Géoarchéologie des îles de Méditerranée

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Geoarchaeology of the Mediterranean Islands

sous la direction de
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Early Holocene Interaction in the Aegean Islands: Mesolithic Chert Exploitation at Stélida (Naxos, Greece) in Context

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Abstract

This paper details the Mesolithic component (*potential* date 9000-7000 cal. BC) of a recent geo-archaeological survey of Stélida, a chert source and associated stone tool making workshops on Naxos, the largest of the Cycladic islands (southern Greece). The history of research is provided, followed by a precis of the survey methods, and the results of the geological study. The techno-typological attributes of the Mesolithic chipped stone artefacts are detailed, and the material's intra-site distribution discussed, followed by an in-depth comparison with Early Holocene material from elsewhere in the southern Aegean, both insular and continental, concluding that the assemblage can be situated within an "island lithic tradition". Stélida is then located within the wider context of the Aegean Mesolithic to consider issues of chronology and the site's significance within broader debates concerning the nature of Early Holocene insular activity and colonization. While the Mesolithic activity at Stélida forms part of an increasing dataset of Early Holocene sites in the Cyclades, Crete, Dodecanese and Sporades, it remains unclear as to whether (a) this evidence attests to perennial island habitation, or (b) to what extent these sites form part of a "slow-fuse" colonisation process, or simply a period of intensified maritime activity and/or the remnants of failed long-term settlement.

Introduction[1]

Drawing on new data from a 2013-2014 survey, this paper discusses the evidence for Mesolithic activity at the chert source of Stélida on Naxos, the largest island in Cyclades (Figure 1). While we have long known that populations on the Greek mainland were exploiting obsidian from the nearby island of Melos (Figure 1) as early as the late Pleistocene (Renfrew and Aspinall, 1990), it is only recently that evidence for occupation of Aegean islands during the Early Holocene has been published (Kaczanowksa and Kozlowski, 2014; Sampson, 2010). Prior models of Cycladic settlement argued for exclusively later Neolithic habitation (Cherry, 1981), but evidence of Mesolithic exploitation of the Stélida chert source, in concert with increasing evidence of Early Holocene habitation on islands such as Kythnos, Ikaria, Youra, and Crete (Sampson, 2010; Strasser, 2012; see Figure 1 for location of these islands), suggests the need to revisit colonisation models of the insular Aegean. In short, there is now the distinct possibility that in at least some of these instances migrant farmers would have been confronted with indigenous hunter-gather populations, rather than settling virgin, uninhabited islands (Carter *et al.,* in prep). Alternatively, rather than these Mesolithic sites representing the birth of island lifeways, they could reflect a period of more intense visitation by mainland hunter-gatherers, and/or failed colonization. In this paper we consider the implications of Mesolithic exploitation of Naxian chert in the context of an inhabited insular Aegean, and consider the potential significance of such a resource for the Mesolithic population of the Aegean.

1. Carter and Contreras wrote the paper, Doyle provided geo-spatial analyses, Mihailović undertook the lithic study, and Skarpelis was responsible for the geological and petrographic study.

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Figure 1: Stélida on Naxos and main locations detailed in text.

History of Research

The chert source of Stélida comprises the majority of a hill rising 152 m above what today is the coast of north-west Naxos (Figures 1 and 2). The source and its associated stone tool and knapping debris were first reported by Séfériadès (1983), who provided a preliminary account of the site's geo-archaeology based on a single season survey. While the technical and typological attributes of the lithic industry were published in some detail, the dating of the assemblage(s) was uncertain, with tentative claims for an Early Neolithic or Epi-Palaeolithic date (terms that were invoked with no reference to absolute dates, for the mainland these periods would be the 7th and 10th millennia cal. BC respectively). Arguably the site's chronology was problematic for two reasons. Firstly, tools of Stélida chert had not been recognised from securely dated archaeological contexts in the Cyclades, which up until that point comprised a small group of later Neolithic through Bronze Age settlements (5th-2nd millennia BC), whose implements were mainly made of obsidian and bore little techno-typological resemblance to the Stélida material (Cherry and Torrence, 1982). Secondly, many Cycladic archaeologists were highly influenced by the work of Cherry (1981), who had argued persuasively that the small islands of the Mediterranean were not occupied until the later Neolithic, whereby it would have been contrary to the accepted model of Cycladic colonisation to have suggested an earlier date for Stélida. The site was thus something of a chronological enigma until archaeologists of the Greek Ministry of Culture (Cycladic Ephorate of Antiquities) undertook a series of small-scale rescue excavations over the past 15 years. Preliminary reports of these investigations made important claims for material diagnostic of Mesolithic, as well as Upper- and Middle Palaeolithic, dates (Legaki, 2012 and 2014). Further investigation of Stélida has been motivated in part by the fact that there have a number of recent claims for Middle Pleistocene – Early Holocene activity on the Aegean islands (Efstratiou *et al.,* 2014; Sampson *et al.,* 2010 and 2012; Runnels, 2014, *inter alia*), thus providing the alleged pre-Neolithic activity at Stélida with a broader context, and making its investigation part of a reconfiguration of the early prehistory of the Aegean Basin. In addition, the hill has been heavily disturbed by modern construction over the past two decades, making the characterisation of the hill's prehistoric exploitation a more urgent imperative, as the evidence is being lost at an alarming rate.

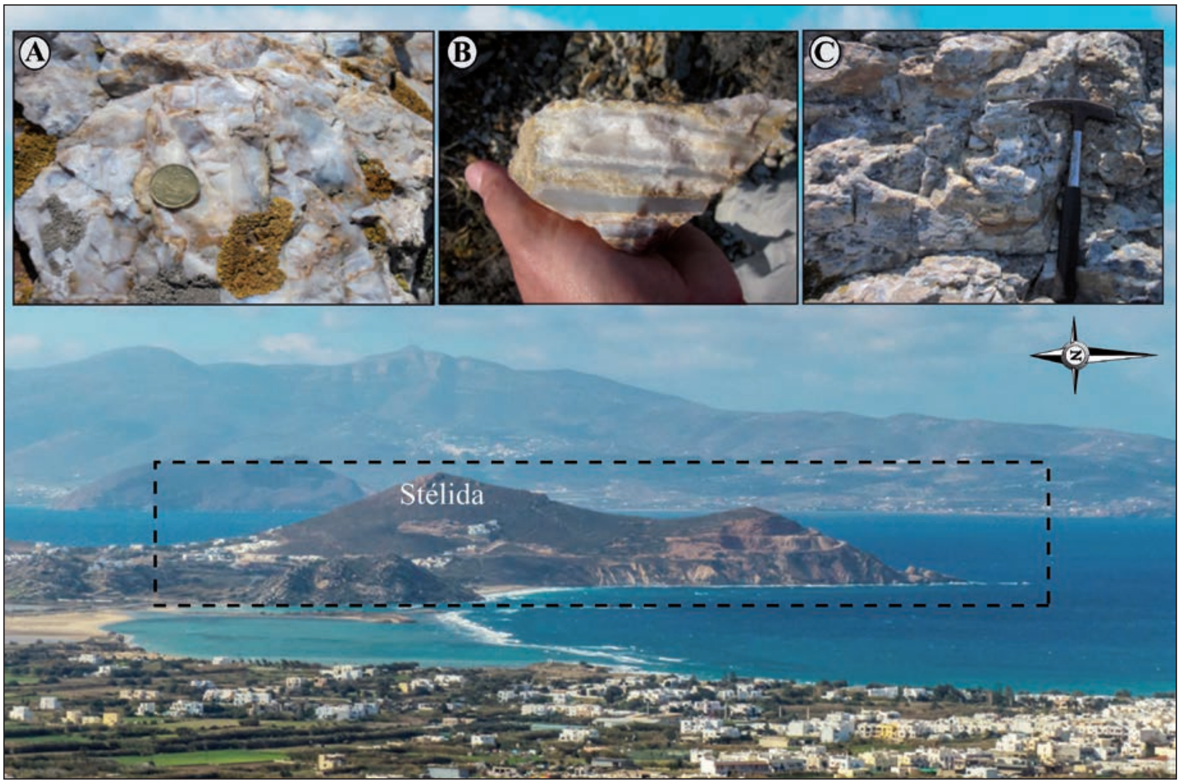

Figure 2: View of Stélida, looking west, and sample of raw materials (D. Depnering / N. Skarpelis); box indicates the area covered by the map in Figure 3.

Geological background

Field survey in conjunction with petrographic and chemical analyses of hand-samples from the site suggests that the Stélida chert is comprised of an early- to mid- Miocene sedimentary protolith of shales and sandstones that was subsequently pervasively silicified through hydrothermal processes (Skarpelis *et al.,* in prep). The chert occurs in tabular beds, has a semi-vitreous or waxy lustre, and is light grey to white in colour (Figure 2). The outcrop is relatively small, being bounded on three sides by granodiorite, and to the north by the sea; that said, the chert is believed to form part of a larger sedimentary unit that also outcrops on Paros and Mykonos (Sánchez-Gómez *et al.,* 2002). Although the chert's tabular structure (resulting from the stratification of the original sediments) is promising from a knapper's point of view, the heterogeneity and abundant internal fracturing in the material make it a difficult raw material, particularly for manufacturing large tools. Chert that is fine-grained and relatively internally homogenous is found in greatest abundance at Stélida's southern peak, and it is here that we find the greatest concentrations of artefacts (Figure 3). As one moves north along the ridge to lower northern peak, far less material is evident on the surface, possibly due in part due to vegetation coverage but presumably also reflecting the fact that less chert outcrops in this area. The raw material then reappears as an outcrop at the northern peak where we find another concentration of artefacts, though the north-eastern flank of the hill has been destroyed by modern quarrying. Chert is also widely available on the slopes of the hill as colluvium, ranging up to large boulders in size.

Aims and Methods

In 2013 the Stélida Naxos Archaeological Project [SNAP] was initiated, a two year geo-archaeological survey aimed at characterizing the nature of the raw materials and their exploitation through time (Carter *et al.,* 2014). While the initial focus is on Stélida itself, this lays the foundation for employing the resultant chemical and petrographic profiles of the raw materials to recognise artefacts made of this chert at other sites as a means of reconstructing the Aegean socio-economic networks that came together at the site.

Over two seasons we surveyed approximately 40 hectares of the undeveloped areas of Stélida, and parts of the promontory to the south (Figure 3). Our work commenced with a series of transects with 40 m

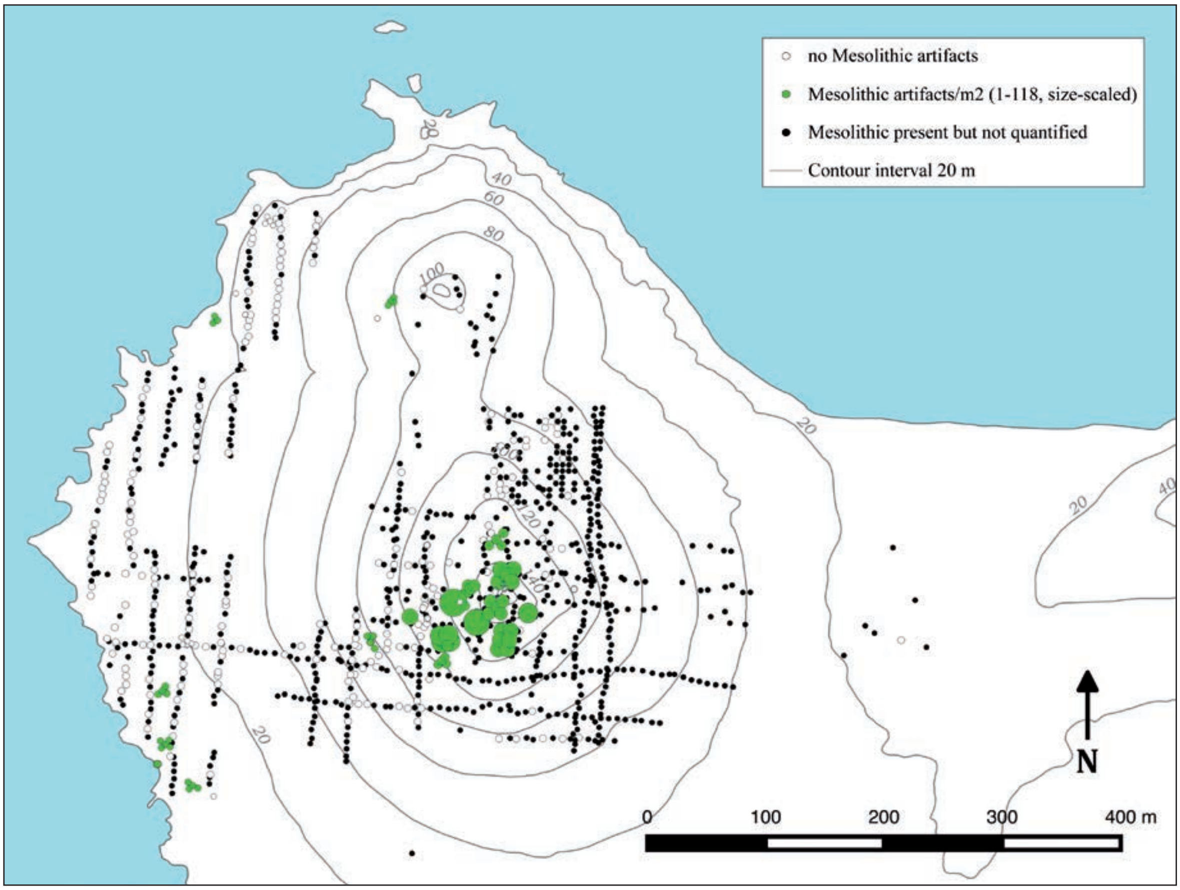

Figure 3: Distribution of all transect and grid collection units containing diagnostic Mesolithic artefacts (note that transect collections have only been subject to preliminary analyses and can only provide presence/absence information on Mesolithic artefacts, not densities).

spacing oriented to the cardinal directions centred on the chert outcrops at the top of the hill. Following well-established Aegean site-specific survey methods (Cavanagh *et al*., 2005; Whitelaw, 1991), we collected all artefacts within a 1 m^2 radius every ten metres along each transect. The results provide rapid and standardised impressions of the distribution and density of finds across the site (Figure 3). These data highlight artefact-rich "hot-spots" – a number of which were revisited to generate larger samples of techno-typologically diagnostic lithic material. These "Stage 2" collections comprised targeted 1m^2 units, plus a series of larger grids ranging from 2 m^2 to 70 × 80 m. In these grids we systematically collected a random sample of 5% of the surface material (via the standardised location of 1m^2 units within that grid, followed by a general collection of all diagnostics visible on the surface). Each collection point was photographed, geo-referenced (with recreation-grade GPS for transects and total station for grids), and documented with regard to degree of slope, vegetation cover, and any forms of natural or cultural disturbance, such as run-off gullies, terrace walls, or bulldozed tracks. These data on artefact distribution provide the basis for study of both diachronic patterns of exploitation of the raw material and site formation processes, with a particular early-stage focus being that of making sure that hot and cold spots are genuine reflections of prehistoric activity – or lack thereof – as opposed to accumulations resulting from geomorphic processes such as downslope movement and terrace wall "traps", or conversely the obscuring of artefacts by bushes, or their complete removal by construction.

Early Holocene activity at Stélida: Definition, distribution, and dates

Based on the techno-typological attributes of the stone tools collected by the survey, it can be argued strongly that Stélida was indeed exploited during the Mesolithic, Upper, and Middle Palaeolithic (Carter *et al.,* 2014), confirming the earlier claims of Legaki (2012) about the antiquity of the site. The survey also recovered tools of techno-typologically diagnostic Lower Palaeolithic date, including a cleaver, bifaces, and a range of flake-based tools such as denticulates, notches and scrapers. We thus have evidence for – likely intermittent – activity at the site spanning at least 23000 – 7000 BC (*i.e.*, from at least the approximate end of the Lower Palaeolithic through the Final Mesolithic in an Aegean context [Harvati *et al.,* 2009; Runnels, 1995]), making Stélida the oldest systematically investigated site in the Cyclades.

Here the focus is on the evidence for Early Holocene activity, as represented by stone tools diagnostic of the Mesolithic period (Figure 4). This component of the survey finds is defined on the basis of the artefacts' parallels with stone tools from excavated Mesolithic sites elsewhere in the southern Aegean, including Maroulas (Kythnos), Kerame 1 (Ikaria), and the Franchthi Cave (Argolid), as detailed below. The Mesolithic tools of Stélida are mainly microlithic (sub-2 cm) and flake-based, knapped from multidirectional cores, with only a small proportion of bladelets and blade-like flakes with their associated nuclei. The material is thus quite distinct from the products of Aegean Neolithic and Bronze Age knapping traditions, which are blade-based (Cherry and Torrence, 1982; Perlès, 2001). The Stélida assemblage is dominated by tools with simple linear modification (often inverse), together with numerous notches, denticulates, piercer/borers ("spines"), combination tools that incorporate these elements, followed by end-scrapers, and truncated, or snapped bladelets; true geometric pieces are quite rare (Table 1). The Mesolithic diagnostics also included a few pieces of obsidian (Figure 4: C, J-L) that were elementally characterised using a portable X-ray fluorescence spectrometer; their elemental profiles match those of geological samples from the sources on Melos (Figure 1) in the western Cyclades. This represents the earliest evidence for the use of Melian obsidian on Naxos, and forms part of a larger data-set testifying to Mesolithic obsidian consumption by southern Aegean hunter-gatherers (Kaczanowksa and Kozlowski, 2013).

Technologically and typologically the Stélida Mesolithic material can be situated within what Sampson *et al.* (2010: 68-69) describe as the Early Holocene Aegean island lithic tradition, a proclaimed insular development of the Balkan-Aegean facies of the Epi-Gravettian (16000 – 8000 BC [Kozlowski, 2005; see also Kaczanowksa and Kozlowski, 2011 and 2013: Fig. 2.3]). The hallmarks of this Aegean tradition are percussion-flake-dominated assemblages, whose modified tools include denticulates, notched pieces, "pseudo trapezes", scrapers, backed pieces and minority blade/bladelet components (for examples from Stélida, see Figure 4; for comparable material from other sites see Kaczanowksa and Kozlowski, 2013). The closest parallels – in technology, form, and assemblage structure (Figure 6) – to the Stélida material come from the excavations at Maroulas on Kythnos (Sampson, 2010), Kerame 1 on Ikaria (Sampson *et al.,* 2012: 19-35, Pl. 1-18), and the Cave of Cyclops on Youra (Kaczanowksa and Kozlowski, 2008). On the same bases, comparisons can also be made with the Lower Mesolithic material from the Franchthi Cave on the Greek mainland (phases VII-VIII [Perlès, 1990; see also Kaczanowksa and Kozlowski 2013]) and Livari on Crete (Carter *et al.,* in prep). While rare, there are also a few geometric microliths (trapezes) from Stélida, tools that at the Franchthi Cave date to the Late/Final Mesolithic (phase IX, 8th millennium BC [Perlès, 1990]). The site assemblages (Figure 6) do not support the proclaimed distinction (Sampson *et al.,* 2010: 68-69) between continental and insular assemblages. The island (Stélida, Maroulas, Kerame 1, Cyclops Cave, and Livari) assemblages are as different from one another as any of them are from the Franchthi Cave assemblage, and the low proportion of spines so at the Franchthi Cave has a parallel in the Cyclops Cave assemblage. However, some basic technological distinctions between the Franchthi Cave and island data-sets, such as core reduction strategies, remain (Kaczanowksa and Kozlowski, 2008 and 2011; Perlès,

Type	Count	Ubiquity
Notch	340	0.3
Denticulate	468	0.35
Spine	455	0.33
Backed	22	0.05
Linear	716	0.4
Scraper	109	0.13
Concave	11	0.07
Point	4	0.03
Snapped	3	0.03
Truncation	7	0.02
Combined Tools	56	0.12
Pièces esquillèes	13	0.05
Unmodified	117	0.17

Table 1: Aggregate data for diagnostic Mesolithic chipped stone artefacts from 1061 m² survey collection units across Stélida (from grids 100-001 through 100-017, 100-019, 100-021 through 100-023, and 100-030 through 100-050). The second column represents the proportion of collection units where Mesolithic material was recovered in which the tool-type is found, demonstrating strong spatial heterogeneity.

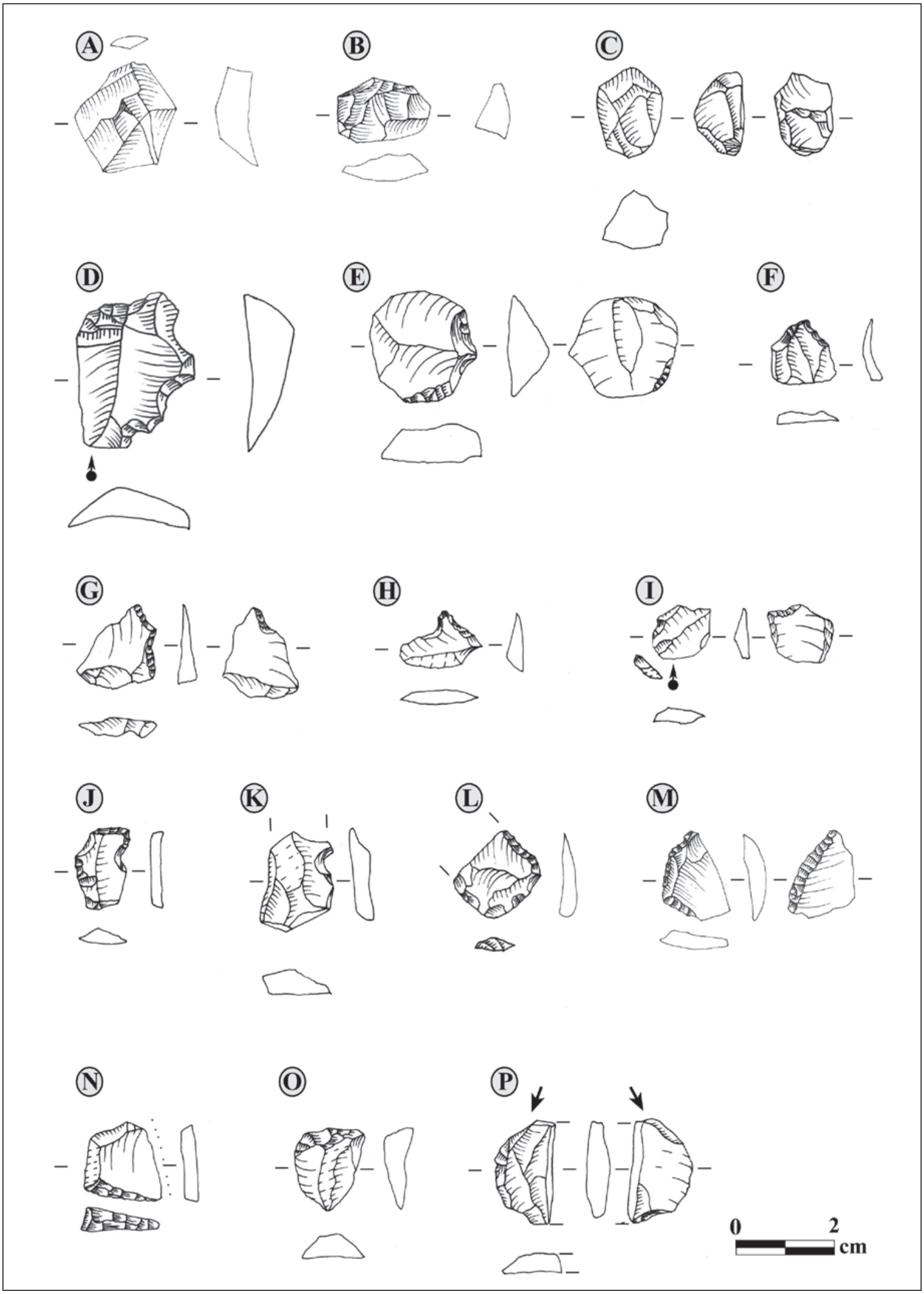

Figure 4: Examples of primary types of Mesolithic stone tools from Stélida (1-3 flake cores, 4-5 denticulates, 6-10 “spines”, 11 notch, 12 – linear, 13 – truncation, 14 – backed flake (‘pseudo-trapeze’), 15 – scraper, 16 – burin (3, 10-12 are Melian obsidian).

1990). Mesolithic artefacts are found widely distributed across Stélida (Figure 3), not only in those areas immediately surrounding chert outcrops, but also the flanks of the hill in widely varying densities. This wide distribution and the frequency of finished tools (notches, spines, and scrapers *inter alia* [Table 1]) suggests that chert extraction was not the only activity performed on site, with the tools' manufacture and use conceivably relating to short-term habitation, food processing, and craft-working.

In discussing Early Holocene activity at Stélida it is important to appreciate that these Mesolithic "assemblages" are comprised almost exclusively of chronologically diagnostic retouched tools. This is because it is nigh impossible – on techno-typological bases – to assign the bulk of what one finds at Stélida to a particular period, *i.e.* the thousands of unmodified flakes, chunks, shatter, and chips typical of a quarry site might date to any period during the site's exploitation. This problem is compounded, and such is the challenge of survey/surface data, by the fact that just under half of the survey collection units contained items diagnostic of more than one period (Figure 5), whereby it can be assumed that the knapping debris is also of mixed date. Occasionally it is possible to recognise Mesolithic flake cores, but it most instances it was better to err on the side of caution and record small and un-standardized nuclei as chronologically undiagnostic, as they could equally represent highly reduced cores of different eras. Thus, somewhat counter-intuitively for a quarry, the study led to the definition of period-specific assemblages that consist predominantly of finished products and tools, with relatively few cores and even less knapping debris. The existence and nature of such debris can tentatively be assessed by examining those survey assemblages whose chronologically diagnostic pieces are exclusively Mesolithic (Figure 5), presuming that the remaining "non-diagnostic" elements are primarily, if not exclusively, of the same date. The quantities of flakes, chips, and chunks associated with Early Holocene knapping activities at Stélida clearly varies widely, but in almost all contexts constitutes the vast bulk of the chipped stone recovered (Figure 6). In other words, our analytic focus should not be taken to suggest that extraction and knapping debris is uncommon on site; indeed it represents the bulk of all lithic material recovered (26-99% [mean 73% / median 72%] based on a study of those 25 collection units that contained *only* Mesolithic diagnostics). Even as a minority component of the total lithic assemblage from the site, the diagnostic tools comprising the Stélida Mesolithic assemblage make up a collection more than twice the size of that from Franchthi Cave, and an order of magnitude bigger than those from Livari and Cyclops Cave, thus adding substantially to the corpus of Mesolithic material from which inferences about the lithic technologies and lifeways of the period may be drawn. Interestingly, the various Mesolithic assemblages (from the Cyclops and Franchthi caves, Kerame 1, Livari, and Maroulas, as well as Stélida) are by no means identical in their composition (Figure 7). The Stélida, Franchthi Cave, Livari, Kerame 1, and Maroulas assemblages all have strong linear retouched and notched/denticulated components, but while the Franchthi Cave assemblage is dominated by such tool-types, those from Stélida and Livari also have substantial components of spines, while the Maroulas and Kerame 1 assemblages have include not only a strong component of spines but also one of scrapers. Overall, the Stélida, Franchthi. Livari, and Kerame I assemblages are generally comparable, while Maroulas and Cyclops Cave appear distinct. Whether those differences – or

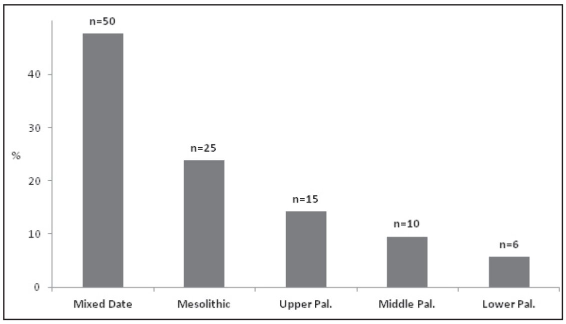

Figure 5: Relative proportion of mixed versus single-period "assemblages" at Stélida based on a sample of 1061 m² surface collection units (from grids 100-001 through 100-017, 100-019, 100-021 through 100-023, and 100-030 through 100-050).

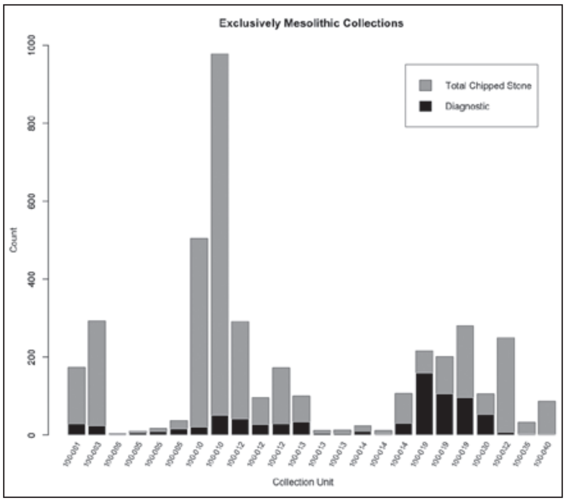

Figure 6: Assemblage structure and proportions of chipped stone collections that are diagnostic for the 241 m² collection units that yielded exclusively Mesolithic material.

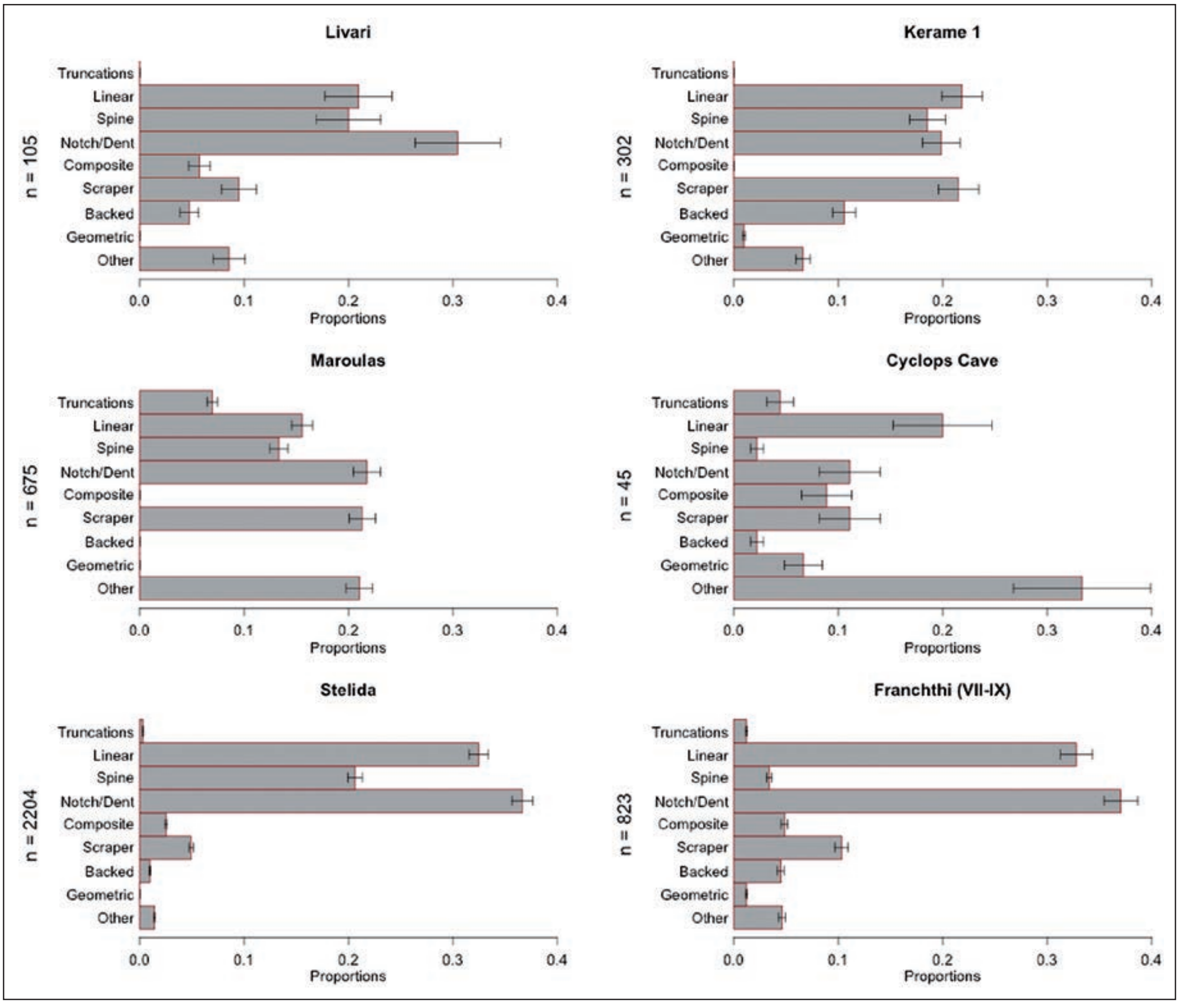

Figure 7: Composition of lithic assemblages at the major southern Aegean Mesolithic sites discussed in the text, with 95% confidence intervals.

those between sites within those two groups – reflect functional needs, sociocultural norms, or some other factor is both beyond our focus here, requiring close contextual analysis.

These parallels between the Stélida Mesolithic chipped stone and radiometrically dated assemblages from elsewhere in the southern Aegean suggest activity at the site between 9000 and 7000 cal. BC, but it is important to appreciate how little is known with regard to the absolute chronology of this period. For the insular Aegean specifically there are only absolute dates from Maroulas and the Cyclops Cave. Both sites were occupied in the early and mid-9th millennium cal. BC (Early Mesolithic), while the latter was then reoccupied in the Late Mesolithic, *i.e.* second half of the 8th millennium cal. BC (Kaczanowksa and Kozlowski, 2014: 40-46). On Crete the establishment of a Neolithic village at Knossos *ca.* 7000 cal. BC (Evans, 1994) suggests that on this island a Mesolithic way of life likely began to die out towards the end of the 8th millennium cal. BC (if an indigenous hunter-gatherer population were still occupying the island at the time the migrant farmers arrived [Carter *et al.,* in prep]). Similarly, the earliest Neolithic sites of the nearby southern Greek mainland date to the first centuries of the 7th millennium cal. BC (Perlès, 2001). Throughout this span of some 2000 years hunter-gatherers from the mainland are known to have been visiting and/or were in contact with the Cyclades through the recovery of small quantities of Melian obsidian throughout the Mesolithic sequence at the Franchthi Cave (Perlès, 1990). As to whether this implies an inhabitation of these islands *throughout* this period, it cannot be said, *i.e.* there is a lack evidence for settlements in the Cyclades from 8500 to 7000 cal. BC. In turn, even if there were people living in the islands at this time it need not follow that the end of the Mesolithic – *i.e.*, the abandonment of a hunter-gatherer mode of subsistence by indigenous inhabitants and/or their replacement by migrants arriving from the east - would have been synchronous throughout the insular Aegean with the establishment of farming on neighbouring Crete and the mainland. Indeed, an agro-pastoral subsistence base was not introduced to the Cyclades until *ca.* 5000 cal. BC. In short, while the lithic typology suggests that Mesolithic activity at Stélida was broadly contemporaneous with the Mesolithic elsewhere in the region (*i.e.*, in the 9000-7000 cal. BC range), it is also possibly that hunter-gatherer (Mesolithic) lifeways persisted much later locally, particularly given the absence of Early-Middle Neolithic material culture in the Cyclades.

Stélida in its Early Holocene insular Aegean context

Until relatively recently, the prevailing model viewed Mediterranean insular colonisation as a Neolithic phenomenon (Cherry, 1981 and 1990), with the major islands of Corsica, Sardinia, Sicily, Crete and Cyprus the first to be settled, followed by the gradual colonization of smaller islandscapes, some of which remained uninhabited until the Bronze Age. In an Aegean context this model suggested an initial settlement of Crete by migrant farmers first, *ca.* 7000 cal. BC (Evans, 1994), with the Cyclades only being settled in the Late Neolithic *ca.* 5000 cal. BC – and even then apparently only on the largest islands - as for example with Grotta and the Zas Cave on Naxos (Zachos, 1990 [Figure 1]). The settlement of the Cyclades was presumed to be preceded by a long period of island exploration by mainlanders, and the number of islands and relative short-distance sea-crossings from both continental Greece and Anatolia favoured "experiments in seafaring by creating ideal 'nursery' conditions" (Broodbank, 2000: 111). Evidence for this nascent activity in the Cyclades was provided indirectly by the procurement of Melian obsidian by surrounding mainland populations from the late Pleistocene onwards. This was first attested by handfuls of obsidian – sourced to Melos by elemental characterisation – from Upper Palaeolithic levels (11th millennium BC) at the Franchthi Cave (Renfrew and Aspinall, 1990). This data that at the time comprised the earliest evidence for seafaring in the northern hemisphere (Lambeck, 1996: 610), as even allowing for post-glacial sea-level changes procuring Melian obsidian would still have involved open-sea voyaging of at least 25-35 km to reach the sources (Cherry, 1985: 15, Fig. 2-2).

From the later Palaeolithic onwards there is an impression of sporadic visitations of the Cyclades driven by resource exploitation (initially fishing), with Melian obsidian playing an ever larger role, becoming the mainstay stone tool raw material amongst Early Neolithic populations of southern-central mainland Greece and Crete (Carter, 2009: 202-203; Torrence, 1986: 219). This model of long-term Cycladic visitation and a slow-fuse colonisation process has required rethinking following the proclaimed discovery of Middle-Late Pleistocene surface sites on Antiparos, Despotikon, Melos, Naxos (Stélida) and Paros (Runnels, 2014: 217), together with the excavation of Early Holocene settlements in the Aegean islands in the 1990s, namely Maroulas on Kythnos in the Cyclades, the Cyclops Cave on Youra in the Sporades, and Kerame 1 on Ikaria in the Dodecanese (Sampson, 2008; Sampson *et al.,* 2010 and 2012 [Figure 1]). Absolute dates from Maroulas (Sampson *et al.,* 2010) and the Cyclops Cave (Sampson, 2008) situate these Mesolithic sites in the early to mid-9th millennium cal. BC respectively (Kaczanowksa and Kozlowski, 2014: 40).

Maroulas comprised an open-air village, with round houses (with sub-floor burials) and a subsistence economy based on marine resources (Sampson *et al.,* 2010); while the fish remains indicate clearly a late winter – spring occupation, a year-round occupation could not be excluded. The more ephemeral archaeology of Kerame 1 was interpreted as representing "a sum of repeated sojourns of Mesolithic groups" to the site (Sampson *et al.,* 2012: 5), while occupation of the Cyclops Cave was considered to be regular, and "for at least a substantial part of the year" (Sampson, 2008: 199-200). In each instance, sedentary or otherwise, these insular communities are perceived to be highly mobile, as evidenced primarily by their access to non-local lithic resources, not least obsidian from Melos – which was recovered from each of these sites – and from the Dodecanesian source of Giali in the case of Kerame 1 (Sampson *et al.,* 2012: 19).

The island of Naxos, or rather the larger Early Holocene insular landmass that would have existed at the time due to lower sea-levels (incorporating Paros through Strongyli to the west, and the Small Cyclades to the south-east [Lambeck, 1996: Figs 6-7]), would have represented one obvious stopping point for a crew paddling from Melos to Ikaria via Mykonos, the latter part most easily navigated during winter months (Agourides, 1997: 15, Fig. 5). Indeed for anyone engaged in maritime movement around the Cyclades, Naxos would have represented an important landmark – whether they intended to stop-off there or not – due to the peak of Mount Zas being the highest and most visible seamark in the archipelago (Broodbank, 2000: 137, Fig. 37). That it has taken so long to document Mesolithic activity on the island is probably due to the fact that for many years no one was looking for it, and that the lithic assemblages of the period can be difficult to recognise. Aside from Stélida, there is also a recently discovered site at Roos on the island's south-west coast where surface finds include artefacts of "white patinated flint" that have techno-typological similarities to the Maroulas and Kerame 1 material (Kaczanowksa and Kozlowski, 2014: 47).

The extent of exploitation of the Stélida chert source strongly suggests that Naxos, or at least Stélida itself, would have represented something more than a port-of-call to these mobile Mesolithic populations. The local chert was obviously an important resource for tool manufacture, either for immediate tasks-at-hand, or more likely for provisioning the visitors – and their home communities – with raw materials and/or finished implements for the foreseeable future. Given the area within which Melian obsidian was circulating in the Aegean during the Early Holocene (southern mainland, Cyclades, Dodecanese and Crete), it may not be unreasonable to suggest that Stélida chert enjoyed a similarly widespread use given the source's deep-time history of use, and the fact that all other reported outcrops of chert in the southern Aegean are significantly smaller and of poorer quality (for references see Carter, 2007: 685-687). It remains uncertain about which off-island populations were exploiting Stélida. The presence of apparently non-local cherts in Mesolithic assemblages on Kythnos (a few islands to the north of Naxos, where a non-local white "flint" constitutes 10.6% of the Maroulas chipped stone assemblage [Sampson *et al.,* 2010: 42]) and in Franchthi Cave (where "silex bleu" is was reported from the Phase VIII Upper Mesolithic strata (Perlès, 1990: 47)) argues that such raw material was both valued and transported at least modest distances. While the possibility of directly linking these materials to Stélida awaits both further analyses of local material and cataloguing of regional sources, the scale of Mesolithic exploitation of Stélida suggests that the material was likely entering regional networks. Ongoing work on geochemical/textural characterization of Stélida chert (Skarpelis *et al.,* in prep) will hopefully shed further light on this issue.

Conclusion and future directions

Our knowledge of the Early Holocene insular Aegean remains in its infancy (Sampson, 2014: 71). Much of what has previously been written about the region comes from a continental perspective, with the excavators of the Franchthi Cave *et al* viewing the Cyclades as a resource-laden arena, exploited by those seasonally fishing in the archipelago, with the favoured tuna's migratory routes further facilitating the islands' exploration (Bintliff, 1977: 117-22, 538-43). While Melian obsidian represents the best known, if not sole, Cycladic raw material proven to have been exploited by mainland communities at this time, it is long-known that the Cyclades offers a variety of rare resources including emery and marble (Broodbank, 2000: 78-80). To these can now be added the chert of Stélida and the nearby geologically-related outcrop at Agios Antonios, Paros. While the number and scale of alternative Aegean chert sources is unknown, it seems apparent – on the basis of what little has been published, and from communications with scholars well-versed in the field (*e.g.*, Curtis Runnels), that Stélida represents a substantial outcrop of raw material, with nothing comparable until the region of Macedonia in northern Greece (Efstratiou *et al.,* 2011; Efstratiou and Ammerman, 2004: 186-187). Chert was an important, if not dominant raw material for southern Aegean Mesolithic toolmakers, even for the insular populations (Cyclops Cave – 83%, Livari – 98%, Kerame 1 – 52%, Maroulas – 11%); excavators have generally assumed the material to be local in origin, though rarely had relevant data for proving is as such (though for Livari see Brandl, 2010). The presence of a substantial chert source with evidence for significant Mesolithic exploitation on Naxos, in conjunction with the growing roster of broadly contemporary sites in the island Aegean, argues that the significance of the period in the island Aegean has been significantly underappreciated. At the same time, caution is warranted: amongst the many unknowns of the Mesolithic Aegean is the permanence of settlement: to what extent were these perennial (though not necessarily sedentary) island populations? Might the activity at Kerame 1, Maroulas and Stélida 'only' represent recurrent seasonal visitations, *i.e.* part of what Broodbank (2000: 111) refers to as an "extended pre-colonisation phase" of the insular Aegean? If so, are the small quantities of obsidian in the Argolid, Attica and Crete indexical of at least some of these voyagers' homelands (see also Nafplioti, 2010)? Alternatively, do the claimed differences between insular Mesolithic chipped stone assemblages (the 'Early Holocene Aegean island lithic tradition' of Sampson *et al.* [2010: 68-69]) and those from the Greek mainland suggest a long-established island population? In turn, *if* certain Aegean islands were settled during the 9th-7th millennia BC, does this represent the start of prehistoric insular habitation, or a failed colonization? In the Cyclades, while there is now increasing evidence for Mesolithic habitation, evidence for Early and/or Middle Neolithic occupation remains absent, whereby there still might be an occupational hiatus of some two millennia (*ca.* 7000 – 5000 cal. BC). As such, although the newly discovered presence of Mesolithic occupation on Crete (Strasser, 2012) forces the field to rethink aspects of Cretan Neolithisation (*i.e.* migrant farmers did not necessarily settle virgin, uninhabited territory (Carter *et al.,* in prep), the data from the Cyclades and Dodecanese need not mandate a radical reconsideration of how agro-pastoral economies came to be developed in the islands.

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