Review of Aegean Prehistory V: The Neolithic and Bronze Age of Northern Greece

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INTRODUCTION

In this article we summarize the state of research on the Neolithic and Bronze Age in the Greek provinces of Thessaly, Macedonia, Thrace, and Epirus.* Emphasizing field projects undertaken in the last two decades, we review the main conclusions of those projects, and outline many new questions that arise as a result of the recent research.

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We repeatedly and extensively discussed among ourselves most of the issues we treat. The closest collaboration has been between Andreou and Kotsakis, who wrote the sections on Thessaly, central and eastern Macedonia, and Thrace, with Kotsakis writing primarily about the Neolithic, and Andreou about the Bronze Age. The note on the history of research in Macedonia, the sections on western Macedonia and Epirus, and the short concluding note on the earliest Neolithic were written by Fotiadis.

The following abbreviations are used in this review:

Achilleion	M. Gimbutas, S. Winn, and D. Shimabuku, *Achilleion: A Neolithic Settlement in Thessaly, Greece, 6400–5600 B.C.* (Los Angeles 1989).
AEMT	*Το Αρχαιολογικό Εργο στη Μακεδονία και Θράκη* (Thessaloniki).
Ancient Thessaly	*Διεθνές Συνέδριο για την Αρχαία Θεσσαλία στη Μνήμη του Δ.Ρ. Θεοχάρη* (Athens 1992).
ArchMak	*Αρχαία Μακεδονία* (International Symposia, Thessaloniki).
Argissa III	E. Hanschmann and V. Milojčić, *Die deutschen Ausgrabungen auf der Argissa-Magula in Thessalien* III: *Die frühe und beginnende mittlere Bronzezeit* (*BAM* 13, Bonn 1976).
Atlas	C.J. Gallis, *Ατλας των προϊστορικών θέσεων της ανατολικής Θεσσαλίας* (Larisa 1992).
BAM	*Beiträge zur ur- und frühgeschichtlichen Archäologie des Mittelmeer-Kulturraumes.*
Coleman	J.E. Coleman, "Greece, the Aegean and Cyprus," in R.W. Ehrich ed., *Chronologies in Old World Archaeology*[3] (Chicago 1992) 247–79.
Dimini	G.H. Hourmouziadis, *Το νεολιθικό Διμήνι* (Volos 1979).
Egnatia	*Εγνατία. Επιστημονική Επετηρίδα της Φιλοσοφικής Σχολής. Τεύχος Τμήματος Ιστορίας και Αρχαιολογίας* (Thessaloniki).
Feuer	B. Feuer, *The Northern Mycenaean Border in Thessaly* (*BAR-IS* 176, Oxford 1983).
Gazetteer	R. Hope Simpson and O.T.P.K. Dickinson, *A Gazetteer of Aegean Civilisation in the Bronze Age* 1: *The Mainland and Islands* (*SIMA* 52, Göteborg 1979).
Grammenos	D.V. Grammenos, *Νεολιθικές έρευνες στην κεντρική και ανατολική Μακεδονία* (Library of the Athens Archaeological Society 117, Athens 1991).
Halstead 1984	P. Halstead, *Strategies for Survival: An Ecological Approach to Social and Economic Change in the Early Farming Communities of Thessaly, N. Greece* (Diss. Univ. of Cambridge 1984).
Halstead 1989	P. Halstead, "The Economy Has a Normal Surplus: Economic Stability and Social Change among Early Farming Communities of Thessaly, Greece," in P. Halstead and J. O'Shea eds., *Bad Year Economics: Cultural Responses to Risk and Uncertainty* (Cambridge 1989) 68–80.
Halstead 1994	P. Halstead, "The North–South Divide: Regional Paths to Complexity in Prehistoric Greece," in C. Mathers and S. Stoddart eds., *Development and Decline in the Mediterranean Bronze Age* (Sheffield Archaeological Monographs 8, Sheffield 1994) 195–219.
Iolkos	I. Kolliou ed., *Νεότερα δεδομένα των ερευνών για την αρχαία Ιωλκό. Πρακτικά Επιστημονικής Συνάντησης 12 Μαΐου 1993* (Volos 1994).
Kastanas	B. Hänsel, *Kastanas: Ausgrabungen in ein-*

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Table 1. Archaeological Phases and Chronology for Northern Greece: Neolithic and Bronze Age

Archaeological Phases		Years B.C. Calendrical
Early Neolithic		6700/6500–5800/5600
Middle Neolithic		5800/5600–5400/5300
Late Neolithic		5400/5300–4700/4500
Final Neolithic		4700/4500–3300/3100
Early Bronze Age		3300/3100–2300/2200
(Middle Bronze Age) / Late Bronze Age	Later Bronze Age	2300/2200–1700/1500 / 1700/1500–1100

Modern geopolitical divisions—states, administrative districts, and the boundaries between them—provide a framework for organizing our knowledge and narrative. However alien they may be to the Neolithic and Bronze Age, such divisions continue to play powerful and multiple roles in the production of archaeological knowledge; they are devices as much as they are obstacles.[1] Our way of coping with their ill effects is indirect. In the body of the review we treat each modern province (Περιφέρεια) in turn, beginning with Thessaly, continuing with western, central, and eastern Macedonia and Thrace, and ending with Epirus. We resist, however, the temptation to develop grand syntheses of the prehistory of each province, or of northern Greece as a whole. The effort to write such syntheses would entrap us in a labyrinth of assumptions and theoretical presuppositions that we are not prepared to accept, and it would entail leaps of faith and, ultimately, violence to the archaeological evidence. We prefer instead to be as synthetic in our scope and conclusions as circumstances in each province allow. We cannot overstress the fact that our conclusions, drawn upon the work of hundreds of researchers, are provisional. We expect—in fact, we hope—that they will be challenged in the very near future. That is all the more likely for northern Greece today, since many field projects are currently in progress, and they have thus far been reported only in preliminary fashion.

We focus here on questions of regional significance, and on interregional comparisons and comparisons between archaeological phases. The state of archaeological knowledge is uneven across the regions with which we are concerned, with the result that we cannot be wholly consistent from one region to the next in the questions we address, nor can we attempt interregional comparisons in all crucial respects. Our strategy is therefore opportunistic: we exploit the particular strengths of archaeological knowledge in each region, and we point out the weaknesses.

We have adopted the broadest chronological framework and terminology, and we use calendrical rather than radiocarbon dates (table 1).[2] Even this

em Siedlungshügel der Bronze- und Eisenzeit Makedoniens, 1975–1979: Die Grabung und der Baubefund (Prähistorische Archäologie in Südosteuropa 7, Berlin 1989).

Kotsakis — K. Kotsakis, *Κεραμεική τεχνολογία και κεραμεική διαφοροποίηση: Προβλήματα της γραπτής κεραμεικής της Μέσης Νεολιθικής εποχής του Σέσκλου* (Diss. Univ. of Thessaloniki 1983).

La Thessalie — *Θεσσαλία. Δεκαπέντε χρόνια αρχαιολογικής έρευνας, 1975–1990. Αποτελέσματα και προοπτικές. Πρακτικά Διεθνούς Συνεδρίου, Λυών, 17–22 Απριλίου 1990. La Thessalie. Quinze années de recherches archéologiques, 1975–1990. Bilans et perspectives. Actes du colloque international, Lyon, 17–22 avril 1990*, vols. A–B (Athens 1994).

Pefkakia I — H.-J. Weisshaar, *Die deutschen Ausgrabungen auf der Pevkakia-Magula in Thessalien* I: *Das späte Neolithikum und das Chalkolithikum* (*BAM* 28, Bonn 1989).

Pefkakia III — J. Maran, *Die deutschen Ausgrabungen auf der Pevkakia-Magula in Thessalien* III: *Die mittlere Bronzezeit* (*BAM* 30, Bonn 1992).

Sitagroi — C. Renfrew, M. Gimbutas, and E.S. Elster eds., *Excavations at Sitagroi: A Prehistoric Village in Northeast Greece* 1 (Los Angeles 1986).

[1] It is small consolation that political boundaries often follow geographical ones (e.g., coasts, massive mountains, steep climatic gradients). Geographical boundaries, and the regions they define, are negotiable, and have limited authority outside particular political fields. See M. Fotiadis, "Regions of the Imagination: Archaeologists, Local People, and the Archaeological Record in Fieldwork, Greece," *Journal of European Archaeology* 1:2 (1993) 154–56 and 161–62.

[2] "B.C." in this review always indicates calendrical dates, whether obtained by calibration of radiocarbon measurements or by other means, including estimation. We do not use "b.c." or "B.P.," except when quoting uncalibrated radiocarbon measurements as published.

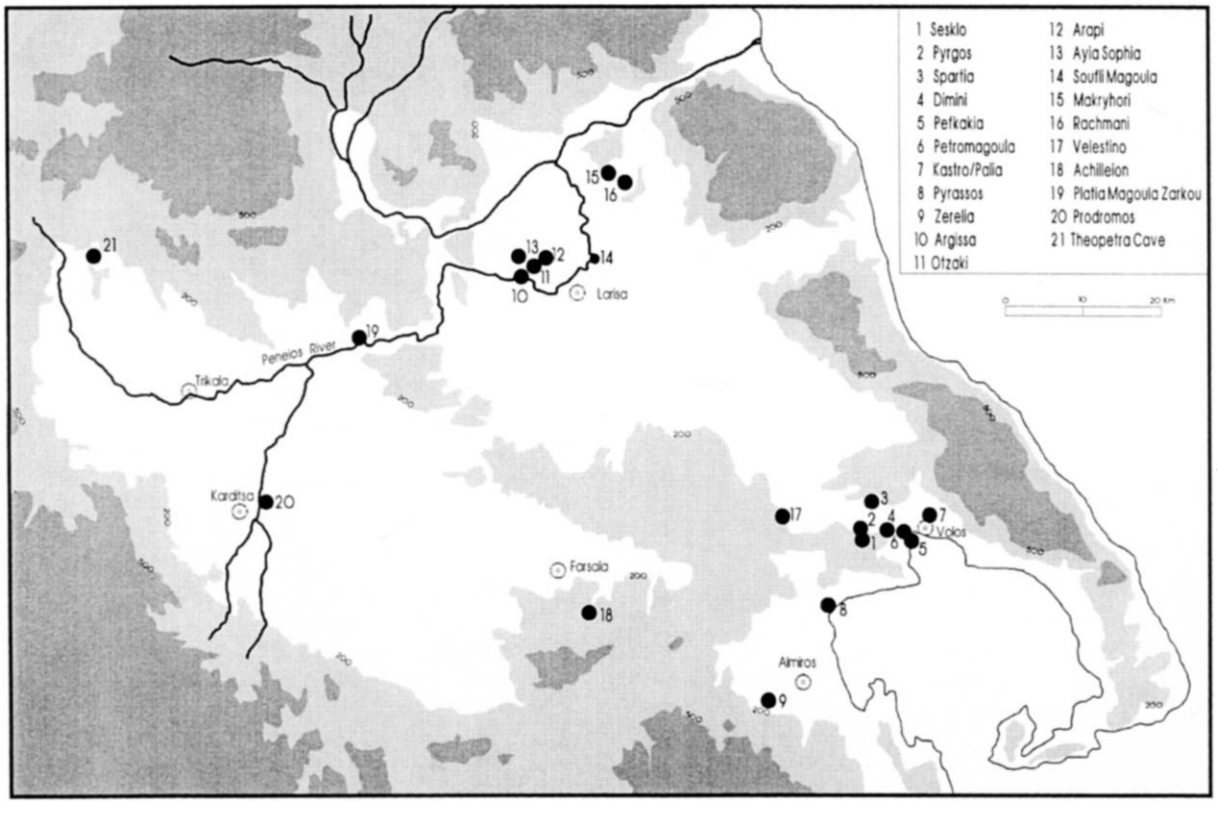

Fig. 1. Thessaly. Principal sites mentioned in the text. Contours at 200 and 500 masl.

broad framework cannot be followed in all its details in every province. Particularly troublesome is the phase we designate as "Middle Bronze Age," which can be identified only in Thessaly and parts of Macedonia. Where the phase remains elusive, we resort to the broader term "later Bronze Age," covering the time period from ca. 2300/2200 to ca. 1100 B.C. Subdivisions within the phases shown in table 1 are possible for many sites and regions. These are discussed along with the other data from the respective sites and regions.[3]

THESSALY

The pioneering work of Tsountas and Wace and Thompson during the early 20th century has made Thessaly the focal point of Neolithic research in Greece (fig. 1).[4] Long before any systematic framework was established in other parts of Greece, research in Thessaly possessed an elaborate chronotypological system suitable for describing the culture history of the area. To some extent this privileged position is still held today, and some of the central issues of Greek prehistory, such as the beginning of a farming economy or the emergence of social complexity, revolve around research in Thessaly, although questions of culture history and chronology are still discussed.

The refinement of the chronological framework was the main objective of the German and Greek excavations carried out from 1953 to 1977 at a number of Thessalian sites. This approach was the natural outcome of a long-established concern with the importance of the Aegean for European chronology. In the last decade or so, research in Thessaly has moved into a phase of synthesis, with less emphasis on excavation and more on the analysis of excavated data. At the same time, new issues have been put forward and new methods and approaches adopted.

Gulf of Volos

The most intensively excavated area of Thessaly is its coastal region. Research, which started here

[3] For the perplexities surrounding the date of the earliest Neolithic, see E.F. Bloedow, "The Date of the Earliest Phase at Argissa Magoula in Thessaly and Other Neolithic Sites in Greece," *MeditArch* 5–6 (1992–1993) 49–57.

[4] For an account of the Greek archaeological research in Thessaly carried out from 1881 to 1975, see C.J. Gallis, "A Short Chronicle of Greek Archaeological Investigations in Thessaly from 1881 until the Present Day," in *La Thessalie, Actes de la Table-Ronde 21–24 juillet 1975, Lyon* (Collection de la Maison de l'Orient méditerranéen 6, Lyons 1979) 1–30.

at the turn of the century and continues to date, has produced a fairly complete excavation record covering extensive parts of settlements and cemeteries from the Early Neolithic to the Late Bronze Age.

Sesklo (fig. 1:1). A new period of research was initiated at Sesklo in 1956 by D.R. Theocharis. With shorter or longer intervals, this period lasted until 1981, and is partly summarized in *Νεολιθική Ελλάς* and partly in a number of preliminary reports.[5] The initial objective was the reexamination of the stratigraphy of the mound, but the focus of investigation gradually shifted to the extended Middle Neolithic settlement outside and around the tell of Sesklo. Theocharis named this part of the settlement the *polis* (Sesklo B), in contrast to the original *acropolis* of Tsountas (Sesklo A), and he put forward a model of urban development and population concentration that had no antecedents in the Greek Neolithic.[6]

The total excavated area approaches 4,500 m^2 and the estimated area of the settlement amounts to 12 ha, unequally divided between the acropolis and the polis. The acropolis, where Tsountas's original excavation had been conducted, is in the form of a tell, 8.5 m high and ca. 0.3 ha in area. The polis stretches out on the flat slope to the northwest, on the edge of a dissected terrace of Tertiary lacustrine marls. Both parts are flanked on the north and south by deeply cut streams that, by Tsountas's time, had already eroded a large part of the tell.

The stratigraphy of the site, clarification of which was one of the principal aims of Theocharis, was checked in a number of trenches. On the tell itself, the stratigraphic sequence was uniform.[7] The lowest part was characterized by the absence of pottery and was considered "preceramic."[8] The rest of the stratigraphy was divided into Early Neolithic and Middle Neolithic, each further subdivided into three phases. The Early and the Middle Neolithic end stratigraphically with an extensive destruction.[9] The Late Neolithic, already investigated by Tsountas, was not studied stratigraphically to any extent by Theocharis.[10]

No significant architectural finds support the division of the Early Neolithic period into three parts. The division rests mostly on observations of ceramic change. The architectural evidence, though tenuous, points to small rectangular houses built with pisé walls and posts or with stone socles and mudbrick.[11] By contrast, the MN phases (I, II, IIIA, IIIB) correspond to architectural episodes of rebuilding houses and floors.[12] The MN IIIB phase ends with a wide-

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[5] D.R. Theocharis, *Νεολιθική Ελλάς* (Athens 1973) 36, 40, 60–77, 102. Theocharis, "Ανασκαφαί εν Σέσκλω," *Prakt* 1962, 24–35; *Prakt* 1963, 40–44; *Prakt* 1965, 5–9; *Prakt* 1966, 5–7; *Prakt* 1968, 24–30; *Prakt* 1971, 15–19; *Prakt* 1972, 8–11; and *Prakt* 1977, 159–61; Theocharis, *Το Εργον της Αρχαιολογικής Εταιρείας* 1976, 88–99. K. Kotsakis, "Τρία οικήματα του οικισμού του Σέσκλου. Ανασκαφική έρευνα," *Anthropologika* 2 (1981) 87–108; Kotsakis 37–41. Results of research on different groups of finds, after Theocharis's death, are included in A. Christopoulou, *Microwear Analysis of the Chipped and Ground Stone Tools from Sesklo A* (Diss. Univ. of London 1979); H.-A. Moundrea-Agrafioti, *La Thessalie du sud-est au Néolithique: Outillage lithique et osseux* (Diss. Univ. of Paris X–Nanterre 1981); M. Wijnen, "Building Remains of the Early Neolithic Period at Sesklo," in *Ancient Thessaly* 55–63; A. Christopoulou, "Ιχνη χρήσης στα λειασμένα λίθινα εργαλεία του Σέσκλου Α," in *Ancient Thessaly* 64–69; A. Papaefthimiou-Papanthimou, "Εργαλεία υφαντικής από το Σέσκλο," in *Ancient Thessaly* 78–82; A. Pilali-Papasteriou, "Οι σφραγίδες από το Σέσκλο και τα προβλήματα της θεσσαλικής νεολιθικής σφραγιδογλυφίας," in *Ancient Thessaly* 83–90; A. Papaefthimiou-Papanthimou, *Οι ανασκαφές του Δ.Ρ. Θεοχάρη στο νεολιθικό οικισμό του Σέσκλου: Πήλινα μικροαντικείμενα* (Athens, in press).

[6] Theocharis 1973 (supra n. 5) 65.

[7] M. Wijnen, *The Early Neolithic I Settlement at Sesklo: An Early Farming Community in Thessaly, Greece* (Leiden 1982) 10–15, 99.

[8] The existence of a true "preceramic" phase in Thessaly has often been questioned, e.g., by C. Perlès, "New Ways with an Old Problem: Chipped Stone Assemblages as an Index of Cultural Discontinuity in Early Greek Prehistory," in E.B. French and K.A. Wardle eds., *Problems in Greek Prehistory* (Bristol 1988) 484–86; *Achilleion* 26–27; Perlès, "La néolithisation de la Grèce," in O. Aurenche and J. Cauvin eds., *Néolithisations* (*BAR-IS* 516, Oxford 1989) 115–16; E.F. Bloedow, "The 'Aceramic' Neolithic Phase in Greece Reconsidered," *MeditArch* 4 (1991) 2–35. For the opposite view, see M. Tellenbach, "Materialien zum präkeramischen Neolithikum in Süd-Ost-Europa. Typologisch-stratigraphische Untersuchungen zu lithischen Gerätschaften," *BerRGK* 64 (1983) 92–94, 123–24. See also infra p. 597.

[9] Wijnen (supra n. 7) 11. Contrary to the MN, the EN destruction was not observed in other parts of the settlement. Therefore it would not be wise to treat it as a general feature of the Sesklo stratigraphy.

[10] Theocharis reports levels belonging to the FN "Rachmani" phase from the acropolis and ascribes them to three subphases. See *Prakt* 1966, 6. No further information is available from this stratigraphic section. Weisshaar's (*Pefkakia* I, 85) reconstruction is insubstantial.

[11] Wijnen (supra n. 5) 56–63.

[12] *Prakt* 1968, 25; *Prakt* 1971, 15; Kotsakis 46–51. Also, K. Kotsakis, *Σέσκλο. Οι ανασκαφές του Δ.Ρ. Θεοχάρη 1956–1977: Η στρωματογραφία και η αρχιτεκτονική της Μέσης Νεολιθικής περιόδου* (in preparation), where the architecture and stratigraphy of Sesklo are discussed in detail. B. Otto, *Die verzierte Keramik der Sesklo- und Diminikultur Thessaliens* (Mainz 1985) 66 attempts to subdivide the MN sequence of Sesklo into six subperiods (MN IA, IB, IIA, IIB, IIIA, IIIB) on the basis of stylistic observations on the pottery published by Tsountas. The stratigraphic support for this subdivision is insufficient and contradicts some of Theocharis's observations. See Theocharis 1973 (supra n. 5) 79, 119 and *Prakt* 1968, 27–30. I. Aslanis, *Η προϊστορία της Μακεδονίας* I: *Η Νεολιθική εποχή* (Athens 1992) 88–93, repeats Otto's scheme.

spread destruction, observed both at the tell and at the extended settlement.[13] The majority of the architecture at Sesklo, such as the famous "potter's workshop," belongs to this final phase.[14]

The stratigraphy of the polis (Sesklo B) was in many respects different from that of the acropolis (Sesklo A).[15] As a rule, deposits at Sesklo B are much shallower than those of Sesklo A, and their stratigraphic order appears discontinuous, varying from trench to trench. Moreover, large areas of Sesklo B are devoid of cultural deposits. The evidence in the extended settlement points toward a pattern of habitation of considerable spatial and temporal discontinuity, with parts of the site remaining either temporarily or totally uninhabited.[16] There is no such evidence at Sesklo A, where spatial discontinuity is limited. Dispersed traces of EN habitation are also present at Sesklo B, occasionally near the surface, but LN material is absent.

Significant differences between the two areas of the settlement are observed in architecture as well. All the buildings explored at Sesklo A are freestanding, sometimes with considerable space around them, or built around yards. By contrast, buildings at Sesklo B form tight clusters, sharing walls and facilities. At least some of these clusters preserve facilities for food-processing and storage, normally distributed in separate rooms.[17] A typical example of a Sesklo A dwelling is given by house 39: it is spacious (8.5 × 5.5 m), with one entrance on its narrow west side, and no internal divisions. Three areas are distinguished inside: a stone-built platform associated with storage vessels, a hearth situated next to it, and a work area with grinders, querns, and an oven on the far east end. The arrangement integrates essential needs of the household in one defined unit.[18]

The differences between the two areas in the Middle Neolithic are emphasized by the stone "fortification walls" that encircle part of the tell. The walls were observed initially by Tsountas and since then their defensive function has been debated.[19] Their size and construction make it more probable that they served as retaining walls, supporting terraces on which houses were founded.[20] Whatever the practical purpose of these features, they represent the concern of the inhabitants for maximizing the available space on the tell itself, a concern absent from Sesklo B. At the same time, the effort to separate the two parts of the settlement stresses further their differences during the Middle Neolithic.

Closely related to the dual habitational pattern at Sesklo is the spatial distribution of pottery, which was preserved thanks to the extended final MN destruction. The frequency of painted pottery is consistently higher at Sesklo A than Sesklo B. Together with differences in ceramic technology, this discrepancy between the two areas seems but another aspect of the dual settlement pattern at Sesklo.[21] In this respect, the original acropolis-polis model might still be relevant, as it implies a deeper difference between the two areas. The size of the population, however, given the more or less dispersed habitation at Sesklo B, was probably a 10th or less of the high figure (3,000–4,000) estimated by Theocharis. Moreover, the

[13] *Prakt* 1972, 8–9; Kotsakis 46–51. This widespread destruction level permits a clear and positive chronological correlation of the final deposits as well as of the houses, floors, and constructions associated with them in different parts of the settlement.

[14] Excavations uncovered 22 MN houses, and a considerable number of partly preserved other structures. They were all built with stone socles and mudbrick. For an earlier discussion of the architecture of Sesklo, based on preliminary reports, see R. Elia, *A Study of the Neolithic Architecture of Thessaly, Greece* (Diss. Boston Univ. 1982) 128–33, 169–74, 216–33. For the "potter's house," see *Prakt* 1968, 27–30. This house is reconstructed by Theocharis 1973 (supra n. 5) fig. 16 as a two-storied building, a reconstruction that has been widely accepted, e.g., in A. Sherratt ed., *The Cambridge Encyclopedia of Archaeology* (Cambridge 1980) fig. 15.6. Examination of the stratigraphic evidence, however, does not clearly support the existence of the second floor.

[15] K. Kotsakis, "The Use of Habitational Space in Neolithic Sesklo," in *La Thessalie* A, 125–30; *contra* Wijnen (supra n. 7) 14–15.

[16] Kotsakis (supra n. 15) 127–28 notes that this pattern resembles that of the extended LN sites of central Macedonia and contrasts with the pattern of persistent occupation of tell sites (see infra p. 585). It is extremely interesting, however, that at Sesklo both patterns are present simultaneously, especially if a socially recognized significance was attached to the tell part of the settlement, which physically represented the long lineage of the households of the community.

[17] E.g., houses A, Γ, and Z2, Kotsakis (supra n. 5) fig. 3.4.

[18] This arrangement is seen in the well-known house model from Platia Magoula Zarkou; see K.I. Gallis, "A Late Neolithic Foundation Offering from Thessaly," *Antiquity* 59 (1985) 20–24.

[19] Theocharis 1973 (supra n. 5) 65; *Dimini* 85.

[20] Kotsakis (supra n. 12): at least one house was founded on top of one of these walls. Most of the MN houses were founded on varying levels, and the whole settlement on the tell must have had a steplike, terraced appearance.

[21] Kotsakis 55–56, 95–102. For the technological differences between the two areas of Sesklo, see Y. Maniatis, V. Perdikatsis, and K. Kotsakis, "Assessment of In-site Variability of Pottery from Sesklo, Thessaly," *Archaeometry* 30 (1988) 264–74. The archaeometric analysis on a small stratified sample from both areas has found a marked preference for calcareous clays in Sesklo A, non-calcareous in Sesklo B. Macroscopic examination of the pottery from both areas seems to support this conclusion.

instability of the extended part of the settlement contrasts with the permanent "urban" characteristics of a polis, and the supposed fortification walls of the acropolis can be more reasonably interpreted as retaining constructions. Finally, although the differences between the polis and the acropolis are clear, they need not imply a formally stratified society with a well-defined elite controlling social production. It is rather a difference in scale, which, at least as far as pottery is concerned, results in a certain inequality of access to raw materials and produce.[22]

An interesting methodological lesson can be learned from the example of Sesklo. The complex intrasite variability of the archaeological features shows clearly that comparisons among sites are potentially misleading. Given the generally limited extent of excavations in Greece, it is unwise to describe excavation sequences as "typical" and to base comparative conclusions on them. Most of the syntheses of the Neolithic in Thessaly have not considered this important factor of latent variability within sites.[23]

Little is known about Sesklo after the Neolithic, mainly because the higher levels had already been removed by Tsountas. In the area of Sesklo B, there are no traces of Bronze Age habitation, except for MBA cist graves, common at Sesklo A as well.[24] Traces of massive retaining walls on the mound must also belong to this period, although their exact date is obscure.[25] Houses of the Middle Bronze Age are reported from the western side of the tell, but evidently this part of the Bronze Age settlement did not spread as far as the Sesklo B area. Particularly interesting is the observation of traces of EBA habitation in area E, ca. 130 m southeast of Sesklo A, across the Seskouliotis ravine.[26]

Pyrgos (fig. 1:2). On a low hill that overlooks the Gulf of Volos, ca. 250 m north of Sesklo, lies the small site of Pyrgos (25 m in diameter), already identified by Tsountas and excavated by the ΙΓ′ Ephoreia in 1979.[27] The excavators explored a deposit containing mainly LN "classical Dimini" pottery and a level with FN "Rachmani" pottery, including incised sherds with white or pink filling, and crusted ware. A thick layer of burnt debris separates the two deposits. The inventory of finds and the few architectural remains point to a more or less permanent settlement. If this small site is directly associated with LN Sesklo, it would match the MN pattern of dispersed habitation around the acropolis. In this case the site could represent a small cluster of households placed a few hundred meters away from Sesklo, overlooking the extended plateau, where the prime farmland lies.

Further to the north, two previously known sites, Spartia (fig. 1:3) and Palaiokastron, have recently been reinvestigated.[28] Together with Pyrgos and Sesklo, they seem to have flanked, during the Late Neolithic, the Tertiary plateau of lacustrine marls of excellent arable qualities (100–200 masl). Unlike Pyrgos, they are long-lived sites, occupied until Hellenistic times or later. Spartia and Palaiokastron are situated on the main pass linking the eastern plain of Thessaly with the small coastal plain of Volos. Sesklo is connected to the coastal area via a route that passes from the Seskouliotis stream to Dimini, Petromagoula, and Pefkakia (fig. 1:4–6). To the southwest the route continues to the Aerino plateau, where four more prehistoric sites were located, of which Persoufli Magoula is also a site of considerable longevity. Another pass, at 300 masl, leads over low mountains to the area of Pyrassos (fig. 1:8) on the present coast of the Pagasitikos Gulf.

Dimini (fig. 1:4). The well-known site of Dimini was reinvestigated by Hourmouziadis in 1974–1976. The main objective was to reexamine the architecture and to consider the relationship of the site to neighboring settlements in an attempt to integrate

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[22] Kotsakis 264–300; K. Kotsakis, "Aspects of Technology and Distribution of MN Pottery at Sesklo," in *Science in Archaeology. Proceedings of a Meeting Held at the British School at Athens, January 1985* (Athens 1986) 1–2.

[23] E.g., Y. Mottier, *Die deutschen Ausgrabungen auf der Otzaki-Magula in Thessalien* II (*BAM* 22, Bonn 1981) 39–54, regards the Otzaki sequence as typical and bases on it the relative chronology of the excavated MN Thessalian sites. On these grounds she views the Sesklo sequence (p. 43) as contemporary with the deeper levels of MN Otzaki, and argues for an early abandonment of Sesklo. The available ^{14}C dates from the last MN phase at Sesklo, however, argue clearly against such a conjecture, as does the A3β-γ pottery of the "degenerate" (pl. E, I/3-2-1, no. 72) style, which is very common in MN IIIB Sesklo and appears also in final MN levels at Otzaki.

[24] MBA cist graves have been found as far as the modern village of Sesklo, more than 1 km away: Theocharis 1976 (supra n. 5) 99. For a detailed dating of the Sesklo graves, see *Pefkakia* III, 222–26.

[25] C. Tsountas, *Αι προϊστορικαί ακροπόλεις Διμηνίου και Σέσκλου* (Athens 1908) 110.

[26] Theocharis 1976 (supra n. 5) 88; *Το Εργον της Αρχαιολογικής Εταιρείας* 1977, 88–93. A few EBA or MBA copper objects have been analyzed by McGeehan-Liritzis and Gale (infra n. 46) 205–206, 211–15, 221–23. There is one occurrence of a tin-bronze alloy, but no identification of the source of the copper was possible.

[27] A. Batziou, "Πύργος: Ενας δορυφορικός προϊστορικός οικισμός," *Anthropologika* 2 (1981) 108–20.

[28] Tsountas (supra n. 25) 4, nos. 3–5; M. Di Salvatore, "Ricerche sul territorio di Pherai: Insediamenti, difese, vie e confini," in *La Thessalie* B, 93–124.

archaeological information in a systemic framework, characteristic of the 1970s.[29] Research was directed toward the excavation of particular features and the restoration of the entire settlement. Spatial information became available on a large scale,[30] although the intensity of the investigation was not uniform throughout the settlement.

The tell of Dimini lies on the higher western edge of the coastal plain of Volos. It sits on an outcrop of schist, at 18 masl and 3 km from the present coast. A major episode of alluviation, dated by ^{14}C to the fourth millennium B.C., has formed the plain, pushing the coast away from Neolithic Dimini.[31] The other sites on the Gulf of Volos, Pefkakia and Petromagoula (fig. 1:5–6), have retained their coastal location.

Clarification of the function of the six concentric perimeter walls at Dimini, uncovered by Stais and Tsountas, was the initial objective of the reexamination. Hourmouziadis carefully evaluated the architectural evidence, and concluded that the purpose of the perimeter walls was to enclose four main domestic areas or "courtyard groups." The four wards were situated at a lower level around a central court. Each ward contained a larger building and a number of storage or food preparation facilities as well as work areas.[32] Communication was ensured through the radiating entrances. According to Hourmouziadis, the pattern of the six concentric perimeter walls was the outcome of the gradual growth of the settlement and reflected the insistence of the inhabitants on dividing their settlement into well-demarcated areas using internal boundaries. The walls also satisfied the need to support and maximize the available space on the small rocky spur of Dimini.

The previous interpretation of the walls as defensive constructions was seriously questioned by Hourmouziadis. He argued that their size and location do not conform with their presumed purpose of preventing hostile intrusions. He could find no evidence, for instance, that the height of the walls exceeded the measure of a simple boundary wall.[33] His main argument, however, derived from his view of social organization: he argued that a Neolithic fortified acropolis, defending the central part of the settlement, would imply a stratified social structure, incompatible with the presumed "Neolithic mode of production."[34] It must be remembered, however, that a territorial demarcation, in any form, primarily controls access, physically or symbolically, to the settlement or to a part of it.[35] Such barriers to access, mainly perimetric ditches, are not uncommon in Neolithic settlements.[36] In any case, the interpretation of the walls at Dimini is a reminder that ar-

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[29] Hourmouziadis, *Dimini* 25–27, describes this system as a threefold structure comprising the subsystems of the organization of space, economy, and non-productive activities.

[30] Several scholars have taken advantage of the recent spatial data: P. Halstead, "Dimini and the 'DMP': Faunal Remains and Animal Exploitation in Late Neolithic Thessaly," *BSA* 87 (1992) 44–55; A. Tsuneki, "The Manufacture of *Spondylus* Shell Objects at Neolithic Dimini, Greece," *Orient* 25 (1989) 1–21; L. Skafida, "Νεολιθικά ανθρωπόμορφα ειδώλια του Διμηνίου," in *Ancient Thessaly* 166–79; and Z. Malakasioti, "Μικρά ευρήματα με εγχάρακτη διακόσμηση," *AAA* 15 (1982) 173–81.

[31] E. Zangger, "Prehistoric Coastal Environments in Greece: The Vanished Landscapes of Dimini Bay and Lake Lerna," *JFA* 18 (1991) 1–7 and esp. fig. 1. Contrary to Zangger, E.M. Kambouroglou, "Η γεωμορφολογική εξέλιξη του κόλπου του Βόλου από τη Νεολιθική εποχή μέχρι σήμερα," in *La Thessalie* A, 41–52, maintains that the rise of sea level was the main geomorphological activity in the area, gradually flooding the Volos plain toward Dimini. Only in late antiquity did alluviation prevail, extending the plain toward the sea. Nevertheless, anthropogenic FN and BA alluviation remains a plausible suggestion, and conforms with observations made in the Larisa plain. See A. Demitrack, *The Late Quaternary Geologic History of the Larissa Plain, Thessaly, Greece. Tectonic, Climatic and Human Impact on the Landscape* (Diss. Stanford Univ. 1986); T.H. van Andel, Zangger, and Demitrack, "Land Use and Soil Erosion in Prehistoric and Historical Greece," *JFA* 17 (1990) 379–96; Demitrack, "A Dated Stratigraphy for the Late Quaternary in Eastern Thessaly and What It Implies about Landscape Changes," in *La Thessalie* A, 38. Also van Andel, K. Gallis, and G. Toufexis, "Early Neolithic Farming in a Thessalian River Landscape, Greece," in J. Lewin, M.G. Macklin, and J.C. Woodward eds., *Mediterranean Quaternary River Environments* (Rotterdam 1995) 131–43.

[32] *Dimini* 110–40.

[33] *Dimini* 59.

[34] *Dimini* 83–98. In two subsequent articles, Hourmouziadis explains more clearly what he believes to be the basic elements of a "Neolithic mode of production," which he considers incompatible with an antagonistic social reality involving aggression and defense: G.H. Hourmouziadis, "Εισαγωγή στο νεολιθικό τρόπο παραγωγής," *Anthropologika* 1 (1980) 118–29 and *Anthropologika* 2 (1981) 39–54. Nevertheless, in the case of Dimini, equal access to household production, as suggested by Hourmouziadis, would seem inconsistent with the seclusion of the productive units behind stone walls.

[35] According to Hourmouziadis, *Dimini* 51, Neolithic Dimini extended outside the acropolis, covering an area of 3 ha, though in a less organized fashion. The extent of the settlement was confirmed by subsequent research in the area of modern Dimini: V. Adrimi-Sismani, *ArchDelt* 32 B′ (1977) 131–34. We have already seen a similar arrangement at Sesklo.

[36] Ditches have been reported from a number of LN sites in Thessaly. For Arapi Magoula and Argissa Magoula, see H. Hauptmann and V. Milojčić, *Die Funde der frühen Dimini-Zeit aus der Arapi-Magula, Thessalien* (*BAM* 9, Bonn 1969) 3, and Milojčić, "Bericht über die Ausgrabungen auf der Gremnos-Magula bei Larissa 1956," *AA* 71 (1956) 160–63.

chitectural features need to be examined in their particular social and economic context.[37]

Another point of divergence from older literature on Dimini concerns the "central megaron." According to Hourmouziadis's observations, the typical "megaron" form at Dimini resulted from a later, EBA modification of the central court area. The modification was related to the demographic decline of the mound and the deterioration of the communal character of the central court, which was then taken over by a single household, apparently an eminent one.[38]

The reconstruction of the gradual formation of the "megaron" at Dimini is convincing and warns against the strict typological approach to architecture. The dating, however, of the Dimini "megaron" to the Early Bronze Age is not supported by decisive stratigraphic evidence, since all the deposits there had already been dug by Stais and Tsountas.[39] Moreover, similar LN architectural finds from Sesklo, Ayia Sophia, and possibly Visviki seem to point to an earlier dating.[40]

Within the limitations of the uneven scale of excavation, Dimini offers an opportunity to observe the spatial arrangement of various finds, including food preparation and storage facilities. They are fairly evenly distributed across the discrete domestic areas and tend to be located indoors rather than in the open areas. A good example is house N, which contained four food preparation and two storage facilities, though not all of them were in use at the same time.[41] Of the other facilities scattered throughout the site, one was identified as a specialized pottery workshop.[42] The composition of the faunal assemblage related to food preparation and consumption was found by Halstead to vary insignificantly within the different domestic areas, which may indicate generally equal access to produce; the possibility remains, however, that some domestic units consumed more meat than others.[43] The majority of faunal remains were classified as sheep/goat, while the percentages of pigs and cattle fluctuated. Eight intramural infant cremation burials were uncovered, all placed near hearths and in pots, some made especially for this purpose.[44] Figurines are present almost everywhere but their distribution shows a strong concentration in the three peripheral domestic areas rather than the central court.[45] Objects made of *Spondylus* have a similar distribution. A concentration of finished rings was identified in house N, while an even greater concentration of buttons and cylinder beads was found in the area of the pottery workshop (area C). Regardless of the possible interpretation of this pattern, which can partly be due to uneven intensity of excavation, the quantity and type of objects prove that LN Dimini was a significant node in the extended exchange network of *Spondylus*.[46]

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[37] I. Aslanis, "Οι οχυρώσεις στους οικισμούς του βορειοελλαδικού χώρου κατά τη Χαλκολιθική περίοδο και η περίπτωση του Διμηνίου," in M.B. Sakellariou ed., *Ποικιλία* (Μελετήματα 10, Athens 1990) 19–53, wishes to restore the "defensive" interpretation of the Dimini perimeter walls on the basis of perceived similarities with the Chalcolithic settlements of Bulgaria and Rumania. Also, Aslanis, "Die Siedlung von Dimini: Ein neues Rekonstruktionsbild," in *Settlement Patterns between the Alps and the Black Sea—5th to 2nd Millennium B.C.* (Museo civico di storia naturale, Sezione scienze uomo 4, Verona 1995) 35–43.

[38] *Dimini* 106, 110 and fig. 6.

[39] The EBA dating of the Dimini "megaron" has been questioned by P. Halstead, review of *Dimini* in *JHS* 101 (1981) 206–207.

[40] Theocharis 1973 (supra n. 5) figs. 18 and 23; V. Milojčić, "Die Grabung auf der Agia Sofia-Magula," in Milojčić et al., *Die deutschen Ausgrabungen auf Magulen um Larisa in Thessalien* (*BAM* 15, Bonn 1976) 5–6. Particularly useful is the dating of the Ayia Sophia "megaron," although this has been only partially uncovered and is not altogether comparable to the megara at Dimini and Sesklo. To these examples one may add the recently found LN "megara" at Makriyalos in Pieria; see infra p. 573.

[41] *Dimini* 133–59. See also Halstead 1984, ch. 5.2.3. As Halstead (supra n. 30) 31–32 has pointed out, the interior location of food-producing facilities is in contrast to earlier Neolithic practice. For house N, see *Dimini* 149–50.

[42] G.H. Hourmouziadis, "Ενα ειδικευμένο εργαστήριο κεραμεικής στο νεολιθικό Διμήνι," *AAA* 10 (1978) 207–26. Also Hourmouziadis, "Die Spezialisierung im Neolithikum," in D. Papenfuss and V.M. Strocka eds., *Palast und Hütte* (Mainz 1982) 125–35.

[43] Hourmouziadis has repeatedly stressed the uniform distribution of food refuse, tools, and pottery in all parts of the settlement. See *Dimini* 67. The inability to estimate the quantity of animal bone deposited was attributed to retrieval factors: Halstead (supra n. 30) 56. For the archaeobotanical remains from the recent excavations, see H. Kroll, "Kulturpflanzen aus Dimini," in U. Körber-Grohne ed., *Festschrift Maria Hopf* (Archaeo-Physika 8, Cologne 1979) 173–89.

[44] G.H. Hourmouziadis, "Εισαγωγή στις ιδεολογίες της ελληνικής προϊστορίας," *Politis* 17 (1979) 33. Also Hourmouziadis, *Αρχαία Μαγνησία: Από τις παλαιολιθικές σπηλιές στο ανάκτορο της Δημητριάδας* (Athens 1982) 81, fig. 52. Halstead (supra n. 30) 33, reports additional infant bones found together with the faunal remains.

[45] Skafida (supra n. 30) 166–79, table 1, fig. 1. With two exceptions, the figurines are schematic—cruciform or acrolithic. See also C. Marangou, *Ειδώλια: Figurines et miniatures du Néolithique Récent et du Bronze Ancien en Grèce* (*BAR-IS* 576, Oxford 1992) 38–40 for the figurines found by Tsountas.

[46] Tsuneki (supra n. 30) table 1. Also P. Halstead, "*Spondylus* Shell Ornaments from Late Neolithic Dimini, Greece: Specialised Manufacture or Unequal Accumulation?" *Antiquity* 67 (1993) 603–609, table 1. According to Tsuneki

The poor preservation of the post-LN architectural remains has led to conflicting reconstructions of the later occupational history of the mound. The circuit walls were possibly replaced by a ditch, and occupation became more sparse and horizontally discontinuous.[47] Halstead argues for the transformation of the hill into a segregated elite area in the Final Neolithic and Early Bronze Age. He considers the segregation of the hill as part of a process, begun in the Late Neolithic, toward an institutionalized hierarchical organization.[48] Whether the end of the Neolithic at Dimini is marked by crisis and disintegration or by continuity and consolidation of a central authority remains an open issue.

A conspicuous change is manifest near the end of the Middle Bronze Age, when the hill was again demarcated by a mudbrick perimeter wall. From that period onward the evidence of occupation is limited to a few burials.[49] The transformation of former habitation mounds to burial grounds was a practice not uncommon at Thessalian sites during the later part of the Middle Bronze Age, and may represent a type of bounded burial, existing in the region prior to the appearance of the first tholoi and built tombs.[50] According to Halstead, the move may be related to the action of elites wishing to isolate their burial grounds.

The most important development for the understanding of the later history of the site has been the excavation of an extensive LBA settlement on the alluvial plain at the foot of the mound. Since 1978 the Archaeological Service has excavated several blocks of houses flanking a wide street. Surface finds and trial trenches indicate that the town was ca. 10 ha in size.[51] The latest architectural remains were found a little below the surface, and the excavation provides a picture of the layout of the settlement in its last phase, which was characterized by pottery of the late LH IIIB or early IIIC style. Earlier deposits, reached in small trenches beneath the floors, show successive habitation from the Middle Bronze Age onward.[52]

(supra n. 30) 13, the *Spondylus* rings were exclusively manufactured in house N, and beads and buttons in area C. Halstead (pp. 607–608), however, points out that waste products from the manufacture of rings, buttons, and beads were found in almost every part of the settlement, which suggests a more dispersed production of these objects. He proposes, therefore, that these objects were unequally accumulated by individual domestic groups as exchange tokens for "social surplus." This exchange may also have included copper artifacts. A copper flat ax and an earring have been analyzed and discussed by V. McGeehan-Liritzis and N.H. Gale, "Chemical and Lead Isotope Analyses of Greek Late Neolithic and Early Bronze Age Metals," *Archaeometry* 30 (1988) 201–207, 211–15, 222–23. The Dimini artifacts were made of arsenical copper, the provenance of which cannot be identified. For a more general discussion of personal ornaments in the Thessalian Neolithic, see N. Kyparissi-Apostolika, "Κοσμήματα της νεολιθικής Θεσσαλίας," in *Ancient Thessaly* 185–90.

[47] Tsountas (supra n. 25) 30–31, 65–68, 363. *Gazetteer* 275. Dating these modifications with any accuracy is impossible.

[48] Halstead 1984, chs. 5.2.4 and 8.1.2–3. House remains dated to the EBA have recently been found in the lower ground, south of the mound, but no details have been published. See V. Adrimi-Sismani, "Η μυκηναϊκή πόλη στο Διμήνι: Νεότερα δεδομένα για την Ιωλκό," in *Iolkos* 22. The massive foundations of a large building between the first and second perimeter walls on the southwest, found during the early period of excavations, may, according to Halstead 1984, ch. 5.2.4, represent the remains of a FN central building. Hourmouziadis and Adrimi-Sismani argue for the identification of the same building with the elite residence or the "palace" of the LBA settlement: *Dimini* 107–10, 149, fig. 6 and pl. 1; Adrimi-Sismani, "Μυκηναϊκός οικισμός Διμηνίου," in *Ancient Thessaly* 275–76, pl. 59a. The documentation offered by Tsountas, however, is insufficient to decide the matter one way or another.

[49] For the MBA wall and contemporary habitation on the lower ground, see Adrimi-Sismani in *Iolkos* (supra n. 48) 23. For the date of the cist graves, see *Pefkakia* III, 217–18. For the cist graves and the two tholos tombs, see *Gazetteer* 147–52.

[50] For other instances of Thessalian habitation mounds transformed into burial grounds, see Halstead 1984, ch. 5.2.5; and J. Maran, "Zum mittelbronzezeitlichen Bebauungsschema auf der Pevkakia-Magula bei Volos," in *La Thessalie* A, 209 and ns. 12–13. For the same practice in southern and central Greece, see Maran, "Structural Changes in the Pattern of Settlement during the Shaft Grave Period on the Greek Mainland," in R. Laffineur and W.-D. Niemeier eds., *Politeia: Society and State in the Aegean Bronze Age* (*Aegaeum* 12, Liège 1995) 69–72. The mortuary reuse of habitation mounds may imply an attempt by an elite to appropriate symbolically the past qua conspicuous ruins. In most cases, however, it is uncertain that the burials belong to an elite group.

[51] V. Adrimi-Sismani, *ArchDelt* 32 B′ (1977) 132–34; *ArchDelt* 35 B′ (1980) 272; *ArchDelt* 43 B′ (1988) 238–39; Adrimi-Sismani, in *Ancient Thessaly* (supra n. 48) 272–78; and in *Iolkos* (supra n. 48) 17–44; and Adrimi-Sismani, "Ο μυκηναϊκός οικισμός Διμηνίου," in *La Thessalie* A, 225–32.

[52] The pottery of the latest floor deposits displays stylistic traits that have been related to LH IIIB1, IIIB2, or even early LH IIIC styles; see Adrimi-Sismani in *La Thessalie* A (supra n. 51) 226–29, figs. 12–18; also in *Ancient Thessaly* (supra n. 48) 273–75. This variability could be due to the idiosyncracy of LH IIIB and IIIC pottery in Thessaly; cf. E.S. Sherratt, "Regional Variation in the Pottery of Late Helladic IIIB," *BSA* 75 (1980) 175–202; Sherratt, "The Development of Late Helladic IIIC," *BICS* 32 (1985) 161–62. Deposits with LH IIB and LH IIIA pottery were also found. Handmade burnished pottery of distinctive shapes was found along with the Mycenaean in the earlier and later LBA levels: Adrimi-Sismani in *Iolkos* (supra n. 48) 27, figs.

The 45-m stretch of street was 5 m wide, paved with pebbles and flanked by walls with no openings. The houses, with a stone socle and mudbrick superstructure, were comprised of several rooms around courtyards, where wells were located. Walls and floors were occasionally plastered. One of the most regularly planned houses had a main room with a hearth and two smaller rooms at the back. A fenced corner in one of the rooms of another house contained a bull figurine and a possible altar, probably indicating a domestic shrine. Several rooms were used for storage and as specialized working areas, including a space with traces of metalworking. Finally, a potter's kiln was uncovered at the eastern limits of the settlement.[53]

The layout indicates a complex, well-organized community, with central planning and craft specialization. The two tholos tombs and a possible central building at the top of the tell point to the existence of a central authority. Dimini offers the most complete picture of a Thessalian LBA community, so far unique in the region.

Pefkakia (fig. 1:5). Pefkakia Magoula, another important coastal site on the Gulf of Volos, had been investigated in the late 1950s by Theocharis, but systematic research was undertaken in 1967 by Milojčić and lasted until 1977. The magoula was formed on the slopes of a rocky promontory.[54] It now extends over 2 ha, but it has suffered much erosion from rising sea level and repeated human interventions. The Neolithic settlement must have been small, limited primarily to the top of the promontory. By contrast, trenches dug at lower levels on the side of the tell revealed thick deposits from the Bronze Age and few traces of the Neolithic.[55]

The information on the Neolithic sequence comes from a single trench, 13 × 10 m, on the top of the mound. A small area produced deposits of the Late Neolithic ("classical Dimini"). The rest was taken up by a sloping outcrop of the natural rock that lay immediately under the levels of the succeeding phases.[56] Three FN architectural phases were defined with rectangular houses built on stone foundations and with clay floors. Plans cannot be reconstructed, but the state of preservation was best in the last phase, where parts of four houses were distinguished. They were arranged in parallel rows separated by narrow alleys. One of the houses contained several small pits and storage vessels, a large rectangular pit lined with mudbrick and filled with ash, and a rectangular clay hearth. Under the floor, near the lined pit, was a burial furnished with two obsidian cores.[57] A stone platform cutting into the house wall recalls the food-processing facilities of house N at Dimini. It is not clear, however, whether this construction was approached from the outside.[58]

In the previous, second, phase, preservation was poorer, but enough survived to indicate that the orientation of houses was the same and that storage facilities were abundant. The orientation of houses was different in the earliest phase. Parts of two houses were defined, while a wall 1.20 m thick was located on their west side. The excavator interpreted this wall as defensive, but its location makes the defensive function again ambiguous; it might well be an internal boundary as at Dimini.

Pefkakia is the only site that stratigraphically completes the sequence of Neolithic phases in Thessaly as reconstructed by Milojčić. For this reason it holds a central position in the chronological debate still continuing in northern Greek and Balkan archaeology.[59] The main argument revolves around ceramic wares and their stratigraphical position. In general terms, the pottery from Pefkakia displays elements characteristic of the Aegean FN phase, such as red-slipped wares and crusted wares, "elephant lugs," and

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7–9; Adrimi-Sismani 1977 (supra n. 51) 131–34. In the final LBA levels, wheelmade "pseudo-Minyan" gray ware was also found: Adrimi-Sismani, in *Ancient Thessaly* (supra n. 48) 273, pl. 56ε; K. Kilian, "Mycenaeans Up to Date," in French and Wardle (supra n. 8) 132–33, n. 4. For non-Mycenaean wares in LBA Thessaly, see *Pefkakia* III, 107–108, 174–76, 214–15, 222–27, 274–78, 286; *Argissa* III, 117, ns. 97–98. Also Feuer 85–86, 98, 103–104, 127, 131–38, 187; and Avila (infra n. 88) 37, 50–51, 56.

[53] Adrimi-Sismani in *Iolkos* (supra n. 48) 31–36, figs. 4, 17, 18. The bovine figure recalls those found in the LH IIIC shrine at Phylakopi, shown in C. Renfrew, *The Archaeology of Cult: The Sanctuary at Phylakopi* (Oxford 1985) 248, 276–80, 425, pl. 39. For the kiln, see V. Adrimi-Sismani, "Μυκηναϊκός κεραμικός κλίβανος στο Διμήνι," in *Η περιφέρεια του μυκηναϊκού κόσμου: Διεθνές διεπιστημονικό συμπόσιο, Λαμία 25–29.9.1994* (forthcoming).

[54] The promontory may have been flanked during most of the site's life by two small bays: Kambouroglou (supra n. 31).

[55] *Pefkakia* I, fig. 1, trench G-H V; E. Christmann, "Die Magula von Pevkakia und die Frühbronzezeit in Thessalien: Chronologie und externe Kontakte," in *La Thessalie* A, 201.

[56] *Pefkakia* I, pl. 146.

[57] Halstead 1984, ch. 5.2.4, relates the lined pit with the burial underneath and points out the similarities with the Ayia Sophia Magoula burials; see Milojčić (supra n. 40) 6–7.

[58] *Dimini* pl. 5.

[59] H.-J. Weisshaar, "Varna und die ägäische Bronzezeit," *ArchKorrBl* 12 (1982) 321–29.

plastic decoration.[60] Ten uncalibrated ^{14}C dates from the site are tightly clustered between 3820 ± 70 b.c. and 3560 ± 65 b.c., and the difference between the six "Dimini" phase dates and the four "Rachmani" ones is very small.[61] Clearly then, the LN–FN sequence at Pefkakia was relatively short and must be placed around the accepted date for the LN–FN boundary near the end of the fifth millennium B.C. The short duration is also confirmed by the minimal changes in the layout of the houses from one architectural phase to the next. Furthermore, repeated episodes of leveling, an expected activity in building on a slope, must have obliterated and disturbed a good part of the original deposits. The particularly poor state of preservation of the architectural remains, especially in the lower phases, and the high frequency of pottery from earlier phases in almost all of the excavated deposits support such a claim.[62]

Despite the series of ^{14}C dates, the excavator proposed a much lower date for the "Dimini" and "Rachmani" levels at Pefkakia, making the last phase synchronous with EH I and part of EH II. That dating was based on the presence of a small number of EH II Urfirnis sherds in the upper Rachmani deposits.[63] A small amount of black-on-red LN pottery of eastern Macedonian origin found in the lower Rachmani levels was thus dated by analogy equally low. This dating has been regarded with much skepticism by archaeologists working in southern as well as in northern Greece.[64]

It is clear then that the Pefkakia sequence represents only a small fraction of the total assumed time span between the end of the Late Neolithic and the beginning of the Early Bronze Age. Consequently, an exact stratigraphic definition of the "Rachmani" phase is still wanting. This generally holds for all sites reported to have "Rachmani" deposits, where even the stratigraphic succession from the "Dimini" phase is assumed rather than shown.[65] On the other hand, it has to be pointed out that the long and convoluted discussion of the comparative chronology at Pefkakia has overshadowed the significance of the presence of imports, which reveal the long-distance connections of the site, already in the Late Neolithic.[66]

The Early Bronze Age at Pefkakia was represented by substantial deposits and architectural remains. The extent of the settlement appears to have been larger than during the Neolithic, since EBA deposits have also been found at the base of the mound. The remains were originally described by Milojčić, who reported a defensive wall with a bastion in an early phase, a large apsidal building with a hearth and several episodes of rebuilding, and the so-called "Trojan megaron" in the final phase. Recently, Christmann has subdivided the EBA levels into seven building phases. He assigned the circuit wall to phase 3, the reconstructions of the apsidal building to phases 5–7, and the "megaron" to the two subphases of phase 7.[67]

During the Early Bronze Age Pefkakia maintained its overseas connections, but their scope was now broader, and oriented toward the south and east rather than the north.[68] The presence of the solid

[60] *Pefkakia* I, 16–25, 44; E. Christmann, "Thessalien im dritten Jahrtausend," *Thraco-Dacica* 14 (1993) 42–43; Coleman 257.

[61] *Pefkakia* I, 139.

[62] Coleman 276–77; pottery of the "Sesklo," "Tsangli," "Arapi," "Otzaki," and "Dimini" phases is present in almost all levels of the trench. See *Pefkakia* I, pls. 137–38.

[63] *Pefkakia* I, 25, 142–43, pl. 145; H.-J. Weisshaar, "Ausgrabungen auf der Pevkakia Magula und der Beginn der frühen Bronzezeit in Griechenland," *ArchKorrBl* 9 (1979) 385–92; also Weisshaar (supra n. 59); Weisshaar, "Galepsos und Urfirnis: Bemerkungen zur relativen Chronologie der Rachmani-Kultur," in J. Lichardus ed., *Die Kupferzeit als historische Epoche. Symposium Saarbrücken und Otzenhausen 6.–13.11.1988* (Bonn 1991) 240–43.

[64] Coleman 257, 276–77; C. Renfrew, "Sitagroi in European Prehistory," in *Sitagroi* 478–79; Grammenos 86–91; R. Treuil, *Le Néolithique et le Bronze Ancien égéens: Les problèmes stratigraphiques et chronologiques, les techniques, les hommes* (*BEFAR* 248, Athens 1983) 73–74; Christmann (supra n. 55) 203 and (supra n. 60) 41–44 has demonstrated that Weisshaar's position is unacceptable, also arguing that a phase contemporary with EH I, which is absent from Pefkakia, is represented at Petromagoula.

[65] Renfrew (supra n. 64) 478 suggests that a hiatus must be assumed in the Pefkakia sequence; Milojčić, *Otzaki* III (infra n. 98) 134–37; Treuil (supra n. 64) 77–78.

[66] Notable among the other finds are two copper adzes from the second phase of Rachmani levels: *Pefkakia* I, 48, pl. XIX.

[67] Christmann (supra n. 55) 201 with earlier references. Also E. Christmann, *Die deutschen Ausgrabungen auf der Pevkakia-Magula in Thessalien* II: *Die frühe Bronzezeit* (*BAM* 29, Bonn, in press). For EBA deposits at the base, see *Pefkakia* III, 59.

[68] EH II and EC II imports were present in all seven phases. Phases 4–6 run parallel with Argissa II. "Anatolianizing" features in the pottery first appeared in phase 6, but were mainly present, together with Anatolian imports, in phase 7, which displays affinities with Lefkandi I and Keos III and late EH II. Cf. J.L. Davis, "Review of Aegean Prehistory I: The Islands of the Aegean," *AJA* 96 (1992) 96–97, ns. 36–37; also J. Rutter, "Review of Aegean Prehistory II: The Prepalatial Bronze Age of the Southern and Central Greek Mainland," *AJA* 97 (1993) 764–65, ns. 78–79. "Anatolianizing" features, however, were also present in the transitional phase together with EH III patterned ware. See Christmann (supra n. 55) 201–203 and (supra n. 60) 43–46; see also infra n. 70.

perimeter wall and the expansion of the exchange network might indicate increased centralization of the social structure, but decisive evidence is lacking.

The MBA habitation at Pefkakia is considerably better understood.[69] The MBA sequence has been divided into seven phases, preceded by a transitional phase between the Early and Middle Bronze Age.[70] From phase 2 onward, the settlement was closely compacted, in a pattern that lasted until phase 6. The stone-built oblong houses stood on terraces along the slope of the mound. Internal arrangements varied but houses were consistently divided into a number of rooms. Storage facilities in various forms were abundant, and a few industrial installations were also found.[71]

Buildings were closely packed, leaving little free space. They give the impression of self-contained units, partitioned into separate spaces, often with a discrete function. The repeated occurrence of infant burials inside the houses, occasionally marked with stone slabs, may further stress the self-containment of the household. Similarly, the increasing importance of hunting during the Bronze Age may also have been part of a strategy to sustain the self-sufficiency of the household through individual or privately negotiated acts.[72] In phase 7 a significant change is observed in the southern part of the mound, where the former habitation area was occupied by cist graves of infants and some adults.[73]

Material culture began changing already in the earlier MBA levels, but the changes can be seen more clearly after phase 3. The most obvious was the gradual adoption of a new type of table ware, Gray Minyan, and the appearance of several types of matt-painted vessels. Gray Minyan became the dominant fine ware after phase 4. Matt-painted sherds were already present in the transitional phase, but fine and coarse matt-painted pots appeared mainly after phase 5.[74] Domestic plain wares relate Pefkakia to the inland sites of the region, such as Argissa. By contrast, special pottery products, such as Gray Minyan and matt-painted pottery, differentiate the site from the inland regions, particularly during the later Middle Bronze Age. In that period pottery was also coming from central Greece, the northeastern Peloponnese, Aegina, the Cyclades, and possibly other areas not easily identifiable.[75]

A less detailed picture is available for the LBA settlement. Previous research had already shown that the southern terrace of the mound was reinhabited in a period corresponding to the LH III pottery phase. A cemetery with rectangular built tombs was placed at the edge of the magoula, and a substantial building nearby was abandoned in the period corresponding to LH IIIA. Recent research has demonstrated that the settlement extended well beyond the mound, acquiring a size of ca. 8 ha.[76] Parts of a substantial building with plastered walls, benches, and extensive storage space were found at some distance to the southeast, and parts of a second to the southwest. The building had two phases, the second of which contained late LH IIIB–early LH IIIC pottery. After that period the settlement seems to have been abandoned.

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[69] *Pefkakia* III. Habitation probably expanded in that period also: A. Batziou-Efstathiou, "Αποτελέσματα των πρόσφατων ανασκαφικών ερευνών στη Νέα Ιωνία και στην περιοχή Πευκακίων," in *Iolkos* 59–69.

[70] *Pefkakia* III, 4–5, plan I. The remains of this transitional phase are scanty, and the extent of changes in the architecture from the underlying EBA levels cannot be evaluated: *Pefkakia* III, 6–7, 61. Absolute dates are not available, and relative dating is established through comparative stratigraphy. The period from the transitional to the third phase has been related to EH III, and phases 3–6 may correspond to the MH period. Phase 7 displays affinities with Shaft Grave period contexts. The earlier five MBA phases at Pefkakia are broadly related to the early five MBA phases at Argissa. The limited and selected set of data, however, cautions against detailed comparisons.

[71] *Pefkakia* III, 7–33, 51–55, 61–64.

[72] The contribution of hunting to the diet increased in Bronze Age Thessaly. At Pefkakia it rose to 21%: A. von den Driesch, "Haus- und Jagdtiere im vorgeschichtlichen Thessalien," *PZ* 62 (1987) 7, esp. fig. 2. Halstead 1984, ch. 7.3, sees hunting as a way of buffering risk. See also P. Halstead, "Man and Other Animals in Later Greek Prehistory," *BSA* 82 (1987) 74–75, where the archaeozoological evidence of Pefkakia is discussed in the general context of Neolithic and Bronze Age subsistence. Animal remains from Pefkakia are presented in B. Jordan, *Tierknochenfunde aus der Magula Pevkakia in Thessalien* (Diss. Univ. of Munich 1975); G. Hinz, *Neue Tierknochenfunde aus der Magula Pevkakia in Thessalien* 1: *Die Nichtwiederkäuer* (Diss. Univ. of Munich 1979); K.-P. Amberger, *Neue Tierknochenfunde aus der Magula Pevkakia in Thessalien* 2: *Die Wiederkäuer* (Diss. Univ. of Munich 1979).

[73] Burials were occasionally furnished with pots and a few other objects: *Pefkakia* III, 31. For similar cases, see supra n. 50.

[74] "Matt-painted" here designates the possible use of manganese-based paint in decoration. The technique appeared at a time when EH III patterned ware was still present in the deposits: *Pefkakia* III, 31 n. 1,204. After phase 5, polychrome and wheelmade matt-painted pots appeared as well: *Pefkakia* III, 149–73. For LBA matt-painted pottery and plain wares, see *Pefkakia* III, 174–76 and 285–89.

[75] Maran is cautious in the macroscopic identification of imports and points out that in cases such as Gray Minyan it is difficult to distinguish imports from Thessalian products: *Pefkakia* III, 81.

[76] A. Batziou-Efstathiou, "Νεότερες ανασκαφικές έρευνες στην ευρύτερη περιοχή της μαγούλας 'Πευκάκια'," in *Ancient Thessaly* 279–85, figs. 1–2, pls. 60–63; Batziou-Efstathiou (supra n. 69).

Petromagoula (fig. 1:6). The excavations at Petromagoula might be crucial for understanding the FN–EBA sequence in coastal Thessaly. The site lies on the former coastline midway between Pefkakia and Dimini. The stratigraphic sequence presents two main architectural phases with a maximum depth of deposit of 2.80 m down to bedrock. No complete architectural plans were found, but houses with stone socles and a circuit wall are reported. Storage facilities were abundant both indoors and outdoors. The finds included a group of copper and lead objects.[77]

The pottery of Petromagoula displays affinities with the "Rachmani" levels at Pefkakia. It also includes incised pieces (absent from Pefkakia) related to groups dating to the beginning of EH I.[78] It is probable that the very beginning of the Bronze Age is present at Petromagoula, in contrast to Pefkakia. In that case, Petromagoula may date closer to the end of the Final Neolithic, thus narrowing the gap left by the high ^{14}C dates of Pefkakia.

Compared to the Middle Neolithic, intensity of occupation in the wider area of the Volos bay, including the hills around Sesklo, seems to have increased during the Late and Final Neolithic. Seen in this light, the foundation of Petromagoula would be part of a regional trend, which could also be responsible for the alluviation of the Dimini bay through the anthropogenic erosion of higher ground.[79]

Kastro/Palia (fig. 1:7). Modern buildings impede the investigation of the impressive tell of Kastro/Palia at the tip of the gulf, near the western edge of modern Volos.[80] Several crucial aspects relating to its stratigraphy and history during the Neolithic and Bronze Age remain obscure, and the interpretation of earlier and recent finds, especially in respect to the organizational aspects of the site and its importance in the regional LBA settlement network, is at best equivocal.

Over several years the ΙΓ′ Ephoreia has excavated over a dozen test pits spread over the site mainly as part of rescue operations.[81] The new excavations confirmed some of Theocharis's claims and challenged others. Up to 2 m thick, the EBA and MBA deposits contained remains of apsidal and rectangular houses with stone walls, clay and paved floors, and occasional infant burials.[82] During the Middle Bronze Age Kastro/Palia participated in the same exchange network as Pefkakia.[83]

Less substantial were the LBA deposits. Recent excavations were unable to locate further traces of the building designated a "palace" by Theocharis. Various architectural phases were represented in the deposits, dated by pottery of LH IIB–LH IIIB2 styles. Finally, despite several instances of burnt and ashy layers, no destruction horizon has been identified in any LBA phase or between the LBA and Protogeometric levels.[84]

It would be an exaggeration to say that the LBA

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[77] L. Hadjiaggelakis, "Ο προϊστορικός οικισμός της Πετρομαγούλας," *Anthropologika* 5 (1984) 75–85. The lead and copper objects are discussed and analyzed in McGeehan-Liritzis and Gale (supra n. 46) 205, 209–15, 222–23. A possible source for the lead object is Lavrion.

[78] Hadjiaggelakis (supra n. 77) figs. 10–11; C.L. Zachos, *Ayios Dhimitrios: A Prehistoric Settlement in the Southwestern Peloponnesos: The Neolithic and Early Helladic Periods* (Diss. Boston Univ. 1987) 134; Christmann (supra n. 55) 201 and (supra n. 60) 44.

[79] Halstead 1984, table 6.4; and supra n. 31.

[80] *Gazetteer* 272–73. For the location of the site, see P. Marzolff and W. Boser, *Die deutschen archäologischen Forschungen in Thessalien: Demetrias* III (*BAM* 19, Bonn 1980) plans I–II. The two early excavators of Kastro, Tsountas and Theocharis, argued for its identification with Homeric Iolkos, a view that has been recently challenged (infra n. 91).

[81] Z. Malakasiotou, "Νεότερα δεδομένα για την αρχαία Ιωλκό στα Παλιά του Βόλου," in *Iolkos* 47–57; *ArchDelt* 36 B′ (1981) 352–53; *ArchDelt* 43 B′ (1988) 239–41. The total depth of deposits including those of the later periods (Protogeometric–Geometric and Early Christian–Ottoman) averaged ca. 9 m.

[82] The earliest occupation at Kastro/Palia may date to EB I: *Gazetteer* 272. The three successive EBA building phases distinguished by Theocharis have affinities with EBA Argissa II and III and some parallels with Lefkandi I and Ayia Irini III (*Argissa* III, 126–29, pls. 60–62).

[83] Similar MBA and early LBA wares, including polychrome-decorated and Minoan pots, occur at Kastro/Palia and Pefkakia: *Pefkakia* III, 219–22; see also J.B. Rutter and C.W. Zerner, "Early Hellado-Minoan Contacts," in R. Hägg and N. Marinatos eds., *The Minoan Thalassocracy: Myth and Reality* (Athens 1982) 82, no. III, 6S; S.A. Immerwahr, "Some Pictorial Fragments from Iolkos in the Volos Museum," *ArchEph* 1985, 85–94.

[84] Malakasiotou, in *Iolkos* (supra n. 81) 51–53. Finds include fragments of pictorial-style vases and figurines of Mycenaean types. Earlier Mycenaean-style pottery in very small numbers has been reported but not illustrated, and was found together with pottery designated as "Middle Helladic." The characteristics of early LBA assemblages in Thessaly have not yet been determined with precision. It is generally accepted that MH burnished ware continued and that pre-LH IIB pottery was rare in the area around Volos and absent further inland. Consequently, it is probable that some of the Thessalian deposits generally reported as MH could date to the LBA. On the other hand, the plan, extent, and specific date of occupation during the period of LH IIIC pottery and the transition from LH IIIC to Protogeometric remain undetermined; see Malakasiotou (supra) 53. M. Sipsie-Eschbach, *Protogeometrische Keramik aus Iolkos in Thessalien* (Prähistorische Archäologie in Südosteuropa 8, Berlin 1991) 186–88, has recently published a few small stratified deposits from Theocharis's test pits.

history of the site has become any clearer after the recent investigations. The remains display strong horizontal and vertical discontinuities and, for that reason, assessments of the size and density of LBA occupation would be speculative. In view of the growing evidence from Dimini and Pefkakia, however, LBA Kastro/Palia emerges as a less prominent settlement than previously thought.

Rescue excavations over many years in the nearby district of Nea Ionia have unearthed an extensive cemetery, ca. 500 m to the north of the settlement, representing most periods of occupation at Kastro/Palia.[85] Twenty new cists and one pit, with LH IIB and LH IIIA style pottery, have recently been added, found underneath 3.50 m of alluvium.[86] The graves held single adult inhumations in a contracted position and were generally poor in grave goods. The most common finds were Mycenaean alabastra and piriform jars, but a bronze dagger, sealstone, bronze ring, a few beads, and decorated bone pins have also been found. One grave stands out: in addition to pots of fine quality, it contained a type CII sword with an alabaster pommel, and a razor.[87]

The proximity of the tholos tomb at Kapakli to the settlement has been a crucial component of the argument for the dominance of Kastro/Palia in the Volos area. Avila has restudied the finds and proposed a new date in LH IIIA for the main period of use.[88] The construction, size, and contents of the tholos exemplify the strong contrasts characterizing Thessalian society during this period. It may be suggested that an important medium for the expression of these contrasts was the varied use of the contemporary Mycenaean material culture by the different segments of the population. Avila contrasts the high craftsmanship of the gold objects with the much lower technological standards displayed by local Mycenaean (LH I–LH IIIA1) pottery.[89] These contrasts may indicate dissimilar modes and levels of adoption of cultural traits from southern Greece by the elite and the rest of the community. At the same time, they may display the different levels of incorporation of Thessalian society into the Mycenaean cultural system.[90]

Finally, in recent years the identification of the settlement at Kastro/Palia with Homeric Iolkos has been questioned on archaeological, literary, and topographical grounds. The incentive was undoubtedly the discovery of the extensive LBA settlement at Dimini. The presence of three closely spaced and equally large contemporaneous settlements along the coast of Volos poses difficulties for the recognition of a regional hierarchical structure on the basis of differences in settlement size. Similarly, the absence of clearly differentiating elements in terms of monumentality, craft specialization, administrative features, and burial practices among the three sites impedes unequivocal recognition of a political and administrative center for the area. Therefore, the identification in coastal Thessaly of a state, resem-

[85] Summary of research in Batziou-Efstathiou (supra n. 69) 59–60. D. and M. Theocharis, "Εκ του νεκροταφείου της Ιωλκού," *AAA* 3 (1970) 198–203, explored 20 cist graves buried underneath the alluvium and dated by LH IIB- and IIIA-style pottery. Two other distinct burial grounds can be related to the settlement. Sixteen LBA cist graves were excavated by Tsountas at the edge of the mound. More LBA cist graves have been found recently in the same area (unpublished). For the tholos tomb excavated by Kourouniotis at Kapakli ca. 500 m to the northwest, see below.

[86] A. Batziou-Efstathiou, "Μυκηναϊκά από τη Νέα Ιωνία Βόλου," *ArchDelt* 40 A′ (1985) 17–71. A total of 208 graves belonging to various periods from the EBA to Early Christian have been explored since 1981: Batziou-Efstathiou (supra n. 69) 59.

[87] Two jugs stand out for their decorative and technological superiority; see Batziou-Efstathiou (supra n. 86) 54–56 and 77–79. An almost identical jug, a cup, and sword were found in another grave excavated by D. and M. Theocharis (supra n. 85) fig. 2. Single burials in a contracted position, primarily in cist graves, seem to be the rule, at least since the third millennium B.C. in Thessaly. For a discussion of EBA and MBA burials in Thessaly, see Halstead 1984, ch. 5.2.4–5 and figs. 5.4–5. Presumably the practice continued through the LBA. For LBA single inhumations, see Halstead 1984, ch. 5.2.5, and Feuer 70, where inland examples are discussed.

[88] A.J. Avila, "Das Kuppelgrab von Volos-Kapakli," *PZ* 58 (1983) 15–60. The stylistic affinities of some ornaments leave open the possibility of a longer use of the tomb (Avila 49–56). The 20 burials were arranged in groups, and grave goods were concentrated in four of the burials. The tomb (10 m in diameter) was rich in gold ornaments along with silver objects, glass paste, and ivory. It also contained Mycenaean, red-burnished, and Gray Minyan pottery (presumably all of LBA date; Avila 23, 55–56).

[89] The differences between local Thessalian Mycenaean and Peloponnesian Mycenaean pottery are seen in the treatment of the clay, modeling techniques, surface treatment, decoration, and firing. Avila (supra n. 88) 57 observes that, occasionally, local non-Mycenaean pottery displays a higher technological standard. The differences, therefore, do not stem from technological skills alone, but also from the particular role of pottery in the Thessalian "market," and from economic aspects such as the level of mechanization or the scale of production. One may assume two distinct modes of ceramic production between early LBA Thessaly, on the one hand, and the Argolid, on the other. There is great scope for further work on local non-Mycenaean and Mycenaean patterns of ceramic technology, production, circulation, and consumption.

[90] Avila (supra n. 88) 57.

bling in organizational features the Mycenaean states of central and southern Greece, is problematic.[91]

Almiros area. An intensive survey has been initiated in the area southeast of Almiros, around the Hellenistic city of Halos. Preliminary results confirm the known pattern of prehistoric occupation in the coastal area and further inland around Zerelia Magoula (fig. 1:9). A LBA rock-cut chamber tomb at Kato Mavrolofos makes a useful addition to the few other examples in Thessaly. Pottery of LH IIIA2 and LH IIIB was associated with at least six burials. Metal finds were missing but the plundered tomb was fairly rich in glass and carnelian beads, conical and biconical "buttons," and glass and steatite seals.[92]

Eastern Plain

No major excavation has been conducted in the eastern Larisa plain since the intensive activity of the mid-1960s. During the last 20 years, however, the results of these early excavations have gradually appeared in an impressive number of volumes presenting in detail the evidence on which the preliminary synthesis by Milojčić had been based.

Argissa (fig. 1:10). Among the first sites to be excavated by Milojčić in the Larisa area, Argissa Magoula is a large tell with an estimated area of 5 ha, the cumulative result of a long history of shifting occupation through the Neolithic and Bronze Age.[93]

The publication of the excavation was completed in 1981 with the presentation of the MBA levels and the few later finds. Architectural remains of the EBA habitation were very sparse. The only evidence for the earlier part of the period are the three successive ditches that probably marked the western limit of the site, carrying on a Neolithic tradition. The remains of two rectangular post-framed houses with facilities for storing and processing food inside and outside, on top of the earlier ditches, indicate the expansion of habitation during the later part of the period.[94] The MBA stratigraphy was divided into seven building phases with a sterile level at the bottom of the sequence.[95] The two large post-houses of the last EBA phase were succeeded in the next phase by three smaller, elongated ones built with mudbricks. From the second phase onward habitation became dense. Narrow alleys separated the houses, which were usually packed with hearths, bins, and storage facilities. An emphasis on storage inside houses characterizes all MBA phases. The plan in the excavated part of the settlement was more or less stable, but the position of the houses shifted laterally from one phase to the next. In the sixth phase the plan became very irregular, and houses with different orientations covered the excavated area. The last MBA and the following LBA phase were much eroded.[96]

As at MBA Pefkakia, access to domestic space was restricted, in contrast to the pattern of the last EBA phase, when several domestic activities took place outside. On the other hand, functional partitioning within the house (persistent at Pefkakia) was not evident at Argissa. At the community level, the arrangement of spaces in the excavated part appears less complex than at Pefkakia: no indications of terracing or large-scale constructions involving commu-

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[91] Hourmouziadis 1982 (supra n. 44) 33–35 suggests that Homeric Iolkos refers to the area rather than to a particular site. This is supported by the fact that Pefkakia and Dimini were abandoned at the end of the 13th or early 12th century B.C., while Kastro/Palia continued through the Protogeometric period. On the basis of the archaeological evidence from Dimini and the reinterpretation of literary sources, it has been proposed recently that Dimini should be identified with Homeric Iolkos: Adrimi-Sismani, in *Ancient Thessaly* (supra n. 48) 277–78; and in *Iolkos* (supra n. 48) 36–43; B.G. Intzesiloglou, "Ιστορική τοπογραφία της περιοχής του κόλπου του Βόλου," in *La Thessalie* B, 34–42; and Intzesiloglou, "Νέα αποτελέσματα για τη θέση της Ιωλκού," in *Iolkos* 71–82. For a discussion of the problems and possible forms of LBA state organization in Thessaly, see Feuer 41–45 and Halstead 1984, ch. 6.4.6.

[92] A. Efstathiou, Z. Malakasioti, and R. Reinders, "Halos Archaeological Field Survey Project," *Newsletter of the Netherlands Institute at Athens* 3 (1990) 31–45; B.J. Haagsma et al., "Between Karatsadagli and Baklali," *Pharos* 1 (1993) 147–64; Malakasioti et al., "A Neolithic Site in the Almiros Plain near Karatsadhagli (Thessaly, Greece)," *Pharos* (in press); Malakasioti, *ArchDelt* 39 B′ (1984) 140, fig. 2, pl. 43; and Malakasioti, "Θαλαμοειδής μυκηναϊκός τάφος στον Κάτω Μαυρόλοφο Αλμυρού," in *Ancient Thessaly* 267–71. For a discussion of chamber tombs in Thessaly, see Feuer 76 and Halstead 1984, ch. 5.2.5 and figs. 5.4–5. The restricted distribution of chamber tombs in Thessaly and their rich finds support their characterization as elite burials.

[93] *Argissa* III, 12; *Atlas* no. 50. The largest part of the mound has been eroded by the Peneios River.

[94] *Argissa* III, 12–17.

[95] E. Hanschmann, *Die deutschen Ausgrabungen auf der Argissa-Magula in Thessalien* IV: *Die mittlere Bronzezeit* (*BAM* 23, Bonn 1981) 5–15. For the synchronization of the Argissa MBA phases with those of Pefkakia, see supra n. 70. Maran, *Pefkakia* III, 228–30, points out that the change in material culture between the EBA and MBA levels at Argissa is much less pronounced than suggested by Hanschmann. For the hiatus in the stratigraphy, see *Argissa* III, 115–17, and *Pefkakia* III, 239–41.

[96] For storage facilities, see Hanschmann (supra n. 95) pls. G–H. For LBA deposits, see Hanschmann (supra n. 95) 117–19; Feuer 124. A group of handmade pottery indicates the continuity of the local ceramic tradition into the LBA. The Mycenaean pottery at the site belongs to LH IIIA2 and LH IIIB.

nal labor were identified. Whether this variance simply reflects the difference between a site built on a flat surface and one built around a natural knoll, or differences in community organization between a coastal and an inland settlement, remains an open question. Similarly, the precise meaning of the often-mentioned inland/coastal distinction in Bronze Age Thessaly remains obscure. The near absence at Argissa of imports of pottery from southern Greece marks a difference from Pefkakia, and demonstrates the crosscutting, but not overlapping, exchange networks of the two communities.[97]

Otzaki (fig. 1:11). The publication of the old excavations at Otzaki Magoula by Milojčić was completed in 1983 with the presentation of the stratigraphy and the Neolithic architecture. The excavated area of less than 400 m^2 represents a very small fraction of the total area of the magoula, estimated at 9 ha.[98]

In the 4 m of MN deposits there were as many as 16 reconstructions of houses, some with further subphases. Throughout the Middle Neolithic the general layout of the settlement remained stable, despite successive rebuildings of individual houses. The main characteristic of this layout was its compactness and the limited open space, in contrast to sites such as Achilleion or Sesklo A. The rectangular houses, occasionally of the "Tsangli" type with internal buttresses, had a stable plan, with one, and rarely two, rooms. All houses were built of mudbrick, with the exception of the latest MN phase, where lines of postholes mark a change in the building technique. Posts were also used in the earlier phases for the support of walls and roofs.

The information provided for the plans and phases of the buildings is rich, but the function of rooms and of the limited open space between them has not been determined. Storage and food-processing facilities are not mentioned, with the exception of the occasional hearth. Apart from pottery, which was abundant, the number of other finds is astonishingly limited.[99] The significance of that pattern is unclear.

The rich architectural remains of the MN period contrast strongly with the poor preservation of the LN and FN levels. The bulk of information for these periods came from ditches and pits that had been dug from and through LN levels, where no substantial architectural remains were found to support stratigraphic observations.[100] A number of deep and wide ditches, similar to those found in other sites from the Early Neolithic onward, were also identified and characterized as defensive. The same interpretation was given to a strong earthen construction with a wooden-post frame.[101] The defensive function, however, is incompatible with at least one of the ditches, which runs through the middle of the settlement, while the course of the others and the character of the earthen construction are indeterminable. The difficulty of approaching the function of these constructions in a more meaningful way is exacerbated by the absence of information on their contents, except for pottery.[102]

Ayia Sophia (fig. 1:13). About 3 km northwest of

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[97] At Argissa, as at Pefkakia, matt-painted pottery appears in the earliest MBA levels: Hanschmann (supra n. 95) 114. Few Gray Minyan and even fewer matt-painted sherds were found at Argissa, which does not necessarily indicate a lack of long-distance contacts. Indeed, contacts may have existed with areas to the north and west. At the moment, however, it is not easy to distinguish these exchanges, not least because of our poor knowledge of MBA communities further north and west; see Hanschmann (supra n. 95) 109–16; *Pefkakia* III, 231–35, 285–89.

[98] V. Milojčić, *Die deutschen Ausgrabungen auf der Otzaki-Magula in Thessalien* II: *Das mittlere Neolithikum: Die mittelneolithische Siedlung* (*BAM* 20, Bonn 1983); Milojčić, *Die deutschen Ausgrabungen auf der Otzaki-Magula in Thessalien* III: *Das späte Neolithikum und das Chalkolithikum: Stratigraphie und Bauten* (*BAM* 20, Bonn 1983).

[99] For a detailed publication of the MN pottery and the few other finds, see Mottier (supra n. 23) 20–38, 72. The pottery is divided into monochrome, incised, painted red-on-white, and scraped wares, but the frequencies of wares, types, and motifs are not recorded. There are notable differences in the pottery repertoire from the coastal area, both in shapes and motifs.

[100] Military trenches dug during the Balkan wars of 1912 have significantly affected the shape of the mound: Milojčić, *Otzaki* III (supra n. 98) 7. Milojčić, on the basis of the stratigraphy of the pits, assigned the black-burnished "Larisa" ware to FN, but evidence from Platia Magoula Zarkou and other sources, discussed below, has since shown this assignment to be erroneous. Similarly, much of the ceramic material that defines the "Otzaki A–C" and "Rachmani" phases does not come from closed contexts but from pits and ditches: H. Hauptmann, *Die deutschen Ausgrabungen auf der Otzaki-Magula in Thessalien* III (*BAM* 21, Bonn 1981) 42, 66, 134. K.I. Gallis, "Results of Recent Excavations and Topographical Work in Neolithic Thessaly," in *La Thessalie* A, 58, strongly doubts the validity of the Otzaki scheme.

[101] Milojčić, *Otzaki* III (supra n. 98) 12–13, 22–23, 28–29, 33–35.

[102] The ceramic material has been exhaustively published by Hauptmann (supra n. 100).

Otzaki lies Ayia Sophia Magoula, the last site excavated by Milojčić in the Larisa region. It is a low and extended mound, rising only 3 m above the plain and covering 2 ha.[103] The brief excavation explored an area of 400 m^2 in the center, where many pits had been sunk. The stratigraphical observations on these pits allowed Milojčić to define the sequence succeeding the LN "Otzaki" phase. Deposits of earlier LN phases were also found but have not yet been published.

An important LN feature was uncovered. A platform constructed of mudbricks, with three consecutive phases, occupied a central part of the site. It was connected to the lower parts of the mound. On top of the platform the porch of a building, interpreted as a "megaron," was uncovered. Two mudbrick walls formed a sort of gateway to the east. The arrangement recalls the central court at Dimini, which also stood higher than the surrounding courtyards and was connected to them by gateways. The platform area at Ayia Sophia was separated during the final LN by a ditch, possibly surrounding the central part.

The significance of the terraced area is highlighted by its proximity to a unique feature with a possibly ritual significance. Immediately to the east, an earlier artificial mound, with a clay platform on its top, covered three successive small rectangular structures of mudbrick, associated with two burials. The structures were filled with fine compact earth, mixed with a few fragments of human and animal bone. The surface of the artificial mound was burnt hard, and a circular pit with a clay rim was constructed at the top. The pit was filled with ashes.[104]

The association of a probable megaron with a feature related to the ritual treatment of the dead is not a common characteristic of Neolithic Greece, and it is not, therefore, easy to decipher. Halstead argued that the mound represented a "revered minority burial" and that its association with the megaron reinforces the evidence available from other sites for the emergence of an institutionalized elite during the LN period.[105] Alternatively, the association of the megaron with a place of mortuary ritual could imply a form of symbolic control over the dead by a certain privileged group, materialized in this revered spot. The find only permits a glance into ritual in Neolithic communities, an area little understood, yet with a potentially significant role.

Soufli Magoula (fig. 1:14). A group of EN cremations was found at Soufli Magoula and published by K.I. Gallis of the IE′ Ephoreia.[106] The cemetery was found (accidentally) at the perimeter of the magoula, where in 1958 Biesantz had excavated a small group of LN cremations in urns. The new finds consisted of 15 concentrations of human bones, ceramic vessels and sherds, animal bones, and traces of fire. In almost all cases a miniature bowl was found with the cremation, and one cremation was accompanied by a stone ax. The burials had been made in shallow, irregular depressions, dug into the levels of the early settlement. Two deeper round pits approximately 1 m in diameter, constructed with care, were interpreted as incinerators. They contained ashes, human and animal bone, and some sherds but no complete vessels.

The reconstruction of the burial procedure in its details is not possible from the available information. Selection of particular parts of the skeleton for burial, mainly the skull and the limbs,[107] is evident. More meaningful perhaps is the presence of the burials in the habitation area of the settlement, the deposits of which covered the cemetery soon after.

Velestino (fig. 1:17). The area of Velestino (ancient Ferai) is one of the few naturally watered spots in the arid southern part of the eastern plain. The area was densely inhabited since the Early Neolithic, with the population living in dispersed settlements.[108] These settlements were abandoned by the Early Bronze Age, with the exception of a huge tell, known as Magoula Bakali, in the vicinity of the Hyperia spring. Excavations at the foot of the tell uncovered remains of an extended MBA settlement and ceme-

[103] Milojčić (supra n. 40) 1–14; *Atlas* no. 42. The site is reported to have EBA and MBA phases. Evidence for Bronze Age habitation has also been found ca. 100 m south of the magoula. See *Atlas* no. 52. A short study of the *Spondylus* objects from Ayia Sophia has been published by A. Tsuneki, "A Reconsideration of *Spondylus* Shell Rings from Agia Sofia Magoula, Greece," *Bulletin of the Ancient Orient Museum* 9 (1987) 1–15. Tsuneki sees evidence for craft specialization and mass production, but the size of the sample hardly justifies such conclusions.

[104] Milojčić (supra n. 40) 6–7, pl. 4.

[105] Halstead 1984, ch. 5.2.3; Halstead 1994, 203.

[106] K.I. Gallis, *Καύσεις νεκρών από τη Νεολιθική εποχή στη Θεσσαλία* (Athens 1982) 23–63.

[107] N.I. Xirotiris, "Αποτελέσματα της ανθρωπολογικής εξετάσεως των καμένων οστών από τη Σουφλί Μαγούλα και την Πλατιά Μαγούλα Ζάρκου," in Gallis (supra n. 106) 190–99.

[108] *Atlas* nos. 270–74, 280, 331. O. Apostolopoulou-Kakavoyianni, "Τοπογραφία της περιοχής των Φερών Θεσσαλίας κατά την προϊστορική περίοδο," *ArchDelt* 34 A′ (1979) 189–200.

tery. During the Late Bronze Age, habitation spread further east and north, over an area of almost 25 ha. The MBA cemetery of cist and pit graves was succeeded by a LBA cemetery of small cist graves with contracted burials accompanied by few grave goods. A potter's kiln, where LH IIIC pots were fired, was excavated at the periphery of the settlement.[109]

The settlement pattern in the area of Velestino is an example of the aggregation of smaller Neolithic communities into larger, long-lasting Bronze Age settlements. This pattern, common in inland Thessaly,[110] is very different from that observed in the coastal areas, where settlement was more stable, and communities may have continued their autonomous existence until the end of the 13th century.

The eastern Thessalian plain has also been the focus of significant palaeoenvironmental research. Demitrack has studied alluviation cycles on the plain and the possible impact of human settlement on the landscape. Her studies indicate the existence of a series of alluvial fans at the edges of the plain and a series of Peneios alluvia, dated to the Pleistocene and Holocene. The middle Holocene episode of alluviation (the Girtoni alluvium) has been dated to 7000–6000 B.P. and has been tentatively related to the activity of farmers in the Middle and Late Neolithic.[111]

An extensive survey program has been undertaken in the eastern plain during the last 20 years by the IE′ Ephoreia (Larisa).[112] One hundred and three new sites have been added to those previously known, raising the total of prehistoric sites in eastern Thessaly to 255. Most of the additions are low mounds or are located in hilly areas. The pattern that emerges shows an initial slight preference for habitation in the plains rather than the hilly areas, followed by an expansion to the open plains in the Late Neolithic, and recolonization of the hills and uplands in the Late Bronze Age. A marked increase was noted in the number of settlements in the LN period and a sharp decline during the Middle and Late Bronze Age. The FN period presents the sharpest drop in the number of sites, which, in view of the length of the period, is difficult to explain.[113] The general trends accord well with the data from the whole of Thessaly presented by Halstead, with the exception of the coastal area, where settlement was more stable.[114]

Site dimensions as reported by Gallis are systematically larger than those used by Halstead, and the discrepancy affects estimates of population size and the perception of social structure.[115] The incompatibility of the two data sets stems from the employment of different measuring techniques, none of which, however, complies with the requirements of modern survey work.[116] A more accurate estimate of size would require intensive, systematic sampling of Thessalian sites.

Western Plain

The western plain of Thessaly displays a lower concentration of settlement in the prehistoric period with the exception of the hilly area near Farsala. This sparseness of habitation is usually attributed to unwelcoming physiographical characteristics and also to the low intensity of archaeological work. Apart

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[109] A. Doulgeri-Intzesiloglou, "Οι νεότερες αρχαιολογικές έρευνες στην περιοχή των αρχαίων Φερών," in *La Thessalie* B, 76–78; Apostolopoulou-Kakavoyianni (supra n. 108) 181–83; A. Batziou-Efstathiou, "Μυκηναϊκός κεραμεικός κλίβανος," in *La Thessalie* A, 215–24. Halstead 1984, ch. 5.2.5, suggests that Magoula Bakali was an artificially segregated habitation area, surrounded by ramparts and perhaps occupied by an elite.

[110] Halstead 1984, table 6.4.

[111] Demitrack, in *La Thessalie* A (supra n. 31) figs. 1–6, and Demitrack 1986 (supra n. 31); van Andel et al. 1990 (supra n. 31) 386–88.

[112] *Atlas* 85–195. The catalogue of prehistoric sites includes data on their topography, size, and date, an account of research prior to 1991, and a brief inventory of surface finds. See also Gallis (supra n. 100) 57–60. Work on figurines collected from sites of the east Thessaly survey has been published by G. Toufexis, "Νεολιθικά ειδώλια της περιοχής Τυρνάβου," *Πρακτικά Πρώτου Συνεδρίου Τυρναβίτικων Σπουδών, Τύρναβος 9–10 Σεπτεμβρίου 1990* (Tirnavos 1991) 21–29; Toufexis, "Neolithic Animal Figurines from Thessaly," in *La Thessalie* A, 163–68. Also K.I. Gallis and L. Orphanidis, "Twenty New Faces from the Neolithic Society of Thessaly," in *La Thessalie* A, 155–62.

[113] According to Gallis, the visibility of the Final Neolithic is negatively affected by the poor preservation of crusted wares, which he treats as the sole reliable indicator of the period: *Atlas* 229–30. Another period of low visibility is perhaps the early part of the LBA, prior to the appearance of LH III-style pottery. See Feuer 51, 54, figs. 7, 11.

[114] Halstead 1984, chs. 6.1.6, 6.3, 6.4, and table 6.1, as a rule used the data provided by D. French's extensive survey.

[115] In a recent article this difference is used to support a higher figure for the size of the population during the Neolithic: J.-P. Demoule and C. Perlès, "The Greek Neolithic: A New Review," *Journal of World Prehistory* 7 (1993) 368–70.

[116] French (Halstead, personal communication) employed the actual size of the mound, and Gallis, the extent of sherd scatter (*Atlas* 34, 225).

from work at Achilleion and Platia Magoula Zarkou, no major prehistoric project has taken place during the last 20 years.[117]

Achilleion (fig. 1:18). The initial objective of the excavation at Achilleion (1973–1974) was the exploration of the "preceramic" phase that Theocharis had reported from the site.[118] A "preceramic" horizon was absent from the excavated area, however, and the cultural sequence at the site was divided into four main phases, covering without interruption most of the Early and Middle Neolithic. A long series of ^{14}C dates placed that sequence in the period 6500–5500 B.C.[119]

Traces of plastered floors and large pits were described by the excavators as houses and/or storage areas in the first phase. Rectangular houses (some built with pisé on stone socles, others around a frame of posts) appeared in succeeding phases. The general impression is one of a loose spatial arrangement. The area around the houses was littered with hearths, and ovens or food-processing facilities, and it seems probable that the greater part of everyday work took place outdoors; few traces of activity were found inside the houses. The architectural evidence does not, however, permit firm conclusions. During phase IVa, dated to the advanced Middle Neolithic, a deep ditch probably segregated the central part of the settlement.[120]

The continuous sequence of pottery at Achilleion permits the understanding of regional ceramic variation, an aspect often underestimated and interpreted in chronological terms. Contrary to the pattern at other sites, early painted ware continues at Achilleion up to the Middle Neolithic. Also, the absence of MN scraped ware (A3ε, A3ζ) from the Achilleion deposits contrasts with the dominance of this ware in the Larisa area during the same period.[121] With the exception of obsidian, little evidence is available concerning the contacts between Achilleion and other regions. According to Elster, the obsidian tools were not manufactured at the site, in contrast to tools made of other stones.[122]

Platia Magoula Zarkou (fig. 1:19). Founded on Pleistocene alluvium near the Peneios River, the tell of Platia Magoula Zarkou is today only 6–7 m high. Another 5 m of deposits lie below the present surface of the plain, providing a measure of alluviation in the area since the foundation of the site. Recent geomorphological work has established the chronology and sequence of alluviation and has shown that the size of the tell did not exceed 2 ha.[123]

The excavation investigated 10.5 m of deposits in one trench of 8 × 5 m in the center of the mound. Deposition began in the EN III phase and continued through the Middle and the early Late Neolithic, forming a mound ca. 5 m high. The site was reoccupied in the Early and Middle Bronze Age. The transition from the Middle to the Late Neolithic is

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[117] Study of the material from the excavation at Prodromos continued: P. Halstead and G. Jones, "Early Neolithic Economy in Thessaly—Some Evidence from Excavations at Prodromos," *Anthropologika* 1 (1980) 93–117. Some survey work has been done on previously known sites: E. Nikolaou, V. Rondiri, and E. Skafida, "Η προϊστορική έρευνα στην ευρύτερη περιοχή των Σοφάδων," in *Σοφάδες* (Larisa 1994) 7–21; A. Koungoulos, "Νεολιθικές θέσεις περιφέρειας Τρικάλων," paper read at "2ο Συμπόσιο Τρικαλινών," Trikala, 10 November 1990.

[118] Less than 0.2% of the 260 × 200 m tell was sampled. Only the central area of the tell appears to have preserved intact cultural deposits, which may mean that the Neolithic settlement was significantly smaller than the area occupied by the tell today. See *Achilleion* 7–8, 19–22.

[119] For reservations about some of the ^{14}C dates, and about the calibration, see J. Nandris's review of M. Gimbutas ed., *Neolithic Macedonia, as Reflected by Excavation at Anza, Southeast Yugoslavia* (Los Angeles 1976), in *BIALond* 16 (1979) 263–64, and C. Runnels's review of *Achilleion* in *JFA* 17 (1990) 341–45.

[120] Similar ditches are known from Soufli Magoula, Nea Nikomedeia, Servia, and other EN and MN sites: Theocharis 1973 (supra n. 5) 65–66 and supra n. 36 for LN examples.

[121] The early painted ware disappears from Sesklo at the start of EN III: Wijnen (supra n. 7) 35–37. For the MN scraped ware, see Mottier (supra n. 23) 33–34. Scraped ware was very common in Platia Magoula Zarkou but absent from Tsani Magoula: J.-P. Demoule et al., "Transition entre les cultures néolithiques de Sesklo et de Dimini: Les catégories céramiques," *BCH* 112 (1988) 12–16. For regional variability of incised "barbotine" and "cardium" wares, which seem to be rare in Achilleion and in MN contexts, see G.H. Hourmouziadis, "Η διακεκοσμημένη κεραμεική της Αρχαιοτέρας Νεολιθικής περιόδου εις την Θεσσαλίαν," *ArchEph* 1971, 165–77. For a general assessment of the regional variability of Neolithic pottery in Thessaly, see Halstead 1984, ch. 4.

[122] E.S. Elster, "The Chipped Stone Industry," in *Achilleion* 300, table 10.4. Also Elster, "Prehistoric Tools in Thessaly: Achilleion, Makrychori 2 and Plateia Magoula Zarkou," in *La Thessalie* A, 169–76. The quantity of obsidian at the site is considerably smaller than at other Thessalian Neolithic sites: C. Perlès, "L'outillage de pierre taillée néolithique en Grèce: Approvisionnement et exploitation des matières premières," *BCH* 114 (1990) table 3. See also Moundrea-Agrafioti (supra n. 5) 59–60.

[123] van Andel et al. 1995 (supra n. 31).

defined by a house floor, under which the well-known house model of Platia Magoula Zarkou was found, near a hearth.[124]

The main contribution of the Platia Magoula excavations to the chronological and culture-typological discussion about Thessaly is the stratigraphic definition of the so-called "Larisa" ware. Black-burnished pottery constitutes a long-recognized horizon of the Late Neolithic of Thessaly, with connections to areas to the north and south, but a particular variety of fine pots with white paint or plastic decoration had been distinguished by Milojčić and Hauptmann and placed in the Final Neolithic, immediately after the phase of "classical Dimini," on grounds of indirect stratigraphic evidence. Such an attribution was met with reservations by many, who proposed an earlier LN date for this pottery. The excavations at Platia Magoula Zarkou offered the necessary stratigraphic confirmation for dating "Larisa" ware to the beginning of the Late Neolithic.[125]

Although the place of "Larisa" ware in the Thessalian cultural sequence may now be fixed near the beginning of the Late Neolithic, the chronological distribution of the broader class of LN black-burnished wares is still obscure in its details. Their assumed absence from later LN levels cannot be inferred from Platia Magoula or Makryhori 2, where only part of the LN sequence is represented.[126] On the other hand, the regional variability of Neolithic pottery is still very little understood in Thessaly, and it is arguable that many of the differences observed are regional rather than chronological.[127] Laboratory analysis of wares characteristic of the transition from the Middle to Late Neolithic has indicated various patterns of ceramic production and distribution. The Gray-on-Gray ware was probably produced in a few places, while the black-burnished wares had a less centralized production pattern. Such differences introduce an obvious element of variability in the distribution of wares that normally form the basis of the definition of phases in the Thessalian Neolithic.[128]

Information about the community of Platia Magoula comes from its cemetery, a few hundred meters to the north.[129] More than 60 cremations in pots of common domestic types were found in shallow pits. A stone wall of the same period possibly delimited the area. Occasionally, the urns were covered with an inverted vessel and/or were accompanied by another. A number of flint tools, some with traces of use or of fire, were also found. Red-fired sherds, in groups or singly, were found near, over, or inside many of the undecorated urns, as well as scattered throughout the cemetery, but figurines were conspicuously rare. Some parts of the body, such as the skull and limbs, were consistently selected for inclusion in the urns, which occasionally contained bones of different individuals.[130]

The cemeteries at Platia Magoula and Soufli Magoula are the only known cases of organized burial grounds in Neolithic Thessaly. There are obvious similarities between the two, but the location of the

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[124] K.I. Gallis, "Die stratigraphische Einordnung der Larisa-Kultur: Eine Richtigstellung," *PZ* 62 (1987) 147–63; Demoule et al. (supra n. 121) 5–7, fig. 3; Gallis, "Archäologische Entdeckungen aus der Jungsteinzeit Thessaliens (Griechenland)," *Altertum* 39 (1993) 83–89. See also Gallis, "Η σωστή στρωματογραφική θέση της νεολιθικής κεραμεικής της γνωστής ως πολιτισμού της Λάρισας," *Πρακτικά του Α' Ιστορικού-Αρχαιολογικού Συμποσίου* (Larisa 1985) 37–55; C. Becker, "Die Tierknochenfunde von der Platia Magoula Zarkou: Neue Untersuchungen zu Haustierhaltung. Jagd und Rohstoffverwendung im neolithisch-bronzezeitlichen Thessalien," *PZ* 66 (1991) 14–78; G. Jones and P. Halstead, "Charred Plant-Remains from Neolithic–Bronze Age Platia Magoula Zarkou, Thessaly," *BSA* 88 (1993) 1–3; also Elster in *La Thessalie* A (supra n. 122) 169–76. The earliest levels were only reached in a portion of the original trench. For the house model, see Gallis (supra n. 18) 20.

[125] Hauptmann (supra n. 100) 75–76, 99–110. Gallis 1987 (supra n. 124) 162 proposed renaming the first Tsangli phase of the Late Neolithic "Tsangli-Larisa." Demoule et al. (supra n. 121) 50, on the basis of further work on the pottery from Platia Magoula Zarkou, argue for a separate ceramic phase, intermediate between the Middle and Late Neolithic, which they call the "Zarko phase." Much of the discourse on prehistoric Thessaly consists of claims of this sort. See also Gallis (supra n. 100) 58–59.

[126] Black-burnished carinated pottery is attested from the "Arapi" and "Otzaki" phases. See Hauptmann and Milojčić (supra n. 36) 50–51; Milojčić, *Otzaki* III (supra n. 98) 10; Demoule et al. (supra n. 121) 35. For a small excavation at Makryhori 2, see Gallis 1987 (supra n. 124) 154–56.

[127] Cf. P. Halstead, "Λάρ'σα, Λάρ'σα, σ' είδα και λαχτάρ'σα," in *Ancient Thessaly* 210–16.

[128] G. Schneider et al., "Transition entre les cultures néolithiques de Sesklo et de Dimini: Recherches minéralogiques, chimiques et technologiques sur les céramiques et les argiles," *BCH* 115 (1991) 1–64. Schneider et al., "Production and Distribution of Coarse and Fine Pottery in Neolithic Thessaly, Greece," in E. Pernicka and G.A. Wagner eds., *Archaeometry '90. Proceedings of the 27th Symposium on Archaeometry Held in Heidelberg, April 2–6, 1990* (Basel 1991) 513–22. Schneider et al., "Production and Circulation of Neolithic Thessalian Pottery: Chemical and Mineralogical Analyses," in *La Thessalie* A, 61–70. For an experimental reconstruction of production techniques of Gray-on-Gray pottery, see K.D. Vitelli, "Experimental Approaches to Thessalian Neolithic Ceramics: Gray Ware and Ceramic Colour," in *La Thessalie* A, 143–48.

[129] Gallis (supra n. 106) 64–134.

[130] Xirotiris (supra n. 107) 199–215.

cemeteries is very different. The Soufli cemetery is adjacent to the settlement, and the pits with the cremations were dug in habitation deposits, while the Platia Magoula cemetery is set some distance from the settlement, and perhaps defined by a wall. One could hypothesize that the practice of segregating a part of the living space of the settlement, observed in the Middle and Late Neolithic, is repeated here at the symbolic level. A further step would be to suggest that LN groups had a pronounced perception of social order, which could be a reflection of an emerging stratified social structure. There are hints for such a development from LN contexts but, to a great extent, the issue remains open.

Geomorphological work at the site of Platia Magoula indicates that the first settlement was established in the active floodplain of the Peneios River. During the Early and Middle Neolithic, flooding resulted in the formation of a deep alluvium (the Girtoni alluvium), which covered the surroundings of the site.[131] Alluviation had ceased before the foundation of the cemetery. According to van Andel et al., that sequence of events has interesting implications for the adaptation of early farmers to their environment. The foundation of sites in an active floodplain suggests a farming practice that takes advantage of periodic flooding and benefits from crops sown in the spring, and may also imply seasonal occupation of the site. This conclusion is in contrast to the prevailing opinion that early farming in Thessaly was geared toward farming on light arable soils fed by rain and based on winter-sown crops.[132] The observations about Platia Magoula and their implications have been projected to other Thessalian sites with a similar setting. [133]

This model of early farming rests on the assumption that flooding occurred with a predictable regularity and that agriculture was based on spring-sown crops. At present the stratigraphic evidence from other Thessalian sites is not detailed enough to support the identification of periodic flooding. Moreover, archaeobotanical evidence from EN sites is very limited, particularly regarding the weed component, a sensitive indicator of environmental conditions.[134] Another question for future research is the applicability of this model to other Neolithic sites.

Theopetra Cave (fig. 1:21). At the western edge of the plain, Theopetra Cave has been excavated by the Greek Archaeological Service since 1987. The cave has a long history of occupation starting in the Middle Palaeolithic. The Neolithic deposits were to a great extent disturbed, but ceramic evidence suggests occupation in all periods of the Neolithic. A series of 25 ^{14}C dates has been published, covering the period from 40,000 b.c. to 4450–4249 B.C.[135]

The potential importance of Theopetra Cave for Neolithic research lies in its long habitation from the Palaeolithic to the Neolithic, challenging the prevailing opinion that Thessaly was uninhabited for a long period before the EN.[136] The dates from the cave form a broadly continuous sequence covering the crucial period from 9000 B.C. to 6500 B.C. There is a hiatus between 6500 B.C. and 5200 B.C., but, according to the preliminary reports, archaeological material fills that hiatus. On the other hand, the sedentary or transient character of the Theopetra settlement is debatable, and the relation of the site to the potentially more stable open settlements of the plains remains unclear. Until the evidence from Theopetra is published, no firm conclusions can be drawn.

Research Perspectives

A major focus of prehistoric research in Thessaly in the last 25 years has been the refinement of the chronological framework and the relationship of

[131] van Andel et al. 1995 (supra n. 31) 140–41.

[132] P. Halstead, "Counting Sheep in Neolithic and Bronze Age Greece," in I. Hodder, G. Isaac, and N. Hammond eds., *Pattern of the Past: Studies in Honour of David Clarke* (Cambridge 1981) 311, 317–20; Halstead 1984, ch. 6.4.4; Halstead, "Traditional and Ancient Rural Economy in Mediterranean Europe: Plus ça change?" *JHS* 107 (1987) 83–85.

[133] T.H. van Andel and C.N. Runnels, "The Earliest Farmers in Europe," *Antiquity* 69 (1995) 490–98.

[134] H. Kroll, "Thessalische Kulturpflanzen," *ZfA* 15 (1981) 97–103, esp. table 1.

[135] G. Fakorellis, G. Maniatis, and N. Kyparissi, "Χρονολόγηση με ραδιοάνθρακα δειγμάτων από το σπήλαιο Θεόπετρας, Καλαμπάκας," in I. Stratis et al. eds., *Archaeometrical and Archaeological Research in Macedonia and Thrace. Proceedings of the 2nd Symposium of the Hellenic Archaeometrical Society, Thessaloniki, 26–28 March 1993* (Thessaloniki 1996) 99–116; N. Kyparissi-Apostolika, "Σπήλαιο Θεόπετρας: Μια σπάνια περίπτωση σπηλαιοκατοίκησης στην παλαιολιθική Θεσσαλία," paper read at "Α' Πανελλήνιο Σπηλαιολογικό Συνέδριο 'Άνθρωπος και Περιβάλλον,' Αθήνα 26–29.11.1992"; Kyparissi-Apostolika, "Prehistoric Inhabitation in Theopetra Cave, Thessaly," in *La Thessalie* A, 103–108; Kyparissi-Apostolika, "The Palaeolithic Deposits of Theopetra Cave in Thessaly (Greece)," in *First International Conference "The Palaeolithic of Greece and Adjacent Areas," Ioannina 6–11/9/1994* (Athens, in press).

[136] C. Runnels, "A Prehistoric Survey of Thessaly: New Light on the Greek Middle Paleolithic," *JFA* 15 (1988) 284; Perlès 1988 (supra n. 8) 485–86; Perlès, "Les débuts du Néolithique en Grèce," *La Recherche* 25 (1994) 646; Runnels, "Review of Aegean Prehistory IV: The Stone Age of Greece from the Palaeolithic to the Advent of the Neolithic," *AJA* 99 (1995) 723.

Thessaly with southern Greece and the Balkans, in a true Montelian fashion.[137] Leaving aside the question of relationships, which are to a great extent still intractable, the use of the Thessalian chronological scheme has shown its major weaknesses. Although these weaknesses had been pointed out quite early,[138] it has been only gradually realized that the stratigraphic evidence that supports the definition of phases on the basis of pottery types may not always be secure. It has also been realized that the variability of pottery, both within sites and across regions, cannot be interpreted in exclusively chronological terms. As a rule, excavations have been limited in extent, and do not permit evaluation of the various aspects of variability of the Thessalian assemblages. Finally, the scarcity of ^{14}C dates supporting the scheme limits its applicability considerably. The difficulties are exacerbated in the case of the Final Neolithic and the transition to the Early Bronze Age, where the very long time span defined by ^{14}C dates from surrounding areas is not compatible with the sparse archaeological remains from Thessaly. Similar problems, to a lesser extent, apply to the chronological sequence of the Bronze Age. Here, the difficulties are clearly seen at the outset and the close of the Late Bronze Age. Although the number of excavated sites in Thessaly is considerable, there is need for new extensive excavations with secure architectural remains and closed deposits.

Another weakness of chronological resolution in the Thessalian sequences arises from the processes of site formation, especially in mounds. Milojčić had perceptively observed the variability in the intrasettlement pattern and the shifts of habitation at sites such as Otzaki and Argissa, or the complexities of the formation processes at Ayia Sophia.[139] The interpretation, however, of the archaeological levels in terms of the reconstructed chronological phases needs still to be evaluated against the possible distortion caused by formation processes. It is worth noting in this respect that in the Bronze Age sequences of Argissa and Pefkakia, where the definition was based on architectural phases, the problems were minimized.

Understanding the processes of site formation is necessary for reconstructing intrasettlement spatial organization and arriving at demographic estimates. The case of Sesklo shows that there are diverging patterns of intrasettlement organization that need not have a temporal meaning. Bounded sites in the form of mounds seem to be the rule during the Neolithic, and are possibly related to specific patterns of social behavior and economic practice. Nevertheless, unrestricted, extended sites in the form of Sesklo B may also exist in numbers. Surface material from Thessalian sites has been collected primarily for use in dating, but also to some extent for determining intersettlement regional and temporal patterns. In evaluating the changes in size of settlements, there is no doubt that surface collection data are constrained by serious weaknesses, related to collection strategies and geomorphological and other postdepositional distortions. Despite the restrictions, a pattern seems to emerge, indicating a gradual shift from dispersed settlements in the Neolithic to nucleated, larger ones during the Bronze Age, especially in the Middle Bronze Age and the Late Bronze Age. Evidence from excavations also suggests a trend toward nucleation in the Bronze Age. Some nucleated sites are very large and exhibit new characteristics in the spatial arrangement of habitation.[140]

The farming economy of prehistoric Thessaly has been described by Halstead.[141] During the initial stages of the Neolithic, the small-scale economy relied on reciprocity and networks of obligations and alliances to cope with environmental uncertainties and the limitations of Neolithic production. A diversified agriculture based on a wide variety of domesticates and on breeding a range of livestock was a primary constituent of Neolithic subsistence. Diversification seems to be further stressed during the later Neolithic and the Bronze Age, and the scale

[137] V. Milojčić, *Hauptergebnisse der deutschen Ausgrabungen in Thessalien, 1953–1958* (Bonn 1960) 1–3, where the research objectives of this program are stated.

[138] Hourmouziadis (supra n. 121) 165–77.

[139] Milojčić, *Otzaki* III (supra n. 98) 5–6; *Argissa* III, 3–11; Milojčić (supra n. 40) 4.

[140] Typical examples are Velestino, Pefkakia, Argissa, and Dimini: Halstead 1994, 203; *Atlas* 232–34; Feuer 44. Grammenos reports a recently found LBA site at Dilofos, near Farsala, with an estimated size of ca. 60 ha, associated with an acropolis: D.V. Grammenos, "Ζητήματα της επιφανειακής έρευνας στη βόρεια Ελλάδα (Νεολιθική–Εποχή Χαλκού)," in *Α΄ Συνέδριο Ανθρωπολογίας, Κομοτινή, Νοέμβριος 1993* (Komotini, in press).

[141] Halstead 1981 (supra n. 132) 307–39; Halstead (supra n. 72) 71–83; Halstead, "Like Rising Damp? An Ecological Approach to the Spread of Farming in Southeast and Central Europe," in A. Miles, D. Williams, and N. Gardner eds., *The Beginnings of Agriculture* (*BAR-IS* 496, Oxford 1989) 25–53; Halstead (supra n. 30) 33–48, 53–56; Halstead and Jones (supra n. 117) 106–108; P. Halstead and J. O'Shea, "A Friend in Need is a Friend Indeed: Social Storage and the Origin of Social Ranking," in C. Renfrew and S. Shennan eds., *Ranking, Resource and Exchange* (Cambridge 1982) 93–96; Demoule and Perlès (supra n. 115) 360–63.

of the economy expanded. It retained, nevertheless, its unspecialized character. Colonization of more marginal lands and amplification of animal husbandry in the final stages of the Neolithic and particularly during the Bronze Age are now discernible. Palynological evidence from Thessaly and elsewhere shows a change in the upland vegetation that could be related to forest degradation through intensive grazing.[142]

The Neolithic economic regime, based on reciprocity and social obligations, would have placed a heavy emphasis on the social organization of production. Throughout the period the social character of consumption and storage must have been stressed in various ways. Although the evidence for ritual or symbolic behavior is minimal in Thessaly, some form of ideological coercion stressing sharing between members of the community must be assumed. The decorated, open ceramic shapes, suitable for display of food consumption, and the presence of facilities for cooking and storage in open, public areas, at least in the Early and Middle Neolithic, are probable indications of an idealized economic reality.[143] The unequal distribution of painted pottery among households at Sesklo or its greater frequency in pits at Achilleion may attest to its ideological function. During the Early and Middle Bronze Age the eclipse of painted pottery was accompanied by a turn to a more private and self-contained household, with storage areas being increasingly moved inside the house. Storage vessels were common among the few painted pots of the Middle Bronze Age, probably stressing further the importance of private surplus.

The obligation for social sharing and the need for storage and diverse productive activities can create a social context for conflict and dissent among members of a community. The house models and the often "personalized" human figurines may represent, among other things, an emphasis on the productive unit and its members.[144] The rise of social elites could be precisely an expression or even a resolution of a long-term conflict between communal appropriation through sharing and production on the household level. On the other hand, the archaeological traces of these social hierarchies are admittedly faint prior to the Late Bronze Age in Thessaly. In tracing social hierarchy in Thessaly, we should expect not a cumulative evolutionary continuum but rather a process, marked with breaks and even regressions. Breaks in the cultural sequence, such as the "Rachmani" FN phase or the early part of the Early Bronze Age (fourth millennium B.C.), provided they are not simply gaps in archaeological evidence, should caution against a simplifying evolutionary reconstruction. Nor is it easy to observe in LBA Thessaly a complex sociopolitical formation as the culmination of an evolutionary process.

The recent evidence from excavations in the coastal area has shown the difficulties in recognizing the formation of a state during the Late Bronze Age. Despite the fact that the material culture of the area shows close affinities with that of central and southern Greece, the hierarchy of sites, a typical characteristic of southern Greek state organization, is here expressed in a random distribution, which displays little patterning in terms of size and location of sites.[145] The impression is one of small-scale polities. The appropriation of Mycenaean cultural traits, such as those observed in Thessaly, does not by necessity imply the adoption of the Mycenaean political and economic organization prevalent in some southern areas. What must be investigated is the particular political and ideological use of these traits, within and in opposition to a tradition of local political structures.[146]

Another aspect of Neolithic and Bronze Age economy is craft production, generally assumed, at least during the Neolithic, to have been primarily a household activity. This perception of an idealized, simple Neolithic self-sufficiency is gradually changing, as a result of more extensive research and a deeper understanding of the complexities involved. Studies of stone tools, pottery, and "prestige" objects indi-

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[142] K.J. Willis, "The Vegetational History of the Balkans," *Quaternary Science Reviews* 13 (1994) 786; Willis and K.D. Bennett, "The Neolithic Transition—Fact or Fiction? Palaeoecological Evidence from the Balkans," *The Holocene* 4 (1994) table 1; S. Bottema, "Palynological Investigations in Greece with Special Reference to Pollen as an Indicator of Human Activity," *Paleohistoria* 24 (1982) 261–62, 287.

[143] Halstead 1994, 206–207; P. Halstead, "From Sharing to Hoarding: The Neolithic Foundations of Aegean Bronze Age Society?" in Laffineur and Niemeier (supra n. 50) 16–19. But see reservations infra n. 259.

[144] Contrary to the often assumed "religious" meaning of figurines, Hourmouziadis has stressed their role in the representation of everyday activities. See G.H. Hourmouziadis, *Η ανθρωπόμορφη ειδωλοπλαστική της νεολιθικής Θεσσαλίας* (Volos 1973) 196–206. The so far unique house model from Platia Magoula Zarkou (supra n. 18) connects the house models with the human figurines.

[145] Halstead 1984, chs. 6.4.5–6; Halstead 1994, 203; Feuer 38–47.

[146] See Feuer, esp. 1–21, 179–203, for discussion of Thessaly's role in a "Mycenaean world" with a Mycenaean type of political and social organization.

cate extensive networks of exchange as well as specialized production centers for various classes of finds. Perlès has shown that obsidian tools were manufactured by specialized knappers, probably itinerant; and chemical analysis has indicated the circulation of specific classes of pottery among sites and the production of ceramics in special centers, occasionally concentrated in small areas, as in the case of LN Gray-on-Gray ware.[147] We still have a very limited understanding, however, of broader aspects of Neolithic society, such as social boundaries and disruptions, mobility and sedentism, inequality and gender, and conflict within and between communities.[148]

Very little work has been done on the modes of production and exchange in Bronze Age Thessaly. Non-systematic, macroscopic observations leave no doubt that pottery was exchanged between Thessalian sites and distant regions during the Early and Middle Bronze Age. For the Late Bronze Age there are indications from several sources—chemical analysis, pottery kilns, and macroscopic ceramic analysis—of different conditions and centers of pottery production, and the exchange of pottery between sites and with regions outside Thessaly. The picture, however, is still tentative.[149]

NOTE ON THE HISTORY OF RESEARCH IN MACEDONIA

Already in the early 20th century, Macedonia came to occupy a peculiar place in the consciousness of prehistorians. It was discussed in terms of what it had *not* been as often as in terms of what it was, in terms of deficiency as much as in terms of importance. It was considered, for example, a key province for the study of European prehistory, but also (especially its western part) a backward area in itself, with "a native tendency to isolation."[150] It was claimed to be the ancestral Bronze Age homeland of the legendary Dorians,[151] yet, as everyone knew, only upon leaving that home did the Dorians shed their primitive habits and achieve distinction. Examples are too many indeed. Macedonia was construed as a passage, or a highway, between lands of obvious importance, Europe and Old Greece or Anatolia,[152] and archaeologists from Rey to Rodden would invoke that condition as a justification for excavating in Macedonia.[153] As early as 1902, Schmidt had concluded, from a collection of potsherds in Berlin, that the province's connections were with the "northern hinterland" (i.e., central Europe).[154] Heurtley wrote his monumental book in hopes of "removing that impression . . . the slogan 'Macedonia goes with the North'," and compensating for "the tacit omission of Macedonia from books dealing with the prehistory of the Aegean";[155] the land west of the Struma (Strymon) belongs primarily with the Aegean, he argued, at a time when few could pay attention. Other researchers, including S. Casson, would make it clear that Macedonia was European—not Mediterranean—by nature; they sought and found the province's northern character, not in its latitude vis-à-vis "mainland

[147] For craft production and specialization, see C. Perlès, "Systems of Exchange and Organization of Production in Neolithic Greece," *JMA* 5 (1992) 115–64. C. Perlès and K.D. Vitelli, "Technologie et fonction des premières productions céramiques de Grèce," *Terre cuite et société: La céramique, document technique, économique, culturel* (Juan-les-Pins 1994) 226–30; Perlès (supra n. 122) 1–42. For chemical analysis and discussion of the circulation of pottery in Thessaly, see supra n. 128. Also Y. Liritzis and J. Dixon, "Πολιτιστική επικοινωνία μεταξύ των νεολιθικών οικισμών Σέσκλου και Διμηνίου (Θεσσαλία)," *Anthropologika* 5 (1984) 51–62, where a local exchange of pottery between Sesklo and Dimini is observed. For the distribution of Neolithic pottery in the Thessalian plain, see V. Rondiri, "Επιφανειακή κεραμεική νεολιθικών θέσεων της Θεσσαλίας: Κατανομή στο χώρο," *Anthropologika* 8 (1985) 53–74. For intrasite analysis of pottery, see Maniatis et al. (supra n. 21) 272–74; Kotsakis (supra n. 22) 1–2; and Kotsakis 208–20, 264–71.

[148] For the potential role of conflict, see infra ns. 277–78.

[149] For pottery exchange in the EBA and MBA, see *Argissa* III, 41, 49–50, 59, 78–79; Hanschmann (supra n. 95) 109–16; Christmann (supra n. 55) 201–204; *Pefkakia* III, 285–89. For chemical analysis of Bronze Age pottery from various sites in Thessaly, see S.R. White, *The Provenance of Bronze Age Pottery from Central and Eastern Greece* (Diss. Univ. of Bradford 1981); White, S.E. Warren, and R.E. Jones, "The Provenance of Bronze Age Pottery from Thessaly in Eastern Greece," in A. Aspinall and S.E. Warren eds., *Proceedings of the 22nd Archaeometry Symposium* (Bradford 1982) 323–32; Jones, *Greek and Cypriot Pottery* (Athens 1986) 121–32, where all previous work is discussed. For macroscopic studies of LBA pottery, see Feuer 143–77; also Avila (supra n. 88) 48–49. For recent kiln finds, see Batziou-Efstathiou (supra n. 109) 215–24; also Adrimi-Sismani, in *Η περιφέρεια* (supra n. 53).

[150] E.g., V.G. Childe, review of S. Casson, *Macedonia, Thrace and Illyria* (Oxford 1926), in *Man* 26 (1926) no. 99; W.A. Heurtley, *Prehistoric Macedonia: An Archaeological Reconnaissance of Greek Macedonia (West of the Struma) in the Neolithic, Bronze, and Early Iron Ages* (Cambridge 1939) 129–32.

[151] W.A. Heurtley, "A Prehistoric Site in Western Macedonia and the Dorian Invasion," *BSA* 28 (1926–1927) 159–94.

[152] E.g., S. Casson, "The Bronze Age in Macedonia," *Archaeologia* 74 (1924) 73–88.

[153] L. Rey, "Observations sur les sites préhistoriques et protohistoriques de la Macédoine," *BCH* 40 (1916) 257; R.J. Rodden and J.M. Rodden, "A European Link with Chatal Huyuk: Uncovering a 7th Millennium Settlement in Macedonia. Part I—Site and Pottery," *ILN* 2179 (1964) 564.

[154] H. Schmidt, "Die Keramik der makedonischen Tumuli," *ZfE* 37 (1905) 110–13.

[155] Heurtley (supra n. 150) xvii. The slogan echoes A.J.B. Wace and M.S. Thompson, *Prehistoric Thessaly* (Cambridge 1912) 233, who, however, applied it to northern Greece—at their time, Thessaly.

Greece," but in its very environment and climate, e.g., in the discharge pattern of its rivers.[156] And just as rivers overflow and spill onto broad vales, so did the idea: Macedonia became different from the Aegean in general, in its natural environment as much as in the character of its prehistoric culture; it became the Other of the Aegean.

The vision of Macedonia's Otherness took form in the context of late 19th- and early 20th-century quests for identities, for nations, races, and their origins, and was directed by the geopolitical concerns of the time.[157] We still live with the consequences,[158] however, and that fact cannot be accounted for in the present review. The most recent textbook on the Bronze Age in the Aegean, for example, once more largely omits discussion of "the northernmost parts of modern Greece" (and other circum-Aegean areas), since, "although demonstrably in contact with the Aegean cultures, [those parts] have an essentially different history."[159] That may well be so; but unless the boundary between "the Aegean cultures" and the north becomes the object of intensive investigation, and its problematical nature is fully documented, to speak of *essentially different histories* for the Aegean and the north can only have one effect, however unintended: it continues to reify Identity—in this case cultural—as a stable, homogeneous, inalienable essence, always the same. Did not, for example, the "contact" have any material consequences for "the Aegean cultures"? In the era of world system approaches, with their emphasis on interaction among centers, peripheries, and margins (to mention but one set of notions that has become available recently to prehistorians),[160] a "given," stable cultural identity for "the Aegean" is a notion that needs considerable justification. In the end, Macedonia in prehistory can be considered a part of "the Aegean" or "Europe" only as long as the last two constructs continue to evade our analyses.

Questions of cultural origins had been prevalent in Heurtley's book,[161] "and the sections on racial contacts form[ed] a brilliant climax to the whole."[162] Invasions as well as local developments were invoked as explanations of change in "wares" and figurine types. But the work offered much more than this, and it was justifiably called "a scientific record of lasting value."[163] A ceramic cultural sequence was established, even an absolute chronology; while the latter was short by ca. 2,000 years, the former was remarkably close to the one that we rely on today for dating unstratified materials. Time was measured in thickness of deposits (in half-meters). Moreover, as the excavations were dispersed over a very wide area, from the Florina basin to the coast of Chalkidiki, regional differences were emerging.[164]

The departure of Heurtley's team from Macedonia in 1931 was followed by a 30-year period during which a minimum of fieldwork was carried out at prehistoric sites. When the joint Cambridge-Harvard excavations at Nea Nikomedeia began in 1961, the prehistory of the province was once more a "lacuna to fill,"[165] since much fieldwork had in the meantime been conducted in every area with which Macedonia was thought to be connected, from Anatolia to Hungary to Thessaly. The new project was also conceived with a view to Macedonia's key location—this time, however, in the context of the "spread" of Neolithic farming. Diffusion and ethnogenesis were no longer the leading concerns of mainstream European prehistory.[166] The project, staffed with people from departments of anthropology, comparative zoology, forestry, and the like,[167] brought to Greece "in one piece" a radically different set of questions and ethos of practice, a "scientific humanism" that had devel-

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[156] Casson (supra n. 150) 1–5.

[157] The issue is treated in detail in M. Fotiadis, "Imagining Macedonia in Prehistory, ca. 1900–1930" (in preparation). See also K. Kotsakis, "The Powerful Past: Theoretical Trends in Greek Archaeology," in I. Hodder ed., *Archaeological Theory in Europe: The Last Three Decades* (London 1991) 65–90.

[158] E.g., Macedonia's natural environment is described in terms of its difference from the Aegean in N.G.L. Hammond, *A History of Macedonia* 1: *Historical Geography and Prehistory* (Oxford 1972) 3–5; and in E.N. Borza, *In the Shadow of Olympus: The Emergence of Macedon* (Princeton 1990) 24–28.

[159] O. Dickinson, *The Aegean Bronze Age* (Cambridge 1994) xviii. By contrast, see C. Renfrew, *The Emergence of Civilisation* (London 1972).

[160] See, e.g., A. Sherratt, "What Would a Bronze-Age World System Look Like? Relations between Temperate Europe and the Mediterranean in Later Prehistory," *Journal of European Archaeology* 1:2 (1993) 1–58; M. Rowlands, M. Larsen, and K. Kristiansen eds., *Centre and Periphery in the Ancient World* (Cambridge 1987).

[161] Heurtley (supra n. 150).

[162] W. Lamb, review of Heurtley (supra n. 150), in *Man* 40 (1940) 29.

[163] V.G. Childe, review of Heurtley (supra n. 150), in *AntJ* 24 (1944) 155. Cf. Lamb (supra n. 162), with similar praises.

[164] Before the project was interrupted, plans were underway for excavating in the Bitola basin as well: W.A. Heurtley, "Prehistoric Macedonia: What Has Been and What Remains to Be Done," *Man* 31 (1931) 217.

[165] The phrase is Rey's from 1916 (supra n. 153).

[166] They survived, however, in many quarters; see the keen remarks of R. Dennell, *Early Farming in South Bulgaria from the VI to the III Millennia B.C.* (*BAR-IS* 45, Oxford 1978) 12–13.

[167] Grahame Clark was among them. See R.J. Rodden et al., "Excavations at the Early Neolithic Site at Nea Nikomedeia, Greek Macedonia (1961 Season)," *PPS* 28 (1962) 267–88; and Rodden and Rodden (supra n. 153).

oped outside Aegean prehistory.[168] That was an exciting moment for archaeology, all the more so since the site yielded an early radiocarbon date (6220 ± 150 b.c.) associated with domesticates, and a "shrine."[169] Nea Nikomedeia was, then, "the site of the oldest dated Neolithic community yet found in Europe,"[170] making Macedonia an important link in the long chain of evolution of European society. But the excitement was short-lived for many reasons, including the realization that, in regard to the spread of Neolithic farming, the conventional geographical boundary between western Asia and eastern Europe (the Hellespont-Bosporus strait) was "irrelevant and even misleading."[171] Still, the project at Nea Nikomedeia marked the beginning of the modern phase of prehistoric research in Macedonia and beyond. It was followed by excavations at several sites, including the important one at Sitagroi, and, in the 1980s, by the projects described individually in this review.

The first chair of prehistory at the University of Thessaloniki was created in 1964, and was occupied by N. Platon, whose area of fieldwork was Minoan Crete.[172] Only under his successors, D.R. Theocharis and G.H. Hourmouziadis after the mid-1970s, were courses in the prehistory of northern Greece offered as regular parts of the curriculum, and prehistoric research undertaken by the University in that area. Dissertations by students on northern Greek topics are now proliferating. Equally important, a few zealous women and men, with a declared interest in prehistory, have in recent decades joined the ranks of the ephoreias in Macedonia. The present review owes much to their field efforts.

WESTERN MACEDONIA

Environmental Change

During the first half of the Holocene, temperatures continued to rise in western Macedonia (west of the Axios River; fig. 2), and in the fifth millennium B.C. summers in the uplands may have been warmer than today by up to 4° C.[173] Cooler, more humid conditions, approximating those of the present, became progressively prevalent in the last two millennia of prehistory, especially after 2500 B.C. The effects of the extensive Neolithic habitation are hardly conspicuous in the region's palynological record.[174] A decrease of forest, in particular, is not in evidence until "about 3100–3300 B.P." (uncalibrated).[175] Whatever the exact chronology and scale of that decrease,[176] it seems to have affected the conifers; oak and, at 1,200–1,500 masl, beech continued to regenerate through much of the historical period. Nonetheless, the episode may have initiated a cycle of slope erosion and deposition of coarse sediments along the peripheries of valleys: a change to more frequent torrential discharge in streams is suggested by the appearance of the plane tree in the pollen record.[177] As a further result, surface outlets in some basins may have been blocked, and marshes may thus have formed or expanded, for example, in Kitrini Limni.[178] At the same time, the walnut and, in the lowlands, the olive were introduced as cultivated trees.

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[168] See M. Fotiadis, "Modernity and the Past-Still-Present: Politics of Time in the Birth of Regional Archaeological Projects in Greece," *AJA* 99 (1995) 59–78, with further references.

[169] For a summary see, e.g., R.J. Rodden, "An Early Neolithic Village in Greece," *Scientific American* 212:4 (1965) 83–92. For the ironic legacy of Nea Nikomedeia, see Fotiadis (supra n. 1) 157–59. An addendum to that legacy is the recent treatment of the site as one of "quelques sites marginaux" by J.-P. Demoule, "Néolithique et Chalcolithique de Macédoine: Un état des questions," *ArchMak* 5 (1993) 374.

[170] Rodden (supra n. 169) 83.

[171] G. Clark and S. Piggott, *Prehistoric Societies* (New York 1965) 224. For the questions surrounding all four ^{14}C dates from the site, see S. Bottema, *Late Quaternary Vegetation History of Northwestern Greece* (Groningen 1974) 147. The first volume of the final publication, containing the stratigraphy and a study of the ceramics, is now published: G. Pyke and P. Yiouni, *Nea Nikomedeia, the Excavation of an Early Neolithic Village in Northern Greece, 1961–1964* I: *The Excavation and the Ceramic Assemblage* (*BSA* Suppl. 25, Athens 1996).

[172] It was Platon who introduced all three authors of this review to prehistory.

[173] Esp. B. Huntley and I.C. Prentice, "July Temperatures in Europe from Pollen Data 6000 Years before Present," *Science* 241 (1988) 689 and fig. 3.

[174] Bottema (supra n. 142), esp. 279–84.

[175] Bottema (supra n. 142), esp. 261–66. Bottema has always insisted on dates around 3200 B.P. (in ^{14}C years) for the changes in Macedonia; at best, that is a rough approximation. Fresh, well-dated cores from the western Macedonian basins would be very helpful. Cf. S. Bottema, "Développement de la végétation et du climat dans le bassin méditerranéen oriental à la fin du Pléistocène et pendant l'Holocène," *L'Anthropologie* 95 (1991) 724; and Bottema and H. Woldring, "Anthropogenic Indicators in the Pollen Record of the Eastern Mediterranean," in Bottema, G. Entjes-Neiborg, and W. van Zeist eds., *Man's Role in the Shaping of the Eastern Mediterranean Landscape* (Rotterdam 1990) 231–64. In the last article, the Macedonian evidence is treated in its broad geohistorical context, the authors' "B.O. phase."

[176] For inferring scale of deforestation from pollen evidence, see the cautions of Bottema and Woldring (supra n. 175), esp. 240–42.

[177] Bottema (supra n. 142) 274–77.

[178] M. Fotiadis et al., *Prehistory of Kitrini Limni, Northern Greece* I: *Surveys and Excavation 1987–1992* (in preparation).

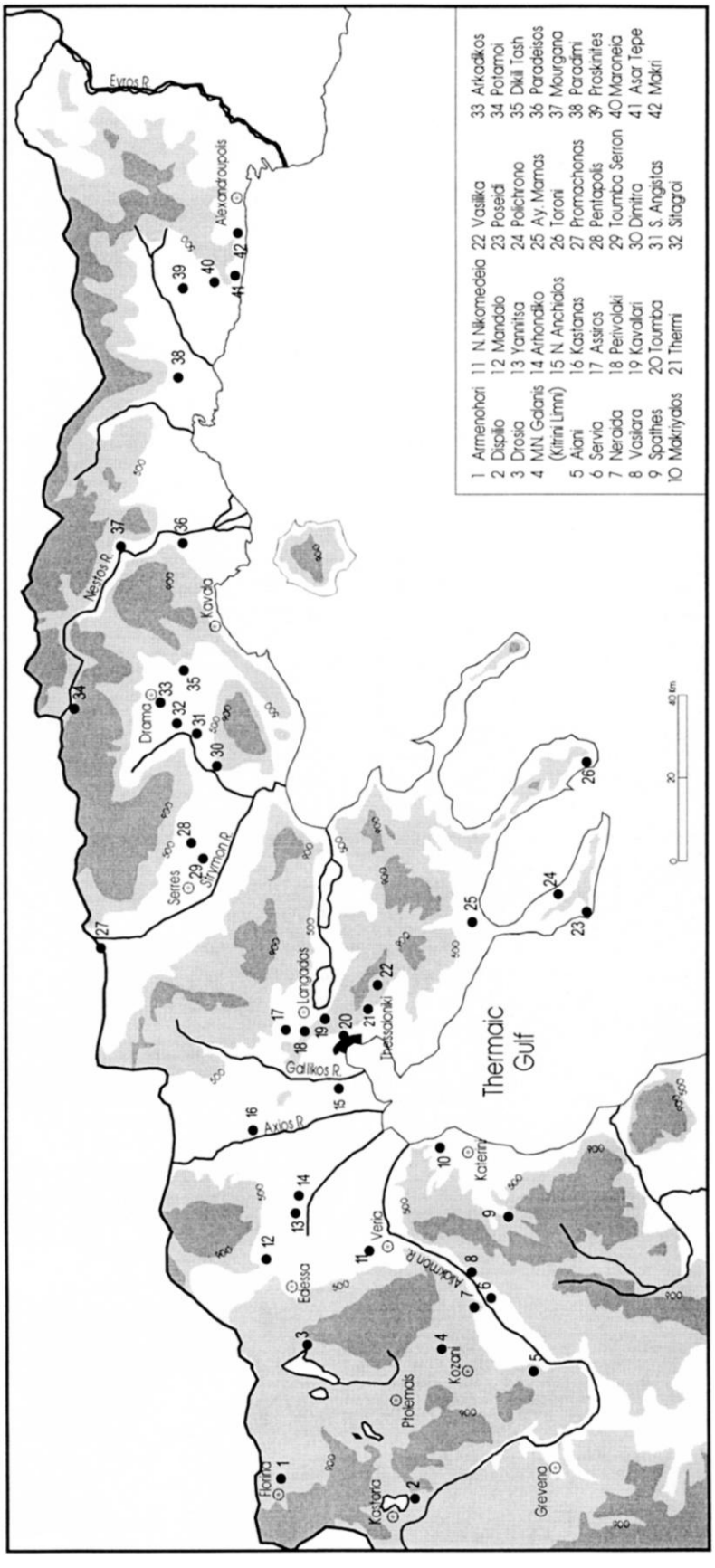

Fig. 2. Macedonia and Thrace. Principal sites mentioned in the text. Contours at 500 and 900 masl.

This is a puzzling pollen record. The vegetational and other changes it suggests are thought to be largely anthropogenic.[179] Assuming that the chronology is not in error by several hundred years, the changes occurred during the Late Bronze Age. Archaeologically, the period remains poorly known. Even so, an increase of population at a scale that would justify forest clearings can be precluded. It is more likely that clearings would result from new ways of exploiting the land's resources. Lumbering has been suggested,[180] and large flocks, requiring summer pastures and, hence, vertical transhumance, also are a possibility.[181] In either of these cases, the uplands (1,000–1,500 masl) should be affected most, and, in that respect, the pollen record may offer a clue: decline was noted among the conifers, which must have occupied the higher elevations, rather than in the oak forest. A further, tantalizing possibility suggests itself: in view of the region's archaeological record for the period 1500–1100 B.C., it is virtually impossible to explain either large, transhumant flocks or systematic lumbering; simply, there could not be enough consumers for the products *within* the region. Should we speculate, then, that the products (e.g., ship lumber, wool) were destined for an interregional trade network? Would that also mean that western Macedonia was drawn, as "margin,"[182] into the world system of the eastern Mediterranean Late Bronze Age? These are questions, however, not conclusions, all the more so since the region's archaeological record would at this time suggest negative, rather than affirmative, answers.

Sea level change is a complicated matter, and studies that purport to reconstruct prehistoric shorelines on the basis of sea level curves derived from broad areas offer no reliable guides.[183] In zones of high seismicity, and of extensive deltaic progradation, such as the Gulf of Thessaloniki,[184] strictly local geological data are essential before the coastal environment can be reconstructed. For the time being, only one recent study fulfills that requirement, covering a small area, the "Gulf of Kastanas," for the last ca. 4,000 years.[185]

Material Sequence and Archaeological Phases

For the Neolithic, the material sequence of western Macedonia today rests firmly on stratified, correlatable deposits at several of the province's sites. In addition to Nea Nikomedeia, four sites have yielded ^{14}C dates—Servia and Servia V (Varytimides) in the Aliakmon valley,[186] Megalo Nisi Galanis in Kitrini Limni,[187] and Mandalo in the Yannitsa

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[179] For a possible change in the pattern of rainfall, concurrent with the anthropogenic changes, see esp. S. Bottema, "The Prehistoric Environment of Greece: A Review of the Palynological Record," in P.N. Kardulias ed., *Beyond the Site: Regional Studies in the Aegean Area* (Lanham 1994) 59–61; see also Bottema and Woldring (supra n. 175) 261–62; N. Athanassiadis and A.M. Gerasimidis, "Μεταπαγετώδης εξέλιξη της βλάστησης στο Βόρα Αλμωπίας," *Scientific Annals of the Department of Forestry and Natural Environment, University of Thessaloniki* 29 (1986) 213–49; Athanassiadis and Gerasimidis, "Μεταπαγετώδης εξέλιξη της βλάστησης στο όρος Πάϊκον," *Scientific Annals of the Department of Forestry and Natural Environment, University of Thessaloniki* 30 (1987) 405–45; Athanassiadis, "Η ανάλυση γύρης και η σημασία της από ιστορικο-αρχαιολογική άποψη με βάση τα δεδομένα διαγράμματός της από το Βαρυκό Λιτοχώρου," *Scientific Annals of the Department of Forestry and Natural Environment, University of Thessaloniki* 31 (1988) 143–52.

[180] Bottema and Woldring (supra n. 175) 261, where the authors are speaking of western Turkey as well.

[181] The reader should be aware, however, of the arguments put forward against pastoral transhumance in Greek prehistory: M. Fotiadis, "Transhumance: Was It Indeed Practiced in the Prehistoric Mediterranean?" *AJA* 84 (1980) 207 (abstract); J.F. Cherry, "Pastoralism and the Role of Animals in the Pre- and Protohistoric Economies of the Aegean," in C.R. Whittaker ed., *Pastoral Economies in Classical Antiquity* (*PCPS* Suppl. 14, Cambridge 1988) 7–11; and P. Halstead, "Present to Past in the Pindhos: Diversification and Specialisation in Mountain Economies," in R. Maggi, R. Nisbet, and G. Barker eds., *Archeologia della pastorizia nell'Europa meridionale* 1 (*RStLig* 56, Bordighera 1990) 61–80.

[182] In the strictly technical sense the term has in the context of world system analyses; see Sherratt (supra n. 160).

[183] G. Rapp, Jr., and J.C. Kraft, "Holocene Coastal Change in Greece and Aegean Turkey," in Kardulias (supra n. 179) 73; see also Kraft, I. Kayan, and O. Erol, "Geology and Paleogeographic Reconstructions of the Vicinity of Troy," in Rapp, Jr., and J.A. Gifford, *Troy: The Archaeological Geology* (Princeton 1982) 19 and n. 24, where the authors warn against the use of their curve for other regions. That warning has not been heeded in Aslanis (supra n. 12) 26, 67, 83.

[184] Progradation in the historical period is in the order of 40–50 km: e.g., J.C. Kraft and G.R. Rapp, Jr., "Geological Reconstruction of Ancient Coastal Landforms in Greece with Predictions of Future Coastal Changes," in P.G. Marinos and G.C. Koukis eds., *The Engineering Geology of Ancient Works, Monuments and Historical Sites* (Rotterdam 1988) 1,548.

[185] H.D. Schulz, "Die geologische Entwicklung der Bucht von Kastanas im Holozän," in *Kastanas* 375–93; for earlier work, see J. Bintliff, "The Plain of Western Macedonia and the Neolithic Site of Nea Nikomedeia," *PPS* 40 (1976) 241–62.

[186] C. Ridley and K.A. Wardle, "Rescue Excavations at Servia 1971–1973: A Preliminary Report," *BSA* 74 (1979) 226; R. Burleigh, J. Ambers, and K. Mathews, "British Museum Natural Radiocarbon Measurements XV," *Radiocarbon* 24 (1982) 277–78.

[187] M. Fotiadis and A. Hondroyanni-Metoki, "Κίτρινη Λίμνη: Διαχρονική σύνοψη, ραδιοχρονολογήσεις και η ανασκαφή του 1993," *AEMT* 7 (1993, in press); cf. below.

Tertiary zone.[188] Together, deposits from the five sites cover much of the Early Neolithic, the entire Middle and Late, and the first half of the Final Neolithic—that is, roughly, the late seventh, sixth, and fifth millennia B.C. Problematical periods are the Early and Final Neolithic—the first, because we lack secure ^{14}C dates (and deposits) from its beginning, the second, because none of the excavated deposits can be confidently assigned to the fourth millennium B.C. The sequence for the sixth and fifth millennia B.C. is more comparable to that of Thessaly than to that of eastern Macedonia,[189] which has prompted many researchers in recent publications to treat western Macedonia in the Neolithic as a province of Thessaly. This practice should be avoided. To call the Late Neolithic of the region "Late Dimini," for example, or to consider "Larisa wares" typical of LN sites in western Macedonia can only lead to confusion, especially since the applicability of such terms to Thessaly itself as a whole is far from self-evident.[190]

For the Bronze Age, one has still to rely on poorly correlated stratigraphies from sites across a very wide area, stretching from Thessaly to the Troad. That is so, despite ^{14}C dates from Servia, Mandalo, and, now, from Arhondiko near Yannitsa (fig. 2:6, 12, 14).[191] The two EBA phases at Servia are ceramically distinct, but their chronological ranges remain obscure.[192] Mandalo covers a large part of the third millennium; when the study of the contexts and their stratigraphic order progresses, certain questions of material sequence may find answers. Arhondiko may in the future help us to distinguish another phase in the sequence, a "Middle" Bronze Age perhaps, around 2000 B.C. Mycenaean (LH IIIB and IIIC) fabrics appear at many sites, but their full contexts, where they exist, have yet to be studied and published. In short, knowledge of the Bronze Age material sequence in western Macedonia remains fragmentary, and one often resorts to annoyingly vague designations of time for particular archaeological contexts. The designation "later Bronze Age" is occasionally used in this review for contexts that, we think, should be dated in the range 2200–1100 B.C., but for which we may not be more specific.

Recent Projects

Middle Aliakmon valley: riverine zone. The landscape along the middle course of the Aliakmon changed dramatically in the mid-1970s with the damming of the river. A strip 30 km long and up to 3 km wide was flooded before the land was systematically surveyed. The site of Servia (fig. 2:6)—known since 1911, excavated in 1930 and again from 1971 to 1973—now lies under many meters of water, as does the nearby EN site Servia V, excavated in 1972–1973.[193] Of the sites that had been known in the area before the 1970s, some escaped inundation (e.g., Vasilara,[194] fig. 2:8), but the entire valley floor, including the terrace on which the Neolithic settlement of Servia was established,[195] is lost to archaeology. Recent surveys by the IZ′ Ephoreia indicate the magnitude of the loss. Surveying along the shore of the newly formed lake, in parts of the terraces that are seasonally exposed, A. Hondroyanni-Metoki and G. Karametrou-Mentesidi have found 13 new settle-

[188] K. Kotsakis et al., "Carbon 14 Dates from Mandalo, W. Macedonia," in Y. Maniatis ed., *Archaeometry: Proceedings of the 25th International Symposium* (Amsterdam 1989) 679–85.

[189] For correlations with sequences in many parts of the Balkan peninsula one may consult, e.g., Demoule (supra n. 169) 389, table 2, or J.-P. Demoule, "Problèmes chronoculturels du Néolithique de Grèce du Nord," in *La Thessalie* A, 83, table 1. Demoule's tables were prepared ca. 1990, however, and should be used with caution. Note a terminological difference between the two versions of the table (far left column).

[190] "Thessalocentrism" is not, however, the only trend; equally unproductive is the practice, popular among both Greek and other archaeologists, of invoking Vinca, Anza, and a host of other *Kulturkreis* labels originating in regions, nearby or distant, to the north of Macedonia.

[191] A. Papaefthimiou and A. Papasteriou, "Ανασκαφή Αρχοντικού, 1994. Προϊστορικός τομέας," *AEMT* 8 (1994, in press).

[192] Ridley and Wardle (supra n. 186) 217–26 discuss the material as well as the problems.

[193] Heurtley (supra n. 150) 43–56; Ridley and Wardle (supra n. 186) 185–230. Bibliographic guides to prehistoric research in western Macedonia (begun in 1898) are supplied in H. Koukouli-Chrysanthaki, "Η δυτική Μακεδονία στην προϊστορία: Νεολιθική εποχή," in *Γ′ Συνέδριο Ιστορίας, Λαογραφίας, Γλωσσολογίας, Παραδοσιακής Αρχιτεκτονικής Δυτικομακεδονικού Χώρου. Πρακτικά* (Thessaloniki 1982) 98–128; in H. Ziota, "Ο Νομός Κοζάνης στην προϊστορία: Ερευνα και προοπτικές," in *Δυτικομακεδονικά γράμματα* (Kozani 1990) 105–34; and in D. Kokkinidou and K. Trantalidou, "Neolithic and Bronze Age Settlement in Western Macedonia," *BSA* 86 (1991) 93–106.

[194] Located on a prominent butte over the Aliakmon course, Vasilara was excavated in 1994 by the IZ′ Ephoreia; cf. Hondroyanni-Metoki (infra n. 196) 109–10. The site was first inhabited in the Late Neolithic, and continued to be occupied through the Bronze Age.

[195] Settlement at Servia was established on a surface of yellowish silt, probably of lacustrine origin, which was found topped with a (fossil) soil profile. That surface, at ca. 260 masl and 17 m above the braided river channel at the time of excavation, appears to have been safe from floods since the Early Neolithic: I.A. Morrison, "Servia Excavations: The Geomorphological Setting of the Site," *AAA* 6 (1973) 425–26.

ment sites since 1985, and the number is likely to rise.[196] Two of those sites (Goules-Varemenoi and Kranidia-Kryovrysi, both near Servia)[197] were founded in the Early Neolithic, and were occupied, continuously or not, to the Bronze Age and later. New foundations were laid in every archaeological phase, down to the later Bronze Age. The Bronze Age chronology of those sites is, for reasons outlined above, much less firm than their Neolithic chronology. Mycenaean sherds indicate activity at some sites toward the close of the Bronze Age,[198] but they do not, by themselves, guarantee extensive habitation, as the example of Servia demonstrates.[199]

When the chronological problem and the loss of the entire lower terrace are taken into account, little can still be said about the settlement pattern. Most clearly, the site of Servia no longer appears as a lonely outpost. The riverine zone of the middle Aliakmon has been extensively settled since the Early Neolithic—at least since an advanced phase of that period.[200] Site numbers increased in the course of the Neolithic. In the Late Neolithic, a small cave, within a few hundred meters of Servia, came into use.[201] Five of the recently found sites were inhabited during some part of the Final Neolithic,[202] two of them located less than 1.5 km from Servia. The well-documented LN abandonment at Servia does not represent a region-wide event. A literal interpretation of the chronological evidence from the two neighboring sites would in fact suggest that they were settled as Servia was abandoned, which may also be the case for Vasilara (5 km downstream).[203] Equally noteworthy, the two sites show no evidence of habitation in the Early Bronze Age, when Servia was reoccupied. At that time, the top of a towering hill across the river from Servia (Neraida, 150 m above the valley floor, fig. 2:7) was also inhabited.[204] Settlements could be located at short distances from one another: around Servia, distances between archaeologically contemporary sites are in the order of 0.5–1 km.[205] Site abandonments are as much in evidence as site occupations—an observation that, without geomorphological and further archaeological data from the lost valley floor, will remain uninterpretable. Finally, the concentration of sites of all periods in the vicinity of the Servia bridge—nine confirmed sites within an area ca. 4 km^2—perhaps indicates more than a preference for settlement in land of superior agricultural potential; it may also suggest that a trail between Thessaly and Macedonia, well traveled in the historical period,[206] was firm geographical knowledge in prehistory as well.

In 1993, a lowering of the lake exposed an orderly cemetery of pithos burials and cists. Forty-one graves in an area 0.3 ha in size were promptly excavated. Preliminary analysis of the goods deposited with the dead shows a date "in the advanced phases of the Early Bronze Age."[207]

Middle Aliakmon valley: terraces and Aiani. The area north of the Aliakmon is a terrace of Tertiary sediments with outcrops of limestone. It rises from 250 masl near the river to 650 masl near Kozani, and is flanked on the west, north, and east by mountains (1,300–1,850 masl). The largest part of that extensive surface (ca. 220 km^2) has never been systematically surveyed, yet several sites are known. Some are located near springs (and old villages), as at Karyditsa and Amygdalia;[208] others occupy eccentric locations (e.g., hill slopes over deep ravines). As far as one can judge, none of the sites antedates the Late Neo-

[196] G. Karametrou-Mentesidi, *ArchDelt* 42 B′ (1987) 418–19, 426, and 429–31; A. Hondroyanni-Metoki, "Από την έρευνα στην παραποτάμια-παραλίμνια περιοχή του Αλιάκμονα," *AEMT* 4 (1990) 105–19; Hondroyanni-Metoki and H. Ziota, "Προϊστορική έρευνα στην παραλίμνια περιοχή του Αλιάκμονα," *AEMT* 7 (1993, in press). The sites are severely disturbed by the lake waters; Hondroyanni-Metoki stresses that measurements of size (now between 0.2 and 4.5 ha) often are meaningless.

[197] Kranidia is currently being excavated: A. Hondroyanni-Metoki, "Αλιάκμων 1992: Προϊστορική ανασκαφή στα Κρανίδια," *AEMT* 6 (1992) 35–43; Hondroyanni-Metoki and Ziota (supra n. 196).

[198] Hondroyanni-Metoki (supra n. 196) 111–12.

[199] Ridley and Wardle (supra n. 186) 189.

[200] Comparison of the Servia V ceramics with those from EN Sesklo suggests a late date for the former site: M. Wijnen, in Ridley and Wardle (supra n. 186) 194. See also the single acceptable ^{14}C date from Servia V (BM-1157), 4955 ± 87 b.c.

[201] K. Rhomiopoulou and C. Ridley, "Prehistoric Settlement of Servia," *AAA* 6 (1973) 424.

[202] That is indicated by numerous analogies ("strainers," crusted sherds, and a variety of lugs and appendages on body sherds) with the FN material from Megalo Nisi Galanis (20 km to the north; see below).

[203] Ridley and Wardle (supra n. 186) 225–26.

[204] Test excavations by P. Pantos, *ArchDelt* 32 B′ (1977) 229. The site (395 masl), today occupied by the relocated village of Neraida, commands the entire valley of the middle Aliakmon.

[205] The map in Hondroyanni-Metoki (supra n. 196) 108 is at a scale of 1:100,000.

[206] Hammond (supra n. 158) 109–10, 117–20.

[207] A detailed report on the burials will appear in Hondroyanni-Metoki and Ziota (supra n. 196).

[208] Hondroyanni-Metoki (supra n. 197); H. Ziota, *ArchDelt* 43 B′ (1988) 402.

lithic. Intensive research will, however, be necessary before patterns emerge.[209] The important question is whether the settlement pattern here, in the relatively dry Tertiary zone, is different from that in the riverine zone, which has a distinctive—and privileged—pedology, hydrology, and even climate.

Aiani, a major center of the early historical period in Macedonia, is also located in the Tertiary zone (fig. 2:5). The main site, Megali Rahi, is a true acropolis, rising 40–80 m above its immediate surroundings, to 480 masl. Recent excavations of the IZ′ Ephoreia[210] indicate that the acropolis appears to have been occupied from the Bronze Age to the first century B.C. The earliest features, in a level area near the summit, are two small oval buildings with stone foundations, one of them with a rectangular hearth in the middle.[211] The buildings are associated with pots—including mugs with two handles—that the excavator compares with those of Armenohori (70 km to the north; fig. 2:1). The latter is "the only site which could date between the Early Bronze Age and the Early Iron Age [previously] excavated in western Macedonia."[212] However fragmentary, the evidence suggests habitation of the acropolis in the later Bronze and Early Iron Age as well. In the saddles and ridges below the acropolis, Karametrou found an abundance of LN (mainly black-burnished) ceramics, and a second extensive site of similar date was identified through exploration a few kilometers away.[213] At the northern foot of the acropolis, in a colluviated area, excavation revealed a series of later Bronze/Early Iron Age burials in pits and cists, along with a hearth-like structure and a pile of ca. 80 broken pots. The majority of the pots are "matt-painted," but the pile also included a complete Mycenaean pot and parts of others. At least one of the graves contained a Mycenaean alabastron next to a matt-painted bowl and a bronze pin.[214]

The finds of Aiani are important for several reasons.[215] First, the widespread distribution of LN material documented by the excavator raises the possibility of dispersed settlement on the Tertiary terraces around Megali Rahi. Second, the early buildings on the acropolis itself suggest occupation during a period (ca. 2000 B.C.?) for which, in western Macedonia, we know virtually nothing. Radiocarbon dates would, in this case, be extremely useful. Third, a pile of broken matt-painted pots and a hearth within a cemetery from the end of the Bronze Age raise intricate interpretative questions, as the excavator emphasizes. Fourth, the concurrence, in a few contexts, of local matt-painted and Mycenaean pots is notable, for it is without clear precedents in western Macedonia. The matt-painted pots of Macedonia, Epirus, and Albania have been the subject of much discussion and controversy in the past. Thanks to new excavations and to distribution studies carried out in the 1970s, it is now known that comparable techniques of matt-painting appear and disappear at different times in different regions, from Kosovo to southern Italy.[216] In western Macedonia they have been thought to occur both toward the end of the Bronze Age and in the Early Iron Age, yet the evidence for the date assigned to specific finds has often been superficial. The Aiani finds do not yet resolve such problems, but they may point to a date for the

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[209] The head of a Mycenaean figurine and a Mycenaean amphora also come from the area, but they are without precise context: G. Karametrou-Mentesidi, *ArchDelt* 39 B′ (1984) 267; and *Ancient Macedonia* (Athens 1988) 135–36.

[210] Initiated by G. Karametrou-Mentesidi in 1983 and continuing to date.

[211] G. Karametrou-Mentesidi, "Από την ανασκαφική έρευνα στην Αιανή, 1989," *AEMT* 3 (1989) 46 and pl. 5.

[212] K.A. Wardle, "Cultural Groups of the Late Bronze and Early Iron Age in Northwest Greece," *Godisnjak, Centar za balkanoloska ispitivanja, Sarajevo* 15 (1977) 188. For more doubts about the chronology of Armenohori, see Treuil (supra n. 64) 86.

[213] Karametrou-Mentesidi (supra n. 196) 424, 429–30.

[214] Karametrou-Mentesidi (supra n. 211) 49 and figs. 7–9, and Karametrou-Mentesidi, "Ανασκαφή Αιανής 1990," *AEMT* 4 (1990) 76 and pls. 1–4; also Karametrou-Mentesidi, *ArchDelt* 43 B′ (1988) 399. The Mycenaean pots are not assigned to specific phases.

[215] For an older surface find with a mysterious inscription, see A. Panayotou, "An Inscribed Pithos Fragment from Aiane (W. Macedonia)," *Kadmos* 25 (1986) 97–101.

[216] See esp. A. Hochstetter, "Die mattbemalte Keramik in Nordgriechenland, ihre Herkunft und lokale Ausprägung," *PZ* 57 (1982) 201–19, for a discussion of previous views, and for differences between the western and central Macedonian varieties. For distribution maps in western Macedonia and Albania, see respectively K. Romiopoulou, "Some Pottery of the Early Iron Age from Western Macedonia," *BSA* 66 (1971) fig. 7, and K. Kilian, "Zur mattbemalten Keramik der ausgehenden Bronzezeit und der Früheisenzeit aus Albanien," *ArchKorrBl* 2 (1972) 116. For discussion of the Epirotic finds, assigned in their totality to the Iron Age, see Wardle (supra n. 212) 179; K.A. Wardle, "The Northern Frontier of Mycenaean Greece," *BICS* 22 (1975) 207; and I. Vokotopoulou, *Βίτσα, τα νεκροταφεία μιας μολοσσικής κώμης* (Athens 1986) 255–76. For finds from sites near Naousa, see Vokotopoulou, "La Macédoine de la protohistoire à l'époque archaïque," *Magna Grecia, Epiro, e Macedonia. Atti del 24° Convegno di studi sulla Magna Grecia* (Taranto 1985) 143–44.

first local production of matt-painted pots before the 11th century B.C.

Grevena and the upper Aliakmon catchment. The most striking discovery thus far reported by the interdisciplinary, comprehensive survey of the Nomos of Grevena undertaken by Carleton College[217] is that of "at least" 15 EN sites.[218] Most of those sites are less than 1 ha in area, and occupy terraces and relatively flat areas near major streams. Mudbrick features in many instances suggest a considerable degree of permanence. More fieldwork will be needed, however, before one can determine why, around 6000 B.C., people settled in a landscape dominated by deeply incised terraces, and why they left their hamlets soon after. Could the EN evidence produced by the Grevena project be indicative of a larger pattern, yet to be mapped in other parts of western Macedonia? The distribution of Bronze Age sites is no less interesting: some were found in higher elevations, near 1,000 masl, and those of the Middle Bronze Age—with occasional pieces of "Gray Minyan"—often "are on rather large, isolated hill tops."[219] In this last, important respect, Grevena in the Middle Bronze Age begins to sound a little like, for example, Messenia (see below, "New Questions").

Further north, along the eastern foothills of the Pindos range, several sites have been found in recent years.[220] At the same time, a LN site on the shore of Lake Kastoria, Dispilio (fig. 2:2), has come under excavation; intriguing finds include what may be the trace of a small flatboat, and a mysterious wooden tablet.[221]

Kitrini Limni area. Since the 1950s, strip mining and industry have brought havoc to the Ptolemais system of basins, creating new deep valleys and precipitous hills. Neolithic sites were first identified here in 1913, but systematic surveys did not begin until the mining had transformed an area ca. 50 km^2 in the central part of the system.[222] The southernmost and highest of the basins, Kitrini Limni (floor at 650 masl), has to date survived largely intact, and has been since 1987 the object of intensive surveys, excavations, and experimental methods.[223] Systematic survey has also been undertaken in the mountainous hinterland (Vermio), at elevations 850–1,480 masl. A summary of conclusions follows.

Neolithic settlement on the basin floor began no later than 5600 B.C., as the presence of various EN elements (e.g., bowls on low bases, with red-slipped surfaces and linear patterns in white paint) at one site confirms. Another site, 5 km away, as well as a remote cave on Mt. Vermio (940 masl), may have been used at that time. The location of the confirmed EN site, Megali Toumba Ayiou Dimitriou, is noteworthy: it is adjacent to the central and least dry part of the basin floor, yet a few meters above it, on a low ridge, commanding a view in all directions.[224] For a pioneer agricultural community settling in a newly opened landscape, there is hardly a more privileged location in all of Kitrini Limni. The site was occupied in the Middle, Late, and Final Neolithic as well, becoming eventually the most conspicuous mound on the basin floor, with more than 5 m of deposits. It was used again some time in the Bronze Age, perhaps as a burial ground.

At least three more sites on the basin floor were settled by the Middle Neolithic (as shown by the presence of distinctive pot profiles with red-slipped surfaces, occasionally with "flame" patterns, known, e.g., from MN Servia).[225] During the Late and Final Neolithic, on the other hand, 13 sites—some between 5 and 10 ha in area—were settled. While all those

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[217] The project is directed by N.C. Wilkie. A substantial report will appear in *Hesperia*. See N.C. Wilkie, "The Grevena Project," *ArchMak* 5 (1993) 1,747–55; G. Toufexis, "Νεολιθικές έρευνες στο Ν. Γρεβενών," *AEMT* 7 (1993, in press); also M. Savina, "Some Aspects of the Geomorphology and Quaternary Geology of Grevena Nomos, Western Macedonia, Greece," in H. Reidl ed., *Beiträge zur Landeskunde von Griechenland* 4 (Salzburger geographische Arbeiten 22, Salzburg 1993) 57–75.

[218] Wilkie (supra n. 217) 1,751. One of the sites, Kremastos near the village of Knidi, is being excavated by G. Toufexis (IE′ Ephoreia).

[219] Wilkie (supra n. 217) 1,752.

[220] H. Ziota, personal communication.

[221] G.H. Hourmouziadis, "Σήματα λυγρά," *AEMT* 7 (1993, in press); G. Anagnostou et al., "Ανασκαφές Δισπηλιού Καστοριάς: Το χρονολογικό πρόβλημα," *AEMT* 7 (1993, in press).

[222] G. Karametrou-Mentesidi, "Προϊστορικοί οικισμοί Κίτρινης Λίμνης (Σαριγκιόλ) Κοζάνης," in *Αμητός. Τιμητικός τόμος για τον καθηγητή Μ. Ανδρόνικο* (Thessaloniki 1986) 391–416, with references to earlier work.

[223] A project of the IZ′ Ephoreia, in collaboration with M. Fotiadis and others, currently overseen by H. Ziota. Preliminary reports: M. Fotiadis, "Κίτρινη Λίμνη, Νομού Κοζάνης, 1987: Προϊστορική έρευνα," *AEMT* 1 (1987) 51–61; Fotiadis, "Προϊστορική έρευνα στην Κίτρινη Λίμνη, Ν. Κοζάνης, 1988: Μία σύντομη έκθεση," *AEMT* 2 (1988) 41–54; H. Ziota et al., "Κίτρινη Λίμνη, τέσσερα χρόνια έρευνας," *AEMT* 4 (1990) 93–103; Fotiadis and Hondroyanni-Metoki (supra n. 187). See also A. Kalogirou, *Production and Consumption of Pottery in Kitrini Limni, West Macedonia, Greece, 4500 B.C.–3500 B.C.* (Diss. Indiana Univ. 1994); and Fotiadis (supra n. 178). Several other studies are in progress; those on the bone tools (R. Hristidou) and botanical remains (M. Mangafa) are nearly completed.

[224] The claim for EN components in another seven sites in the basin, in Aslanis (supra n. 12) 67–69, is spurious.

[225] Kalogirou (supra n. 223) 250–51; cf. Karametrou-Mentesidi (supra n. 222).

sites were clustered in 30 km^2 in the nearly flat basin bottom, a steep hill (Ag. Eleftherios, 853 masl), 2.5 km outside the basin, and overlooking a major trail (now, national road) to the Aliakmon valley, was also used in the Late or Final Neolithic.[226]

In the later part of the Final Neolithic, the basin floor appears to have lost much population. Typical EBA pieces are rare on the surface of the sites; small quantities were also found in "pockets" at the excavated site, Megalo Nisi Galanis (fig. 2:4). Here, potsherds from all the traditionally recognized EBA phases were identified, as well as a few later Bronze Age pieces.[227] Some FN deposits in the periphery of Megalo Nisi Galanis were found buried under a dark lacustrine clay, which indicates an expansion of marshes in the basin floor. That episode, however, has yet to be dated with precision, and need not, therefore, be the cause of site abandonments in the basin floor (cf. above, "Environmental Change"). Finally, while the Mt. Vermio survey was successful in identifying small sites (including several tumuli, situated over pastures at 1,050–1,150 masl), it located no definite Bronze Age sites.

The excavation at Megalo Nisi Galanis has identified two main phases, a "Late" and a "Final Neolithic." The LN deposits rest on a nearly level part of the basin floor, directly on a thin horizon of dark clay that covers the soft, clay marl substratum. Settlement began at a time when the red-slipped pots known from the Middle Neolithic were still being produced.[228] In the course of time, those were progressively replaced by dark-burnished pots with rounded profiles, and, later still, by "black-topped," distinctly carinated ones.[229] This last ceramic subphase has been dated at the site to the range 5200–4950 B.C.[230] The end of the Late Neolithic is, however, missing from the excavated trenches—the result of digging by the subsequent, FN occupants of the site; traces of that subphase (e.g., small sherds with "classical Dimini," or comparable, patterns) are found in later deposits.

The Final Neolithic of Megalo Nisi Galanis is, in terms of ceramics and stone tools, comparable to the "Rachmani" phase in Thessaly (e.g., Pefkakia), and it shares many elements with the early part of the Final Neolithic in southern Greece (e.g., Kitsos Cave). Two dates from different contexts show habitation in the period 4700–4450 B.C.[231] Pottery now is much more abundant than before. Hemispherical and conical bowls in a wide range of capacities (0.12–9 liters) predominate, followed by jars with capacities up to 30–35 liters. What truly characterizes the ceramics of this phase, however, is a variety of clay bodies (calcareous and non-calcareous), surface treatments (including frequent application of white and pink "crusts"), pigments, and a broad range of new types of containers and other utensils (e.g., "strainers" and asymmetrical and angular vessels).[232] Taken together, the increase in the quantity of pottery and the proliferation of fabrics and shapes strongly suggest that the ceramic craft radically expanded, its products becoming useful in a large spectrum of diverse practices; one is tempted to speak of a "ceramic revolution," the full articulation of which with other crafts and activities needs to be systematically explored. The lithic material from the FN deposits comprises heavily used and reused blades (often as scrapers and drills) from a variety of high-quality cherts, obtained mostly as ready-made tools or blanks through long-distance trade. Obsidian of Melian texture is present in the uppermost deposits, which also contain objects from marine shell, and pieces of gold sheet and wire. In house construction, a calcareous concrete was used; it probably was a man-made material, prepared by mixing lime with a sandy sediment collected for the purpose from streambeds.[233] Some surfaces were covered with fine white plasters.

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[226] F. Petsas, *Prakt* 1965, 27–28. EBA occupation is in evidence as well.

[227] Examples of both the earliest and the latest ceramic materials from Kitrini Limni are illustrated in Fotiadis and Hondroyanni-Metoki (supra n. 187); "tubular lugs," "corded" designs, and clay "anchors" should be added to the EBA material.

[228] Cf. "phase 6" at Servia, Ridley and Wardle (supra n. 186) 212–13.

[229] The groups of rounded dark-burnished pots and carinated "black-topped" vessels have some elements in common (e.g., "rippled" decoration), yet they appear to have been produced by two very different ceramic recipes, at least at Megalo Nisi Galanis (Fotiadis, personal observations, 1994; cf. Ridley and Wardle [supra n. 186] 216–17). The technology of the LN carinated pots is treated extensively in Kalogirou (supra n. 223), esp. 72–106. For means by which the distinctive shine of the LN carinated pots could be achieved, see, e.g., Vitelli (supra n. 128) 143–44.

[230] Two dates: 6150 ± 90 B.P. (Beta-48508) and 6250 ± 170 B.P. (Beta-48507). Calibrations by the University of Washington Quaternary Isotope Lab Radiocarbon Calibration Program, rev. 3.0.3c. See also Fotiadis and Hondroyanni-Metoki (supra n. 187).

[231] Beta-48506: 5730 ± 80 B.P., and Beta-48509: 5710 ± 100 B.P.

[232] Kalogirou (supra n. 223) 107–80. The capacities cited for bowls are those that could be measured.

[233] Fotiadis 1988 (supra n. 223) 43–46. Samples are presently being analyzed by L. Joyner (Fitch Laboratory, British School at Athens).

By the end of the FN occupation, the settlement stood on a mound almost 9 ha in area and with its top 5 m above the basin floor. Most deposits thus far excavated at Megalo Nisi Galanis are secondary, and contexts—especially FN ones—are highly fragmentary. Nevertheless, that is the only site thus far excavated in western Macedonia with an almost complete LN sequence topped by a rich Final Neolithic.

Drosia (fig. 2:3).[234] Drosia is located in a small basin (ca. 8 km^2, 500 masl) in the upper catchment of the Agras River, east of Lake Vegoritis. The cultural horizon, up to 1.20 m thick, occupied a gentle rise, and extended over at least 1.4 ha. Excavation in 1992 by the IZ′ Ephoreia in an area ca. 40 m^2 uncovered remains of house floors, made of clay set on an infrastructure of worked timbers. At least two such floors were identified ca. 10 m apart, and one of them preserved a small grinding facility, a slab supported by small stones. In the space between the two floors a pit was found, 3 m in diameter and 40 cm deep, containing a large amount of potsherds, stone tools, and animal bone. Outside that pit, the cultural deposits contained few artifacts.

The site must belong to the period 6000–5500 B.C., as is shown by hemispherical bowls with red-burnished surfaces and occasional bands of red paint, and by "barbotine" patterns on some of the larger vessels. The excavator calls attention to the relatively large number of ground stone tools (mainly axes or adzes from serpentinites) in comparison with the number of chipped stone blades and scrapers (made on both good- and poor-quality cherts). Three lower bodies of clay figurines, three "sling bullets," a "spool," and a chert "arrowhead" are also mentioned.

Drosia, then, is a single-period, EN/MN settlement with dispersed houses, the first site of its kind to be identified in this part of Greece.[235] It lies in a well-watered, fertile part of the landscape amid high mountains, but also along the main natural artery (Via Egnatia)[236] from the plains of central Macedonia to the upland basins of Pelagonia and Ptolemais. It may therefore have been not simply one more settlement of pioneer farmers in search of a cultivable patch, but also a station along the trails of prospectors and traders, a socially marked place in a sparsely populated landscape.[237] The finds ought to be examined with that possibility in mind. Eight thousand years after it was formed, the cultural horizon is extremely fragile, and hardly detectable from the surface, even though the house floors lie less than 50 cm below. The circumstances of discovery are instructive: the site was spotted as it was being bulldozed away, in the course of industrial development. One lesson is that such sites are difficult to detect, and, in certain areas, scores of them may lie hidden under recent alluvia.

Yannitsa area. In the low terraces flanking the plain of central Macedonia on the northern side, between the courses of the Loudias and the Axios, recent explorations by the IZ′ Ephoreia have produced evidence for at least 15 new prehistoric sites. Information on most of them still is sketchy,[238] but one site, Yannitsa B (fig. 2:13), has been under excavation by P. Chrysostomou since 1989, and short reports appear regularly.[239] The site is located in a densely built area within the city limits of Yannitsa, and only small parts of it can be excavated. Late Neolithic deposits have been estimated to cover an area of 6–8 ha; in their southern quarter, in an area near springs, they appear to rest directly on deposits, up

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[234] S. Kotsos, "Ανασκαφή νεολιθικού οικισμού στη βιομηχανική περιοχή Δροσιάς-Εδεσσας," *AEMT* 6 (1992) 195–202.

[235] Its only known parallels are Servia V in the Aliakmon valley, and the sites in the Grevena area.

[236] See N.G.L. Hammond, "The Via Egnatia in Western Macedonia," *ArchMak* 4 (1986) 247–55.

[237] The nearest contemporary sites known to date—Yannitsa to the east (see below), the sites of Kitrini Limni to the southwest, and those of the Bitola area to the northwest—lie already more than 50 km away. It must be remembered, however, that the sizable basins nearest to Drosia—Amyndaio and Florina—remain poorly explored; see K. Trantalidou, "Προϊστορικοί οικισμοί στις λεκάνες της Φλώρινας και του Αμυνταίου (δυτική Μακεδονία)," *ArchMak* 5 (1993) 1,593–622, where only one MN site, Monastiraki, is claimed for the area (p. 1,614). For the Bitola sites, see, e.g., D. Simoska and V. Sanev, *Prahistory* [sic] *in Central Pelagonia* (Bitola 1976), with catalogue and map.

[238] The most useful accounts are P. Chrysostomou, "Η τοπογραφία της βόρειας Βοττιαίας: Η αποικία της Πέλλας και οι χώρες τους," in *Μνήμη Δ. Λαζαρίδη: Πόλις και χώρα στην αρχαία Μακεδονία και Θράκη. Πρακτικά Αρχαιολογικού Συνεδρίου, Καβάλα, 1986* (Thessaloniki 1990), esp. 213–17; and Chrysostomou and P. Chrysostomou, "Νεολιθικές έρευνες στα Γιαννιτσά και στην περιοχή τους," *AEMT* 4 (1990) 169–77 (with remarks on the pattern of site distribution).

[239] P. Chrysostomou, "Ο νεολιθικός οικισμός των Γιαννιτσών Β," *AEMT* 3 (1989) 119–34; Chrysostomou, "Οι νεολιθικές έρευνες στην πόλη και την επαρχία Γιαννιτσών κατά το 1991," *AEMT* 5 (1991) 111–25; Chrysostomou, "Ο νεολιθικός οικισμός Γιαννιτσών Β: Νέα ανασκαφικά δεδομένα (1992–1993)," *AEMT* 7 (1993, in press); Chrysostomou and Chrysostomou (supra n. 238) 175–76. Archaeobotanical evidence is presented in S. Valamoti, "Γεωργικά προϊόντα από το νεολιθικό οικισμό Γιαννιτσά Β: Προκαταρκτική προσέγγιση μέσω των αρχαιοβοτανικών δεδομένων," *AEMT* 6 (1992) 177–84.

to 1 m thick, that clearly belong to the Early Neolithic. In one of the soundings into those EN deposits, Chrysostomou uncovered the remains of three superimposed structures, the lowest resting on the natural surface and being elliptical in plan, the others being rectangular. The small internal diameter of the elliptical structure appears to be ca. 4 m.[240] All three structures had walls built around frames of sturdy posts. The walls of the upper two structures rested in foundation trenches (50–60 cm wide, 40 cm deep), and the floor of one of them had been lined with a hard calcareous material.[241] From another sounding Chrysostomou reports a massive foundation, perhaps of a platform, constructed with fieldstones set in clay.[242]

The above are the earliest structural remains to be uncovered in northern Greece since the excavation of Nea Nikomedeia (fig. 2:11). An early date is suggested, first of all, by the associated pottery, which is characterized by an abundance of red-slipped, deep hemispherical bowls (often on ring bases, many with solid and linear patterns in white paint) and by small quantities of pots with impressed decoration.[243] Even more telling perhaps are a few "studs" ("earplugs"),[244] known to mark a very early ceramic Neolithic horizon from Iran to Thessaly.[245] A date around 6000 B.C. or earlier seems likely. A series of ^{14}C dates from the site is essential, and might also resolve remaining questions on the date of Nea Nikomedeia.[246]

The settlement stood near the coast of the Aegean, ca. 25 km around the gulf from Nea Nikomedeia.[247] A third EN settlement appears to have been located between Yannitsa B and Nea Nikomedeia. Material of the Middle Neolithic is reported from yet another site, while later Neolithic components are claimed for more than 20 sites in the area.[248] It is worth remembering that one of the latter sites, Aravissos, is the source of a small hoard of gold objects (unfortunately, a "chance find") that have close parallels among the funerary furnishings from the cemetery of Varna (Bulgaria).[249]

Mandalo (fig. 2:12). A small mound (area under 0.5 ha, height 7–8 m), Mandalo is located on a narrow interfluve, ca. 40 masl, in the northwestern part of the Yannitsa terraces. A substantial portion of the mound (ca. 10%) was excavated from 1981 to 1988 by the University of Thessaloniki, and a group of 19 generally consistent radiocarbon dates now is available.[250] Two main periods of occupation have been distinguished, a "Late Neolithic" and an "Early Bronze Age," separated by an occupational hiatus of ca. 1,000 years. The "Late Neolithic" of the site spans the second half of the fifth millennium B.C. (12 useful dates, ca. 5700–5300 B.P.)—a time period that, according to the chronological framework we have adopted in this review (table 1), is part of the Final Neolithic. The ceramic and other parallels (e.g., implements for copper working, acrolithic figurines) also are with sites, in Greece and beyond, that belong to the Final Neolithic. If there is a discrepancy between the preliminary project reports and the pres-

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[240] The correct scale of fig. 1 in Chrysostomou 1991 (supra n. 239) 112 is 1:50.

[241] Chrysostomou 1991 (supra n. 239) 111–13.

[242] Chrysostomou 1989 (supra n. 239) 122, and fig. 4 on p. 124 (correct scale is 1:30). Possible ditches are also reported in Chrysostomou 1993 (supra n. 239).

[243] Chrysostomou 1991 (supra n. 239) 113–15, figs. 6–12 and 14–15. The most noticeable difference from Nea Nikomedeia is the rarity, at Yannitsa, of red patterns on white background; cf. Rodden (supra n. 167) 284.

[244] One carved in marble and one in clay are reported in Chrysostomou 1989 (supra n. 239) 128 and fig. 7, lower left. They have rounded rather than (as from Nea Nikomedeia and the Near East) pointed tips, resembling therefore those from the first EN phases of Thessaly: D.R. Theocharis, *Η αυγή της θεσσαλικής προϊστορίας: Αρχή και πρώιμη εξέλιξη της Νεολιθικής* (Volos 1967) 82–84.

[245] E.g., R.J. Rodden, "Recent Discoveries from Prehistoric Macedonia: An Interim Report," *BalkSt* 5 (1964) 121; Theocharis (supra n. 244) found them most often in layers that he considered "preceramic" Neolithic.

[246] Demoule and Perlès (supra n. 115) 381. Cf. A. Whittle, *Neolithic Europe: A Survey* (Cambridge 1985) 41.

[247] Bintliff (supra n. 185) 256–57. Marine shell and fish vertebrae (unidentified) are common finds at Yannitsa B, as at neighboring sites: Chrysostomou 1989 (supra n. 239) 121.

[248] Chrysostomou 1991 (supra n. 239) 117; Chrysostomou and Chrysostomou (supra n. 238) 173.

[249] Grammenos 109 and pl. 30.1–6; *Ancient Macedonia* (supra n. 209) 120–21; J. Makkay, "Comparisons of Some Chalcolithic and EBA Types from Anatolia, the Aegean and the SE Balkans," *ArchMak* 5 (1993) 821–23.

[250] For summary reports, see Kotsakis et al. (supra n. 188); A. Pilali-Papasteriou et al., "Νέος προϊστορικός οικισμός στο Μάνδαλο δυτικής Μακεδονίας," *ArchMak* 4 (1986) 451–65; A. Papanthimou and A. Papasteriou, "Ο προϊστορικός οικισμός στο Μάνδαλο: Νέα στοιχεία στην προϊστορία της Μακεδονίας," *ArchMak* 5 (1993) 1,207–16; A. Pilali-Papasteriou and A. Papaefthimiou-Papanthimou, "Νέες ανασκαφικές έρευνες στο Μάνδαλο δυτικής Μακεδονίας, 1985–1986," *Egnatia* 1 (1989) 15–28; Papaefthimiou-Papanthimou and Pilali-Papasteriou, "Η ανασκαφική έρευνα στο Μάνδαλο (1987–1990)," *Egnatia* 2 (1990) 411–21; and Papaefthimiou-Papanthimou and Pilali-Papasteriou, "Ο προϊστορικός οικισμός του Μανδάλου δυτικής Μακεδονίας μέσα στα πολιτιστικά πλαίσια της Υστερης Νεολιθικής," in *ΣΤ' Διεθνές Συμπόσιο Αιγαιακής Προϊστορίας* (Athens, in press).

ent account, then, it is strictly terminological, and need not be dwelt upon. No such discrepancy exists for the second period of occupation, the Early Bronze Age at the site, which covers the years 2900–2200 B.C. (five dates in stratigraphic order, ca. 4300–3850 B.P.).

In both periods, habitation structures were built with pisé, piled onto frames carried by large posts. White plasters and clays were commonly used for floors and hearths (cf. the FN phase at Megalo Nisi Galanis). House plans, however, have proven intractable, despite efforts[251] and the relatively broad exposures. Toward the end of the Neolithic occupation, a large wall made of fieldstones was erected. Almost 2.5 m wide and more than 1.4 m high, the wall may have ringed the settlement, or some part of it; alternatively, it may have formed a barrier on one side only. A second, outer wall is veiled in comparable uncertainties. Parts of those walls may still have been standing above ground 1,200 years later, during the EBA occupation.[252] A child burial in an urn also was part of the Neolithic settlement, and the remains of an adult were at some point reburied in a pit lined with mudbricks and a clay floor.[253]

To judge by the volume of debris (mainly building materials) accumulated in so small an area, habitation structures must have been tightly packed. Still, the community can never have numbered more than a few dozen people—that is, assuming that the community lived within the walled area, and not in houses dispersed in the plain below.[254] In the last instance, the walled site might even have been a chiefly estate. But the possibilities are many, and one must wait for the in-depth studies of the many classes of data. One point is clear. Despite its small size, Mandalo cannot be thought of as a settlement marginal to the regional economic system, nor perhaps to the political one: inside the wall, a variety of productive activities took place, including the manufacture of textiles, perhaps at some scale;[255] and, toward the close of the fifth millennium, a coppersmith appears to have lived there.[256]

Makriyalos (fig. 2:10). The recently excavated Neolithic site of Makriyalos occupies a hill, ca. 1 km inland from the modern coast, in the rolling landscape of northern Pieria. Surface remains cover an area of ca. 50 ha. Of these, 6 ha were intensively excavated from November 1992 to June 1994, in one of the largest, best coordinated salvage efforts ever conducted in Greece.[257] The excavators have distinguished two components, with a minimum of spatial overlap. The earlier component is securely datable by the preponderance of characteristic black-burnished pots to the early part of the Late Neolithic. At that time the entire settlement was encircled by a system of ditches. Habitation structures within the circle were partly sunk into the ground; they survived as pits, often overlapping, in groups separated by extensive open spaces. One of those groups of pits was found littered with exceptionally large quantities of cultural residue, ranging from scraps of animal bone to complete figurines.

As the preliminary reports make clear, the concentric ditches—up to three—were maintained through substantial, continuous investments of labor. Dug and redug as a series of adjoining pits into the Tertiary substratum, the largest one reached in places a depth of 4 m, and widths exceeding 5 m. Subse-

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[251] See esp. K. Kotsakis, "Αποκατάσταση κατόψεων πασσαλόπηκτων οικημάτων με τη βοήθεια ηλεκτρονικού υπολογιστή στην ανασκαφή Μανδάλου, Δ. Μακεδονίας," in *Ειλαπίνη: Τόμος τιμητικός για τον καθηγητή Νικόλαο Πλάτωνα* (Iraklion 1987) 117–24.

[252] The excavators found the upper parts of the walls amid EBA debris: Papanthimou and Papasteriou (supra n. 250) 1,208.

[253] Pilali-Papasteriou et al. (supra n. 250) 455 and fig. 5.

[254] A survey has identified the nearest contemporary ("LN") site ca. 3 km away: A. Papaefthimiou-Papanthimou and A. Pilali-Papasteriou, "Ανασκαφή στο Μάνδαλο (1988)," *AEMT* 2 (1988) 131.

[255] Pilali-Papasteriou and Papaefthimiou-Papanthimou (supra n. 250) 24; A. Papaefthimiou-Papanthimou and A. Pilali-Papasteriou, "Ανασκαφές στο Μάνδαλο," *AEMT* 1 (1987) 177. Archaeobotanical evidence is presented in S. Valamoti, *The Plant Remains from the Late Neolithic/Early Bronze Age Site of Mandalo, Macedonia, Greece* (M.S. thesis, Univ. of Sheffield 1989).

[256] For a well-dated clay crucible, see Papanthimou and Papasteriou (supra n. 250) 1,209 and fig. 2; also Pilali-Papasteriou and Papaefthimiou-Papanthimou (supra n. 250) 24 for metal objects (needle, chisel, copper sheet, and ax) from both the fifth- and third-millennium deposits. Neutron activation analysis of obsidian has shown a Carpathian provenance; a Melian provenance was also indicated for one sample: V. Kilikoglou et al., "Carpathian Obsidian in Macedonia, Greece," *JAS* (in press). For chemical analyses of EBA pottery, see M. Kesisoglou, E. Mirtsou, and I. Stratis, "Μελέτη δειγμάτων κεραμεικής από το Μάνδαλο—Πρώιμη Εποχή Χαλκού," in Stratis et al. (supra n. 135) 161–68.

[257] The project has been organized and overseen throughout by M. Pappa and M. Besios (ΙΣΤ′ Ephoreia, Thessaloniki), and has involved a staff of ca. 150. See the informative reports of M. Pappa, "Νεολιθικός οικισμός Μακρυγιάλου," *AEMT* 7 (1993, in press), and of M. Besios and M. Pappa, "Νεολιθικός οικισμός Μακρυγιάλου," *AEMT* 8 (1994, in press). The excavated portion lay directly in the path of a new Thessaloniki–Athens railway. It has now been completely erased. Excavations were resumed in October 1995, for additional salvage work.

quently, a V-shaped ditch was dug through those irregular pits. Refuse from the settlement, including human bone, frequently found its way into the ditch. Not all of the accumulation, however, was due to accidents (e.g., collapsing ditch walls, or trapping of loose debris from above): burials, both primary and secondary, had intentionally been placed in the ditch.

Such evidence is intriguing. The ditches no doubt served a variety of purposes, including defense against raiders and against intrusions of the wild. But the episodic nature of digging, the irregularities in proportions and sections, and, even more, the episodes of partial infilling, at least with burials—all of those also require explanation. One is reminded of remarks made by I. Hodder about ditches at a British site: "the enclosure was less a thing than a process. Ditches were continually being subdivided and joined." For Hodder, the larger entity, the enclosure in this case, was the product of "segmented labour activities" involving, among other things, competition between the social segments responsible for the work.[258] In the enclosure of Makriyalos too, one is tempted to see a process as much as a thing: the ditches may well have constituted a field of contentions not only between a human community and nature, but also among the social units—kin groups or other—making up the community. Such a hypothesis deserves exploration.

The later component at Makriyalos yielded a very high proportion—thus far unique outside Thessaly—of "classical Dimini" ceramics, with painted as well as incised patterns. The new settlement occupied a smaller area, adjacent to that occupied before. The density of structures in the inhabited space was higher, but appears to have varied through time. Most structures were, again, partly sunk into the soft ground. They were found as roughly circular pits of various depths and diameters, many preserving evidence for superstructures supported on frames of posts. One of the deepest pits was fitted with an earthen staircase, and had served as storage space; large jars had once stood on its floor. Gravel pavements outside the large pits had ovens built on them, while small pits served as depositories—some for seashell—or perhaps as cooking facilities.[259] In addition to the circular, partly subterranean structures, a number of rectangular, "megaroid" buildings with apsidal ends stood above ground. They appear to form a coherent pattern, and possibly belong to a distinct subphase. An infant cremation burial, bones in a small urn, was also found within the settled area, while several inhumations in pits were made at one point beyond the edge of the inhabited area. Finally, this settlement too, or some part of it, appears to have been bounded or divided by ditches.

The salvage excavation of Makriyalos is a landmark, opening a new, vast potential for research into Neolithic societies in Greece, thanks not only to the size of the area exposed, but also to the fine grain of observation. The contexts recovered—salvaged, indeed—are immensely rich.[260] Neolithic settlements that spread over hill slopes, with houses separated by ample open spaces, have been known from surface surveys in Macedonia since the 1970s.[261] They have held the promise of large exposures, and of contexts modified only by natural forces and agriculture, but not by repeated, long-term habitation. Makriyalos, the first such settlement to be extensively excavated, stands up to those promises. The presence, side by side, of two distinct components is also interesting for at least two reasons: it provides a unique basis for a comparative approach to the phases of the local Neolithic; and it also hints at discontinuities in the habitation of prehistoric sites in Greece—discontinuities one suspects, but cannot easily document, while excavating mound sites.

Several other sites, contemporary with Makriyalos and later, have been discovered in northern Pieria in recent years, and some have been excavated.[262]

Mt. Olympos. Spathes (fig. 2:9), a 13th–12th century B.C. cemetery, with finds that might be equally at home in Mycenaean Thessaly, was excavated in 1985–

[258] I. Hodder, "The Haddenham Causewayed Enclosure—A Hermeneutic Circle," in Hodder, *Theory and Practice in Archaeology* (London 1992) 232–33.

[259] Pits found filled with ashes may, but need not, be places where fires were lit. They can also be places where fires were put out—safe depositories for embers still burning, or storage for the resulting, highly useful ashes. The issue becomes critical when one attempts to determine whether hearths were indoors or outdoors, and whether, therefore, food consumption involved hospitality and reciprocity or was a sign of emerging redistribution; e.g., Halstead 1989, 74–76; Halstead 1994, 206–207.

[260] The finds of Makriyalos display an incomparably large variety in materials and types, including obsidian and stones from distant sources, *Spondylus* shell as finished ornaments and raw material, and several copper artifacts.

[261] See Kotsakis (supra n. 15) 127–28.

[262] E.g., K. Soueref, *ArchDelt* 41 B′ (1986) 141–42; Grammenos 140–42. M. Besios, "Ανασκαφές στη Β. Πιερία," *AEMT* 8 (1994, in press) where the rescue excavation of a LBA cist grave cemetery near Korinos (15 single-burial graves) is reported. Mycenaean pottery, gold jewelry, and a marble Early Cycladic vessel were among the finds. Rubbish pits were the only remains of the eroded and destroyed Bronze Age settlement, and their contents included a stemmed bowl in Gray Minyan fabric and Mycenaean pottery.

1987 by E. Poulaki-Pantermali (ΙΣΤ′ Ephoreia).[263] Located on a steep, westward slope of Mt. Olympos, at 1,000–1,100 masl, the site overlooks a major high pass between Thessaly and Macedonia. No settlements are known in the area, but the valley floor below, 800–900 masl, has some potential for garden farming and tree orchards, and an intensive survey would be essential. In any case, the placing of the cemetery on a high slope with a broad horizon is noteworthy (though far from unique; see, e.g., above, the tumuli of Mt. Vermio).

The graves—34 excavated in an area of ca. 0.2 ha—were arranged in rows. The shafts, many of them exceeding 2 m in length, were carefully dressed and roofed with heavy slabs, and were sealed from above with red earth. They had been repeatedly opened for new burials, including children. The dead were often buried with a carved sealstone on their chests, and with personal and other items—jewelry, pots, bronze weapons, and some biconical and conical "buttons." An unspecified number of those items are of readily recognizable Mycenaean types (e.g., alabastra, both rounded and straight-sided, a juglet, two swords), and/or are objects usually found in graves in "Mycenaeanized" provinces (e.g., strings of glass paste and amber beads, the former with volute designs). The remains of another cemetery with comparable graves and furnishings have also been found at some distance along the same mountain pass.[264] As a consequence of those discoveries, the "border/frontier boundary" of Mycenaean Thessaly in the area of Mt. Olympos may have to be drawn a little further west than Feuer drew it in 1983.[265] But, until a detailed publication of the grave contents appears, it is impossible to proceed with a more exacting interpretation. Did, for example, the graves belong to military personnel, dispatched by one of Thessaly's chiefs to guard a crossover into his territory? Or did they belong to a "wild bunch"—mountain bandits, living off booty from traffic through the pass? Lumbering may also have been carried out in the area, the cemetery being located at the altitude where oaks give way to a dense conifer forest (see "Environmental Change" above).

New Questions

The maps of Neolithic and Bronze Age site distributions in western Macedonia are rapidly being filled. Any attempt to analyze and interpret the emerging patterns, however, is compromised by the virtual absence of intensive surveys, especially of the kind that employ controlled (probability) sampling, and of geomorphological research. Only a few, tiny areas have undergone intensive surface survey (e.g., segments of the Aliakmon riverine zone; parts of the western watershed of Mt. Vermio). Geomorphic change, moreover, while evident to the trained eye in many areas, and also gleaned from the pollen record,[266] is nowhere adequately dated, nor are its magnitude and complexities documented by reference to quantified field data.

Take as an example the Kitrini Limni basin. In the center of the basin floor,[267] the surface on which some of the Neolithic settlements were established is today buried under a lacustrine clay at least 1 m thick. In theory, many small, especially EN, sites may lie under that deposit. The eastern quarter of the basin floor, on the other hand, is covered by large, coalescent alluvial fans, in part postdating the prehistoric occupation. What significance can one attach to the absence of prehistoric sites in that area? If none, and if no significance can be attached to the presence of only one confirmed EN site in the basin, how can one speak, for example, of the process of Neolithic colonization and the spread of agriculture in the basin?

In brief, the list of what one can infer from site distributions in western Macedonia today is considerably shorter than the list of what one should not attempt to infer. Let us focus on a few, specific, positive points, those that might pose challenges to established views, or reinforce them. It appears, for example, that for every site with an EN and/or MN (roughly 6500–5400 B.C.) component identified in recent years, two to three sites with later Neolithic (LN and/or FN) components have been identified.[268] Even when we consider the possibility that the later phases comprise a longer period of time than the earlier ones (table 1), that statistic still seems to lend

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[263] E. Poulaki-Pantermali, "Ολυμπος 2," in *Αμητός* (supra n. 222) 706–708; Poulaki-Pantermali, "Ανασκαφή Αγ. Δημητρίου Ολύμπου," *AEMT* 1 (1987) 201–208; E. Pantermali, *ArchDelt* 40 B′ (1985) 243; *ArchDelt* 41 B′ (1986) 140–41; and *ArchDelt* 42 B′ (1987) 363–64.

[264] Pantermali 1987 (supra n. 263); Poulaki-Pantermali, in *AEMT* (supra n. 263) 203–204. For references to other, old and new, Mycenaean finds from Mt. Olympos, see Poulaki-Pantermali, in *Αμητός* (supra n. 263) 705–706, 711–12; and Pantermali 1985 (supra n. 263) 240–41.

[265] Feuer 199.

[266] See also Savina (supra n. 217).

[267] Probability sampling was employed here, but it was limited to on-site survey, and to transects between some of the sites.

[268] In all, 30 late seventh/early sixth millennium (EN and/or MN) sites have to date been confirmed in western Macedonia, 15 of them in the Grevena area, five in the Aliakmon riverine zone, four in Kitrini Limni, four in the coastal plain, Monastiraki (supra n. 237), and Drosia.

support to the idea of a "Late Neolithic expansion,"[269] at the same time as it calls some critical elements of that idea into question. First of all, an increase of population in the later Neolithic phases (noted by many for several circum-Aegean areas) is beyond dispute; not only are there more LN and FN sites, but some of them (e.g., Megalo Nisi Galanis, and other sites in Kitrini Limni) are, by Aegean standards, massive. But that pattern does not seem to hold for every river valley and basin, as the evidence produced especially by the Grevena survey suggests. Furthermore, speculation that Greek Macedonia was virtually empty for the period 6500–5400 B.C. appears to have been rash.[270] The recent discoveries, accidental and systematic, of EN and MN sites in five different parts of western Macedonia strongly suggest that we have yet to learn a good deal about the late seventh and early sixth millennia B.C.

In almost all five areas (except, perhaps, Grevena), the confirmed early sites are located at, or very near, the lowest points of the landscape—that is, in proximity to groundwater or streams. A dispersal to a variety of locations, including locations in elevated, dry land (e.g., terraces north of the Aliakmon), is noticeable for the later sixth millennium B.C. The significance of that pattern—far from unique to western Macedonia[271]—has yet to be fully understood. The dispersal, for example, cannot be seen as strictly the result of population pressure. Nor is it obligatory to see locations in relatively dry land (e.g., on terraces) as "agriculturally marginal": the marginality in question depends as much on the goals of agricultural production as on pedology and rainfall.[272] Finally, the suggestion that farming in dry parts of the landscape was made possible by the development of the ard meets several difficulties, both evidential and theoretical.[273] In short, the Late Neolithic expansion remains a fascinating issue, in need of field and analytical investigations.

Most remarkable is the occasional presence of later Neolithic material in sites that cannot have been selected for their farming potential.[274] The strategic location of Ag. Eleftherios (near Kitrini Limni) with regard to an important trail was noted earlier, but it is impossible to specify the function of the site in the regional network. The significance of such sites is that they hint at dimensions of Neolithic societies systematically marginalized in our analyses. In particular, the view of the Neolithic populations of mainland Greece as sedentary farmers, peaceful, hospitable, prudent, and devoted to nothing but production,[275] has detracted attention from the potential those "farmers" had for practicing mobility. When mobility is discussed, it is primarily in the context of orderly modes of exchange.[276] Yet practices of mobility also include common forms of aggression and tactics of warfare—raids, ambushes, cunning embassies, misleading footprints. We should be paying more attention to all the precautions taken against such dangerous traffic, from ditches and walls around settlements to means of territorial surveillance and of intelligence about distant places.[277] Rather than being skirted, the forms of aggression should be treated as central aspects of Neolithic political economies; they appear to us to contribute as much to the formation of value (especially "prestige" value) as "elite" pots and specialist craftsmen.

It is in the Bronze Age, however, that "high places," affording large views and, hence, possibilities for extended territorial surveillance, become occupied with some regularity (e.g., Megali Rahi, at Aiani, fig. 2:5; Neraida hill, fig. 2:7; and sites in the Grevena area). Whatever complex social transformation brings the new pattern about,[278] it is not peculiar to Mace-

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[269] E.g., Demoule and Perlès (supra n. 115) 398; cf. Halstead 1994, 200 and passim.

[270] Demoule (supra n. 169); cf. Perlès (supra n. 136) 645–46.

[271] E.g., A. Sherratt, "Water, Soil and Seasonality in Early Cereal Cultivation," *WorldArch* 11 (1980) 313–30.

[272] As has been long recognized; for references and a relevant model, see M. Fotiadis, *Economy, Ecology and Settlement among Subsistence Farmers in the Serres Basin, Northeastern Greece, 5000–1000 B.C.* (Diss. Indiana Univ. 1985) 66–95. The interesting questions raised by A. Fleming, "Landscape Archaeology, Prehistory, and Rural Studies," *Rural History* 1 (1990) 11–13 are also pertinent.

[273] Fotiadis (supra n. 272), esp. 151–53.

[274] E.g., Rodohori Cave, F. Petsas, *ArchDelt* 19 B′ (1964) 356–59.

[275] In fact, dedicated to overproduction: e.g., Halstead 1989, 73–75; and Halstead 1994, 202, 206–207. Cf. Fotiadis (supra n. 1) 156; and Fotiadis (supra n. 168) esp. 68–76.

[276] Movement of households or villages at times of crop failure also is an attractive possibility: Halstead 1989, 73–75.

[277] For the frequency of aggression and warfare among supposedly peaceful Neolithic folk, see L.H. Keeley, *War before Civilization: The Myth of the Peaceful Savage* (New York 1996).

[278] For an interpretation that does not invoke an increase in warfare but considers changes in agricultural technology, see M. Fotiadis, "Settlement and Production in the Bronze Age of North Eastern Greece," *International Thracian Conference: The Bronze Age in the Thracian Lands and Beyond* (Milan 1986) 91–92. Cf. Dickinson (supra n. 159) 80–81.

donia, for the pattern is evident over much of Europe, from the Peloponnese to western Germany.[279] That is not to suggest that the processes that generated Mycenae of the Shaft Graves and the Bronze Age acropolises of western Macedonia differed merely in scale. The observation does, however, cast doubt on the common view that life in Bronze Age western Macedonia continued in isolation, becoming an impoverished version of Stone Age manners, with nothing socially important happening (except invasions).[280] There are important questions to be asked and investigated in the field: are the province's Bronze Age acropolis sites the marks of a new political economy and organization? Were they the central places (in the "Assiros" or any other model)[281] of a regional network of settlements yet to be systematically recorded? Were they also lookouts, signaling stations, or cult places? Speculation will not substitute for evidence, which in some cases (e.g., Neraida) has been destroyed.

CENTRAL MACEDONIA

Environmental Change

Pollen data from regions adjacent to central Macedonia (the area between the Axios and Strymon rivers, fig. 2) indicate a continuous expansion of deciduous forest during the early Holocene, both in the plains and the mountains, with a peak around 8000–7000 B.P. Forest expansion was succeeded by a decline, which at Philippoi is dated to 3500 B.P. and at Yannitsa to 4500 B.P., and may be partly attributable to human activity. Evidence for extensive clearing in the lowlands, possibly dating from the end of the second or beginning of the first millennium B.C., also comes from the mouth of the Strymon. The palynological evidence from the Yannitsa plain indicates generally unstable conditions related to successive inundations and sedimentations of the area, between 8500 and 7000 B.P.[282] Geomorphological study in the Axios valley has shown that a marine transgression connected to the sea-level rise after 8000 B.C. culminated around 4000 B.C., creating a deep gulf and areas of brackish water. During the Bronze Age the settlement of Kastanas was on an island, but successive alluviations by the Axios and episodes of land rise resulted in the silting of the gulf by 200 B.C.[283] Environmental research has not confirmed any substantial changes in the climate during the last 8,000 years, although regional variation cannot be excluded.[284]

Material Sequence and Archaeological Phases

In contrast to eastern Macedonia, secure series of stratified ^{14}C dates are generally lacking from central Macedonia, with the exception of the Bronze Age sites of Kastanas and Assiros. The chronology of earlier periods is of necessity relative, and relies on comparisons of the local ceramic sequences with those of eastern Macedonia and the Balkans, and occasionally with Thessaly. To some extent, comparisons with other regions have resulted in a confusing terminology: the earliest levels are designated "Middle Neolithic" in Balkan terms but "Late Neolithic" according to Thessalian and southern Greek terminology. The same holds true for the "Chalcolithic" and "Final Neolithic."[285] In the discussion that follows we use the Aegean terminology.

The earliest deposits in the region, dating to the end of the Middle Neolithic or beginning of the Late Neolithic, come from a small excavation at Vasilika, where a specific class of painted pottery has been related to the Thessalian MN painted styles.[286] In

[279] For the complexities of the transformation in Central Europe, see S. Shennan, "Settlement and Social Change in Central Europe 3500–1500 B.C.," *Journal of World Prehistory* 7 (1993) 121–61.

[280] See, e.g., the evocative prose of Borza (supra n. 158) 72: "the dwellers in Macedonia continued to live in scattered unwalled villages, content—as far as we know—to exploit on a local level the rich natural resources of their hills and plains." Cf. Heurtley (supra n. 150) 132. Borza is contrasting Macedonia with the Mycenaean Bronze Age; that should serve as a good example of the construction of Macedonia's Otherness, noted earlier.

[281] For the Assiros model, see below.

[282] Yannitsa: Bottema (supra n. 171) 141–48, 159, 162–66; Strymon mouth: P. Morrison, *Holocene Landscape Evolution of the Langadas Basin, Macedonia: An Approach to the Evaluation of the Soil Resource for Prehistoric Settlement* (Diss. Univ. of Birmingham 1993) 83–85, fig. 3.3, where otherwise unpublished information is presented; Philippoi: J. Turner and J.R.A. Greig, "Vegetational History," in *Sitagroi* 45–54, with references to earlier work; Willis (supra n. 142) 784–85, table 8. The only pollen diagram from central Macedonia comes from Lake Volvi and is dated to the historical period. Bottema (supra n. 142) 265–66.

[283] Schulz (supra n. 185) 375–93.

[284] Turner and Greig (supra n. 282) 51; Morrison (supra n. 282) 75–76, 90.

[285] See Demoule (supra n. 189) table 1, which synchronizes cultures in "Aegean" (left) and "Balkan" (right) terms; Coleman 247–79.

[286] Grammenos 46–58, 91. For a surface find of MN "Thessalian" sherds found at Mesimeriani Toumba, see R.C.S. Felsch, "Bericht über neolithische Scherben aus Mesimeriani," in F. Schachermeyr, *Die ägäische Frühzeit* I: *Die vormykenischen Perioden* (Vienna 1976) 293–97.

terms of absolute chronology, however, two ^{14}C dates place MN Vasilika at around 5500 B.C.—rather early in comparison to the final Middle Neolithic of Thessaly.[287] Based on the evidence from Vasilika, the LN sequence of central Macedonia has affinities with "Sitagroi II" and "Sitagroi III," but this observation needs further corroboration. Deposits that could be securely assigned to the Final Neolithic are difficult to define.[288]

Kastanas remains the only site with a stratified sequence for the third millennium, yet the dearth of material in the earliest four building phases and the clustering of three ^{14}C dates in the later phases, between 2000 and 1800 B.C., preclude estimation of the time span represented by the site's stratigraphic sequence.[289] The chronology of the Early Bronze Age has to rely, therefore, on general ceramic affinities with adjacent areas, and firm definition of subphases is still wanting. Stratified deposits with ceramic affinities to the earlier MBA phases in Argissa Magoula have been found at Kastanas but the later part of the Middle Bronze Age and the early Late Bronze Age, equivalent to the prepalatial Late Bronze Age in central and southern Greece, are still poorly documented. Recently excavated material from Toroni, Ayios Mamas, and Toumba Thessalonikis promises to fill this gap.[290] The later LBA stratigraphy is more adequately recorded at Kastanas, Assiros, and Toumba Thessalonikis. Mycenaean pottery of LH IIIA, IIIB, and IIIC styles in LBA stratified deposits has been used to establish a chronological scheme. Four ^{14}C dates from the latest LBA phases at Assiros are fairly consistent and conform to the conventional chronology for the beginning of LH IIIC, around 1200. A long series from Kastanas offers dates around the 13th century B.C. for levels with LH IIIB pottery, but the late 13th-century date for levels with LH IIIC and Protogeometric pottery seems too high.[291]

Recent Projects

The majority of prehistoric sites in central Macedonia were first systematically described by D.H. French in the 1960s. Additional sites have been identified by the ΙΣΤ′ Ephoreia, and the number has risen to 220.[292] The temporal distribution of sites offers a rough account of the general trends of settlement. From the Late Neolithic to the Early Bronze Age a rise in density is observable. The increase in number of sites in the later Bronze Age is accompanied by a decrease in the size of those sites. On present evidence, therefore, a process of nucleation cannot be documented in central Macedonia, in contrast to Thessaly.[293] Most inventoried sites are tells, but a number of flat and inconspicuous Neolithic sites have recently been identified. Some of these are huge and reach dozens of hectares.[294]

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[287] Bln-3185 (6630 ± 50 B.P., 5580–5480 B.C.) and Bln-3186 (6650 ± 50 B.P., 5585–5480 B.C.). See D.V. Grammenos, *Νεολιθικά θέματα από τη Μακεδονία και την ευρύτερη περιοχή* (Athens, in press).

[288] Grammenos 64–84. For a description of LN ceramics from central Macedonia, see Aslanis (supra n. 12) 179–89, 206–209. For the FN, see Treuil (supra n. 64) 90–93; J.-P. Demoule, "Les recherches récentes en Grèce septentrionale et les problèmes chronologiques et régionaux des cultures à céramique au graphite," in Lichardus (supra n. 63) 232; also Demoule, "La transition du Néolithique au Bronze Ancien dans le nord de l'Egée: Les données de Dikili Tash," in Maniatis (supra n. 188) 687–96.

[289] I. Aslanis, *Kastanas: Ausgrabungen in einem Siedlungshügel der Bronze- und Eisenzeit Makedoniens, 1975–1979: Die frühbronzezeitlichen Funde und Befunde* (Prähistorische Archäologie in Südosteuropa 4, Berlin 1985) 317–20. See also H. Willkomm, "Radiokohlenstoffdatierungen des Siedlungshügels Kastanas," in *Kastanas* 409–10.

[290] Aslanis (supra n. 289) 317–20; A. Cambitoglou and J.K. Papadopoulos, "Excavations at Torone, 1989," *MeditArch* 4 (1991) 162–67, where a stratigraphic sequence covering the EBA to early LBA, perhaps with regional characteristics, is summarily presented; ^{14}C dates are forthcoming. For Toumba Thessalonikis, see below. For Ayios Mamas, see B. Hänsel, "Erste Vorstellung eines neuen Projektes: Agios Mamas/Olynth," *AEMT* 7 (1993, in press).

[291] Assiros: *Radiocarbon* 24 (1982) 243–44; Kastanas: Willkomm (supra n. 289) 395–411. For discussion, see P. Warren and V. Hankey, *Aegean Bronze Age Chronology* (Bristol 1989) 159, n. 39; S.W. Manning and B. Weninger, "A Light in the Dark: Archaeological Wiggle Matching and the Absolute Chronology of the Close of the Aegean Late Bronze Age," *Antiquity* 66 (1992) 639–50. For PG-style pottery, see B. Hänsel, "Ergebnisse der Grabungen bei Kastanas in Zentralmakedonien 1975–1978," *JRGZM* 26 (1979) 189–90; and C. Podzuweit, "Spätmykenische Keramik von Kastanas," *JRGZM* 26 (1979) 204.

[292] D.H. French, *Index of Prehistoric Sites in Central Macedonia* (unpublished manuscript, Thessaloniki 1967); D.V. Grammenos and M. Bessios, "Από τους προϊστορικούς οικισμούς της κεντρικής Μακεδονίας, Θεσσαλονίκη 1992," in preparation. Also Grammenos (supra n. 287). For a list of Neolithic sites from central and eastern Macedonia, see Grammenos, "Διάγραμμα των χρονικών της νεολιθικής έρευνας στη νότια Βαλκανική από το 1984 κ.εξ.," *Μακεδονικά* 28 (1992) 263–65.

[293] S. Andreou and K. Kotsakis, "Διαστάσεις του χώρου στην κεντρική Μακεδονία: Αποτύπωση της ενδοκοινοτικής και διακοινοτικής χωροοργάνωσης," in *Αμητός* (supra n. 222) 57–86.

[294] Grammenos 30–31, 136–43; Andreou and Kotsakis (supra n. 293) 70–77, 82–84. For eastern Macedonia, see Fotiadis (supra n. 272) 407; Grammenos 104.

Langadas basin. Intensive survey since 1986 in the western Langadas basin has investigated the pattern of prehistoric human activity.[295] The tectonic basin is dominated by two lakes, remnants of a larger single lake that contracted during the Early and Middle Quaternary. Neolithic and Bronze Age sites are distributed unequally across the recent alluvium, the alluvial fans of the lower Pleistocene terrace, the heavier soils of the upper Pleistocene terrace, and further, on the surrounding mountains, where arable land was scarce, but not altogether unavailable. Two LN sites located in areas dominated by heavy, water-retentive soils are large and flat, reaching 30 ha. It has been suggested that their size is primarily due to a shifting, unrestricted occupation, interspersed with cultivated land.[296] Why this pattern was preferred to the more restricted habitation characteristic of tells is not immediately apparent. It may be suggested tentatively that proximity of habitation and fields facilitated the intensive cultivation of the land, compensating for the low workability of the heavy soil. In an area of relative aridity, such as that around Langadas, the productivity of this water-retentive soil in conditions of drought would be a vital advantage and would justify the extra labor required. Another possibility, to be explored in the future, is that the sites were seasonally occupied. The problem of aridity, however, was probably resolved in a different way in the case of Kavallari (fig. 2:19) and other Neolithic sites located near the lakes, in areas that were regularly inundated.[297]

Neither of the flat, extended sites continued to be occupied in the Bronze Age. The number of sites declines generally in the Early Bronze Age, but during the Late Bronze Age, habitation becomes increasingly more dense, limited to small, steep-sided tells and to sites on hill summits. Traces of perimeter walls are preserved in some cases, and can be assumed in others, but their function, whether protective or retaining or both, cannot be confirmed. New sites in high places with an unrestricted view of the surrounding landscape were established at the end of the period and continued to be occupied into the Early Iron Age. The shift to settlement near a greater variety of soils and landscapes denotes an emphasis on diversified production, which is also detectable in the impressive archaeobotanical evidence from Assiros.[298] The major settlements of Langadas developed on the alluvial fans of the lower terraces. One of these, Assiros, possibly evolved during the Late Bronze Age into a regional economic center.

Assiros (fig. 2:17). The 14-m-high tell of Assiros lies in the western part of the Langadas basin, and was extensively excavated in 1975–1979 and 1986–1989. Nine building phases were identified on the top, of which phases 9–5 cover the later Late Bronze Age. The phases are dated by the occurrence of LH III pottery, with LH IIIA2 in phase 9 and continuing with LH IIIC in phases 7–5. Earlier deposits were dug on a limited scale on the side of the mound, providing a tentative date for the beginning of occupation in the late Middle Bronze Age.[299]

A massive earthen bank and a casemate wall, repeatedly reconstructed at the edge, supported the buildings inside, and, according to the excavator, defended the site.[300] The layout of the settlement remained more or less stable through the successive rebuildings. Parallel narrow alleys separated elon-

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[295] K. Kotsakis, "The Langadas Basin Intensive Survey. First Preliminary Report: The 1986 Season," *Egnatia* 1 (1989) 3–14; Kotsakis, "Το πρόγραμμα της εντατικής επιφανειακής έρευνας Λαγκαδά: Δεύτερη περίοδος 1987," *Egnatia* 2 (1990) 175–86; S. Andreou and Kotsakis, "Prehistoric Rural Communities in Perspective: The Langadas Survey Project," in P.N. Doukellis and L.G. Mendoni eds., *Structures rurales et sociétés antiques. Actes du colloque de Corfou, 14–16 mai 1992* (Centre de recherches d'histoire ancienne 126, Annales littéraires de l'Université de Besançon, Paris 1994) 17–25; Kotsakis and Andreou, "Επιφανειακή έρευνα Λαγκαδά: Περίοδος 1992," *AEMT* 6 (1992) 349–56.

[296] Andreou and Kotsakis (supra n. 293) 82–84; Andreou and Kotsakis (supra n. 295) 19–20. The pattern of extended habitation is similar to that of the well-known flat, extended sites from the Balkans. See R. Tringham and D. Krstić eds., *Selevac: A Neolithic Village in Yugoslavia* (Los Angeles 1990) 585–89; A. McPherron and D. Srejović, *Divostin* (Pittsburgh 1988) 35–142, 469–89; J.C. Chapman, "The Early Balkan Village," in S. Bökönyi ed., *Neolithic of Southeastern Europe and Its Near Eastern Connections* (Varia archaeologica hungarica 2, Budapest 1989) 38–40. For an interpretation of the Macedonian sites as large "proto-urban" centers, see Grammenos 102; Grammenos (supra n. 140); Grammenos (supra n. 292) 255; Grammenos (supra n. 287). For the classification of soils, see Morrison (supra n. 282) 30–34.

[297] Morrison (supra n. 282) 244–46.

[298] G. Jones et al., "Crop Storage at Assiros," *Scientific American* 254:3 (1986) 87; Jones, "Agricultural Practice in Greek Prehistory," *BSA* 82 (1987) 121.

[299] For preliminary reports, see K.A. Wardle, "Excavations at Assiros 1975–9," *BSA* 75 (1980) 229–65; *BSA* 82 (1987) 313–29; *BSA* 83 (1988) 375–87; and *BSA* 84 (1989) 447–63. Also Wardle, "Assiros: A Macedonian Settlement of the Late Bronze and Early Iron Age," in *ArchMak* 3 (1983) 291–305. For the MBA phase of the site, see Wardle, "Mycenaean Trade and Influence in Northern Greece," in C.W. Zerner, P.C. Zerner, and J. Winder eds., *Wace and Blegen: Pottery as Evidence for Trade in the Aegean Bronze Age, 1939–1989* (Amsterdam 1993) 121. Phases 4–1 belong to the Early Iron Age.

[300] Wardle 1980 (supra n. 299) 236–39; Wardle 1988 (supra n. 299) 384.

gated blocks of rooms, which changed in their internal arrangement and function from one phase to the next. The buildings had mudbrick walls with a frame of posts. A destruction by fire at the end of phase 9 preserved an impressive quantity and variety of charred seeds, stored in six storerooms occupying half the excavated area. The storerooms were crowded with pithoi, large baskets, and smaller clay containers. The quantity and pattern of storage suggested a communal storeroom, in contrast to the next two phases (7 and 6) of the Late Bronze Age, which have been more extensively excavated, and date to the 12th century. Storage facilities in these phases were dispersed throughout the settlement, and storage appears to have been a more private affair than previously.[301] The settlement consisted of at least four large, elongated complexes with rectangular rooms separated by narrow streets. Open and roofed spaces were found in each complex, equipped with ovens, hearths, occasional pithoi, and other food-processing and storage facilities. The final LBA phase (5) shows few changes in the alignment and internal arrangement of the buildings. The smaller amount of pottery, particularly of Mycenaean type, precludes close dating.[302]

Handmade pottery with a limited variety of wares and shapes, mainly plain burnished ware, comprises the overwhelming majority of the finds at Assiros, as at all other Bronze Age sites in Macedonia. Matt-painted and incised vessels with white or pink fill or incrustation are a small portion of the ceramic repertoire and indicate a specialized production on a small scale. Mycenaean ceramics appear with increasing frequency, but remain, until the end of the Bronze Age, a very small fraction of the assemblages. Small shapes predominate, indicating that Mycenaean vases probably reached Assiros as "luxuries."[303]

Excavations at Assiros offer a wealth of information on an inland LBA settlement in central Macedonia, the result of the intensive strategy employed, with several aspects of prehistoric life and different types of evidence investigated. During the 13th and 14th centuries (phases 8 and 9), Assiros in all probability acquired a principal position in the regional economic structure, becoming the focus of agricultural storage, which exceeded the needs of this settlement. It has been suggested that a hierarchical political structure, analogous to that of the southern Greek palaces, had been established in central Macedonia by that time.[304] The bioarchaeological finds, however, along with the rest of the archaeological evidence, do not support a specialized and extensive agriculture, nor a centralized economy. Rather, they can be better understood in the context of a small-scale, diversified, intensive farming and animal husbandry regime.[305] Storage at Assiros, therefore, may not represent mobilization of surplus to serve an elite controlling production and exchange, but a reserve against the unpredictabilities of a subsistence economy. Assiros could have been the focal point of a regional settlement network with a hierarchical structure, but a small-scale and unstable network very different from the contemporary polities of Mycenaean Greece.[306] The regional evidence helps to clarify further the picture: in the western Langadas basin, the nearby tell of Perivolaki

[301] The storerooms of Assiros offered a wealth of information on storage techniques, crop-processing methods, and farming practices. The stored crops included einkorn, broomcorn, millet, bitter vetch, macaroni wheat, and hulled barley (pure crops), and emmer and spelt (a mixed crop). Flax, lentils, and unrecognizable seeds have also been found. See Jones (supra n. 298) 117–23; and Wardle 1989 (supra n. 299) 462.

[302] Wardle 1989 (supra n. 299) 455.

[303] For a discussion of pottery and other finds from the site, see Wardle 1980 (supra n. 299) 244–53. For an excellent summary of LBA Macedonian ceramics based on the sample from Assiros, see Wardle 1993 (supra n. 299) 121–24, 127–29, 130–33, with reference to previous work. According to macroscopic observations and some chemical analyses, Mycenaean-style pottery at Assiros falls into three broad groups, designated by Wardle as "local," "imports" from centers of the southern mainland, and "provincial," a non-homogeneous group. Coastal central Macedonia has been tentatively suggested as one of the sources for the last group. The earliest "local" Mycenaean sherd in Assiros was found in phase 9. By phases 7 and 6, "local" and "provincial" pottery predominated in the Mycenaean pottery assemblages. Despite their long coexistence, the handmade and Mycenaean (wheelmade) wares apparently stem from two independent manufacturing traditions. Only occasionally did other Mycenaean objects find their way to Assiros, see, e.g., Wardle 1980 (supra n. 299) 253. For chemical analyses, see Jones (supra n. 149) 108–112, 494.

[304] Wardle 1989 (supra n. 299) 462; Wardle 1993 (supra n. 299) 127.

[305] G. Jones, "Weed Phytosociology and Crop Husbandry: Identifying a Contrast between Ancient and Modern Practice," *Review of Palaeobotany and Palynology* 73 (1992) 141–42; Halstead 1994, 202, 206, 209.

[306] Andreou and Kotsakis (supra n. 295) 21; S. Andreou and K. Kotsakis, "'Μυκηναϊκή παρουσία' και 'Μυκηναϊκή περιφέρεια': Η Τούμπα της Θεσσαλονίκης, μια θέση της Εποχής του Χαλκού στη Μακεδονία," forthcoming in *Η περιφέρεια* (supra n. 53). For a general discussion of settlement hierarchical networks in central Macedonia, see Kotsakis and Andreou, "Ιεραρχική οργάνωση στην κεντρική Μακεδονία στην Εποχή του Χαλκού," in *The Prehistoric Aegean and Its Relations to Adjacent Areas. Proceedings of the Sixth International Colloquium on Aegean Prehistory* (Athens, in press).

(fig. 2:18, Saratse) competes in size and construction with Assiros, indicating that the hierarchical system had more than one center in the basin, either contemporaneous or succeeding each other. This picture of small-scale networks is corroborated by the evidence from Toumba in Thessaloniki (see below).

Kastanas (fig. 2:16). Four seasons of excavation at Kastanas, a 14-m-high mound on the left bank of the Axios River, explored parts of another long-lasting Bronze Age and Iron Age settlement. The site, an island during the Bronze Age, was located near a coast occupied by several tells, the most imposing of which is the well-known mound of Axiochori (Vardaroftsa).[307]

The excavation revealed a deep stratigraphy with Bronze Age and Iron Age levels.[308] The Bronze Age was separated into 17 building phases: eight assigned to the Early Bronze Age and the beginning of the Middle Bronze Age, and the rest to the Late Bronze Age. A period of abandonment separated the two groups of building phases.[309] The architectural picture for the EBA phases is elusive. Sparse architectural traces indicate lines of posts with one possible apsidal building and a complex of post-framed rooms containing clay benches and food-processing facilities.[310] More information comes from the LBA phases. The characteristic features in phases 18–14 are parts of apsidal or rectangular freestanding buildings, laid out in a random way, without an apparent overall plan.[311] Hearths and food-processing facilities are concentrated mainly inside the buildings. A preference for larger, more widely spaced houses, and the adoption of mudbrick for construction of walls mark the beginning of the Late Bronze Age. Such features have been exposed over a limited area, however, and their significance cannot be evaluated.

Transformations of the settlement layout are evident in the final part of the Late Bronze Age. The orientation of post-framed houses in phase 13, with ovens and hearths inside and outside, changed.[312] In phase 12, the independent buildings were replaced by complexes of rooms, built with mudbricks and supported by posts. The buildings were arranged in a more compact way, reminiscent of the layout at Assiros in phases 7–5. Food-processing facilities were appended in special, possibly roofed, areas outside the houses, while storage facilities were absent. It has been suggested that one of the complexes served a large number of occupants. The next change in settlement layout is dated to the 10th century B.C. or later.

Apart from stratigraphic and architectural evidence, the work at Kastanas has produced significant bioarchaeological data. According to Kroll,[313] a highly diversified subsistence system during the Early Bronze Age was succeeded in the Late Bronze Age by a more specialized and extensive system of agriculture and stock-raising. The end of the Bronze Age was marked by the adoption of a more balanced regime, namely, intensive small-scale cultivation of a wide variety of crops and a new interest in gathering and, especially, hunting.[314]

The changes in the layout of Kastanas and the organization of production during phases 18–14 of the Late Bronze Age have been regarded as evidence for a more centralized social organization, influenced by developments in southern, Mycenaean Greece.[315] Evidence from Assiros and the Langadas survey im-

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[307] For the geomorphological study, see Schulz (supra n. 185) 375–93.

[308] *Kastanas* 25–62, esp. 52–54. The excavation has been promptly published in six informative volumes: H. Kroll, *Kastanas: Ausgrabungen in einem Siedlungshügel der Bronze- und Eisenzeit Makedoniens, 1975–1979: Die Pflanzenfunde* (Berlin 1983); A. Hochstetter, *Kastanas: Die handgemachte Keramik* (Berlin 1984); C. Becker, *Kastanas: Die Tierknochenfunde* (Berlin 1986); Hochstetter, *Kastanas: Die Kleinefunde* (Berlin 1987); *Kastanas*; and Aslanis (supra n. 289). See also Kroll, "Bronze Age and Iron Age Agriculture in Kastanas, Macedonia," in W. van Zeist and W.A. Casparie eds., *Plants and Ancient Man: Studies in Palaeoethnobotany* (Rotterdam 1984) 243–46. The only group of finds that remains unpublished is the wheelmade pottery.

[309] *Kastanas* 52–54. For the relative chronology of the earlier phases, see Aslanis (supra n. 289) 203–316, fig. 121. No Mycenaean pottery was found in the earliest LBA phase (19); LH IIIA2 pottery appears in phase 18, and LH IIIC pottery in phase 14. In phase 12, however, Middle Protogeometric pottery was found along with pottery preserving Mycenaean LH IIIC features. Quantities of wheelmade pottery rose dramatically during this phase: Hänsel (supra n. 291) 189–91; Podzuweit (supra n. 291) 203–23. Phase 11 has been assigned to a period contemporary with Protogeometric. On the basis of similar Mycenaean pottery at Kastanas and Assiros, phases 18 and 17 of Kastanas may be correlated with phase 9 at Assiros, phases 16–14b at Kastanas with phase 8 at Assiros, and phases 14–13 with 7–5 at Assiros. The date of phase 12 at Kastanas remains an open problem, especially since ^{14}C determinations indicate a date in the 12th century B.C. or earlier. A similar assemblage is missing from Assiros but was recently found at the Toumba of Thessaloniki (see below).

[310] Aslanis (supra n. 289) 32–35, figs. 13–14; 45–53, figs. 23–24.

[311] *Kastanas* 70–146.

[312] *Kastanas* 337–38.

[313] Kroll 1983 (supra n. 308) 148–51.

[314] Becker (supra n. 308) 291.

[315] *Kastanas* 334–35. The evidence for influence from Mycenaean Greece comprises the adoption of mudbricks, the production of painted pottery, and the appearance of Mycenaean imported vases.

plies a centralized social organization in central Macedonia during the same period, yet there is little to suggest that the cause of social complexity was Mycenaean influence, or that its form and content were "Mycenaean."[316] Nor could one readily comply with the excavator's assertion that major changes in the settlement, such as those observed in phases 13 and 12, were the result of successive arrivals of northern populations and southern Aegean immigrants, respectively.[317] This constrained migrationist/diffusionist explanation overlooks important possible factors for short-term change in the life of past communities, such as times of dearth and famine, shifts in production, collapse of exchange networks, and intraregional antagonism and aggression.[318]

Despite the contrasting locations of Kastanas and Assiros, no significant differences can be observed in their material culture.[319] In architectural layout, however, the sites diverge. The communal storerooms at Assiros are conspicuously absent from the Axios site, as are the earthen banks and casemate walls at the edge. A possible explanation may lie in the rank of each site in its regional network: Kastanas in the Late Bronze Age may have been part of a polity of which it was not the center.[320]

Gallikos valley. Very little work has recently been done in the Gallikos valley. During excavations at Toumba Nea Anchialos (fig. 2:15), a third-millennium pottery deposit and possibly the remains of an EBA pottery kiln were found in the area of the Archaic cemetery. Recent excavations at the tell have offered indications that the earliest phase of occupation there may be placed at the end of the Late Bronze Age.[321]

Area of Thessaloniki. Two Neolithic sites have been explored in the coastal plain of Thessaloniki by the ΙΣΤ' Ephoreia. Stavroupolis is located on the hills to the west, and the other site in a flat area at the center of the city. Both sites are extended and flat. The latter, for which more information is available, has been dated to the final Middle Neolithic and early Late Neolithic, and the only remains of habitation were pits, similar to those at Makriyalos.[322]

Toumba Thessalonikis (fig. 2:20). Toumba Thessalonikis, or Toumba Kalamaria, is an imposing tell in the hills surrounding the small coastal plain of the inner Thermaic Gulf. The tell is 1.3 ha in area and stands 23 m above a plateau formed by the deposits of an Iron Age settlement spread around the base. Once a prominent feature of the landscape, it is now blocked by modern high-rise buildings. Excavations since 1984 by the University of Thessaloniki have uncovered deposits ranging from the late Early Bronze Age to the fourth century B.C.[323] Five

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[316] Extensive agriculture and overproduction geared to a surplus for exchange and trade have been claimed for Kastanas. Questions have been raised, however, regarding the interpretation of the archaeobotanical evidence: Jones (supra n. 305) 141.

[317] *Kastanas* 335–37.

[318] Channeled ware, considered an indication of northern intruders, appears at Kastanas for the first time in phase 13, in extremely small quantities, and continues modestly into later phases: Hochstetter 1984 (supra n. 308) 188–94; for the "Mycenaean elements" in the architecture of phase 12, see Andreou and Kotsakis 1992 (infra n. 323) 265–66.

[319] A wider variety of Mycenaean pottery motifs was noted at Kastanas, although Mycenaean pottery appeared at the same time at both sites. Comparison of frequencies from the two sites, however, is inhibited by a lack of detailed quantitative data. The appearance of Protogeometric style is much more obvious at Kastanas than at Assiros, but the suggestion that Mycenaean pottery production continued on the former site during the Early Iron Age has been questioned by Wardle 1980 (supra n. 299) 252. Decorated and undecorated wares, including double cooking vessels with central European affinities, displayed a similar variety at both sites. Other finds relating to everyday activities were also identical. For the Mycenaean pottery of Kastanas in the wider Macedonian context, see Podzuweit (supra n. 291); C. Podzuweit, "Der spätmykenische Einfluss in Makedonien," in *ArchMak* 4 (1986) 467–84. For comparisons between the material culture of Assiros and Kastanas, see Wardle 1993 (supra n. 299) 121–24, 127, 129, 133–35. For a detailed presentation and analysis of handmade LBA pottery from Kastanas and its relationship to material from other sites in the region and beyond, see Hochstetter 1984 (supra n. 308). For other finds, see Hochstetter 1987 (supra n. 308) 94–101.

[320] The nearby site of Axiochori, one of the largest mounds in Greek Macedonia, may be the equivalent of Assiros in the Axios area. Indeed, such a suggestion was made by Hänsel for the subsequent Early Iron Age: *Kastanas* 340–41.

[321] S. Andreou, "Αποθέτης κεραμεικής της Πρώιμης Εποχής του Χαλκού στη Σίνδο Θεσσαλονίκης," *ArchDelt* (in press). M. Tiverios, "Αρχαιολογικές έρευνες στη διπλή τράπεζα κοντά στη σημερινή Αγχίαλο και Σίνδο (1990–1992)—Ο αρχαίος οικισμός," *Egnatia* 3 (1991–1992) 211.

[322] M. Pappa and N. Kousoulakou, "Ανασκαφή στο χώρο της Διεθνούς Εκθέσεως Θεσσαλονίκης," *AEMT* 7 (1993, in press). The Stavroupolis site remains unpublished.

[323] K. Kotsakis and S. Andreou, in *AEMT* 1 (1987) 223–33; Kotsakis and Andreou, in *AEMT* 3 (1989) 201–13; Andreou, Kotsakis, and G. Hourmouziadis, "Ανασκαφή στην Τούμπα της Θεσσαλονίκης 1989," *Egnatia* 2 (1990) 381–403; Andreou and Kotsakis, in *AEMT* 5 (1991) 209–19; and *AEMT* 6 (1992) 259–72; Kotsakis and Andreou, in *AEMT* 7 (1993, in press); Andreou and Kotsakis, "Ανασκαφή Τούμπας Θεσσαλονίκης 1990–92," *Egnatia* 3 (1991–1992) 175–98; Andreou and Kotsakis (supra n. 306); I. Anagnostou et al., in *AEMT* 4 (1990) 277–87; A. Krahtopoulou and K. Tou-

building phases have been identified at the top of the mound. The earliest three (phases 5–3) belong to the later Late Bronze Age, and in their deposits little LH IIIC-style pottery was found. The penultimate phase (2) contained some pottery with compass-drawn concentric circles and new shapes more akin to Protogeometric shapes, along with Mycenaean-style features.[324]

Earlier Bronze Age phases have only been reached in trenches on the side of the mound. Habitation levels dating from the end of the third millennium have been found both at the bottom and near the top of the mound, indicating that the settlement had spread across the slope of the natural hill, in stepped terraces, reminiscent of the arrangement at Pefkakia during the Middle Bronze Age.[325] Architectural remains of the Middle Bronze Age were found in a small area at the bottom of the mound.[326] The layout changed in the Late Bronze Age, when massive casemate constructions (6 m wide × 3 m high) were erected midway down the slope, surrounding the tell. The houses were on the top of the mound, supported by a strong retaining wall.[327] The purpose of the massive constructions is not entirely clear. They had a retaining function, but at the same time they controlled access to the central part of the settlement on the top.

The LBA houses were tightly clustered. A system of narrow lanes separated large blocks of rooms in a layout that was maintained for the last three phases of the Late Bronze Age. The large buildings were constructed of mudbrick reinforced by wooden posts. They comprised living quarters and extensive storerooms with large pithoi. One 225-m^2 complex was uncovered, with storerooms occupying more than half the area.[328] The inventory of finds is similar to that from Assiros and Kastanas. Several bronze implements were collected, a hoard of which included a double ax and was found in one of the rooms of the large complex. The same complex also contained a bone horse bit of Central European type.[329] The earliest, unstratified, Mycenaean pottery dates to LH IIIA1. Later on, both imports and local products are found, although Mycenaean pottery never seems to have exceeded 5.5% of the total assemblage.[330]

The formation processes of the mound are very complex, and offer an idea of the difficulties involved in the interpretation of the stratigraphic sequence of some high Bronze Age tells. The successive construction of massive earthworks at different levels on the slope creates a stratigraphy that does not follow the regular principle of superposition of layers. It may even result in an "inverted" stratigraphy, where older layers are found above later ones. Of equal importance are the implications for the mobilization of a workforce to erect these ramparts. In this respect, tells like Toumba and Assiros stand apart from sites like Kastanas, where no traces of this intensive activity can be discerned. At Assiros the difference is amplified by the centralized storage of phases 9 and 8. At Toumba, information on storage is not as conclusive, but the scale of the collective effort inferred from the earthworks points again to a centralized social structure in the Late Bronze Age.

Thermi and Vasilika (fig. 2:21–22). The Neolithic sites of Thermi and Vasilika are located in the valley of Anthemous to the east of Thessaloniki. Limited salvage excavations were conducted here by the ΙΣΤ′ Ephoreia.[331] Vasilika and Thermi are flat, extended sites covering an area of 25 ha and 12 ha, respectively.

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loumis, in *AEMT* 4 (1990) 289–97; Hourmouziadis, in *AEMT* 4 (1990) 269–75; Kotsakis et al., "Reconstructing a Bronze Age Site in CAD," in J. Hugget and N. Ryan eds., *Quantitative Methods in Archaeology 1994* (*BAR-IS* 600, Oxford 1995) 181–87.

[324] There are certain similarities between phase 2 at Toumba and phase 12 at Kastanas. The amount of wheel-made pottery at Toumba rises dramatically during phase 2. Also notable at Toumba is the absence of channeled ware from this and earlier phases.

[325] See supra p. 548.

[326] The latest of these levels contained incised pottery, a few sherds of dark-burnished, ribbed cups, and even occasional matt-painted sherds. These features comply to some extent with Heurtley's original definition of the MBA, see Heurtley (supra n. 150) 89–91. The levels must be later than those designated by Aslanis (supra n. 289) at Kastanas as early MBA.

[327] Kotsakis and Andreou 1989 (supra n. 323) figs. 6–9; Kotsakis and Andreou 1993 (supra n. 323) fig. 6.

[328] Andreou and Kotsakis 1992 (supra n. 323) fig. 4.

[329] Andreou et al. (supra n. 323) figs. 12, 14.

[330] For a discussion of Mycenaean pottery from Toumba, see Andreou and Kotsakis 1992 (supra n. 323) 266–68; Andreou and Kotsakis, forthcoming (supra n. 306). Petrographic analysis has identified locally produced and imported pottery: E. Kiriatzi, "Pottery Production in Late Bronze Age Central Macedonia, Greece: Toumba Thessalonikis" (unpublished manuscript, Sheffield 1995).

[331] Thermi: D.V. Grammenos et al., "Ανασκαφή νεολιθικού οικισμού Θέρμης, 1987," *Μακεδονικά* 27 (1990) 223–87. Also Grammenos et al., "Ανασκαφή νεολιθικού οικισμού Θέρμης Β και βυζαντινής εγκατάστασης παρά τον προϊστορικό οικισμό Θέρμη Α," *Μακεδονικά* 28 (1992) 381–501. Vasilika: Grammenos 30–31 and 36–37; Grammenos (supra n. 292) 234–39. For the lithics from Vasilika, see M. Kyriakidou, *Η λιθοτεχνία των φάσεων ΙΙΙ και IV: Υστερες φάσεις της Νεώτερης Νεολιθικής του οικισμού των Βασιλικών, Ν. Θεσσαλονίκης* (M.A. thesis, Univ. of Thessaloniki 1991). Both excavations were complemented by studies of bio-archaeological remains, and other special groups of finds, included in the reports.

The small trench at Vasilika revealed a sequence that was divided into four phases mainly on the basis of pottery typology, spanning the period equivalent to Sitagroi I–III. The Thermi sequence was divided into three main building phases that were related to phase III at Vasilika. At Vasilika architectural remains are sparse, limited to the later deposits. They testify, however, to the use of mudbricks and stone socles.

The picture from Thermi is clearer, mainly because a larger area was excavated. The site's main feature is an open surface, ca. 60 m^2, paved with cobbles. In one of the trenches, deposits indicating a period of abandonment were found between two successive cobbled yards. Everyday activities took place in these yards, including food- and crop-processing and knapping a low-quality flint taken from a quarry some 12 km away. A hearth and several pits were related to food preparation activities. In the next phase (II), clay floors and traces of stone and post-built walls covered the cobbled yard. The general impression from the small excavation at Thermi is one of considerable discontinuity in the use of space, with activities shifting between open yards and habitation structures, and with temporary abandonments.[332]

Chalkidiki. Prehistoric research in Chalkidiki resumed the last few years, ending a long period of inactivity since Heurtley's work in the 1920s. While previous work in the area had focused on the flatter northern and western coasts, at mound sites such as Kritsana and Ayios Mamas (fig. 2:25), recent research has turned to the peninsula itself. Settlements here are often found on natural knolls by the sea and on rocky promontories, some of which, like the mounds in the plains, were occupied for long periods.

On the western side of the Kassandra peninsula, at Cape Poseidi, a sanctuary with successive buildings dating from the 10th century B.C. has been excavated since 1989 (fig. 2:23).[333] Beneath the earliest apsidal temple, dated by Middle and Late Protogeometric pottery, a deep deposit of ashes and animal bone indicated an earlier altar. The deepest levels there, underneath deposits described as Protogeometric and Submycenaean, reportedly contained LH IIIC-style pottery along with handmade wares. It has been suggested that both the wheelmade and handmade pottery display closer affinities to Lefkandi wares than to local wares.[334] No LBA buildings have been found, but, if the earliest levels could be related to a sanctuary, then Poseidi would be the only specialized site known from Bronze Age northern Greece, with indications of ritual that are missing from the tells of central Macedonia. The location of the site on a prominent spot by the sea, however, and the Euboean connections implied by the pottery might indicate its close relationship to seafaring prospectors at the close of the Bronze Age.[335]

On the eastern side of the Kassandra peninsula, the EBA settlement of Polichrono (fig. 2:24) was located on the slope of a natural hill, ca. 100 m from the shore of the Gulf of Toroni.[336] Rescue excavations revealed successive terrace walls with scanty remains of habitation. A more interesting find was a small pit interpreted as a potter's kiln at the outer limit of the settlement, postdating the terrace walls.[337] Bowls with incurving rims and trumpet lugs, one-handled tankards, pointed cups, and pithoi with plastic decoration date the find to the later part of the third millennium.[338]

Toroni (fig. 2:26). Excavations over a number of years at the strategically located, steep promontory of Lekythos at Toroni have revealed extensive remains of occupation ranging from the Early Iron Age to the Ottoman period. A very significant development of recent years, however, has been the discovery of stratified remains belonging to a FN and Bronze Age settlement.

Prehistoric pottery of the third and early second

[332] There are only four pieces of obsidian of unspecified provenance reported from Thermi: Grammenos (supra n. 292) 234. For the lithics from Thermi, see A. Skourtopoulou, *Η λιθοτεχνία της Θέρμης Β* (M.A. thesis, Univ. of Thessaloniki 1993); A. Skourtopoulou and S. Dimitriadis, "Η θερμική επεξεργασία των πυριτικών λίθων στις λιθοτεχνίες του παρελθόντος: Το παράδειγμα του νεολιθικού οικισμού της Θέρμης Β," in Stratis et al. (supra n. 135) 331–50. A new project by the ΙΣΤ′ Ephoreia was started in 1992 at Mesimeriani Toumba, a few kilometers south of Thessaloniki. The first report gives a preliminary account of the site morphology and describes successive floors and a part of a house belonging to the end of the LBA and the Early Iron Age from a 4 × 4 m trench. D. Grammenos and K. Skourtopoulou, "Μεσημεριανή Τούμπα Τριλόφου Νομού Θεσσαλονίκης: Ανασκαφική περίοδος 1992," *AEMT* 6 (1992) 339–47.

[333] I. Vokotopoulou, "Μένδη-Ποσείδι 1990," *AEMT* 4 (1990) 401–404.

[334] I. Vokotopoulou, "Ποσείδι 1992," *AEMT* 6 (1992) 445, figs. 5–6; Vokotopoulou and S. Moschonisiotou, "Ποσείδι 1994," *AEMT* 8 (1994, in press).

[335] J.D. Muhly, "The Crisis Years in the Mediterranean World: Transition or Cultural Disintegration?" in W.A. Ward and M.S. Joukowsky eds., *The Crisis Years: The 12th Century BC from beyond the Danube to the Tigris* (Dubuque 1992) 10–26.

[336] M. Pappa, "Εγκατάσταση της Εποχής του Χαλκού στο Πολύχρονο Χαλκιδικής," *AEMT* 4 (1990) 393–98.

[337] Heurtley (supra n. 150) 5–7; and Andreou (supra n. 321). Two other similar EBA firing pits are known from central Macedonia, at Ayios Mamas and Sindos.

[338] Pappa (supra n. 336) pls. 6–13.

millennium has been found in most places where excavation reached the rock beneath the later buildings.[339] The deposits have been disturbed by the intensive use of the site, and later architectural remains preclude an understanding of the settlement layout during the earliest periods. The traces of earliest occupation comprise a small number of burnished and white-painted FN sherds found on bedrock. EBA remains have been preserved more frequently: several closed deposits include architecture and floors belonging to different phases, occasionally accompanied by traces of destruction by fire. Among the EBA material, obsidian flakes, a "Trojan" anthropomorphic lid, not necessarily imported, several pieces of sauceboats, and a clay figurine have been found.[340]

Toroni is the only site in Greek Macedonia with a documented continuous stratigraphy from FN to the earliest part of the Late Bronze Age.[341] MBA levels with mudbrick walls contained dark-faced handmade pottery and also wheelmade Gray and Yellow Minyan wares, presumably imported. Moreover, imports from southern Greece continued to appear during the early Late Bronze Age. Toroni offers the earliest indication of imported Mycenaean pottery in the northern Aegean, with a handful of sherds of LH I, LH IIA, and LH IIB styles.[342] One rubble stone foundation was connected with a deposit of locally made two-handled bowls imitating Minyan shapes and associated with imported LH I and II sherds.[343] The later phases of the Late Bronze Age, however, are poorly represented by a few sherds from handmade and Mycenaean wares.

The special relationship of Chalkidiki to the Aegean has been pointed out since the beginnings of prehistoric research in Macedonia on the basis of very limited evidence.[344] The comparison of the archaeological record from Toroni with that from Bronze Age tell sites in the rest of central Macedonia should allow a better evaluation of the impact Aegean connections may have had on local developments.[345]

Ayios Mamas (fig. 2:25). The recent resumption of investigations at the tell of Ayios Mamas promises to offer new evidence on the network of sites in Chalkidiki from the Neolithic to the Late Bronze Age.[346] Rescue excavations by the ΙΣΤ′ Ephoreia of an EBA cemetery immediately west of the tell have revealed an aspect of EBA communities so far unique in the archaeological record of central Macedonia.[347] The remains, comprising ca. 15 graves, were found amid burials of the Late Roman period. They displayed a variety of mortuary practices, such as contracted inhumations in pithoi sunk in shallow pits, or placed directly in pits strewn with pebbles, and one cremation of an infant. The graves were often delimited by rows of stones, and the pithoi selected for burials had plastic decoration and striated surfaces. Almost all burials were furnished with pots or copper/bronze ornaments. One of the best-preserved burials was furnished with a jug, cup, and a necked jar with vertically pierced lugs, which finds its best parallels in the Cyclades.[348] In the jar, 25 beads,

[339] A. Cambitoglou and J. Papadopoulos, "Excavations at Torone, 1986: A Preliminary Report," *MeditArch* 1 (1988) 188, 204–205, 207–208, 210–11, 215; "Excavations at Torone, 1988," *MeditArch* 3 (1990) 129; and Cambitoglou and Papadopoulos (supra n. 290) 152, 161–62, 164, 167, 169; also Cambitoglou and Papadopoulos, "The Earliest Mycenaeans in Macedonia, Greece," in Zerner et al. (supra n. 299) 289–302.

[340] Cambitoglou and Papadopoulos 1988 (supra n. 339) 205; Cambitoglou and Papadopoulos (supra n. 290) 161–62, figs. 24–25. A similar figurine was found at the western Macedonian site of Mandalo. Remains of houses with storage facilities possibly recalling those from MBA Argissa have also been reported: Cambitoglou and Papadopoulos (supra n. 290) 167, cf. *Argissa* III, pl. G.

[341] A series of ^{14}C dates from various stratified deposits is forthcoming, see Cambitoglou and Papadopoulos (supra n. 290) 164. Although the pottery from Toroni displays many strictly local features, its publication is expected to clarify the ceramic sequence of the third and early second millennia over a broad area.

[342] Sixteen sherds of mostly open Early Mycenaean vessels have been found in stratified and mixed deposits. See Cambitoglou and Papadopoulos, in Zerner et al. (supra n. 339).

[343] The occurrence of LH I and II pottery with imported or imitation Minyan ware is a good indication that MBA wares continued in coastal Macedonia, as well as elsewhere, into the earlier LBA phases. Minyan pottery in the Chalkidiki sites of Ayios Mamas and Molyvopyrgos is better related to types common during the last phase of MH or the beginning of LH, see *Pefkakia* III, 382–83. The deposits at Toroni include both imported and local imitations of Minyan ware as well as handmade and wheelmade varieties: Cambitoglou and Papadopoulos 1988 (supra n. 339) 215.

[344] Heurtley (supra n. 150) 121–23.

[345] Metal sources in Chalkidiki were a possible attraction for the southern Aegean; see G.A. Wagner et al., "Archäometallurgische Untersuchungen auf Chalkidiki," *Der Anschnitt* 5–6 (1986) 183–85, fig. 19, where a possible northern origin is suggested for silver and lead used in some objects in the Shaft Graves of Mycenae; Z.A. Stos-Gale and C.F. Macdonald, "Sources of Metals and Trade in the Bronze Age Aegean," in N.H. Gale ed., *Bronze Age Trade in the Mediterranean* (*SIMA* 90, Jonsered 1991) 258–62, 267–68, 270–76.

[346] Hänsel (supra n. 290).

[347] M. Pappa, "Τούμπα Αγίου Μάμαντος Χαλκιδικής: Ανασκαφή νεκροταφείων," *AEMT* 6 (1992) 475–84.

[348] Pappa (supra n. 347) fig. 3.

shown by chemical analysis to be of faience, were deposited. The surviving evidence from the cemetery is very incomplete, as scattered fragments of EBA pithoi indicate; nevertheless an impression of considerable care is dominant.

New Questions

Recent research in the province has once more failed to identify traces of habitation prior to the late sixth millennium. A number of possible explanations can be put forth: obliteration of the remains of early human settlement by postdepositional factors, unsuitability of the area due to particular environmental conditions, or the occupation of the area by non-sedentary populations, invisible to research geared to stable farming sites. In the Langadas basin, for example, where survey was intensive, several episodes of erosion and alluviation after the Late Neolithic were identified.[349] The absence of sites, however, cannot be accounted for by geomorphological changes alone, unless early sites were ephemeral and were located exclusively on the alluviated or eroded areas—an interesting possibility, but one that clearly needs additional firmly dated regional geomorphic and archaeological support. In the meantime, it is difficult to decide whether Macedonia east of the Axios River was uninhabited from the Upper Palaeolithic to the Middle Neolithic, or has simply been insufficiently researched.

As a result of the uncertainties surrounding the time depth of settlement, major themes such as Neolithic colonization or Late Neolithic expansion can only be partly understood. Does the LN settlement pattern indicate the adoption of full-fledged farming by a population previously exploiting the aquatic resources of the region or does it depict the initial episodes of agricultural colonization of an empty area? Alternatively, does it represent the growth and expansion to less desirable locations of farming communities limited previously to specific niches? The extended sites that highlight the Neolithic settlement pattern imply a particular type of habitation and land use, but in view of the gaps in evidence, their relation to any of the alternatives remains obscure. What is perhaps more clear is the contrast between the extended sites and the tell sites that appear also during the same period. Tells represent an option for continuity of settlement, which can be the result of economic choice but has also a definable ideological content.[350] They were prominent points in the landscape, the mark of a community's permanence and its inhabitants' lineage, an instrument for constructing the identities of prehistoric people.

The three recent large excavations on tells, focusing on the Late Bronze Age, and new data from surveys encourage discussion of political and economic aspects of the prehistoric communities of central Macedonia. The outstanding position of some settlements during the later Late Bronze Age in terms of capacity and centralization of agricultural storage, scale of public works, extent and size of occupation, and internal arrangement of houses suggests the operation of a hierarchical social organization, integrating neighboring sites. We have no details for the structure of this hierarchy, or for its ideological content, which is markedly invisible in the archaeological record. The range of the hierarchical networks, however, must have been relatively limited, judging from the scale of production, small number of sites involved, their proximity, and restricted size. The limited range is probably reflected in the absence of a strong symbolic expression of authority, which is also missing from the internal arrangement of houses at the settlements. This, however, remains an issue for future research, with the hope that information on mortuary practices will be forthcoming. Equally, the processes by which complexity rose and developed in the third and early second millennium B.C., or possibly earlier, are presently little understood.

A recurrent issue in research since Heurtley worked in the area has been the relationship of LBA Macedonia with the "Mycenaean world." This relationship has been perceived in different forms by various researchers, ranging from more or less regular trading contacts to the establishment of southern colonies along the coast of central Macedonia. The arguments put forth in support of these propositions, occasionally not without considerable excess, range from similarities observed in building techniques to assumed analogies in political organization, but the presence of Mycenaean-style pottery in the excavated deposits and on the surface of LBA

[349] The causes and exact dates of the alluviation-erosion episodes are not known, but there is at least one Neolithic site (Kavalari) in the Langadas basin that seems to have been partially buried under an alluvium of ca 1.25 m, either during, or right after, its use. For discussion of the absence of earlier Neolithic phases in the Langadas basin and its relation to environmental or postdepositional factors, see Morrison (supra n. 282) 274–75.

[350] Chapman (supra n. 296) 38–40.

settlements remains the strongest evidence.[351] In recent years, considerable amounts of new data have been added, but researchers have only started to approach issues concerning the patterns of production, circulation, and consumption of this group of pottery, using quantitative and analytical data, vis-à-vis the overwhelmingly predominant handmade pottery. Although the relationship between Macedonia and the "Mycenaean world" never ceases to fascinate archaeologists, it is still too early to define meaningfully its intensity and nature.[352]

EASTERN MACEDONIA

Environmental Change

The environmental evidence from eastern Macedonia (the area between the Strymon and Nestos rivers) does not give a significantly different picture from that discussed above for central Macedonia, although it has been suggested that the Drama plain remained generally wooded, despite some small-scale fluctuations during the Bronze Age.[353] Erosion and alluviation from the Strymon and Angitis rivers have been noted in the two plains of Drama and Serres as major contributors to postdepositional distortion of the archaeological record.[354] The geomorphological evolution of the lakes and marshes at the bottom of the basins is not yet clearly understood, and human habitation in relation to this part of the plains is still unclear.

Material Sequence and Archaeological Phases

The Neolithic sequence in eastern Macedonia begins with Sitagroi I, dated by ^{14}C to 5500–5200 B.C. (late Middle Neolithic in Thessalian terms). The only earlier case may be Toumba Serron (fig. 2:29), reported from surface finds as belonging to an earlier "Karanovo I" horizon.[355] The earlier phase of the LN sequence for the region is represented by Dikili Tash I and Sitagroi II, and is defined by the presence of "black-topped" and "rippled" pottery along with a variety of distinctive painted wares. It is dated by a series of ^{14}C dates from Sitagroi to ca. 5200–4800 B.C.[356] The later Late Neolithic, highlighted by "graphite" and "black-on-red" wares, is represented by the stratigraphic phases of Sitagroi III and Dikili Tash II. Absolute dates indicate that the sequences of the two sites are probably not coterminous, and Sitagroi III may continue into the Final Neolithic, i.e., after ca. 4500 B.C. The ^{14}C dates from Sitagroi III, however, are not decisive since they all derive from the early levels of the phase. In addition to the well-known sequences of Sitagroi and Dikili Tash, Pentapolis has supplied six dates for two EBA phases, which agree with the Sitagroi IV/Va ^{14}C sequence.[357] Combining the stratigraphic sequences of the three sites, a subdivision of the Early Bronze Age into two phases is possible. An earlier phase in which "channeled" ware is a well-known feature (Sitagroi IV–Va, Dikili Tash IIIA, Pentapolis I; ca. 3200–2500 B.C.) is roughly contemporaneous with EH I/II, and a later phase (Sitagroi Vb, Dikili Tash IIIB, Pentapolis II; ca. 2500–2200 B.C.) with late EH II/III.[358] It has not been possible, however, to identify a stratigraphically distinct MBA phase nor an early LBA phase, before 1400 B.C. Three ^{14}C dates covering the period 1200–1000 B.C. were obtained from the LBA settlement of Angista. The samples came from deposits that contained a few sherds of LH IIIC type.[359]

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[351] For a recent summary, see Wardle 1993 (supra n. 299). Also Cambitoglou and Papadopoulos, in Zerner et al. (supra n. 339) 289–302; *Kastanas* 331–37; K. Kilian, "Mycenaean Colonization: Norm and Variety," in J.P. Descoeudres ed., *Greek Colonists and Native Populations* (Oxford 1990) 448–55; I. Vokotopoulou, "Macedonia—Geographical and Historical Outline," in I. Vokotopoulou ed., *Greek Civilization: Macedonia, Kingdom of Alexander the Great* (Athens 1993) 12; H. Koukouli-Chrysanthaki, "Macedonia in the Bronze Age," in Vokotopoulou (supra) 108–10, 116–23. For discussion of the arguments, see Andreou and Kotsakis (supra n. 306).

[352] For ceramic analysis along these lines, e.g., Wardle 1993 (supra n. 299) 131; Kiriatzi (supra n. 330). For other incentives for contact between Macedonia and southern Greece, see supra n. 345.

[353] Turner and Greig (supra n. 282) 51–53. Regional environmental work has been conducted in the Drama basin, in connection with the Sitagroi project: O. Rackham, "Charcoal," in *Sitagroi* 55–62; and D.A. Davidson, "Geomorphological Studies," in *Sitagroi* 25–40.

[354] Davidson (supra n. 353) 30; Fotiadis (supra n. 272) 99–143.

[355] Grammenos and Fotiadis (infra n. 360) 20–23, but for reservations, see Fotiadis (supra n. 272) 210–12.

[356] *Sitagroi* 169–74; R. Treuil ed., *Dikili Tash: Village préhistorique de Macédoine orientale* 1 (*BCH* Suppl. 24, Paris 1992) 33–37.

[357] D. Grammenos, "Ανασκαφή σε οικισμό της Εποχής του Χαλκού (Πρώιμης) στην Πεντάπολη του Νομού Σερρών," *ArchEph* 1981, 123. A hiatus in occupation between Sitagroi III and IV remains a plausible hypothesis: *Sitagroi* 482. Between Dikili Tash II–III, and III–IV (LBA), long hiatuses were suggested by the excavators: Treuil (supra n. 356) 33–36.

[358] S.W. Manning, *The Absolute Chronology of the Aegean Early Bronze Age* (Sheffield 1994) 161–64; *Sitagroi* 482–83.

[359] H. Koukouli-Chrysanthaki, "Οικισμός της Υστερης Εποχής του Χαλκού στον Σταθμό Αγγίστας Σερρών," *Anthropologika* 1 (1980) 78. Another date comes from Dikili Tash: Koukouli-Chrysanthaki, *Πρωτοϊστορική Θάσος: Τα νεκροταφεία του οικισμού Καστρί* (Athens 1992) 668–69; Treuil (supra n. 356) 36.

There are 76 reported prehistoric sites from eastern Macedonia, distributed mainly in the two major basins of Serres and Drama. Outside these areas, large parts of the region appear blank, but this reflects the intensity of research and lack of systematic reporting rather than the preferences of prehistoric communities.[360] The number of sites increases through the Neolithic, and, after a sharp decline and discontinuity during the Early Bronze Age, sites reach the highest number for all periods during the Late Bronze Age. A few LN and Bronze Age sites are caves.[361] These general trends are observed in both the Serres and Drama basins. In the Neolithic period, settlements tend to be located on the lower terraces, in areas providing light arable along with other types of land. In the Serres basin, more than half of the known sites are abandoned at the end of the Neolithic, and the number of sites in the Drama basin also declines. In the later Bronze Age, however, sites are established on higher ground with less light arable around and further away from the plain. At the same time, conspicuous locations on hilltops are selected.[362] The occupation of higher ground is a familiar LBA trait from the other regions discussed above, but whether it reflects an increase in antagonism and warfare or an economic decision is at present difficult to determine.[363] The limited evidence is also not particularly helpful for defining regional hierarchical structures, such as those suggested for central Macedonia. Perhaps the rarity here of the large and distinctively high settlements seen in central Macedonia is a sign of diverging social trajectories between the two areas.[364]

Recent Projects

Dikili Tash (fig. 2:35). Excavations at Dikili Tash started in 1961 as a joint Greek-French project, and with long intermissions continue to date.[365] The mound is situated near a rich spring, at the edge of an extensive marshland, drained in recent times. The actual depth of the deposits and the extent of the settlement are among the problems investigated by recent work at the site. Geomorphological research at the present edge of the mound has shown that the archaeological deposits alternated with alluvial lake deposits, signifying the fluctuating levels of the marshland.[366]

The stratigraphy of the mound, already established by early excavations, is divided into four main phases that cover the Late Neolithic (Dikili Tash I–II), the Early Bronze Age (Dikili Tash III), and the Late Bronze Age (Dikili Tash IV), with hiatuses between

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[360] The area of the Nestos delta was surveyed for prehistoric sites during excavations at Paradeisos. The absence of sites in the area is taken to indicate a large-scale infilling from alluviation: P. Hellström ed., *Paradeisos: A Late Neolithic Settlement in Aegean Thrace* (Medelhavsmuseet 7, Stockholm 1987) 13. For a catalogue and discussion of sites with references to previous work, see D. Grammenos and M. Fotiadis, "Από τους προϊστορικούς οικισμούς της ανατολικής Μακεδονίας," *Anthropologika* 1 (1980) 15–33; Grammenos, "Συμπεράσματα από τη μελέτη των προϊστορικών οικισμών της ανατολικής Μακεδονίας," in *Α' Τοπικό Συμπόσιο, 'Η Καβάλα και η Περιοχή της,' 18–20 Απριλίου 1977* (Thessaloniki 1980) 235–47; Grammenos, "Προϊστορικοί οικισμοί της ανατολικής Μακεδονίας," *Θρακικά Χρονικά* 36 (1980–1981) 95–100; Grammenos, "Bronzezeitliche Forschungen in Östmakedonien," in B. Hänsel ed., *Südosteuropa zwischen 1600 und 1000 v. Chr.* (Prähistorische Archäologie in Südosteuropa 1, Berlin 1982) 89–98; Grammenos (supra n. 287); and Grammenos 120–26. For a detailed description of sites and finds from the Serres basin, see Fotiadis (supra n. 272) 350–408. For the Drama basin, see E. Blouet, "Development of the Settlement Pattern," in *Sitagroi* 133–44. To the number of sites reported, a few have been added recently: K. Kasvikis, *Οικισμοί της Εποχής του Χαλκού στην ανατολική Μακεδονία* (M.A. thesis, Univ. of Thessaloniki 1995). No regional projects in eastern Macedonia have followed an intensive strategy.

[361] K. Trantalidou and A. Darlas, "Ερευνες στα σπήλαια του Νομού Δράμας, 1992," *AEMT* 6 (1992) 593–600.

[362] Fotiadis (supra n. 272) 281–83. These later Bronze Age sites are often one-period sites with shallow deposits, and their absence from the lower areas can be attributed either to the effects of alluviation or to their low visibility: Blouet (supra n. 360) 139.

[363] Fotiadis (supra n. 278) 89–92 considers economic choice as a more plausible alternative.

[364] See, however, H. Koukouli-Chrysanthaki, *ArchDelt* 27 B′ (1972) 527–29 for a large tell in the Strymon valley.

[365] For a detailed report of the first period of French excavations at Dikili Tash, see Treuil (supra n. 356); also M. Séfériadès, "Dikili Tash: Introduction à la préhistoire de la Macédoine orientale," *BCH* 107 (1983) 635–77. For a summary of results of the first period of Greek excavations, see H. Koukouli-Chrysanthaki and K. Romiopoulou, "Οι ανασκαφές στον ελληνικό τομέα του προϊστορικού οικισμού Ντικιλί Τας (1961–1967)," in *Ancient Thessaly* 226–47. For the more recent excavations, see Koukouli-Chrysanthaki, "Προϊστορικός οικισμός στο 'Ντικιλί Τας'," *Prakt* 1986, 141–46; Koukouli-Chrysanthaki and Treuil, "Dikili Tash," *BCH* 111 (1987) 616–19; Koukouli-Chrysanthaki, *Prakt* 1987, 173–76; K. Peristeri and R. Treuil, *BCH* 112 (1988) 727–31; Koukouli-Chrysanthaki, *Prakt* 1989, 233–42; A Pariente, *BCH* 114 (1990) 799; P. Darcque, G. Touchais, and R. Treuil, *BCH* 116 (1992) 715–19; and Koukouli-Chrysanthaki, "Dikili Tash," *Το Εργον της Αρχαιολογικής Εταιρείας* 1993, 68–75.

[366] The archaeological deposits at the foot of the tell were dated to the EBA. Two stone features were uncovered in two separate locations (sectors II and IV). They probably date to the EBA and may represent circuit walls built to protect the site from the fluctuating marshes: Peristeri and Treuil (supra n. 365) 729; Darcque et al. (supra n. 365) 715.

Dikili Tash II (ending ca. 4500 B.C.) and III (starting ca. 3200 B.C.), and between the Early Bronze Age and the later Bronze Age.[367] Excavations at different locations of the mound display dissimilar stratigraphic sequences implying discontinuities and shifts in habitation from period to period.[368] Architectural remains were scanty in the Neolithic levels and mainly comprised traces of post-built walls and stone socles. Many hearths and ovens were found, but it is unclear whether they were located inside or outside houses. One feature deserves special notice: a potter's firing pit, found partly sunk in a floor, together with a large pit filled with ashes and another filled with clay, a silo filled with carbonized lentils, and two mysterious joined cavities. The assemblage belongs to Dikili Tash I. The firing pit had a single chamber containing deformed pots, charcoal, and ashes.[369] Apart from its contents, it resembles the common ovens found at the site, which implies that firing pottery was within the capacities of the regular household.

Recent excavations on the eastern plateau, below the top of the mound, have yielded complete plans of post-buildings arranged in regular rows, with occasional indications of an upper story. The houses are 10 m long × 5 m wide and are separated by narrow lanes.[370] This architecture was dated to the latest part of Dikili Tash II and provides the only information on the layout of a Neolithic settlement in eastern Macedonia. In another sector of the excavation, a thick destruction level of the early LN period was uncovered. The remains of pisé houses of undetermined plan, again with ovens and silos, were explored.[371]

Over a final destruction deposit on the eastern plateau, dating to the end of the Late Neolithic, sparse remains of EBA occupation were preserved, including post-built houses equipped with pits and horseshoe-shaped ovens. A long post-built house with internal partitions, at least 12 m long, was found there.[372] It was rebuilt at least three times, the last probably with a stone socle. Two hearths were located at the two ends and during the last phase the house was equipped with a stone platform. A street separated it from another house to the north. At the top of the mound, five occupation phases were identified through successive floors with hearths and ovens, but no house plans could be determined. EBA activity at the base of the mound is indicated by recent finds, but occupation on the mound itself during that period was possibly more limited than previously, as the absence of EBA deposits on the southern slope indicates.[373]

Another long apsidal building at the top of the mound is the sole structure dated to the Late Bronze Age. The building was constructed of mudbricks and was at least 10 × 4 m in size. Most remarkable were two elliptical plaques of clay, placed on an earlier floor, lying opposite one another, near the long walls of the building.[374] They had a square hollow in the middle filled with ashes, two round bowls on each side, and were decorated with parallel curvilinear grooves running around the edge of the plaques. Part of a clay figurine and several spindle whorls have also been reported from the building, which was destroyed twice by fire.[375]

Notable is the suggested use of flint from the Danube area for the flaked tool industry at the end of the Neolithic, while obsidian was represented by very few pieces. Copper objects were present in LN and EBA levels in very small numbers. Finally, a variety of objects made of bone, lead, shell, and clay were found mainly in the Neolithic deposits of the site.[376]

Sitagroi (fig. 2:32). One of the main objectives of the Sitagroi project was the clarification of the chronological position of the Balkan LN and Chalcolithic

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[367] Treuil (supra n. 356) 33–36.

[368] E.g., Peristeri and Treuil (supra n. 365) 729, 731. Also Koukouli-Chrysanthaki and Romiopoulou (supra n. 365) 235.

[369] Treuil (supra n. 356) 23, 43–44.

[370] Koukouli-Chrysanthaki 1993 (supra n. 365) 70–74.

[371] *AR* 1993–1994, 59; Darcque et al. (supra n. 365) 715–17.

[372] Koukouli-Chrysanthaki 1993 (supra n. 365) 69, 74; Koukouli-Chrysanthaki and Romiopoulou (supra n. 365) 235–47. The house was probably contemporary with the "Long House" of Sitagroi Vb.

[373] See Treuil (supra n. 356) 49–51; for building activities at the base of the mound, see supra n. 366.

[374] Treuil (supra n. 356) 52–57; M.S. Séfériadès, "Le bâtiment absidial en briques crues de Dikili Tash (Bronze Récent)," in J.-L. Huot, M. Yon, and Y. Calvet eds., *De l'Indus aux Balkans: Recueil à la mémoire de Jean Deshayes* (Paris 1985) 111–13.

[375] Séfériadès (supra n. 374) interprets the plaques as altars, and the building as a sanctuary. Treuil (supra n. 356) 56–57, however, takes a more skeptical view.

[376] Treuil (supra n. 356) 59–144. Archaeobotanical remains from the second period of research in the Greek sector are presented in M. Magafa, *The Plant Remains from the Late Neolithic/Early Bronze Age Site of Dikili Tash, Macedonia, Greece* (M.S. thesis, Univ. of Sheffield 1990); Magafa and K. Kotsakis, "A New Method for the Identification of Wild and Cultivated Charred Grape Seeds," *JAS* (in press). The archaeobotanical analysis of grape seeds shows that wine was produced on the site, but from wild grapes.

periods and their relation to the Aegean. The results in this respect were revolutionary for the whole of southeastern Europe and, since the completion of fieldwork in 1970, have been discussed repeatedly, despite the fact that the first volume of the final publication appeared only in 1986. We shall not, therefore, deal extensively with these results.[377] The excavation focused also on the placement of the prehistoric settlement in its broader palaeoeconomic context, thus carrying on a tradition seen earlier at Nea Nikomedeia.

In the deep trenches excavated at Sitagroi, only clay floors could be identified for the Neolithic phases. No substantial parts of buildings or features were unearthed, except for a number of hearths, pits, and the occasional wall of pisé or posts. The general pattern of habitation is suggested by the stratigraphy of the deep trench ZA, where house floors were found alternating with layers described as middens. In this—admittedly small—area, habitation was not continuous, and occasional, short-term abandonment may have taken place. This possibility finds support in the results of phosphate and particle-size analyses of the sediments.[378]

More information is available for the layout of the settlement during the Early Bronze Age. Houses were as a rule built of posts and elongated, possibly following a single orientation and regular layout.[379] During phase Va, houses at the top were probably closely packed together.[380] The apsidal "Burnt House" of that phase was 8 m long, with a concentration of food-processing and long-term storage facilities inside the apse. Various domestic activities were indicated by the presence of a hearth, and a number of vessels and tools in the main room.[381] The "Long House" (at least 15.5 m long) of phase Vb, in the same area, preserved less information, with the exception of a stone shaft-hole ax head and several intramural infant burials. During the same phase, evidence from trenches away from the top indicates the existence of similarly long buildings and possibly a less packed arrangement of habitation. In the eroded uppermost level, traces of intensive storage and other domestic activities were not connected to house remains. Habitation continued after the late EBA phase, but no architectural remains have been found associated with the mixed deposits.[382]

It is not possible to correlate changes observed in the regional settlement pattern with changes in the pattern of habitation at Sitagroi. The vertical strategy of the excavation precludes obtaining information about changes in the general layout of the settlement, density of habitation, or architectural features. Consequently, the proposition that, during the Sitagroi III phase, a demographic growth at the settlement level should be correlated through nucleation to a decrease in the total number of sites in the Drama basin certainly needs further support.[383]

The Neolithic pottery of Sitagroi—especially that of phase III—is very rich in decoration and technically advanced.[384] Its distribution over an extensive area possibly signifies the existence of long-distance exchange networks, parallel to exchange networks of raw materials such as metal, flint, etc., but also perhaps foodstuffs. At the present level of research, it is impossible to place these potentially interconnected networks into a wider social and economic context, similar to that discussed in Thessaly, nor is it possible to define more closely their specific content and extent. Equally poorly understood are the consequences or causes of a shift in orientation toward the Aegean at the end of the Early Bronze Age, evident in the similarities in pottery from both areas, and, more importantly, in the occurrence of tin alloys.[385]

Toumba Dramas/Arkadikos (fig. 2:33).[386] A brief excavation at Arkadikos, near the town of Drama, was conducted in 1991. The site extends over 15 ha and provides a good example of a flat, extended site in eastern Macedonia. The excavations revealed a level

[377] *Sitagroi*. For recent discussions based on the Sitagroi sequence and its importance for northern Greek prehistory, see Grammenos (supra n. 292); Grammenos 85–95; Aslanis (supra n. 12) 129–40, 260–64; Coleman 261–62, 274; Demoule, in Lichardus (supra n. 288) 227–36; Manning (supra n. 358) 92–97, 161–64; Demoule, in Maniatis (supra n. 288) 690 defines, on grounds of pottery typology, three subphases of Sitagroi III (a–c) and inserts a hiatus between IIIa and IIIb.

[378] *Sitagroi* 175–82, 212–18. For the geoarchaeological analysis of formation processes, see *Sitagroi* 32–40.

[379] *Sitagroi* 207–208.

[380] *Sitagroi* 190.

[381] *Sitagroi* 191–203.

[382] For the "Long House," see *Sitagroi* 189–90; the rest of the Vb phase, *Sitagroi* 203–10; the "Bin Complex," *Sitagroi* 187–88; and for later Bronze Age phases, *Sitagroi* 470.

[383] *Sitagroi* 137.

[384] For the technological aspects of this pottery, see Jones (supra n. 149) 768–72, with earlier references.

[385] For ceramic form and decoration, changing subsistence practices, and orientation of contacts, see *Sitagroi* 446–49. For a discussion of technological aspects of metallurgy, see McGeehan-Liritzis and Gale (supra n. 46) 215–23.

[386] Grammenos 125.

of LN habitation with dense concentrations of postholes, possibly representing repeated reconstructions of post-built houses.[387]

Dimitra (fig. 2:30). The site of Dimitra lies on a Neogene formation very close to the Angitis River alluvium, in the Serres basin. Two trenches were dug to investigate the stratigraphy. The Neolithic sequence was divided into three phases (Dimitra I–III), corresponding to phases I–III of Sitagroi, and habitation levels were also found dating to the Late Bronze Age (Dimitra IV). Very little was discovered in respect to architecture except for a LBA house/retaining wall associated with a destruction deposit. A wealth of material came from the Neolithic strata, including gold and copper beads from all phases, *Spondylus* rings and beads, and a good sample of bioarchaeological material, which was systematically collected.[388] Two ^{14}C dates from phase I appear extremely high in relation to the Sitagroi I dates.[389]

Pentapolis (fig. 2:28). A small-scale excavation was conducted at the low mound (2.5 m high) of Pentapolis in the central part of the Serres basin. The site is situated on the middle terraces surrounding the plain, in a landscape of high erosional activity and dominated by conglomerates and red clays. The brief excavation produced deposits showing two phases dated to the Early Bronze Age, and traces of later, LBA habitation, which have been eroded. A series of ^{14}C dates confirmed a chronological overlap with Sitagroi IV and V. The small trench preserved remains of mudbrick walls, floors, a hearth, and a clay bin.[390]

Stathmos Angistas (fig. 2:31). Stathmos Angistas is a tell on the summit of a hill rising ca. 45 m above the surrounding alluvial valley of the Angitis River. Since the center of the Bronze Age settlement had been destroyed by a Macedonian tomb, LBA levels were explored only near the western edge of the site. The excavation revealed two main LBA strata.[391] Mudbrick terraces supported the edge, while floors with pithoi, clay bins, hearths, and an oven belonged to roughly rectangular houses with mudbrick walls. Handmade pottery, in plain coarse, coarse with plastic decoration, burnished, incised, and occasional painted and graphite-coated wares, comprised the majority of the ceramics. In addition a small amount of wheelmade Mycenaean pottery was found (0.08%). The two phases were dated by the presence of LH IIIA2/B and LH IIIC pottery, respectively. The presence of Mycenaean pottery along with the terraced formation of the mound gives Stathmos Angistas a "central Macedonian" appearance.[392]

Paradeisos (fig. 2:36). A small excavation was conducted for one month in 1976 at Paradeisos, situated strategically on the right bank of the Nestos River. Deposits were 1.7 m deep and belong mainly to the LN period, contemporary with Sitagroi III. Thin EBA deposits were also found, and LBA pottery on the surface testifies to the long life of the settlement.[393]

New Questions

As a result of sound fieldwork, analysis, and publication since the late 1960s, eastern Macedonia offers a chrono-typological framework for the Neolithic and Early Bronze Age that is more complete and secure

[387] K. Touloumis and K. Peristeri, "Ανασκαφή στον Αρκαδικό Δράμας, 1991," *AEMT* 5 (1991) 359–69; I. Anagnostou and A. Vargas-Escobar, "Ανασκαφή Αρκαδικού 1991," *AEMT* 5 (1991) 371–81; and Vargas et al., "Ανασκαφές στην προϊστορική τούμπα του Αρκαδικού Δράμας," *AEMT* 6 (1992) 577–85.

[388] Grammenos (supra n. 287) includes chapters on ceramic technology, petrographic analysis, metallurgical examination, and archaeobiological analysis; also Grammenos 48–63.

[389] 6060–5950 B.C. (Bln 3187) and 6370–6220 B.C. (Bln 3189). For a recent excavation of a contemporary site at Promachonas-Topolniča (fig. 2:27), see H. Koukouli-Chrysanthaki, "Προμαχώνας-Topolniča. Ενα πρόγραμμα ελληνοβουλγαρικής συνεργασίας," *AEMT* 6 (1992) 561–75; Koukouli-Chrysanthaki, I. Aslanis, and F. Konstantopoulou, "Προϊστορικός οικισμός Προμαχώνας-Topolniča," *AEMT* 7 (1993, in press); Koukouli-Chrysanthaki, Aslanis, and Konstantopoulou, "Προμαχώνας-Topolniča: Ελληνοβουλγαρικές έρευνες στον προϊστορικό οικισμό," *AEMT* 8 (1994, in press).

[390] Grammenos (supra n. 357) 91–153.

[391] Koukouli-Chrysanthaki 1980 (supra n. 359) 54–85. See also Koukouli-Chrysanthaki 1992 (supra n. 359) 475–76 for additional information about the stratigraphic sequence. EBA and Early Iron Age finds are also mentioned.

[392] For informative reviews of the existing evidence on LBA eastern Macedonia with emphasis on chronocultural issues and LBA ceramics, see H. Koukouli-Chrysanthaki, "Late Bronze Age in Eastern Macedonia," in *Thracia praehistorica* (Supplementum Pulpudeva 3, Sofia 1982) 231–58; also Koukouli-Chrysanthaki 1992 (supra n. 359) 442–63, 473–507, 559–61, 631–34, 668. The affinities of the material culture with that from central Macedonia are stressed. General affinities with the central and eastern Balkans and Aegean Thrace are also recognized. For a review with emphasis on economic and social issues, see Fotiadis (supra n. 278). Two isolated tumuli, dated to the end of the Bronze Age and the beginning of the Iron Age, were partially rescued in the highland passes near the villages of Potamoi (fig. 2:34) and Exohi, near the Greek-Bulgarian border. An undetermined number of cremations in urns were furnished with plain, graphite-coated, and incised pottery, and with a few Mycenaean pots. See D. Grammenos, "Τύμβοι της Υστερης Εποχής του Χαλκού και άλλες αρχαιότητες στην περιοχή του Νευροκοπίου Δράμας," *ArchEph* 1979, 26–71.

[393] Hellström (supra n. 360).

than most other areas in the Aegean can claim. In this respect, it offers a useful example for other regions with longer histories of research. Major issues that occupied the previous generation of archaeologists have been elucidated, and it would not be an exaggeration to say that the data from this area could be used with care as safe time pegs to assist the clarification of difficult chronological problems, even in areas as far removed as Thessaly. There is an urgent need, however, for the extension of the chronotypological framework to include the later Bronze Age, for which information is minimal. We now understand many aspects of the palaeoenvironment, but work done in the 1970s on the interaction between settlement and environment needs to be continued in a more intensive form. Finally, it is time to start translating the well-known cultural features of the region into human terms by investigating the changing relationships within and between eastern Macedonian communities, an aspect of prehistoric life that at present is very little understood.

THRACE

Greek Thrace is generally absent from reviews of Aegean prehistory. This is surprising since one would think that both the Rodopi plain to the south as well as the lower Evros valley to the east would attract researchers interested in prehistoric interaction among Anatolia, the Aegean, and the Balkans. Nevertheless, it was only a few years ago that a prehistoric excavation of some scale was undertaken by the Archaeological Service, which has also conducted smaller-scale excavations of early sites in the area.[394]

No secure stratified sequence has been sufficiently published for any period of western Thrace. In the absence of ^{14}C dates, comparisons with the material culture from sites in eastern Macedonia, southern Bulgaria, and the northeastern Aegean offer the only basis for dating archaeological assemblages. Recent excavations at the site of Makri promise to rectify the situation for the Neolithic period by providing a more secure stratigraphy for the fifth and early fourth millennium B.C. than is presently provided by Paradimi, and may offer evidence for even earlier Neolithic occupation. Dating problems are more severe for the period 3500–1000 B.C. due to a general dearth of excavated sites and the absence of long, continuous stratigraphies.

Previously known sites with Neolithic and occasional EBA occupation are primarily mounds along the edges of the plain and near the coast, and caves with sparse traces of intermittent occupation from Late Neolithic to historical times.[395] Only recently have less conspicuous sites, some in elevated areas, been discovered, indicating at least for some periods more varied patterns of habitation than were suspected in the past.

The preliminary results of a recent joint project conducted by the Ephoreia of Komotini, the University of Thessaloniki, and A. Ammerman for the investigation of the plain of Rodopi and adjacent areas offer additional reasons for the general scarcity of prehistoric sites in the area. Eustatic sea-level rise, large-scale alluviation in deltaic areas and along floodplains, and the late formation of Lake Vistonis in the western part of the plain, though not accurately datable, possibly prohibit the recovery of prehistoric sites other than large mounds. Geomorphological changes may also have rendered large parts of the lowlands unattractive for occupation during certain periods of the prehistoric past. On the other hand, exploration of the Pleistocene terraces along the southeastern edge of the area identified a concentration of sites, some of small size, belonging to various prehistoric periods, including a few Middle Palaeolithic and several LN sites.[396] Whether the geomorphological changes were initiated by human activity and whether occupation of the Pleistocene terraces was related to economic and political processes are questions for future research.

Recent Projects

Paradimi (fig. 2:38). The early excavations at Paradimi in the 1920s by S. Kyriakides, an anthropologist, and E. Pelekides were published in 1981 by G.

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[394] For a first synthesis of the data from the area with a catalogue of sites, see D. Theocharis, *Prehistory of Eastern Macedonia and Thrace* (Athens 1971). For a recent summary, see D. Triantafyllos, "Ancient Thrace," in V. Papoulia et al. eds., *Thrace* (Athens 1994) 37–41. For the only site excavated prior to the 1970s, and this on a very small scale, see G. Bakalakis and A. Sakellariou, *Paradimi* (Mainz 1981). Bakalakis was the initiator of research specifically conducted to collect surface data, followed by D. French and members of the Archaeological Service.

[395] Theocharis (supra n. 394) 11 and Appendix III. E. Tsimbidis-Pentazos, "Αρχαιολογικαί έρευναι εν Θράκη," *Prakt* 1971, 87–88.

[396] N. Efstratiou, "Νεότερες ενδείξεις για την προϊστορική εγκατάσταση στην Θράκη," *AEMT* 5 (1991) 430–32. For more Neolithic and EBA sites in elevated areas, see D. Triantafyllos, *ArchDelt* 26 B′ (1971) 430–31, 437; Triantafyllos, "Η Θράκη του Αιγαίου πριν τον ελληνικό αποικισμό," *Θρακική επετηρίδα* 7 (1987–1990) 299, 302, 304–305, 309, where LBA and Early Iron Age occupation on high ground is preceded by Neolithic settlement.

Bakalakis and A. Sakellariou. Bakalakis dug a small control trench (7 × 1 m) in 1965 to check the stratigraphy of the tell and correlate the abundant material produced by the earlier excavations with specific strata. The 4.5-m stratigraphy of Paradimi was divided into four main Neolithic phases, covering the span from the end of the Middle Neolithic to the Final Neolithic (roughly equivalent to phases Sitagroi I–III), and one phase belonging to the Early Bronze Age. The publication is heavily biased toward pottery, and gives little information on the settlement. The pottery comprises dark-faced vessels with carinated shapes, "black-topped" and "channeled" wares in the earlier phases, and graphite decoration as well as some "black on red" in the later Neolithic deposits.[397]

Paradimi is a well-known site, although the level of research hardly justifies its prominent position in the literature. The recent publication gives a somewhat clearer view of the evidence, but does not warrant the view that the Paradimi "culture" is unique, with features demonstrating its position at a crossroads between east and west, north and south.[398] Similar views have been expressed about Macedonia as a whole, and even Thessaly (see above); they are based, however, on perceptions of the geopolitical position of the sites and regions in question rather than on archaeological evidence.

Proskinites (fig. 2:39). A brief excavation at a site 5 km from the coast, near the village of Proskinites, south of Komotini, explored ca. 3.5-m-deep Neolithic deposits. The low mound is fairly large, ca. 8 ha, and is located at the boundary between the limestone hills and the Pleistocene terrace. The two 4 × 4 m trenches uncovered only elusive structural elements, probably from post-framed houses, more substantial remains of clay-lined pits, and rich furnishings in the form of pottery and other implements, including a rich repertoire of chipped stone, mainly from local chert and flint, and several large ground stone tools. Ceramic vessels, mainly monochrome or decorated with channeling, reportedly resemble the repertoires from Paradimi I–II, a few kilometers to the north, and the more distant site of Sitagroi I–II.[399]

Makri (fig. 2:42). The mound of Makri, 11 km west of Alexandroupolis, is typical of Neolithic sites in the area. It is located on a rocky outcrop rising ca. 50 masl on the face of which opens a cave with sparse remains of habitation from different periods. The mound is fairly small but trial trenches up to 50 m away from its base on the north side have uncovered habitation deposits underneath several meters of recent alluvium, indicating a settlement of ca. 1 ha. Some 200 m further north another trial trench revealed, beneath 2.50 m of alluvium, a deposit with flakes and tools yet no pottery, provisionally interpreted as a flint-knapping floor, not necessarily related to the main settlement.[400]

The site was also occupied in the historical period and the Bronze Age, but the prehistoric remains in the 250-m^2 excavated area belong exclusively to the Neolithic period. The 4-m-deep deposits of the settlement have been assigned to two periods, Makri I and II, separated by a destruction deposit and ending in a uniform destruction horizon. Monochrome pottery prevailed in both phases, with occasional incisions or impressions in Makri I, and rare painted "white-on-red" pottery was also found. In Makri II, monochrome pottery continued to be produced, with clays taken from six local sources; carinated shapes appeared along with channeled decoration.[401] Efstratiou assigns the later phase to the period covered by phases I–II at Sitagroi and Paradimi I–III, and attributes the rarity of painted pottery to regional variation. It is proposed that Makri I could date to a period earlier than Sitagroi I, possibly going back into the Early Neolithic, suggesting a closer connection with recently discovered assemblages in eastern Thrace and Anatolia.[402]

The possibly early date of the site is a new development for the prehistory of the northern Aegean. Furthermore, the extensive architectural remains of

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[397] Bakalakis and Sakellariou (supra n. 394) 14–23.

[398] Bakalakis and Sakellariou (supra n. 394) 27–40, esp. 38.

[399] D. Triantafyllos, "Προσκυνητές-Ροδόπης," *Το Εργον της Αρχαιολογικής Εταιρείας* 1986, 50.

[400] Makri represents the first long-term excavation of a prehistoric site in the region; see D. Kallintzi and N. Efstratiou, "Ανασκαφή στη Μάκρη Εβρου," *AEMT* 2 (1988) 499–510; Efstratiou, in *AEMT* 3 (1989) 595–605; *AEMT* 4 (1990) 595–612; and *AEMT* 6 (1992) 643–54; N. Urem-Kotsos and N. Efstratiou, "Η συμβολή της κεραμεικής τυπολογίας της Μάκρης στη μελέτη της προϊστορικής εξέλιξης στη Θράκη," *AEMT* 8 (1994, in press). Also Efstratiou and Kallintzi, *Ο αρχαιολογικός χώρος Μάκρης-Εβρου* (Komotini, in press).

[401] For a technological analysis of pottery from Makri, see P. Yiouni, "Η συμβολή των αρχαιομετρικών ερευνών στη μελέτη της νεολιθικής κεραμεικής," in Stratis et al. (supra n. 135) 135–48.

[402] Cf. infra n. 437. For a surface find of a clay figurine head possibly dating to the sixth millennium B.C., see Efstratiou (supra n. 396) 429–30.

Makri II offer an opportunity for the investigation of Neolithic social and economic organization that is unique in the area.

Buildings in Makri II were constructed with frames of posts with occasional use of mudbricks and stone. Traces of a possible stone enceinte wall need further clarification, but more important for the understanding of community organization is the concentration of storage facilities in the form of several clay bins and a large plastered pit in a central part of the settlement. The area, presumably roofed, was 60 m^2 in extent and was also furnished with a clay platform and three conical objects that have been alternatively interpreted as horns of consecration or as fire-stands. It is suggested that the complex may represent a communal storage area or centralized storage controlled by an elite. Information, however, on the general layout of the settlement is still insufficient, and no complete house plans have yet been documented. Nevertheless, numerous floors have been uncovered, often plastered and preserving a rich inventory of finds and features. Finally, there is evidence for the practice of intramural adult burial.[403]

Information on EBA patterns of occupation and material culture is sparse. It has been suggested that habitation continued in some of the earlier mounds and that affinities with the material culture from the northeastern Aegean and southern Bulgaria are displayed.[404] A major change has been recognized in the pattern of settlement during the Late Bronze Age. New sites were established during that period on eminent, naturally protected hilltops, away from the plain, in the upland areas near or away from the coast. [405] Two of the excavated sites, Ay. Georgios Maroneias and Asar Tepe (Kremasti Erganis) (fig. 2:40–41), both near the southeastern edge of the plain, also display large enceinte stone walls (ca. 1.40 m thick), with protected entrances and towers. More importantly, they contain areas segregated by additional walling at the very top, and rectangular or elliptical buildings inside. However, at Mourgana (fig. 2:37), another recently excavated small site, the post-framed houses were only protected by the precipitous natural formation of the hill.[406] The appearance of monumental constructions, the spatial segregation observed in some settlements, and the differences in construction and layout between settlements may imply changes in the sociopolitical organization of Thracian LBA communities. The low quality of current field data, however, prevents any detailed understanding of these new developments or of the processes that brought them about. Several issues remain open, such as the accurate dating of the enceinte walls or the economic implications of the shift in settlement to the upland areas.

EPIRUS

Epirus (fig. 3) is mountainous, difficult to explore and, because of ubiquitous steep grades, its landscape is subject to intense erosion and deposition. Fieldwork has been erratic. In view of those conditions, it is not surprising that few Neolithic sites are known in the province. It may in fact be more surprising that as many as 10–15 Neolithic sites are known.[407] A few are caves—that is, relatively stable, protected microenvironments. Others, masked by recently deposited sediments, were discovered "by chance," during construction of soccer fields or drainage ditches; they would have been undetectable by conventional surface surveys, however intensive. Such facts underline the rarity of stable areas in the Epirotic landscape, where Neolithic settlements might be easy to come upon. Remote sensing, in conjunction with GIS applications, should one day prove very useful in identifying surfaces, either buried or eroding, that

[403] A. Agelarakis and N. Efstratiou, "Skeletal Remains from the Neolithic Site of Makri, Thrace: A Preliminary Report," in Stratis et al. (supra n. 135) 11–21.

[404] Triantafyllos (supra n. 394) 40; Triantafyllos 1971 (supra n. 396) 430.

[405] Triantafyllos (supra n. 394) 42. Most sites were also occupied in the Iron Age and later periods, but had an earlier component dated to the LBA on the basis of wares decorated with incised and encrusted patterns or relief cordons, features also present in LBA eastern and central Macedonia; see Koukouli-Chrysanthaki 1992 (supra n. 359) 482–83, with a list of sites in Thrace. Koukouli-Chrysanthaki also discusses affinities with the central and northeastern Balkans. Notable is the absence of any trace of Mycenaean-type pottery from Thrace: Triantafyllos (supra n. 394) 42. Some caves were also reoccupied during the same period, Tsimbidis-Pentazos (supra n. 395) 87–88.

[406] For Asar Tepe and Ay. Georgios Maroneias, see Tsimbidis-Pentazos (supra n. 395) 90–93, 97–99; E. Tsimbidis-Pentazos, "Προϊστορικαί ακροπόλεις εν Θράκη," *Prakt* 1972, 86–91. For Mourgana, see D. Triantafyllos, "Αρχαιολογικές εργασίες στην Παρανέστια περιοχή," *AEMT* 4 (1990) 627–30.

[407] For summaries and bibliographic guides to older finds, see T. Papadopoulos, "Η Εποχή του Λίθου στην Ηπειρο," *Dodoni* 3 (1974) 125–34; T. Koungoulos, "Νεολιθικές εγκαταστάσεις Καστρίτσας Ιωαννίνων," *Ηπειρωτική Εστία* 1990, 3–24, where Neolithic material from the area of Kastritsa (fig. 3:2) also is discussed.

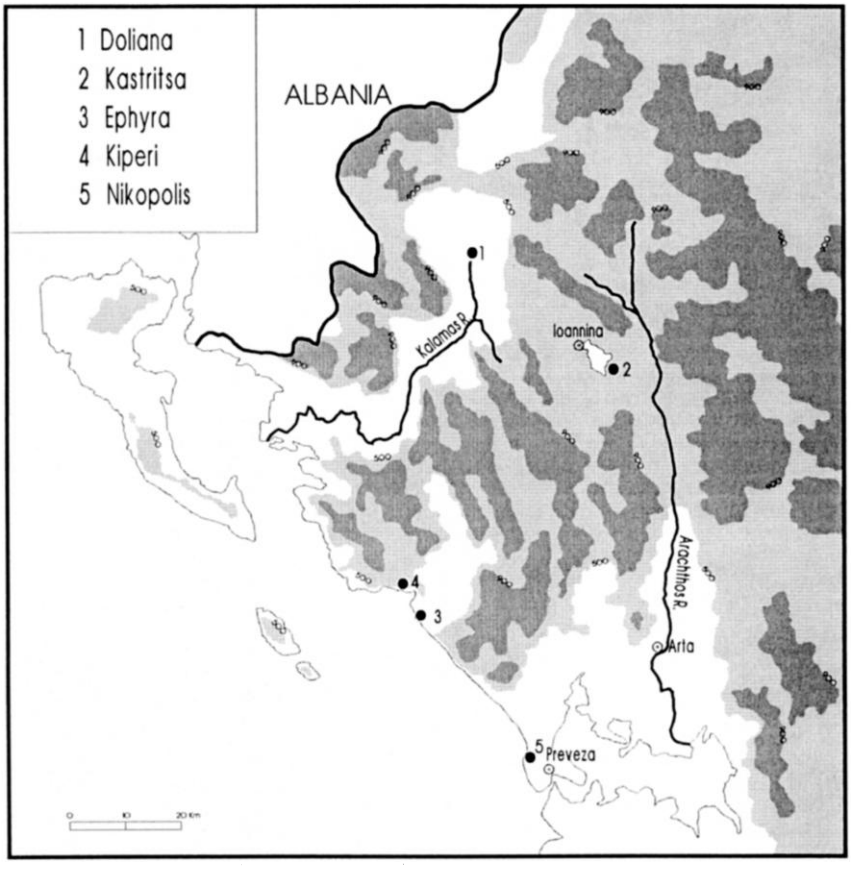

Fig. 3. Epirus. Principal sites mentioned in the text. Contours at 500 and 900 masl.

were settled in various phases during the Neolithic.[408]

Noteworthy, however, is the absence of Neolithic mound sites. That may suggest that settlements were relatively ephemeral, buildings were dispersed, limited use was made of earthen materials for construction, and/or that population density was never very high. By no means does it compel us to project the "Sarakatsani model" of pastoralism and transhumance onto the Neolithic;[409] the model is best reserved for the historical period or, at the earliest, for the Late Bronze Age.

The most interesting Neolithic find of recent years is a modest structure, dated to the range 3600–3100 B.C. (four ^{14}C dates), in the Doliana basin (ca. 300 masl; fig. 3:1). Here, in the vicinity of the headwaters of the Kalamas River,[410] excavations by the IB′ Ephoreia uncovered two superimposed "hut" floors (4.5 × 3.5 m) in association with hearths, an abundance of potsherds, and animal bone—a distinctive assemblage, without known parallels in the Neolithic and Early Bronze Age of Epirus.[411] The excavators named this assemblage "Doliana," cautiously also comparing the ceramics with those of Chalcolithic sites in Albania (Maliq phase IIb and Tren).[412] A pollen core from Gramousti, a former lake bottom 500 m west of the site, had previously been analyzed. The results are at odds with the archaeological record: forest reduction both preceded and, especially, followed the known Neolithic occupation, while in the

[408] These are the research strategies employed by the Nikopolis Project, a current joint venture of Boston University, the IB′ Ephoreia, and the 8th Ephoreia of Byzantine Antiquities: J. Wiseman, "Archaeology and Remote Sensing in the Region of Nikopolis, Greece," *Context* 9 (1992) 1–4; see also infra ns. 414 and 416.

[409] The objections to pastoral transhumance in the Neolithic have been voiced many times; see supra n. 181.

[410] The Doliana basin lies along a highly active fault: D. Sturdy, personal communication.

[411] A. Douzougli and K. Zachos, "Αρχαιολογικές έρευνες στην Ηπειρο και την Λευκάδα: 1989–1990," *Ηπειρωτικά Χρονικά* 31 (1994) 14–17 and pls. 3–5.

[412] For a ^{14}C date, calibrated to 4660–4092 B.C., from phase IIa at Maliq, see J. Guilaine and F. Prendi, "Dating the Copper Age in Albania," *Antiquity* 65 (1991) 574–78.

fourth millennium B.C. the oak forest regenerated.[413] Several episodes of intensified erosion and deposition during the Holocene also are attested by changing rates of sedimentation at Gramousti.

The Nikopolis Project has preliminarily reported ca. 20 secure Bronze Age sites in the lowlands of southwestern Epirus, many of them largely buried, and exposed only in road cuts and other scarps.[414] Two of those sites yielded ^{14}C dates within the second millennium B.C., but a ceramic chrono-typology remains an elusive objective. Bronze Age settlement appears to have been extensive in the vicinity of small coastal plains, such as the Acheron River mouth. A walled acropolis in "Cyclopaean" masonry, Xylokastra (or Ephyra), has been known in that area for some time (fig. 3:3);[415] the Nikopolis Project now adds possible terrace walls in the same masonry. Mycenaean ceramics are rare (ca. 50 out of 2,500 Bronze Age sherds) throughout the survey area. A reconstruction of the LBA site distribution with regard to land resources in southwestern Epirus ought to be within reach when the study of the survey data progresses.[416]

An important question concerns the nature of the acropolis at Xylokastra. Is it a Mycenaean "fort," or "trading post," comparable in its functions (at least initially) to, for example, the forts established by Europeans in North America in the 16th century and later? Or is it the material mark of an indigenous social transformation, indicating the emergence of a line of chiefs, who engaged in transactions with the polities of southern Greece, and managed to emulate some of their ways? The existence of burial tumuli within the acropolis, and of a tholos tomb at Kiperi (fig. 3:4), 10 km away,[417] is compatible with either of these scenarios. Authorities have as a rule favored the first scenario,[418] but the quality of evidence from the excavations at Xylokastra is less than satisfactory, and the interpretative efforts have been speculative. The site may, for example, have been a port of call along a probable "amber route"[419] (and it even yielded an amber bead),[420] but only well-designed fieldwork could substantiate such speculations.

As is well known, in the latter half of the second millennium B.C. quantities of bronze, especially in the form of weapons, were deposited in graves and buried as hoards throughout Epirus.[421] The pattern seems to set Epirus largely apart from the other provinces examined in this review, but its significance has yet to be fully realized. For some, those deposits constitute evidence for "pastoralist warriors or chieftains whose appreciation of fine craftsmanship and wide-ranging contacts enabled them to obtain suitable weapons."[422] Recent interpretations of somewhat analogous patterns in other periods and regions are geared to broader questions, and are informed by more sophisticated premises, such as the macroeconomic distinctions between "core" and "periphery," and between "gift" and "commodity." To A. and S. Sherratt, for example, the ritual deposition of metal might indicate a political economy that is out of step with the LBA Aegean "core," yet is already transformed by it through a "contagious process," the spread of the "desire for luxuries" among local elites.[423] S. Shennan adopts a comparable perspec-

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[413] K.J. Willis, "The Late Quaternary Vegetational History of Northwest Greece III," *New Phytologist* 121 (1992), e.g., 146.

[414] T.F. Tartaron, "Prehistoric Settlement in Southern Epirus: Preliminary Results from Survey," *AJA* 98 (1994) 316 (abstract); Tartaron and K. Zachos, "The Mycenaeans and Epirus," forthcoming in *Η περιφέρεια* (supra n. 53); see also supra n. 408.

[415] For a recent summary, see T. Papadopoulos, "Settlement Types in Prehistoric Epirus," in P. Darcque and R. Treuil eds., *L'habitat égéen préhistorique: Actes de la table ronde internationale, Athènes, 23–25 juin 1987* (*BCH* Suppl. 19, Paris 1990) 364.

[416] See now T. Tartaron, *Bronze Age Settlement and Subsistence in Southwestern Epirus, Greece* (Diss. Boston Univ. 1996).

[417] T. Papadopoulos, "Das mykenische Kuppelgrab von Kiperi bei Parga (Epirus)," *AM* 96 (1981) 7–24.

[418] Papadopoulos (supra n. 415); K.I. Soueref, *Μυκηναϊκές μαρτυρίες από την Ηπειρο* (Diss. Univ. of Thessaloniki 1986), e.g., 171; Feuer 88.

[419] See, e.g., A.F. Harding, "The Wessex Connection: Developments and Perspectives," in *Orientalisch-ägäische Einflüsse in der europäischen Bronzezeit: Ergebnisse eines Kolloquiums* (Römisch-Germanisches Zentralmuseum, Forschungsinstitut für Vor- und Frühgeschichte, Monograph 15, Bonn 1990) 139–43 and 153.

[420] In all, 12 amber beads are known from Epirus: Soueref (supra n. 418) 108.

[421] More than 80 weapons (daggers, swords, knives, axes, spearheads) are individually treated in Soueref (supra n. 418) 91–105. For a recently reported hoard, mainly of double axes, see E. Andreou, in *ArchDelt* 41 B′ (1986) 114 and pls. 107–108. Contexts in general are poor, and that has encouraged the practice of connoisseurship with regard to the cultural identities and places of manufacture of the objects. Connoisseurship is effectively demonstrated in Soueref, who boldly juxtaposes the divergent opinions of various scholars. Local manufacture of some types of weapons has been argued by Wardle (supra n. 212) 190–98; the claim is not, however, repeated in Wardle 1993 (supra n. 299) 117–41.

[422] Feuer 88.

[423] A. and S. Sherratt, "Luxuries to Commodities: The Nature of Mediterranean Bronze Age Trading Systems," in Gale (supra n. 345), esp. 353–56 and 375.

tive: the Epirotic pattern should suggest to him an economy still in the "prestige mode," and, at once, "a tension between two different transactional orders," one of them taking the form of gift exchanges, the other arising from self-interested transactions.[424]

But these arguments are not only well informed by long-standing theoretical problems (and dilemmas that they attempt to resolve). They also—especially Shennan's—are aimed at interpreting thoroughly researched portions of the European archaeological record, and take into account a multitude of strands of local evidence.[425] For Epirus, the problem seems to be far more basic and discomforting: a scarcity of field data. The underdevelopment of prehistoric research—a chronic condition—has stunted progress. The archaeological imagination has always been resourceful in Epirus. It is time, however, for intensive fieldwork.

A NOTE ON THE EARLIEST NEOLITHIC

Good analytical work on the evidence for the earliest Neolithic in Greece has recently been published by Perlès.[426] The conclusion once more weighs heavily on the side of an allochthonous origin, and on colonization from the Near East. For Thessaly, in particular, "néolithisation" is regarded by Perlès as a fully exogenous process.[427] The Neolithic colonization of Greece, she further suggests, may not be an isolated event but an extension of a process already attested in the Near East, namely the "PPNB exodus."[428] Notwithstanding the reservations Perlès herself has about aspects of the relevant evidence, about her interpretation, and about similar interpretations offered in recent decades, colonization at some scale appears to her to be beyond doubt, as does the (ultimately) Near Eastern origin of the colonists.

We take a more dim view of the evidence.[429] We think that questions about the earliest Neolithic in Greece will not be answered by "paper-and-pencil" operations but by fresh fieldwork. Exercises such as Perlès's have great analytical merit. The conclusions, however, can be only as good as the evidence upon which they rest, and here one meets with serious problems. For example, no northern Greek province (not even Thessaly)[430] has been researched thoroughly enough to justify the inference that it was uninhabited during the Pleistocene/Holocene transition and during the ensuing one or two millennia. The recent discoveries of probable Mesolithic sites in coastal Epirus,[431] and the tantalizing ^{14}C dates and finds from Theopetra Cave underline precisely this point. True, we cannot imagine that scores of Mesolithic sites will be discovered throughout northern Greece in the future; yet—it is worth remembering—the factors responsible for their scarcity in our records are not very well understood. Have we, for instance, been searching for Mesolithic sites in the wrong places? The pattern for the entire southern Balkan peninsula—if one can call ca. 15, widely dispersed, for the most part poorly dated occurrences a pattern—suggests a preference for locations near the (former) coast and other bodies of water. This observation will, no doubt, encourage some to invoke (once more) submergence and burial by alluviation as the reasons for the invisibility of the Mesolithic in northern Greece. Our aim is different, however—

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[424] S. Shennan, "Commodities, Transactions, and Growth in the Central-European Bronze Age," *Journal of European Archaeology* 1:2 (1993) 59–72, esp. 66.

[425] It is in fact impossible to do justice to Shennan's argument (supra n. 424) without frequent reference to the rich data base for the Early Bronze Age in Central Europe.

[426] Perlès 1989 (supra n. 8) 109–27; Perlès (supra n. 136) 642–49; Perlès and Vitelli (supra n. 147) 226–33; Demoule and Perlès (supra n. 115), esp. 364–65. See also Bloedow (supra n. 8).

[427] van Andel and Runnels (supra n. 133) further amplify this view. See also Runnels 1995 (supra n. 136) 725. A different model, involving "borrowings" and interaction between colonizers and local Mesolithic groups, is envisaged for Franchthi and, perhaps, for Sidari: Perlès 1989 (supra n. 8) 117–20; Perlès (supra n. 136) 646.

[428] Perlès (supra n. 136) 648–49; J. Cauvin, "La néolithisation au Levant et sa première diffusion," in Aurenche and Cauvin (supra n. 8), esp. 14–24.

[429] Papers and comments on the earliest Neolithic in Europe—a veritable industry since the 1980s—as a rule cover very large areas (e.g., the whole of Greece, the Balkans, or the entire continent). Such broad perspectives are dictated by the need for comparative treatment, but also by the scarcity of data pertinent to particular, relatively small regions. We cannot in this review delve into the larger picture and theoretical controversies for we must limit ourselves primarily to the evidence from northern Greece. For bibliography on the larger picture, see, e.g., Perlès (supra n. 136) passim; M. Zvelebil, "On the Transition to Farming in Europe, or What Was Spreading with the Neolithic: A Reply to Ammerman (1989)," *Antiquity* 63 (1989) 382–83; and C.N. Runnels and T.H. van Andel, "Trade and the Origins of Agriculture in the Eastern Mediterranean," *JMA* 1 (1988) 103–109.

[430] But see Runnels 1988 (supra n. 136) 284.

[431] Runnels 1995 (supra n. 136) 724–25. For Albania see K.M. Petruso, "Radiocarbon and Archaeomagnetic Dates from Konispol Cave, Albania," *Antiquity* 68 (1994) 335–39. Epipalaeolithic sites have in recent years also been claimed from the coast of Turkish Thrace: I. Gatsov and M. Özdoğan, "Some Epi-Paleolithic Sites from NW Turkey: Ağaçlı, Domalı and Gümüşdere," *Anatolica* 20 (1994) 97–120. Both the Epirotic and the Thracian finds are from surface surveys; their chronology is as yet problematic.

to direct future research to promising coastal spots and other areas rich in aquatic resources.

A second problematic area is the paucity of data from very early Neolithic sites in northern Greece—sites that, according to calibrated ^{14}C dates, were probably occupied ca. 6500 B.C. or earlier yet.[432] We concur with Perlès's assertion[433] that the chipped stone industry of "preceramic" Argissa (and Sesklo) has a distinctly Neolithic, rather than Mesolithic, character.[434] We find it methodologically unsound, however, to generalize from just two sites to the entire province of Thessaly. In short, the sample for Thessaly ca. 6500 B.C. is at this moment pitifully small to permit inferences of regional significance with regard to the nature and origin of the earliest Neolithic. Nothing militates against the possibility that some of the province's ca. 120 recorded EN sites conceal deposits roughly contemporary with those of "preceramic" Argissa and Sesklo, and that such deposits contain a chipped stone industry comparable to that of "aceramic" Franchthi.

There are further problems, including problems with chronology.[435] Demic diffusion from the Near East is considered the sole process by which Neolithic culture reached northern Greece, but was it? The evidence in favor of a positive answer is not as considerable as is currently thought.[436] But we wish to speculate no further, either about the earliest Neolithic of Thessaly, or about the "absence" of late seventh/early sixth millennium sites in Greek central and eastern Macedonia, and Thrace.[437] Rigorous, persistent fieldwork is in order. We only hope that the next wave of excavations into the Early Neolithic of northern Greece will be carried out by people who understand the difference between "strata" and deposits, people who, unlike our predecessors, will not subscribe to the "layer cake" view of the archaeological record (and of culture and history), and will be knowledgeable about, and attentive to, site formation processes. We also hope that they will document the data obtained from their researches in clear and incontrovertible ways.

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[432] For this date see Bloedow (supra n. 8).

[433] Esp. Perlès 1989 (supra n. 8) 115–17.

[434] Some might regard this as too generous a concession, however: in the 1980s, Perlès examined the material collected by Milojčić in the 1950s. Milojčić's notion of "Steingeräte" may have been less inclusive than ours today, and his collection strategy may have systematically favored the discovery of pressure-flaked blades, at the expense of the products of a flake industry, such as those that later became known from, e.g., "aceramic" Franchthi. The same reservations may also hold for Theocharis's work.

[435] Of eight ^{14}C dates available from the earliest Thessalian Neolithic (the "preceramic"), three have appeared, without comment, in a table only: Coleman 209 (the dates are those from Argissa, with the prefix "H"); another two (UCLA-1657A and UCLA-1657D) are entangled in bizarre histories: Bloedow (supra n. 8) 50–53; no context for any of the eight dates has been adequately published. For disturbing problems with the dates from EN Achilleion as well, see Nandris (supra n. 119). Furthermore, we are doubtful that ^{14}C dates obtained early in the history of radiocarbon dating can be calibrated with confidence in the results.

[436] Cf. Runnels 1995 (supra n. 136) 725.

[437] Our colleagues in Turkish Thrace and Bulgarian Macedonia have, through systematic fieldwork, been able to resolve such dilemmas all the way to the borders of their countries with Greece: for Hoca Çeşme and Kovačevo, see respectively M. Özdoğan, Y. Miyake, and N. Özbaşaran Dede, "An Interim Report on Excavations at Yarımburgaz and Toptepe in Eastern Thrace," *Anatolica* 17 (1991) 81–82, and M. Lichardus-Itten, "Zum Beginn des Neolithikums im Tal der Struma (südwest-Bulgarien)," *Anatolica* 19 (1993), esp. 101–103.