Barbara Horejs • Mathias Mehofer (Eds.)
Western Anatolia before Troy
Proto-Urbanisation in the 4th Millennium BC?

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Preface by the Series Editor

These conference proceedings launch the new publication series Oriental and European Archaeology, OREA, initiated by the series editor after the institute of the same name was founded at the Austrian Academy of Sciences. It was endorsed by the publishing committee of the philosophical-historical class of the Academy as part of its canon of publications. The scientific quality of the new series is ensured by international peer review and integration into an active scientific environment. The new publication series is intended to mirror the supra-regional networked research at the Institute for Oriental and European Archaeology and present it as a consistent collection.

OREA deliberately considers the core zones of cultural developments in Europe and the Orient to act not as counterpoints, but rather as a common cultural bracket, in which undoubtedly very different dynamics and processes influenced the most important developments. The advanced specialisations of the various branches of archaeology and their corresponding regional foci are reflected in their publication cultures. The new series aims to achieve a cross-regional readership and authorship from both European and Oriental archaeology to consider and discuss these cultural areas as they relate to one another. In accordance with the research profile and expertise of the institute, the series concentrates on the prehistoric and early historical periods in human history. The series is open to all scientific approaches, as long as they support topics and discussions of basic archaeological research in this area. Monographs, primary publications of excavations, detailed studies, interdisciplinary and archaeometric analyses as well as conferences and manuals are equally welcome.

The OREA series starts with this volume, Western Anatolia before Troy. Proto-Urbanisation in the 4th Millennium BC?, which arose from the homonymous symposium in Vienna in 2012. The articles within constitute a first basic overview of new archaeological data from the 4th millennium BC – before the start of the Bronze Age in western Anatolia – in the context of the neighbouring regions of south-eastern Europe and the Aegean up to the Caucasus. The authors of this volume discuss fundamental cultural, ecological and economic issues. The compilation sheds new light on this period and highlights its importance for future research; it reflects the intense and insightful discussions during the symposium, for which I would like to thank everyone involved.

My sincere thanks go to the co-editor of this volume, Mathias Mehofer, the *Kunsthistorisches Museum* in Vienna, and all the organisers of the event, in particular the team of the ERC project Prehistoric Anatolia. Financial support for publication was provided by the Austrian Academy of Sciences, the University of Vienna and the European Research Council (ERC). The rapid production was enabled by two people: Angela Schwab, who designed the layout of the contributions, and Estella Weiss-Krejci, who oversaw the general editing. I would like to take this opportunity to acknowledge their commitment. I intend that this new series about Oriental and European archaeology will attract interested and avid readers as well as numerous active authors with innovative and pioneering research.

Vienna, 19 November 2014
Barbara Horejs
Series Editor
Director of the Institute for Oriental and European Archaeology

Introductory Remarks

This volume presents the scientific results of the international symposium *Western Anatolia before Troy – Proto-Urbanisation in the 4th Millennium BC?,* which took place in Vienna from November 21 to 24, 2012.

The initial idea for this conference emerged whilst discussing the role of metals in the Copper Age in western Turkey during our excavations at Çukuriçi Höyük. On the one hand, due to the sparse archaeological data published for the 5th and 4th millennia, further conclusions seemed premature. On the other hand, the archaeological picture of western Anatolia has changed fundamentally in the last decades, as there are long-term excavations in place that have been contributing new and important information to this old debate. The time seemed right to bring together specialists of western Turkey and the neighbouring regions to discuss new data in the light of socio-cultural processes in the period before Troy. Furthermore, following the results of the ERC research group (ERC project *Prehistoric Anatolia*), it appeared high time to focus on this period as it had been frequently neglected in the recent dynamic prehistoric research in western Turkey. The intermediate millennia between the archaeological focus on the Neolithic (and early Chalcolithic) of the 7th and 6th millennia BC with ground-breaking results and publications on the one hand and traditional research on the Early Bronze Age in the 3rd millennium BC with new input from important key sites on the other, remained more or less neglected.

The symposium in Vienna was organised with a narrow chronological focus on the 4th millennium BC in mind to initiate a first step in refreshing the scientific debate on this period. A circle of international experts in the field of archaeology, archaeozoology, archaeobotany, archaeometallurgy and climatology were invited and discussed various cultural phenomena, some of which stretch from across the Balkans to Mesopotamia. Moreover the contributions included a vast amount of new archaeological data and inspiring ideas about how to deal with this yet so nebulous period in the future.

Important key sites at the central Anatolian Aegean coast are presented and discussed in this volume, offering insights into the results of new excavations and ground-breaking new data for the 4th millennium BC. The western Anatolian sites discussed in detail include Çukuriçi Höyük (B. Horejs), Miletus I and Heraion/Samos (O. Kouka), Bakla Tepe (V. Şahoğlu – R. Tuncel) and Çine-Tepecik (S. Günel). In addition, the site survey at Alacalıgöl is presented and embedded in the middle and late Chalcolithic Troad (S. Blum), meanwhile B. Weninger and D. Easton discuss the Early Bronze Age chronology of Troy on the basis of pottery seriation and radiocarbon results. The Carian region is discussed by a re-evaluation of data previously recorded from Iasos (C. Gerber). This new collection of western Anatolian sites demonstrates convincingly that the region was permanently settled and indicates that the main developments of the following Early Bronze Age period were rooted in local, regional and intra-regional processes taking place in the 4th millennium BC in western Anatolia (Fig. 1).

The symposium aimed to shed light on these developments and focus in particular on the formation of centres of regional and supra-regional importance that emerged in western Anatolia and its neighbouring regions. It was therefore more than enlightening to discuss our region in relation to the broader geographical context of the Balkans, the Marmara Sea, the Greek mainland and Crete. The gap of knowledge about the 4th millennium BC (and the second half of 5th millennium BC) in eastern Thrace is reviewed by M. Özdoğan in the context of a complex research problem on a macro-regional scale. Integrated in a crucial critical discussion of data, he suggests that maritime contacts between central Anatolia and the northern Balkans might have taken place through the

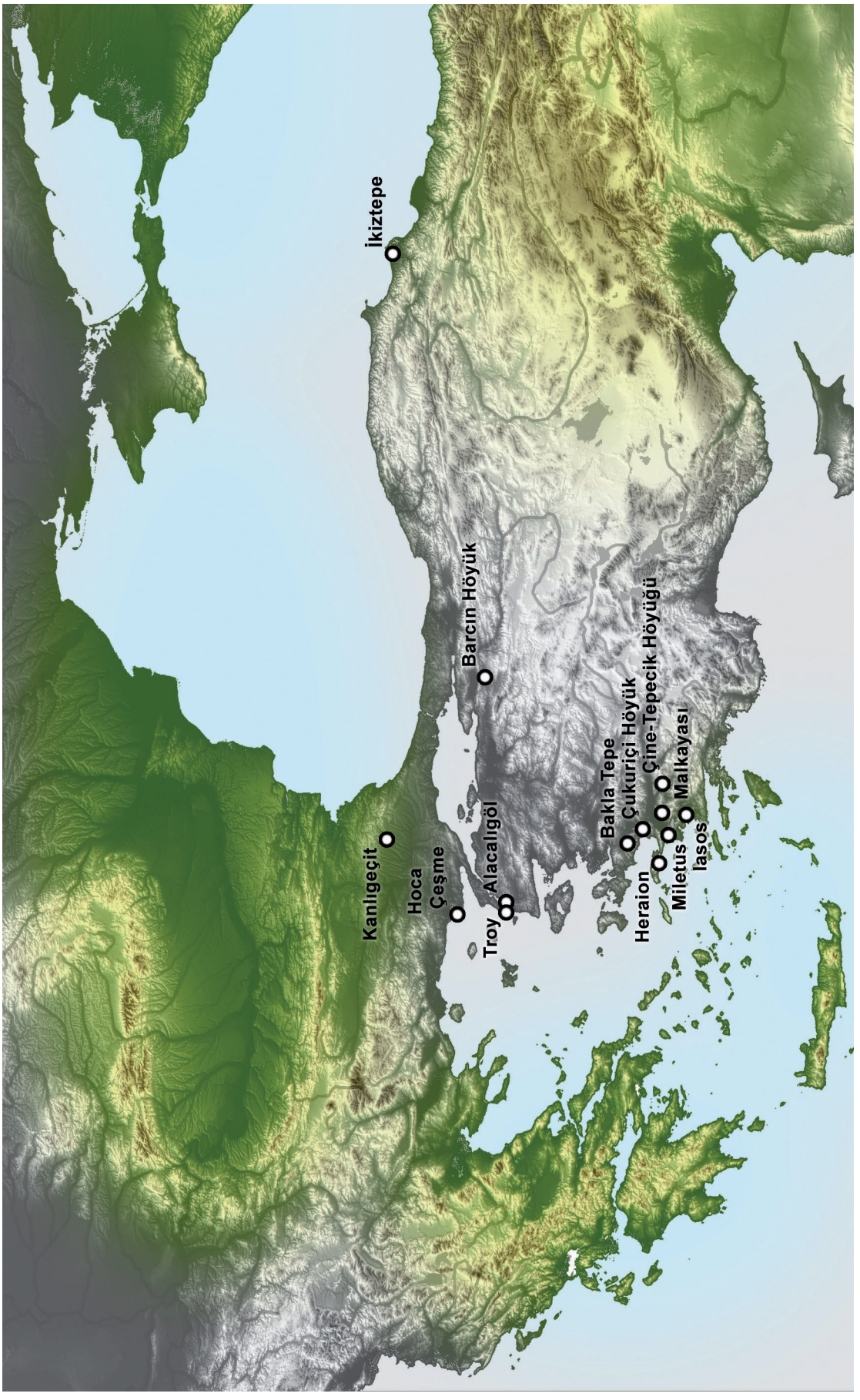

Fig. 1 Archaeological sites in Turkey whose excavations results are presented in detail in this volume. Adjacent areas also discussed are shaded green (design: M. Börner).

Black Sea, being quite aware of the chronological discrepancies. The western Pontic area in 5th millennium BC is characterised by well-organised rural societies, although a ranking of sites with one dominating centre cannot yet be established, as A. Reingruber argues. She identifies the high impact of craft specialisation on social transformations, the application of innovative technologies and intensified communication in the lower Danube region. This specific cultural package might be comparable to western Anatolia in the succeeding millennium. The general dynamics of this period are discussed in broad terms by S. Hansen, who characterises the "second half of the 4th millennium BC as one of the most significant chapters in the history of mankind by an expansion of power unknown until then". A cluster of key technical and social innovations can be observed in the Near East and western Eurasia. Future research in western Turkey could pick up Hansen's results and discuss the various elements of this bundle of innovations that were perhaps adapted and partially combined to a socio-cultural structure that finally lead to the Early Bronze Age homogeneity. The Balkan-Carpathian region in the 4th millennium BC is discussed by R. Krauß in the context of the Baden and Corded Ware cultures with new data from the site Foeni-Gaz.

The role of the Aegean in the 4th millennium BC and the current state of knowledge are analysed and debated in several contributions which include a range of new data from northern Greece to Crete. Recent chronological studies by Z. Tsirtsoni offer a re-evaluated and clear order of the transformation that took place in the Aegean. It includes problematising visibility in archaeology – an important aspect that should also be included in future discussions of western Anatolia. E. Alram-Stern adds an important focus on the distribution of pottery technologies and styles as well as on metallurgy to describe an already established Aegean network in that particular period. She furthermore points out the probable expansion of social organisation visible through fortifications and wells in Late Chalcolithic times. The role of Crete in the emergence of long-distance trade networks is pointed out by Y. Papadatos and P. Tomkins. Their interpretation of Kephala Petras as early gateway community offers ground-breaking new insights for understanding the role of coastal sites and their strategies of raw material procurement. P. Tomkins furthermore offers a broad overview of essential cultural developments and their chronological order in Crete from the Neolithic to the Early Bronze Age II.

The third main aspect of the symposium was the integration of archaeological data from the different regions with environmental and climate data as well as the reconstruction of subsistence strategies and high impact technologies. A broad geographical synopsis of climatic and environmental changes in the 4th millennium BC is provided by S. Riehl, K. Pustovoytov and H. Othmanli. Their diachronic analyses of archaeobotanical data of various sites lead to agricultural models for the period with a long-term shift from a protein- to a carbohydrate-dominated plant diet, probably related to an increase in aridity. Additional information about subsistence on regional levels in this volume is offered by A. Galik. His comparison of new faunal data revealed regional disparities in livestock management on the Late Chalcolithic sites of Barcın Höyük and Çukuriçi Höyük that are interpreted as being caused by the differing natural environments at the Marmara Sea on the one hand and the Mediterranean coast on the other. The important large cemetery of İkiztepe is discussed in the light of mobility, social organisation and integration by examining isotopes. L. Welton not only provides new radiocarbon data for this already intensively discussed necropolis, but also new evidence for transhumant pastoralism and its role in the social economy. I. Gatsov and P. Nedelcheva summarise lithic technology and raw material procurement strategies by presenting their lithic studies of various sites in the Balkans, the Marmara region and the east Aegean. U. Schoop draws our attention to the potential role of textile production in Late Chalcolithic Anatolia and its presumed socio-cultural impact in terms of economy and personal prestige. The development and role of metallurgy is discussed in both a broad and a narrow chronological and geographical context. E. Pernicka presents a broad geographical overview of the current state of early metallurgy between Mesopotamia, Asia and continental Europe including recent evidence dating to the 5th and 4th millennia BC. M. Mehofer provides new data from Çukuriçi Höyük, revealing intensive metallurgical activities in the 3rd millennium BC that are probably rooted in the Late Chalcolithic period.

The symposium was organised by the ERC project *Prehistoric Anatolia* and the Vienna Institute for Archaeological Science (VIAS) of the University of Vienna. For the financial and organisational support we want to express our gratitude to the ERC starting grant *Prehistoric Anatolia*, the Institute for Oriental and European Archaeology (OREA) of the Austrian Academy of Sciences, the Austrian Archaeological Institute (ÖAI), the Vienna Institute for Archaeological Science (VIAS) and the IDEE – Forum for Interdisciplinary Dialogue, University of Vienna. We would like to thank Sabine Haag and Georg Plattner for the friendly hosting of the symposium in the Art History Museum of Vienna (KHM) as well as Anton Kern for the interesting tour through the Natural History Museum of Vienna (NHM). The professional assistance by Christoph Schwall, Felix Ostmann, Johanna Traumüller and Maria Röcklinger ensured a perfectly organised symposium. Further editorial and linguistic work for the publication of the conference proceedings were carried out by Silvia Hack, Maria Martinez, Katharina Rebay-Salisbury, Estella Weiss-Krejci and Doris Würtenberger. We also would like to express our thanks to all anonymous reviewers for their valuable comments and suggestions.

Finally we warmly thank all authors and discussants for their inspiring contributions, which greatly enhanced our knowledge about the complex cultural processes and interactions that took place in the 4th millennium BC. We hope that this volume will both offer a rich variety of new data and models of interpretations for a broad audience and will inspire further investigations into the Late Chalcolithic period in western Anatolia and beyond.

Barbara Horejs, Mathias Mehofer
Vienna, 12 May, 2014

Tracing Complexity in 'the Missing Millennium': An Overview of Recent Research into the Final Neolithic Period on Crete

Peter Tomkins[1]

Abstract: Traditionally the Neolithic period on Crete has played no part in narratives of the origins of civilisation except perhaps rhetorically as a contrastive device employed to focus attention on the beginning of the Bronze Age as the phase when something new, more complex and more reassuringly 'modern' first emerged. However, during the last decade or so clarification of Neolithic chronology and thereby of the nature and timing of change, combined with detailed contextual study at key sites, most notably at Knossos and Phaistos, has revealed something of the complexities of social life in Cretan Neolithic communities and how it changed over time. The 4th millennium BC, corresponding to the latter part of the Final Neolithic phase, is emerging as a key period in the evolution from 'Neolithic' communities, constructed around communality and subjugated to the interests of the many, to 'Bronze Age' communities, constructed around inequality and driven by the interests of the few. This work has isolated the late Final Neolithic (FN) in particular as the real beginning of the Bronze Age, during which new identities and livelihoods, new cultures of acquisition and accumulation and new and more permanent forms of social difference and inequality first emerge. This paper will provide an overview of this emerging new picture and of new developments in how the 4th and early 3rd millennia on Crete are being theorised and explained. Given the focus of this volume, the paper will clarify the timing and nature of the changes that take place in Crete during this period up to the emergence of central buildings late in Early Bronze Age I (EB I) and urbanism in EB II.

Keywords: Greece, Crete, Minoan, Final Neolithic, Early Bronze Age, chronology, social evolution, initial urbanism

It is now more than four decades since C. Renfrew first drew attention to a 'fault line' separating 'historically-dated' chronologies, such as those sharing material linkages with Dynastic Egypt, from chronologies that relied solely on radiocarbon dating.[2] In the Aegean this fault-line divides off the 3rd millennium BC, a period known universally as the Early Bronze Age (EB), from the 4th millennium BC, a period known by different names in different regions (e.g. Late Chalcolithic, Late Neolithic, Final Neolithic, Late Aegean Neolithic, etc.). Research conducted either side of this 'fault line' has developed along radically different lines. Viewed as a pivotal period in the emergence of civilisation in Europe, the Early Bronze Age of the Aegean has attracted intense research activity over the course of the 20th century and is relatively well-defined and understood.[3] In contrast, just across the fault line, the period of the 4th millennium and earlier, has tended to be viewed as irrelevant to narratives of the emergence of greater social complexity or what has been termed 'civilisation'.[4] Consequently, it remained under-investigated and poorly understood; so much so, in fact, that as recently as 2001 it was still possible to speak of a 'missing millennium', symbolised by a "radiocarbon 'gap' in the 4th millennium BC across much of central and southern Europe, the Aegean and Anatolia".[5]

In this paper I will explore how and what we have learnt about the 'missing millennium' on Crete over the last decade or so. In the first part I will outline some general historiographical

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[2] Renfrew 1970; 1989.

[3] E.g. for recent reviews of EBA Crete see Wilson 2008; Tomkins – Schoep 2010; Tomkins, submitted b.

[4] E.g. Childe 1958; Branigan 1970; Renfrew 1972; see Schoop 2011; Tomkins, submitted b.

[5] Manning 2001, 168.

theoretical, methodological, empirical issues that have been faced and some solutions that were found. I do so in the belief that these are more widespread problems, shared with researchers working on the 4th millennium in other regions of the Aegean, and therefore in the hope that the solutions adopted for Crete might also be relevant to those working elsewhere. In the second part of the paper, I will outline some of the patterns to emerge from this recent work. What do the societies of the 4th millennium BC on Crete look like? What changes in complexity occur during this period, when and where? How has our new knowledge affected or transformed traditional views about the nature and timing of social evolution on the island, specifically the so-called 'emergence of Minoan civilisation'? Is there a sudden transformation in complexity at the beginning of the EBA, as convention holds, or is EB I an *artificial* 'fault line', created by the ways in which our forebears chose to frame and explain the past; that is, just a phase in a longer period of reconfiguration that began earlier in the 4th millennium BC. Finally, since the Vienna workshop also addressed the question of 'proto-urbanisation', the paper briefly touches upon the origins of urbanism in Crete, a task that takes it across the 'fault line' and into the 3rd millennium BC.

Tracing Complexity in the 4th Millennium BC Aegean: Some Considerations

Historiographical Considerations

In order to understand the current state of knowledge on the 4th millennium it is useful to reflect upon how the early historiography of Aegean prehistory has directed investigation and shaped interpretation. In the decades either side of the turn of the twentieth century Aegean prehistory was framed and explained by an elite group of influential and predominantly northwestern European scholars, whose agenda was to establish the prehistoric origins (racial, ethnic, historical) and geographies of national and European identities and to explain the cultural stages by which modern European civilisation emerged and evolved.[6] This Eurocentric, cultural-evolutionist project led them to seek out the earliest instances of key modern phenomena (e.g. farming, metallurgy, trade, monarchy, palaces, writing, etc.) and to focus their enquiries on 'top-end' complexity, the clearest examples of which were the 'palace civilisations' of Bronze Age Crete and Greece. Early influential interpreters, such as Arthur Evans and Gordon Childe, instinctively felt able to theorise this higher level complexity by drawing on their own understanding of modern western society and its history since the Renaissance. However, this personal experience was of little use for understanding earlier, less complex periods of existence, such as the Neolithic or indeed the Early Bronze Age. Instead these earlier periods tended to be defined and understood in opposition to what was called civilisation. They were thus understood *rhetorically*[7] according to their place in a grand narrative of the emergence of European civilisation, rather than *empirically*, that is in their own terms.[8] When prehistories are rhetorical rather than empirical the interpretation of data is significantly more fluid, such that it is perfectly possible for two opposing narratives to be sustained simultaneously from the same 'evidence'. Thus, for example, in the case of Crete, the same set of data was interpreted by Arthur Evans as indicating a rapid, revolutionary emergence of civilisation at the beginning of the Early Bronze Age, and by V. G. Childe as evidencing a much later, but similarly revolutionary, emergence of civilisation at the beginning of the Middle Bronze Age.[9]

One of the great achievements of Cretan Bronze Age studies of the last forty years has been to move understanding of the Early Bronze Age from a rhetorical to an empirical footing.[10] This task

6 Bintliff 1984; Thomas 2000, 14–18; Hamilakis 2002; Hamilakis – Momigliano 2006; Schoep 2010; Tomkins, submitted b.

7 Fotiadis 2006.

8 Tomkins 2004; 2010.

9 Tomkins, submitted b.

10 Branigan 1970; Renfrew 1972; Tomkins, submitted b for a review of the 'Early Minoan Project'.

was achieved through detailed chronological work, which transformed the resolution at which actual continuity and change could be measured and compared, through intensive and extensive investigation in the field and through integrated characterisation of artefactual and ecofactual datasets. While ultimately this empirical engagement has been extremely successful, it unfortunately had an upper chronological limit, defined by the earliest ceramic phase of the 'Early Bronze Age' on Crete. While it was obvious to some that this was an artificial limit – one effectively invented by A. Evans when he first drew the 'fault line' between Neolithic and Bronze Age in the deep stratigraphy he encountered at Knossos in 1900–1904 – it was generally believed that this conceptual boundary nevertheless enclosed the actual limit of variation relevant to study of the evolution of social complexity: i.e. to understand the emergence of civilisation one needed only to investigate the Bronze Age.

This sustained a 'Catch 22' where the (later) Neolithic of Crete continued to be perceived as irrelevant and so was not systematically investigated; but where this supposed irrelevance would remain rhetorical assertion rather than empirical fact until such systematic investigation took place. In this way the 4th millennium BC on Crete was under-investigated and under-theorised, isolated by Evans' chronological, conceptual and investigative fault line and inevitably ignored by narratives of social evolution. This story – of how our own artificial, inherited categories have constrained our engagement with certain periods of the past – is one that I suspect will be familiar to others working on the 'wrong' side of the 'fault line' elsewhere in the prehistoric Aegean.

Theoretical Considerations

A second factor complicating investigation of social complexity during the 4th millennium BC is theoretical. How can we move from a rhetorical understanding of past small-scale societies, in which our own assumptions and preconceptions drive our narratives, to an *actual* understanding of past social lives, which accords more closely with how the social was actually lived and experienced? One approach, successfully pursued for the Greek Neolithic since the early 1980s, has been to take cross-culturally defined anthropological concepts (e.g. household, community, production, exchange, consumption), and use them to think through our data.[11] In this way by considering how small-scale societies of the recent past organised themselves and operated we gain not only a better understanding of the constraints and possibilities of existence in such societies, but also an alternate perspective from which to critically assess the specificities of our own experiences of the social.

Central to this work has been the concept of the household as a socioeconomic unit[12] and its seemingly close applicability to the Neolithic data. Neolithic sites throughout the Aegean are composed of multiple architectural sub-units that seem to mark the existence of multiple, co-residing groups that were active in the domains of production, consumption and exchange. By mapping variation in how Aegean households operated and cooperated during different periods of the Neolithic researchers have sketched a general evolution in the nature and complexity of societies during the Neolithic and into the Bronze Age. The nature of this long-term evolution is rendered clearest by comparing and contrasting communities of the 7th millennium with those of the 3rd millennium BC. In this way one can trace an evolution from the communal societies of the earlier Neolithic, where the interests of specific groups were subordinate to those of the many, to the unequal societies of the EBA, where the interests of the many are subordinate to and driven by the interests of a few.[13] But between these two extremes, the nature and timing of the subtle shifts that occurred along the way are often unclear. Thus far the focus has fallen on what appears

[11] E.g. Halstead 1981a; Halstead 1981b; Halstead 1999; Kotsakis 1999; Tomkins 2004; Tomkins 2007a; Tomkins 2010.

[12] E.g. Sahlins 1974.

[13] Halstead 1995; Tomkins 2010.

to be a progressive isolation of the household as an independent social, economic, and political unit and its progressive appropriation of communal rights, controls, and obligations.[14] Framed in such terms it has been possible to develop a narrative of social evolution that emphasises two particularly notable phases of realignment within the Greek Neolithic, the first around the mid-6th millennium BC, the second during the mid to late 4th millennium BC.[15]

However, while the use of cross-cultural anthropological concepts has transformed our engagement with the Neolithic data, their deployment is not without certain risks and limitations. These are, after all, concepts that we have developed to understand societies of the recent past and thus their relevance to the societies of the Aegean Neolithic, and the conditions in which they operated, cannot simply be assumed but must be established. Unless we can observe the specific ways in which these idealised concepts are actualised and articulated in the Neolithic data, we run the risk once more of imposing our own ideals and assumptions on the data and creating our own rhetorical prehistories of the Neolithic. While the recasting of social relations during the Neolithic as an interplay of household and communal agencies has helped us to develop more sophisticated social narratives, we need to ask ourselves how well grounded these agents are in the Neolithic data. How well linked are our current narratives of social evolution to the actual data? Do they float above or flow from the empirical realities of existence? Can the social during the Neolithic be adequately summed in idealised terms of households and communities or do we need to work harder to do full justice to the complexity of existence during the Neolithic?

These are difficult questions, which we can only address by broadening and deepening our engagement with Neolithic materiality and thereby what is often termed social production. Since the 1980s detailed, contextual studies of various Neolithic technologies of production and consumption (e.g. farming, lithics, pottery, ornaments) have provided our most important insights into Neolithic social production, especially when married with a theoretical approach that explicitly or implicitly frames past human engagement with the material world in terms of *practice*.[16] A practice-based approach views continuity and change in material and social production as occurring through the interactions of people and things. Human practices take different forms and articulate different materialities in timespace. Typically the archaeological record presents a palimpsestic mixture of these different materialities and thus a practice-based approach offers a means of unpacking the residues of the archaeological record into more meaningful people-thing associations. Crucially, a practice-based approach places the (now absent) people alongside their (still present) materials, and thus provides a necessary corrective to the object-oriented gaze of modernist archaeologies.[17] Past applications of practice theory to European prehistory have demonstrated that practice provides a more sensitive and appropriate framework for understanding change in small-scale Neolithic societies than culture history or systems theory; one that allows the people of the past to inform us of their lives and have a greater say in our narratives of their history.[18]

Methodological Considerations

However, while our epistemologies and frameworks are now sufficient to offer the prospect of a Neolithic 'in its own terms', applying them successfully necessarily requires datasets amenable to such a detailed, relational approach. That is, we need datasets that allow us to situate our gaze at the highest possible temporal and spatial resolution and comprehensively trace out the entanglements of people and things and thus how the social was variously enacted. It is only by deepening and slowing down our engagement in this way, by focusing down on the specific and maximizing

14 Halstead 1995; Tomkins 2004; Tomkins 2010.
15 Halstead 1995; Tomkins 2010.
16 E.g. Bourdieu 1977; Dobres 2000.
17 E.g. Tomkins, submitted a.
18 E.g. Thomas 1990; Barrett 1994; Edmonds 1999; Tomkins 2004.

the detail, that we can have any hope of giving full voice to the diversity and contingencies of the data,[19] and thus of glimpsing actual identities and of tracing how the social was stabilised and experienced during the Neolithic.

However, if we adopt such an approach, we are forced to confront a major methodological issue and, in turn, to reflect critically on the efficacy of current techniques and traditions of archaeological characterisation.[20] Just how well do our traditions of archaeological practice, which were developed more than a century ago amid different circumstances and answering to different agendas for and conceptions of the past, answer to present aims and conceptions? To what extent do the datasets produced by these traditions resist the social narratives we now seek to trace? How might we modify our methodologies of characterisation to enable a more relational understanding of Neolithic social production? Thus, for example, in the case of ceramic characterisation it may be argued that traditional object-oriented, typology-led characterisation is not the most sensitive indicator of meaningful variation in Neolithic ceramics and, moreover, that a different, more integrated and more comprehensive practice-led approach can produce datasets better suited to the highly detailed, relational approach to Neolithic social production advocated above.[21]

Empirical Realities: Discovering the 'Missing Millennium' on Crete

When commenting on the scarcity of radiocarbon dates from 4th millennium BC contexts Manning sensibly drew attention to a potential variety of factors and to variability in their articulation in different regions of the Aegean.[22] While for some sites, even whole regions, it is apparent that there was actual hiatus in habitation, in other cases the 'missing millennium' seems more likely to result from under-investigation (i.e. insufficient radiocarbon sampling of likely 4th millennium BC contexts). In the case of Crete, after a decade or so of investigation it is apparent that under-investigation, site abandonment and empty regions are all relevant for different cases at different times.

Resolving Basic Chronological Problems

The biggest single factor restricting our understanding a decade ago was under-investigation. Although investigation of pre-Bronze Age contexts on Crete had mainly been serendipitous rather than planned, more than a century of this had still produced a large body of (mainly unstudied) data. While several pioneering site-studies had been made, most notably by J. Evans at Knossos and L. Vagnetti at Phaistos and Nerokourou, the relations between sites and regions generally remained unclear, if not confused, largely because of ongoing chronological uncertainty about ceramic phasing during the Final Neolithic and at the beginning of the Early Bronze Age.[23] While Knossos presented a clear and seemingly continuous sequence from the very beginning of the Neolithic down to the end of the 5th millennium BC, its uppermost Neolithic levels were seen as more problematic. Indeed a form of consensus had developed that the strata covering most, if not all of the 4th millennium BC were missing, either because the site contracted or was abandoned before reoccupation during EM I[24] or because these strata, together with almost all EBA remains from the top of the hill, had been cleared in a major leveling episode that preceded the construction of the First Palace,[25] traditionally placed at the beginning of the MBA.[26] In contrast to

19 See Latour 2005.
20 Tomkins, submitted a for a discussion.
21 Tomkins, submitted a.
22 Manning 2001, 168–169.
23 See Tomkins 2007b, 13–18, 32–48; Tomkins 2008, 36–40.
24 Broodbank 1992, 42.
25 Evans 1968, 276; Evans 1971, 114.
26 Evans 1921, 127–131, 134, 165.

Knossos, most known Neolithic sites elsewhere in Crete seemed to be of much shorter duration, typically comprising no more than one or two phases of occupation. Moreover, these generally presented styles of pottery that appeared to date later than Knossos, but earlier than classic EM I.

And so a decade ago it was already clear that there were sites of general 4th millennium BC date on Crete, however an absence of radiocarbon samples and uncertainty regarding relative phasing meant that there was no more precise means of dating them and thus no way of exploring continuity and change *within* the 4th millennium. Moreover, as one got close to the Neolithic-EBA transition, there was also considerable confusion with regard to what precisely was or was not characteristic of the beginning of EM I, leading to the same pottery groups being termed Neolithic or EM I by different scholars.

Such chronological problems, specifically a lack of resolution *within* the long Final Neolithic (FN) phase and uncertainty or disagreement regarding the precise nature of the ceramic phases that lie either side of the latest FN and earliest EB I divide, were by no means limited to Crete. Indeed to a greater or lesser extent they still afflict other regions of the southern Aegean as well as those further afield. Resolving them is of paramount importance because enhanced chronological control and resolution is the critical first step to a deeper understanding of the nature and development of social complexity in the Aegean during the 4th millennium BC. In view of this, some discussion of how these chronological problems came to be resolved for Crete over the last decade may be of wider interest.

To a large extent, recent advances in Cretan FN chronology are the product of hard work studying previously excavated data from sites where multiple phases of FN are preserved. In this way Comprehensive reviews of Neolithic stratigraphy and ceramic phasing at Knossos[27] and Phaistos[28] have clarified the sequence for the 4th millennium and have resolved longstanding questions regarding the chronological relationship between the two sites. At Knossos, which is the only site to preserve a complete FN sequence, the 4th millennium proved to be present in its entirety and thus only 'missing' in the sense that it lacks radiocarbon dates. It has also become apparent that stratigraphies spanning the end of the Neolithic and the beginning of EBA[29] are by no means rare or lacking on Crete[30] and, moreover, would have long been available had detailed characterisation work been carried out immediately after their excavation.

In addition, further clarity has been brought by refinement in the basic methods of chronology building, specifically a move away from an idealised 'stratum-based' approach to a more specifically contextual approach to the definition of ceramic chronological 'control' groups. Simply put, in the case of complex, multi-phase stratigraphies such as Knossos and Phaistos, the stratum, when deployed as the total depth of archaeological deposit assignable to a single ceramic phase, is too blunt an instrument to capture ceramic development accurately and reliably, primarily because it seeks to combine deposits with potentially very different depositional and compositional characteristics. Preferable is an approach that isolates specific, closed, stratified groups of pottery, that can be shown to correspond to discrete, and ideally primary, episodes of deposition. Such pottery groups provide a more secure basis for the definition of relative site phases, the sequence of which at a site is made clear by their stratigraphic relationships. The aim with this is to exclude mixed deposits from the primary chronology-building process, even when those deposits comprise the most complete examples of specific vessel types, such as is the case with the numerous cave and collective burial sites that span the FN–EM I transition in Crete. Previous chronological work on Crete that attempted to define phases using mixed deposits[31] succeeded only in generating considerable confusion regarding what constituted latest FN and earliest EB I.[32]

27 Tomkins 2007b; Tomkins 2008.
28 Todaro – Di Tonto 2008; Todaro 2012.
29 E.g. Knossos, Phaistos, Kephala Petras.
30 Contra Manning 2001, 41–42.
31 E.g. Renfrew 1964; Vagnetti – Belli 1978.
32 Tomkins 2007b, 13–18 for a discussion.

An essential tool in the comparative investigation of complexity in different regions of the Aegean is chronological transparency, that is the development of a common understanding of chronological phasing that is shared between researchers working in different regions and within different modern regional archaeological traditions. Ideally, greatest transparency would be achieved if all researchers related their regional sequences to a single, shared standardised chronological scheme for the Neolithic Aegean, as is the case for the Bronze Age. In reality, however, we seem, if anything, to be moving further away from this ideal thanks to the current proliferation of alternative chronological schemes, fed by recent expansion in investigation into this period in different Aegean regions. Greater clarity and integration between Greek and Turkish schemata is particularly crucial for our understanding of the relations between the islands of the East Aegean and the Aegean regions of Turkey, where the two systems most clearly overlap.

The difficulty, of course, lies in achieving a common, transparent Aegean chronological framework for the 7th–4th millennia BC. Researchers first need to be willing to adopt new chronological terminology (not easy when one has grown up in a different chronological tradition) and consensus has to be reached on which particular terminology to use. A significant obstacle to the latter is the desire felt by many researchers that a chronological scheme should not simply be a system of reference to refer to blocks or periods of time, but should also convey a place or stage in a system of historical development. The main difficulty with this desire to merge chronological and developmental schemes is that opinions about the nature and timing of development within and between regions vary greatly, not just among researchers in the present-day, but also historically as data increase and understanding deepens. This lack of consensus about development combined with the potential for future empirically-driven shifts in understanding, means that the desire to impose developmental opinions on our chronological architecture is a highly subjective one that is best resisted at all costs. Thus, while all chronological schemes currently in use around the Aegean originate out of a merging of chronological and developmental functionality, and thus imply a developmental meaning, it is essential that we resist the desire to see them as denoting anything more than a relative chronological ordering of time. Indeed it is only by excising all sense of historical development, that we can ever have any hope of harmonizing our fragmented regional chronologies into a single, overarching scheme.

In the case of Crete a decade ago, chronological disharmony with other Aegean regions was extreme. Although it shared the same phase terminology for the Greek mainland (i.e. Aceramic, Early, Middle, Late, Final Neolithic), none of the Cretan phases were remotely equivalent in timing or duration. The extent of the original mismatch is shown by the fact that the old Cretan 'Early Neolithic' covered the entire period of the Greek EN, MN and LN periods, while 'Middle Neolithic' coincided with the beginning of FN. In order to improve chronological transparency, and thereby facilitate the comparison of ideas, models, and data between Crete and more general discourse on the Greek Neolithic, the Greek terminology was reapplied to phases at Knossos that could be shown (by imports, exports, stylistic influence and radiocarbon dates) to be the direct equivalent of their Greek counterparts.[33] The new chronology was also linked, where possible to the chronology used in the Aegean regions of Turkey (NB, an updated version of this correlation of Cretan, Greek and Turkish regional chronologies is shown in Fig. 1). For the Final Neolithic, and more specifically the 4th millennium BC, this process had the added advantage of advertising the exceptionally fine chronological resolution that is available for Crete, in contrast to the Greek mainland, where phasing within the 1500 years of FN is currently not well understood. Regarding the Aegean regions of Turkey, the Cretan FN IB, FN II, FN III and FN IV phases appear to be broadly the equivalent of Late Chalcolithic 1–4 (Fig. 1).

[33] Tomkins 2007b.

New Cretan Neolithic Phases (Knossos)	Southern Greek/ Cycladic Neolithic	Anatolian Neolithic	Approx. Dates (calibrated BC)
Initial Neolithic (Stratum X)	Initial Neolithic (from c. 6750 BC)	Aceramic/ Early Neolithic Ulucak VI	c.7000 – c.6500/6400
Early Neolithic (Strata IX-VIII)	Early Neolithic Franchthi FCP1	Late Neolithic Hacilar IX–VI Ulucak V Kuruçay 13–11	c.6500/6400 – c.6000
Middle Neolithic (Strata VII–VIB; Stratum P)	Middle Neolithic Franchthi FCP2–3	Early Chalcolithic Hacilar V–I Ulucak IV Kuruçay 10–7	c.6000 – c.5600
		Middle Chalcolithic Ulucak III Emporio X?	c.5600 – c.5300
Late Neolithic I (Strata VIB–V; Strata N, M, L)	Late Neolithic I Saliagos I–II Franchthi FCP4	---------- Emporio IX? Tigani I	c.5300 – c.4900
Late Neolithic II (Stratum IV; Strata K, H, G)	Late Neolithic II Saliagos II–III Ftelia	---------- Emporio VIII Kum Tepe IA Beşiktepe Kizilbel/Lower Bagbasi Tigani II–III	c.4900 – c.4500/4400
Final Neolithic IA (Stratum IIIB; Strata F, E, D)	Final Neolithic		c.4500/4400 – c.4200
Final Neolithic IB (Stratum IIIA; Strata C, B)	Franchthi FCP5	Late Chalcolithic 1 Beycesultan XL–XXXV Aphrodisias Pekmez VIIIB	c.4200 – c.3900
Final Neolithic II (Stratum IIB)		Late Chalcolithic 2 Beycesultan XXXIV–XXIX	c.3900 – c.3600
Final Neolithic III (Stratum IIA)	---------- Kephala (early)	Late Chalcolithic 3 Beycesultan XXVIII-XXV Kuruçay 6A	c.3600 – c.3300
Final Neolithic IV (Stratum IC) Kephala Petras (Neolithic Building)	---------- Ayia Irini I Kephala (late)	Late Chalcolithic 4 Beycesultan XXIV–XX Kuruçay 3 Kum Tepe IB Emporio VII/VI Tigani IV	c.3300 – c.3000

Fig. 1 The relationship between Cretan, Greek and Anatolian phase.

Identifying Investigation Biases: Visibility, Serendipity and Blind-Spots

Resolution of these basic chronological issues on Crete in turn provided a more secure and resolved perspective from which to evaluate Neolithic data collected over more than a century of archaeological investigation. By clarifying the relative chronology of sites beyond Knossos it has proved possible to identify several new patterns in site-use and settlement.[34] But such work has also served to demonstrate that the current Neolithic data are seriously affected by issues of taphonomic and research bias. But, by acknowledging the full extent of this bias, we place ourselves in a better position to appreciate not only the data that we do have, and thus where we have been afforded precious windows on the past, but also the areas where we have serious gaps, and thus where we need to tread carefully and direct future research.

Beyond Knossos, the representation of phases in the new Cretan Neolithic chronology varies considerably. Most phases down to the mid-4th millennium (i.e. IN–FN II) seem to be strikingly under-represented or absent outside Knossos, while the late FN, particularly FN IV, account for the large majority of known 'Neolithic' sites. Previously this scarcity had been explained as reflecting a real absence of settlement outside Knossos. However, petrographic study of EN–FN pottery from Knossos has demonstrated a consistent presence of imported pottery originating from different regions within Crete and beyond.[35] If pottery was being produced at various locations beyond Knossos, using distinct sets of raw materials and in distinct technological traditions, it seems reasonable to presume that such locations correspond to settled communities.[36] This strongly suggests that settlement (in)visibility in fertile, lowland fluvial zones, whether due to subsequent burial or insufficient investigation, remains a major distorting factor in the data. That this invisibility issue also applies to the better represented late FN phases of settlement is suggested by the fact that the majority of known late FN sites are small, single-phase sites in locations of high archaeological visibility in the uplands of Crete (i.e. thin soils, hills, ridges), while the most fertile lowland locations remain almost as under-represented in the late FN as they are in earlier phases of the Neolithic.[37]

Compounding issues of visibility is the problem of research bias. While some serendipitous discoveries have been well studied and published,[38] most have received little or no further attention. One consequence of this is that we still do not really know the extent of what we have found, with a considerable amount of potentially valuable data, especially from caves, currently languishing unstudied in store-rooms. A second consequence of serendipitous investigation has been that our sample of the places where Neolithic activity took place is heavily biased towards locations where Bronze Age or later activity occurred. Thus caves remain a heavily over-represented Neolithic site type, as they do elsewhere in the Aegean,[39] while in the sample of open-sites the late FN is slightly better represented in part because it is the period when occupation at some Bronze Age sites first begins and thus is more frequently revealed in excavations targeted at Bronze Age remains. In contrast, locations *only* occupied during the (Final) Neolithic, especially in the lowlands, are under-represented to an unknown degree.

Worlds in Transition: The Rise of Defensibility and Marginality in the 4th Millennium BC

And so, while many gaps remain, the settlement data are sufficient, in some cases, to provide glimpses of patterns and development *within* the long FN period.[40] For the millennia prior to FN

34 Tomkins 2008; Tomkins 2013.
35 Tomkins – Day 2001; Tomkins et al. 2004.
36 Tomkins 2008, 27–33.
37 Tomkins 2008, 38–39.
38 E.g. Vagnetti et al. 1989; Haggis et al. 2007.
39 Tomkins 2009.
40 See Tomkins 2008, 35–40; Tomkins 2013.

the settlement data are consistent with the conclusion, drawn from detailed petrographic study of EN–FN pottery fabrics from Knossos, that there was widespread occupation of prime, lowland agricultural locations in eastern, central and western areas of Crete, not just at Knossos.[41] For the early FN (i.e. late 5th millennium BC) the settlement data remain frustratingly sparse, but provide further hints in this direction. The first change to this picture of significant settlement invisibility in the lowlands of Crete occurs during FN II–III (c. 3900–3300 BC) when some lowland regions (e.g. Isthmus of Ierapetra, Mesara) see a marked increase in the archaeological visibility of settlement, while others (e.g. the Herakleion Basin around Knossos) do not. This pattern appears to be caused by a shift in site preference (in some regions) to higher-lying, more 'defensible' locations (hilltops, upper slopes) overlooking prime agricultural land.

While the near-invisibility of earlier phases of settlement in these regions currently restricts the extent to which this can be *demonstrated* to be a local evolution in site choice, there are nevertheless some indications in this direction. For example, Mitropolis, the earliest known settlement in the Mesara (FN I–II),[42] is located directly on the plain next to a tributary of the Ieropotamos River. During FN II (c. 3900–3600 BC) occupation ceases at Mitropolis and is initiated at a number of higher-lying, more 'defensible' locations (ridges, hill-tops) in the general vicinity (e.g. Phaistos). Although a direct causal link between the two phenomena cannot be demonstrated, the timing is at least suggestive of a wider local shift in preference for site location. The reasons for this increased interest in defensibility (and inter-visibility) remain unclear, but it seems plausible to infer increased insecurity and friction between local settled communities. Why there should be increased social conflict at this time remains unclear. One possible contributory factor could be increased climatic uncertainty (i.e. greater aridity and interannual variation in precipitation), and the pressure this could place on productivity and thus social stability in an agricultural economy.[43] However, considerably more research is required to produce a more resolved and local picture of climatic variation in Crete and to relate it convincingly to the timing of shifts in human behaviour, before the validity of this hypothesis, and particularly why it would affect only certain lowland regions, can be assessed.

During FN IV a second, significant development in settlement is marked by the first appearance of a dense spread of small sites located in agriculturally more marginal regions (e.g. Siteia uplands of East Crete), which previously had not been favoured for Neolithic settlement.[44] Such regions are termed marginal because they lie away from the (mainly lowland) areas of prime agricultural land and because stands of cultivable land tend to be less extensive and more dispersed through the landscape. Short-term marginal colonisation recurs as a settlement strategy, in different forms and at different times, throughout the Cretan Bronze Age and historic past. In order to exploit such regions in the Neolithic a new, more distributed form of community needed to be developed, one where households and dwellings were distributed through the landscape rather than clustered together in large nucleated villages. While some regions of Crete were settled in this way during FN IV (e.g. Siteia uplands), in others (e.g. Asterousia hills of south-central Crete) marginal colonisation is only apparent from EB I. In contrast to Neolithic settlement in the lowlands of Crete and elsewhere in the Aegean, marginal settlement appears to have been a considerably more unstable strategy. FN IV and EB I sites in more marginal locations are typically occupied for no more than one or two ceramic phases, which need equate to no more than a few centuries at most. There remains much to learn about the nature of these episodes of marginal colonisation and about the factors pushing/pulling certain groups of people away from the Cretan lowlands at certain times. However, in the case of FN IV marginal colonisation, it has been suggested that social changes taking place in lowland villages during the late FN may have played a significant role.[45]

41 Tomkins et al. 2004.
42 Tomkins 2007b, 35–36.
43 Tomkins 2008, 38; Tomkins 2010, 42–43.
44 Halstead 2008; Tomkins 2008, 38–40; Tomkins 2010, 39–40.
45 Tomkins 2010, 39–42.

Continuity and Change in Village Life during the 4th Millennium BC

Early FN Continuities: The Later Neolithic Village

In addition, to these dots on maps, there are a number of excavated sites, mainly of late FN date, where a more detailed window on people, materials and practices can be gained. Chief among these is Knossos, which after more than a century of excavation and study represents one of the more comprehensively sampled Neolithic settlements in the Aegean. While its importance for our understanding of Neolithic Crete has been appreciated for more than a century,[46] over the last decade or so appreciation of the nature of its significance has changed. Previously Knossos tended to be treated as unusual in almost every respect: it was widely believed that it grew rapidly in isolation into a Neolithic 'super-site' which became the mother community for a very late colonisation of the rest of the island in the 4th millennium BC.[47] More recently, however, this idea has been entirely rejected thanks to the recognition of the probable existence of other communities beyond Knossos from as early as the 7th millennium BC[48] and by detailed re-evaluation of the growth of Neolithic Knossos.[49] Far from growing quickly into a large, demographically self-sufficient community early in the Neolithic, as previously supposed,[50] Knossos remained very small (c. <0.5ha), and thus demographically unviable for the 1st millennium of its existence (i.e. c. 7000–6000 BC), and only developed into a large village (c. 1.0–2.5ha), that was at least technically self-sufficient demographically, during LN (c. 5300–4500 BC). Contrary to previous estimates, which assumed continual growth throughout FN,[51] careful study of all available deposits, exploiting the resolution provided by the new FN I–IV chronology, indicates that at no point during FN did Knossos grow any larger, remaining instead within the size threshold observed for other large villages on Crete[52] and in other regions of the Aegean.[53]

And so, rather than providing us with a window on a highly unusual form of Neolithic social complexity that has little comparative value, Knossos in fact appears to be typical of other large village sites of the Aegean Neolithic and thus gives us our best glimpse of social life and how it may have evolved at other such villages on Crete. From the first emergence of a more independent household unit during the late 6th millennium BC[54] down to the turn of the 4th millennium BC a picture of the later Neolithic Knossos community emerges that is household-based, communally-oriented and seemingly highly stable. From LN I houses are not only larger, more complex and more carefully constructed, but also for the first time become architecturally discrete and ideologically represented (house models). That this change in the visibility of the household coincides with changes in household rights and obligations in other domains of practice is suggested by the adoption of a series of new technologies of production (e.g. weaving, flax, increased wild olive cultivation) and consumption (e.g. pouring shapes) during the 5th millennium. The possibility for such changes suggests that households now enjoyed greater control over the destination of their productive output, while the motivation for such changes seems to lie in the competitive social advantage afforded by increasing the quantity, quality and value of household productive output.

Clearly, however, household competition had its limits. Elsewhere[55] I have suggested that the LN-early FN household be seen as 'emergent' in the sense that it had become a more discrete social, economic, and political unit, but one whose independence continued to be curtailed by

46 E.g. Evans 1902; Tomkins 2000.
47 E.g. Broodbank 1992.
48 Tomkins – Day 2001; Tomkins et al. 2004; Tomkins 2008.
49 See Tomkins 2008, 27–36.
50 E.g. Broodbank 1992.
51 Evans 1971; Broodbank 1992, 44–45.
52 E.g. late FN Phaistos 2–3ha; Whitelaw 2012, 120–121.
53 Tomkins 2010, 34.
54 Halstead 1995; Tomkins 2004; 2010.
55 Tomkins 2010, 37–39.

a powerful set of communal obligations. There is, as yet, no convincing evidence, from Crete for the emergence of more permanent forms of social inequality during the 5th millennium BC. Rather the evidence indicates that households continued to live in aggregations, preferring the security of communal solidarity to the potential opportunities for personal advancement provided by social fragmentation. Moreover, the failure of LN–FN Knossos (and other Aegean communities) to grow beyond the threshold above which egalitarian communities tend to fission or evolve more complex forms of organisation[56] strongly suggests an absence of permanent institutionalised inequalities, which would otherwise have developed if household competition had been allowed to develop unchecked.[57] In this way the stability of the later Neolithic village on Crete was predicated on the continued maintenance of communal rights and obligations over the general inclination of households to pursue their own self-interest.

The Bronze Age before the Bronze Age? Thinking through Complexity and Change in the Late FN

On present evidence this balance of social rights and obligations appears to continue without significant change for much of the 4th millennium BC. Although the regional shift to more defensible locations during FN II–III may hint at increased social stress within some lowland communities (see above), it is currently only from FN IV that more concrete signs of a rupture to this social contract become apparent.

One such indication is provided by evidence that trading and the longboat, which hitherto had been understood to be phenomena of the EB IB–II Aegean, have a deeper history in the Aegean and on Crete going back at least as far as FN IV.[58] This earlier date is based partly on the discovery of petroglyphs of a craft resembling the longboat and dating to the very end of FN, at the site of Strophilas on Andros,[59] but mainly on detailed, integrated characterisation of ceramic, lithic and metallurgical artefacts from the site of Kephala Petras, located on the Siteia Bay in East Crete.[60] This characterisation work has shown that around half the imported pottery is in White Mica-Schist fabrics compatible with a provenance beyond Crete in the Hellenic Arc (Lavrion-Cyclades) and also shares distinctive typological similarities with FN IV pottery from sites in the same Attic-Kephala region. The general absence of connections with regions that lie between the Attic-Kephala region and East Crete indicates that this was a highly specific, directed link. The presence of notably larger amounts of obsidian at Kephala Petras, exploiting off-island technologies of reduction without a deep history of use on Crete, together with evidence for seemingly the earliest known metallurgy on Crete, strongly suggests that primary motivation for this direct, long-distance connection was not to forge specific social relations *per se* but to secure preferential access to specific, high value *commodities* (i.e. metals, obsidian) and the technologies for their transformation.[61] Comparison with assemblages at other FN IV sites in the Siteia region strongly suggest that Kephala Petras monopolised and restricted access to these off-island commodities and technologies and thus that it acted in an essentially similar way to later EBA gateway communities engaged in trading (e.g. EB IB Ayio Photia, EB IIA Poros-Katsambas, EB IIB Mochlos).

As has long been realised,[62] the emergence of trading and gateway communities is significant because it implies the existence of new cultures of acquisition, commoditisation and consumption. In this way the presence of trading communities by FN IV strongly suggests that communal

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56 Ca. 2–3ha or 300–500 people; Whitelaw 1983, 340.
57 Tomkins 2010.
58 Tomkins 2010, 40–42; Papadatos – Tomkins 2013.
59 Televantou 2008.
60 See Papadatos – Tomkins 2013.
61 Papadatos – Tomkins 2013.
62 E.g. Renfrew 1972, 440, 463, 468–472, 496–497.

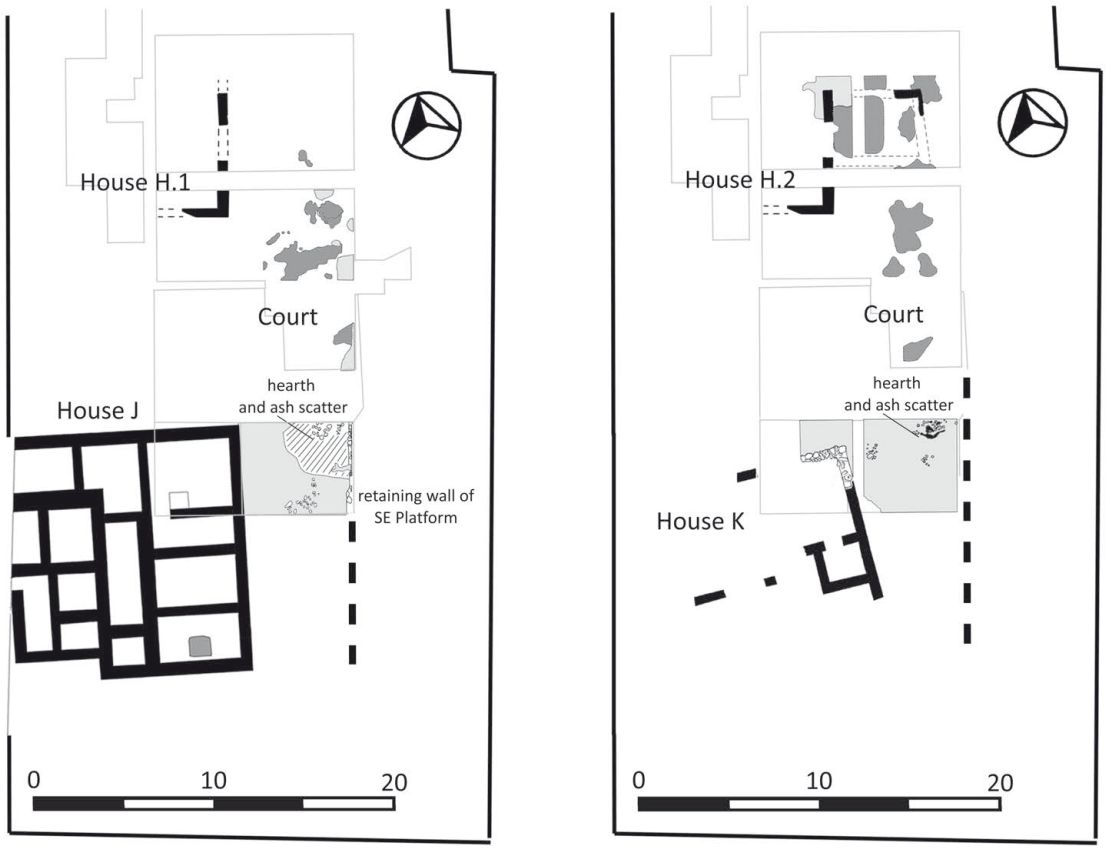

Fig. 2 The Final Neolithic IV–Early Minoan I houses and court below the Central Court at Knossos: left, Stratum IA (FN IV); right, Stratum IB (FN IV–EM IA).

controls over household acquisition and accumulation, which typify later Neolithic village societies, were no longer operating in quite the same way. Indeed we may reason that households were now freer to acquire, accumulate and appropriate in ways that would surely have brought them into more overt, unmediated conflict with each other and their communities and would have led to the emergence of more permanent forms of inequality.

Further hints in the direction of emerging inequality and an appropriation of the communal are provided by changes in ritual practice. Throughout the Neolithic the use of caves on Crete and in the wider Aegean appears to have been communal and essentially ritual in nature, involving the deposition of material culture and, on occasion, human skeletal material.[63] During FN IV there is evidence for a significant increase in the intensity of corporal deposition at certain cave sites on Crete, prefiguring a more widespread funerary use of caves and rock-shelters in EB I and II.[64] The placement of a body in a cave is a highly energetic and visible form of corporal disposal: to do so episodically over millennia at a communal ritual site advertises the status of an important individual or lineage; however, to do so more intensively over a century or so suggests a more competitive environment, where individuals or lineages were not only seeking to make sustained claims to (unequal) status, but were also aiming to cement these claims in greater perpetuity by appropriating the space, both physical and semantic, of communal ritual.

63 Tomkins 2009; Tomkins 2013.
64 Tomkins 2013.

Something similar is suggested by a major spatial reorganisation at Knossos at the beginning of FN IV. This takes the form of large-scale levelling of the top of the Neolithic settlement mound to produce a large, flat area, which was then extended to the south-east by the construction of a terrace wall backed by a large fill of levelling debris. On the eastern edge of this levelled area a long, rectilinear open space or court was laid out (Fig. 2). This court was bounded to the west by two houses, one of which has been sufficiently excavated to show that it was large and unusual in that it contained a copper axe, one of the earliest known metal artefacts from the island. The court surface seems to have been kept clean save for the presence of fixed hearths, the position of which remains constant between different stratigraphic phases (i.e. Strata IC–IB; FN IV–EM IA). On the western edge of the hilltop there is evidence from FN III for a second open area, characterised by the digging and re-digging of large pits with complex, episodic internal sequences of deposition that appear ritual in nature. Perhaps the most significant feature of these eastern and western communal spaces is that a direct line of evolution can now be traced between their initial creation in the late FN and the subsequent development at Knossos of the monumental Bronze Age ceremonial complex conventionally known as the Minoan palace.[65] Similar continuities are also apparent between late FN communal ritual spaces at Phaistos and the Central and West Courts of the later 'palace' complex.[66]

The FN IV spatial reorganisation at Knossos served to create a restricted residential area, sufficient for 4–6 similar-sized dwellings, on the hill-top flanked by open spaces of different character to the west and east, with the rest of the settlement occupying the lower northern slopes of the hill. The establishment of specific ritual foci on the hill-top created the possibility for a new, hierarchy of access to communal ritual space, which previously in the Neolithic had shown no sign of such restriction. These changes thus appear to articulate a new order, where access to communal ritual space is not only more restricted, but also more unequal, with those resident in the restricted hilltop habitation area enjoying priority. Moreover, this new order, once established, continues to develop into EB I–II during which the eastern court and western open space are enlarged, boundaries between hilltop and settlement are further reinforced and access becomes further restricted by the construction of terraces and additional public buildings oriented around the eastern court. In short, at Knossos the history of a specifically Bronze Age tradition of ceremonial practice on the Kephala Hill goes back not to the beginning of the EBA but to the late FN.

And so what might these late FN developments mean more generally for the evolution of social complexity? Elsewhere I have argued that the appearance of marginal colonisation and trading in Crete, together with new arenas for the performance of social difference, new cultures of acquisition, appropriation and accumulation and new forms of identity and inequality are all rooted in a more fundamental shift in social rights and obligations that takes place in the late FN. This shift may be understood in terms of an irreversible change in the balance between the communal good and private self-interest that hitherto had stabilised and sustained later Neolithic village life. Previously communities had effectively managed perceptions of the possible, such that the logical desire of groups to capitalise on periods of advantage (social, productive), by finding ways of stabilizing these short-term inequalities into more permanent inequalities in status and access to resources, was controlled and curtailed. A loosening of these communal controls in the late FN opened the door to the development of alternative and diverging perceptions of the possible, in which private gain was allowed to take precedence over the common good and households were now more free to accumulate and appropriate in ways that encroached upon previously sacrosanct domains of household and communal practice. Elsewhere I have characterised this shift in terms of the emergence of a new form of household, termed 'modular' because households now appear

[65] Tomkins 2012.

[66] Todaro – Di Tonto 2008; Todaro 2012.

to have been more free to operate in isolation as fully separate and separable socioeconomic units that might combine in new and different ways to meet new and different circumstances.[67]

This late FN shift not only opened the door to the development of more permanent forms of inequality, but also increased organisational flexibility. It facilitated the emergence of new forms of identity, more permanent forms of inequality and new forms of livelihood, such as trading and marginality, which enabled communities to exploit a wider range of the resources configured across the land and seascapes of the Aegean. In this way, processes of socioeconomic diversification and integration, which are conventionally viewed as typical of the Bronze Age and later, should be understood to begin in the late FN.

Final Thoughts: The 'Urban Evolution' in Crete

If the late FN on Crete represents the beginning of the process of social and economic reconfiguration that we conventionally term the 'Bronze Age', when in this process do we see the first signs of urbanism? Historically the answer to the first question has depended very much on how urbanism has been defined. One group of researchers, most notably Gordon Childe and Colin Renfrew, chose to place the bar to the attainment of urban status at a high level, viewing only settlements with very large concentrations of population[68] as urban. In the case of Crete this meant that urbanism only first emerges at the end of the 3rd millennium BC during EM III–MM IA. Others, however, have pointed to evidence for significant settlement growth, well beyond the village threshold typical of Neolithic communities, already at certain sites in EB II and have suggested that this represents the beginning of urbanism, albeit at a much smaller scale than later.[69]

Recent work on Crete has contributed to this debate in two ways: first, clarification of spatial and demographic development at Knossos during FN (see *infra*) has demonstrated that the first phase of growth to take it beyond the demographic and organisational threshold of the face-to-face village society (c. 350–450 people) took place, not in FN as had been claimed, but in the early part of EB II (i.e. EM IIA). By the end of EB II Knossos has been estimated to have reached a size of c. 6.5ha,[70] corresponding to a population of at least 1000 people and probably significantly more. Elsewhere in Crete,[71] and indeed the Aegean,[72] EB II is more generally a phase that sees significant, comparable growth in the size of certain communities. As has long been emphasised, growth of this sort implies that some form of social restructuring must have taken place.[73]

Second, integration of late FN–MM I contextual, architectural and stratigraphic data from below the later Minoan palaces at Knossos and Phaistos, drawing on a century's accumulation of excavated materials, has recently opened up a window on a surprisingly complex world of ritual practice, large-scale 'public' construction and spatial re-organisation in the period between the late FN and the end of the EBA.[74] At Knossos, it is apparent that the origins of the building complex that we term the 'palace' dates back, not to MM I, but to late EM I when there is evidence to suggest the construction of one, or more probably two, large buildings, which share the same footprint and orientation as the Central Palace Sanctuary and Throne Room System of the later (MM I–III) 'palace'.[75] This building (or buildings) lay immediately to the west of a very large, rectangular, formal open space or court, which was a successor to the original FN IV–EM I early

67 Tomkins 2010, 39–42.
68 E.g. >5000; Renfrew 1972, 7; cf. Childe 1950.
69 Branigan 1970, 42, 118, 120; Warren 1975, 2, 36; Tomkins 2012, 69–75; Tomkins, submitted b.
70 Whitelaw 2012.
71 E.g. Phaistos, Malia; Whitelaw 2012.
72 Halstead 1981b, 196–200; Hägg – Konsola 1986.
73 Cf. Whitelaw 1983.
74 See Todaro 2012; Tomkins 2012.
75 See Tomkins 2012.

courts, but significantly enlarged in EM I late. During EB II there is good evidence to suggest that this 'central building' saw further significant expansion through the addition of further peripheral buildings, the walls of which share the same orientation as the late EM I building with court and, moreover, appear in some cases to have also formed part of the fabric of the later palace.

Irrespective of its precise function, which is difficult to establish owing to the fragmentary nature of the evidence, the timing of the construction of this 'central building' is significant because it predates the first initial expansion of the settlement in EB IIA. It implies a notable change in scale, both in the expenditure of resources on a communal project and in the size of the gatherings that could be accommodated in the court. Such changes are suggestive of a modification or even restructuring of social relations and imply that expansion in the community was either already taking place or was foreseen. It may thus be proposed that the subsequent expansion of the Knossos community during EB II, and the concomitant further expansion of the 'central building', was facilitated by social changes that took place slightly earlier, in the late EB I period. It may therefore be more appropriate to speak, not of an urban revolution and a pivotal, unilineal moment of transformation,[76] but of an *urban evolution*, characterised by a more complex and multilineal unfolding of social relations between the late FN and EB II, which in time and at certain places created the conditions in which what might be termed *initial urbanism* ultimately evolved.[77]

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