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Findings Relating to the Manufacture and Use of Stone Beads at Neolithic Boncuklu Höyük

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Introduction

After five seasons' work at Boncuklu Höyük it became clear that the site could tell us something about how stone beads were made and used in the early Neolithic. The early date of the site (8200-7700 BC) and the social changes that occurred during the incipient stages of permanent sedentary settlement make study of technology and manufacturing practices particularly interesting. The site is unusual in having no easy access to stone sources, the nearest of which is located at a distance of 20km from the site. Archaeological evidence shows that bead manufacture took place at the site, and there are indications that raw material procurement included engagement with a broad area of the surrounding Konya Plain in Central Turkey. There is a wide variety of stone bead forms at Boncuklu, although the majority of the assemblage consists of stone disc beads which vary little in size or form but are made from a variety of stone types. The technology of stone bead manufacture is a way by which the tools that were used as well as the working practices of individuals within a community can be identified. Technology may also offer the key to identifying early inter-settlement trade or exchange patterns. The contextual information in conjunction with technological practices may offer an insight into the social role of bead manufacture – whether it was a specialized craft activity or whether it was widely practiced by members of most households within the community. There is also evidence from the site that broken beads were mended, their edges were polished and they were re-pierced; recycling practices have the potential to elucidate value attributed to artefacts by their owners.

This article explores the archaeological evidence for the ways that stone beads were manufactured and used at Boncuklu Höyük using data gathered between 2006-2010. It asks what processes were involved in procurement of materials and manufacture of beads, where they might have been made and what tools were needed. Examples of wasters are used to determine the processes that were involved. After a brief introduction to the archaeology of Boncuklu Höyük the evidence for bead manufacture and use at the site is described, and then compared with evidence from other Neolithic settlements. In its conclusions the article addresses the role of beads within the wider technologies of early Neolithic communities.

Boncuklu Höyük

Boncuklu Höyük is an early sedentary Neolithic settlement that lies to the southeast of the modern city of Konya on the Anatolian Plateau (Fig. 1). The site is approximately one hectare in extent and dates between the 9th and 8th millennia cal. BC. The Boncuklu Höyük Project is an on-going excavation under the direction of Dr Douglas Baird of the University of Liverpool, the project commenced in 2006 with the aim of documenting the beginning of sedentary, cultivating and herding communities in central Anatolia and establishing the nature of the antecedents to Çatalhöyük (Baird *et al*. 2012: 219). The site is 9.5 km from Çatalhöyük and is located in the open Konya Plain with no surrounding landmarks or geological features for kilometres in any direction (Baird *et al.* 2012).

The site is characterised by curvilinear buildings of mudbrick construction with plastered inner wall surfaces and floors. There is evidence of underfloor burial while buildings remained in use. In most respects the site can be seen as an antecedent to Çatalhöyük, it shows similar decorative characteristics to those that have made Çatalhöyük so well known. There are bucrania mounted in the walls, red painted floors and walls and a less complex, but nonetheless similar, system of platforms in different areas of the house.

The artefact assemblage is dominated by obsidian microliths, grooved stones of various forms are common, some are incised with geometric or organic forms while others have a variety of use surfaces (Baird *et al.* 2012: 231). The stone beads and pendants to be discussed below overlap to some extent with the ground and grooved stone assemblage in terms of both technology and use. The presence of 'used' grooves in at least two of the pendants found at the site suggests that categories of tool and ornament, ground stone and

bead may need to be reconceptualised for the purposes of interpreting the assemblage.

An early sedentary settlement like Boncuklu Höyük provides a window onto a period of time when many changes were taking place. The settlement of populations into year-round habitation areas led to a range of adjustments in the way that food was procured and processed, the way that people related to each other and the relationship of the inhabitants of a settlement with their surrounding environment. The concomitant change within the archaeological record can be used to determine the technologies that were employed at these newly founded settlements and the way in which the manufacturing of goods was distributed across the site, whether activities were universal or whether they were the preserve of those who were talented/fast and efficient or perhaps those who were allotted to certain tasks.

Boncuklu Höyük's stone bead assemblage

A total of 167 beads, pendants and bead blanks from the excavation of Boncuklu Höyük have been studied. These comprise items of stone, shell, bone and possibly clay/marl, however, stone and shell beads dominate the assemblage at 59.9% and 27.5% respectively (for details of the full assemblage see Baysal 2013a). The assemblage of 100 stone beads, of which 78% are complete, was manufactured from a number of different stone types of different hardnesses (Table 1). The stone beads are dominated by the disc form (78%) made from various types of stone. The remainder of the assemblage consists of a very varied selection of different forms, few of which can be categorised into a conventional typology. Some of these individual beads, categorised by a loose typology, are described here with particular emphasis on the technology of their production.

The contextual information from this site is good, all 9th-8th millennium BC deposits were subjected to 50% wet-sieving and 50% flotation, residues were sorted into greater than 4 mm, greater than 2 mm and 1mm fractions. 2 mm and 4 mm fractions were 100% sorted thereby ensuring complete recovery of even the smallest beads (Baysal 2013a: 5). This detailed information allows the identification of evidence of production, as well as curation and deposition practices. There follows an overview of the stone bead assemblage, which leads into an assessment of the evidence for technological activity, and the use of the beads.

Disc beads

There are 78 stone disc beads (Beck 1928, Type I.A.2.b) in the assemblage, mostly made from limestone (Fig. 2). This type is ubiquitous to Neolithic sites not only in Anatolia but across the Levant (Bar-Yosef Mayer 2013). They are relatively uniform in size and proportions, with an average diameter of 5 mm and piercing diameter of 2 mm, and the majority of piercings are of the hourglass form as a result of being worked from both sides (Beck 1928, Type I Double Cone) (Table 2). However there are some exceptions to this, relating to specific materials, such as the white marble beads (6 examples, Fig. 2, top left) that have straight piercings (Beck 1928, Type IV Plain). The profiles of the beads show slight variation, some have straight sides, some are curved and there are varying styles of surface finishing, although in most cases beads were not polished (Fig. 2).

The colour of the stones chosen to make beads seems to rely on a combination of locally available resources and the preferences of the community. The assemblage is predominantly composed of local limestones in a variety of colours, mostly pale beige, pink and orange. Green stone, use of which for beads is commonly associated in the literature with the onset of domestication and agriculture (Bar-Yosef Mayer – Porat 2008; Wright, *et al.* 2008), makes up only 14% of the stone bead assemblage and can therefore not be interpreted as of disproportionate importance.

Although access to stone at the site was limited, the predominant choice of limestone for disc beads indicates that proximity was probably an important factor. Limestone was a relatively easy material to work (MOH's 3) and its easy availability in the surrounding landscape, the nearest source being the Bozdağ 20km away to the northeast, would have made it an obvious choice (Fig. 3).

Large beads and pendants

There are a number of non-standardized bead and pendant forms that make up the remainder of the personal ornament assemblage (Table 1). These can be roughly categorized as plaque shaped pendants, lozenge shaped beads and pierced pebbles and are described in detail below.

Plaques

Flat stone pendants with one or more piercings share enough common features that they can be grouped together convincingly. These are the largest

of the items of personal ornamentation found at Boncuklu with an average length of more than 25 mm. There are five examples of this type of pendant, three of which have significant evidence of 'use' or remodelling in the form of grooves caused by repeated cutting which probably did not occur as part of the manufacturing process (Fig. 4, right). One of these examples, made of serpentine, has a single piercing in a triangular body which is covered with incised patterns (Fig. 4, left). The incisions on this pendant may relate to the symbolism seen on many grooved stones (Schepens 2007: 156) and also bears a resemblance in its repetitive nature to the 'kilim' patterns seen in wall paintings at Çatalhöyük (Mellaart 1962; Last 1998).

There is a single example of a large elongated rectangular bead with piercings in both directions (Beck 1928, Type Xc), of three piercings two were broken and the rough edges polished. All the piercings show signs of prolonged use, suggesting that this bead may have had a long life. One side of the plaque has light scratches all over its surface and the other side has a groove running vertically from top to bottom surrounded by quite obvious scratch marks.

There are two very similar rectangular pendants of pale green stone both of which have piercings at opposing corners. One of these artefacts has no evidence of use while the other has been broken and mended on at least one occasion, and also possibly used as a tool (Fig. 4, right).

Large beads

A group of the larger beads can be broadly classified as lozenge shapes (almost equivalent to Beck 1928, group IV lenticular IVC2e) and variations thereon, including heavily abraded examples in a 'butterfly' form (for example Fig. 5, left). There is little size or proportion uniformity and a number of the examples are incomplete, so the original shape is extrapolated from remaining portions. These beads are of a variety of materials and colours ranging from pale green to black (Table 1). Size ranges from a maximum length of more than 30 mm to a minimum of less than 10 mm. All these beads are pierced from both ends and would have required more skill to produce than any of the other bead and pendant types owing to the length of the piercings.

Examples of this type include a butterfly form made from basalt (Mohs 6) and well finished with a polished surface (Fig. 5, left), another example probably started out in a similar form but was worn down to an 'H' shape by surface abrasion. Rounded lozenge shapes, which show similarity to examples found at other sites such as Pınarbaşı (E. Baysal forthcoming) and Çayönü (Özdoğan 2007) have been recovered. These beads are well made

with polished surfaces and indications of considerable wear around the piercings suggestive of prolonged use.

Pebbles

The small but nevertheless significant assemblage of beads produced from what are, apparently, river pebbles share some significant features, most obvious of which is dark colour and hard material. This group of beads has the lowest quality and the lowest success rate in manufacture, and can perhaps be interpreted as an experimental type. Their shared feature is the very uneven nature of their piercings, which are unusually large and off-centre. In some cases multiple attempts were made to pierce a single pebble, sometimes from both sides of the stone, using a flat-ended drill (Fig. 5, right). There are two examples among this group of successfully pierced pebbles that were better finished, with some degree of shaping and polishing (Fig. 5, middle). Only one of these pebbles comes from a grave context and was buried unfinished. There is one example of a bead manufactured from a chip of a large basalt ground stone tool. It was evenly pierced from one side but very roughly pierced from the opposing direction, probably resulting in the broken condition in which it was recovered. The single example of a bead made from schist was probably also related to the procurement and use of larger ground stone tools as the nearest source of the material was about 60km from the site.

Evidence for manufacture and use

Because of the lack of local raw material sources, all the stone beads can be used as indications of interaction with the surrounding landscape. We know that there are sources of most of the types of stone that were used within 20 km of the site while the furthest of the likely 'local' source areas is about 50 km away (Sızma) (Türkmenoğlu, *et al.* 2001, 2005). There is no indication as to how stone raw material reached the site, the quantities that would have been used in bead manufacture were so small that they could have been collected or procured as an embedded part of other activities such as ground stone procurement, or indeed brought to the site in direct or down-the-line trade (for discussion of distant material sources see Stone 1994). I would currently regard the procurement of pebbles, almost certainly from the Çarşamba river, as a purely expedient 'spur of the moment' act which is backed up by the relative lack of success in their subsequent piercing when brought back to the settlement.

There are a number of indications of the manufacturing processes of the beads and pendants of Boncuklu Höyük. The most common bead type, the disc, is known to have been manufactured on site; a number of unfinished examples have been recovered. Most discs are of limestone in various colours. Expeditions to sources of limestone local to Boncuklu have shown that colour choice may also relate to the quality of the material, the pink and orange shades strongly correlate to the closest sources (Fig. 3) and also to the poorest quality, softest, and therefore easiest to work of the limestones available.

The discovery of examples of disc beads on the floor of a building, where they would have been covered by reed matting (Baird *et al.* 2012: 226), indicates either that they were lost during manufacture or that they were deliberately placed – which raises the question of their possible perceived significance. Their shape and stage of preparation indicates that the beads were shaped before they were pierced and that they were probably abraded in groups – indicated by the similarity in shape of the two blanks that were found (Fig. 2, top right). Other blanks were less accurately formed before piercing, giving a larger object to hold and therefore making the drilling process easier. The marks of abrasion are clear on most of the beads, even with the naked eye; polishing was rare. There is a single example of a dark green rounded and highly polished bead, recovered from a burial; this is so unusual in both form and technology that it is likely to be an import (Fig. 2, bottom right).

The piercings of the disc beads show some variety, with hourglass, straight and v shaped profiles (Table 2). The finish of the disc beads is generally not particularly good, the piercings show the lack of symmetry that probably indicates manual drilling rather than the use of a bow drill (Gwinnett – Gorelick 1981: 22). When compared with the analyses carried out at Çatalhöyük (Bains *et al.* 2013) it is suggested that the profiles and surface finish of the piercings indicate that most of the bead drilling at Boncuklu was carried out by hand. There are no confirmed examples of the use of a bow drill at such an early date in this region although their presence is suggested in the Levant (Wright *et al.* 2008; Wright – Garrard 2003). After drilling the beads were abraded down to their final small size; there are two examples of this stage, both found in levelling deposits. Most of the disc beads show signs of abrasion and faceting to their outer edges and it is also clear that the flat surfaces were rubbed on abrasive material using the pressure of a finger, often resulting in an asymmetrical profile (E. Baysal forthcoming). The ground stone assemblage at Boncuklu indicates likely candidates for abrasives as sandstone

or, more likely, schist which is found at Sızma (50 km to the north west of Boncuklu) and in significant quantities at Boncuklu itself (A. Baysal pers comm.). Microscopic analysis may establish a more concrete link.

The exception to the relatively standardized limestone disc bead technology is the white marble disc beads. These are exceptionally uniform in shape, size and finish and notably have straight piercings. As the material and the finishing are both different to the examples made on-site it is suggested that these are likely to have been made elsewhere.

Although the manufacture of disc beads was standardized and successful, this was not true of the production of all forms of beads. The piercing of hard volcanic pebbles was regularly attempted, but with only limited success. The drills used were much larger, with diameters of more than 4 mm, and the hardness of the material resulted in an unevenness in the drilling profile not seen in the other bead types. Hand-drilling such hard materials is a difficult and time-consuming process, indeed piercing them mechanically with chipped stone drill bits and a bow drill is also challenging (see examples in Gurova *et al.* 2013). They share the common features of a very hard raw material (usually pebbles of volcanic rocks such as basalt) and a failure to achieve piercing, either because of breakage of the blank or frustration at the hardness of the stone. Although it is tempting to suggest that these efforts were the work of those who were learning, or of children, the fact that the material used is different to the norm indicates that this phenomenon is separate from the more regular and more efficient manufacture of beads.

No chipped stone drills have, as yet, been recovered during the Boncuklu excavations. The size of drill needed for a disc bead would be so small - less than 2 mm in length – that an un-retouched flake of obsidian or chert can be employed for the purpose as an expedient tool. Comparable examples from other sites have shown that there were often production areas where large numbers of drills and bead wasters were found in close proximity (for example Iovino – Lemorini 1999). The slightly later site of Kumartepe (middle 7th millennium BC) has yielded thousands of micro-borers as part of a chipped stone industry that was adapted to their specialist production (Calley – Grace 1988: 73). The length of the tip is not more than 3 mm indicating that these were intended for use on small beads, the wear and breakages on the tools were caused by mechanical drilling (Calley – Grace 1988: 79). The bead wasters were sometimes abandoned during drilling, as in the Boncuklu example, and some broke when being pecked prior to drilling. In similar evidence found during survey in southern Jordan the drills and beads had a difference

in hardness of only 0.5 on the Mohs scale (Fabiano *et al.* 2004: 272). This suggests that drilling could be achieved with materials of similar hardness. The lack of success with harder material at Boncuklu is probably a result of hand drilling rather than problems with materials. Experimental work has shown that drilling, particularly of relatively soft materials such as limestone, was a fast process, taking less than 15 minutes for a 4 mm hole (Fabiano *et al.* 2004: 272; Gurova *et al.* 2013; Bains *et al.* 2013).

My *ad hoc* experimentation has shown that a fairly rough individual limestone disc bead may be produced in less than half an hour with the aid of a small (10-20 mm) chert or obsidian flake (un-retouched) and an abrasive material such as sandstone or schist and a little water (note: there is, as yet, no evidence that this was the technique that was originally employed). Similar examples of experimental bead manufacture were carried out on the basis of evidence from Çayönü using a mechanical drill and also found the drilling process to be fast (Altınbilek *et al.* 2001: 138; see also Mezraa Teleilat, Coşkunsu 2008: 33 onwards and detailed ethnographic work at Khambhat, Kenoyer *et al.* 1991; Roux *et al.* 1995). The discs of a harder white marble, a source of which can be found at the eastern edge of Karadağ (Fig. 3), would have taken more work than this and this is perhaps why they are less common and also manufactured to a higher quality of finish. White marble disc beads are a phenomenon seen at many Neolithic sites (Baysal 2014; 2013a; Baysal – Erdoğu 2014). Such white marble disc beads were also found in the 9th millennium assemblage at nearby Pınarbaşı, in greater numbers, a pattern that may relate to proximity to the source of raw material (E. Baysal forthcoming) or to the perceived properties of this type of bead. The similarity in technology may be indicative of a common point of manufacture for Boncuklu and Pınarbaşı. There is some indication that the choice of white stone may be related to the use of the large marine shell *Spondylus,* which saw concurrent use in many locations although generally closer to the coast (Baysal – Erdoğu 2014).

Indications of the use of stone disc beads are limited to a group of three identical beads that were found together in the position they were strung. It is not known whether they were threaded or sewn onto clothing. There are some examples of beads found singly in burials in the wrist area of the skeleton. The impression is that small beads were used sparingly and that they were not frequently included in deliberate deposits at Boncuklu Höyük.

The large lozenge shaped beads would have been considerably more difficult to produce than a disc, and their scarcity is perhaps a result of this. The

drills required were longer, and broken examples of beads show the difficulty of accurately piercing from both directions. These beads were also well polished. This would have been a time-consuming task, probably requiring the use first of abrasive stones or sand and then leather or other organic material in finishing. The harder materials chosen received more attention in their quality of finish, indicating that more time was spent on each aspect of their production.

Evidence for adaptation and reuse

In addition to the evidence of bead manufacture at Boncuklu, there is also evidence that recycling of broken beads and pendants was common practice. With the exception of disc beads, which are too small to mend, there are examples of adaptations in all other bead types. Breakage usually relates to piercings and a number of the broken beads had their rough edges smoothed and polished, and obviously continued in use, sometimes with new piercings. In some cases partially functional piercings continued in use, in others the bead or pendant must have been carried in some other way, perhaps in a bag or pouch, in others a fresh piercing was made, even if it spoilt the original form of the bead or pendant (for example Fig. 4, right). These larger bead types have not been found in burials, suggesting that their importance lay in their continued circulation.

Some examples of these mended and adapted artefacts include a black jasper (provisional identification) bead, which is badly broken and the original shape is therefore indeterminate. It was re-polished after the breakage so was obviously deemed worthy of curation, a small portion of the original piercing remained in use. Another example was probably originally a lozenge shaped bead which was broken at some stage during its use life. The break left a functioning piercing and although the original aesthetic quality of the bead was spoilt, the rough edges were smoothed and the item obviously continued in use. The surface is covered with a mixture of abrasion and cut marks suggesting that it may have been used to facilitate other activities, as was the case with the plaque pendants (Fig. 4).

A 'butterfly' bead (Fig. 5, left) about 60% of which is preserved is 20.8 mm long with a large (5.5 mm) piercing made from both ends with clearly visible drill marks (Beck 1928, perforation Type II) was reused. Drilling reached a maximum of 14 mm from one end. Made from basalt (Mohs 6) and finished to a good polish, the outer surface has chipped off in places, possibly due to

wear. After severe breakage the raw surfaces were smoothed despite the bead having no functional piercing, whether this was deliberate abrasion or wear as a result of the broken piece being carried around is not clear.

The pendants show a number of examples of repair work in cases where piercings have broken. In each example the broken edges were abraded to make them smooth and a new piercing was made in order to restore the item to its original functionality (Fig. 4, right). This adaptation changes the form of the bead so it is clear that a repair has taken place, symmetry is lost and scars are visible. This offers the clearest evidence of the value attributed to items of personal ornamentation. The evidence shows clearly that longevity was more important than form.

There are indications that some of the beads were seen not as purely ornamental items but were used as tools. They appear to have been used as a cutting surface, which resulted in the creation of a considerable groove in the central surface of the artifact as well as many scratches. Examples include two pendants that have a large groove as their main feature (Fig. 4), and the surrounding scratches suggest that they may have been used and therefore constitute a tool rather than just a decorative item, it may also be the case that there are two other such examples, but unused. It is not possible to determine exactly how these items would have been suspended, and therefore impossible to understand their social and visual impact. I suggest, however, that the double piercing of these pendants may have allowed them to be affixed either on the body or on clothing in such a way that they constituted a portable tool/cutting surface. Perhaps they were used as a place to cut thread, twine or gut or other small or fine items of everyday use, given that the other available alternatives such as the ground/floor or the individual's body or clothing would have resulted in damage and would not have proved stable or solid enough. The preference for green coloured stone for these items could be attributable either to the perceived properties of the colour (Bar-Yosef Mayer – Porat 2008, Wright *et al.* 2008) or to the actual properties of the chosen raw material, harder than the ubiquitous limestone and therefore more durable. The triangular incised pendant that also incorporates a groove caused by cutting may have had a process of development with different aspects being added over time and the groove continuing in 'use' until the artefact was deposited.

Discussion

The Boncuklu bead and pendant assemblage leaves us with the impression of the small scale production of some items of personal ornamentation at the site, mainly focussed on simple disc beads. These could be produced easily with relatively low levels of skill using stone from the surrounding landscape. The locations of the beads and unfinished beads within the site suggest that production may have taken place both in houses and in the areas between the houses. Such low levels of production do not necessarily indicate any specialized activity (Baysal 2013b) although perhaps shows the foundations of later specialized manufacture (Wright – Bains 2007; Garfinkel 1987; Rollefson 2002; Iovino 2004).

Although there was some on-site manufacture it can be said with some certainty, on the basis of both variations in production technology and materials, that white marble disc beads, and possibly some of the other small beads and pendants, originated away from the site. The use of white marble and specifically the adherence to the choice of this colour is a preference that seems to gain traction as time progresses and shows strong links with the use of marine shells during the later Neolithic and Chalcolithic periods (Baysal – Erdoğu 2014). Indeed saccharoidal marble is reported as the second most common stone raw material used for beads at Çatalhöyük (Bains *et al.* 2013: 334), perhaps indicating a direct continuation of interest in the material at the later site.

Bains *et al*. (2013) have suggested that at Çatalhöyük stone bead manufacture was, as at Boncuklu, focused on small disc beads. At the former site the drilling was predominantly carried out mechanically from the earliest levels onwards, with either a pump or bow drill (Bains *et al.* 2013: 341) in contrast to the use of manual drilling at Boncuklu. Whereas it seems unlikely that a mechanical drill was used on-site at Boncuklu, although some of the probably imported products show indications that it might have been in use elsewhere, it seems certain that they were in use at Çatalhöyük. The use of a conical tipped micro drill, of which there are examples at Çatalhöyük (Bains *et al.* 2013: 347), seems to have been consistent at both sites. Production sequences are also broadly similar at both sites (Fig. 6 and Bains *et al.* 2013: 346). As there are not yet any reasonably sized assemblages from comparable small Early Neolithic sites (nearby Pınarbaşı has a small assemblage of stone beads dating to the 9th millennium BC, Baysal forthcoming) it is not possible to establish whether the use of stone for personal ornaments at the site was typical of this region during this period.

The recycling of larger beads and pendants at Boncuklu raises a number of questions with regard to how items of personal ornamentation were valued and treated. The fact that breakage was not considered enough to render the object unusable, even when raw material requirement for the production of a replacement was minimal, suggests values that extended beyond the aesthetic. Wider patterns of material use at Boncuklu Höyük suggest that beads fitted into a generally conservative use of stone in all forms whether chipped or ground (Baird 2012; A Baysal pers comm.). Extensive recycling of shaft straighteners, handstones and querns is an understandable expedient at locations such as Boncuklu and Çatalhöyük where raw materials are hard to come by (Wright – Baysal 2012: 422). The extension of similar attitudes to ornaments perhaps indicates a consistency in the attitude to all stone items that might have been linked to their procurement method.

In addition to technology another area that has received considerable attention is that of colour choices of prehistoric ornaments. There have been many suggested theories regarding the significance of colour choices in early bead manufacture. In SW Asia green and red have been highlighted as important and possibly significant colour choices (Wright – Garrard 2003; Wright, *et al.* 2008). It has been suggested that the, sometimes extraordinary, lengths taken to procure and use green stone indicates that an association with fertility and abundance made the green material of special importance (Bar-Yosef Mayer – Porat 2008). It has also been suggested that the green bead is the precursor of the blue *nazar boncuk* that is now so common throughout the Middle East (Bar-Yosef Mayer – Porat 2008; Özkaya pers comm. 2011). The use of green does seem to have had some significance at Boncuklu, although constituting only about 15% of the assemblage, there are a variety of different green stone types (definite identifications forthcoming) and they are used for beads and pendants of various different forms, as well as grooved stones and incised plaques. According to the theories of Bar-Yosef Mayer – Porat (2008: 8549 Fig. 1.10) these plaques may be an equivalent in form of the cowrie-shell stone beads that appear in the Late Natufian at Gilgal II, and may therefore make a very distant reference to types of marine shells not found at Boncuklu. The basic colour palette at Boncuklu consists of green, pinkish-orange, white and black/grey, at this stage it is reasonable to say that this is probably representative of the stone colours that were naturally available.

Conclusion

Overall the early Neolithic stone bead assemblage of Boncuklu Höyük shows that despite the relatively small number of beads, and the low level of formal deposition in locations such as burials, there was much variety in both the type and use of beads and pendants at the site. There are general indications that practices at Boncuklu were less complex than at later Çatalhöyük but show some degree of similarity in both forms and material use. Availability of resources had a clear effect on the choice of materials and the use-life of the larger beads and pendants. Although no tools involved in bead manufacture have yet been recovered, there is evidence that beads were manufactured at the site and that broken beads and pendants were adapted and recycled for continued use. The mending of artefacts suggests that they were valued enough to be kept in their broken form. Whether this value was for social reasons, because of the difficulty of obtaining the materials or because the items were specifically associated with individuals in the community remains to be seen.

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Neolitik Boncuklu Höyük'te Taş Boncuk Üretimi ve Kullanımı İle İlgili Bulgular

MÖ 9. bin sonu ile 8. bin yıllarına tarihlenen Boncuklu Höyük erken Neolitik Dönem yerleşimi Orta Anadolu'da Konya Ovasında yer almaktadır. Buluntu yeri, erken dönem yerleşik yaşamı, oval mimarisi, avcılık ve toplayıcılık aktiviteleri ile geniş bir alan boyunca olan ilişkileri hakkında verdiği bilgiler bakımından ilgi çekmektedir. Kullanılan detaylı kazı tekniği, özel aktivitelerin gerçekleştiği alanlar gibi yaşam biçimlerini anlamayı mümkün kılmaktadır. Boncuklu'daki 5 sezonluk kazı çalışmalarından sonra höyük, taş boncuk ve kolye tanelerinin erken Neolitik dönemde nasıl üretilmiş ve kullanılmış oldukları hakkında bilgi verebilmektedir. Yerleşim yerinin erken tarihi ve daimi yerleşik yaşamın erken evrelerinde gerçekleşen sosyal değişimler teknoloji ve üretim uygulamaları çalışmalarını ilginç kılmaktadır.

Boncuklu Höyük'te gerçekleştirilen kazılar sonucunda taş, deniz kabuğu ve kemikten yapılmış olan boncuk ile kolye tanelerinden oluşan bir buluntu topluluğunu belirlenmiştir. 100 adet buluntudan meydana gelen taş boncuk ve kolye tanesi topluluğunda, Neolitik dönemin en çok kullanılan boncuk tipi olan basit disk biçimli boncuklar hâkim durumdadır. Daha büyük boncuk formları ise daha çeşitli malzemelerden daha çeşitli şekillerde yapılmıştır. Kolye taneleri arasında ise bir ya da daha fazla delikli olan büyük örnekler yer almaktadır. Arkeolojik veriler, boncuk üretiminin yerleşim yerinde yapılmış olduğunu göstermektedir ve hammadde tedarikinin de Konya Ovasındaki geniş bir alan boyunca yapılmış olduğuna dair göstergeler de bulunmaktadır. Yarı tamamlanmış ve bazı durumlarda başarısız bir şekilde deliklerin açılmış olduğu örnekler ile boncuk ve kolye tanelerinin kırıldıktan sonra tamir edildiklerini ve bu şekilde kullanımlarına devam edilmiş olduğunu gösteren önemli kanıtlar bulunmaktadır. Boncukların mezarlara konulduğuna dair çok az kanıt vardır ve mezarlarda rastlanılan örnekler de bireylerin bilek ya da boyunları çevresine tek başlarına ya da muhtemelen bağlanmış olarak kullanılmıştır.

Taş boncuk ve kolye taneleri Neolitik dönem üretiminin ilginç bir konusunu oluşturmaktadır; buluntu yerine yakın ovada taş kaynaklarının bulunmaması, tüm taş malzemenin civardaki dağlardan getirilmiş olduğu anlamına gelmektedir. Detaylı kazı tekniği, boncukların nerede depolanmış ve üretimin nerede gerçekleşmiş olduğunu saptamayı mümkün kılmaktadır. Boncukların

bulunduğu kontekst, çöplük olarak kullanılan alanlardan ev içlerine ve mezarlara kadar değişiklik gösterecek şekilde oldukça karışıktır. Kireçtaşı gibi yerel kaynaklardan yapılmış olan taş boncukların, özellikle de disk biçimli örneklerin yerleşim yerinde üretildiğine dair göstergeler, üretim uygulamaları hakkında önemli kanıtlar sunmaktadır. Ele geçen tamamlanmamış örneklere dayanarak disk biçimli boncukların üretimi ile ilgili üretim zinciri'nin rekonstrüksiyonunu yapmak mümkündür. Ayrıca boncuk ve kolye tanelerinin kırıldıktan sonra yerleşim yerinde tekrar kullanılacak duruma getirilmiş olduğuna dair de kanıtlar bulunmaktadır.

Teknolojik uygulamalar ile ilişkili bilgiler, boncuk üretiminin özelleşmiş bir zanaat aktivitesi mi yoksa toplumdaki çoğu aile üyesi tarafından mı gerçekleştirilmiş olduğu gibi bunların toplumdaki sosyal rolü hakkında da bilgi vermektedir. Kırılmış boncukların tamir edilmesi, kenarlarının cilalanması ve yeniden delik açılması ile ilgili kanıtlar, sahiplerinin bu ürünlere verdiği değeri göstermektedir. Ele geçen boncuk ve kolye tanelerinin yüksek değerde olduğu görüşü, yeni malzemelerin kullanımı ve yeni boncukların üretimi ile güçlendirilmektedir. Çoğu boncuk tipinin üretimi, her ne kadar daha büyük örnekler daha sert taş tiplerinden yapılmış ve bu yüzden üretimleri daha zor olsa da uzun sürmektedir ve belki de bu yüzden daha yüksek fiyatlara sahiptir.

Bu makale, 2006-2010 yılları arasında toplanan veriler kullanılarak Boncuklu Höyük'te boncukların üretim ve kullanım şekilleri ile ilgili arkeolojik verileri sunmaktadır. Taş boncuk topluluğu ile ilişkili arkeolojik verilerin sunulmasından sonra, malzemenin elde edilişi ve boncukların üretiminde ne tür işlemlerin gerçekleştirildiği ve bunların nerede yapılmış olabileceği ve yapımlarında ne tür aletlere ihtiyaç duyulduğu konuları sorgulanmaktadır. Tamamlanmamış boncuk ve kolye taneleri örnekleri, ne tür işlemlerin gerçekleştiğinin tespit edilmesinde kullanılmıştır. Boncuklu Höyük arkeolojisinin kısa bir tanımından sonra, yerleşim yerindeki boncuk üretimi ve kullanımına dair kanıtlar tanımlanmış ve daha sonra benzer ve daha geç tarihli diğer Neolitik yerleşimlerden elde edilen kanıtlarla karşılaştırmaları yapılmıştır. Sonuç kısmında da erken Neolitik toplumlarının teknolojilerinde boncukların rolü sorgulanmaktadır.

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Bead form	Material	Number
Disc	Limestone	52
	Marble	6
	Volcanic (andesite/gabbro/diabase)	8
	Sandstone	2
	Malachite	1
	Schist	1
	Greenstone/serpentine	8
Pendant	Marble	2
	Serpentine	3
Irregular	Volcanic (andesite/gabbro /diabase)	4
Lozenge/trapezoid	Serpentine	2
	Jasper	1
	Basalt	1
	Chert?	1
	Gabbro	1
	Chlorite	1
	Marble	1
Unfinished/unidentifiable	Limestone, diabase, sandstone, basalt	5
Total		**100**

Table 1 Summary of the stone bead assemblage of Boncuklu Höyük (material identifications are provisional).

Piercing type	Number	Percentage
Bi-conical	49	62.8
Conical	6	7.7
Straight	23	29.5
Total	78	100
Outer edge profile		
Straight	50	64.1
Curved	28	35.9
Total	78	100

Table 2 Disc bead forms; piercing type and outer edge shape.

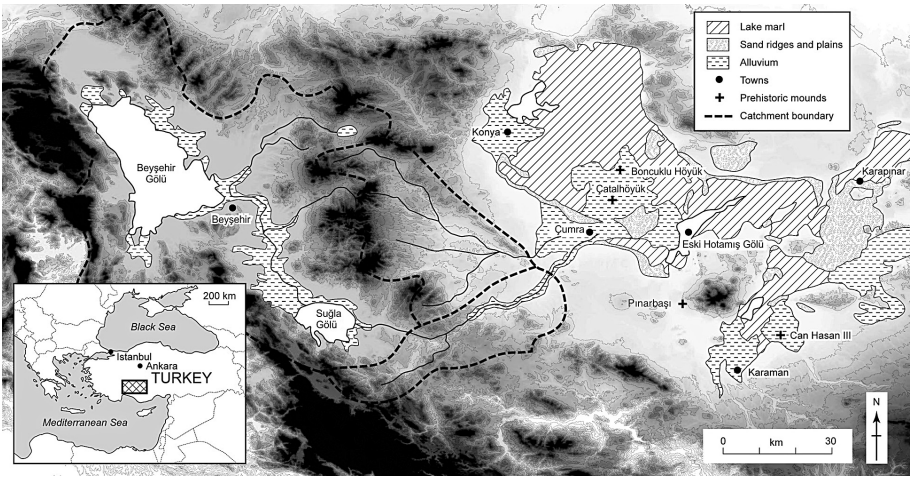

Fig. 1 The location of Boncuklu Höyük in the Konya Plain

Fig. 2 Stone disc beads from Boncuklu Höyük

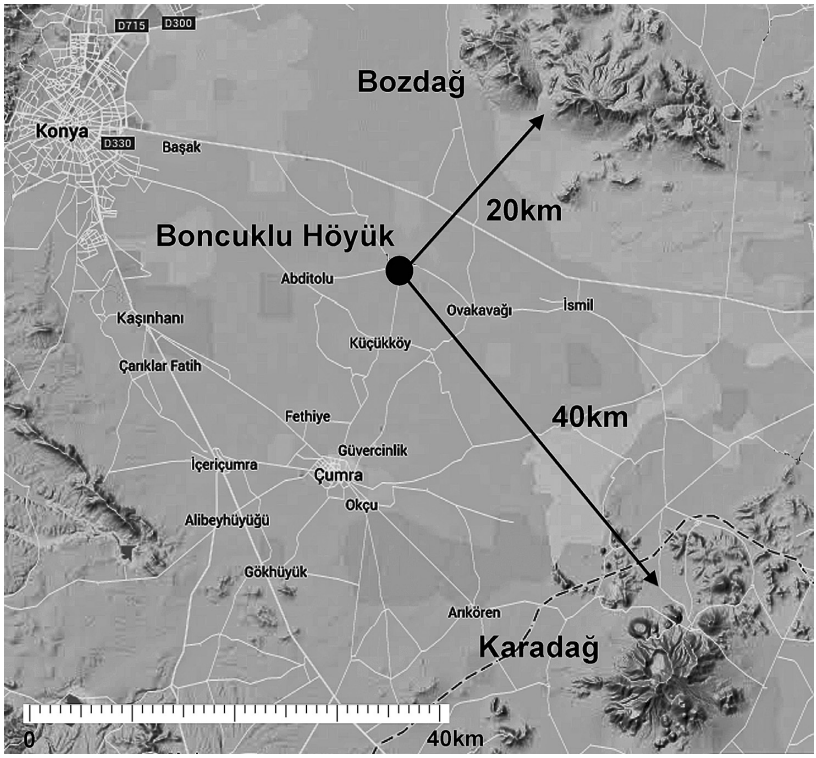

Fig. 3 Closest sources of stone to Boncuklu Höyük

Fig. 4 Stone pendants

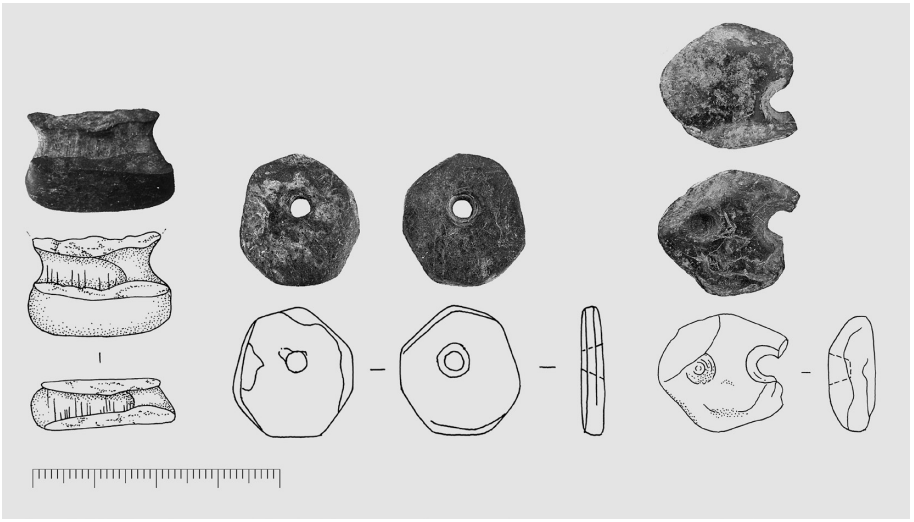

Fig. 5 Large bead and pierced pebbles

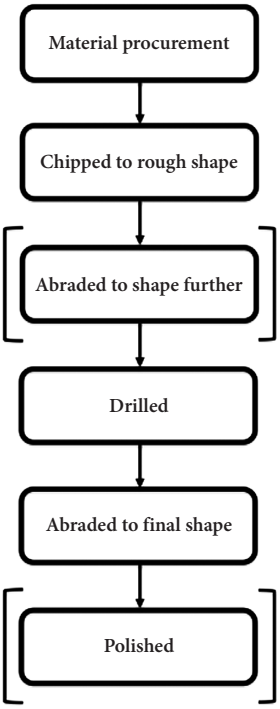

Fig. 6 Bead manufacturing process

Fig. 7 Experimentally testing bead manufacturing processes