

Barcın Höyük, a seventh millennium settlement in the Eastern Marmara region of Turkey

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ABSTRACT – Recent excavations at the site of Barcın Höyük provide a detailed view of a settlement founded and inhabited during the early stages of the Neolithic of the Marmara Region of northwestern Anatolia. The occupation history of the site complements and extends further back in time the regional sequence as it had been established for the eastern Marmara Region on the basis of excavations at nearby Menteşe, Aktopraklık and Ilıpınar, and Fikirtepe and Pendik in the Istanbul environs. The site of Barcın Höyük is therefore of critical importance for our understanding of the initial neolithisation of northwestern Anatolia. This paper summarizes some of the main findings of the Barcın Höyük excavations with regard to the Neolithic occupation phases.

KEY WORDS – neolithisation; spread of farming; Northwestern Anatolia; settlement; migration

Barcın Höyük, naselbina iz 7. tisočletja v regiji Vzhodna Marmara v Turčiji

IZVLEČEK – Na podlagi nedavnih izkopavanj na najdišču Barcın Höyük dobimo bolj natančen vpogled v naselbino, ki je bila osnovana in poseljena v času zgodnjega obdobja neolitika v regiji Marmara na območju severozahodne Anatolije. Poselitvena zgodovina tega najdišča tako dopolnjuje regionalno sekvenco, ki je bila postavljena za območje Vzhodne Marmare na podlagi izkopavanj na bližnjih najdiščih Menteşe, Aktopraklık in Ilıpınar ter na najdiščih Fikirtepe in Pendik blizu Istanbula, ter jo celo postavlja v zgodnejše obdobje kot doslej domnevano. Najdišče Barcın Höyük je tako izredno pomembno za razumevanje začetne neolitizacije severozahodne Anatolije. V članku povzemamo podatke o glavnih odkritjih pri izkopavanjih na najdišču glede na poselitvene faze, vezane na obdobje neolitika.

KLJUČNE BESEDE – neolitizacija; prehod na kmetovanje; severozahodna Anatolija; naselbina; preselejevanje

Introduction

Research on the pre-Bronze Age cultures of the Marmara Region began relatively early in the history of Anatolian archaeology, and has seen concerted efforts over the last few decades to document through a number of excavations the early cultural history of the region and to build provisional neolithisation models for this region at the transition between Anatolia and Europa (Fig. 1). The excavations at Bar-

cın Höyük have been conducted as part of this effort. Barcın Höyük was first recognized as a prehistoric site and recorded as Yenişehir II in surveys by James Mellaart and David French (*Mellaart 1955; French 1967*). Following long-term excavations during the 1980s and 1990s at the 6th millennium site of Ilıpınar (*Roodenberg 1995; Roodenberg, Thissen 2001; Roodenberg, Alpaslan Roodenberg 2008*) and

soundings at the 7th millennium site of Mentese (Roodenberg 1999), Jacob Roodenberg initiated excavations at Barcın Höyük in 2005. In 2007 the authors of this article took over responsibility and conducted nine consecutive excavation campaigns until 2015. The project has taken place under the auspices of the Netherlands Institute in Turkey, in close partnerships with colleagues at Turkish universities, in particular at Koç University, Boğaziçi University and Ege University, and in collaboration with an international team of specialist researchers. At present, the project team is preparing specialist studies and final publications.

Environmental setting

The site of Barcın Höyük is currently located among arable fields in the centre of the Yenişehir Plain. Well into the 20th century AD, the valley bottom was prone to seasonal flooding. A small lake a few kilometres to the west of the site existed until 1950, when a drainage canal was dug to drain the lake water and the surrounding swamps (Aksoy, Özügül 2014). Palynologists Bottema and Woldring of Groningen University cored the dried lakebed for pollen and published a vegetation sequence covering much of the early Holocene period (Bottema, Woldring 1995; Bottema et al. 2001).

A small program of coring on and around the mound was carried out to reconstruct the local environmental conditions during the Neolithic. Geoarchaeologists Sjoerd Kluiving, Mark Groenhuijzen and Michiel Künzler of Vrije Universiteit Amsterdam established that the first settlers selected a slight natural elevation of coarse sand at the northern edge of a lake or marsh (Groenhuijzen et al. 2015). Nearby access to a wetland environment to the south of the settlement, as well as drier terrain to the north, may have been a consideration in the selection of the site location. During the centuries of Neolithic occupation, the edge of this lake or marsh appears to have withdrawn further away from the edge of the mound. Subsequent millennia indicate fluctuations in the distance of the site to nearby standing or flowing water. As the outcome of a complex history of deposi-

tion and removal of sediment, the current level of the plain 100m away from the edge of the mound at *c.* 225.20m lies 1.2m higher than the base of the mound at 224.00m.

General occupation history

The current archaeological site consists of two low mounds connected by a saddle covering an area of about 1.7ha. The smaller, western mound was not excavated. Surface collections indicate that occupation there postdates the Bronze Age. On the eastern mound, excavations concentrated on a transect running from the centre down the southern slope of the mound. Contiguous areas between 250 and 550m² were exposed of each of the Neolithic occupation phases. The excavations established that, following the abandonment of the Neolithic settlement, parts of the site were intermittently reoccupied. This includes brief occupation episodes during the Middle Chalcolithic Period, the Late Chalcolithic Period (Gerritsen et al. 2010; Özbal et al. 2017), the Early Bronze Age, and the Early to Middle Bronze transition. Mound formation during these periods was limited. A last phase of use of the site occurred during the Byzantine Period, when the eastern mound was used as a burial ground (Alpaslan Roodenberg 2009; Roodenberg 2009).

Neolithic architecture and settlement layout

The Neolithic settlement existed continuously for approximately six centuries. Based on a combination of stratigraphic observations, building horizons, ce-



Fig. 1. Map of central and western Anatolia with the location of regions and sites mentioned in the text.

ramic developments and ^{14}C dates, this period has been subdivided into seven phases, labelled from old to young: VIe, VI d1, VI d2, VI d3, VI c, VI b and VI a.

The architecture shows a significant degree of continuity throughout much of the occupation period, with rectangular buildings made of wood and loam. The structural timber is placed in foundation ditches for the walls and in postholes for roof bearing posts. Loam is used to fill the spaces between and around rows of wall posts in order to create closed walls. Evidence of wattling is strikingly absent, even in cases where buildings burnt down and yielded ample impressions of building wood in the burnt loam debris. Entrances are located in the long sides of the buildings. The architecture of the oldest building phase (VIe) appears to differ somewhat from the later phases, making use of heavy posts set in individual postholes rather than in foundation ditches.

In terms of settlement layout, however, the general pattern established in phase VIe was adhered to throughout the following phases until an apparent reorganization of settlement space in VI b. During the early phases, VIe and VI d1 (c. 6600–6400 cal BC), there was a row of buildings oriented East-West, facing a large open space, that dipped into a natural depression, probably with further architecture beyond the depression to the south (Fig. 2). In the course of the early phases, the depression became filled up with midden deposits.

During the middle phases, VI d2, VI d3 and VI c (c. 6400–6200 cal BC), houses continued to be erected in the same central East-West strip, and the open space to the south continued to be used for outdoor activities, including fire pits and other installations. The courtyard was also frequently used to bury adult individuals in flexed position in simple pit graves (Alpaslan Roodenberg et al. 2013). Infants tended to be buried inside or in the direct vicinity of the houses. During the middle phases, the southern part of the courtyard became built up. The architectural remains and installations in this area are less well preserved than in the central part, but appear to have been of the same rectangular type, with post-rows set in foundation ditches as elsewhere in the settlement. Similarly, there is evidence for one or multiple buildings appearing to the north of the central buildings, separated by an open space. Judging by the limited exca-

vated area, therefore, it appears that the number of buildings in the settlement expanded during the middle phases of occupation, possibly connected to an increase in the population.

With the transition from VI c to VI b, around 6200 cal BC, new buildings appear in two of the areas that had functioned as open courtyard areas during all previous centuries of occupation. Assuming that the former courtyards had been communally used until then, this suggests a reorganization of settlement space connected to new property practices. The architecture of VI b again consists of post-row buildings, but these now stand individually rather than agglomerated, as before (Gerritsen et al. 2013a, Fig. 6). They appear to have had small annexes or side rooms attached to them. Architectural remains of phase VI a are very fragmentary, and it is impossible to say to what extent the spatial layout continues the pattern established in phase VI b.

Subsistence economy

Studies of the subsistence economy are ongoing, but preliminary results of palaeobotanical and archaeo-



Fig. 2. Barcın Höyük; generalized overview of the excavated remains of phase VI d1 (6500–6400 cal BC).

zoological analyses indicate that its main components were agriculture and animal husbandry. There appear to have been minor changes in the relative importance of specific crops and animals, but it is clear that the first settlers were farmers and that this remained the case throughout the habitation history of the settlement.

The botanical samples analysed to date number over 450 (1318 liters of soil), with an overrepresentation of samples from the early phases VIe and VI d1 (*Cap-pers, Balci n.d.; Balci et al. 2019*). The samples represent a broad array of settlement contexts: indoor and outdoor surfaces and deposits, ovens, hearths and storage features, as well as pits and midden fills. With the exception of a single store of charred lentils from Structure 2a in phase VI d1, crops stores were not encountered. This suggests that viewed together, the samples give a representative picture of plants that were brought to the settlement and were processed and consumed there. Cultivated plant species included a wide range of cereals (Einkorn, Emmer, Bread/Hard Wheat, hulled and naked barley) and pulses (lentil, pea, and chickpea), bitter vetch and flax. Additionally, hazelnut and blackberry count among the economic plants exploited at Barcın Höyük.

The animal economy relied largely on domesticated cattle, sheep and goat, with the first two being more frequent than the third (*Galik 2013; Würtenberger 2012*). With slight variations between the phases of the occupation history, wild animals are always a minor component of about 15%. They include fallow and roe deer, wild boar, hare, fox, birds, terrapins, small rodents, fish and molluscs. Domesticated pig is absent in the Neolithic faunal assemblages from Barcın Höyük, supporting an emerging picture of the adoption of pig husbandry in the Marmara Region not before the Early Chalcolithic period (*Arbuckle et al. 2014.Fig. 1*).

Pottery

The ceramic assemblages of Neolithic Barcın Höyük provide a rich source to study the development of a ceramic tradition in the Eastern Marmara Region. This material has been and continues to be studied by Laurens Thissen (*Thissen et al. 2010; Gerritsen et al. 2013b; De Groot et al. 2018*).

In Phase VIe, pottery was made and used in small quantities. The central area of the settlement with structures 24 and 25 yielded only a handful of sherds.

The midden deposits in the depression excavated in L13 and M13 produced slightly larger numbers, mostly deriving from the upper deposits of VIe. Among these same VIe midden deposits, fire cracked stones occur in large quantities, whereas they are quite rare in levels following phase VIe. This has been interpreted as an indication that the earliest settlers relied mostly on hot-rock cooking techniques, and that subsequent generations abandoned this in favour of using cooking pots (*Gerritsen et al. 2013a. 58; 2013b.72–73*).

The low intensity of ceramic production during phase VIe notwithstanding, the earliest settlers were accomplished potters. They made holemouth pots and bowls in schist tempered wares with burnished surfaces in light buff and greyish colours. During phase VI d1, vessels walls become harder and thinner, while the repertoire of forms remains restricted. There is a switch to crushed calcite as the main tempering agent. Greatly increased quantities of sherds compared to VIe indicate a significant increase in the level of production in VI d1. During subsequent phases VI d2 and VI d3, the range of shapes increases, with bowls and pots with light S-profiles. Surfaces tend to have pastel colours in phase VI d2 and darker colours in VI d3, highly burnished as before.

Ceramic traditions continue to develop during the later phases of occupation (VIc, VI b and VI a). New forms such as pots with four vertically pierced lugs or two lug handles and four-legged Fikirtepe boxes become common. There is now a greater variety in tempering additives, including quartz and sand. Dark, burnished surfaces are sometimes decorated with simple incised geometric patterns.

Overall, the ceramic assemblages of Barcın Höyük convey the development of gradual change within a consistent tradition (see Thissen in *Gerritsen et al. 2013a; 2013b*). Changes are introduced by building on and transforming existing practices of production rather than by radical changes. Comparisons with the ceramic assemblages of other 7th millennium sites in the eastern Marmara Region are difficult to make with any precision because of the still limited extent of publication of ceramics from stratigraphic sequences. Nevertheless, it is clear that much of the ceramic sequence at Barcın Höyük predates what is termed Archaic and Classical Fikirtepe (*Özdoğan 1999; 2019.Fig. 3*). Barcın Höyük phases VI b and VI a, with their globular pots with pierced lugs and handles and Fikirtepe boxes show the best resemblances to the Fikirtepe traditions. This suggests

that the Barcın Höyük ceramic sequence can be taken to represent the precursors and early stages of the Late Neolithic and Early Chalcolithic Fikirtepe tradition (Fig. 3). Beyond the eastern Marmara Region, parallels for the earliest Barcın Höyük ceramics (especially VIe) can be found at Demircihüyük (*Seeher 1987*) and Keçiçayırı (*Akyol 2018*) in nearby inland northwestern Anatolia.

Lipid residue analyses

An extensive program of lipid residue analysis on the ceramics from Barcın Höyük has been carried out under the direction of Hadi Özbal of Boğaziçi University, Istanbul. Preliminary reports have appeared (*Thissen et al. 2010; Özbal H. et al. 2012; 2014*) and a final publication of the results is in preparation. From over 1000 sampled sherds, lipid residues were successfully extracted and identified from 174. These represent all phases of the Neolithic occupation history and include small numbers of sherds from the brief Middle and Late Chalcolithic re-occupation phases of the site.

The analyses demonstrate that using ceramic vessels for milk processing occurred from phase VIe onwards. With minor variations between phases, the percentage of sherds with residues of milk fats is around or above 50%. These findings substantiate the suggestion made by Evershed and his team that dairying became an important element of subsistence strategies in the Marmara Region, earlier and more dominantly than in other regions of Anatolia and southeastern Europe (*Evershed et al. 2008*). The lipid residue data from Barcın Höyük corroborate the faunal data. Aside from the milk lipids the data yielded numerous samples with ruminant adipose fats. Only small amounts of non-ruminant fats were discovered.

Lithic technologies

A large assemblage of some 17 000 pieces of flint and obsidian has been studied and is currently being prepared for publication by Ivan Gatsov and Petranka Nedelcheva (preliminary studies in *Gatsov, Nedelcheva 2009; 2016; in print; Gatsov et al. 2012*).

Among the Barcın Höyük raw material, flint is much more common than obsidian, but during some of the occupation phases obsidian represents as much as a quarter of the assemblage. A preliminary study using pXRF points to Central Anatolia as the dominant source area for obsidian, possibly supplemented by

materials acquired from Melos (*Milić 2014*) and unidentified sources (perhaps Galatian: *Bigazzi et al. 1995; 1998.80–86*).

Based on the research conducted by Gatsov and Nedelcheva, it is clear that lithic production at Barcın Höyük connects very well with the traditions that characterize the assemblages from sites of the Fikirtepe horizon, both typologically and technologically (*Gatsov 2003; Gatsov, Nedelcheva 2009; 2016; Gatsov et al. 2012*). Unidirectional blade cores, including bullet cores, are characteristic elements of the assemblage, as well as the blades and bladelets struck from them. Semi-circular and circular end-scrapers as well as high and macro end-scrapers are common among the tools. Sickle blades, blade perforators and drills, as well as a small number of trapezes also occur. There is evidence for pressure blade production, indirect percussion and direct percussion.

Small finds

The excavations at Barcın Höyük have yielded a large assemblage of finely made bone tools. Particularly striking are the spoons, which differ from spatulas in their pronounced distinction between the handle and spoon bowl (*Erdalkıran 2016*). Beads are made of stone and shell (*Baysal 2014*). Whereas in the earlier levels, dentalium shell beads dominate the assemblage, in the later levels turquoise coloured beads, probably made of bone, become common (*Bursali et al. 2017*). Baked and unbaked clay human figurines occur in small numbers, from different levels of occupation (*Gerritsen et al. 2013a; Özbal, Gerritsen 2019.Fig. 9*).

In general, all categories of small finds, including also the ground stone tools and axes, display a development from a limited range of types, shapes and raw materials during the pioneer phases of VIe and VIId1, to a much wider variety during the middle and late levels.

Human DNA studies

A total of 130 Neolithic graves were excavated at Barcın Höyük. A selection of the human skeletal remains from Barcın Höyük has been used for a series of genetic studies that focused on the grand narrative question of the nature of the expansion of farming from Anatolia and the Near East to Europe (*Mathieson et al. 2015; Hofmanová et al. 2016; Lazaridis et al. 2016*). Conducted at a time when full genomic analyses from Anatolia and the Near East were

only just beginning to produce results, the skeletal remains from Barcın Höyük have been instrumental in establishing an ‘Anatolian Farmer’ genetic profile. Comparisons with genetic profiles of European hunter-gatherers and European Neolithic farmers from Hungary, Germany and the Iberian Peninsula showed that early European farmers derived almost all of their genetic ancestry from Anatolian farmers. This has now provided a strong case for migration-based theories of the expansion of farming to Europe.

Additional studies have used the genetic data from Barcın Höyük to track the genetic histories within Anatolia and the Near East. On present evidence, it appears that people at Barcın Höyük were genetically closely related to 9th and 8th millennium groups in Central Anatolia (Boncuklu), but also that as a group they were genetically more diverse than Central Anatolian groups, perhaps incorporating a modest genetic influx from populations from or genetically similar to the Levant (Kılınç et al. 2016; 2017). In the coming years new data will undoubtedly expand and refine this emerging picture of complex genetic histories.

Regional and inter-regional setting

The full-fledged farming economy of the earliest inhabitants of Barcın Höyük is the strongest indication that the settlers were newcomers to the region. Any acculturation processes of an indigenous population would be observable in the faunal and botanical assemblages, as well as in different artefact categories and architectural remains, but indications of this are absent. Given the ¹⁴C dates that place the foundation of Barcın Höyük at around 6600 cal BC, it is clear that the site stands at the start of Neolithic presence in the region (Fig. 3), and therefore that the settlers at Barcın Höyük must have moved here as immigrants from outside the eastern Marmara Region (Özbal, Gerritsen 2019). Mainly on the basis of parallel developments in ceramic traditions, the Anatolian Corridor can be identified as the most likely route along which this population entered the region, with ancestral roots probably in western Central Anatolia and Çatalhöyük, and with intermediate sites such as Keçiçayırı and Demircihüyük as nodes in the network of the earliest pioneers that settled in the Marmara Region (Fig. 1). Whether there existed early contacts with the Lakes District, as sug-

gested by Mehmet Özdoğan (2019:320), is more difficult to establish.

For the Fikirtepe Horizon, and specifically for the sites in the Istanbul environs, an indigenous component in the population has been suggested (Karul 2017:8; Özdoğan 1999:210; 2019:320). This idea is based on a combination of evidence for Epipalaeolithic or Mesolithic hunter-gatherer groups in the region (the Ağaçlı group) and elements in the food economy and architecture at Neolithic sites like Fikirtepe and Pendik that do not seem to have their origins in a Neolithic way of life (Özdoğan 1999:215). Different aspects of the idea of the Fikirtepe Horizon as a merging of indigenous and Neolithic traditions are being re-evaluated by various authors in light of new data (Çakırlar 2013; Özbal, Gerritsen 2019). Regardless of the nature of this cultural interaction elsewhere in the eastern Marmara Region, it is clear that hunter-gatherer influence in the Barcın Höyük community was very minimal at most, and probably completely absent.

In the course of the second half of the 7th millennium, there appears to have been an increase in the number of settlements in the eastern Marmara Region, possibly as a result of a continuing influx of people from inland Anatolia as well as from indigenous population growth over the course of several centuries. The shared material culture traditions of

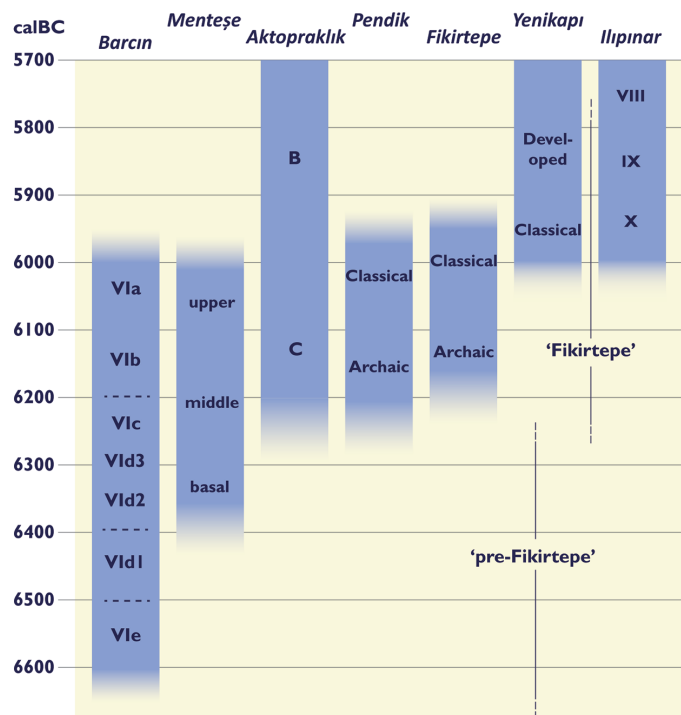


Fig. 3. Comparative periodization table of excavated sites in the eastern Marmara Region.

these settlements inhabited during the final centuries before 6000 cal BC and into the beginning of the 6th millennium cal BC have given rise to the term Fikirtepe Horizon or Fikirtepe Culture (Özdoğan 1979; 1983; 2013; Karul 2019). Although there remain site-specific differences and intra-regional distinctions, the later levels of Barcın Höyük, VIb and VIa, share this regional identity with other sites in the eastern Marmara Region. The long stratigraphic sequence of Barcın Höyük shows, moreover, that the genesis of the Fikirtepe Culture took place gradually over the course of several centuries.

In sharp contrast to the growing body of evidence for cultural interaction and interconnected developments within the eastern Marmara Region and with inland central-western Anatolia, we find many differences in material culture with eastern Thrace and the western Marmara Region (Özdoğan 2019). There appears to have been a distinct and lasting cultural boundary to the west of Istanbul. Aşağıpınar, in eastern Thrace, displays very different material culture traditions than sites that belong to the Fikirtepe Horizon, and the lithic data show this very clearly (Gatsov et al. 2017). While the eastern Marmara assemblages, including Barcın Höyük described above, yielded microblade assemblages and pressure flaked bullet cores, the Thracian side of Turkey (with the exception of a few sites along the coast) have no evidence of pressure flaking (Özdoğan 2014). Likewise, sites like Barcın and other eastern Marmara sites have consistent access to obsidian mostly from Central Anatolia. In contrast, western Marmara lithic assemblages are characterized by Karanovo I-type

blades, and obsidian is completely absent at sites like Aşağıpınar, although some coastal sites have yielded small quantities (Özdoğan 2014:42). Differing burial customs are another indication of this regional boundary. If we consider burials as reflective of societal beliefs then it is noteworthy that no burials have been uncovered from western Marmara sites, whereas Barcın and other sites in the eastern Marmara, including Ilıpınar, Fikirtepe, Pendik, and Yenikapı, have ample evidence for human inhumations within and near the settlements.

This final point on cultural boundaries can serve as a useful reminder of the need to maintain a critical, archaeological outlook on neolithisation processes. The new genetic paradigm that points to migration as a major mechanism in the expansion of farming (see above) leaves many archaeological questions unaddressed, questions about how and why people interacted and migrated, and about why they on occasion they also maintained cultural boundaries that prevented mobility and interaction. Both are aspects of the history of the spread of Neolithic ways of life from Anatolia to Europe.

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