Early Neolithic settlement patterns and exchange networks in the Aegean

Agathe Reingruber
The German Archaeological Institute (DAI), Eurasia Department, Berlin, DE
are@eurasien.dainst.de

ABSTRACT – *The Neolithisation process is one of the major issues under debate in Aegean archaeology, since the description of the basal layers of Thessalian tell-settlements some fifty years ago. The pottery, figurines or stamps seemed to be of Anatolian origin, and were presumably brought to the region by colonists. The direct linking of the so-called 'Neolithic Package' with groups of people leaving Central Anatolia after the collapse of the Pre-Pottery Neolithic B resulted in the colonisation model of the Aegean. This view is not supported by results obtained from natural sciences such as archaeobotany, radiocarbon analyses, and neutron activation on obsidian. When theories of social networks are brought into the discussion, the picture that emerges becomes much more differentiated and complex.*

IZVLEČEK – *Proces neolitizacije predstavlja enega glavnih vprašanj v okviru razprav v egejski arheologiji vsaj od opisa temeljnih plasti naselbin tipa tell v Tesaliji pred 50 leti. Za keramiko, figurine in pečatnike se je zdelo, da izvirajo iz področja Anatolije, in so jih na področje Tesalije prinesli kolonisti. Neposredno povezovanje t.i. 'neolitskega paketa' s skupino ljudi, ki je zapustila centralno Anatolijo po padcu kulture predkeramičnega neolitika B, je postalo osnova za egejski kolonizacijski model. Ta vidik pa ne podpirajo rezultati iz naravoslovja kot so arheobotanika, radiokarbonske analize in nevronska aktivacijska analiza obsidiana. Če v razpravo vključimo še teorije socialnih omrežij, postane slika veliko bolj raznolika in zapletena.*

KEY WORDS – *Aegean; Neolithic; Mesolithic; Neolithisation; networks*

Introduction

'For lack of a name' James H. Breasted (*1919.55*) labelled the area covering the Levant, Upper Mesopotamia, and the Western flanks of the Zagros Mountains as 'The Fertile Crescent'. This telling name now refers to the core area in which the 'Neolithic Revolution' – a term coined by Gordon V. Childe – began. In his seminal book 'Man Makes Himself', Childe (*1951*) dedicated a whole chapter to those transformations that cover all aspects of life, leading to the most radical restructuring in human (pre)history. At its far end is our modern society, still comprised of sedentary communities relying on plant and animal husbandry exclusively.

According to the two basic alternative views of the spread of the Neolithic way of life, Early Neolithic communities in areas adjacent to the Fertile Crescent were either deeply influenced by the transformations happening there, or were a direct offspring of people living in the Near East who, for whatever reasons, moved West and colonised not only the Aegean, but also Southeast Europe. Eminent archaeologists dealing with these questions advanced various narratives, three of which were recently published in the same catalogue (*Lichter 2007*).

From a Central European viewpoint, the direction of the movement as presented by Jens Lüning (*2007. 179*) seems rather clear and very linear (Fig. 1). Represented by thick arrow-lines, the dissemination started from the Eastern Mediterranean, reaching Europe via the islands of Cyprus, Crete and both

DOI: 10.4312/dp.38.23

mainland Greece or Sicily and Magna Graecia. Lüning's other route is supposed to have led via the Sea of Marmara. Certainly, these routes seem logical and navigable. Yet, the archaeological evidence for this linear movement takes us no farther than the first steps: the colonisation of Cyprus from the Levant.

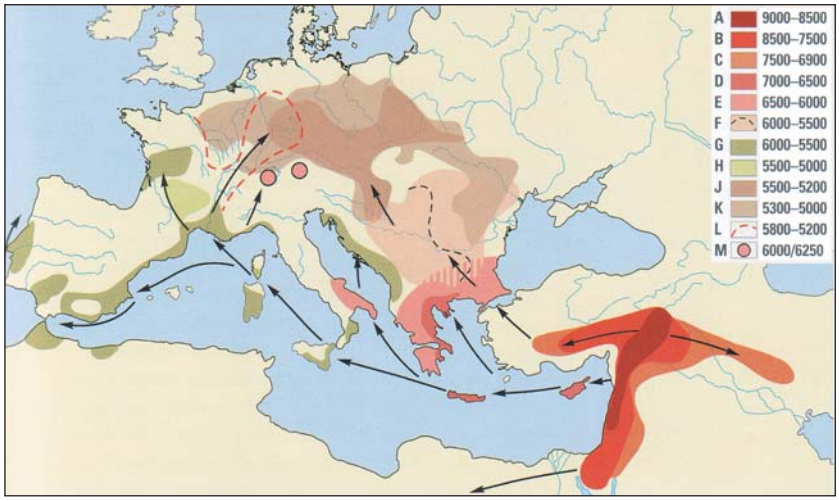

Fig. 1. Neolithisation model according to Lüning (*2007.179*).

Mehmet Özdoğan's (*2007a. 151*) narrative dispenses with arrows, but suggests a very powerful expansion starting throughout Anatolia, sweeping over whole regions, covering enormous areas, and leaving no gaps behind (Fig. 2). Neither were any unoccupied territories admitted (for example, the Southern Peloponnese), nor were enclaves of Mesolithic groups taken into consideration (*e.g.* the Danube Gorges).

Fig. 2. Neolithisation model according to Özdoğan (*2007a.151*).

The third narrative, by Jean Guilaine (*2007.171*), operates with more limited and defined areas, and does not use symbols to indicate unidirectional movements, but calibrated dates to show the boundaries between even neighbouring areas (Fig. 3). The gaps might result from insufficient evidence and/or insufficient investigation.

Whereas the first two narratives operate within the colonisation paradigm, option [A], the third dispenses with indicators for direct movement, leaving open the possibility of the transmission of ideas, option [B]. It is the third narrative that also transmits our sparse knowledge about certain regions like the one under discussion in this contribution. By 'Aegean' I mean both littorals of the Aegean Sea: the Eastern, Anatolian coastal area with its hinterland, and the Western, including Eastern Greece. The Southern boundaries are formed by the island of Crete, the Northern ones are formed by Aegean Macedonia as well as Greek and Turkish Thrace. Northwest Anatolia, with its complex geographical setting close to the Marmara Region deserves a separate and comprehensive study.

The spread of the Neolithic is directly linked to the geographical setting of Anatolia: regional groups are delimited by geographical borders, like the Middle Taurus mountain range that separates Upper Mesopotamia from Central Anatolia, and farther West, the Hasan Dağları of the Western Taurus mountain range, with heights around 3000m, between the Anatolian Plateau and the Lake District. These ranges are certainly not impenetrable, but nevertheless form natural barriers separating not only the regions in an East-West direction, but also in a North-South-direction: the coastal plains around the gulfs of Mersin and Antalya also have specific regional characteristics.

The 'Neolithic Package'

Before discussing the character of the spread of the Neolithic – whether of people and/or ideas and/or commodities – a closer look should be taken at the arguments for a Near Eastern colonisation of the

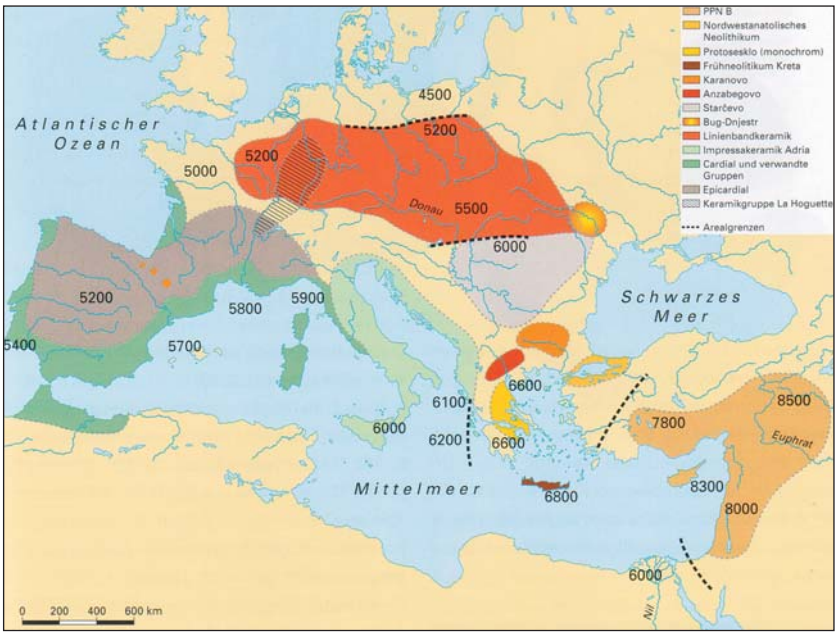

Fig. 3. Neolithisation model according to Guilaine (*2007.171*).

Aegean region based on material culture. According to Childe, both the agricultural economy relying on domesticated plants and animals, as well as sedentism, were among the key features of the Neolithic way of life. In his view, ground stone implements (hoes and axes), pottery (mainly for storage), spindle whorls, and other weaving implements for producing textiles formed the basic elements of the Neolithic. Other features of Childe's primary components are exponential population growth, the storage of surplus products, trade networks focusing on non-essential items, decentralised social mechanisms for the coordination of collective activities, and magic-religious traditions that focus on the promotion of fertility (*Childe 1951.75-80; Zeder 2009.13*).

It is well known that the 'Neolithic Revolution' was a long-lasting process, since even the appearance of the three main elements of material culture that Childe mentions (pottery, ground stone, spindle whorls) encompassed a very long period, more than 15 millennia (from roughly 24 000 to 8400 calBP) (*Zeder 2009.18*). In Melinda Zeder's (*2009.39*) view, "*Childe clearly did not conceive of the constituent components of the Neolithic bursting forth fully formed as a complete package. Instead, Childe saw these different components as mutually reinforcing parts of an unfolding process.*" Zeder (*2009.3*) borrowed the concept of the '*Bauplan*' from macro-evolutionary theory in biology. It is based on the idea that single traits should not be analysed alone; instead, integrated wholes or constellations of traits that follow basic structural plans should be studied. Following this approach, we should not just be content with the definition of the 'Neolithic Package' and the description of its individual components when studying the Neolithisation process, but rather embed them in their social context.

In an attempt to place these components within living environments, I shall make use of another concept that seems most suitable for approaching prehistoric societies: social network theory (*Watkins 2008. 139–171; 2003.36–37*).

In 6700 calBC at the latest, the so-called 'Neolithic Package' was fully developed in Eastern and Central Anatolia, including not only economic and technical items, but also social and symbolic cultural objects like figurines, stamps, and ornamentation on pottery. Thus, at the moment when the Neolithic way of life spread into the Aegean, all of the features were available. Therefore, they were seen in research as an integrated component of a single 'Neolithic Package'. Yet, the more sites were excavated in the Aegean, the more it became clear that the concept of such a single package arriving with colonists from farther East could not properly explain the complicated process of Neolithisation, as I will argue in the rest of this paper.

The concept of the 'Neolithic Package' has long been the main argument in research for explaining the Neolithisation of the Aegean and the Balkans by colonists (*Perlès 2005.286*). Its seemingly sudden spread into the Aegean paired with the again seemingly sudden appearance of new sites in the initial stage of the Early Neolithic (EN I) were the main reasons for taking a colonisation process – triggered by a collapse at the end of the Pre-Pottery Neolithic B (PPNB) (*Perlès 2001; Özdoğan 2007b*) – for granted. But in the last decade, the positivistic approach to dealing with the arrival of the 'Package' in Europe has been moderated to some degree. According to Çilingiroğlu (*2005.Tab. 2*), the 'Neolithic Package' should be divided into several packages that arrived in the Aegean at different times. This proposal, taken a step further, raises the question as to whether it is meaningful to conceive of 'packages' at all. Is a pa-

ckage not a combination of several things belonging together or relating to one another? Yet, if the single parts of the 'Neolithic Package' occurred in several periods and in different combinations from region to region, even from site to site, are we then still dealing with a package or packages? And who might have been packing the parcels? Was it indeed 'colonists' expanding from Anatolia to the West who packed them (according to view [A] in the introduction), or were any local populations involved in the process, who adopted only parts of it, leaving certain features and contents aside (according to view [B] in the introduction)? Or instead, is the 'Package' rather the result of a combination of two processes: mobile groups of people relying increasingly on domesticates (with all the consequences involved), and influencing other mobile groups of hunter-gatherer-fishermen through regular contacts and exchanges in such a way that the latter groups also adopted and became adapted to innovations, and to social and cultural change?

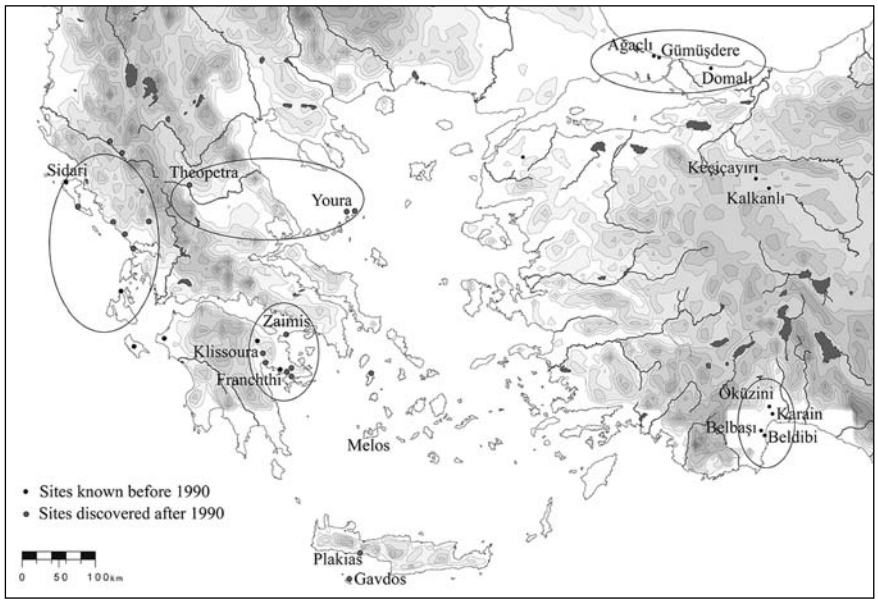

Fig. 4. Mesolithic sites in the Aegean (after* Reingruber 2008.Map 1*).

When archaeologists structure the 'Neolithic Package', there seems to be no broad consensus on what should go into the parcel(s). Depending on the knowledge and priorities peculiar to the archaeologists dealing with this concept, the supposed package tends to be quite varied. Upon close examination, the limits of this concept become more than clear. The impossibility of fitting the package into tables is obvious, when comparing the suggestions made by Perlès (*2005.Tab. 1*) and Özdoğan (*2010.Tab. 1– 2*): in their view, the 'Neolithic Package' reaching Greece should contain – in addition to mud bricks – complex hearths, plastered and lime floors, clay benches and buttressed walls. These elements did not appear before the Early Neolithic II (EN II) or even the Middle Neolithic (MN) in Thessaly and the Argolid, if at all. When small finds are also included in the discussion, it is even more difficult to reach a consenus: the stamp seals, bone spoons, antler hafts, pebble figurines or M-shaped figurines, supposedly brought by the early colonists, have not been found at any EN I sites in Greece.

I believe that, when trying to explain the Neolithisation of the Aegean by the arrival of colonists bringing their package(s) with them, one should focus first on the initial stage of the Neolithic, EN I. After 'freeing' this period of all the assumptions connected with it and then rigorously examining the finds from this stage, very little is left for discussion. As shown in an earlier contribution (*Reingruber 2005*), investigations in the Western Aegean are limited to small trenches when reaching the basal layers of tell settlements. Every study dedicated to the Neolithisation process of the Aegean, the present one included, is hampered by at least two major shortcomings: (1) the lack of large-scale excavations carried out according to modern standards, and (2) few comprehensive publications with a convincing discussion of the stratigraphy and a precise placement of the finds in a specific layer and a certain context. Instead, there is an abundance of papers with a rather general appraisal of the cultural material.

Despite these shortcomings, one should not waste the chance to at least attempt, even within limited terms, to analyse the EN I material – not merely to contradict the concept of the 'Neolithic Package', but taking a more comprehensive view as suggested by Zeder's (*2009*) concept of a '*Bauplan*'. The idea of enumerating single items of the 'Neolithic Package', that seem to occur both in Anatolia and the Aegean, and explaining the introduction of such items to Europe by the unidirectional movement of people, by colonists, actually oversimplifies the complicated and complex procedure that the Neolithisation process must indeed have been. Therefore, one must

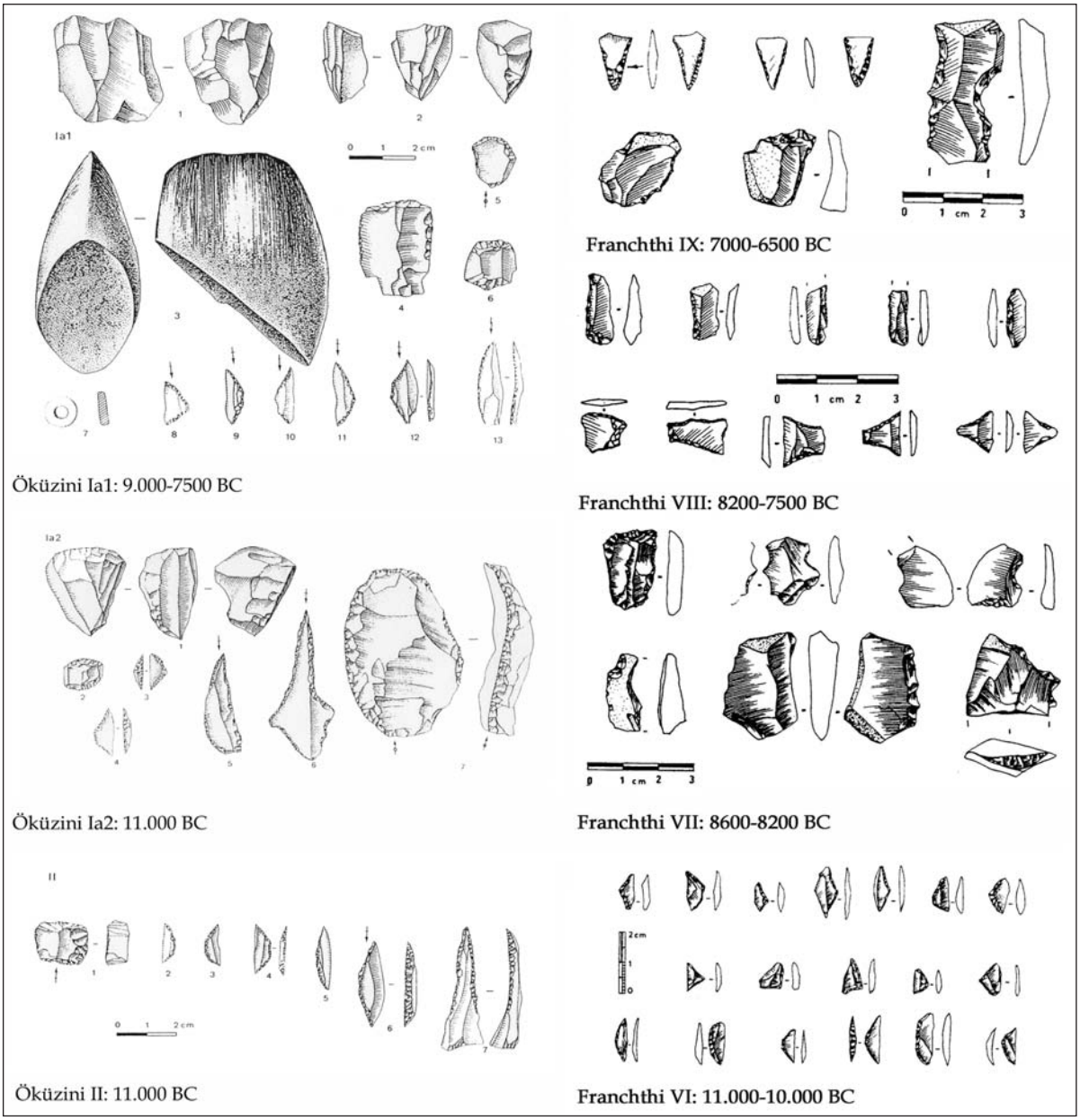

Fig. 5. Stone tools from Öküzini (*Yalçınkaya *et al.* 1995*) and Franchthi (*Perlès 1990*).

acknowledge the limits of the 'Package' as a tool for analysis. The 'Neolithic Package' seems to be a construct that helps archaeologists structure their information and knowledge rather than reflecting a historical process. Instead of focusing on presupposed colonists bringing their parcels of items and knowledge into the Aegean, one should take a step back into the Mesolithic period and include archaeological remains from caves in Southwest Anatolia and Eastern Greece in the discussion.

The Mesolithic and the EN I in the Aegean

After the two decades of intensive study of the Greek Neolithic by Milojčić and Theocharis during the 1950s to the end of the 1970s, systematic investigations of the Early Neolithic in Eastern Greece have been few and only on a limited scale. Yet even the sparse evidence produced, when studied in detail and not only in a broad perspective, offers clues for a differentiated discussion of the ensuing Neolithic in the region.

As stagnant as the investigation of the Early Neolithic is, just as slowly are new pieces added to the puzzle that is the Mesolithic. Furthermore, investigations of the Mesolithic are linked to a few researchers active in the different regions. In the European part of the Aegean, new sites have been revealed in the last two decades by Adamantios Sampson, Stefan Kozłowski, Nina Kyparissi-Apostolika, Curtis Runnels

and Thomas Strasser (*Sampson 1998; Sampson* et al. *2002, Kyparissi-Apostolika 2000; Strasser* et al. *2010*). Thus, the many blank areas on maps in earlier monographs dealing with or including the Aegean Mesolithic (*Perlès 1990*) can be filled with more find spots (Fig. 4). The island of Crete alone, which often served as the prime example of Neolithic colonisation, now must be reckoned to have had a significant hunter-gatherer-fisher presence on the southern coast (*Strasser* et al. *2010*). Mesolithic finds have been recorded even on the small island of Gavdos, south of Crete (*Kopaka, Matzanas 2009.Fig. 5*). It is only a matter of time before camps of hunter-gatherer-fishermen are also detected in the Eastern Aegean.

Not including Western Greece, with many newly discovered sites in the Preveza region, the focus of this contribution will be on the Argolid and Thessaly. At the moment, intra-Aegean comparisons can be made between Eastern Greece and Southwest Anatolia, where in the Antalya region, stone inventories of the Early Holocene were brought to light in the middle and late 20th century.

Groups of hunter-gatherer-fishermen seem to have preferred secure bay-like situations close to hilly areas (Fig. 4). This is not only the case with the region around Antalya (Beldibi, Belbaşı, Öküzini and Karain), but also in the Argolid (with sites like Franchthi, Klissoura, Koukou, Ulbrich or Zaimis). When comparing the inventories of stone artefacts found in these two regions, the similarities are much more convincing than any comparisons with coeval sites in Central Anatolia. In Çatal Höyük during the 8th and early 7th millennium, bifacially retouched tools are the most evident feature suggesting a very sophisticated *chaîne opératoire*. At the same time in Öküzini, Beldibi and Belbaşı, backed bladelets, end-scrapers and geometric microliths predominate. When comparing the stone tool-inventories from the two sites of Öküzini (*Yalçınkaya* et al. *1995*) and Franchthi (*Perlès 1990*), starting with the Early Holocene, the similarity in concepts of tool-production is striking (Fig. 5). The rhythm in which the changes occur in the West and East is the same: backed bladelets are typical of the transition from the Late Upper Palaeolithic to the Mesolithic around 10 000 BC; splintered tools and transformation tools appear often in the Early Mesolithic, whereas geometric microliths are identified as Mesolithic.

If one accepts the view that colonists from Central Anatolia arrived in the Aegean around 7000 BC (*Perlès 2003.103*), one has to find convincing answers as to why they did not bring with them (that is, in their packages) their most advanced technologies for flint-knapping and tool production, but instead reverted to a less sophisticated *chaîne operatoire*.

After the middle of the 7th millennium, regularly cut blades, probably pressure-made, appeared on both coasts, such as Çukurici Höyük, Dedecik-Heybelitepe, Ege Gübre and Yeşilova in the East (*Begner* et al. *2009; Herling* et al. *2008; Sağlamtimur 2007; Derin 2007*), and at Sesklo (*Moundrea-Agrafioti 1981*) and Argissa (Fig. 6) in the West. However, geometric items with Mesolithic forms did not disappear. The stone tool-kit found in Argissa-Magoula is among the most complete inventories from Thessaly. Tools made from blades dominate the assemblage, but types known from the Mesolithic, such as trapezes, segments, denticulates and notched pieces, still occur (Fig. 7). Triangular arrowheads appear in the Aegean only in the late Middle Neolithic and become more abundant during the Late Neolithic and Chalcolithic, when trapezes were still in use (*Reingruber 2008.531; Alpaslan-Roodenberg 2011.60-61*). New

Fig. 6. Stone tools from Argissa-Magoula.

Tools	Flint	Obsidian	Total
tools made on blades	46	33	79
sickles on blades	18	–	18
pointed blades	3	6	9
tools made on flakes	8	2	10
notched pieces	4	3	7
trapezes	5	2?	7
segments	1	–	1
microtools	1	1	2
borer	–	2	2
denticulates	–	1	1
Total	**86**	**50**	**136**

Fig. 7. Stone tools from Argissa-Magoula.

techniques, like the application of pressure for the production of long and thin blades, need not necessarily be explained by a replacement of people, but rather by a replacement of activities and tasks (plant harvesting instead of hunting).

An interesting point here is that, according to our current knowledge, those areas that formed the territory of hunter-gatherer-fishermen were used later by early groups of farmers: the first Neolithic settlements appeared between the outer margins of Theopetra and Youra in Thessaly and later around Argive Bay (Fig. 8). At first sight, there seems to be a stark contrast between the very few sites from the Mesolithic period and the numerous settlements of the Early Neolithic, which would support the explanation that colonists intruded into Greece and founded many new settlements. This view, however, must be challenged: on the one hand, many more Mesolithic sites discovered since 1990 must be taken into consideration than was possible before; and, on the other, many of the sites that have been labelled as EN I date, in fact, to later periods – whether to later phases of the EN or even the beginning of the MN. The Early Neolithic of Crete (Knossos IX–V) or the Early Neolithic sites of Euboea, for instance, are – from a supra-regional Aegean view – of late Middle or even Late Neolithic date. Moreover, the sites dated to the EN I in the Argolid are not coeval with the EN I-sites in Thessaly, but some hundred years younger (*Reingruber and Thissen 2009*).

All maps denoting EN-sites in Thessaly and created on the basis of Gallis' Atlas (*Gallis 1992*) should be seriously questioned. The basic information on Gallis' map is the occurrence of sites with an inventory of monochrome pottery, sites with painted sherds, or those with impresso decoration. Yet 'monochrome pottery' is a vaguely defined term which in no case can be used in a chronological sense (*Reingruber in print*). Keeping in mind that painted sherds are always very rare and the painting mostly restricted to rims, it is evident that surface collections without painted fragments may be of pure coincidence. Assigning a site by surface material alone to a certain stage of the Neolithic on the basis of only a single, ill-defined criterion is misleading. Rather, the pottery inventories can date to more than one period.

A supra-regional, methodologically correct analysis should be made on the basis of coeval sites. Alone from the Western and Northern Aegean, can we rely on a body of 241 radiocarbon dates (*Reingruber, Thissen 2005.295–327*). With the help of modelled ^{14}C dates for each site, the approximate time at which Neolithic life started in a specific region can be inferred (*Reingruber, Thissen 2009; Thissen 2010*). The oldest sites are in the Southern Aegean, with Crete and the Lake District, and date to the first half of the 7th millennium. They are followed by the Central Aegean sites in Thessaly and Western Anatolia, while the youngest sites were founded at the end of the 7th millennium in the Northern Aegean

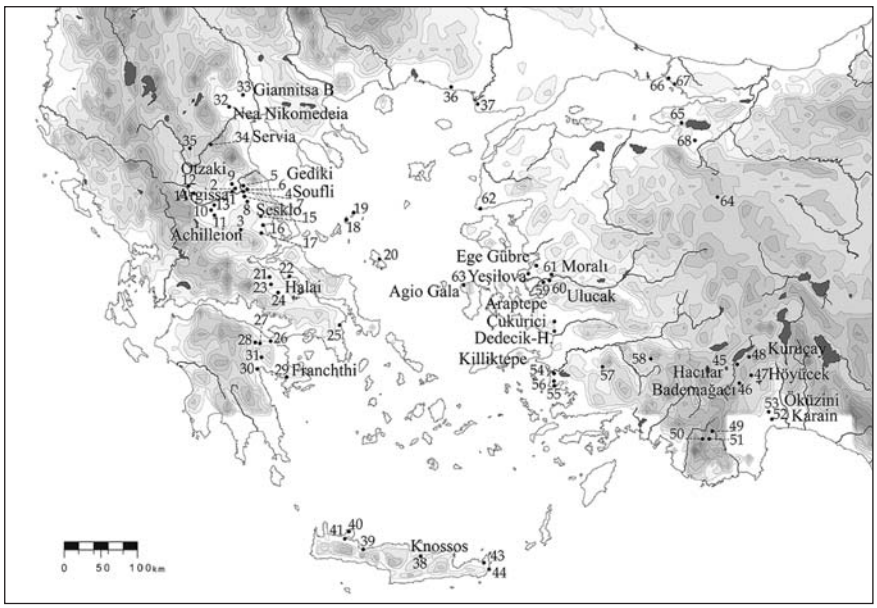

Fig. 8. Neolithic sites in the Aegean (after* Reingruber 2008.Map 2*).

(Fig. 9). Astonishingly, in the Argolid, where there was a strong Mesolithic presence, long-lasting settlements appear comparatively late, around 6000 BC. The islands, as well as Crete, were (re)inhabited continuously only after 5500 BC.

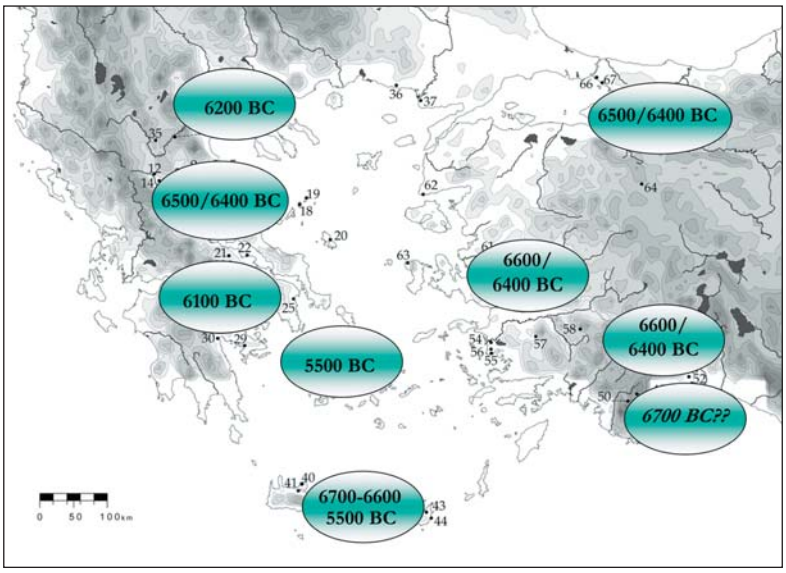

Fig. 9. First appearance of Neolithic sites in the Aegean.

After a detailed examination of both the material culture and ^{14}C dates, the model of a wave of colonisation sweeping over the Aegean as a whole must be rejected: that is, sites appear there at different stages in different landscapes. The ^{14}C dates suggest that the EN I period can be dated to between *c.* 6500/6400 (somewhat earlier in the Southern Aegean with Crete and the Lake District) and 6300/6200 calBC. All sites with dates later than these, although purported to be of EN I date, will not be taken into account here. Hence, for the whole of Greece, there remain Knossos, Argissa and Sesklo, and in Anatolia, only Ulucak and Bademağacı. Interestingly, the sites in the Lake District are older the closer they lay to the sea. Generally, the oldest known sites are situated in coastal areas. The basal layers at Knossos, Ulucak and Bademağacı are still only poorly understood – their dating around 6700 calBC is to be considered tentative (*Thissen 2010.Fig. 13*). Therefore, the modelled ^{14}C dates do not support the idea of direct colonisation from Central Anatolia, but testify to a marine-oriented population living in this area in the transition to the EN I.

The Neolithic '*Bauplan*' in the Aegean

When compiling all the data available for the first phase of the EN, we should first note the following:

Architecture

Sufficient data for reconstructing the earliest dwellings is available only from three sites: in Argissa, a more or less rectangular discolouration appeared in level 28a (level 31 being the lowest), which probably represents the contours of a hut (*Milojčić 1962*) (Fig. 10). In Sesklo A, some remains of what appear to be the corners of lightly-built structures were uncovered, but the outline remains unclear (*Theocharis 1973*) (Fig. 11). In Sesklo C, signs of a wall foundation were traced over a distance of *c.* 5m, but nothing could be connected to it (*Wijnen 1981*) (Fig. 12). In Knossos X, a threshing area was superimposed by mud brick walls from Knossos IX. Further, the basal part of pits with burials of children were also found there; the pits for the burials might have been dug from higher above (Fig. 13). At none of these sites were mud bricks or complex hearths or clay benches discovered. Mud bricks appear only later in EN II in Otzaki (*Milojčić-v.Zumbusch and Milojčić 1971*); in Argissa, mud bricks were found as a cover for the body of a child buried in EN II–III.

These remains of lightly-built, surface structures form the basal layers of incipient tell-settlements. Several areas were inhabited in Sesklo before the concentration at one main site – the later Acropolis – occurred. This settlement concept continued during the MN, with houses built not only on the tell, but also around it (*Kotsakis 1983*). The remains of Knossos X were nothing but a thin layer of settlement debris; only some 1000 years later did the inhabitants of Knossos IX build their houses atop it. The EN I–II-layers in Argissa are approximately 2m high; the MN and LN, conversely, are known only in the form of a few pits. Either there was a shift in the habitation area, or these layers were thoroughly destroyed during the Early Bronze Age.

The concept of building on the same plot like the previous generation becomes more pronounced during the EN II, since most of the tells have depositions from this period at their base (Otzaki, Achilleion *etc.*).

Burials

Compared to the number of known habitation sites, burials are even more scant: a skeleton in a crouched

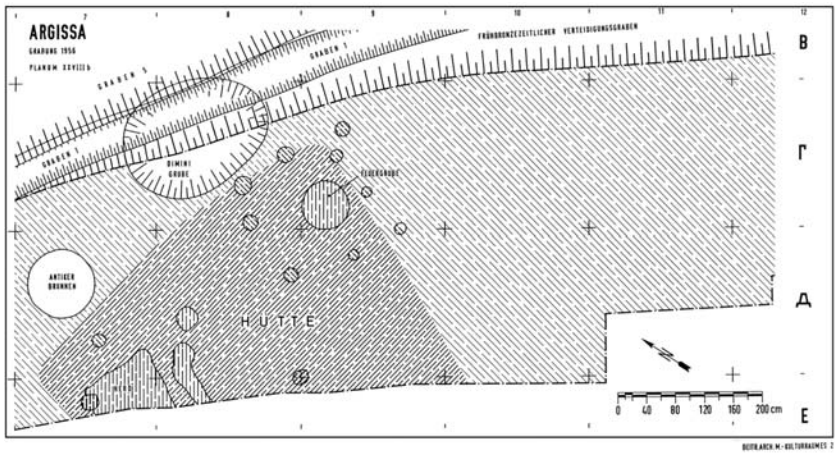

Fig. 10. Traces of architecture from EN I site Argissa-Magoula (*Milojčić 1962*).

position dated to the EN I was identified in Sesklo C. The skeleton of a child from a pit in Argissa can be dated to the EN II–III. The 15 cremations and 3 inhumations found by Gallis (*1982.221, Fig. 7*) in Soufli can be assigned to the EN II. Chourmouziades (*1971.164–175; 1973.210*) interpreted the remains of 11 individuals found in a pit under a house floor in Prodromos I as a collective grave consisting of three consecutive depositions of secondary burials (*Treuil 1983.427–428, Fig. 217*). Perlès (*2001.279–280*) draws parallels between this pit and the well-organised ossuary of the skull-building in Çayönu, which is located some 2000 kilometres and 2000 years apart. Yet, a reasonable interpretation of this feature is not possible, since no further information is available.

A comparable combination of different burial rites has not been observed thus far in Anatolia. However, human remains dating to the Mesolithic and found throughout Eastern Greece show a similarly wide spectrum: in the Argolid inhumations, single human bones and cremations appeared side by side in the cave of Franchthi. Seven burials, one in a crouched position, the others only partially preserved, were covered with stones. From the Mesolithic units, single human bones from at least 19 individuals were recovered. Two cremations appeared at the same depth with the inhumations (*Cullen 1995.274–281*). In addition, completely and partially preserved inhumations in slightly crouched positions and covered by stones were discovered in Maroulas on Kythnos. The bones were additionally covered with ochre (*Honea 1976.259; Sampson* et al. *2002.45–67*). A female skeleton in a crouched, supine position found in the Theopetra-cave is dated to 7000 calBC (*Kyparissi-Apostolika 1999.235*). In Youra, the skull of a woman found at a depth of 3.30m depth has been reported (*Sampson 1996.57*).

No skulls were remodelled or bear traces of special additional treatment. The insufficient data from Youra and Prodromos cannot serve as evidence of a 'skull cult', as in the Near East or in Central Anatolia (*Stordeur, Khawam 2007*).

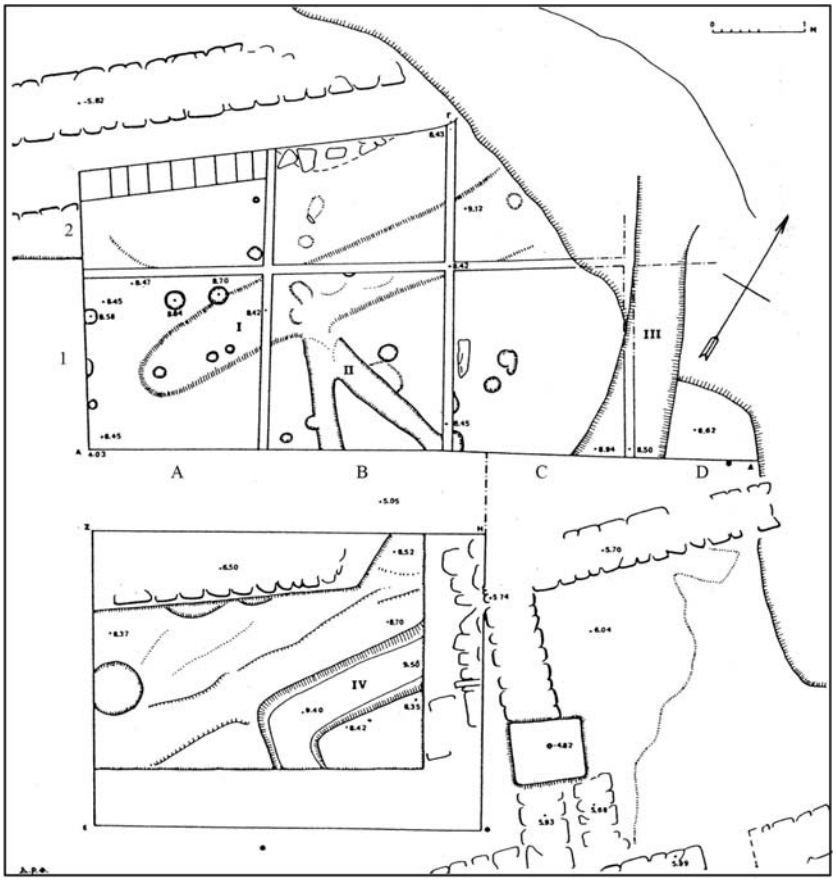

Fig. 11. Traces of architecture from EN I site Sesklo A (*Theocharis 1973*).

Stone tools: obsidian

Already at the very end of the Late Palaeolithic, the first pieces of obsidian from Melos appeared in Franchthi in the Argolid; they must have been brought there by boat, since no land bridge connected the islands with the mainland. Obsidian was in use at several sites in the Argolid during the Mesolithic (Klissoura, Koukou, Ullbrich) and on Kythnos (Maroulas) (Fig. 14). Only after *c.* 7600 calBC did this raw material appear in the Northern Sporades (Youra). By contrast, other Mesolithic sites like those on Crete, in Western Greece and even Western Thessaly (Theopetra) have not yielded any Melian obsidian. After 6500 calBC, obsidian was used in great quantities in Argissa (amounting to 46% of the stone material) and at other Thessalian sites (also in Central Greece). It reached the Northern Aegean (Nea Nikomedeia, Giannitsa, Servia) only after 5500 calBC (Fig. 15).

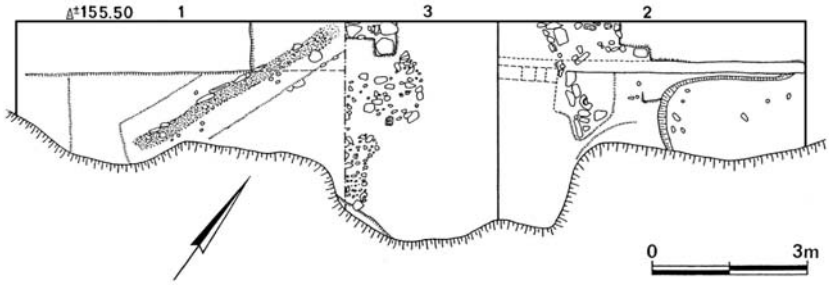

Fig. 12. Traces of architecture from EN I site Sesklo C (*Wijnen 1981*).

Obsidian from Melos was also transported to the Eastern Aegean coast: neutron-activation-analyses on samples from Çukuriçi, Dedecik-Heybelitepe and Araptepe have shown that the raw material was procured from Melos. Melian obsidian has been further documented in Altınkum Plajı/Didim, Moralı, Aphrodisias, Loryma and Latmos (*Herling* et al. *2008*). Only when analysed macroscopically, as in the case of samples from Ulucak (*Çilingiroğlu 2005.9*), Yeşilova (*Derin 2007*) or Ege Gübre (*Sağlamtimur 2007*), are Anatolian sources claimed. Here, however, the strong suspicion of a circular argument arises, according to which colonists came from Central Anatolia bringing with them their own raw materials; hence, since they used Anatolian obsidian, they came from Central Anatolia. Certainly, supra-regional networks for raw material procurement also worked in this direction, as one such piece of Central Anatolian origin from Dedecik-Heybelitepe proves (*Herling* et al. *2008.51*).

Unfortunately, no finds have been unearthed in Western Anatolia yet that can be assigned to the Mesolithic; but when such sites are discovered, it will be interesting to determine the provenance of the raw materials found there.

Subsistence and symbolic representation

Early Neolithic networks in the Aegean can also be traced in the use of certain combinations of grains, since not all regions cultivated the same varieties of cereal (Fig. 16). Before 6200 calBC, einkorn/emmer and both hulled and naked barley were planted in Southwest Anatolia and in Knossos X, but not in Thessaly, where only 'founder crops' were used. After 6200 BC, bread wheat (*T. aestivum*) appeared not only in Hacılar VI, but also in the Northern Aegean, although not in Thessaly or the Argolid (*Reingruber 2008.501–512*). Farmers in Thessaly continued to use plants that were already known to them.

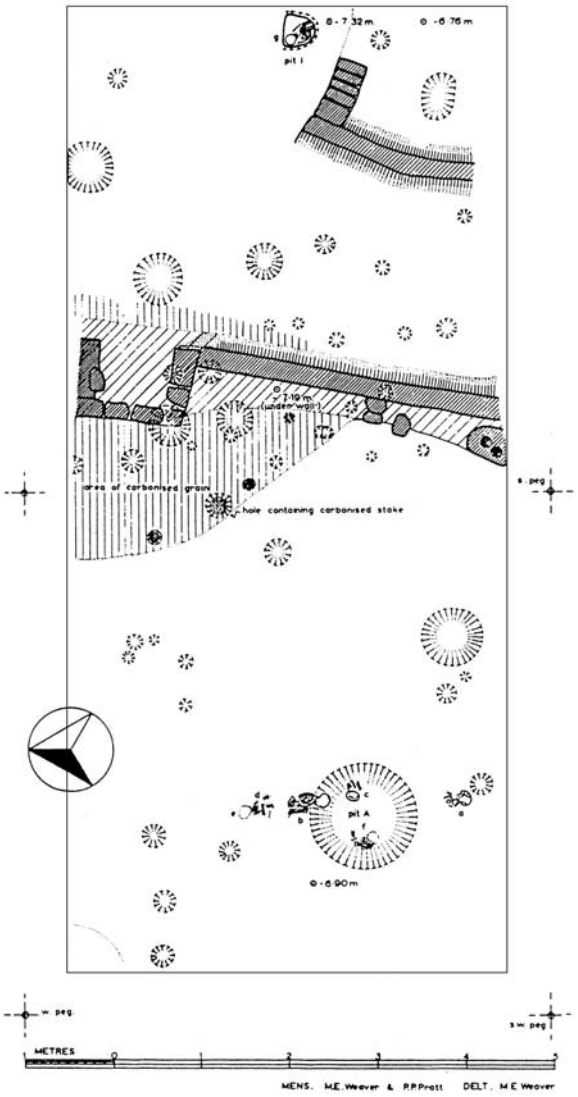

Fig. 13. Traces of architecture from EN I site Knossos IX and X (*Evans 1964*).

When contrasting this picture with the use of stamps, again a solid network becomes visible, connecting Southwest Anatolia and the Northern Aegean before 6000 calBC; and now, Thessaly is included in this sharing of symbolic expressions (Fig. 17).

No single stamp has been found in an EN I-context. The example from Argissa was assigned by its excavator to the EN; however, a reassessment of its exact position has revealed that the stamp was found in a disturbed context. Therefore, the earliest stamps are from Nea Nikomedeia, dating to post-6230 calBC (*Reingruber, Thissen 2009.756*). Those found in a secure context in Thessaly appeared only in the transition to the MN (Achilleion, Sesklo, Soufli). Again, the Argolid in the South of Greece is not part of this exchange network.

Fig. 14. Distribution of obsidian from the island of Melos in the Mesolithic.

Such a regionalisation is also visible in pottery production (*Thissen 2010.279*). Figurines – mostly female, but some recognisably male – are especially interesting in an East-West-comparison (*Hansen 2007*). Also worth noting is that none of the clay figurines can be securely dated to the EN I, but they do appear in secure contexts in the EN II (*Reingruber 2008.589*) and, therefore, are of an earlier stage than the stamps.

Discussion

During the Early Neolithic I:
- settlements appear in regions with a Mesolithic presence (Thessaly, Crete);
- huts are lightly built with thin posts and pisé walls;
- burial customs are similar to those of the Mesolithic period (cremations and inhumations);
- microlithic stone tools were still in use, but produced by new techniques;
- Melian obsidian becomes more widely distributed.

During the Early Neolithic II–III and at the beginning of the Middle Neolithic not all raw materials, products, and social practices are adopted in all regions:
- no obsidian in the North until the Late Neolithic (after 5500 BC);
- no new types of cereal in Thessaly after 6200 BC;
- no stamps and only a few figurines in Southern Greece.

This regionalisation and the slow pace at which the Neolithic way of life spread into the Western Aegean (from 6500–6000 calBC) does not accord with a massive colonisation beginning in Anatolia. Instead, interrelated regional networks become visible upon which were founded the dissemination of the Neolithic way of life into the Aegean. The main actors were not colonists, but highly mobile, seafaring groups whose roots were in the Mesolithic.

Networks from the Mesolithic and the EN in the Aegean

In his study on Palaeolithic societies, Clive Gamble (*1998*) differentiates between intimate networks, with five persons, effective networks with approximately 20 persons, extended networks with 100–400 people, and global networks with 2500 persons. In his view, interaction is based on face-to-face contact. Rather than the group, his emphasis is on the individual.

This view explains aptly the network that can be visualised with the aid of Melian obsidian found in the different regions of the Aegean. Both in the Mesolithic and the Neolithic, raw materials were procured from the same source. From a small local network in the Mesolithic, in the region around Melos, the network expanded into an effective and extended one during the EN I and MN, encompassing long

distances in both a North-South and East-West direction (Figs. 14–15). This transformation from a micro- to a macro-scale network, from a local to a regional and supra-regional one, fits well with the increasing size of groups. From the EN I to the MN, more and more sites appeared in all the regions of the Aegean. By the end of the Neolithisation process, there were several overlapping networks. The Neolithic settlements in Greek Macedonia in the Northern Aegean were not influenced by groups from Thessaly but can rather be connected with the Eastern Aegean. Unlike people in Thessaly, the inhabitants of Nea Nikomedeia cultivated *T. aestivum* and were probably the first in the Western Aegean to possess stamps. Network building must have worked from there in both a Northern (Neolithisation of the Balkans) as well as Southern direction (stamps in Thessaly). Neither a purposeful nor an irreversible colonisation/migration process lies at the basis of the Neolithic in the Aegean, but rather continuous and enduring exchange and contact over a long period, until the end of the MN around 5500 calBC.

Fig. 15. Distribution of obsidian from the island of Melos in the Neolithic.

It is also Zeder's view that Neolithic communities were linked by interregional contacts and communication networks that dispersed the Neolithic way of life "*into ever-widening territories outside the area of origin*" (*Zeder 2009.22; 27*). At the end of the EN, a vast sphere of social and economic interaction had been established throughout the Aegean. The network was maintained and widened by new groups of people, who were highly mobile people rather than colonists. Such groups produced, for example, the impressed pottery that appears mainly in coastal areas around 6000 calBC. During the EN I–II, beakers and wide-mouthed, open bowls were the most common vessels – both probably used for the consumption of liquids. Storage vessel appeared only later during the MN. EN pottery was used in symbolic ways, in communicative acts – another sign of the appreciation of contacts. According to Gamble, human networks contain not only material, but also emotional and symbolic exchange. Similarly, in Watkins' view, the exchange of goods and materials should be understood in association with the sharing of symbols and symbolic be-

Fig. 16. Use of different cereals in the Aegean.

Fig. 17. Distribution of stamps in the Aegean.

haviour. Such networks grow in scale and intensity over time (*Watkins 2010.631*).

With this concept of regional and supra-regional networks based on the mobility of prehistoric people I do not argue in favour an exclusively autochthonous Neolithisation model. The input of the Anatolian/Near Eastern way of life in the Aegean is obvious. Many of the products and also the items used in symbolic activities were of Anatolian origin. Nevertheless, as has been shown, the Aegean '*Bauplan*' displayed other priorities, the material culture differing from region to region. What I wish to stress is interaction based on face-to-face contact, on integration and social competence. Also a precise examination of the ^{14}C dates argue against a demic movement ignited by a catastrophe at the end of the PPNB (compare also *Thissen 2010.278*).

Each generation of archaeologists has posed its own questions, depending on the zeitgeist of the period, the political background, and the social or economic disasters of their own time. The current generation of archaeologists in Europe has not directly witnessed war or colonisation; conversely, with the European integration process growing more powerful since the 1970ies, issues like integration and social competences now dominate our daily life. It is time to widen the discussion on prehistoric processes and approach them from an integrative perspective, accentuating the social interaction between neighbouring areas, not the domination of colonists over assumed retarded groups that seemingly played a negligible role.

ACKNOWLEDGEMENTS

The writing of this article was preceded by many discussions with scholars studying Neolithisation processes. Even if it is impossible to mention them all by name, I would like to stress that the formulation of some of the ideas put forward here were developed thanks to fruitful exchanges with Dr. Laurens Thissen, Dr. Clemens Lichter, Dr. Barbara Helwing, Giorgos Toufexis, Dr. Barbara Horejs and Prof. Dr. Konstantinos Gallis. Dr. Emily Schalk corrected the English version of the first draft and Frank Lünsmann helped with the maps. With this article, I wish to thank Prof. Dr. Harald Hauptmann for opening many doors into the exciting world of Aegean Prehistory.

∴

REFERENCES

ALPASLAN-ROODENBERG S. 2011. Homicide at Aktopraklik, A Prehistoric Village in Turkey. *Near Eastern Archaeology 74(1): 60–61*.

BEGNER M., HOREJS B. and PERNICKA E. 2009. Zur Herkunft der Obsidianartefakte vom Cukurici Höyük. *Studia Troica 18: 249–271*.

BREASTED J. 1919. *Survey of the Ancient World*. Ginn and company. Boston, New York, etc.

CHOURMOUZIADES G. 1971. Dio neai ekatastaseis tés archaioteras neolithikés eis tén ditikén Thessalian. *Archaiologika Analekta ex Athenon 4(2): 164–175* (in Greek).

1973. Burial Custom. In D. Theocharis (ed.), *Neolithic Greece*. National Bank of Greece. Athens: 201–212.

CHILDE V. G. 1951. *Man makes Himself*. New American Library. New York.

ÇILINGIROĞLU Ç. 2005. The concept of "Neolithic package": considering its meaning and applicability. In M. Budja (ed.), *12th Neolithic Studies. Documenta Praehistorica 32: 1–13*.

CULLEN T. 1995. Mesolithic Mortuary Ritual at Franchthi Cave, Greece. *Antiquity 69: 270–289*.

DERIN Z. 2007. Yeşilova Höyuğu. In: M. Özdoğan and N. Başgelen (eds.), *Türkiye'de Neolitik Dönem. Arkeoloji ve sanat yayınlar*. Istanbul: 377–384.

EVANS J. D. 1964. Excavations in the Neolithic Settlement of Knossos, 1957–60. Part I. *Annual of the British School at Athens 59: 132–240*.

GALLIS K. 1982. *Kauseis nekrón apo té neolithiké epoché sté Thessalia*. Ekd. tu Tameiu Archaiologikón Porón kai Apallotrióseón. Athens (in Greek).

1992. *Atlas proistorikón oikismón tés anatolikés Thessalikés pediadas*. Ekd. Hetaireias Istorikón Ereynón Thessalias. Larissa (in Greek).

GAMBLE C. 1998. Palaeolithic society and the release from proximity: A network approach to intimate relations. *World Archaeology 29(3): 426–449*.

GUILAINE J. 2007. Die Ausbreitung der neolithischen Lebensweise im Mittelmeerraum. In C. Lichter (ed.), *Vor 12.000 Jahren in Anatolien. Die ältesten Monumente der Menschheit*. Badisches Landesmuseum Karlsruhe, Stuttgart: 166–176.

HANSEN S. 2007. *Bilder vom Menschen der Steinzeit: Untersuchungen zur anthropomorphen Plastik der Jungsteinzeit und Kupferzeit in Südosteuropa*. Archäologie in Eurasien 20. Verlag Philipp von Zabern. Mainz.

HERLING L., KASPER K., LICHTER C. and MERIC R. 2008. Im Westen nichts Neues? Ergebnisse der Grabungen 2003 und 2004 in Dedecik-Heybelitepe. *Istanbuler Mitteilungen 58: 13–65*.

HONEA K. 1976. Mesolithic Settlement of the Greek Cyclades Islands. *Paper presented to the IX. Congrès, UISPP. Nice: 259*.

KOPAKA K., MATZANAS C. 2009. Palaeolithic industries from the island of Gavdos, near neighbour of Crete in Greece. *Antiquity 83 (321)*. Project Gallery http://antiquity.ac.uk/antiquityNew/projgall/kopaka321/.

KOTSAKIS K. 1983. *Kerameiké technologia kai kerameiké diaphoropoiésé; problémata tés graptés keramikés tés mesés neolithikés epochés tu Sesklu*. Thessaloniké (in Greek).

KYPARISSI-APOSTOLIKA N. 1999 The Palaeolithic Deposit of Theopetra Cave in Thessaly (Greece). In G. N. Bailey, E. Adam, E. Panagopoulou, C. Perlès and K. Zachos (eds.), *The Palaeolithic Archaeology of Greece and Adjacent Areas*. Proceedings of the Icopag Conference, Ioannina 1994. British School at Athens Studies 3, London: 232–239.

(ed.) 2000. *Theopetra Cave. Twelve Years of Excavation and Research 1987–1998*. Proceedings of the International Conference, Trikala, 6–7 November 1998, Athens: 181–234.

LICHTER C. (ed.) 2007. *Vor 12.000 Jahren in Anatolien. Die ältesten Monumente der Menschheit*. Badisches Landesmuseum Karlsruhe, Stuttgart.

LÜNING J. 2007. Bandkeramiker und Vor-Bandkeramiker. In C. Lichter (ed.), *Vor 12.000 Jahren in Anatolien. Die ältesten Monumente der Menschheit*. Badisches Landesmuseum Karlsruhe, Stuttgart: 177–189.

MILOJČIĆ V. 1962. Die präkeramische neolithische Siedlung von Argissa in Thessalien. In V. Milojčić (ed.), *Die deutschen Ausgrabungen auf der Argissa-Magula in Thessalien I. Beiträge zur ur- und frühgeschichtlichen Archäologie des Mittelmeer-Kulturraumes*. Band 2. R. Habelt Verlag, Bonn: 1–25.

MILOJČIĆ-v. ZUMBUSCH J. and MILOJČIĆ V. 1971. Die deutschen Ausgrabungen auf der Otzaki-Magula in Thessalien I. Das frühe Neolithikum. In V. Milojčić and J. Milojčić-v. Zumbusch (eds.), *Die deutschen Ausgrabungen auf der Otzaki-Magula in Thessalien. Beiträge zur ur- und frühgeschichtlichen Archäologie des Mittelmeer-Kulturraumes*. Band 10. R. Habelt Verlag, Bonn: 19-152.

MOUNDREA-AGRAFIOTI H.-A. 1981. *La Thessalie du sud-est au Néolithique: Outillage lithique et osseux*. Unpublished doctoral dissertation. Université de Paris X. 1981.

ÖZDOĞAN M. 2007a. Von Zentralanatolien nach Europa. In C. Lichter (ed.), *Vor 12.000 Jahren in Anatolien. Die ältesten Monumente der Menschheit*. Badisches Landesmuseum Karlsruhe, Stuttgart: 150–160.

2007b. Amidst Mesopotamia-centric and Euro-centric approaches: the changing role of the Anatolian peninsula between the East and the West. *Anatolian Studies 57: 17–24*.

2010. Westward expansion of the Neolithic way of life: sorting the Neolithic Package into distinct packages. In P. Matthiae *et al.* (eds.), *Proceedings of the 6th International Congress on the Archaeology of the Ancient Near East*, May 5th–10th 2008, "Sapienza"-Università di Roma, Roma: 883–897.

PERLÉS C. 1990. Les industries lithiques taillées de Franchthi (Argolide, Grèce). Tome II, Les industries du Mésolithique et du Néolithique Initial. In T. W. Jacobsen (ed.), *Excavations at Franchthi Cave, Greece, Fascicle 5*. Indiana University Press, Bloomington and Indianapolis.

2001. *The Early Neolithic in Greece. The First Farming Communities in Europe*. Cambridge World Archaeology. Cambridge University Press. Cambridge.

2003. An Alternate (and Old-Fashioned) View of Neolithisation in Greece. In M. Budja (ed.), *10th Neolithic Studies. Documenta Praehistorica 30: 99–113*.

2005. From the Near East to Greece: Let's reverse the Focus – Cultural Elements that did not Transfer. In C. Lichter (ed.), *How Did Farming Reach Europe?* International Workshop, Istanbul 2004. Byzas 2, Istanbul: 275– 290.

REINGRUBER A. 2005. The Argissa Magoula and the Beginning of the Neolithic in Thessaly. In C. Lichter (ed.), *How Did Farming Reach Europe?* International Workshop, Istanbul 2004. Byzas 2, Istanbul: 155–171.

2008. *Die Argissa-Magula. Das frühe und das beginnende mittlere Neolithikum im Lichte transägäischer Beziehungen. Die deutschen Ausgrabungen auf der Argissa-Magula in Thessalien II*. Beiträge zur ur- und frühgeschichtlichen Archäologie des Mittelmeer-Kulturraumes Band 35. Dr. Rudolf Habelt GmbH. Bonn.

in print. Rethinking the "Preceramic Period" in Greece 50 Years after its Definition. In R. Krauß and B. Horejs (eds.), *Beginnings – New Research in the Appearance of the Neolithic between Northwest Anatolia and the Carpathian Basin*. Workshop held in Istanbul, 8.–9. April 2009 (in print).

REINGRUBER A., THISSEN L. 2005. ^{14}C Database for the Aegean Catchment (Eastern Greece, Southern Balkans and Western Turkey) 10,000–5500 cal BC. In C. Lichter (ed.), *How Did Farming Reach Europe?* International Workshop, Istanbul 2004. Byzas 2, Istanbul: 295–327.

2009. Depending on ^{14}C- Data: Chronological Frameworks in the Neolithic and Chalcolithic of Southeastern Europe. *Radiocarbon 51(2): 751–770*.

SAĞLAMTIMUR H. 2007. Ege Gübre neolitik yerleşimi. In M. Özdoğan and N. Başgelen (eds.), *Türkiye'de Neolitik Dönem*. Arkeoloji ve sanat yayınlari, Istanbul: 373–376.

SAMPSON A. 1996. La grotte du Cyclope. Un abri de pecheurs préhistorique? *Archéologia 328: 55–59*.

1998. The Neolithic and Mesolithic Occupation of the Cave of Cyclope, Youra, Alonessos, Greece. *The Annual of the British School at Athens 93: 1–22*.

SAMPSON A., KOZŁOWSKI J. K., KACZANOWSKA M. and GIANNOULI B. 2002. The Mesolithic Settlement at Maroulas, Kythnos. *Mediterranean Archaeology and Archaeometry 2(1): 45–67*.

STORDEUR D., KHAWAM R. 2007. Les cranes surmodelés de Tell Aswad (PPNB, Syria): premier regard sur l'ensemble, premières refléxions. *Syria 84: 5–32*.

STRASSER T. F., PANAGOPOULOU E., RUNNELS C. N., MURRAY P. M., THOMPSON N., KARKANAS P., McCOY F. W. and WEGMANN K. W. 2010. Stone age seafaring in the Mediterranean: Evidence from the Plakias Region for Lower Palaeolithic and Mesolithic Habitation of Crete. *Hesperia 79(2): 145–190*.

THEOCHARIS D. R. (ed.) 1973. *Neolithic Greece*. National Bank of Greece. Athens.

THISSEN L. 2010. The Neolithic-Chalcolithic sequence in the SW-Anatolian Lakes Region. In M. Budja (ed.), *17th Neolithic Studies. Documenta Praehistorica 37: 269-282*.

TREUIL R. 1983. *Le Néolithique et le Bronze Ancien Egéens*. de Boccard. Paris.

WATKINS T. 2003. Developing socio-cultural networks. *Neo-Lithics 20(3): 36–37*.

2008. Supra-Regional Networks in the Neolithic of Southwest Asia. *Journal of World Prehistory 21: 139–171*.

2010. New Light on the Neolithic revolution in southwest Asia. *Antiquity 84: 621–634*.

WIJNEN M. H. J. M. N. 1981. The Early Neolithic Settlement at Sesklo; an Early Farming Community in Thessaly, Greece. *Analecta Praehistorica Leidensia 14: 1–146*.

YALÇINKAYA I., LÉOTARD J.-M., KARTAL M., OTTE M., BARYOSEF O., CAIMI I., GAUTIER A., GILOT E., GOLDBERG P., KOZŁOWSKI J., LIEBERMAN D., LOPEZ-BAYON I., PAWLIKOWSKI M., THIEBAULT S., ANCION V., PATOU M., EMERY-BARBIER A. and BONJEAN D. 1995. Les occupations tardiglaciaires du site d'Öküzini (Sud-ouest de la Turquie) Résultats préliminaires. *L'Anthropologie 99(4): 562–583*.

ZEDER M. 2009. The Neolithic Macro-(R)evolution: Macroevolutionary Theory and the Study of Culture Change. *Journal of Archaeological Research 17: 1–63*.