flat site levels are thin and discontinuous across these sites, and no tell mound betrays their presence in the countryside.

Chapman (1994), for North Balkan examples, hypothesizes that shifting house locations might be to avoid pollution from the dead buried in and around older houses, but the lack of such a practice in Greek tells, where the rare burials tend to be off the tell, or in flat sites, scattered around their surfaces, seems to go against this view. More functional arguments seem relevant. In the Hungarian Plain, flat sites line elevated linear river levees (river overflow sediments) above wet bottomlands; houses are abandoned and relocated further along the levee every few generations, ultimately creating linear smeared settlements of considerable size. In the Langhadas Basin of Greek Macedonia, survey and excavation (Andreou and Kotsakis 1994) demonstrate that flat sites follow patches of highly fertile soil, and are made up of an accumulation of shifting houses and fields (probably fertilized from deliberate spreading of household rubbish onto the cultivation zone). Here the Macedonian flat sites can be directly contrasted with adjacent tells: the latter's location allows radial land use on easily worked soils, so that continuity and nucleation of the community is possible. In contrast the flat sites, even

if their overall population was similar, appear to "burn up" a small part of the land and then move on to a fresher patch of high-quality soil. It is unclear whether this latter method of land use is conditioned by irregular strips of soil which cannot sustain a nucleated community or long cultivation, or reflects another form of social organization. However, excavated houses on flat sites compare in scale but not form to examples from tells, and the burial of bodies dispersed across the former is interpreted as emphasizing the entire community of scattered households, reminiscent of the supposed communal spirit of tell societies.

Intensive survey in South-Central Greece, across the ancient city of Tanagra and for several kilometers around (Bintliff *et al.* 2006), has identified a Neolithic settlement system with two components: a nucleated hamlet at the later city site, and then farms or small hamlets lining the banks of a major river and its small tributary streams. A possible ritual or burial focus was also discovered atop a precipitous hilltop 3 km south of the city. The critical resource is a largely lost floodplain of moist fertile soil which once covered the floor of the river and its sidestreams (whose surviving edges are now the "Middle Terrace"), emphasizing the preference for high water table soils in the drier southern half of Greece. Elsewhere in Boeotia, nucleated sites of a tell or semi-tell character are known beside river bottomlands (Thespieae, Chaeronea). One can compare this complementarity with that in the Langhadas Basin in Macedonia. The Nemea Survey in the Peloponnese (Cherry *et al.* 1988), also discovered Neolithic settlements in a small district and of varying sizes, with one MN example at 4 ha, others much smaller. One suspects that the dispersed nature of suitable farming land encouraged networks of larger and smaller sites at Nemea as at Tanagra, and in ideal ecology even tells.

If Southern Mainland settlements were more scattered than Northern Greece, creating a sustainable population there in the Neolithic may have been problematic. One solution was intermarriage within and between clusters of nucleated and dispersed sites, as discovered at Tanagra and Nemea. Another could be heightened nucleation, so that the required social group for biological reproduction resided in a single large village, although smaller-scale out-marriage would be needed to ensure long-term biological fitness and cooperation in trade systems. Kouphovouno

is a large (4ha) MN flat settlement near Sparta in the Peloponnese (Cavanagh 2004), and if completely occupied, conceivably housed 500 or so inhabitants, the minimum number for a largely self-sufficient community. Nonetheless since most lithic tools were made in exotic obsidian from the Cyclades (Cavanagh *et al.* 2001), this village was well integrated into regional exchange systems and not isolated from other communities.

Our best known flat site is Makriyalos in Macedonia (Pappa and Besios 1999, Kotsakis 2007). Only a small sector of this 50ha site has so far been excavated, but there are two occupation zones used at different points of the LN period, both demarcated by ditches defining zones of shifting habitation. Although houses are insubstantial, the communal effort of the ditches points to inter-house collaboration, and burials in the ditches (and in a large pit) and not with houses, seem also to emphasize a sense of community. The suggestion that some animal bone and pottery debris might indicate large-scale community feasting reinforces this reconstruction.

As we have seen, the exact forms which Mesolithic-Neolithic interaction took in Greece remain unclear. It is possible that more aspects than we expect were adopted from forager lifestyles into the dominant new farmer-herder lifeway, whereas we tend still to see one-way traffic with a Near Eastern origin. So also with settlement systems. As the scope for dispersed, shifting Neolithic households increases, to set against the exotic settled tell village, we can note that in Europe as a whole, broad-spectrum foragers of the Holocene created series of sites along favored niches such as river valleys, visited repeatedly over hundreds or even a thousand years (Ellis *et al.* 2003). The similarities to the use of Neolithic flat sites and small site networks is striking, even if the economic base had changed decisively.

### Long-term change in Neolithic village societies

Some scholars believe that within the immensely long Neolithic era in Greece we can observe directional change. Moreover, the transformations involved appear to pave the way for the much more complex societies of the Aegean Bronze Age. In a more nuanced

model to his earlier reconstructions, Halstead (2006a, cf. also Halstead 1995a) notes firstly, that on many settlements a contrast exists between early house and site plans, where cooking facilities lie in open ground outside and between homes (stage 1), and later plans, where enclosures shield off groups of houses with associated open-air working areas from each other (stage 2), or individual houses enclose their own cooking zones (stage 3). For Halstead (based on Thessaly sites, confirmed for Knossos by Tomkins 2004), the early villages (EN-MN) shared food and did not conceal their subsistence resources, whilst later villages (LN-EBA) witnessed a new ethos of privacy rather than community. Moreover EN-MN homes seem to have inadequate storage for a year's household needs, suggesting that families may have depended on supplements such as the rotating obligation for a family to slaughter stock and distribute it around the community (animal bones support the possible operation of this practice). Possibly the main stores were communal and, lying peripheral to villages, may have so far escaped observation. Indeed, in the earliest period at Knossos, there is a large grain cache at the site's edge, associated with a timber building (Tomkins 2004). In LN times deep storage pits ("bothroi") are commonly dug both within homes and outside them, and at the same time the ceramic assemblage expands to include large storage jars. Further confirmation comes from ceramic and stone-tool (lithic) production, for the idea of a growing emphasis on distinct families in a settlement, over an early communitarian ethos. Pottery is argued to have developed from a high-quality product emanating from group activity in EN-MN (excepting some high-quality trade wares), to a family or clan-based lower-quality product in LN-FN. Likewise in lithic tool production, more household involvement is suggested in LN, compared to EN-MN when it is suggested that visiting specialists catered for high-quality artifacts to be supplied to the whole settlement (Demoule and Perlès 1993). Finally, EN-MN house models emphasize the external form or roof, whereas LN examples are more usually house interiors, sometimes including figurines, seeming to refocus attention to individual families and away from the anonymous replicated house which is the building block of the entire settlement (Nanoglou 2001, 2005).

Halstead believes this evolution was the inevitable result of tension within the Neolithic village between the economic interests of the household and of the community, a conflict ultimately won by the family at the expense of shared resources and values. This explanation is reasonable, but raises difficulties. If such tension characterized the entire Neolithic, why, a tiny few villages excepted, did it take thousands of years to bring about the LN changes described? Rather than see the late transformations as inevitable, we might rather agree with Perlès (2001) that the remarkable thing is the immense timescale over which these communities appear to have remained socially and economically stable and egalitarian.

If we still accept that these changes are widespread and critical, perhaps then a "punctuated equilibrium" model (sudden major changes interrupting lengthy periods of stability) is preferable to a gradual, deterministic approach (i.e., change was inherent in the system). Surely significantly, the shift from "sharing to hoarding" and other signs of households refocusing away from the community, is manifested most strongly for the Late and Final Neolithic, when it appears likely that the main impact of Sherratt's key economic changes were spreading throughout Greece. Did the effect of ploughs, and textile and dairy product innovations, destabilize the cooperative agricultural economics of the Neolithic village, providing the means for households to erect more autonomous food production and consumption practices?

### The Agropastoral Economy

A striking argument for a Neolithic colonization of Greece is the very limited use of wild plants and animals in the seed and bone samples recovered from settlements. The basis of the diet was cereals, together with pulses (beans, peas, vetch, and lentils) (Demoule and Perlès 1993, Halstead 1999b, 2006a-b), a combination which catered for humans, and, via stubble grazing and fallow for stock, as well as through a postulated crop rotation, helped the intensively hand-cultivated soils to recover nutrients (Kroll 1981). As for domestic herds, in the lowland sites which dominate our economic remains, sheep and goat are primary, cattle rarer, which suits the climate and the

absence till the later Neolithic of the wider value of cattle beyond meat, that is for dairy products and the pulling of ploughs and wagons.

Neolithic villagers could not have managed their major domestic animals at the level of the household alone (Halstead 1992). A viable breeding population requires at least 20 cattle, 100 pigs, and several hundred sheep. Inter-household exchange was fundamental, and together with the use of domestic animals as a food buffer against failures in the dominant cereal and pulse economy, could lead to stock becoming a form of capital. Again following Halstead, when in LN and later times households turned to more competitive surplus accumulation, the formation of village elite families could thus have been stimulated. Although all this is plausible, there is an alternative (Perlès 2001), the herding and breeding of village stock as a collective, where individuals or a few families take responsibility for moving herds to water and pasture on a daily basis.

The impact of Sherratt's Secondary Products Revolution ("2PR") and the diffusion of Plough Traction, which seem to have risen to prominence by the Late to Final Neolithic, would have boosted the Greek Neolithic economy to a very significant extent. Cattle statistics at LN Makriyalos suggest their breeding for secondary products (Collins and Halstead in Halstead 1999a), and faunal analysis from LN Knossos may evidence plough traction and textile production (Isaakidou 2006, Tomkins 2004, Halstead 2006a). Perhaps the clearest evidence is the expansion of settlement out of the favored regions and districts of the earlier Neolithic into more upland areas and onto the dry islands of the Aegean, that marks the Greek later Neolithic. The added value of stock in the Secondary Products economy, and the greater ease of cultivating dry soils with the animal-drawn scratch-plough (*ard*) allowed population to colonize areas previously neglected. Particularly the Southern Greek Mainland and the Aegean islands, which were less ideal for dense agropastoral settlement under the previous regime of higher rainfall or wetland hand-cultivation, now opened up for permanent settlement.

As already noted, the origins of traditional pastoral (domestic herd) transhumance in Greece have stimulated controversy. The critique of applying ethnographic models to pre-capitalist times highlighted the



market orientation of recent transhumance (Halstead 1987, Lewthwaite 1981). The first step to rehabilitate elements of the model came with the recognition that stock-keeping on a much larger scale than the household or village might have been organized in previous complex societies, such as Classical, Imperial Athens (Hodkinson 1990), or in the palace-states of Bronze Age Crete (Halstead 1999c). This has been supported by archival sources and the existence of archaeological sites in the Greek uplands which can only have been seasonally visited (e.g., Final Neolithic sites in the Sfakia Mountains, Western Crete). Halstead, initially critical of the continuity model, has reinstated it for palatial Crete, and now acknowledges the possibility of transhumance developing in LN Neolithic Greece following the introduction of the 2PR, also confirmed by the Grevena Pindos survey (Efstratiou *et al.* 2006). High levels of cave use in the Greek LN could support a rise in pastoralism, although they are also taken into use now for burial and ritual (Demoule and Perlès 1993). But as Halstead demonstrates convincingly (1987, 1996), a village economy based on domestic animals alone, particularly in Greece, is hardly viable (unless grain and other crops were exchanged on a large scale), so that even upland settlements where grazing was especially favorable should be supplemented by complementary farmland there or elsewhere. Indeed locational studies throughout Greek later prehistory and history support this observation, with permanent settlements favoring a mixed economy even in the Greek uplands (Bintliff 1997, Wallace 2003).

Worth emphasizing from the Thessalian Neolithic is the great occupational duration of most tells and their close packing. This shows undeniably that their economy was extremely successful (Perlès 2001), further supported by the ability of their occupants to obtain large amounts of external lithic imports, for which agricultural and pastoral surpluses were the most likely product for reciprocal exchange. Since the theory of "bad year economics" (Halstead and O'Shea 1989) for rural societies suggests that regional crises from drought or crop/animal diseases tend to afflict whole districts, extra-regional socio-economic networks beyond Thessaly may have been important to buffer its villages from such occasional disasters, whereby food could be imported from unaffected

regions; here the evidence discussed below for exchange systems could offer some support for this resource being tappable.

In addition to transhumance, the role of migratory fishermen deserves some discussion, for which I coined the term "transmerance" (Bintliff 1977). The association between obsidian from the island of Melos and evidence for fish catches, beginning with the final Palaeolithic and running through the Mesolithic and Neolithic in Greece, is patchy but suggestive. Thirty years ago I used ethnographic and historic records to suggest that early marine travel, especially coastal moves and island-hopping, may have been perfected by fishermen traveling from one point to another where regular or seasonal catches of fish (both inshore and open-water) could be encountered. This theory has received extensive criticism (Stratouli 1996) as well as support. Some key sites fit very well, such as the type-site for the Final Neolithic (FN) colonizing culture of Saliagos in the Cyclades, with its massive fish and shellfish remains and a central role for stone points which could be harpoons (Evans and Renfrew 1968). Yet, another site of this culture, also in a prime position to carry out sailing and fishing, Phtelia, reveals no significant fish remains (Sampson 2006). On the other hand, Mesolithic and EN colonization of the Sporades islands does reveal a special interest in fishing and shellfish, including open-water species (Sampson 2006). Even large urban sites such as EBA Phylakopi on Melos, fronting a bay which is one of the finest for fishing on the island, provided no significant fish remains in its faunal finds from excavation, although there are iconographic depictions of fishing from the town.

Critics have apparently misunderstood "transmerance." Saliagos is a full Neolithic economy, where fish and shellfish were accompanied by a range of domestic plants and animals. The ethnohistoric evidence makes clear that fish usually forms a high-quality food supplement to other basic foods, as well as being a resource best caught in the summer months, off-season for foraging or crop-cultivation. Most skeptics of prehistoric fishing in Greece rely on the demonstrable fact that fulltime subsistence is highly unlikely from such a resource. Although fish and shellfish were thus always a minor element in Mesolithic-Neolithic diet, this does not mean that their exploitation might

not have been organized and extensive, encouraging seasonal travel beyond normal exploitation territories. A second critique is that fish would not have been a very valuable resource until methods of preservation were perfected. In fact on the Sporades there is evidence that fish were dried and salted in late Mesolithic-Neolithic times (Sampson 2006). Finally, the survival of fish debris may pose problems for the archaeologist, and I am not convinced that "absence of evidence means evidence of absence."

### Craft Production, Exchange, and Neolithic Material Culture

The prehistorian Gordon Childe developed a highly influential model for European Social Evolution (1951), in which early Neolithic farmers produced almost all their own artifacts, with exchange of raw materials and finished products being of minor importance. Momentous changes occurred with the Bronze Age, when metal artifacts created the need for long-distance bulk trade and enhanced craft specialization at the regional and interregional scale; thus arose a class of merchants and professional artisans above the peasantry, and also an aristocratic class whose power was buttressed by controlling the traders and manufacturers of the age. The Greek Neolithic is one of the best-researched areas in Europe to re-examine Childe's theory.



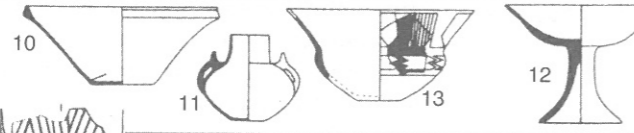
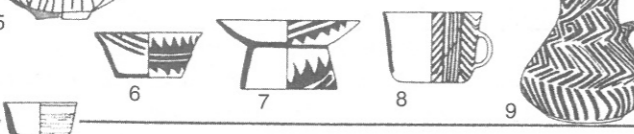

#### Ceramics

Greek Early and Middle Neolithic pottery is peculiar in its limited role within everyday activity (Vitelli 1995). The shapes are simple and denote their function for serving and consuming food and drink. Reconstructed numbers of whole pots suggest that production was very low and a family's cupboard of ceramics remarkably sparse. Coarse and plain wares for storage or cooking are extremely rare. In the Late Neolithic the latter groups rise in proportion, and by the Final Neolithic they have expanded to service all a family's needs in food storage, processing, serving, and consumption. Other features fit this picture. Traces of burning on EN-MN pot exteriors are absent, so food was cooked directly over a fire or

boiled in organic containers with heated stones, not in cookpots. The dominance of small, round-based bowls of a nice appearance (burnishing, slip, occasionally painted red-brown) highlights pots as the chief focus of meals, emphasizing their social significance (communal kin-group dining, inter-household social events, and perhaps special feasts). Although such tableware was probably made by a village specialist over a limited period each year, using a basic technology, it is very well made and survives surprisingly well, far better than the coarser wares which dominate the FN assemblage.

Tomkins (*pers. comm.*) believes that EN ceramics are imitations ("skeuomorphs") of organic containers in wood and leather. This reminds us that the dominance of eating and drinking forms in EN-MN pottery probably conceals a wider range of vessels which do not survive the Greek climate, although very rare traces of these are claimed, as at Tsangli in Thessaly (Tomkins 2004). Storage and even cooking are possible in organic containers. As for the scale of potential loss, Coles (2001) estimates from the full organic assemblages recovered in waterlogged sites in Northern and Central Europe that contemporary dry land settlements might only preserve some 5 percent of portable material culture. Greece would have less woodland but plenty of domestic animals (so skin might be preferred rather than wooden containers), thus we could reasonably assume a substantial missing component of non-pottery household containers. A more challenging point of Tomkins is that since we know neither the EN-MN nor Late Mesolithic types of organic containers, it cannot be ruled out that Greek EN pots were copying traditional vessels used by indigenous Greek foragers rather than shapes derived from the Near East.

For the Greek Mainland, most ceramics seem to have been made for local use during the EN-MN eras, rather than for inter-settlement pottery exchange. However, already during MN and especially in LN, the situation becomes transformed. More elaborately decorated tablewares develop, for example MN Sesklo Ware with red-brown geometric designs on a white background and LN Dhimini Ware with polychrome designs, both in Thessaly, which are linked to a growing network of exchange within each region and sometimes further afield (Figure 3.7). These later wares were perhaps produced to enhance wider social

Phases	Main shapes and designs	Main techniques of ornamentation
5		- Painted "crusted" (18, 19)
4		- Painted white-on-red "Agia Sofia" - Painted black-on-red "Otzaki" (15) - Painted brown-on-cream "Dimini" (17) - Incised (14)
3		- Black burnished "Larissa" (10) - Channel decoration - "Matt-painted" brown-on-brown - Painted black-on-red (13) - Grey-on-grey (5) - Polychrome
2		- Painted red-on-white "Sesklo" (6, 7) - Painted white-on-red - Scraped ware (8, 9) - Impressed (4) - Grey-on-grey (5)
1		- Monochrome (1, 2) - Painted "proto-sesklo" (3) - Impressed (4)

Typochronology of the Thessalian Neolithic ceramics. (1–3, 6–8, 13, 15) Otzaki; (5) Plateia Magoula Zarkou; (10, 12) Arapi; (14) Dimini; (17) Sesklo; (18, 19) Rachmani. Not to scale.

**Figure 3.7** Characteristic tableware pottery forms from the Neolithic sequence of Thessaly. Phase 1=EN, 2=MN, 3–4=early then late LN, 5=FN. Note that in the last three phases a wide range of undecorated domestic and cookwares are in use, not shown here.

J.-P. Demoule and C. Perlès, "The Greek Neolithic: A new review." *Journal of World Prehistory* 7/4 (1993), 355–416, Figure 8. London: Springer Verlag.

networks under the encouragement of a local Big Man or chieftain, such as indeed are inferred at contemporary Sesklo and Dhimini (Demoule and Perlès 1993). In contrast to such local and Northerly variants which may have been used in competitive intervillage exchanges, the uniformity of a style such as MN Urfirnis Ware with patterned burnish popular in the Southern Mainland may reflect the need to create large-scale social bonding between a thin and scattered population (Perlès and Vitelli 1994). In the FN however, distinct regional products decline and once again broad similarities link much of Greece's ceramics, suggesting wide sharing of styles but a return to the dominance of localized production and

consumption. The precise meaning of this long cycle remains to be fully explained.

One attractive interpretation of the high visibility and food consumption function of most Greek Neolithic pottery is that it served an important role in community integration, not just linking families within a settlement (tell or flat) but probably functioning in feasts bringing more than one community together. As we have seen, there would have been a critical need for smoothing the exchange of marriage partners and limiting intervillage violence over disputed land rights.

However, studies of EN-MN ceramics on Crete have been interpreted as giving a contrasted picture

(Tomkins 2004). Rather than small-scale localized production, more than half the pottery at Knossos was made from raw materials of "non-local" provenance. Most of these "exotic clay" pots are from material in the range 7–30 km distant, with a small percentage from some 70 km away, or even from outside Crete. On the other hand, the ethnographic record (Morris and Woodward 2005) shows that potters in a settlement may travel up to 10 km to add special tempering material to their clay (some two hours on foot), so it is quite possible that the vast majority of Knossos pottery was made by its own specialists within a day-return, leaving a very small component of genuine long-distance imports. If Knossos was in touch with a distant region, perhaps this had more to do with intermarriage, with few available partner settlements close to Knossos. In favor of a social rather than economic explanation is the fact that the pots are very uniform in appearance, so that "exotic" pieces would not be apparent to the users (unless they came with distinct contents). As was observed on the Southern Mainland, the apparently low population of earlier Neolithic Crete may have encouraged wide social links to ensure social and biological reproduction, the shared styles evidencing ties with distant communities.

### Lithics

Very few localities in a rocky, mountainous country such as Greece lacked local hard rocks with a crystalline structure suitable for making stone tools: their varied types served the equivalent of modern knives, drills, chisels, razors, and bullets. Neolithic lithic assemblages are less varied than Palaeolithic and Mesolithic (Figure 3.8), as the economy was far less wide-ranging. Blades knapped (struck off) from cores dominated, followed by scrapers and borers, with a low production of arrow-points for hunting or human conflict (they are trapeze-shaped in earlier, then lozenge-shaped in later Neolithic times). Types conform to Near Eastern parallels, and only the arrow forms may indicate influence from indigenous hunter-gatherers.

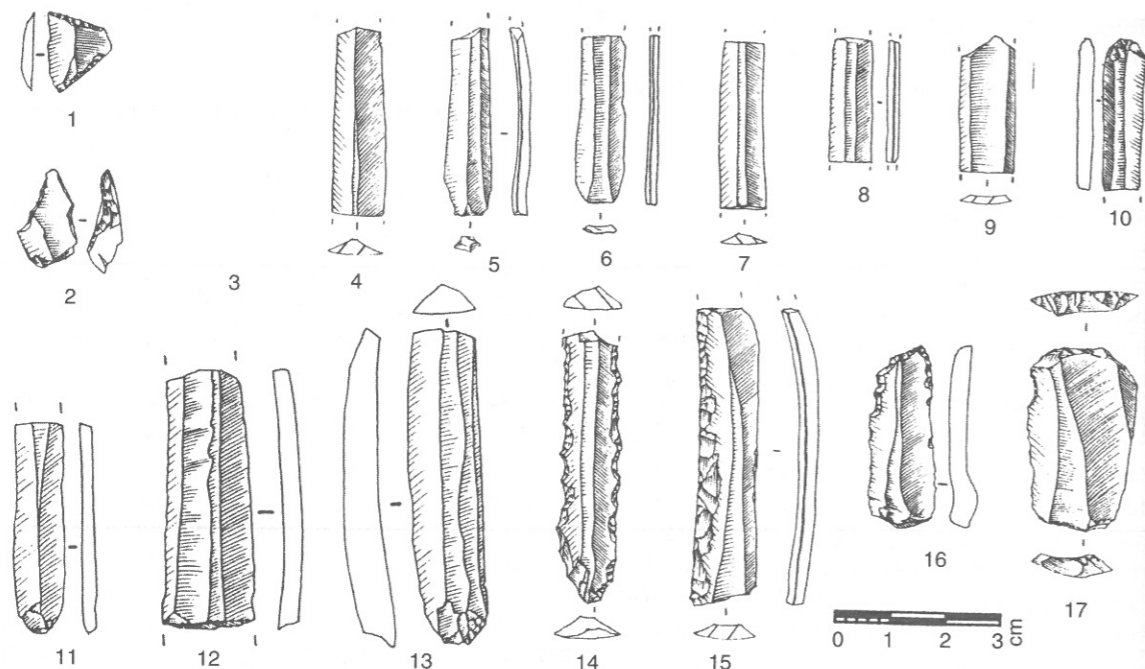
Surprisingly, study of stone sources utilized in Greece (Torrence 1986; Perlès 1989, 2001) shows that the majority of lithics were nonetheless made from exotic imported material (Figure 3.9), with local

sources neglected unless "next door" to a site, or where the settlement was particularly remote from wider contacts. The leading provenance are obsidian quarries on the Cycladic island of Melos (and more limited use of Giali sources): this black-grey volcanic glass with remarkable sharpness properties was probably spread as prepared cores to its consuming villages, where it was reduced to blades and other tool-types. Even Northern Mainland Greek sites may still contain up to 80 percent of their lithics from Melos. Another, less common source was fine honey flint from Northwest Greece, but this traveled as ready blades and was not worked in receiving villages. As well as these hard stones for cutting and scraping, andesite (from Aegina and nearby) was exchanged to make grinding stones, and Naxos emery (a rock like sandpaper) for shaping and polishing stone bowls and axes.

Torrence (1986) studied the open-air obsidian quarries on Melos. The evidence at the extraction and working areas, and study of various Mainland assemblages, convinced her that distant communities traveled themselves to the island, where a single voyage sufficed to obtain more than a year's supply. Perlès (1989, 2001) agrees with this "direct procurement" model for the Greek LN and FN, at least for villages of Eastern Greece and the islands, but communities further away would have more likely relied on intermediaries for their lithic supplies. As for the EN and MN, careful study leads Perlès to the conclusion that communities throughout Greece were almost entirely reliant on circulating traders, who visited the sources, prepared cores or blades, then went from village to village with their wares. Even there, the skill deployed in manufacturing tools on-site suggests a professional rather than local craftsman, so probably traders also made the tools to order. The logic of proposing middlemen follows from the calculation that an entire village's needs could be met by less than 1 kg of obsidian a year. In the rarer dispersal of honey flint from Epirus, the already-prepared blades probably circulated over the Mainland through a combination of traveling traders and "down-the-line" trade (Renfrew 1975), that is, passed from village to village.

Remarkably, Melos was only permanently settled, along with most other Cycladic islands, in the LN-FN period, making it clear that no community seized the advantage of monopolizing access, or living entirely on the obsidian trade. This surely indicates, as would





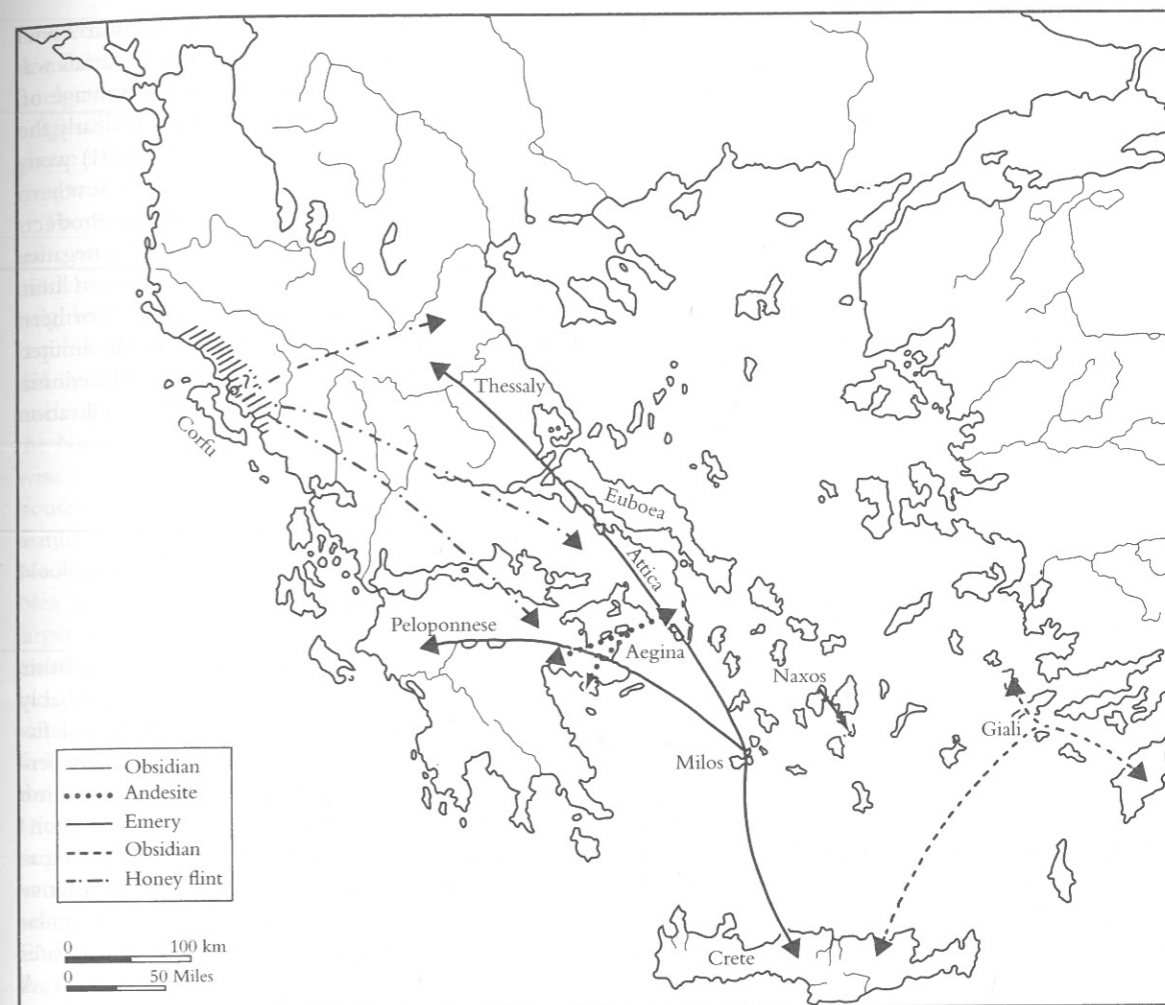
Chipped stone tools. (1) Franchthi, EN, Jasper; (2) Franchthi, EN, flint; (10) Franchthi, EN, obsidian; (16) Franchthi, LN, obsidian; (18–20) Franchthi, EN, honey-flint; (22) Franchthi, MN, honey-flint; (23) Franchthi, LN, flint; (24) Franchthi, FN, jasper; (26) Franchthi, MN, honey-flint; (11), (13) Argissa, "preceramic Neolithic," obsidian; (12) Argissa, "preceramic Neolithic," honey-flint; (3–9) Tharounia, LN/FN, obsidian; (14), (15) Tharounia, LN/FN, obsidian; (17) Tharounia, LN/FN, obsidian; (21) Tharounia, LN/FN, jasper; (25) Throunia, LN/FN, obsidian.

**Figure 3.8** Characteristic stone tools of the Greek Neolithic.

J.-P. Demoule and C. Perlès, "The Greek Neolithic: A new review." *Journal of World Prehistory* 7/4 (1993), 355–416, Figure 6. London: Springer Verlag.

be expected given the flimsy nature of Neolithic boats (see Chapters 2 and 4) and the off-season of bad conditions for Aegean sailing in the winter months, that obsidian trade was a seasonal activity, probably carried out by maritime communities in the summer months when their own crops needed little intensive work. Any neglect of their own farming economy might be made up through obtaining, in return for their lithic trade items, local surpluses of grain or animal products. Indeed it is difficult to think what else the dense tell-villages of Thessaly could have given in exchange, *but* farming products. In Greece as late as the early twentieth century, before motor access connected every village to the wider world, tinkers circulated widely with pottery and metalwork, also carrying out specialist craftwork as well.

Melos obsidian was first obtained by hunter-gatherers in the late Upper Palaeolithic, possibly connected with the activity of migratory fishermen. Perhaps descendants of these pioneers, foragers who became farmers, were key players in the Neolithic trade in obsidian, honey flint, and other exotics such as jasper. Indeed it is probably no coincidence that the first culture to colonize the Cyclades has a mixed-farming economy in which specialist fishing is a characteristic feature (Evans and Renfrew 1968, Bintliff 1977). On the other hand, the putative Near Eastern colonizing farmers themselves had become deeply involved with long-distance exchange for obsidian from Near Eastern sources before their spread to Greece, so a reliance on exotic supplies is not so surprising for the Greek Neolithic.



**Figure 3.9** The spread of exotic lithic raw materials (obsidian, andesite and honey flint) and the location of the emery source on Naxos. C. Perlès, "Systems of exchange and organization of production in Neolithic Greece." *Journal of Mediterranean Archaeology* 5 (1992), 115–164, Figure 1.

The Neolithic in Europe was distinguished by nineteenth-century archaeologists as the "New Stone Age," not on the basis of changes in chipped stone tools, but on the accompanying polished stone artifacts such as axes, adzes, and hammers (and in later Neolithic times warlike versions of such shapes). Some of these in Greece utilize exotic rock (e.g., greenstones). In line with the vigorous expansion of settlement which occurred in LN-FN Greece, the axes of EN-MN are small and seem suited for light carpentry or bone and skin processing, whilst in LN-FN large

axes appear widely, appropriate for major woodland clearance (Perlès 2001). Even more specialized was the source of good millstones, usually volcanic rocks which were gritty but very hard and dense (Runnels 1985). A major source was andesite from old volcanic rocks in the Saronic Gulf (especially on Aegina). For these "macrolithic" artifacts a combination of modes for distribution are likely: specialist traders, down-the-line exchange, and direct procurement. Finally Neolithic settlements procured special hard stones and exotic shells for making ornaments and seals (perhaps

for body decoration). These are rare and probably usually came through down-the-line exchanges.

### Metals

From the LN and more so from the FN the first metal artifacts, of copper, appear, but are so rare that one cannot talk about a Copper Age. If the LN pieces in copper are perhaps traded from outside Greece, the FN objects, now in precious metal as well (gold and silver), probably mark the beginnings of Aegean production at such sources as the Cycladic island of Siphnos and the Lavrion mines in Attica. Ornaments and daggers are the forms desired, perhaps both of them more for display than function.

### Neolithic trade mechanisms

In the EN and MN, pottery and lithics have contrasted production systems (Perlès 2001). Ceramics were special household artifacts, rarely and very well made, but typically produced at long intervals within each community. Lithics were usually obtained from far away by specialists who either brought them to the village and then worked them there, removing surplus raw material, or sent them on long exchange-chains across the settled landscape; but they were sufficient for each village and utilized in a range of everyday functional tasks. A third procurement system brought rarer stone and shell, perhaps by a combination of mechanisms. From the MN and more clearly in LN, pottery seems to have been exchanged over a district as a function of social and political networking, or even, with a few of the finest tablewares, for trade.

In the LN-FN period, increased seafaring encouraged more communities to procure their own lithic materials. The FN particularly coincided with a great settlement explosion all over Greece, most clearly in the colonization of the smaller Aegean islands, enhancing direct procurement and exchange of exotic materials. The increased role of the Cyclades, supplying obsidian, millstones, marble, and metals, may even have been an important factor in its settlement (Davis 1992). Yet the fact remains that the major island settlements in this and subsequent periods never appear to be located so as to dominate or prosper from such resources, which suggests that trade control was not

the incentive (contrary to Runnels and van Andel 1988). Easier direct access to island raw materials was nonetheless desirable and clearly taken advantage of, and in the EBA it is the Cyclades which is clearly the hub of Greek exchange systems. Perlès (2001) wonders if the greater subsistence viability of the Southern Mainland and islands due to the Secondary Products and Plough "revolutions" might have had a negative effect on the supposed reciprocal trade between lithic merchants and the food surpluses of the Northern plains of Greece, helping to account for the limited socio-political developments in Thessaly, Macedonia, and Thrace in the Bronze Age, whilst civilization emerged in the South Aegean.

### Social Relations

#### Settlement evidence

What we have learnt so far, is that almost all Neolithic settlements in Greece appear to be small, probably confined by face-to-face social controls. Social fission encouraged radial colonization of the most fertile landscapes, but more linear or patchy expansion in regions less suitable for the technology and economy of the EN-MN phases. Although stable location tells and shifting flat sites represent alternative modes of settlement and land use, they have a similar range of crops and animals, whilst larger flat sites have comparable population estimates to tells. A third settlement mode combines the two, with a focal tell or flat site with longer use surrounded by less fixed farm or hamlet sites. All these forms generally needed to exchange marriage partners with comparable settlements or settlement clusters, to create a healthy gene pool. The lack of clearly defensive walls and ditches until occasional MN examples and then commoner LN occurrences, suggests that settlements achieved the peaceful intercommunity relations needed both for exogamy and for the flows of imports and visiting specialists testified to in the lithic record. The limited role of ceramics in EN and still to a large extent in MN times, focused on communal eating and drinking, has plausibly been seen as a mechanism through which households within nucleated settlements, and neighboring communities,

renewed good social ties. But if social fission was the dominant means of settlement colonization, then one's neighbors were often relatives, and even if not originally, the multi-community breeding group soon created kinship webs through constant exogamy.

The plans of nucleated settlements, tell and flat, are seen as emphasizing the competitive household, a model reinforced if we add satellite farms in some neighborhoods (neglected since their detection requires unusually fine-focus surface survey). But how did nucleated sites, and the satellite networks around nucleated settlements, achieve social integration? In the Neolithic Near East, one or more larger or otherwise special houses are claimed as facilities where many households met for social and ritual activities. Such features are hard to identify in the excavated plans for Neolithic Greece. One exception is the "shrine" at EN Nea Nikomedeia (Pyke and Yiouni 1996), a central larger structure with unusual finds, including fine exotic axes. However Halstead (1995a) wonders if this is a precocious example of a household with special status, controlling the exchange of imports, and thus a first link in his evolutionary model which accounts for the less controversial elite enclosures in Sesklo, or at Dhimini, in MN and LN Thessaly. At MN Sesklo there might be a communal structure on the acropolis and another in the Lower Town, distinctive through possessing three entry doors, if small (Nanoglou 2001). EN-MN house models include several examples with four doors, again perhaps for public use.

The narrow built-up spaces of tells suggest that normally important village-wide or intervillage social events took place extramurally, but the large flat sites would have ideal spaces between their loose networks of houses, and indeed it is at one, Makriyalos, that the excavators found feasting debris (Pappa and Besios 1999). In the nucleation-satellite form of settlement, we have suggested for Central and Southern Greece that the larger focal site might be a social center for outlying farms and hamlets rather than a locus of district power, essential to the social and economic reproduction of such a network. In contrast, the latter (power focus) interpretation better suits MN Sesklo. This seems large enough to have formed an endogamous society, and here Kotsakis has argued (1999) that the supposed elite enclosure of the acropolis, with its

tell-like permanent dwellings, is surrounded by a very extensive Lower Town of shifting flat-site type; here the relationship of satellite settlement to the fixed tell nucleation might be one of subordination.

Rarely in MN and more commonly in LN times, appear two surely linked phenomena: possible defensive features and elite residences or enclosures. Contemporaneously, the restricted role for ceramics opens up progressively to cover the full range of household needs, suggesting a decline in the centrality of communal dining. Some fine wares which are exchanged around wide areas have even been claimed to show the economic reach of influential chieftains or Big Men, while their distribution within MN Sesklo suggests privileged access for the occupants of the elite enclosure over those in the Lower Town. The advent of the great "2PR" transformation in the agropastoral economy which occurred most likely in LN and FN times must have stimulated major changes in the socio-political sphere, and one wonders if all these trends are not linked in a highly causative fashion.

The surprise, difficult to assimilate into our social reconstructions, is the case made by Perlès with regard to chipped stone and macrolithic tools, for an early division of labor, on the scale of Neolithic Greece as a whole, into consumer rural settlements on the one hand, and mobile procurers, distributors, and on-site artifact makers on the other. The best clue to the origins of such a system, she hypothesizes, lies in the evidence from the Final Palaeolithic for the start of such economic specialization, suggesting that acculturated foragers were the principal community who developed this way of life. In any case, these specialists probably worked seasonally so as to be able still to maintain their own subsistence economy.

### Burial evidence

Archaeologists generally view the form and elaboration of mortuary rituals as highly insightful for shedding light on the social relations of the living (Parker Pearson 1999). In an excellent synthesis of the burial record for prehistoric Greece, Cavanagh and Mee (1998) highlight the extraordinary rarity of Neolithic mortuary evidence. Demoule and Perlès (1993) link Greek customs to those general in the contemporary North Balkans: a very low visibility of the dead in EN



and MN, a lack of defined cemeteries or funerary monuments, small numbers of burials inside the village (“intramural”), usually under house floors, and no emphasis on status. Only by the FN is there a general shift, with community cemeteries appearing outside the settlement (such as at Kephala on the Cycladic island of Kea), a practice normal for the subsequent Early Bronze Age in most of Greece. Over the same LN-FN period, the wider use of caves includes many functioning as burial locations.

In the early farming era of the Near East, burial beneath the house is often read as stressing the importance of the family, or perhaps a larger kin group. Their occurrence would suit the view that tell villages in Greece are amalgamations of competing families. Yet a central problem lies in what is *not* visible to us, raising the point made at the start of this section on the obscuring as well as illuminating potential of the mortuary sphere. The number of intramural burials is very low, and where palaeodemographic studies are available women and children are emphasized. The vast majority of the village dead are simply missing. It is more likely that the minority placed in the houses are the exceptions to customary ritual, than that these are the key individuals in the social world (Perlès 2001). Perhaps the nature of their death, or their passing away at a certain stage of the family or house-construction cycle, marked them out for exclusion from normal community practice. And what might the latter have been?

One idea is that the dead were normally disposed of outside the tell. A chance discovery at Souphli tell in Thessaly has indeed revealed an extramural cremation cemetery. Further support comes from the extended settlement at the giant flat site of Makriyalos in Macedonia (Kotsakis 1999; Pappa and Besios 1999), where the excavated settlement includes ditches and open spaces between house clusters. In the ditches parts of human bodies have been recovered, which Kotsakis interprets as a sign that the dead are merged into the soil of the whole community rather than isolated as house burials or into a communal burial-place. These new results may weaken the supposed opposition between tell individualism and the supposed more communal extended sites, since the Souphli cemetery, if other examples emerge, surely anticipates the FN-EBA extramural cemeteries, generally seen as reflecting village solidarity.

## Neolithic Symbolic Behavior and Material Culture

In the Near Eastern Neolithic, symbolic aspects of material culture in architectural forms and their decoration, and in portable artifacts, are central to community life. But in the derivative Neolithic Balkans, including Greece, we see a stripped-down symbolic culture. Buildings which could have served as ritual are rare and not undisputed in function, such as the EN “shrine” in a central location at Nea Nikomedeia, larger than typical houses and containing outstanding traded stone axes, unused lithic blades, a collection of small figurines, and other unusual objects of clay. It could have held 16 people, but whether a temple, village elders’ house or chieftain’s residence remains debatable (Marangou 2001b).

The Balkan Neolithic shares with the Near East (Nandris 1970) a recurrent series of small items in clay or hard stone, presumed non-functional and of symbolic or ornamental purpose: stamps which could have decorated textiles or the body, plugs perhaps for ears or noses, and other small objects. Although Perlès (2001) candidly finds these hard to interpret and rather uninteresting, ethnohistory suggests that village communities, especially close-packed with much social interaction, develop recognizable dress and body ornamentation to mark village and even kin-group affiliation, something well documented in the Mediterranean for several centuries before the present (Broufas and Raftis 1993, Congedo 2001) and which deserves more attention for much earlier periods.

### Figurines

The artifact type with most potential for reading symbolic aspects of Neolithic material culture is the clay, or rarely stone, figurine. These represent animals, usually domestic, and humans, predominantly female, and are relatively abundant in the Greek (and Balkan) Neolithic, with clear Near Eastern parallels. However, little can be said with confidence about their meaning in any of these contexts. The natural tendency has been to read the female class (Figure 3.10) either as a goddess or a series of goddesses, or as ancestors (in a female-oriented kinship system or matriliney), or,

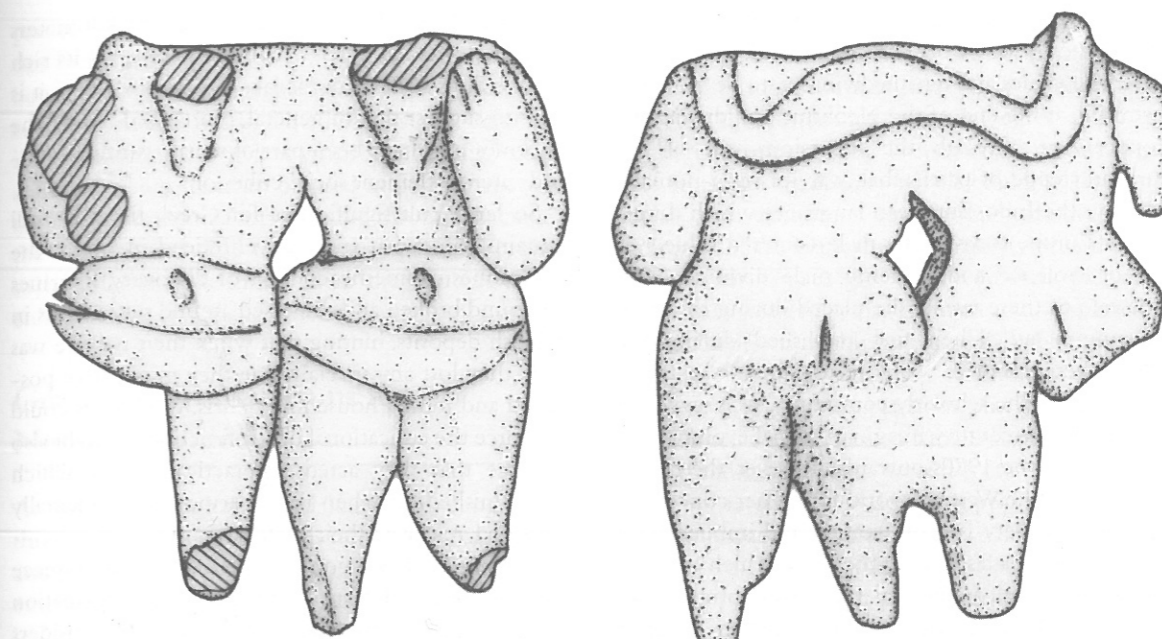


Figure 3.10 Middle Neolithic double figurine from Thessaly. Drawing by Professor Lauren Talalay, University of Michigan.

given the ample proportions of most, as symbolic representations of (female or general) fertility, which can then be extended to animals whose fertility is also welcome. Alternative theories are toys, or educational devices for women’s *rites de passage* (the passing of key life-stages: puberty, marriage, birthing). Most economically, some suggest that figurines served all these roles. Preziosi and Hitchcock (1999) note that at Late Neolithic Dhimini, figurines of women occur amongst the lesser structures for storage and adjacent living spaces. This link to storage they relate to fertility and a female role in the domestication and management of food, connecting these ideas to Hodder’s (1990) theory of Neolithic gendered domestic space: the home or *domus* of women and the natural extra-settlement world, the *agrios*, or wild space of men.

The association of women, food production, and storage is thus identified as a gendered socio-ritual concept, combining nourishment and productivity. Here figurines represent sacred and secular in the household and are found embedded in its everyday life (combining a fertility goddess and the special roles of human females). One figurine from FN Pefkalia

contained several sorts of grains, whilst the common “coffee-bean” form given to eyes might also refer to seeds (Marangou 2001b). But most recently several commentators suggest that the meaning of figurines depended more on their context, such as their deployment in different phases of human life or in the circulation of the objects themselves.

It is very unhelpful that their occurrence in Greek Neolithic burials is little known about, due to the poverty of such contexts, since the successor figurines from the FN-EBA in Southern Greece occur frequently in formal cemeteries, and are then considered as likely to have religious associations. Nonetheless the limited range of types and their widespread occurrence indicate that the meanings they conveyed were probably shared across the Greek, North Balkan, and maybe Near Eastern Neolithic, which, if they were ritual meanings, might open up the worldview of these innumerable rural communities. Indeed this potential was taken up in a charismatic way by Marija Gimbutas (1991), who argued that the early farming world of the Near East and Balkans was strikingly different in its global outlook from the metal-using

societies which succeeded it. For her, this long and geographically vast world was a peaceful one focused on female values and female divinities, to be violently destroyed, at the end of the Neolithic and during the Copper Age, through the incursions out of the Eurasian steppe of patriarchal, warrior semi-nomads, bringing the Indo-European languages which dominate in Europe today and a male-centered value system of violence and supreme male divinities. The timescale of these events she placed during the third millennium BC. When first published during the 1960s, these theories were received with extreme skepticism by the scholarly community, as a revival of the nineteenth-century imaginary social evolutionary ladder. From the 1970s onwards, however, the rise of Feminism in the Western world found her concept of a primeval society run by women and imbued with "female values" a fascinating tool with which to combat the very real, traditional male assumption of an eternal female inferiority. She was fêted in Feminist literature and the media, notably in the United States. Even if her invasion theories and the concept of rule by women (matriarchy) are not currently accepted on the basis of the now available evidence, some (including male) scholars have nonetheless defended the possibility of at least a female-centered mentality in the European Neolithic (Sherratt 1984; see also Talalay 1994, Meskell 1995).

We can go somewhat further with the figurines by introducing additional empirical evidence. Firstly, recent excavations in the Near East have found Neolithic villages with figurines and architectural representations dominated by males, for example Göbekli Tepe and Nevali Çori in Turkey (Hauptmann 1999), challenging a unitary emphasis on female ritual power. Secondly, the earlier Greek human figurines are schematic, and only gradually become more naturalistic and clearly predominantly female. Thirdly, Talalay (1994) and Perlès (2001) associate the fact that the majority of figurines come from Northern Greek tells with the greater need for them there in ritual behaviors assisting peaceful relations within those densely settled regions. This might perhaps be research bias, since the Southern Greek Neolithic is still poorly recovered and often known from surface finds rather than excavations. In my own fieldwork region of Boeotia, South-Central Greece, the small hamlet of

Thespieae Magoula (a low tell) is several kilometers from the next nucleated Neolithic village, yet its rich surface finds include numerous figurines. Perhaps it is safer to suggest that in general, North and South, the figurines may have been part of rituals assisting intra- and inter-settlement social cohesion.

So far, a cult significance for Greek figurines still remains somewhat speculative. Indeed in by far the commonest domestic context of discovery, figurines are found broken and dispersed around settlements in rubbish deposits, hinting that when their use-life was over, they lost any special value they might have possessed and joined household debris. Whilst this could reinforce the educational or toy function, it might also indicate that they acted in practical rituals, which once finished, or when the figurine was accidentally damaged, removed their usefulness.

Marangou (1996) combines evidence from Greece and the North Balkans in an intriguing explanation for the figurines' popularity. Although she considers that the artifacts had multiple roles even in one community, she takes some fortunate contexts where figurines appear in groups as the key to one major role. She argues that in some Balkan Neolithic settlements, figurines, model clay furniture, and animals could be assembled in one building within the community into a dramatic scenario, where they formed an attention-focusing device for community religion (for this important concept in identifying a ritual context see Renfrew 1985). After the ceremony, the set was dispersed into separate households, perhaps as a related symbolic activity linking families to the community, and to allow individual models to act as "apotropaic" (warding off evil) devices to protect or bless the household or its goods. They could also be stored in house models. Hearths, ovens, storage areas, and generally settlement domestic debris, seem typical contexts for Neolithic figurines, whilst their female dominance emphasizes a focal role for women and the home in their symbolism (Marangou 2001b).

Another intelligent attempt at penetrating the mental world of Neolithic Greece comes from Talalay (2004) in her study of "head cult." In common with Near Eastern Neolithic societies, there are numerous instances in the Aegean where disembodied skulls have been placed under house floors, or visibly in yards, a structure or cave. This would have made heads

part of "the visual vocabulary of the living." She links this to figurines, some of which have detachable and hence perhaps exchangeable heads, while others seem to have "mask" heads. The head as the center of human awareness as well as visual identity might have appeared a rich "text" to be used in performances by the living (ceremonial masks?), and through placing of the disembodied skull to symbolize past and present social roles and identities, all in the context of the enhancement of social cohesion.

### General Considerations for Neolithic Greece

As the archaeological record stands, this long era of three to four thousand years is remarkable for the rare, and generally late, evidence for social hierarchy. The emphasis on the domestic household and then to a lesser extent on the rural community is still central, even where, in the dense tell networks of the plains of Northern Greece, such settlements are packed within sight of each other in all directions. The late spread of fortifications appears to signal the success with which these early farmers managed their social relations, and Perlès rightly highlights the artifactual evidence which shows both vigorous exchange in raw materials and prepared tools, and suggestions of an important role for communal feasting, as likely means through which harmonious and mutually beneficial interactions were maintained. We have also argued that the social fission and face-to-face models are dominant in community organization, so that rare exceptions such as Sesklo or Knossos represent isolated examples where more internalized, more endogamous, and more complex societies arose, meriting the term "proto-city state" in my model of the "corporate community." Taken together, the limited and usually late cases of unusual sites where an elite and/or a proto-city state can be argued for, still provide a potential springboard for more widespread signs of similar complex societies in the succeeding EBA.

The evidence continues to link social and political transformations over time, at least in some areas, with the introduction out of the Near East of Sherratt's Secondary Products and Traction Plough Revolutions. Alongside the great expansion in areas occupied and

sites known for LN-FN due to these innovations, they must also have enhanced the economic surplus potential of most communities, surely an added stimulus for the sustenance of social elites and larger nucleated communities. Nonetheless, despite being able to isolate tendencies which could be laying the social and economic foundations of the "High Cultures" of the EBA, the vast majority of settlements in Neolithic Greece give a very different picture, of small-scale peaceful villages (nucleated, dispersed or in combinations), achieving a remarkably successful economic balance with their technology and environment over very long periods, and participating in long-distance exchanges on a totally unexpected scale. Even if these settlements were full of competing families, very rarely indeed does it appear that individual kin-groups achieved dominance. The persistence of the face-to-face community of itself speaks for the normal operation of an egalitarian society, excepting precisely the rare, much larger settlements. Thus one is tempted to agree with Catherine Perlès, that the Greek Neolithic is "a foreign country" far removed from our historical parallels of the European peasantry.

### An Annaliste Perspective on the Integration of Different Timescales

The overwhelming impression one obtains from this review of the Greek Neolithic is that of a very static society, with change registered in limited places over some 4000 years of farming life. This is in the Annales long term, and could be associated with a similarly static worldview tied to a fixed economic and social pattern. The model of Halstead, where competition between households led to the emergence over the Neolithic as a whole of elite village/town families, is problematic when viewed at such a timescale. Why did this not occur faster and more generally? An even longer perspective, also a *longue durée*, is opened up if we consider the spread of mixed farming into Greece as the ultimate outgrowth of the diversification and specialization of the final phase of hunter-gatherer lifestyles, the Broad Spectrum Economy, stimulated by the unique combination at the end of the last Glacial of truly Modern Humans (*Homo sapiens*) adapting to dramatic ecological changes. Scope for the medium,



and short term, and the individual, still focus around exceptional sites such as Sesklo, Dhimini, and Knossos, and here much still remains controversial about these potential "chieftain centers" or "town-like agglomerations." Their "historical" trajectories are still to be unraveled. Since in any case the Thessalian complex tell sites do not appear to be central to the rise of the subsequent Early Bronze Age "High Cultures" of Southern Greece, only Knossos being arguably a locus for the elaboration of long-term political complexity, the rarity of complex settlements in the Greek Neolithic is reinforced. At the present, Perlès' emphasis on the overwhelming sense of stability, to the point of a static society, is attractive, where a sense of time might have been limited, centering around a mentality of peaceable agricultural preoccupations, and directly reminiscent of Ladurie's concept of "motionless time" (1974; Bintliff 1999b, 2004). But then Perlès also persuasively argues for a remarkable degree of human mobility and economic complexity in the large-scale exchange systems for essential lithic materials. In comparison to Neolithic excavations in Northwest Europe, where in Germany and the Netherlands large-area settlement analysis and highly refined chronologies allow scholars to follow individual generations of early farming families as they abandon one house and build its successor (Lüning 2005, cf. Bintliff 2003), opening up the possibility of the world of individuals and events, this perspective is not yet with us in Greece, but it surely will soon come. At that point some better understanding of the fluctuations in people's lives over time and space should emerge, to confirm or challenge the current appearance of relative "immobility" for the Greek Neolithic.

### A Personal View

As just described, Neolithic Greece does seem "a foreign country" far removed from our expectations from Early Modern rural societies. But I am not so sure. What is striking about the Early Modern peasantry, and those elsewhere in the records of ethnohistory, is that some of the key processes we have identified for the Neolithic – face-to-face size limits, then the breakthrough from these restrictions which creates the corporate, more endogamous and socially

complex corporate community – can also be found in these recent societies (Bintliff 1999a), even when they exist within a state. Gimbutas's theory of a Neolithic worldview in which "female" values were unusually privileged, and women's status high, is attractive, and is in no way contradicted by the evidence from Greece and the Balkans, but it is still unclear how one could get closer to demonstrating it more conclusively. I also feel that we know too little about the Neolithic outside of the tell heartlands of Thessaly and Macedonia, especially concerning how the Southern Mainland settlement system operated, and whether isolated developments toward more complex political organization were also occurring there. If my concept of the "hidden prehistoric landscape" of Greece (Bintliff *et al.* 1999) is correct (but some specialists disagree with this, cf. Davis 2004) then we are just at the beginning of understanding the non-tell societies.

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## Complex Cultures of the Early Bronze Age

### Introduction

This period lasting from ca. 3500/3200 to ca. 2000/1900 BC is widely considered as the birth phase of Aegean civilization (general reading: Shelmerdine 2008, Cline 2010, Mee 2011). Colin Renfrew (1972, 1973), highlighted the "high cultures" of the Early Bronze Age (EBA) as preparatory to the true civilizations which followed in Middle and Late Bronze Age times (MBA, LBA). Key indicators of transformation were: the rise of a more productive agricultural economy in the Southern Mainland and the islands, based on the "Mediterranean triad" of cereals, olive oil (see Figure 1.1), and wine ("polyculture"); the impact of bronze metallurgy; the appearance of "central places" dominating local settlement clusters; and by the end of the period, the localized appearance of nucleated, town-like settlements with elaborate fortifications. He considered the associated cultures of the EBA as intermediate between the tribal, egalitarian or Big Man societies of the Neolithic, and the state forms of the later palace civilizations: "High Cultures" in which chiefdoms might have arisen in key places.

Previous scenarios emphasized migrations or invasions, or strong imitation of Near Eastern societies, as critical to the appearance of Minoan and Mycenaean civilizations. Renfrew envisaged those palace societies

as the logical outcome of *internal* developments which had commenced during later Neolithic times and accelerated in the EBA. He still conceded that diffusion from the Near East and the North Balkans was an essential component: metallurgy was introduced from the precocious copper- then bronze-using societies to the north of Greece, and from Northwest Anatolia; the cultivation of the olive was a diffusion of know-how (but the tree was local) from the Levant, that of the grape vine probably from Northern Greece or adjacent areas in the South Balkans. Most importantly, the remarkable EBA developments in political organization and proto-urbanism were confined to Southern Mainland Greece and the Aegean islands, indicating apparent stagnation in political complexity within Northern Greece after the Final Neolithic.

As this tendency toward regionalization of culture and socio-political trajectories becomes increasingly pronounced during the course of the EBA, we shall follow custom and treat the key regions of the Aegean separately: the Southern Mainland EBA/EH (Early Helladic Culture), the Cretan EBA/EM (Early Minoan Culture), the EBA/EC on the Cycladic and North Aegean Islands (the Early Cycladic and related culture further north in the Aegean Sea), and finally the EBA in the Northern Mainland.