

# The Emergence of Trade and the Integration of Crete into the Wider Aegean in the Late 4<sup>th</sup> Millennium: New Evidence and Implications

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**Abstract:** Ever since the definition of a Bronze Age in the Aegean, more than a century ago, explanations for its origins have been sought in an intensification of external contacts, traditionally placed in EB I. However, the precise nature and timing of these contacts and the social contexts in which they developed have long remained unclear due to insufficient data. While recent decades have seen an upsurge in detailed investigations of late EB I–II coastal sites, coastal sites of the 4<sup>th</sup> millennium BC (and earlier) have not been similarly treated. Consequently we have had no means of exploring when, how or why Crete's relations with the Aegean first intensified. Drawing on the results of recent excavations at the FN IV–EM IA coastal site of Kephala Petras in east Crete, a picture is sketched of an early trading community of the late 4<sup>th</sup> millennium BC, which, thanks to its off-island connections enjoyed preferential access to valued raw materials, to the technologies for their transformation and to finished objects. This monopoly over the resource of distance was in turn exploited locally and regionally in east Crete, as a social strategy, to construct advantageous relationships with other communities. As such Kephala Petras appears to represent the earliest of a series of such gateway communities, which are known to have operated along the north coast of Crete in later periods. The implications of this are also discussed in the light of additional evidence from neighbouring regions, as part of an effort to understand the dynamics of the long-distance trading networks that emerge in this period in the Aegean.

**Keywords:** Aegean, Crete, Kephala Petras, Final Neolithic, Early Bronze Age, trade, gateway communities, coastal sites

The late 4<sup>th</sup> millennium in Crete, which in relative terms corresponds to the Final Neolithic (hereafter FN) III and IV phases and the very beginning of the Early Bronze Age (hereafter EB), is becoming more widely accepted as a pivotal phase in Cretan prehistory.<sup>3</sup> Evidence for important changes, spanning FN III to EB IA, include new patterns and types of settlement, population mobility and expansion,<sup>4</sup> significant changes in pottery styles,<sup>5</sup> the development of metallurgy<sup>6</sup> and the emergence of formal cemeteries.<sup>7</sup> However, there are still many problems and gaps in our knowledge of these phases.

First, there are problems of definition and relative chronology, mostly due to the lack of excavations with complete stratigraphic sequences.<sup>8</sup> In the two multi-period sites of Knossos and Phaistos it is only very recently that stratified FN–EB I deposits have been located and subject to detailed study.<sup>9</sup> This work has resulted in a more tightly resolved FN sequence for Crete consisting of five sub-phases (FN IA, FN IB, FN II, FN III, FN IV), initially defined at Knossos and subsequently extended to FN III–IV Phaistos. For the rest of Crete, the available evidence

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<sup>3</sup> Vagnetti – Belli 1978; Hood 1990; Vagnetti 1996; Nowicki 2002; Hayden 2003; Tomkins 2008; Tomkins 2010.

<sup>4</sup> Watrous 1994, 701; Branigan 1998, 80–84; Vokotopoulos 2000; Nowicki 2002; Hayden 2003.

<sup>5</sup> Hood 1990; Betancourt 1999; Nowicki 2002.

<sup>6</sup> Muhly 2004; Papadatos 2007; Catapotis et al. 2011.

<sup>7</sup> Vagnetti – Belli 1978, 150–151; Betancourt 1999, 36–37; Tomkins 2008; Tomkins 2010; Tomkins this volume ■■■–■■■.

<sup>8</sup> For a detailed discussion see Nowicki 2002, 11–15; Tomkins 2007; Papadatos 2008, 261–263.

<sup>9</sup> Tomkins 2007; Todaro – Di Tonto 2008; Tomkins 2008.

is typically in the form of either single-phase assemblages from open-air sites (e.g. Monastiraki Katalimata, Gortyna Mitropolis, Kaloï Limenes, Nerokourou, Kastelli Phournis), or unstratified, often disturbed, funerary and cave assemblages (e.g. Partira, Ayios Nikolaos Palaikastro, Amnisos Eileithyia, Trapeza and Lebena). Historically, these single-phase, poorly stratified or mixed assemblages have been variously considered to date to FN, early EB I or somewhere in between ('sub-Neolithic'). Finally, in several cases, especially surface surveys, the catch-all term 'FN/EM I' is used.<sup>10</sup>

Second, the historical conditions and the social processes associated with these changes are very poorly known due to the fragmentary archaeological record. While scholars agree on the radical character of these late FN–EB IA changes, there is no consensus concerning their interpretation. For some, they are the result of major population movements into Crete from other external regions.<sup>11</sup> However, amongst those who hold this view there is disagreement on the chronology of these movements, variously dated to FN or EM I, and on the origin of the newcomers, variously located in the Dodecanese and southwestern Anatolia, the Troad and northeastern Aegean, Cilicia or the coast of Syro-Palestine. Others argue that the changes marking the beginning of EB in Crete constituted a long, gradual and mostly internal process, which could involve external influences, but not major migration episodes.<sup>12</sup> Both interpretations, however, converge at one point; that, regardless of the associated mechanisms (population movements or internal development), Crete, after millennia of relative isolation, "enters the wider Aegean world"<sup>13</sup> and from this period onwards becomes a more closely integrated part of the Aegean.

It is important to note that, although both approaches emphasise the more connected character of Crete in the late 4<sup>th</sup> millennium, neither considers trading as a significant factor in the increase in integration and cultural or social change that seem to occur at this time.<sup>14</sup> One reason is surely the fact that the excavated record for FN III–EB IA is patchy, poor and restricted mainly to inland sites (e.g. Knossos, Phaistos, Monastiraki, Gortyna, Kastelli Phournis, Partira, Ayios Nikolaos, Trapeza, etc.). Among the few coastal sites that have been excavated, Lebena and Kaloï Limenes are late in date (EB IA) and lie on the south coast and are thus less likely to have played any major role in maritime trade with the Aegean. Along the north coast few excavations have taken place of FN III–EB IA sites, with those at Nerokourou (west Crete) and, more recently, Kephala Petras (east Crete) revealing the most promising evidence for off-island connectivity.

A second reason is methodological. While morphological study of late FN–EB IA ceramic assemblages can identify indications of influence by or connectivity with external regions, it cannot isolate the different technologies, raw materials and provenances within such assemblages and thus cannot provide the precise, quantified data necessary to identify specific exchange behaviours in general and trading in particular.<sup>15</sup> In other words, unless such assemblages are subjected to more comprehensive, integrated and fully analytically-supported characterisation programmes, we simply lack the data to discern trading from gift exchange or indeed local importation from local reproduction of 'foreign' forms and practices.

A third reason is conceptual and concerns the belief, still widespread, that trading and the competitive acquisition of prestige goods are an entirely new and defining characteristic of Bronze Age societies, differentiating them from those of the Neolithic, which were characterised by simple gift exchange.<sup>16</sup> According to Renfrew trade and traders emerged around the EB II phase (c. 2600–2400 BC) to satisfy a new desire for specific commodities, mainly metals, but also other categories of raw materials and finished artefacts, such as midrib daggers, sauceboats, stone figu-

<sup>10</sup> Haggis 2005, 47.

<sup>11</sup> Warren 1974, 41–43; Hood 1990; Nowicki 1999; Nowicki 2002; Hayden 2003, 395.

<sup>12</sup> Evans 1921; Branigan 1970, 201; Evans 1974, 19–21; Vagnetti 1996, 39.

<sup>13</sup> Vagnetti 1996.

<sup>14</sup> Papadatos – Tomkins 2013, 353–356.

<sup>15</sup> Papadatos – Tomkins 2013, 355–356.

<sup>16</sup> Renfrew 1972, 44, 468–472.

rines and vessels. The distribution of these items in EB II, within a broad area encompassing the islands and the littoral Aegean, was regarded as evidence for a greater intensity of interaction than previously proposed and the fostering of an ‘international spirit’, i.e. a common culture of artefacts, ideas and practices.<sup>17</sup> Thus, trade was traditionally associated with two important technological innovations of the EBA: (a) the rapid development of metallurgy, a *Metallschock*, which transformed metals into a commodity worth trading, and (b) the invention of the longboat, which enabled swifter, more directed and more long-range sea voyaging.

In more recent decades, two important alterations were made to Renfrew’s model. First, it was shown that EB II trading was not a widely accessible venture but was controlled by groups or individuals located in a few large trading communities.<sup>18</sup> As a result, the motive behind this phenomenon was not only the desire for metals but also the desire for social distinction through participation in long-distance networks of maritime interaction and exchange. Second, on the basis of recent archaeological evidence, it has been suggested that intensive interaction and trade of Cycladic commodities started slightly earlier than EB II, in the late EB I (c. 2700 BC), on the basis of evidence for gateway communities operating along the north Cretan coast, such as at Ayia Photia and Poros Katsambas.<sup>19</sup> Thus, long-distance trade, longboats, gateway communities, and the beginning of a *Metallschock* were considered closely connected phenomena, which emerged more-or-less simultaneously in the Aegean sometime around 2800/2700 BC, in the transition from EB I to EB II.

In a recent paper, we have taken issue with this orthodoxy and have argued instead that such phenomena have a deeper history going back at least as far as the late FN. This new interpretation is based on the results of recent detailed, integrated characterisation (morphology, technology, raw materials) of FN IV and EB IA artefactual assemblages from the recently excavated coastal settlement of Kephala Petras, in east Crete. Here we summarise the argumentation and evidence presented in this paper and further argue that trading, rather than migrations, was the main mechanism behind the increased degree of cultural integration between Crete and the rest of the Aegean in the latter part of the 4<sup>th</sup> millennium BC.

### Kephala Petras

The settlement lies on the Kephala hill, which in the prehistoric period had the form of a coastal promontory, 200m northeast of the later Minoan town and palace of Petras (Fig. 1).<sup>20</sup> The Kephala hill enjoys a strategic location with visual control over an extensive area of land- and seascape. Although the excavations covered a relatively small area, the settlement was much larger as indicated by dense pottery scatters on the surface. The excavated building remains belong to at least three architectural phases. On the basis of the associated ceramic assemblages, the earliest architectural phase is dated to the FN IV (c. 3300–3100/3000 BC), and the two subsequent to the earliest phase of the Bronze Age, the Early Minoan IA (c. 3100/3000–2900/2800) (hereafter EM IA).

### Pottery

Ceramic study took the form of an integrated macroscopic and petrographic characterisation of technological and typological variation. On this basis the pottery was sorted into fabric groups and wares.<sup>21</sup>

<sup>17</sup> Renfrew 1972, 444, 451.

<sup>18</sup> Broodbank 1989; Broodbank 1993; Broodbank 2000, 256–258.

<sup>19</sup> Carter 1998; Day et al. 1998; Broodbank 2000, 247–256, 300–304; Davaras – Betancourt 2004; Wilson et al. 2008.

<sup>20</sup> Papadatos 2008; Papadatos 2012.

<sup>21</sup> For a more detailed presentation see Papadatos – Tomkins 2013, 356–365; Papadatos et al. forthcoming.

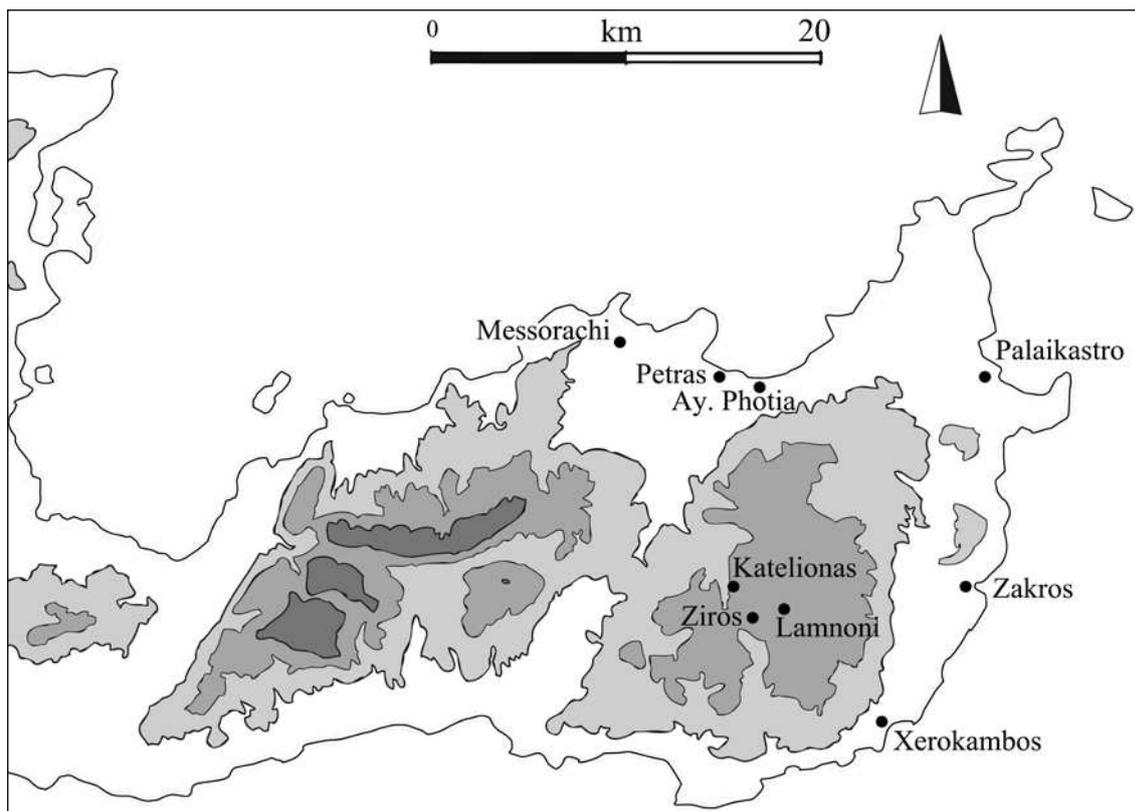


Fig 1 Map of the Siteia region.

(a) *Final Neolithic IV Pottery*

The pottery fabrics of the FN IV phase could be classified into three principal groups: Local Grog, Cretan Imported and Off-Island Imported.

**Local Grog Fabric Group:** The majority, almost 80%, of the FN IV pottery belongs to a single fabric group, characterised by a non-calcareous clay matrix tempered with fragments of crushed pottery, or grog.<sup>22</sup> The mineralogy of this fabric and its high frequency strongly suggest that it represents local, most probable on-site, ceramic production. The pottery includes bowl and jar forms with close parallels in contemporary FN assemblages from inland sites in east and central Crete, such as Knossos, Phaistos and Kastelli Phournis,<sup>23</sup> indicating a community following existing Cretan ceramic traditions. It is important, however, to recognise also the occurrence, usually rare, of ceramic types that do not find close parallels in Crete. These types include the ‘cheese pot’, the biconical jar with horned and/or grooved handle, the hole-mouthed jar with crescentic lug or vertically-pierced tubular lug, the bowl with horizontally pierced tubular lug (with or without low pedestal) and some types of plastic decoration, namely pellets and cordons (Fig. 2A).

**Cretan Imported Group:** The remainder (20%) of the FN IV assemblage comprise a series of distinctly different and rare fabrics imported to Kephala. About 10% seem to derive from other pottery-producing communities located elsewhere in Crete.

**Off-Cretan Imported Group:** The other 10% comprise a series of fabrics containing white mica-schist.<sup>24</sup> These fabrics occur in vessels with off-island typological parallels, and, from a mineralogical point of view, are compatible with the schist dominated geology of the Hellenic

<sup>22</sup> Nodarou 2012, 82–83.

<sup>23</sup> Vagnetti 1973; Manteli 1992; Tomkins 2007.

<sup>24</sup> Nodarou 2012, 83–83.

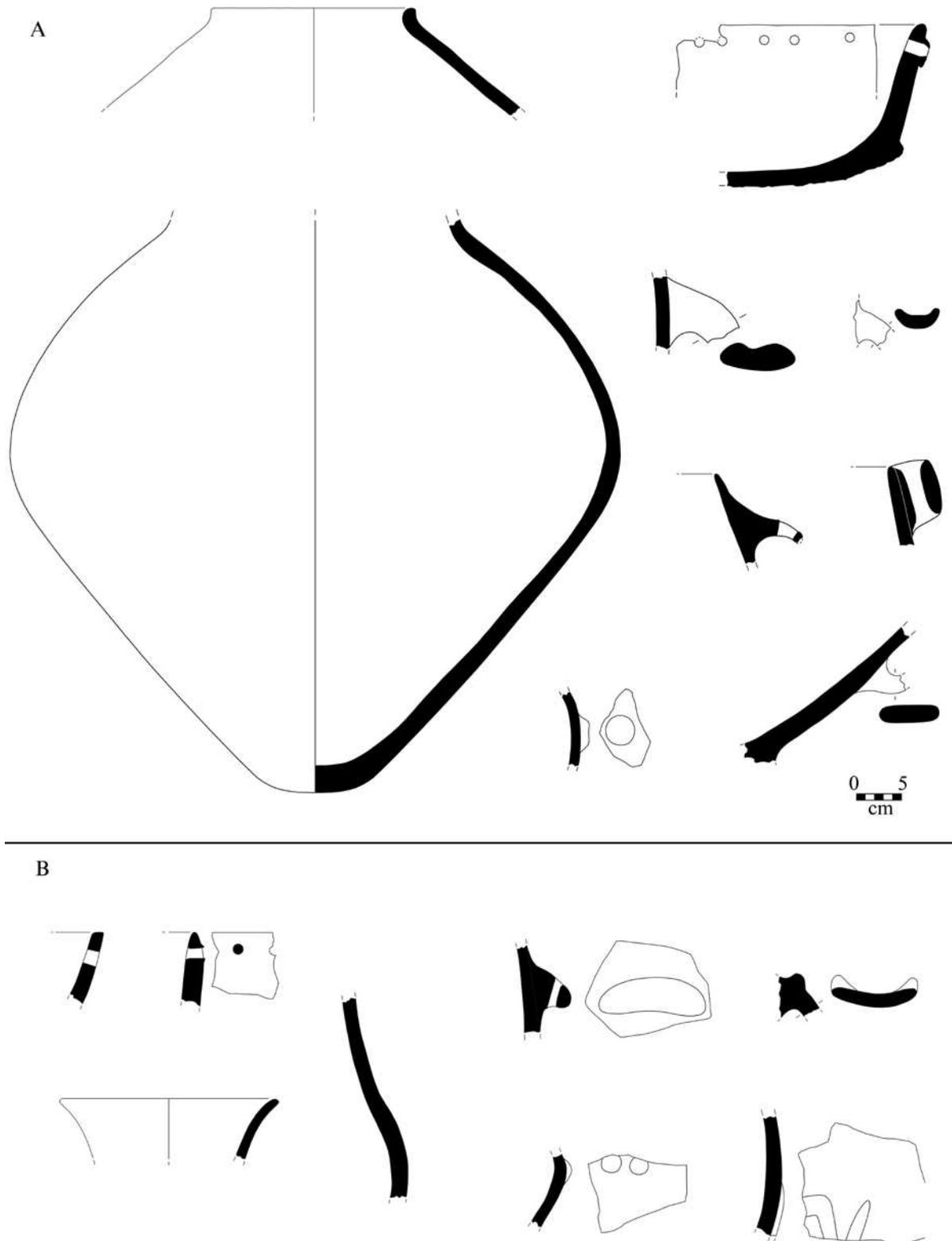


Fig. 2 A. FN IV off-Cretan vessels made in the Local Grog fabric group; B. FN IV off-Cretan vessels made in the imported White Mica-Schist fabric group.

Arc. Analogous mica-schist fabrics occur in FN and EB ceramic assemblages from Attica and the Cycladic islands of Kea, Thera, Melos, Amorgos and Keros. Regarding typology, some of the ceramic forms have parallels from the Dodecanese, but the closest parallels are with latest FN assemblages from Attica, Euboia and the northwest Cyclades, such as Kephala and Ayia Irini I on Kea.<sup>25</sup> The types included are the cheese pot, the biconical jar with grooved handle, the hole-mouthed jar with crescentic lug, the collared jar with narrow body and plastic decoration with pellets and cordons (Fig. 2B). It should be stressed that these non-Cretan vessel types also occur rarely (with the exception of the ubiquitous cheese pot) in the Local Grog fabric group. The typological similarity between vessels of the two fabric groups suggests that imported vessels of the White Mica-Schist Fabric group were the source of inspiration for local experimentation with and selective adoption of these new foreign forms.

(b) *Early Minoan IA Pottery*

The EM IA pottery from Kephala Petras could also be divided into three main groups: Local Grog, Cretan Imported and Cycladic/Cycladicising.

**Local Grog Fabric:** Almost the entire EM IA assemblage (98%) is locally made in essentially the same grog-tempered fabric as in FN IV.<sup>26</sup> A wide range of ceramic forms were produced, from small cups and high-pedestaled chalices, to cooking jars and baking plates, or large storage pithoi. The evidence from the local pottery does not indicate a clear break between FN IV and EM IA, but rather evolution in technology and typology that is characterised by both continuity and change. It is interesting to note that some new EM forms can be linked back to FN IV types, which are considered as non-Cretan in inspiration: e.g. the EM IA baking plate with holes beneath the rim echoes the FN cheese pot; the EM IA hole-mouthed jar with crescentic projections echoes rare FN IV hole-mouthed jars with actual crescentic lugs. Finally, there are entirely new forms, such as the fenestrated chalice and the pithos with rich relief decoration, which although produced in the Local Grog Fabric, have close parallels from Akrotiri on Thera, in both FN and EC I contexts.<sup>27</sup>

**Cretan Imported Group:** The imported pottery is more limited than that of the FN IV and can be classified into two broad groups. A small number of vessels, about 0.5%, finds close morphological parallels in other EM IA assemblages in Crete and is mineralogically compatible with a provenance on the island.

**Cycladic/Cycladicising Group:** The second imported group, about 1.5% of the total, is characterised by vessels in calcite-tempered fabrics which typologically find their closest parallels in Cycladic assemblages of the EB I period.<sup>28</sup> The forms include the deep bowl with vertical tubular lug(s), the serving plate and the shallow bowl with incurved rim, the hole-mouthed jar with strap handles, the jar with horizontal non-perforated crescentic lug and collared neck jar (Fig. 3). All have close parallels in early and late EB I contexts from islands in the southern Cyclades, such as Naxos, Amorgos and Thera.<sup>29</sup> The rarity of these vessels suggests that they were imported to Kephala Petras. A Cycladic source seems a strong candidate, although we cannot exclude that some or all were produced on Crete, as has been argued for other Cretan EB I coastal sites.<sup>30</sup> In general, despite the decline in the percentage of off-Cretan imported or influenced pottery in EM IA, the evidence indicates continued familiarity with and influence from off-island regions, in particular the southern Cyclades.

<sup>25</sup> Coleman 1977; Wilson 1999.

<sup>26</sup> Nodarou 2012, 82–83.

<sup>27</sup> Kariotis 2003; Kariotis forthcoming.

<sup>28</sup> Nodarou 2012, 84–85.

<sup>29</sup> Karantzali 2006; Wilson et al. 2008.

<sup>30</sup> Wilson et al. 2008 ; Day et al. 2012.

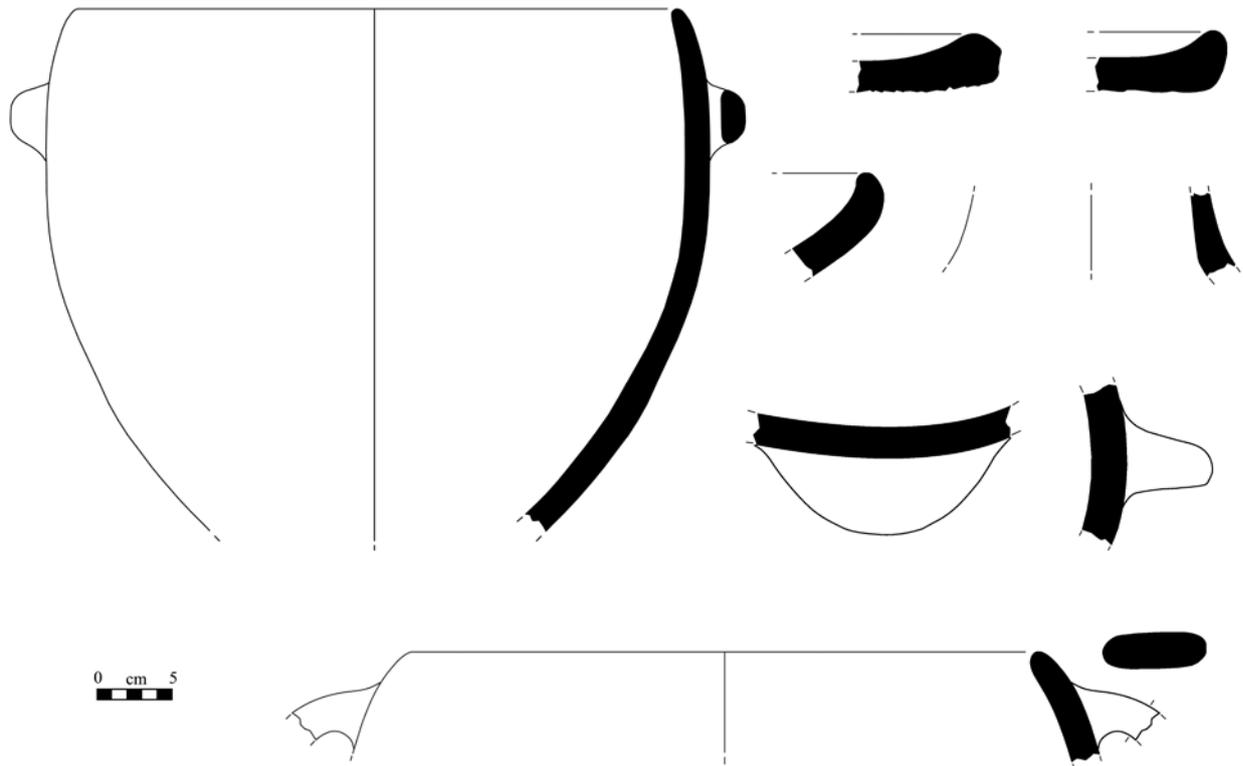


Fig. 3 EM IA off-Cretan vessels made in the Cycladic/Cycladicising Calcite-tempered fabric group.

#### Raw materials

Beyond pottery, there is evidence for the importation of non-Cretan raw materials, namely obsidian and copper.

##### *(a) Obsidian*

All the chipped stone tools are made from Melian obsidian.<sup>31</sup> Although the presence of obsidian cannot be used to differentiate Kephala Petras from other Neolithic sites in Crete, at which Melian obsidian is typically present as a major or minor component, what is unusual is the size, forms and technological characteristics of the Kephala Petras assemblage. First, the percentage of obsidian is encountered in significantly higher proportions than at any other FN site, including Knossos. The fact that no other local or imported stone sources were used suggests that the supply of obsidian was sufficient to meet requirements. Second, the obsidian arrived at Kephala Petras in the form of raw nodules and not as prepared cores or finished tools, as at other contemporary sites. This implies that the Kephala Petras community enjoyed special, seemingly restricted access not only to obsidian in its raw nodule form, but also to the necessary technical knowledge for the transformation of the raw nodules into finished tools. Indeed, the characteristics of the Kephala Petras knapping technology, namely pressure flaking, blade production, burin technology and utilisation of flakes situates it more closely with Cycladic sites<sup>32</sup> than with other contemporary Cretan communities.<sup>33</sup>

<sup>31</sup> D'Annibale 2008.

<sup>32</sup> Carter 2008, 228–229.

<sup>33</sup> Branigan 1998, 47–50.

*(b) Metals*

Fragments of copper ore and slags, and deformed clay fragments, probably from refractory material used in the metallurgical process, testify to metallurgical activity at Kephala Petras, albeit limited in scale and output.<sup>34</sup> This activity, which seems to begin in FN IV, involved the smelting of oxidised ores for the production of metallic copper.<sup>35</sup> Currently, there is no clear evidence for metallurgy anywhere else on Crete during this period. Thus, it seems that Kephala Petras is more closely linked with late FN sites outside Crete, such as Kephala and Paoura on Kea and Yiali near Nisyros, where small-scale copper smelting was practised before the end of the Neolithic.<sup>36</sup> The origin of the copper remains unknown, but the most probable sources are located in the western Cyclades (Kythnos, Seriphos and Siphnos) and Lavrion. Further evidence for the connection of Kephala Petras with Aegean metallurgy may be seen in the skeuomorphism of some EM IA ceramics, which indicates knowledge of sheet metal vessels. The biconical fenestrated chalices bear several skeuomorphic features that recall sheet metal technology, such as the thin walls, the fenestrated ‘pedestal’, the plastic knobs and rivets, and the shiny, dark grey burnished surface.<sup>37</sup> The source of the metal prototypes and their technology of production remain unknown, but considering the scarce evidence for Cretan metallurgy during FN IV–EM IA, it seems reasonable to conclude that they too are an off-Cretan element.

**Finished products**

Apart from pottery and raw materials, Kephala Petras also provided evidence for the importation of finished products, namely spindle whorls and body ornaments.<sup>38</sup> Most spindle whorls were locally made, but at least one FN IV whorl was made in an imported White Mica-Schist fabric, and one EM IA whorl was made in the Cycladic or Cycladicising Calcite-tempered fabric. It seems, therefore, that the Kephala Petras community acquired spindle whorls from the same off-island sources as the imported pottery in both FN IV and EM IA phases. Finally, a small FN IV cache of phallic pendants (Fig. 4A) include examples made in White Mica-Schist fabrics, which must have been imported to Kephala Petras, and two in spondylus shell (Fig. 4B), a material rare in Crete but more commonly used for body ornaments in the rest of the Aegean.<sup>39</sup>

**Discussion**

From the above evidence, it appears that during FN IV the Kephala Petras community had developed close, direct relationships with communities beyond the island. The ceramic parallels and the origin of the raw materials (obsidian and copper) suggest that these communities were probably located in the Attica-Kephala cultural region (Fig. 5). These relationships involved the exchange of finished objects, such as pottery, spindle whorls and pendants, as well as raw materials, such as obsidian and metal. Furthermore, it also clearly included a wide-ranging exchange of ideas and practices, such as technologies of production (e.g. obsidian, metallurgy), cultures of consumption (e.g. local adoption of off-Cretan ceramic forms, such as the cheese pot) and identities/concepts of the body (e.g. phallic pendants). It seems, therefore, that Kephala Petras currently represents our earliest clear case of an outward-looking coastal Cretan community, which enjoyed

<sup>34</sup> Papadatos 2007.

<sup>35</sup> Catapotis et al. 2011.

<sup>36</sup> Sampson 1988; Nakou 1995, 3–8; Muhly 2002, 77.

<sup>37</sup> Papadatos – Tomkins 2013, 365, fig. 9.

<sup>38</sup> Papadatos – Tomkins 2013, 367–368.

<sup>39</sup> Theodoropoulou 2011.

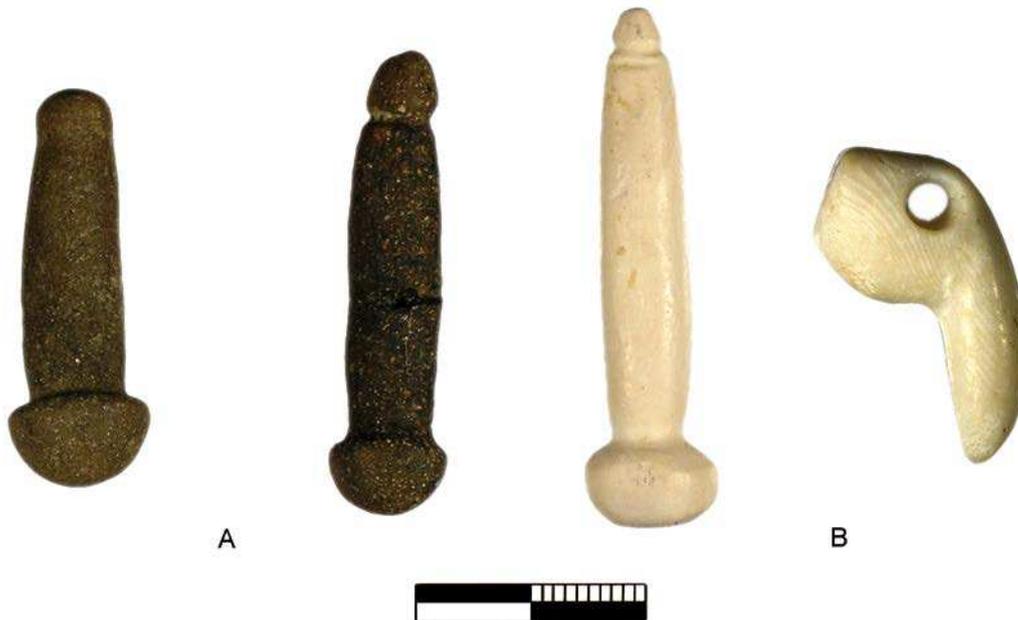


Fig. 4 A. FN IV pendants made in the imported White Mica-Schist fabric group; B. FN IV pendants made in imported spondylus shell.

close, direct contact with off-island areas, imported goods and raw materials from overseas, and adopted and/or adapted foreign ideas and practices.

It should be noted that these off-island relations are characterised by both distance and specificity. The comprehensive nature of the ceramic characterisation work means that we can conclusively rule out any connectivity with more proximate regions of the Aegean, such as the southern Dodecanese. Rather specific connection seems to have been sought with the more distant Attica-Kephala cultural region. Sustaining this specific, distant link required increased navigational capabilities and the use of boats that were capable not only of swiftly covering longer distances, but also of bypassing islands that previously had functioned as stepping stones. We therefore believe it likely that vessels with the navigational capabilities of longboats, which are traditionally considered as an EB II invention, were built and used as early as the FN IV period. Indeed, not only was the construction of such boats technically possible at the end of the Neolithic,<sup>40</sup> but also petroglyphs recently found at Strophilas on Andros<sup>41</sup> clearly suggest that a craft similar in form to the EB II longboat was already known at the end of FN in the islands.

The operation of longboats at the end of the FN enabled Kephala Petras to gain privileged access to the important mineral resources of Lavrion and the western Cyclades (metal, obsidian), as well as to the metallurgical and knapping techniques for the transformation of these raw materials into finished objects. However, in order for this activity to qualify as trading, it is important to provide evidence that Kephala Petras operated as a gateway community, controlling local access to off-island raw materials and technological knowledge. The late FN–EM I sites located by surveys in the Ziros uplands (Fig. 1)<sup>42</sup> and in neighbouring areas<sup>43</sup> take the form of small hamlets or isolated farmsteads, much smaller than the settlement at Kephala Petras. The ceramic material from these sites shows no obvious off-Cretan fabrics, and evidence for the adoption of foreign ceramic forms is very limited or absent. Of the off-Cretan forms observed at Kephala Petras only

<sup>40</sup> Broodbank 2000, 97.

<sup>41</sup> Televantou 2008; Liritzis 2010.

<sup>42</sup> Branigan 1998.

<sup>43</sup> Tsipopoulou 1989; Tsipopoulou 1990; Whitley et al. 1999; Vokotopoulos 2000; Schlager 2001; Greco et al. 2002; Nowicki 2002; Papadatos – Sofianou 2013.



Fig. 5 Map of the Aegean with sites and areas mentioned in the text.

cheese pots occur at a small number of other coastal/near-coastal sites in the Siteia region and are almost entirely absent from sites in the Ziros uplands.<sup>44</sup> Furthermore, obsidian is rare or absent from FN IV–EB I sites in the Ziros uplands,<sup>45</sup> which typically exploit local chert sources. The obsidian at these inland sites arrived in the form of finished tools, suggesting that the procurement, reduction, consumption and secondary exchange of obsidian was primarily mediated through and controlled by communities on the Cretan coast,<sup>46</sup> with Kephala Petras being the most obvious candidate. Notably, these inland sites lack a pressure-flaked industry in local chert,<sup>47</sup> suggesting that they were not only excluded from accessing obsidian in raw material form, but also from the technology for its transformation into pressure-flaked blades. The same applies to metal objects, which are extremely rare at inland sites, and most probably were procured through coastal sites, such as Kephala Petras.<sup>48</sup> Taken together, the above evidence suggests that FN IV–EM IA Kephala Petras was very different from other contemporary sites of the Siteia region concerning access to off-island objects, raw materials and associated technical knowledge for their transformation into finished products.

### Conclusions

To conclude, the FN IV–EM IA coastal site of Kephala Petras constituted an early trading community which, thanks to its close off-island connections enjoyed preferential access to valued raw materials, to the technologies for their transformation and to finished objects. The motive behind

<sup>44</sup> Papadatos – Tomkins 2013, 372.

<sup>45</sup> Branigan 1998, 48–50.

<sup>46</sup> Branigan 1998, 49.

<sup>47</sup> Branigan 1998, 48–50.

<sup>48</sup> Papadatos – Tomkins 2013, 373–374.

trading with off-Cretan areas was not simply the acquisition of valuable goods for internal consumption, but also the accumulation of symbolic and political capital at a regional level. Preferential access to Cycladic goods allowed Kephala Petras to develop advantageous relationships with other communities in the region, by controlling the distribution of sought-after off-island products and raw materials and perhaps even by manipulating local demand. From this point of view, FN IV–EB IA Kephala Petras appears to represent the earliest of a series of gateway communities, such as Ayia Photia, Mochlos and Poros Katsambas, which operated along the north coast of Crete during the EBA.<sup>49</sup>

On this basis, the origins of phenomena traditionally associated with the EBA, such as the emergence of trading, the use of longboats, the establishment of distant maritime networks for the movement of people, goods and ideas and the flourishing of gateway communities, should now be pushed at least as far back as FN IV. Moreover, we believe that Kephala Petras was not the only trading site in Crete or the rest of the Aegean. Extensive, important, fortified FN sites, have been recently excavated on the Greek mainland and in the Cyclades, namely Zagani in Attica<sup>50</sup> and Strophilas on Andros.<sup>51</sup> These may have played a similar role in early trading and long-range maritime activity as is apparent at Kephala Petras. The depictions of longboats on the fortification wall of Strophilas reinforce the connection of this prosperous settlement with maritime interaction. A similar suggestion could be also made for Akrotiri on Thera, at least on the basis of the deep and rich FN deposits excavated beneath the Middle and Late Bronze Age town.<sup>52</sup>

The above evidence also presents important implications for theories on the historical conditions of the FN–EB transition and the possibility of population movements in Crete. Kephala Petras, a coastal site with a large number of off-island cultural elements could be regarded as one of the best candidates for a newcomers' settlement. However, the evidence clearly suggests that the vast majority of the pottery was locally manufactured, and belongs to ceramic forms similar to other typical Cretan FN assemblages such as Knossos, Phaistos and Kastelli Phournis.<sup>53</sup> This picture does not provide evidence for major population movements to Crete in the FN IV, although it does depict the existence of a trading network within which people could and almost certainly did move and re-locate between regions in multiple directions. Moreover, comparison of the pottery of the FN IV and EM IA phases shows a significant degree of continuity (technological, morphological), rather than the clear break that one could associate with a cultural shift and the arrival of newcomers during the FN IV–EM IA transition.<sup>54</sup> Small scale population movements cannot be excluded, as some imported finished artefacts, such as the spindle whorls and the body ornaments, may have travelled to Crete together with their owners, e.g. perhaps marriage partners. However, in the light of the above discussion it is suggested that the cultural integration of Crete in the Aegean world could not be the result of the major migration episodes or large-scale colonisation and replacement envisaged by earlier researchers. The evidence from Kephala Petras reinforces the idea that in the late FN period Crete enters the wider Aegean world,<sup>55</sup> and demonstrates that this was primarily achieved through interregional trade and more intensive maritime activity facilitated by long-range boats, which allowed people, goods and ideas to travel further and more frequently across the Aegean well before the beginning of the EBA.

<sup>49</sup> Branigan 1991; Day et al. 1998; Wilson et al. 2008.

<sup>50</sup> Georgopoulos et al. 1999.

<sup>51</sup> Televantou 2008.

<sup>52</sup> Kariotis 2003; Kariotis forthcoming.

<sup>53</sup> Papadatos 2012; Papadatos – Tomkins 2013; Papadatos et al. forthcoming.

<sup>54</sup> Papadatos 2012, 72–75.

<sup>55</sup> Vagnetti 1996.

## References

Betancourt 1999

P. P. Betancourt, What is Minoan? FN/EM I in the Gulf of Mirabello region, in: P. P. Betancourt – V. Karageorghis – R. Laffineur – W.-D. Niemeier (eds.), *Meletemata. Studies in Aegean Archaeology presented to Malcom H. Wiener as he enters his 65<sup>th</sup> Year*, *Aegaeum* 20 (Liège 1999) 33–40.

Branigan 1970

K. Branigan, *The Foundations of Palatial Crete* (London 1970).

Branigan 1991

K. Branigan, Mochlos. An early Aegean ‘gateway community’?, in: R. Laffineur – L. Basch (eds.), *Thalassa: L’Égée Préhistorique et la mer*, *Aegaeum* 7 (Liège 1991) 97–105.

Branigan 1998

K. Branigan, Prehistoric and early historic settlement in the Ziros region, eastern Crete, *The Annual of the British School at Athens* 93, 1998, 23–90.

Brodie et al. 2008

N. Brodie – J. Doole – G. Gavalas – C. Renfrew (eds.), *Horizon – Όρίζων: A Colloquium on the Prehistory of the Cyclades*, Cambridge, 25<sup>th</sup>–28<sup>th</sup> March 2004 (Cambridge 2008).

Broodbank 1989

C. Broodbank, The longboat and society in the Cyclades in the Keros-Syros Culture, *American Journal of Archaeology* 93, 1989, 319–337.

Broodbank 1993

C. Broodbank, Ulysses without sails. Trade, distance, knowledge and power in the early Cyclades, *World Archaeology* 24, 1993, 315–331.

Broodbank 2000

C. Broodbank, *An Island Archaeology of the Early Cyclades* (Cambridge 2000).

Carter 1998

T. Carter, Reverberations of the ‘international spirit’. Thoughts upon ‘Cycladica’ in the Mesara, in: K. Branigan (ed.), *Cemetery and Society in the Aegean Bronze Age*, *Sheffield Studies in Aegean Archaeology* 1 (Sheffield 1998) 59–77.

Carter 2008

T. Carter, The consumption of obsidian in the Early Bronze Age Cyclades, in: Brodie et al. (2008) 225–235.

Catapotis et al. 2011

M. Catapotis – Y. Bassiakos – Y. Papadatos, Reconstructing Early Cretan metallurgy. Analytical evidence from Kephala Petras, Siteia, in: P. P. Betancourt – S. C. Ferrence (eds.), *Metallurgy. Understanding How, Learning Why*, *Studies in Honor of James D. Muhly* (Philadelphia 2011) 69–78.

Coleman 1977

J. E. Coleman, *Keos I. Kephala. A Late Neolithic Settlement and Cemetery* (Princeton 1977).

Davaras – Betancourt 2004

C. Davaras – P. P. Betancourt, *The Hagia Photia Cemetery I: The Tomb Groups and Architecture* (Philadelphia 2004).

Day et al. 1998

P. M. Day – D. E. Wilson – E. Kiriati, Pots, labels, and people. Burying ethnicity in the cemetery at Aghia Photia, Siteias, in: K. Branigan (ed.), *Cemetery and Society*, *Sheffield Studies in Aegean Archaeology* 1 (Sheffield 1998) 133–149.

Day et al. 2012

P. M. Day – A. Hein – L. Joyner – V. Kilikoglou – E. Kiriati – A. Tsolakidou – D. Wilson, Petrographic and chemical analysis of the pottery, in: C. Davaras – P. P. Betancourt (eds.), *The Hagia Photia Cemetery II. The Pottery* (Philadelphia 2012) 115–138.

D'Annibale 2008

C. D'Annibale, Obsidian in transition. The technological reorganization of the obsidian industry from Petras Kephala (Siteia) between Final Neolithic IV and Early Minoan I, in: Isaakidou – Tomkins (2008) 191–200.

Evans 1921

A. J. Evans, Palace of Minos I (London 1921).

Evans 1974

J. D. Evans, The archaeological evidence and its interpretation. Some suggested approaches to the problem of the Aegean Bronze Age, in: R. A. Crossland – A. Birchall (eds.), Bronze Age Migrations in the Aegean (London 1974) 17–26.

Georgopoulos et al. 1999

A. Georgopoulos – G. E. Karras – G. N. Makris, The photogrammetric survey of a prehistoric site undergoing removal, Photogrammetric Record 16, 93, 1999, 443–456.

Greco et al. 2002

E. Greco – T. Kalpaxis – N. Papadakis – A. Schnapp – A. Viviers – D. Viviers, Travaux menés en collaboration avec l'École française en 2001. Itanos (Crète orientale), Bulletin de correspondance hellénique 126, 2002, 577–582.

Haggis 2005

D. C. Haggis, Kavousi I. The Archaeological Survey of the Kavousi Region (Philadelphia 2005).

Hayden 2003

J. H. Hayden, Final Neolithic – Early Minoan I/IIA settlement in the Vrokastro area, eastern Crete, American Journal of Archaeology 107, 2003, 363–412.

Hood 1990

M. S. F. Hood, Settlers in Crete c. 3000 B.C., Cretan Studies 2, 1990, 150–158.

Isaakidou – Tomkins 2008

V. Isaakidou – P. Tomkins (eds.), Escaping the Labyrinth. The Cretan Neolithic in Context (Oxford 2008).

Kariotis 2003

S. Kariotis, Ακρωτήρι Θήρας. Μια πρώτη ανάγνωση της στρωματογραφικής ακολουθίας στην Πλατεία Διπλών Κεράτων, in: A. Vlachopoulos – K. Birtacha (eds.), Argonautis. Timetikos tomos gia ton Kathegete Christo G. Douma apo tous mathetes tou sto Panepistimio Athenon (1980–2000) Essays in Honour of Professor C. Doumas (Athens 2003) 419–444.

Kariotis, in print

S. Kariotis, Νεότερα στοιχεία για την Πρώιμη Εποχή του Χαλκού στο Ακρωτήρι, in: C. Doumas – A. Giannikouri – O. Kouka (eds.), The Aegean Early Bronze Age. New Evidence. International Conference, Athens, April 11<sup>th</sup>–14<sup>th</sup> (Athens, in print).

Karantzali 2006

E. Karantzali, The pottery of phases I and II and a note on the pottery from the Bastion Area, in: L. Marangou – C. Renfrew – C. Doumas – G. Gavalas (eds.), Markiani Amorgos. An Early Bronze Age Fortified Settlement. An Overview of the 1985–1991 Investigations (London 2006) 101–130.

Liritzis 2010

I. Liritzis, Strofilas (Andros Island, Greece). New evidence for the Cycladic Final Neolithic period through novel dating methods using luminescence and obsidian hydration, Journal of Archaeological Science 37, 2010, 1367–1377.

Manteli 1992

K. Manteli, The Neolithic well at Kastelli Phourmis in eastern Crete, The Annual of the British School at Athens 87, 1992, 103–120.

Muhly 2002

J. D. Muhly, Early metallurgy in Greece and Cyprus, Der Anschnitt 15, 2002, 77–82.

Muhly 2002

J. D. Muhly, Chrysokamino and the beginnings of metal technology on Crete and in the Aegean, in: L. Preston Day – M. S. Mook – J. D. Muhly (eds.), Crete Beyond the Palaces (Philadelphia 2004) 283–289

Nakou 1995

G. Nakou, The cutting edge. A new look at early Aegean metallurgy, *Journal of Mediterranean Archaeology* 8, 1995, 1–32.

Nodarou 2012

E. Nodarou, Pottery fabrics and recipes in the Final Neolithic and Early Minoan I period: the analytical evidence from the settlement and the Rock Shelter of Kephala Petras, in: M. Tsipopoulou (ed.), *Petras, Siteia, 25 years of Excavation and Studies* (Athens 2012) 81–88.

Nowicki 1999

K. Nowicki, Final Neolithic refugees or Early Bronze Age newcomers? The problem of defensible sites in Crete in the late fourth millennium B.C., in: P. P. Betancourt – V. Karageorghis – R. Laffineur – W.-D. Niemeier (eds.), *Meletemata. Studies in Aegean Archaeology presented to Malcom H. Wiener as he enters his 65<sup>th</sup> Year*, *Aegaeum* 20 (Liège 1999) 575–581.

Nowicki 2002

K. Nowicki, The End of the Neolithic in Crete, *Aegean Archaeology* 6, 2002, 7–72.

Papadatos 2007

Y. Papadatos, The beginning of metallurgy in Crete. New evidence from the FN–EM I settlement at Kephala Petras, Siteia, in: P. M. Day – R. C. P. Doonan (eds.), *Metallurgy in the Early Bronze Age Aegean* (Oxford 2007) 154–167.

Papadatos 2008

Y. Papadatos, The Neolithic–Early Bronze Age transition in Crete. New evidence from the settlement at Petras Kephala, Siteia, in: Isaakidou – Tomkins (2008) 258–272.

Papadatos 2012

Y. Papadatos. Back to beginnings: the earliest habitation at Petras on the basis of the evidence from the FN–EM I settlement on Kephala, in: M. Tsipopoulou (ed.), *Petras, Siteia, 25 Years of Excavation and Studies* (Athens 2012) 69–79.

Papadatos et al. 2013

Y. Papadatos – P. Tomkins, Trading, the longboat, and cultural interaction in the Aegean during the late fourth millennium B. C. E. The View from Kephala Petras, east Crete, *American Journal of Archaeology* 117, 2013, 353–381.

Papadatos – Sofianou 2013

Y. Papadatos – C. Sofianou, A prepalatial tholos tomb at Messorachi Skopi, near Siteia, east Crete, *Aegean Archaeology* 10, 2013, 7–31.

Papadatos et al., in print

Y. Papadatos – P. Tomkins – E. Nodarou – Y. Iliopoulos, The beginning of Early Bronze Age in Crete. Continuities and discontinuities in the ceramic assemblage at Kephala Petras, Siteia, in: C. Dumas – A. Giannikouri – O. Kouka (eds.), *The Aegean Early Bronze Age. New Evidence. International Conference, Athens, April 11<sup>th</sup>–14<sup>th</sup>* (Athens, in print).

Renfrew 1972

C. Renfrew, *The Emergence of Civilisation. The Cyclades and the Aegean in the Third Millennium BC* (London 1972).

Sampson 1988

A. Sampson, *Η Νεολιθική κατοίκηση στο Γυαλί της Νισύρου* (Athens 1988).

Schlager 2001

N. Schlager, Pleistozäne, neolithische, bronzzeitliche und rezente Befunde und Ruinen im fernen Osten Kretas, *Jahreshefte des Österreichischen Archäologischen Institutes in Wien* 70, 2001, 157–220.

Televantou 2008

C. A. Televantou, Strofilas: a Neolithic Settlement on Andros, in: Brodie et al. (2008) 43–53.

Theodoropoulou 2011

T. Theodoropoulou, *Spondylus gaederopus* in Aegean prehistory. Deciphering shapes from northern Greece, in: F. Ifantidis – M. Nikolaidou (eds.), *Spondylus in Prehistory. New Data and Approaches. Contribution to the Archaeology of Shell Technologies*, *British Archaeological Reports, International Series* 2216 (Oxford 2011) 93–104.

Todaro – Di Tonto 2008

S. Todaro – S. Di Tonto, The Neolithic settlement at Phaistos revisited. Evidence for ceremonial activity on the eve of the Bronze Age, in: Isaakidou – Tomkins (2008) 177–190.

Tomkins 2007

P. Tomkins, Neolithic: Strata IX–VIII, VII–VIB, VIA–V, IV, IIIB, IIIA, IIB, IIA and IC Groups, in: N. Momigliano (ed.), *Knossos Pottery Handbook: Neolithic and Bronze Age (Minoan)*, British School at Athens Studies 14 (London 2007) 9–48.

Tomkins 2008

P. Tomkins, Time, space and the reinvention of the Cretan Neolithic, in: Isaakidou – Tomkins (2008) 22–51.

Tomkins 2010

P. Tomkins, Neolithic antecedents, in: E. Cline (ed.), *The Oxford Handbook of the Bronze Age Aegean (ca. 3000–1000 BC)* (Oxford 2010) 31–49.

Tsipopoulou 1989

M. Tsipopoulou, *Archaeological Survey at Aghia Photia, Siteia* (Gothenburg 1989).

Tsipopoulou 1990

M. Tsipopoulou, Μινωική κατοικηση στην περιοχή της πόλης της Σητείας, in: *Proceedings of the 6<sup>th</sup> International Cretological Congress A2* (Chania 1990) 305–321.

Vagnetti 1973

L. Vagnetti, L'insediamento neolitico di Festos, *Annuario della Scuola Archeologica di Atene e delle Missioni Italiane in Oriente* 50–51, 1973, 7–138.

Vagnetti 1996

L. Vagnetti, The Final Neolithic: Crete enters the wider world, *Cretan Studies* 5, 1996, 29–39.

Vagnetti 1978

L. Vagnetti – P. Belli, Characters and problems of the Final Neolithic in Crete, *Studi Micenei ed Egeo-Anatolici* 19, 1978, 125–163.

Vokotopoulos 2000

L. Vokotopoulos, Οχυρές θέσεις της Τελικής Νεολιθικής και Προτομινωικής Ι στην περιοχή της Ζάκρου, in: *Proceedings of the 8<sup>th</sup> International Cretological Congress* (Herakleion 2000) 129–146.

Warren 1974

P. Warren, Crete, 3000–1400 B.C. Immigration and the archaeological evidence, in: R. A. Crossland – A. Birchall (eds.), *Bronze Age Migrations in the Aegean* (London 1974) 41–47.

Watrous 1994

L. V. Watrous, Review of Aegean prehistory 3. Crete from earliest prehistory through the Protopalatial period, *American Journal of Archaeology* 98, 1994, 695–753.

Whitley et al. 1999

J. Whitley – M. Prent – S. Thorne, Praios IV. A preliminary report on the 1993 and 1994 survey seasons, *The Annual of the British School at Athens* 94, 1999, 215–264.

Wilson 1999

D. E. Wilson, *Keos IX. Ayia Irini. Periods I–III. The Neolithic and Early Bronze Age Settlements* (Mainz 1999).

Wilson et al. 2008

D. E. Wilson – P. M. Day – N. Dimopoulou-Rethemiotaki, The gateway port of Poros-Katsambas. Trade and exchange between north-central Crete and the Cyclades in EB I–II, in: Brodie et al. (2008) 261–270.

