From Maple to Olive

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The Stélida Naxos Archaeological Project: New Studies of an Early Prehistoric Chert Quarry in the Cyclades

Introduction

The double-peaked 152 m high hill of Stélida is located on the northwest coast of Naxos, ca. 3 km to the south of Chora, the island's modern port and capital (Fig. 1 and 2). Stélida is a major source of chert, a siliceous raw material that was exploited for the manufacture of flaked stone tools from the Lower Paleolithic to the Mesolithic (≥250,000–9,000 B.P.). Tool typology suggests that the quarrying and knapping may have been undertaken by some combination of *Homo heidelbergensis*, Neanderthals, and early modern humans.

In this paper, we review the history of archaeological work at Stélida from the early 1980s until the present day and give an

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overview of the aims, methods, and results of the ongoing *Stélida Naxos Archaeological Project.*

Background to Stélida and Archaeological Research 1981–2012

While geological studies had been undertaken on Stélida in the 1960s,[9] the hill's archaeological component was not recognized until 1981 when the site was discovered during a survey of Naxos by the *École Française d'Athènes.*[10] A brief publication of the siliceous raw materials and flake-based tool kits appeared shortly thereafter.[11] This report suggested tentatively that the site was of Early Neolithic or Epipaleolithic date, given that its flake-based artifacts bore little resemblance to the blade- and obsidian-dominated assemblages of Cycladic Late Neolithic to Late Bronze Age sites of the 5th to 2nd millennia cal B.C.[12] The dating remained tentative because professional opinion at that time was that no one was living in the archipelago at such an early date. Indeed, the received wisdom at the time was that Mediterranean island colonisation was a largely Neolithic phenomenon,[13] with the settlement of the Cyclades not occurring until the Late Neolithic (5th millennium cal B.C.), as evidenced on Naxos (Fig. 1) at Grotta (Chora) and the Zas Cave.[14] That said, scholars had been aware since the late 1970s that mainland-based Upper Paleolithic and Mesolithic hunter-gatherers were making—presumed short-term/seasonal—maritime forays into the Cyclades, as evidenced by small quantities of Melian obsidian from the Franchthi Cave (Argolid) in strata spanning the 11th to 8th millennia cal B.C.[15]

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[9] Roesler 1969.
[10] Treuil 1983, p. 64.
[11] Séfériadès 1983.
[12] Cherry and Torrence, 1984.
[13] Cherry 1981.
[14] Fotou 1983, p. 20; Hadjianastasiou 1988; Zachos 1990
[15] Renfrew and Aspinall 1990; see also Carter 2016.

Over the subsequent two decades, archaeological fieldwork has generated significant evidence for pre-Neolithic activity in the Aegean basin. An insular Mesolithic is well established, with villages or seasonal camps excavated in the Cyclades, Sporades, northern Aegean islands, and Crete, with absolute dates spanning ca. 9000–7000 cal B.C.[16] Claims of Paleolithic activity are more controversial, as they comprise mostly undated surface finds,[17] but geo-archaeological investigations in the Plakias region of southwestern Crete generated dates of 110,000–130,000 BP terminus ante quem for a stratum containing stone tools of Lower Paleolithic type, the first unequivocal evidence for Middle Pleistocene insular activity in the Aegean.[18]

Back at Stélida, archaeological investigations were reinitiated by the Greek Ministry of Culture in 2000 in the context of increasing modern development on the hill. This work was undertaken initially by Olga Philaniotou (then-head of the Naxos Museum), whose interventions led to the official protection of the site (Alpha- and Beta-zones), limited rescue excavations, and completion of a small survey with Moundrea-Agrafioti of Volos University. Most recently, the Ministry's Naxian representative, Irini Legaki, has supervised a series of small salvage projects; preliminary reports of these investigations made important claims for the discovery of Mesolithic, as well as Upper and Middle Paleolithic finds.[19]

The Stélida Naxos Archaeological Project: Stage #1—Survey

In 2013, we initiated the Stélida Naxos Archaeological Project (SNAP) dedicated to the geo-archaeological characterisation of the site.[20] SNAP, whose work is being undertaken in parallel to the

[16] Sampson 2014; Strasser et al. 2015.
[17] Chelidonio 2001; Ferentinos et al 2012; Kopaka and Matzanas 2009; Mortensen 2008; Strasser et al. 2010.
[18] Strasser et al. 2011.
[19] Legaki 2012, 2014.
[20] Carter et al. 2014.

Ministry's continuing rescue excavations, represents the Canadian Institute in Greece's first archaeological foray into the Cyclades. The initial aims of SNAP were to (a) revisit the claimed pre-Neolithic activity at Stélida in the light of new Paleolithic and Mesolithic finds elsewhere in the Aegean basin;[21] (b) document the site before the archaeological record was further compromised by modern disturbance; and (c) characterize the raw materials so that, eventually, stone tools made of Stélida chert might be recognized at other prehistoric sites, and by extension, reconstruct the socio-economic networks that intersected at the source.

The project's initial iteration (2013–2014) employed intensive pedestrian survey to detail artifact distribution, while a parallel geological study mapped and characterized the chert outcrops. Over two seasons, approximately 40 ha of Stélida's undeveloped areas were surveyed, together with parts of the promontory to the south (Fig. 3). The work began with a series of transects being walked at 40 m intervals along the cardinal directions from the southern peak. Following well-established Aegean site-specific survey methods,[22] recording points were established at every 10 m along these transect lines, with all artifacts collected from within a 1 m^2 radius. The results from the survey transects provided rapid and standardised impressions of the distribution and density of finds across the site (Fig. 3). These data served to highlight artifact-rich "hot-spots"—a number of which were revisited to generate larger samples of techno-typologically diagnostic lithic material from a mixture of targeted 1m^2 units, plus a series of larger grids ranging from 2 m^2 to 70 m by 80 m. Within these grids, we systematically collected a sample of five percent of the surface material via the standardised location of 1 m^2 units within that grid, followed by a general collection of all diagnostics.

All collection points were photographed, geo-referenced (with recreation-grade GPS for transects and total station for grids), and documented with regard to degree of slope, vegetation

[21] Runnels, 2014; Sampson, 2014.
[22] E.g. Cavanagh et al. 2005; Whitelaw 1981.

cover, and any forms of natural or cultural disturbance, such as erosion gullies, terrace walls, or bulldozed tracks. When integrated, these data allow us to map the distribution of artifacts by period and tool-type, information which could potentially inform us to diachronic source exploitation patterns and the recognition of activity-specific areas. We stress the term *potentially*, as the data cannot be taken at face value, with various site-formation processes having affected the archaeological record over millennia. The documentation of contemporary surface conditions and topography will allow us to critically reflect on the survey data, examining to what extent the hot and cold spots are genuine reflections of prehistoric activity—or lack thereof—as opposed to accumulations resulting from downslope movement and terrace wall "traps," or conversely, the obscuring of artifacts by bushes or their complete removal by construction.

Alongside the analysis of artifact distribution, a dedicated geological study served to map the chert outcrops, with a series of geo-referenced source samples collected for petrographic and geochemical characterization. The chert is exposed in two main outcrops at Stélida's southern and northern peaks (Fig. 2); the raw materials consist primarily of pervasively silicified shale, together with some silicified sandstones and conglomerates.[23] The product of hydrothermal alteration (silicification), the rock occurs as thick tabular beds, is very hard, fractures conchoidally, and has semi-vitreous, vitreous, or waxy lustre. The colour of the rock is light-grey to white, occasionally with a honey hue.

Artifacts were found widely distributed across Stélida, not only in those areas surrounding the outcrops, but also on the hill's flanks in widely varying densities (Fig. 3). Aside from a handful of pottery shards and hammerstones, the ca. 30,000 finds were almost entirely comprised of flaked chert artifacts, including material with technological and typological traits associated with material from well-dated Lower to Upper Paleolithic and Mesolithic sites in the region (Table 1).

[23] Skarpelis et al. forthcoming.

Date of Artifact	Number	Proportion
Mesolithic	4,099	14 %
Upper Paleolithic	2,389	8 %
Middle Paleolithic	812	3 %
Lower Paleolithic	159	1 %
Non-diagnostic	22,322	75 %
TOTAL	29,781	100 %

Table 1. Chipped stone collected by the 2013–14 survey by chronological period based on number of diagnostic artifacts (all transect and grid data, most of grab samples)

Mesolithic activity is represented by artifacts whose form and techniques of production are directly comparable to excavated assemblages from Early Holocene sites elsewhere in the southern Aegean (Fig. 1), including Maroulas on Kythnos, Kerame 1 on Ikaria, the Cyclops Cave in Youra, and the Franchthi and Klissoura 1 caves in the Argolid.[24] The material from Stélida recognized as Mesolithic (Fig. 4) is, accordingly, microlithic (sub-2 cm) and largely flake-based, percussion-knapped from multi-directional cores; there is also a minority bladelet component. Retouched pieces include those with linear retouch, notches, denticulates, piercer/borers ("spines"), and end-scrapers; true geometrics are rare.[25]

The Upper Paleolithic exploitation of Stélida was attested primarily by material derived from percussion blade and bladelet industries (Fig. 5, a–b). Based on the survey material alone, the specific phase(s) of this period (ca. 42,000–11,000 B.P. in the Aegean context) represented on-site were not entirely clear. Further details can, however, be gleaned from the excavated assemblages (see below).

Middle Paleolithic visitation of Stélida is evidenced by the nuclei and retouched products of a discoidal flake core tradition, as well as lesser quantities of Levallois flakes and blades (Fig. 6). Modified tools include denticulates, various scrapers, and a

[24] see Kaczanowksa and Kozlowski 2014; Perlès 1990.
[25] Carter et al. 2016.

handful of Mousterian points. Parallels for this material are published from a number of cave sites on the Greek mainland including Lakonis and Kalamakia in Laconia, Klissoura 1 in the Argolid, and Theopetra in Thessaly,[26] where such industries range in date from 130,000 to 40,000 B.P.[27] The Levallois blade tradition is of particular interest given its association with earlier Middle Paleolithic assemblages in the Eastern Mediterranean,[28] the closest comparanda coming from the Asprochaliko Cave in Epirus where they are dated ca. 100,000 B.P.[29]

Finally, the survey also recovered artifacts diagnostic of Lower Paleolithic date, including hand axes and other bifaces (some made of emery from elsewhere on Naxos), a cleaver, as well as large flake tools such as denticulates and scrapers (Fig. 7). Examples of such large cutting tools, hand axes, cleavers, scrapers, and unifaces have been published from the Acheulean site of Rodafnidia on Lesbos, whose preliminary dates span 475,000±48,000 to 164,000±33,000 B.P.[30] In turn, the Stélida bifaces and flake cores are comparable to those from Lower Paleolithic survey sites in the Preveli region of southwest Crete, and Rodia in Thessaly, datasets provided with terminus ante quem determinations of 110,000–130,000 to 200,000–400,000 B.P., respectively.[31] It is this earliest period of activity for which we have some of our best artifact comparanda thanks to recent work in the Levant on a number of Middle Pleistocene quarry sites.[32]

[26] Darlas 2007; Sitlivy et al. 2007.
[27] Harvati et al 2009, table 1.
[28] Bar-Yosef and Kuhn 1999, p. 326.
[29] Huxtable et al. 1992.
[30] Galanidou et al. 2013, 2014.
[31] Strasser et al. 2011; Runnels and van Andel 1993.
[32] Barkai et al. 2002; Bisson et al. 2014; Gopher and Barkai 2014.

The Stélida Naxos Archaeological Project: Stage #2—Excavation

The limitations of survey data inevitably mean that the project's important (and controversial) claims for earlier Paleolithic activity in the Cyclades require better-quality chronological control. In short, no matter how compelling were the artifacts coming from surface collection, it was necessary to excavate, aiming to locate undisturbed stratified deposits that we could date scientifically. This work began in 2015 as a new collaborative project under the co-directorship of Carter and Athanasoulis. The details provided here have to be viewed as highly preliminary in nature.

The first two seasons focused on Stélida's western flanks (Fig. 8), initially working close to the southern chert outcrops (Plot DG-A) where an exposed lip of bedrock acted as a natural terrace, protecting sediments that were hoped to contain early prehistoric materials. Slightly further to the north (Plot AK), trenches were established by a small rock shelter, while on the upper part of the hill a *sondage* was dug to investigate one of the densest areas of knapping debris. Excavations were also carried out at the base of the western slope on what today is a narrow coastal plain (Plots DG-B and EH-A/B), with an intermediary trench established on the mid-slope (Plot BR-A), with the goal of gaining insight into depositional history and process down the hill's entire central-western profile. At the time of writing, 18 trenches, 1 m^2 to 4 m^2 have been initiated.

The depth of sediment across the site varies considerably. The uppermost trench (AK/016) reached bedrock at only ca. 75 cm (Fig. 9). While there may have ever only been a weakly developed soil atop the hill, whatever was there in the Late Pleistocene to Early Holocene seems to have suffered colluvial and aeolian erosion, leaving a rich palimpsest of Mesolithic and Upper Paleolithic artifacts in its uppermost levels. Trenches on the upper terrace of Plot DG-A have a much deeper stratigraphy, consisting primarily of stratified colluvial deposits, on some of which soil formation is evident. *Sondage* DG-A/001 was almost 3 m deep by the end of the

2016 season, and had not yet reached bedrock. While deposition is complex at Stélida, at least three distinct paleosols are found across the hillslope area of the site. The evidence of soil formation on buried colluvial deposits in each of the four DG-A trenches suggests at least two distinct periods of landscape stability and a third paleosol, newly revealed in DG-A/001 at the end of the 2016 season, and argues for another earlier period of stability. The multiple colluvial strata beneath the modern surface contain abundant lithic material. In the upper strata, the typologically diagnostic artifacts are primarily Upper Paleolithic, though smaller quantities of finds from earlier periods are also present. Underlying this material is a lower stratum—also colluvial—that in addition to containing material diagnostic of the Upper Paleolithic also contains implements of clear Lower Paleolithic date (including bifaces).

Two units were excavated in proximity to "Rock Shelter B" (AK/015, AK/018 [Fig. 8]). Both were again capped with significant (>50 cm) colluvial deposits. In the case of AK/018—a *sondage* directly in front of the rock shelter—a black horizon was discovered that included abundant ash, microcharcoal, and fire-cracked lithics. The abundance of this material and relative scarcity of other intermixed sediments, suggests that these deposits derived from a nearby fire, or fires; given the local topography the rock shelter just above is the most likely source. Micromorphological analyses should provide further information on this feature's character and integrity. Further, slightly more diffuse remnants of these deposits were also found ca. 10 m downslope in nearby AK/015. Preliminary study of the lithics from these burnt deposits suggests that the latest and dominant material is Upper Paleolithic. Beneath this carbon-rich stratum was a thick (ca. 30 cm) deposit of artifact-bearing aeolian sand. The cultural material from this layer would have been deposited here—naturally or anthropogenically—while the sand was accumulating; as such, optically-stimulated luminescence (OSL) dating (see below) should provide a reliable terminus ante quem date for these finds. The trench had not reached bedrock by the end of the 2016 season.

BR-A/017 attests to limited soil formation (or retention) on the mid-slope of Stélida (Fig. 8). While the unit has yet to be fully dug, nearby sections exposed by modern buildings suggest sediment/soil depth of less than a metre.

Those trenches initiated on the lowest reaches of the hillside in plots DG-B and EH-A (the "toe-slope") revealed deflated sandy surfaces with finds of mixed date. EH-A/011 has thus far produced the deepest (1 m) deposits in this area (Fig. 8), with an uppermost sandy layer, overlaying a thick red clayey deposit with few artifacts, which sealed a cemented white-yellow fine sand (aeolianite). The basal deposit of aeolianite is a relic of coastal dunes, while the aeolian components in the overlying strata suggest persistent aeolian deposition, though apparently in a more complex landscape. The aeolianite does not comprise sterile bedrock; artifacts have been recovered from the sections exposed by the low coastal cliff (see below). Unfortunately, excavating this cemented stratum would be quite challenging. Once again, Upper Paleolithic finds are documented in these lower slope *sondages* with small quantities of earlier material.

The lithics from these *sondages* are being studied at the time of writing. Cores and end-products of Upper Paleolithic types have been recovered from most of the trenches. The techno-typological characteristics of both cores and end-products suggest that there are at least two phases represented. The oldest material is represented by a number of carinated end-scrapers/bladelet cores, whose laminar products have a distinctive twisted profile. These are characteristic of the earlier Upper Paleolithic/Early Aurignacian phase at the Argive cave sites at Franchthi and Klissoura 1, where they are dated ca. 39,000 to 36,000 B.P., and 35,000–37,000 to 31,000–33,000 B.P., respectively.[33] This material is particularly well-represented in the coastal trenches EH-A/008 and EH-A/010. A second component is made up of bladelets (as well as some blades) whose modified end-products include scrapers, notched pieces, and burins (Fig. 5, c-f). This knapping

[33] Douka et al. 2011; Kaczanowksa et al. 2010, pp. 141–173; Kuhn et al. 2010, pp. 39–40.

tradition and these tool types are associated with the Epigravettian (Late Pleistocene) phase of the Upper Paleolithic, as evidenced in the Klissoura Cave 1 (Sequence B, which has produced a single radiocarbon date of 14,280±90 B.P.[34]) and in the Balkans, as well as in Mediterranean Anatolia more generally, where dates span 20,000 to 10,000 B.P.[35] Also recorded are larger blades with facetted platforms from more prismatic cores, but it is uncertain at present whether they belong to the earlier or later phase.

Quantities of Mesolithic tool types have been recovered from many of the trenches, albeit in deflated (AK/016), secondary context (DG-A/001) or in mixed deposits (DG-B/008), none of which would be worth dating scientifically. For the earlier periods, a Mousterian point and pseudo-Levallois point in secondary context from DG-A/005 represents, thus far, the best Middle Paleolithic material from the excavation (Fig. 6, e-f), despite this being a well-represented period among the survey finds. Finally, large flake tools including notches and denticulates, as well as bifaces and biface preforms of likely Lower Paleolithic date, have been recovered from the lower red sandy lithostratigraphic units in trenches DG-A/001-004, though at present, most if not all of this material is believed to be from colluvial deposits that overlay or incorporate Upper Paleolithic artifacts.

Preliminary studies further suggest that there is some distinction in the specific raw materials by period, though the differential effects of patination over time is an issue that needs to be addressed in any such analysis. An ongoing geological, geo-chemical, and geo-archaeological study of the Stélida chert[36] will hopefully eventually enable us to distinguish period or tradition-specific lithic raw material choices and, by extent, the behaviour of the various early humans exploiting the source over time.

[34] Kaczanowksa et al. 2010, p. 180.
[35] Kozlowski, 2005.
[36] Skarpelis et al. forthcoming.

The Absolute Dating Program

Generating absolute dates in association with stratified finds is a key aim for the excavation. Ideally, these chronometric determinations would be associated with artifacts that were techno-typologically distinct items that could then be related to our survey finds to impose a clearer chronology on Stélida. Radiocarbon dating should be appropriate for the Mesolithic and Upper Paleolithic periods given that in the Aegean these eras should span approximately 9,000 to 40,000 B.P., within the technique's chronological range. Alas, organic material survival is extremely poor at Stélida, thus greatly reducing our ability to use carbon-14 dating. That said, the hearth deposits excavated in AK/018 did generate quantities of charcoal and a handful of wild seeds that represent an excellent opportunity to obtain some radiocarbon dates.

Given the twin issues of poor organic preservation and the likely time-depth of the Lower to Middle Paleolithic activity (≥40,000 to ≥250,000 B.P.), forms of luminescence dating represent the main techniques for producing Stélida's deep-time chronology. These methods are based on levels of radiation within quartz or feldspar constituents of a deposit—the accumulated dose representing the time elapsed since the grain was last exposed to sunlight. Luminescence, as does any chronometric technique, requires first establishing carefully the integrity of the deposit, prior to block and tube samples being taken, to document both the natural level of radiation within the deposit (for dose-rate calibration) and ultimately the date of the artifact-bearing stratum.

In 2015, samples were taken mainly from a series of beachside aeolianite (silicified sand dunes) exposures on the western skirts of the hill (Fig. 7) that were noted to contain artifacts. Detailed geo-archaeological mapping and stratigraphic analysis defined three distinct layers of aeolianite and a palaeosol (Fig. 10), with embedded artifacts documented throughout. Most of these items were so eroded by chemical weathering that they cannot be dated on technological or typological bases; however, a few pieces were distinctive, including a biface of Lower Paleolithic type from the lowest stratum. The aeolianite samples are being analysed at the University of Washington's Luminescence Dating Lab using infrared stimulated luminescence (IRSL) focusing on feldspar grains.

In 2016, a second collaboration was initiated with the Université Bordeaux Montaigne, whose *Institut de recherche sur les Archéomatériaux* will be employing OSL and thermoluminescence (TL) to date a range of samples from the *sondages* themselves, not least the 3 m deep sequence in DG-A/001 and trench AK/018 with the hearth-derived material.

Preliminary View of Earlier Prehistoric Activity and Archaeological Challenges at Stélida

In sum, SNAP has provided the first direct evidence for Lower Paleolithic activity in the Cyclades,[37] with long-term—though likely intermittent—exploitation of the chert source continuing until the Mesolithic, that is from ≥250,000 to 9,000 B.P., based on the current dating of the Lower Paleolithic to Mesolithic periods in the Aegean. The hunter-gatherer populations involved in these ventures would conceivably have included *Homo heidelbergensis* and Neanderthals (Lower to Middle Paleolithic), followed by early modern humans: *Homo sapiens* in the Upper Paleolithic and Mesolithic.[38] With the recovery of what appear to be Early Aurignacian artifacts—material that has traditionally been associated with the earliest *Homo sapiens* in Eurasia[39]—Stélida might ultimately come to represent a key site in tracking and understanding early modern human migration routes into Europe. The quarry seems to have gone out of use after the Mesolithic,

[37] Runnels 2014, p. 217.
[38] Harvati et al. 2009; Sampson 2014.
[39] Douka et al. 2011; Higham et al. 2011.

with Cycladic Neolithic and later populations apparently preferring to exploit Melian obsidian for stone tool production.[40]

Exactly when—and how—these various humans visited the source currently remains unclear. For the Upper Paleolithic and Mesolithic periods, it is generally accepted that Naxos was insular—albeit part of a larger landmass—whereby an expedition to Stélida would have required maritime voyaging for anyone travelling from distance.[41] That Late Pleistocene hunter-gatherers were capable of seafaring in the Aegean is well-attested, as evidenced by the presence of Melian obsidian from Upper Paleolithic strata at the Franchthi and Klissoura 1 caves in the Argolid.[42] For the Lower and Middle Paleolithic, the situation is more complex. Current palaeo-geographic reconstructions suggest that during glacial periods, sea levels may have been sufficiently low enough to produce dry routes to the quarry from continental Greece or Anatolia, while intervening warmer phases may have left (greater) Naxos wholly insular.[43] While there have been recent claims for earlier Pleistocene seafaring in the Aegean by pre-modern human populations,[44] neither the chronology of the Aegean's sea levels nor the chronology of Stélida's exploitation are sufficiently precise to determine whether the chert source was continuously visited or only exploited during those cold periods when terrestrial routes existed. The dates from the aeolianite stratigraphy should provide insight into the geodynamic history of Naxos and should further contribute to discussions of eustatic sea level change.

The interpretation of our stratigraphic sequences, not least those from the deep *sondages* DG-A/001, DG-A/003, and AK/018, is key to understanding the nature and timing of early human activity at the site. What were the factors that led to periods of hill erosion or to phases of stability and soil development? Do the paleosols represent localized periods of soil development or do

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[40] Carter 2009, pp. 202–203.
[41] Lambeck 1996.
[42] Carter 2016, pp. 1, 13–16.
[43] Lykousis 2009, p. 2042, fig. 5; Sakellariou and Galanidou 2015.
[44] Runnels 2014; Strasser et al. 2011; for a counter-point see Leppard 2014.

they instead reflect broader regional climatic oscillations between cold glacial periods and warmer interglacial phases? Drawing from what we know about sediment transfer on mainland Greece, as well as Crete,[45] we can speculate that periods of landscape stability represented warmer periods when precipitation rates permitted more vegetation and increased soil stability. The missing paleosols and episodes of hillwash may then represent evidence for colder periods when reduced vegetation meant that soils were more easily eroded. Developing these hypotheses further, might Stélida have been visited by hominins during only those glacial periods when sea levels were so low that land bridges were produced across the Aegean Basin, a situation that would have allowed early prehistoric peoples to walk to the site from mainland Greece or Anatolia?[46] Hopefully, the project's absolute dating program and ongoing palaeo-environmental reconstruction studies will clarify many of these issues in due course.

The archaeology of Stélida provides many challenges. One is the sheer quantity of lithic material, not least on the deflated areas of dense knapping debris at the top of the hill where excavation often generates more artifacts than soil (Fig. 9), with the relatively shallow trench AK/016 (ca. 1.5 m deep) producing more than 13,000 artifacts. Of this material, often less than ten percent might be viewed as stand-alone diagnostic or dateable items on the basis of distinctive techno-typological traits. Dealing with such massive assemblages can be challenging for excavators, lithic analysts, and museum storeroom keepers alike, forcing the development of appropriate sampling strategies. This challenge is in some ways offset by the fact that such an extraordinary number of artifacts provide us with early prehistoric assemblages that are orders of magnitude larger than hitherto excavated in the Aegean (compare the 17.3 kg of *total* artifacts from later Neolithic Ftelia on Mykonos[47] with the 18.6 kg from the *single* aforementioned AK/016 trench at Stélida), though as we discuss below, contrasting such

[45] Pope et al. 2007.
[46] Lykousis 2009, page 2042, fig. 5.
[47] Galanidou 2002, p. 318.

datasets involves problems anew. Another issue we face is the lack of organic preservation. This hampers any reconstructions of Stélida's Middle Pleistocene to Early Holocene palaeo-environment and hinders our chances of detailing the subsistence practices of those visiting the site should we locate traces of domestic activity. Phytoliths might represent another line of inquiry, but even those thus far recognized in some of the later Pleistocene strata appear to be quite degraded. In turn, we have come to appreciate the complexity of the archaeology, with almost all of the lithic material excavated thus far comprising material in secondary context. That said, some of the colluvial events seem to be quite rapid, with a degree of assemblage integrity despite their downslope re-deposition, whereby it may still be possible to publish period-specific data sets, with any intermixed earlier material usually distinguishable on the basis of both differential patination and techno-typological traits. The working hypotheses concerning the site formation processes involved in the deep DG-A/001 sequence also suggest that there is a possibility of reverse stratigraphy in certain instances, such as in the Upper Paleolithic surfaces being covered by colluvial deposits containing Lower Paleolithic material. Such stratigraphic complexity needs to be analyzed carefully through integrated macroscopic and micromorphological analyses (to be undertaken by P. Karkanas and J. Holcomb), lithic studies, as well as field observation, in order to interpret the significance of eventually dated strata and assemblages.

A further issue concerns the specialized nature of the site and by extension the distinct kinds of lithics we find. For example, while the survey produced significant quantities of Levallois flake cores, the number of Mousterian tool types is surprisingly low. While on the face of it this might suggest Stélida lacks evidence for later Middle Paleolithic activity, it has to be remembered that Mousterian assemblages are defined primarily by the presence of modified end-products.[48] The absence of such material at Stélida could thus be due to these retouched tools being removed when

[48] Bordes 1961.

finished or even made off-site, whereby this lacuna pertains to *behaviour*, not chronology. Telling in this regard is the fact that two of our best examples of Lower Paleolithic large cutting tools were made of non-local raw materials, with a cleaver made on a water-rolled cobble[49] (Fig. 7, a) and a hand axe of emery; the inference is that if we were to find the residential site tool kits associated with those exploiting Stélida, such assemblages might be far more "typical" and comparable to excavated material from the Mediterranean, the Balkans, or the Levant. In short, we need to bear in mind that the archaeology of Stélida is predominantly that of a quarry and early-stage production site, which is quite distinct from those represented by the domestic cave sites of Franchthi, Klissoura 1, Lakonis, and Theopetra *inter alia*.

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[49] cf. Mourre 2003.

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Figures

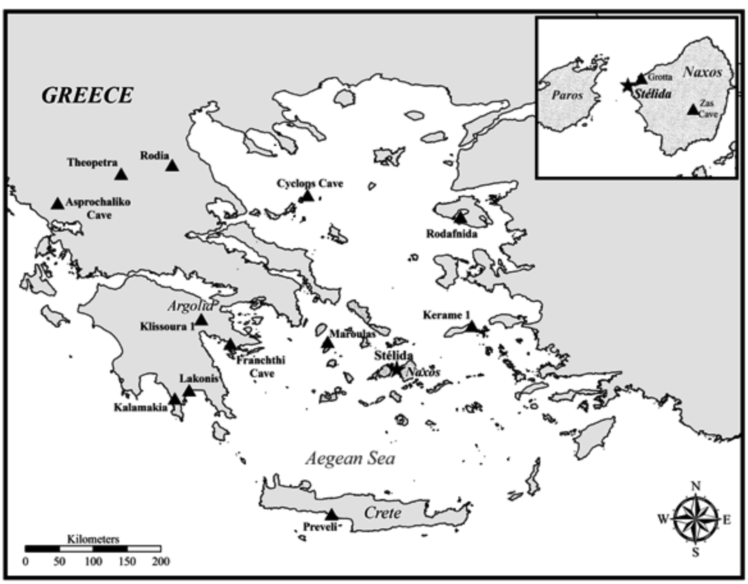

Figure 1. Stélida on Naxos and main locations detailed in text (map by K. Campeau)

Figure 2. View of the double-peaked hill of Stélida from east, Paros in the background (photo by D. Depnering)

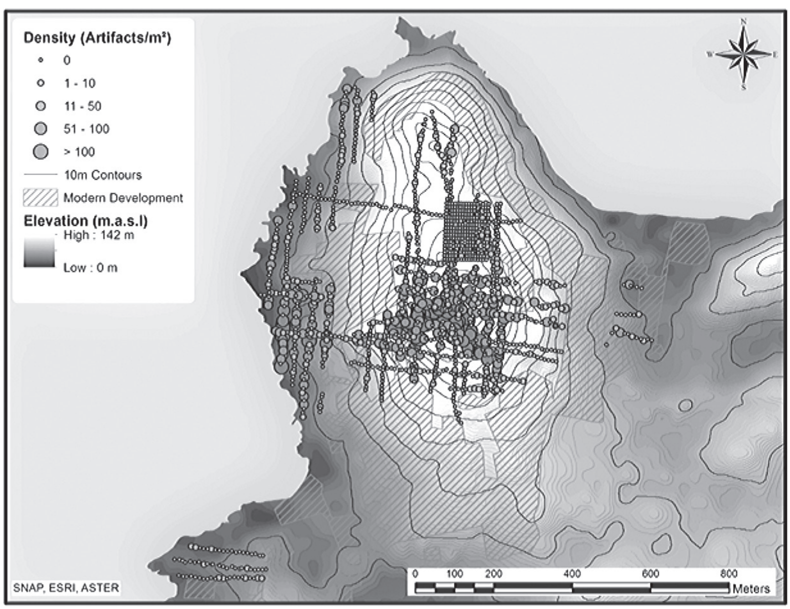

Figure 3. Distribution and counts of surface artifacts collected by the Stélida Naxos Archaeological Project 2013–14 (map by Y. Pitt)

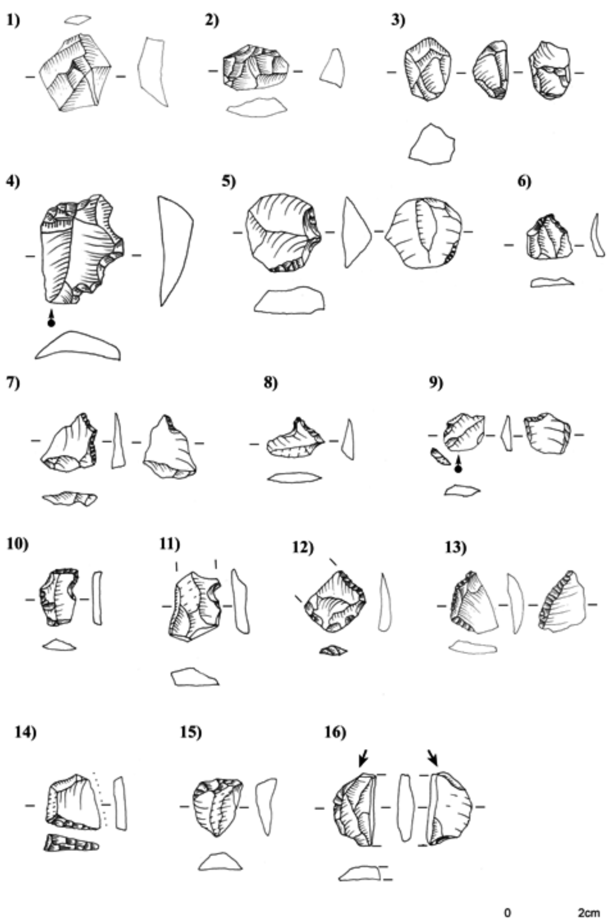

Figure 4. Examples of the main Mesolithic stone tool types from Stélida: 1–3, flake cores; 4–5, denticulates; 6–10, "spines"; 11, notch; 12, linear; 13, truncation; 14, backed flake ("pseudotrapeze"); 15, scraper; 16, burin; (3, 10-12 are Melian obsidian) (drawing by D. D. Mihailović)

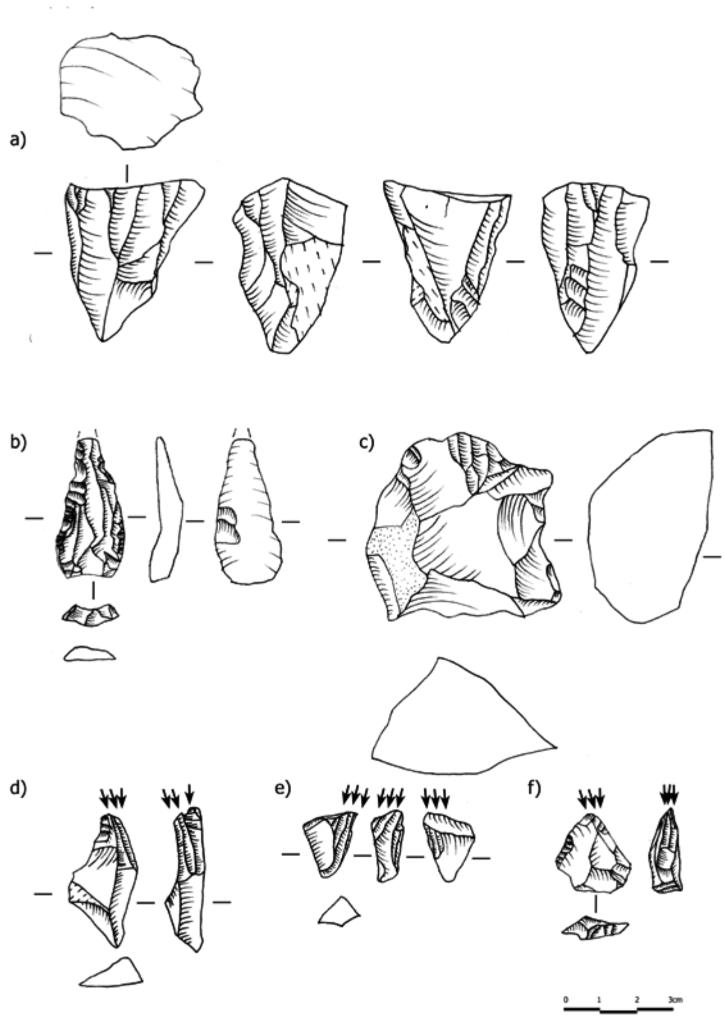

Figure 5. Examples of the main Upper Paleolithic stone tool types from Stélida: a, unipolar blade core with lateral preparation; b, unipolar retouched blade; c, combined tool end-scraper and denticulate on flake; d–f, multiple burins on flakes (drawing by D. D. Mihailović)

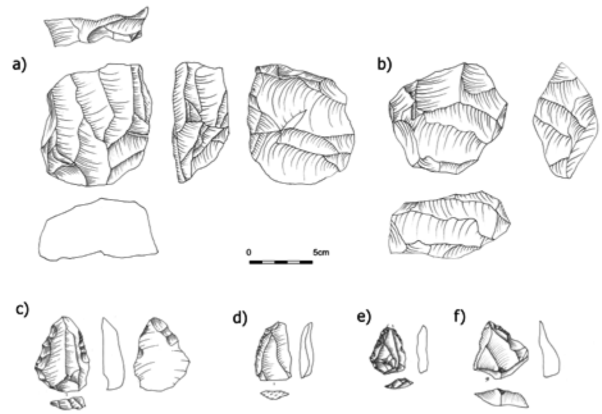

Figure 6. Examples of main Middle Paleolithic stone tool types from Stélida: a, Levallois blade core; b, Levallois flake core; c, Mousterian point; d, Levallois point; e, Mousterian point; f, pseudo-Levallois point; (a–d survey finds, e–f excavated material) (drawing by D. D. Mihailović)

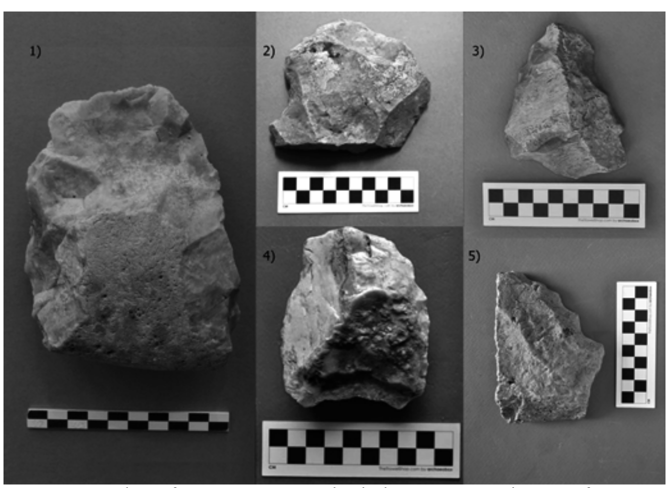

Figure 7. Examples of main Lower Paleolithic stone tool types from Stélida: 1, cleaver; 2, Clactonian notch; 3, Tayacian point; 4, scraper; 5, denticulate (drawing by D. D. Mihailović)

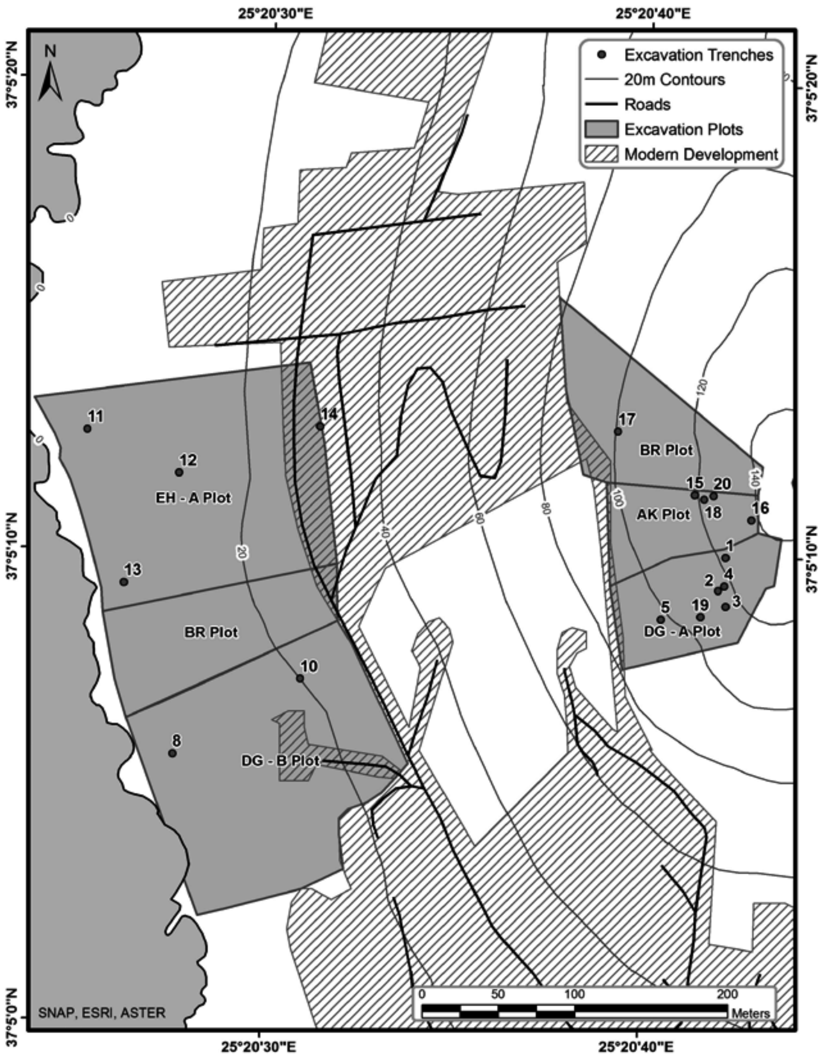

Figure 8. Location of trenches excavated on the western flanks of Stélida 2015–16 (map by Y. Pitt)

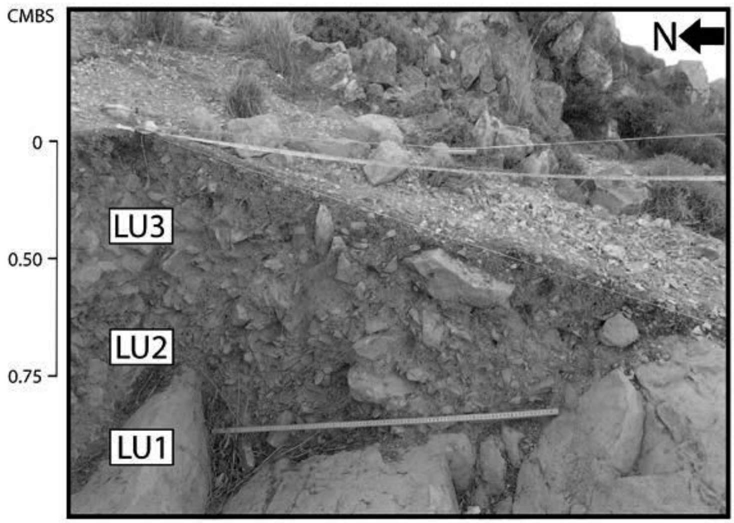

Figure 9. Artifact-rich west-facing section of Trench AK/016 with Lithostratigraphic Units [LU] indicated (photo by N. Jackson and J. Holcomb)

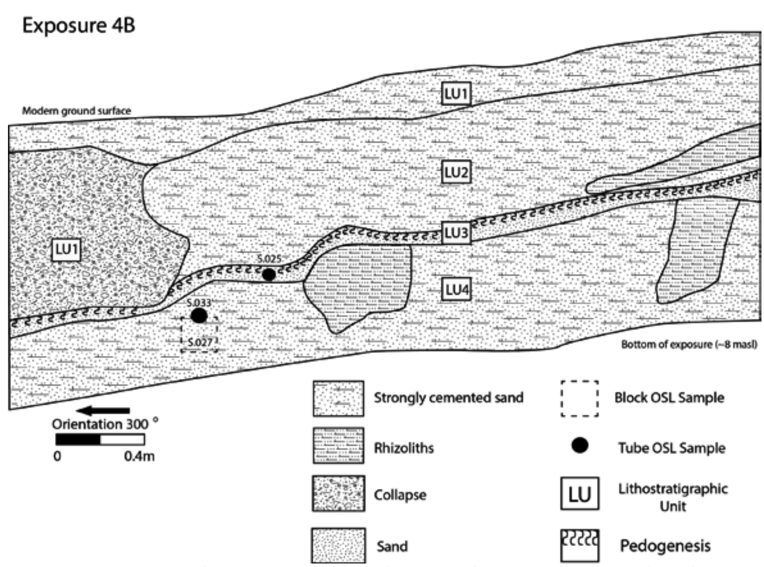

Figure 10. Stratigraphic section of northern aeolianite exposure detailing IRSL sample locations (drawing by J. Holcomb)