The 8.2 event and the Neolithic expansion in Western Anatolia

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Chapter Six

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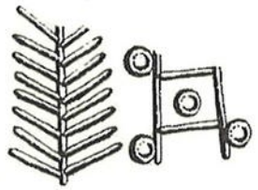

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Abstract *Over the past few years the claim that the 8.2 event triggered the expansion of farming toward Europe has been put forward by various archaeologists and climate researchers. Paradoxically, the archaeological evidence from western Anatolia, a region of key significance in this Neolithic expansion episode, has not featured prominently in these hypotheses. This neglect may partly stem from the circumstances that relevant data, mostly published exclusively in Turkish, have only become available in recent years. Here, new data from western Asia Minor, in particular the Lake District, Aegean Anatolia, and the Marmara Region, will be considered.*

It will further be argued that synchronicity in ecology and archaeology has often been erroneously equated with causality, and that synchronicity in itself does not prove anything. Instead, it is necessary to reconstruct ecological changes in particular regions and to explain why particular developments in the archaeological sequence would have been related to ecological changes, rather than other factors. In order to evaluate the role of the 8.2 event in relation to the Neolithic expansion, I will discuss the chronology of the Neolithic expansion that occurred in Asia Minor during the seventh millennium, proxy records of ecological changes, and, finally, the archaeology of the early Neolithic in western Turkey and what that can tell us about the mechanisms that made this expansion possible. On this basis we can evaluate whether or not the 8.2 event might have played a significant role in this particular Neolithic expansion episode.

INTRODUCTION

The central issue addressed in this paper is whether the climatic fluctuation known as the "8.2 event" was a factor in the Neolithic expansion episode that occurred in the seventh millennium B.C. in western Anatolia.

In the past few years we have witnessed a resurgence of deterministic explanations in studies dealing with Near Eastern Prehistory, in which climate changes triggered substantial shifts in how human societies developed. One case in particular that can illustrate this broader development, undoubtedly linked to anxieties in the modern world about climate change and how this may affect us, is that a large number of scholars have claimed that the 8.2 event triggered the expansion of farming toward Europe (Bar-Yosef 2001; Berger and Guilaine 2009; Budja 2007; Clare et al. 2008; Turney and Brown 2007; Wagner et al. 2002; Weiss and Bradley 2001; Weninger et al. 2006).

In these studies, a perceived chronological fit between the 8.2 event climatic oscillation and the expansion of farming has been taken as proof for the link between climate change and the Neolithic expansion. The arguments put forward in these papers vary somewhat from one study to the next—for instance, some authors link the expansion of farming with the so-called PPN-B collapse in the Levant, whereas others argue that the westward spread of farmers started in Central Anatolia—but they have three implicit assumptions in common. First, it is argued that the 8.2 event significantly affected the climate in the Near East. Second, it is postulated that adverse climatic effects would have impacted farming societies of the Near East, resulting in a series of crop failures and famines. Third, it is claimed that, faced with these conditions, farmers massively decided to migrate toward more temperate climatic regions such as western Anatolia, Greece, and the Balkans.

The approach taken in this paper will be to investigate the validity of these three assumptions by critically evaluating the ecological and archaeological data of Asia Minor in the seventh millennium B.C. The aim is to assess possible relations between the expansion of farming in western Asia Minor in the seventh millennium B.C. on the one hand and climatic changes on the other. Before proceeding to this discussion, however, it is necessary to make some more general comments on the manner in which the relation between ecological and culture change has often been conceptualized, and the chasm between archaeologists and climate researchers.

RELATING ARCHAEOLOGY AND CLIMATE STUDIES

At first sight, the relation between archaeology and climate studies may appear like another instance of the typical encounter between the "sciences" and the "humanities." For example, there are a large number of publications linking climate change and cultural change in "science" journals, such as *Science*, *Quarternary Research*, and *Quarternary Science Reviews*. By contrast, papers of similar content are almost completely absent from the core journals of archaeology, such as *Antiquity*, *Current Anthropology*, or the *Journal of World Prehistory*.

However, I will argue that it would be a mistake to construe these differences as an opposition between the sciences and humanities. The discipline of archaeology is

saturated with scientific methodologies, and archaeologists discussing matters such as agricultural changes and stratigraphic sequences and their chronology base themselves on a large corpus of systematically collected scientific data (Jones 2002). Instead, I will argue that archaeologists and climate researchers typically espouse fundamentally different understandings of the way in which cultural systems function.

The implicit view one often encounters in studies by climate researchers is that cultural systems are essentially stable over long periods of time and changes are triggered by factors upsetting the balance of the ecological-cultural equilibrium. Thus, time and again one encounters the idea that if we can establish synchronicity between ecological changes and cultural changes, it is reasonable to assume that ecological changes triggered cultural changes (Berger and Guilaine 2009; Clare et al. 2008; Turney and Brown 2007; Weiss and Bradley 2001).

This perception of culture is not dissimilar to the "systems theory" model of culture that was popular in the New Archaeology of the 1960s and 1970s, in which cultural systems were perceived as a relatively stable constellation of relations between cultural and ecological subsystems. This model of cultural systems came under attack in the 1980s, one of the main critiques being that this model offered no scope for agency and change (Hodder 1982). From that time onward, archaeologists have regarded cultural systems as dynamic; that is, changing on a more or less constant basis.

The dynamic culture model has significant implications for how archaeologists perceive studies relating archaeology and climate. A possible synchronicity of ecological and cultural changes is not intrinsically interesting given that change is a constant factor in archaeology in any case, and it is always possible to find cultural changes at any moment in time that may or may not be linked with ecological changes (Nieuwenhuyse et al., this volume). This is why the technique of highlighting a specific wiggle in a climate reconstruction and relating it to cultural changes—a popular technique in publications of climate researchers—is almost completely meaningless to archaeologists. One wonders why that particular climatic wiggle is highlighted and why it would have any bearing on a set of cultural changes likewise selected more or less randomly; for example, a posited link between the 8.2 event and the shift from Çatalhöyük East to Çatalhöyük West (Weninger et al. 2006:410). Instead, a typical archaeologist would want to know more about ecological changes in a particular region, how these changes would have affected local communities, and why particular cultural changes are best explained as resulting from ecological changes rather than other factors.

I argue that possible evidence for synchronicity in ecology and archaeology has often been erroneously equated with causality, and that synchronicity in itself does not prove anything. If we focus on the discussion on the 8.2 event and attendant farming expansion, the following questions need to be addressed: first, what were the actual effects of the 8.2 event in the heartlands of farming and elsewhere; second, why would these climatic changes have stimulated migrations rather than other strategies such as diversification of the economy; third, are the radiocarbon data from the regions to which the Neolithic expansion took place synchronous with the 8.2 event; and fourth, do the archaeological data from Central Anatolia and western Asia Minor support the model of large-scale migration of farmers out of their former heartland?

The 8.2 Event in Asia Minor: Regional Perspectives

The 8.2 event, which can be traced in climatic data from many parts of the globe, was caused by the release of a massive amount of cold water from Lake Agassiz in Canada into the Atlantic after the ice dams behind which it was trapped burst (Alley and Agustsdottir 2005; Wagner et al. 2002). The 8.2 event was marked by a drop in temperatures and reduced precipitation in many regions of the earth. On the basis of ice cores, the 8.2 event can be dated to between 6300 and 6100 B.C. (Akkermans et al. 2010).

What evidence is there for climatic changes in Asia Minor in the seventh millennium B.C. in general, and the 8.2 event in particular? First, I would like to argue against a monolithic perspective on climate change. There is often a tendency to model climatic development as blanket events, whereas in fact climates are complicated systems and the local effects of climatic changes might vary greatly (Bottema 1995; Van Andel 2005). For example, it is clear that the effects of the 8.2 event were not homogeneous across the globe. Many Near Eastern climate proxy records show no or little effects of the 8.2 event (Alley and Agustsdottir 2005; Berger and Guilaine 2009:38–40; Morrill and Jacobsen 2005; Van Andel 2005). It follows that we need to work with regional proxy data for modeling the effects of this climatic oscillation and its possible effect on local societies. This point is especially relevant in Asia Minor because of its ecological diversity, which means that large climatic changes might have had little impact in some regions, whereas in other areas even small climate changes could have had large effects on subsistence economies of prehistoric societies.

A substantial number of dated sequences with climate proxy data, consisting of pollen, diatoms, and isotopes, are available for Asia Minor and surrounding regions (Eastwood et al. 1999; Fleitmann et al. 2009; Van Zeist and Bottema 1991; Woldring and Bottema 2002). Many of these studies have been published after the "discovery" of the 8.2 event, but as far as I know no one has ever published any evidence for an 8.2 event in their proxy records in Central Anatolia. It has been suggested that this reflects sampling resolution factors; that the 160 years of the 8.2 event were too short to leave a mark in lake pollen records and speoleothems (Roberts et al. 2011:150), but one wonders why it does show up in other lake pollen samples, such as at Tenaghi Philippon (Kothoff et al. 2008). In my mind, we should therefore be careful with reconstructing dramatic ecological changes that drove people out of Central Anatolia. This is relevant because arguments for a possible link between the 8.2 event and demographic movements have revolved around the idea that it was in the steppe region of Central Anatolia, where early farmers had been settled for millennia, that the climatic oscillation resulted in droughts and famines and it was in these circumstances that people decided to migrate to western Asia Minor. It seems that at the moment this argument cannot be substantiated.

By contrast, in climate proxy records in the Aegean and the Marmara Region, much clearer evidence of the 8.2 event has been found. For example, at Tenaghi Philippon, in northeastern Greece, a pronounced change in vegetation probably related to the 8.2 event has been recognized, and this has been interpreted as a mesoclimatic effect, limited to a specific region (Pross et al. 2009). The 8.2 event also seems to be present in other northern Aegean Sea proxy datatets, and possibly in the Yenişehir pollen sequence in the Marmara Region (Bottema et al. 2001:339; Kotthoff et al. 2008:1028).

A somewhat different climate reconstruction is provided by the fine-grained climate proxy data from deep-sea cores in the southern Aegean (Clare et al. 2008; Rohling and Pälike 2005). In these data it not so much the 8.2 event but a broader climatic oscillation which can be observed. Between about 6600–6000 B.C., the southern Aegean Sea was 2–3 degrees colder in winter. Effects were probably more severe on land, and the regular occurrence of severely cold and dry winters in the north of the Aegean and in the Marmara Region is postulated. Recent stalactite evidence from Sofular Cave on the western Turkish Black Sea seems to provide similar data (Fleitmann et al. 2009). Thus, there is some evidence in the Aegean and Black Sea region for the 8.2 event and a broader, but milder climatic oscillation, which I will label the *mega 8.2 event* for lack of a better designation.

In summary, ecological effects of both the 8.2 event and the mega 8.2 event remain to be established for the Central Anatolian heartland of farmers, whereas possibly significant effects of these climatic oscillations have been documented for the Aegean and the Marmara Region, with seemingly greater changes occurring in the north than to the south. Thus, it is possible that the (mega) 8.2 event might have significantly impacted local hunter-gatherer-fisher groups in the Aegean and in the Marmara region.

The precise effects of these climate and ecological changes on prehistoric subsistence strategies in the Aegean and Marmara regions are unknown. More research is required to establish, for example, what the effects were on, for example, fish and mollusks that were of importance to Mesolithic communities along the coast.

The Chronology of the Neolithic Expansion in Western Asia Minor

Apart from the regional ecological effects of climatic oscillations such as the 8.2 event, any consideration of the effects of climate changes on cultural systems has to include a discussion of the chronology of archaeological developments. For the 8.2 event/Neolithic expansion model evaluated here, the chronology of western Asia Minor is of key significance, because it is here that the earliest Neolithic expansion occurred. Paradoxically, the archaeological evidence from Asia Minor has not featured prominently in studies that link the Neolithic expansion with the 8.2 event. No doubt this can be explained in part because much of the relevant data has been published in recent years and in some cases only in Turkish (Özdoğan and Başgelen 2007). However, it is also the case that in some of the articles linking the Neolithic expansion with the 8.2 event there is a selective use of data that fit with the postulated link.

At first sight, the proposed link between the Neolithic expansion and the 8.2 event seems attractive. After the uptake of farming in southern Central Anatolia around 8500 B.C. at sites such as Aşıklı Höyük and Boncuklu Höyük (Figure 6.1) (Esin and Harmankya 2007), it is only in the mid-seventh millennium B.C., nearly 2,000 years later, that farming seems to expand farther westward (Düring 2011; Özdoğan 2010). In theory, at least this Neolithic expansion could have been triggered by a climatic change.

Here, I will briefly summarize the chronological evidence for the spread of farming in western Asia Minor. To facilitate this summary I will distinguish three subregions: the Lake District, Aegean Anatolia, and the Marmara Region. These regions can be distinguished in part in terms of ecology. Central Anatolia, the region where the earliest

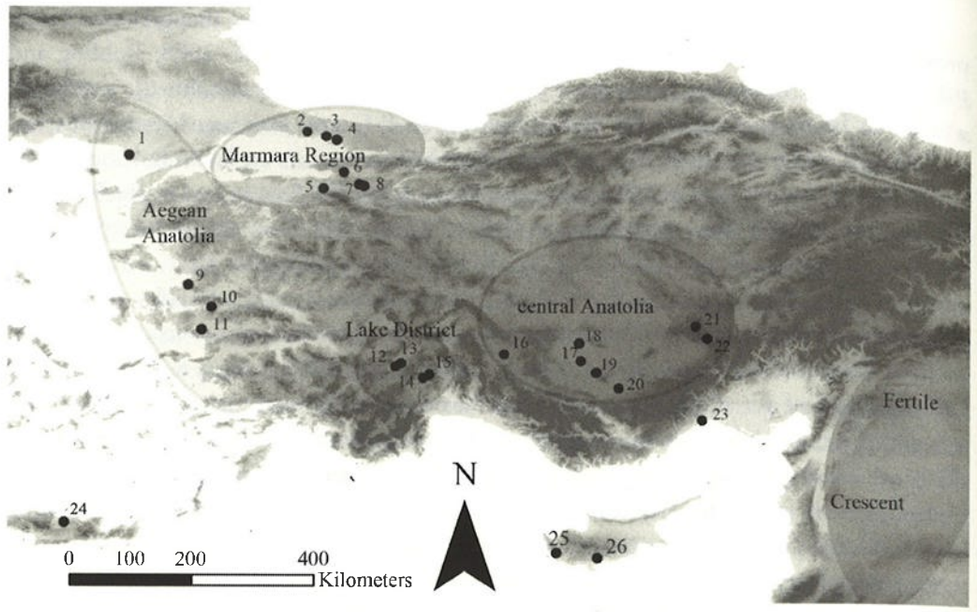

FIGURE 6.1. Neolithic sites of Anatolia. 1—Hoca Çesme; 2—Yarımburgaz and Yenikapı; 3—Fikirtepe; 4—Pendik; 5—Aktopraklik; 6—Ilipnar; 7—Mentese; 8—Barcin Höyük; 9—Ege Gübre; 10—Ulucak; 11—Dedecik-Heybelitepe; 12—Hacılar; 13—Kuruçay; 14—Bademağacı; 15—Höyücek; 16—Erbaba; 17—Çatalhöyük East and West; 18—Boncuklu Höyük; 19—Pınarbaşı; 20—Canhasan; 21—Aşıklı Höyük; 22—Kaletepe; 23—Mersin-Yumuktepe; 24—Knossos; 25—Mylouthkia; 26—Shillourakambos.

Neolithic of Asia Minor is documented, has a steppe climate similar to much of the Fertile Crescent. The Lake District and Aegean Anatolia have a Mediterranean climate, with dry summers and mild winters. Finally, the Marmara Region has a more temperate climate with summer rains and frequent frost in winter.

It is not entirely clear when the Neolithic sequence in the Lake District starts. A few years ago Weninger et al. (2006), in a paper linking the 8.2 event and the Neolithic expansion, claimed that the Neolithic sequence in this region started at around 6200 B.C. This chronology was based on the Hacılar radiocarbon dates, of which four dates were considered too early and discarded. However, Hacılar is only one of a number of investigated Neolithic sites in the Lake District, which also include the sites of Kuruçay, Höyücek, and Bademağacı. The collective evidence from the Lake District sites clearly demonstrates that the region was settled by sedentary farmers much earlier than 6200 B.C., and possibly even as early as 7000 B.C.[1]

In particular, there is some evidence from Bademağacı that its occupation seems to have begun around 7000 cal B.C. (Duru 2004). Unfortunately, the "Early Neolithic I" exposure at this site was very small, and we know very little about the early seventh millennium in this region. However, recent data from the site of Ulucak, which will be discussed later, adds credence to the possible existence of this early horizon.

In contrast with the presently elusive data for the first half of the seventh millennium B.C., there is strong chronological data for Neolithic strata immediately after 6500 B.C. at all excavated sites in the Lake District. This 6500 B.C. date is one that recurs in other areas of western Asia Minor also (Thissen 2005).

For Aegean Anatolia, where evidence for early Neolithic strata has been obtained in recent years, the data are similar to those of the Lake District. Two recently obtained radiocarbon dates on charcoal from the oldest level (Vg) at Ulucak suggest the site was inhabited already in the first half of the seventh millennium B.C. (Çilingiroğlu 2009a:12, 2009b:47). More information concerning these levels and radiocarbon dates on short-lived samples rather than charcoal would be useful, because the present samples have wide ranges and could suffer from the old wood problem. Occupation at Ulucak is continuous into the later seventh and early sixth millennia B.C. (Çilingiroğlu and Çilingiroğlu 2007). From around 6500 B.C. we also have radiocarbon-dated sequences at the sites of Ege Gübre, Yeşilova, and Hoca Çeşme (Derin 2007; Özdoğan 2007; Sağlamtimur 2007).

For the Marmara region, Özdoğan and Gatsov (1998) have argued for the existence of an Aceramic Neolithic phase, to be dated from about 7000 B.C. onward. The evidence upon which they base this consists of two survey sites, Çalca and Musluçesme, for which we lack absolute dates.

The excavated and dated Neolithic strata in the Marmara Region date from around 6500 B.C. Strata dating to the latter half of the seventh millennium B.C. have been excavated at Menteşe, Barcın Höyük, and Aktopraklık (Karul 2007; Roodenberg and Alpaslan-Roodenberg 2007; Roodenberg et al. 2008). These earliest Neolithic strata have been investigated in small trenches at sites such as Menteşe and Barcın Höyük, and we await further details from the recently excavated site of Aktopraklık.

Summarizing the chronological evidence for the Neolithic expansion into western Asia Minor as a whole (Figure 6.2), two conclusions can be drawn. First, there is some

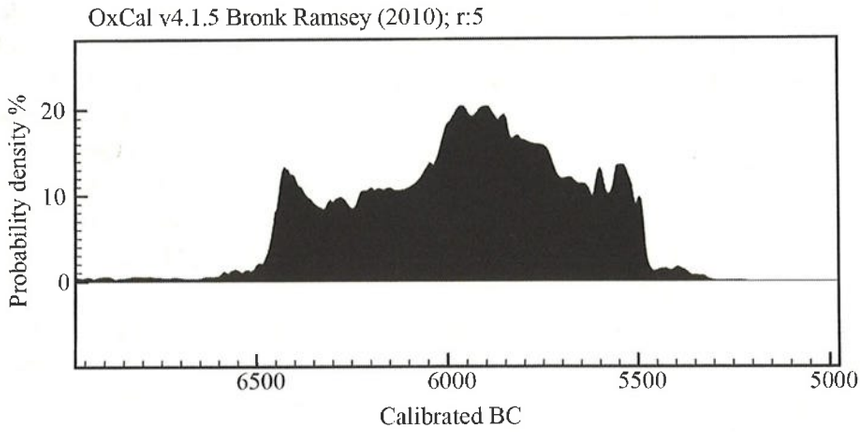

FIGURE 6.2. Cumulative radiocarbon plot for the Lake District, Aegean Anatolia, and the Marmara Region (n=135, data obtained from CONTEXT (http://context-database.uni-koeln.de/) database [Böhner and Schyle 2006] augmented with data from Özdoğan and Başgelen 2007).

evidence for a Neolithic expansion into western Asia Minor in the first half of the seventh millennium B.C. This phase has been tentatively identified with survey data in the Marmara Region, has been excavated in a small sounding at Bademağacı in the Lake District, and has also been excavated in a small exposure at Ulucak. Much remains to be learned about this, as yet elusive, earliest Neolithic horizon in western Asia Minor. Second, there seems to be a substantial increase in Neolithic settlements in all three areas from about 6500 B.C. onward, mirroring the emergence of Neolithic settlements in Greece (Pérles 2001; Reingruber 2005; Thissen 2005), a circumstance that could suggest that the two developments were not entirely unrelated.

Evaluating the Synchronicity of the Neolithic Expansion in Western Asia Minor and the 8.2 Event

On the basis of the chronological data for the Neolithic expansion in western Asia Minor, we can now evaluate the question: To what degree is this expansion synchronous with the 8.2 event? However, there are a number of caveats surrounding this synchronicity discussion. First, although the 8.2 event is dated to about 6300–6120 B.C. in calendar years in the Greenland ice cores (Akkermans et al. 2010), one frequently encounters significantly earlier dates for the 8.2 event: up to 6500 B.C. (Berger and Guilaine 2009; Turney and Brown 2007; Weninger et al. 2006). Second, there is the broader but milder climatic oscillation of the mega 8.2 event, dated between about 6400 and 5900 B.C. in calendar years (Maher et al. 2011:8; Rohling and Pälike 2005).

The fact that different scholars have used different dates for the 8.2 event has resulted in a group of scholars opting for an "early 8.2 event" from about 6500 B.C. to explain the expansion of farming toward western Turkey and the Aegean (Bar-Yosef 2001; Budja 2007; Clare et al. 2008; Turney and Brown 2007; Weninger et al. 2006), whereas another group has used the more robust dates for the 8.2 event to explain transformations in Mesolithic societies in the Balkans and their shift toward a Neolithic way of life (Berger and Guilaine 2008; Bonsall et al. 2003) or changes in the later Neolithic of Central Anatolia (Biehl and Rosenstock 2009; Roberts and Rosen 2009). Clearly, there is a need for accurate chronologies of both climatic oscillations and archaeological developments; otherwise, discussing synchronicities becomes rather pointless.

It is clear that the 8.2 event of 6300–6120 B.C. postdates the Neolithic expansion by a considerable margin, even if we exclude the recent evidence for sites dating to the first half of the seventh millennium B.C. and focus on the rapid spread of farming settlements around 6500 B.C.

The 8.2 event/Neolithic expansion model rests on, firstly, a flawed chronology of the 8.2 event; and secondly, on a selective use of chronological data from archaeology (for example, by discarding dates preceding the 8.2 event as "unreliable"). Thus, from a chronological point of view the 8.2 event occurs too late to explain the westward Neolithic expansion in Asia Minor (see also Berger and Guilaine 2009; Bonsall et al. 2003).

What about the "mega" 8.2 event and the farming expansion? As is the case for the 8.2 event, one can encounter earlier date ranges for this climatic oscillation, such as 6600–6000 B.C. (Clare et al. 2008), while the more accurate range is probably between about 6400 and 5900 B.C. (Maher et al. 2011:8; Rohling and Pälike 2005). This would put the start of this oscillation about a century after the main agricultural expansion in western Turkey around 6500 B.C. However, we have to admit that this chronology rests on relatively few dates, and we cannot exclude the possibility that the mega 8.2 event and farming expansion were synchronous. While the mega 8.2 event would, chronologically, better fit the acceleration of the spread of farming that occurred around 6500 B.C.—recently, this link has been proposed by Weninger and Clare (personal communication, 5 April 2010), abandoning an earlier link between the 8.2 event and farming expansion—its effects on the climate of the Near East are much less pronounced, and it does not show up at all in many proxy records (Berger and Guiliane 2009).

The crucial points that emerge out of the presented discussion are: firstly, for neither the 8.2 event nor the mega 8.2 event do we have proxy data for ecological changes in Central Anatolia, though both climatic oscillations can be documented in proxy record from the (northern) Aegean and the Marmara Region; and secondly, the earliest Neolithic strata in the Lake District and Aegean Turkey predate both climatic oscillations. The conclusion, at least for me, is that if climate changes played a role in the transformation of Mesolithic/Neolithic groups in Asia Minor, we have to focus on what happened in western Turkey rather than Central Anatolia.

The Archaeology of the Neolithic Expansion in Western Asia Minor

From the data that have been presented so far it has already become clear that both in the Lake District and in Aegean Anatolia, at the sites of Bademağacı and Ulucak, there is evidence for Neolithic settlements that predate the climatic oscillations of the seventh millennium B.C. Further, there is a sudden boom in of Neolithic settlements in the Lake District, Aegean Anatolia, and the Marmara Region occurring around 6500 B.C. It is this acceleration of a Neolithization process already underway in which climatic oscillations might have played a role. If so, it would be the mega 8.2 event that would fit in terms of chronology, and it might have been predominantly local groups in the Aegean and Marmara Region that shifted into a farming way of life around 6500 B.C., given that the climatic effects were most prominent in these regions.

Such a perspective, in which one could postulate an indigenous uptake of farming by local hunter-gatherer groups in western Asia Minor, has not been popular among scholars investigating Turkish prehistory (who have tended to opt for migrations out of Central Anatolia [Özdoğan 2010]), but it can be further substantiated along two lines of evidence. The first line of evidence concerns a cultural continuity between Neolithic traditions and those of preexisting Mesolithic groups, and the second argument concerns the heterogeneity of the Neolithic of western Asia Minor.

The Mesolithic in Asia Minor is poorly investigated. There are a number of cave sequences in the Antalya region with excavated Mesolithic strata, at sites such as Öküzini, Beldibi, and Belbaşı, but these are, unfortunately, poorly published and understood (Yalçınkaya et al. 2002). For Aegean Anatolia we know even less, though it is conceivable that the Latmos rock paintings date to the Mesolithic (Peschlow-Bindokat 1996). Finally, in the Marmara Region we have the so-called "Ağaçlı group," a group of Mesolithic sites known only from surveys (Gatsov and Özdoğan 1994).

Interestingly, there is a marked cultural continuity from these Ağaçlı sites to the earliest Neolithic sites in the Marmara Region, known as the Fikirtepe horizon (Gatsov and Özdoğan 1994; Özdoğan 2007). The chipped stone industries of Ağaçlı sites and Fikirtepe sites are almost identical, an example being the type of bullet cores and end-scrapers used in both complexes. In the Fikirtepe horizon we can distinguish between coastal sites and interior sites. The coastal sites are similar in location to those from the Ağaçlı group. In the Fikirtepe coastal sites we find simple round sunken huts, and fishing constituted an important component to subsistence. It is plausible that fishing and round huts were also common in Ağaçlı sites. In contrast to the coastal Fikirtepe sites, those in the interior have large rectangular wattle and daub houses. Here, the economy, surprisingly, is almost completely dominated by animal husbandry and crop cultivation. The cultural continuity between the Ağaçlı sites and the Fikirtepe sites suggest that local Mesolithic hunter-gatherer groups played an important role in the Neolithization of the Marmara Region. This argument does of course not exclude the possibility that there was also some westward migration from Central Anatolia.

At present, similar continuities between the Mesolithic and Neolithic cannot be established for the Lake District and Aegean Anatolia, but much research remains to be done on documenting the earliest Neolithic and Mesolithic horizons in both regions before we can establish the ancestry of the Neolithic complexes known at present. One interesting issue in this regard is the cultural affiliations of the earliest Neolithic groups at sites such as Bademağacı and Ulucak.

A striking characteristic of the Neolithic in western Asia Minor is its regional diversity (Düring 2011:122–199, 2013). Our current data suggest that there are at least three cultural facies in western Asia Minor: the Lake District, Aegean Anatolia, and the Marmara Region. Within each of these regional horizons there are more or less interchangeable artifacts, iconographical styles, settlements, and burial traditions, but these regions clearly differ both from each other and from the Neolithic of Central Anatolia (Düring 2011; Özdoğan 2010). Thus, for example, Fikirtepe ceramics are only found in the Marmara Region (Özdoğan 2007; Thissen 2001), while in Aegean Anatolia we find red slipped burnished and impressed wares that can be clearly distinguished from those in the Lake District and the Marmara Region (Çilingiroğlu and Çilingiroğlu 2007; Herling et al. 2008; Sağlamtimur 2007), and in the Lake District we find monochrome ceramics with features that are absent in the seventh millennium in Central Anatolia, such as tubular lugs, s-profiled bowls, and globular jars (Duru 2007; Last 2005).

Similarly, if we focus on the types of settlements occurring in these three regions, clear differences are again apparent. The settlements of the earliest Fikirtepe horizon (Özdoğan 2007; Roodenberg and Alpaslan-Roodenberg 2007) consist of groups of sunken huts along the coasts and large rectangular wattle and daub buildings in the interior. In both cases, buildings are freestanding without a clear alignment to streets or the like. In Aegean Anatolia, settlements have a more structured format. At Ulucak (Çilingiroğlu and Çilingiroğlu 2007), rectangular structures of about six by six meters, constructed of wattle and daub, pise, and mud bricks, are arranged along streets. At nearby Ege Gübre (Sağlamtimur 2007), stone foundations of similarly sized buildings were found, arranged around a central court. Finally, in the Lake District (Düring 2011:160–174; Umurtak 2000), the earliest settlements consist of rectangular buildings found in small house clusters and built of mud in various techniques, with a door in the long wall and a hearth on the wall across. All these settlements are distinct from each other and from the settlement type prevailing in Central Anatolia, that of the "clustered neighborhood settlements," in which there were no streets in the blocks of houses that made up a neighborhood and structures were accessed from the roof (Düring 2006).

Other differences between the assemblages found in Aegean Anatolia, the Lake District, the Marmara Region, and Central Anatolia could be added, concerning other artifacts, iconographical styles, burial traditions, and agricultural practices, but this would go too far in the context of this paper (for further discussion, see Düring 2011). The idea here is simply to sketch the degree to which western Turkey was divided into a number of cultural horizons during the seventh millennium B.C. Future research will have to demonstrate whether these are, in part, a product of the archaeological research that has taken place in specific regions, and whether there are intermediate assemblages that combine various elements.

What is pertinent in the context of the issue of how farming expanded in the seventh millennium B.C. in Turkey is how we can explain this regionalization of the Neolithic of western Asia Minor, a pattern that contrasts with large spreads of more or less homogenous Neolithic horizons emerging a few centuries later in Europe, such as the LBK and the Cardial (Barnett 2000; Bogucki 2000). The cultural diversity of Neolithic horizons in western Asia Minor could point to a development in which local groups played an important role in the articulation of distinctive Neolithic horizons in their respective regions. This would also explain the strong continuities between Mesolithic and Neolithic cultural traditions in the Marmara Region. On the other hand, it is not unlikely that at least some of the actors in this process were migrant farmers from Central Anatolia.

Indeed, it is possible to explain the Neolithic expansion of 6500 B.C. in Asia Minor as a combination of small-scale migration from Central Anatolia and local hunter-gatherer groups opting into farming. In this scenario, the migrants would have contributed farming expertise and the hunter-gatherers contributed knowledge of the local environment and its resources. The (mega) 8.2 event could have accelerated this process, which appears to have been set in motion earlier, although this is a hypothesis that needs to be investigated further rather than a firm conclusion.

CONCLUSIONS

In this paper, I have argued that proponents of the 8.2 event/Neolithic expansion hypothesis have mistakenly taken possible evidence for synchronicity as proof of climatic

causation. Further, the 8.2 event in its traditional sense was shown to chronologically postdate the Neolithic expansion. A better fit in terms of chronology is the "mega" 8.2 event, dating to between ca. 6400 and 5900 B.C., which might have accelerated the Neolithization of western Asia Minor already under way.

The ecological effects of climatic oscillations need to be investigated in local climate and vegetation proxy records, because local climates might have been affected quite differently. At present, the best evidence for ecological changes in the seventh millennium B.C. can be found in western Asia Minor rather than in Central Anatolia. Thus, if climate change played a role in the Neolithization of western Asia Minor, it is most likely that it triggered local Mesolithic groups into taking up farming.

This scenario finds some circumstantial support in the Mesolithic-Neolithic continuity established in the Marmara Region, and in the regional facies of the Neolithic of western Asia Minor, which suggest local Neolithization processes rather than the arrival of large groups of migrants from Central Anatolia.

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Note

1. An even earlier date at around 8000 B.C. has been suggested for Aceramic Hacılar (Mellaart 1970), but this is based on a single radiocarbon date taken from a small sounding that has no chronological parallels and is rejected by most researchers working on Anatolian prehistory (Duru 1989; Schoop 2005:178–179; Thissen 2002).

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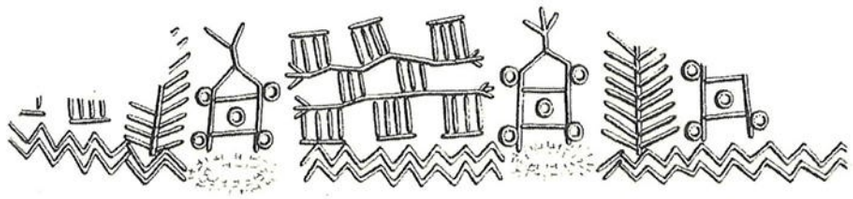

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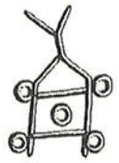

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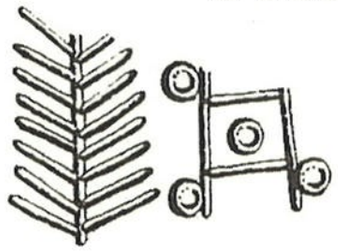

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