

The Neolithic Settlement of Knossos in Crete

New Evidence for the Early Occupation
of Crete and the Aegean Islands

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The Neolithic Settlement of Knossos in Crete

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edited by

Nikos Efstratiou, Alexandra Karetsou, and Maria Ntinou



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To the memory of Professor J.D. Evans, a gentleman of British Archaeology

–Nikos Efstratiou

Table of Contents

List of Tables in the Text.....	ix
List of Figures in the Text.....	xiii
Preface, <i>Alexandra Karetsou</i>	xix
Acknowledgments.....	xxiii
Introduction, <i>Nikos Efstratiou</i>	xxv
1. The Excavation, <i>Nikos Efstratiou, Alexandra Karetsou, and Eleni Banou</i>	1
2. The Stratigraphy and Cultural Phases, <i>Nikos Efstratiou</i>	25
3. Fabric Diversity in the Neolithic Ceramics of Knossos, <i>Sarantis Dimitriadis</i>	47
4. Neolithic Sedimentology at Knossos, <i>Maria-Pilar Fumanal García[†]</i>	53
5. The Economy of Neolithic Knossos: The Archaeobotanical Data, <i>Anaya Sarpaki</i>	63
6. Wood Charcoal Analysis: The Local Vegetation, <i>Ernestina Badal and Maria Ntinou</i>	95
7. Plant Economy and the Use of Space: Evidence from the Opal Phytoliths, <i>Marco Madella</i>	119
8. The Knossos Fauna and the Beginning of the Neolithic in the Mediterranean Islands, <i>Manuel Pérez Ripoll</i>	133
9. The Earliest Settlement on Crete: An Archaeozoological Perspective, <i>Liora Kolska Horwitz</i>	171

10. Radiocarbon Dates from the Neolithic Settlement of Knossos: An Overview, <i>Yorgos Facorellis and Yiannis Maniatis</i>	193
11. Knossos and the Beginning of the Neolithic in Greece and the Aegean Islands, <i>Nikos Efstratiou</i> ...	201
Index.....	215

List of Tables in the Text

Table 4.1.	Correlation of sedimentology samples with excavation levels and cultural phases.....	55
Table 4.2.	Munsell color and calculation of statistical parameters of mean size, sorting, skewness, and kurtosis for each of the analyzed sedimentology samples.....	56
Table 5.1.	Seed list provided to J.D. Evans by Hans Helbaek (unpublished).....	67
Table 5.2.	List of archaeobotanical samples from the 1997 rescue excavation, along with relative and absolute dates.....	67
Table 5.3.	Aceramic Neolithic archaeobotanical sample E 97(30) from Knossos 1997 level 39, retrieved from 16 liters of water-floated soil.....	68
Table 5.4.	Measurements of <i>Triticum turgidum/aestivum</i> from Aceramic and EN levels at Knossos.....	71
Table 5.5.	Measurements of <i>Triticum dicoccum</i> , <i>Triticum monococcum</i> , <i>Hordeum vulgare</i> , and <i>Lens culinaris</i>	74
Table 5.6.	Early Neolithic I archaeobotanical (seed) samples.....	75
Table 5.7.	Measurements of <i>Trifolium</i> spp. and Leguminosae.....	78
Table 5.8.	Measurements of <i>Raphanus</i> cf. <i>raphanistrum</i> and <i>Linum</i> cf. <i>usitatissimum</i>	78
Table 5.9.	Early Neolithic II archaeobotanical (seed) samples.....	81

Table 5.10. <i>Vitis</i> sp. measurements from EN II levels; sketch of a grape seed showing locations of dimensions.....	85
Table 5.11. Middle Neolithic archaeobotanical (seed) samples.....	86
Table 5.12. Late Neolithic archaeobotanical (seed) samples.	88
Table 6.1. Inventories of plants growing in different parts of the study area.	99
Table 6.2. Absolute and relative frequencies of taxa identified in the wood charcoal assemblages from Neolithic Knossos.....	102
Table 6.3. Presence of plant taxa in wood charcoal assemblages from Neolithic Knossos, along with the total number of fragments analyzed and the total number of taxa identified in each level.	104
Table 7.1. Knossos 1997: south profile phytolith counts.	122
Table 7.2. Knossos 1997: west profile phytolith counts.....	125
Table 8.1. Number of identified and unidentified specimens by taxa and period.	135
Table 8.2. Measurements of bones from <i>Bos taurus</i>	135
Table 8.3. Measurements of bones from <i>Ovis aries</i> (<i>O.a.</i>) and <i>Capra hircus</i> (<i>C.h.</i>).....	136
Table 8.4. Measurements of bones from <i>Sus scrofa domesticus</i> , <i>Sus scrofa ferus</i> , <i>Capra aegagrus</i> , <i>Martes</i> , and <i>Meles meles</i>	138
Table 8.5. Number of identified specimens of <i>Bos</i> , <i>Ovis/Capra</i> , and <i>Sus</i> with number of marks caused by dog gnawing.....	140
Table 8.6. Early Neolithic I and EN II faunal remains.....	141
Table 8.7. Early Neolithic II/MN faunal remains.	142
Table 8.8. Middle Neolithic faunal remains.....	144
Table 8.9A. Late Neolithic faunal remains.	146
Table 8.9B. Late Neolithic faunal remains.	149
Table 8.10. Number of identified specimens of <i>Bos</i> and <i>Ovis/Capra/Sus</i> with burn marks.....	151
Table 8.11. Number of long bone remains (the diaphysis fragments are not counted here), phalanges, and tarsi corresponding to mature and immature bones, along with the number of LN tooth remains, grouped by age, for comparison with the long bones.....	156
Table 8.12. Number of mandibles (NM) for goats and sheep from the LN levels classified by age.....	157
Table 8.13. Number of mandibles (NM) of <i>Bos taurus</i> classified by age.....	158
Table 8.14. Number of maxillary and mandibular remains of <i>Sus scrofa domesticus</i> classified by age....	159
Table 8.15. Number of identified specimens of <i>Bos taurus</i> classified by sex.....	160
Table 8.16. Number of identified specimens of <i>Ovis aries</i> (<i>O.a.</i>) and <i>Capra hircus</i> (<i>C.h.</i>) classified by sex.....	160

Table 8.17. Chronological representation of the faunal species at Knossos.....	161
Table 8.18. Percentages of identified specimens of domestic and wild species at Knossos and other sites.....	161
Table 8.19. Representation and abundance of various faunal species at Shillourokambos, Ais Yiorkis, and Khirokitia.....	162
Table 8.20. Introduction and chronological representation of wild animals at various sites in Crete....	163
Table 9.1. Relative frequencies (percentages) of animal species from Knossos.....	175
Table 9.2. Schematic representation of the relative chronology (cal. B.C. dates) of sites mentioned in the text.....	183
Table 10.1. Summary of the British Museum radiocarbon dates on charcoal from the excavations of J.D. Evans at Neolithic Knossos, sorted by age.....	194
Table 10.2. Description of the samples dated in the British Museum Research Laboratory.....	195
Table 10.3. Summary of radiocarbon dating results of carbonized samples collected in 1997 from the Neolithic settlement levels at Knossos.....	196

List of Figures in the Text

Frontispiece. The city, the fortifications, the harbor, and the hinterland of Khandax (Herakleion) in the first half of the 17th century. Map by unknown cartographer, 17th c., Collezione Museo Civico, Padua. Vikelaia Municipal Library, Herakleion.	ii
Figure i. The Minoan palace and its Neolithic past.	xxi
Figure 1.1. Plan of the Palace of Knossos showing the Central Court and the location of the excavation.	2
Figure 1.2. Trench II: (a) view of the Central Court of the Palace, looking northeast; (b) view of the area of the rescue dig, looking northeast; (c) view looking northeast of the stratigraphy of the upper part of the trench in the souther profile.	3
Figure 1.3. Plan of the excavation trenches next to the staircase.	3
Figure 1.4. South and west stratigraphic profiles of the trench.	4
Figure 1.5. View of excavation level 4, showing hearth in northwest corner of the trench.	5
Figure 1.6. Plans of excavation levels 9 and 10.	7
Figure 1.7. Plan of excavation level 12, showing the round <i>kouskouras</i> feature (12A) in southwest corner.	8
Figure 1.8. View of excavation level 12, showing <i>kouskouras</i> deposit and feature (12A) in northwest corner.	8

Figure 1.9.	Plan of excavation level 13.	9
Figure 1.10.	Plan of excavation level 14, showing hearth in northwest corner.	9
Figure 1.11.	View of excavation level 14, showing hearth in northwest corner.	10
Figure 1.12.	Plans of excavation levels 15 and 16, showing appearance of walls 1 and 2 running from north to south.	11
Figure 1.13.	View of excavation level 15 from above.	12
Figure 1.14.	View of excavation level 16 from above.	12
Figure 1.15.	View of excavation level 16 facing west section.	12
Figure 1.16.	Plan of excavation level 17, showing walls 1 and 2 and the first appearance of walls 3 and 4.	12
Figure 1.17.	View of level 17 facing west section.	13
Figure 1.18.	View of excavation level 18 from above.	13
Figure 1.19.	View of excavation level 19 from above.	13
Figure 1.20.	Plan of excavation level 21, showing walls 3, 4, 5, and 6.	13
Figure 1.21.	View of excavation level 21 from above.	14
Figure 1.22.	View of excavation level 23.	14
Figure 1.23.	View of excavation level 24, showing wall 7 and grinding stones.	14
Figure 1.24.	Plans of excavation levels 22 and 24.	15
Figure 1.25.	Plan of excavation level 27.	16
Figure 1.26.	View of excavation level 28 from above.	16
Figure 1.27.	View of excavation level 28 facing west profile.	16
Figure 1.28.	Plans of excavation levels 29–29a and 30–30a, showing walls and hearths.	17
Figure 1.29.	View of level 29A, showing hearths 1, 2, and 3.	18
Figure 1.30.	View of excavation level 30, showing hearth 4.	18
Figure 1.31.	View of excavation level 30, showing hearth 4 and the elliptical structure.	19
Figure 1.32.	View of the elliptical stone wall from levels 24–27.	19
Figure 1.33.	View of excavation level 31.	19
Figure 1.34.	Plans of excavation levels 31, 32, and 34, showing hearths 5, 6, and 7.	20
Figure 1.35.	Plan of excavation level 37, showing pits 1 and 2.	21
Figure 2.1.	Sedimentological samples of the middle part of the south profile.	26
Figure 4.1.	Fine fraction granulometry (%) of the samples from the west profile.	57
Figure 4.2.	The organic content (%) of the samples from the west profile.	57
Figure 4.3.	The carbonate content of the samples from the west profile.	57

Figure 4.4.	Morphoscopy of sands without acid treatment.....	57
Figure 4.5.	Morphoscopy of sands after the elimination of calcareous grains (subsequent to acid treatment).....	57
Figure 5.1.	Drawing of <i>Triticum turgidum</i> L./ <i>T. aestivum</i> from the 1997 excavations at Knossos.	69
Figure 5.2.	Graphs of measurements and measurement ratios of <i>Triticum turgidum/aestivum</i> from Neolithic Knossos.....	72
Figure 5.3.	Measurements of <i>Triticum turgidum/aestivum</i> from Aceramic and Early Neolithic Knossos compared with average values for Erbabab, Ramad, and Bouqras in the Near East.	73
Figure 5.4.	Graphs of measurements and measurement ratios of <i>Lens culinaris</i> from Neolithic Knossos.....	74
Figure 5.5.	Early sites including those from mainland Greece where <i>Triticum turgidum/aestivum</i> is reported: 1. Tell Abu Hureyra, 2. Tell Halula, 3. Tell Aswad, 4. Tell Ghorafe, 5. Tell Sabi Abyad, 6. Servia, 7. Cafer Höyük, 8. Dhali Agridhi, 9. Otzaki, 10. Sesklo, 11. Sitagroi, 12. Haçilar, 13. Aşkli Höyük, 14. Çatal Höyük, 15. Can Hasan, 16. Cayönü, 17. El Kown, 18. Bouqras, 19. Tell Ramad.....	89
Figure 5.6.	Summary of the distribution of all categories of archaeobotanical remains at Neolithic Knossos.....	90
Figure 6.1.	Climate and topography of Knossos: (a) mean annual precipitation in Crete; (b) topographic map of the area around Knossos; (c) west–east topographic section; (d) southwest–northeast topographic section.....	96
Figure 6.2.	View of the Knossos valley from Mt. Juktas showing present-day vegetation.	98
Figure 6.3.	Panoramic view of the site of Knossos showing present-day vegetation.....	98
Figure 6.4.	Present-day phrygana vegetation on the hills in the study area.....	98
Figure 6.5.	Present-day vegetation on deep soils in the study area.....	98
Figure 6.6.	Anatomy of plant taxa identified in wood charcoal assemblages from Neolithic Knossos.....	106
Figure 6.7.	Wood charcoal diagram from Neolithic Knossos showing relative frequencies of taxa in successive excavation levels.....	108
Figure 7.1.	Bar chart of phytolith percentage frequencies from the south profile.....	122
Figure 7.2.	Bar chart of C ₃ and C ₄ phytolith percentage frequencies from the south profile.....	122
Figure 7.3.	West profile stratigraphy and sampling.....	123
Figure 7.4.	Bar chart of phytolith percentage frequencies from the west profile.	124
Figure 7.5.	Bar chart of C ₃ and C ₄ phytolith percentage frequencies from the west profile.	125
Figure 7.6.	Trench section (southwest corner to west face) with phases identified according to phytolith composition and frequencies.	127

Figure 7.7.	Silica skeleton from grass leaf (long cells and a stoma) from the EN I deposits (sample XXa, level 32).	129
Figure 7.8.	Wheat-type silica skeleton from the EN I deposits (sample XXIVb, level 32).	129
Figure 7.9	Silica skeleton from a dicotyledonous plant from the EN I deposits (sample XIV, level 30).	129
Figure 7.10.	Millet-type silica skeleton from the EN II deposits (sample Xa, level 16).	129
Figure 8.1.	Percentages of the osseous parts of cattle long bones.	139
Figure 8.2.	Percentages of the osseous parts belonging to the long bones of middle-sized mammals (goats, sheep, and pigs).	139
Figure 8.3.	Skeletal fragments of long bones of <i>Ovis/Capra</i> from level 14, all with dog-gnawing marks.	140
Figure 8.4.	Fragments of proximal epiphyses of femur and tibia of <i>Bos taurus</i> with fracture marks caused by impacts from the extraction of marrow, level 24.	151
Figure 8.5.	Animal bones from level 3: (a) radius diaphysis; (b) radius proximal part; (c) scapula; (d) fragment of femur; (e) phalanx I of <i>Capra aegagrus</i>	153
Figure 8.6.	Distal metacarpus of <i>Capra aegagrus</i> and <i>Ovis aries</i>	153
Figure 8.7.	Animal bones: (a) ulna in lateral view probably belonging to a wild boar (level 23); (b) <i>Sus scrofa ferus</i> : canine fragment (level 10); (c) <i>Sus scrofa domesticus</i> : ulna in lateral view (level 14).	154
Figure 8.8.	Diaphysis width range (SD) of <i>Sus scrofa domesticus</i> and <i>Sus scrofa ferus</i> from Zambujal (Portugal), Cerro de la Virgen (Spain), Argissa-Magula, and Knossos.	154
Figure 8.9.	<i>Meles meles</i> : (a) left mandible in lateral view (level 14); (b) lower canine (level 14); (c) left ulna in medial views; the proximal epiphysis is not fused (level 3). <i>Martes</i> : (d) distal part of humerus in cranial view (level 9).	155
Figure 8.10.	Age classes of the mandibles of <i>Ovis</i> and <i>Capra</i>	157
Figure 8.11.	Age classes of the mandibles of <i>Bos taurus</i>	158
Figure 8.12.	Distal part of metacarpus belonging to a male (possibly ox) of <i>Bos taurus</i> , with osseous deformations on the articular surfaces.	158
Figure 8.13.	Age classes of <i>Sus scrofa domesticus</i> maxillae and mandibles.	159
Figure 8.14.	Correlation of the measurements of phalanx I belonging to <i>Bos taurus</i>	160
Figure 9.1.	Map showing location of sites mentioned in the text: 1. Ashkelon; 2. 'Ain Ghazal; 3. Atlit Yam; 4. Hagoshrim and Tel Ali; 5. Ras Shamra; 6. Cap Andreas Kastros; 7. Khirokitia; 8. Tenta; 9. Asikli Höyük; 10. Mersin; 11. Can Hasan III; 12. Çatalhöyük; 13. Suberde; 14. Haçılar; 15. Nea Nikomedeia; 16. Argissa-Magula; 17. Sesklo; 18. Achilleion; 19. Franchthi Cave; 20. Sidari, Corfu; 21. Cave of the Cyclops, Youra; 22. Melos; 23. Santorini; 24. Knossos, Crete; 25. Tel Aray 2; 26. Umm el Tlel; 27. Qdeir; 28. El Kowm 2.	173
Figure 9.2.	Adult male <i>agrimi</i> (<i>Capra aegagrus cretica</i>) showing phenotypic resemblance to the wild bezoar goat.	177

- Figure 10.1. Distribution of calibrated dates sorted by stratum of the samples from the excavations of J.D. Evans. 198
- Figure 10.2. Distribution of calibrated dates sorted by depth of the samples from the 1997 archaeological campaign..... 198
- Figure 10.3. Calibrated radiocarbon dates from the 1997 excavation at Knossos plotted against the depth of the samples in order to determine the accumulation rate of the habitation deposits..... 198

Preface

The site of Knossos on the Kephala hill in Crete is of great archaeological and historical importance for Greece and Europe. Dating back to 7000 B.C., it is the home of one of the earliest farming societies in southeastern Europe. In later Bronze Age periods, it developed into a remarkable center of economic and social organization within the island, enjoying extensive relations with the Aegean, the Greek mainland, the Near East, and Egypt. Arthur Evans excavated the site at the beginning of the 20th century, and through his extensive and spectacular restoration and reconstruction efforts, he transformed Knossos into one of the most popular archaeological sites in the Old World (Evans 1901, 1921–1935, 1927, 1928). Knossos is now best known among both specialists and the wider public for its unique central building, conventionally called a palace, which is one of the earliest archaeological monuments to have been restored on such a scale.

What was not apparent during the early archaeological research at the site was the impressive extent and depth of the earlier habitation that lies under the imposing palace, even though

the laborious work of Arthur Evans and Duncan Mackenzie in the early 20th century had revealed considerable amounts of Neolithic material (Mackenzie 1903). In 1953 Audrey Furness studied and published the Neolithic pottery from Evans's test soundings with the aim of testing the three "Stone Age" periods discussed by Mackenzie (Furness 1953). The successful work of Furness led the British School at Athens to launch a series of systematic investigations at Knossos, directed by Sinclair Hood and John D. Evans, from 1956 to 1971 (Evans 1964, 1971, 1994; Warren et al. 1968). The well-known Trenches A to C, which were opened in the area of the Central Court of the palace, together with the peripheral soundings X and ZE, confirmed a chronological sequence of 10 strata representing at least 4,000 years of Neolithic occupation, including the still-disputed Aceramic phase. Looking back at the announcement by J.D. Evans (1971) of the first and very early radiocarbon dates for the founding of Knossos (7000 B.C.), I cannot forget the welcome surprise with which these dates were received, and I am very happy to

see that our recent radiocarbon dates, published in this volume, confirm Evans's early chronology that was attained without the benefit of our modern technology.

Other contributions to our knowledge of the Neolithic of Crete include the work of Richard M. Dawkins at Magasa in eastern Crete in 1905 (Dawkins 1905), the investigations of Angelo Mosso and Doro Levi at Phaistos (Mosso 1908), the publication of the Phaistos material by Lucia Vagnetti (Vagnetti 1972–1973), and the pioneering research at Katsambas by Stylianos Alexiou (1953, 1954). The forthcoming publication of Katsambas by Nena Galanidou and her associates (Galanidou, ed., forthcoming) and the study of the material from older fieldwork at Gerani and Pelekita in the Zakros area, carried out by Yiannis Tzedakis and Costis Davaras, respectively (Tzedakis 1970; Davaras 1979), are expected to offer more data regarding the early occupational horizon of Crete. The recent publication by Valasia Isaakidou and Peter Tomkins of *The Cretan Neolithic in Context* (Isaakidou and Tomkins, eds., 2008), the latest rescue excavations carried out by the Ephorate of Central Crete in the vicinity of Katsambas, and, most importantly, the announced presence of Mesolithic material on the islands of Crete and Gavdos, show that early prehistoric research in Crete and its immediate environs is a dynamic field of investigation.

A series of archaeological test soundings was opened in February 1997 in conjunction with the planning of the course of the main and secondary visitors' routes through the palace, a process that involved widening the existing paths, establishing new ones, and examining the state of the building's foundations. The south and east slopes of the Kephala hill were the main focus of investigation (Karetsou 2004; Ioannidou-Karetsou 2006). This research was prompted by the architect Clairly Palyvou's suggestion to double the width of the modern narrow stone stair leading from this part of the Central Court to the first level of the Grand Staircase, where A. Evans made his last attempt to restore the Medallion Pithoi. The investigation, which lasted five weeks, was carried out under difficult weather conditions and according to a very strict timetable.

We were all happily surprised that in an area often disturbed for conservation work in the 1950s

and 1960s, including the opening of rainwater channels, deep pre-Minoan deposits remained intact just a few centimeters under the visitors' feet. I took this to be a sign of good fortune, since, after three decades of personal, systematic involvement with Minoan archaeology, the dream of my youth to look down to the "Neolithic Cretan time" was becoming a reality.

A collaboration with colleagues familiar with the excavation of Neolithic sites and modern data collection and analysis methods was my next immediate concern. The chance to reexamine the succession of Neolithic occupation strata on the Kephala hill-top, some 50 years after the first such investigation at Knossos, presented me with great expectations and challenges. Professor Nikos Efstratiou of the Aristotle University of Thessaloniki contributed greatly to the success of the project, and I would like to take this opportunity to thank him. He was responsible both for the selection of the researchers who gathered at Knossos with very short notice that February and for the coordination of the project. In addition, Professor Giorgos Hourmouziadis, also of the Aristotle University of Thessaloniki, was very helpful.

Many thanks are due as well to my colleague Dr. Eleni Banou, who participated in the excavation on behalf of the Ephorate, to Nikos Daskalakis, the skilled foreman of the Knossos project, and to the late Andreas Klinis, also a Knossos foreman and a man of rare excavation experience.

The general aims of the investigation in the Central Court of Knossos in 1997 were (1) to readdress questions related to the old material and conclusions reached many years ago, and (2) to obtain new data, which, considering the nature of the archaeological site, with the palace standing on top of the Neolithic tell, would have been otherwise impossible. More specific objectives included the careful study of the stratigraphy for the confirmation or revision of the already established Neolithic sequence, the determination of whether the alleged Aceramic phase was represented, the collection of new evidence for the Neolithic ceramic sequence, and the recovery of new archaeozoological and archaeobotanical data and the analysis of their stratigraphic distribution (Efstratiou et al. 2004). Most importantly, the archaeological information was to be gathered and studied using methodologies that were not available in the past—sedimentological

analyses, which might clarify the occupational gaps in the impressive Neolithic palimpsest, phytolith analyses, ceramic technological analyses, paleoenvironmental observations, and, most significantly, new radiocarbon analyses for the establishment of a reliable sequence of dates.

The many archaeological questions relating to the long Neolithic habitation of the Knossos tell had always intrigued me, especially during my 12 years of service (1992–2004) as head of the Knossos Conservation Project. I was impressed by the extent of the Neolithic settlement and the density of the scattered material, especially that of

the Late and Final Neolithic periods (Fig. i). I was enormously pleased by the opportunity we had to investigate this early Cretan farming community, buried deep under the glorious Minoan palace, and to contribute to its understanding. There is no doubt that the Knossos Neolithic settlement—whether or not it was the first and only one in Crete—constitutes one of the earliest agricultural communities in Greece, and it is also surely the earliest in the Aegean islands.

Alexandra Karetsou
 Honorary Ephor of Antiquities

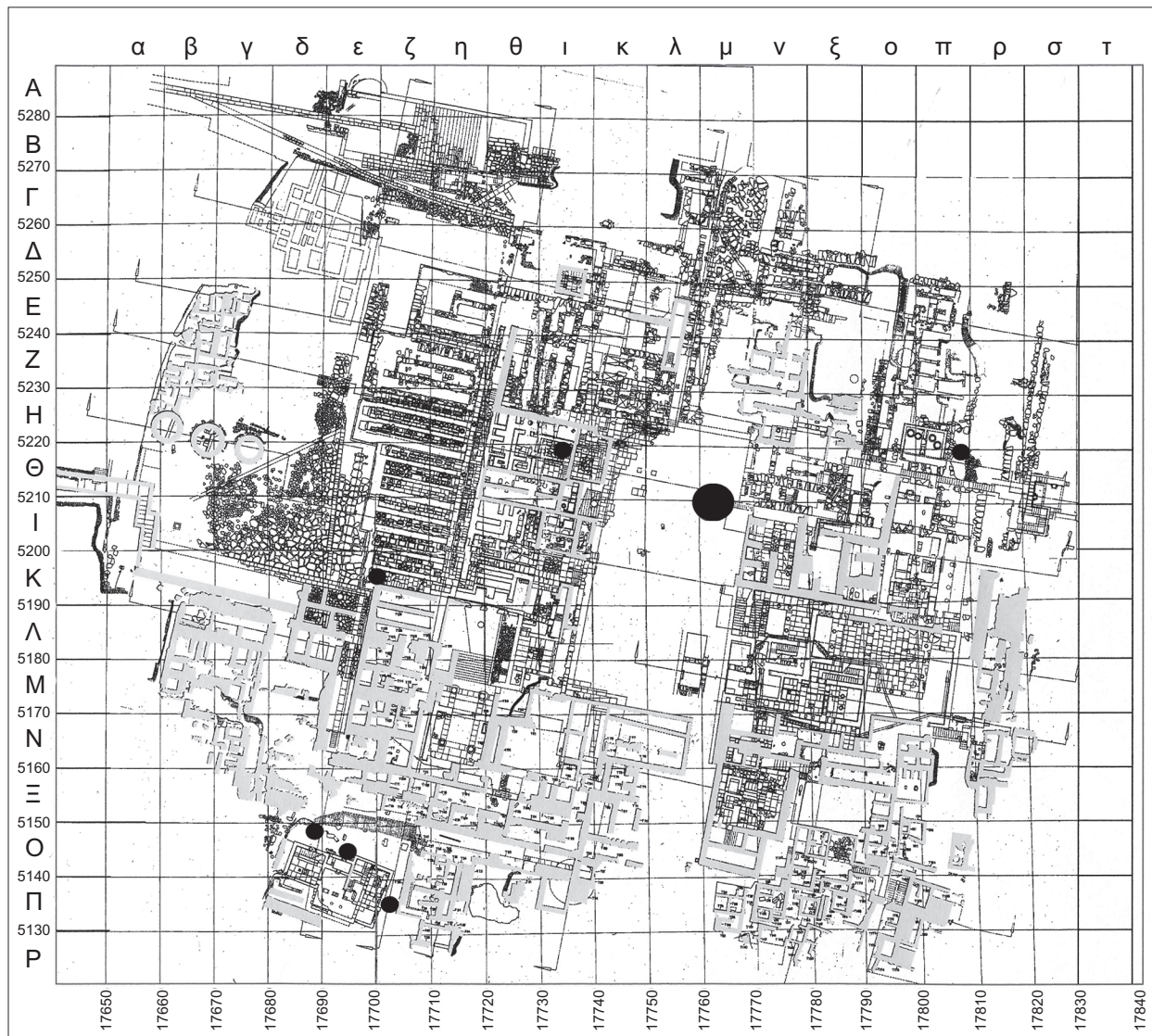


Figure i. The Minoan palace and its Neolithic past; areas where Neolithic deposits and ceramics are found are indicated with black dots (1997–2004).

References

- Alexiou, S. 1953. "Ανασκαφή Κατσαμπά Κρήτης," *Prakt* 108 [1956], pp. 299–308.
- . 1954. "Ανασκαφή Κατσαμπά Κρήτης," *Prakt* 109 [1957], pp. 369–374.
- Davaras, C. 1979. "Σπήλαιο Πελεκητών Ζάκρου," *ArchDelt* 34 (B', 2 Chronika), pp. 402–404.
- Dawkins, R.M. 1905. "Excavations at Palaikastro. IV.2: Neolithic Settlement at Magasá," *BSA* 11, pp. 260–268.
- Efstratiou, N., A. Karetsoy, E. Banou, and D. Margomenou. 2004. "The Neolithic Settlement of Knossos: New Light on an Old Picture," in *Knossos: Palace, City, State. Proceedings of the Conference in Herakleion Organised by the British School of Athens and the 23rd Ephoreia of Prehistoric and Classical Antiquities, in November 2000, for the Centenary of Sir Arthur Evans's Excavations at Knossos (BSA Studies 12)*, G. Cadogan, E. Hatzaki, and A. Vasilakis, eds., London, pp. 39–51.
- Evans, A.J. 1901. "The Neolithic Settlement at Knossos and Its Place in the History of Early Aegean Culture," *Man* 1, pp. 184–186.
- . 1921–1935. *The Palace of Minos at Knossos I–IV*, London.
- . 1927. "Work of Reconstruction in the Palace of Knossos," *AntJ* 7, pp. 258–266.
- . 1928. "The Palace of Knossos and Its Dependencies in the Light of Recent Discoveries and Reconstructions," *Journal of the Royal Institute of British Architects* 36, pp. 90–102.
- Evans, J.D. 1964. "Excavations in the Neolithic Settlement of Knossos, 1957–60: Part I," *BSA* 59, pp. 132–240.
- . 1971. "Neolithic Knossos: The Growth of a Settlement," *PPS* 37, pp. 95–117.
- . 1994. "The Early Millennia: Continuity and Change in a Farming Settlement," in *Knossos: A Labyrinth of History. Papers in Honour of S. Hood*, D. Evely, H. Hughes-Brock, and N. Momigliano, eds., Oxford, pp. 1–20.
- Furness, A. 1953. "The Neolithic Pottery of Knossos," *BSA* 48, pp. 94–134.
- Galanidou, N., ed. Forthcoming. *The Neolithic Settlement by the River Kairatos: The Alexiou Excavations at Katsamba*.
- Ioannidou-Karetsoy, A. 2006. "Από την Κνωσό μέχρι τη Ζάκρο: Η περιπέτεια της προστασίας των ιστορικών αρχαιολογικών χώρων στην κεντρική και ανατολική Κρήτη," in *Conservation and Preservation of the Cultural and Natural Heritage of the Large Islands of the Mediterranean*, V. Karageorghis and A. Giannikouri, eds., Athens, pp. 61–76.
- Isaakidou, V., and P. Tomkins, eds. 2008. *Escaping the Labyrinth: The Cretan Neolithic in Context (Sheffield Studies in Aegean Archaeology 8)*, Oxford.
- Karetsoy, A. 2004. "Knossos after Evans: Past Interventions, Present State and Future Solutions", in *Knossos: Palace, City, State. Proceedings of the Conference in Herakleion Organised by the British School of Athens and the 23rd Ephoreia of Prehistoric and Classical Antiquities, in November 2000, for the Centenary of Sir Arthur Evans's Excavations at Knossos (BSA Studies 12)*, G. Cadogan, E. Hatzaki, and A. Vasilakis, eds., London, pp. 547–555.
- Mackenzie, D. 1903. "The Pottery of Knossos," *JHS* 23, pp. 157–205.
- Mosso A. 1908 "Ceramica neolitica di Phaestos e vasi dell'epoca minoica primitiva," *MonAnt* 19, pp. 142–228.
- Tzedakis, I. 1970. "Αρχαιολογική Έρευνε Άνασκαφή Σπήλαιο Γερανίου," *ArchDelt* 25 (B', 2 Chronika), pp. 474–476.
- Vagnetti, L. 1972–1973. "L'insediamento neolitico di Festòs," *ASAtene* 34–35, pp. 7–138.
- Warren, P., M.R. Jarman, H.M. Jarman, N.J. Shackleton, and J.D. Evans. 1968. "Knossos Neolithic, Part II," *BSA* 63, pp. 239–276.

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Introduction

Nikos Efstratiou

The construction of a staircase extension in the northeastern part of the Central Court of the Palace of Minos at Knossos prompted the opening of a new excavation trench in 1997. After the systematic excavation of the deep Neolithic occupation levels by J.D. Evans in the late 1950s (1964, 132) and later, more limited investigations of the Prepalatial deposits undertaken primarily during restoration work, no thorough exploration of the earliest occupation of the mound had been attempted. Although our operation was to be swift and limited in extent, we knew that the opening of a trench destined to reach the basal layers of the settlement offered us the opportunity to address many old and new research questions concerning the chronological, socioeconomic, and spatial aspects of Cretan Neolithic society (Evans 1994, 1).

Since the time of Evans's research, excavation techniques and field methods have developed rapidly, and a new, more complex picture of late Pleistocene and early Holocene developments in the Aegean and the eastern Mediterranean has emerged. The chance to reexamine the important

but inconspicuous Neolithic deposits of the Knossos tell afforded both an appealing and a demanding challenge.

While the Bronze Age palace dominates the historiography of the site and its archaeological image, the Neolithic settlement at Knossos does not hold the position it deserves in discussions of the early prehistory of the eastern Mediterranean, in part because of the limited research directed toward the early prehistory of Crete and the other Aegean islands. Moreover, the publication of the Neolithic settlement has been confined to a few preliminary though excellent field reports and short studies produced by Professor J.D. Evans and his collaborators (1964, 132; 1971, 95; Warren et al. 1968, 239). When attempted, previous syntheses of this material have been either very cautious analyses of the limited data (Evans 1994, 1) or provocative interpretations containing attractive but ill-founded speculations (Broodbank 1992, 39; Whitelaw 1992, 225). Additional Neolithic material recovered from later small field investigations focusing on Bronze Age deposits has been welcome, but because such

information is scarce, it cannot provide the answers to many open questions (Manteli and Evely 1995, 1).

It is fortunate that certain categories of the archaeological material from Evans's investigations have recently undergone detailed reexamination with respect to issues of spatial organization, ceramic typology and technology, lithics, and faunal remains (Isaakidou and Tomkins, eds., 2008).

Despite these new and interesting studies, however, the need for a better understanding of the foundation and development of Neolithic Knossos continues. This impressive and long-lived settlement—one of the very few tells in Greece—is of paramount importance to the history of the eastern Mediterranean and the Near East (Berger and Guilaine 2009). Recent developments in the archaeology of Cyprus and the Aegean islands make the reevaluation of long-held concepts about this region and time period all the more urgent, as discussed in Chapter 11.

Although a number of rigorous surface reconnaissance projects have been undertaken in Crete in the past decades, Knossos remains the only early settlement known on the island (Manning 1999, 469). The methodology employed in these all-period surveys was not specifically designed to locate early sites, however. In the last few years field researchers have become increasingly critical of older methods used to identify traces of early habitation sites, especially in view of the geomorphological complexity of coastal and island areas (Runnels 2003, 121; Ammerman et al. 2006, 1). Until specially designed surface reconnaissance projects are carried out in various coastal areas, the presence of other early occupation sites in Crete remains an open possibility. Thus, the recently reported results of the Plakias Mesolithic Survey in Crete, in which a number of pre-Neolithic sites rich in lithic scatters were identified along the southern coast of the island, do not come as a surprise (Strasser et al. 2010). Indeed, current research in Cyprus indicates that we may encounter more new and unexpected late Pleistocene and early Holocene finds in the eastern Mediterranean (Ammerman 2011). Many older views of early habitation patterns in the Aegean islands should now be treated with skepticism (Cherry 1990, 145).

The newly found Mesolithic habitation remains along the south coast of the island may ultimately support claims of a missing Early Neolithic (EN)

horizon in Crete. In the meantime, the apparent uniqueness of Knossos within the island is hard to accept in cultural terms, and as we shall see in later chapters, such a perception is undermined, albeit indirectly, by the material remains (pottery, subsistence) from Knossos, along with other evidence. The key importance of Knossos, however, for documenting the beginning of farming in the Aegean and mainland Greece, whether as a distinctive stage within a westward mobility pattern of human groups or as a well-planned colonization episode involving specific Aegean islands, remains undiminished. At present the notion of a local transition to farming in Crete undertaken by a dynamic Mesolithic population seems improbable, as is the case in continental Greece, where the archaeological evidence for the arrival of new farming groups seems overwhelming (Perlès 2001).

Neolithic Knossos is also important, as suggested above, in the wider geographic context of the early island prehistory of the eastern Mediterranean. Recent discoveries on the island of Cyprus have revealed the presence of a number of pre-Neolithic inland and coastal sites, triggering an interesting debate about a possibly early date for the occupation of the largest eastern Mediterranean islands and the interpretation of this phenomenon as a historical process with its own distinctive cultural, technological, and ideological characteristics (Broodbank 2006; Ammerman 2010). Mounting archaeological evidence from the Aegean either supports or at least allows us to entertain a new picture of early island settlement (Sampson 2006). In this context, the founding of the early seventh millennium B.C. farming village of Knossos on the Kephala hill may still be viewed either as the result of a long pre-Neolithic process of development on the island or as the start of an intrusive occupation by farmers from the east. Archaeological evidence from the long stratigraphic sequence of the Knossos tell may be called upon to interpret this ambiguous cultural process. Indeed, in relation to mainland Greece, specific material evidence from Knossos, such as the EN sequence of pottery (fabric types, surface treatment), attests to idiosyncratic elements of a local island development (see Dimitriadis, this vol., Ch. 3). It is still too early to argue whether these characteristics should be interpreted as the outcome of island isolationism

and endogenous developments in Crete or as the manifestation of a more generalized and long-standing Aegean island cultural tradition. The former would undoubtedly have resulted in a number of other distinctive material features and perhaps oddities that we may search for in the archaeological record.

Both in terms of a pre-“historical” reconstruction and as far as the archaeology of the site itself is concerned, our endeavor entails a constant shift between different scales (“macro,” “micro”) and genres of field inquiry (e.g., use of space, radiocarbon dating, abandonment phases, faunal changes, pottery changes). The small size of our 1997 dig admittedly limits the overall representational validity of our findings at the site, but this does not deter us from addressing some of the broader issues mentioned above. We are particularly hopeful that the new studies presented here—sedimentology, phytoliths, anthracology, ceramic technology—together with the critical reevaluation of the other categories of material remains, such as the fauna and archaeobotany, will provide new and meaningful insights into the cultural sequence of

the Knossos settlement. The documentation of the tell’s stratigraphic sequence, which has a depth of more than 8 m, along with its comparison to the old and well-established succession of Evans’s strata (Efstratiou, this vol., Ch. 2), also contributes to these insights, as does the newly obtained series of radiocarbon dates from accelerator mass spectrometry (AMS), which seems to corroborate the existing chronological framework (Facorellis and Maniatis, this vol., Ch. 10).

All of the categories of material remains with the exception of the pottery are analyzed and presented in the following chapters of the monograph. The detailed study of the ceramics is still in progress and will appear in a separate volume. The contributors wish to underline the contingent nature of their results and syntheses, which are constrained by the limited area of the field investigation. Nevertheless, we hope that the rigor employed in the data collection, the meticulous study of the finds, the constant cross-checking with J.D. Evans’s record, and our final synthesis will balance this unavoidable difficulty.

References

- Ammerman, A.J. 2010. “The First Argonauts: Towards the Study of the Earliest Seafaring in the Mediterranean,” in *Global Origins (and Development) of Seafaring*, A. Anderson, J. Barrett, and K. Boyle, eds., Cambridge, pp. 81–92.
- . 2011. “The Paradox of Early Voyaging in the Mediterranean and the Slowness of the Neolithic Transition between Cyprus and Italy,” in *The Seascape in Aegean Prehistory (Monograph of the Danish Institute at Athens 14)*, G. Vavouranakis, ed., Athens.
- Ammerman, A.J., P. Flourentzos, C. McCartney, J. Noller, and D. Sorabji. 2006. “Two New Early Sites on Cyprus,” *RDAC* 2006, pp. 1–22.
- Berger, J-F., and J. Guilaine. 2009. “The 8200 cal BP Abrupt Environmental Change and the Neolithic Transition: A Mediterranean Perspective,” *Quaternary International* 200, pp. 31–49.
- Broodbank, C. 1992. “The Neolithic Labyrinth: Social Change at Knossos before the Bronze Age,” *JMA* 5, pp. 39–75.
- . 2006. “The Origins and Early Development of Mediterranean Maritime Activity,” *JMA* 19, pp. 199–230.
- Cherry, J.F. 1990. “The First Colonization of the Mediterranean Islands: A Review of Recent Research,” *JMA* 3, pp. 145–221.
- Evans, J.D. 1964. “Excavations in the Neolithic Settlement of Knossos, 1957–60: Part I,” *BSA* 59, pp. 132–240.
- . 1971. “Neolithic Knossos: The Growth of a Settlement,” *PPS* 37, pp. 95–117.
- . 1994. “The Early Millennia: Continuity and Change in a Farming Settlement,” in *Knossos: A Labyrinth of History. Papers in Honour of S. Hood*, D. Evely, H. Hughes-Brock, and N. Momigliano, eds., Oxford, pp. 1–20.
- Isaakidou, V., and P. Tomkins, eds. 2008. *Escaping the Labyrinth: The Cretan Neolithic in Context (Sheffield Studies in Aegean Archaeology 8)*, Oxford.

- Manning, S.W. 1999. "Knossos and the Limits of Settlement Growth," in *MELETEMATATA: Studies in Aegean Archaeology Presented to Malcolm H. Wiener on the Occasion of His 65th Birthday (Aegeum 20)*, P. Betancourt, V. Karageorghis, R. Laffineur, and W.-D. Niemeier, eds., Liège, pp. 469–482.
- Manteli, K., and D. Evely. 1995. "The Neolithic Levels from the Throne Room System, Knossos," *BSA* 90, pp. 1–16.
- Perlès, C. 2001. *The Early Neolithic in Greece: The First Farming Communities in Europe*, Cambridge.
- Runnels, C. 2003. "The Origins of the Greek Neolithic: A Personal View," in *The Widening Harvest: The Neolithic Transition in Europe. Looking Back, Looking Forward (Colloquia and Conference Papers 6)*, A.J. Ammerman and P. Biagi, eds., Boston, pp. 121–133.
- Sampson, A. 2006. *Προϊστορία του Αιγαίου*, Athens.
- Strasser T.F., E. Panagopoulou, C.N. Runnels, P.M. Murray, N. Thompson, P. Karkanas, F.W. McCoy, and K.W. Wegmann. 2010. "Stone Age Seafaring in the Mediterranean: Evidence from the Plakias Region for Lower Palaeolithic and Mesolithic Habitation of Crete," *Hesperia* 79, pp. 145–190.
- Warren, P., M.R. Jarman, H.N. Jarman, N.J. Shackleton, and J.D. Evans. 1968. "Knossos Neolithic, Part II," *BSA* 63, pp. 239–276.
- Whitelaw, T.M. 1992. "Lost in the Labyrinth? Comments on Broodbank's Social Change at Knossos before the Bronze Age," *JMA* 5, pp. 225–238.