"Shell ornaments and their distribution in North western Anatolia during Late Neolithic and Early Chalcolithic periods (mid-7th to mid-6th millennia B.C.): the case of the settlements of Aktoprahlik Höyük and Barcin Höyük."

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This dissertation was written as part of the MA in Black Sea and Eastern Mediterranean Studies at the International Hellenic University.

Shells of various types and origins were widely used as ornaments even from the Upper Palaeolithic period. The use of shells as a mean of ornamentation was most probably appreciated for its originality and rareness as well as the diversity of its form (shape, colour etc). This created a particular attractiveness to humans, which was additionally reinforced with emblematic and symbolic meaning by their use in clothing and body ornamentation.

Shell ornaments could have decorated many parts of the body. Beads and pendants, objects of the same or different materials and shape would be put together in necklaces or bracelets. Actually, it is difficult to identify the exact use and role of these “ornaments” in the past. The decoration of some figurines could be interpreted as ornaments, and ethnographic parallels provide us with some suggestions about human ornaments, their use and/or symbolic meaning.

Ornaments’ characteristics such as material, shape, colour or use, can give them magical and amuletic properties in which case they may be passed on to other people or ritually disposed of. In addition, beyond their aesthetic appeal ornaments carry emotional and symbolic values. Shell ornaments made of exotic materials present many questions beginning with their source. Whereas shell ornaments found in the hinterland very often pose questions regarding their arrival there, their actual value, who was involved in these distributions and why they exchanged them. All these issues refer to and discuss the role of exchange networks of exotic materials in prehistory.

Many questions could be raised about shell ornaments either as items of decoration or for human ornamentation. While ornaments are artefacts of high symbolic potential, questions about their manufacture, their distribution, their form and characteristics, could be discussed.
Keywords: shell, mollusk, ornaments, exchanging network, Neolithic, Chalcolithic, Anatolia

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During our “journey” around the Black Sea and Eastern Mediterranean we became familiar with the cultures and the tribes which inhabited these regions from the ancient times until recent years. As an archaeologist I have broadened my mind regarding the settlements, the culture and the way of life of the aforementioned regions. The combination of my knowledge from my bachelor degree (Archaeology & History of Art -AUTH-) with the knowledge that I gained from my MA studies, has resulted in the writing of this particular thesis.

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INTRODUCTION

This dissertation is dealing with regional exchanging networks of shell ornaments that have been unearthed in prehistoric Anatolia and neighbouring areas during Late Neolithic and Early Chalcolithic periods (mid-7th to mid-6th millennia B.C.). The aim of this research is to present every aspect of use of shell ornaments, their possible production processes and exchange networks that they were part of, based on the case-study of the settlement of Aktopraklik Höyük and Barcin Höyük in northwest Anatolia.

In prehistory, people gradually developed evidence of mental and symbolic behavior that helped them to deal with issues of social reproduction. The making of ornaments is definitely an example of this process. The desire to decorate the human body is something which appeared from very early in prehistory. People used not only specific objects as ornaments but also they probably were painting their body on different and special occasions during their life. The meaning of decoration by humans is related to matters of individual and social identity, age, gender and sexual availability, group affiliation, wealth, ceremonial etc. In these circumstances, the decorated human body becomes a powerful symbol which materializes cosmological concepts, taboos, socially and religiously prescribed roles and is part of the overall style of a culture. However, nowadays it is not always possible to detect the means of decoration especially when examining the past. Ornaments were also an important category of tangible residues of specific ceremonies.\(^1\) Shell ornaments pose many problems regarding the specific material chosen, its use and trade; studying them addresses interesting questions.

The study of mollusc and/or shell remains is considered part of environmental archaeology and zooarchaeology; it is specifically called “archaeomalacology” or “malacoarchaeology”. In archaeological contexts, molluscs are either natural remains or human-modified objects. Archaeological mollusc and/or shell remains could be categorized according to its taxonomic group and habitats. There are two main groups of molluscs: the first includes those that are

\(^1\) Κυπαρίσση-Αποστολίκα 2001: 155-158
terrestrial and the second those from marine environments. The molluscs of terrestrial origin are composed of gastropods, the so-called land snails. Molluscs from marine environments are basically separated as gastropods (e.g., whelks, topshells, and limpets) and bivalves (e.g., clams and oysters), although there are some species such as cephalopods (typically cuttlefish) and scaphopods (typically Dentalium shells).²

Shells of various types and origins were widely used as ornaments from the Upper Palaeolithic period onwards. The use of shells as objects of ornamentation was most probably appreciated for its rare provenance (exotic material) as well as the diversity of its appearance (shape, colour etc.). These qualities were particularly attractive to humans, this attraction was reinforced by emblematic and symbolic meanings related to their use for clothing and body ornamentation. Singular natural ornamentation and colour rendered them decorative and imparted aesthetic features, so these shells were added to the group of objects with hand-made ornaments.³

In the regions of Eastern Mediterranean, Northwestern Turkey and Anatolia ornamentation practices had undergone a period of important changes during the Late Neolithic and Early Chalcolithic period (mid-7th to mid-6th millennia B.C). The site of Aktopraklik Höyük, in Northwest Turkey, is considered to be a “crossroad” among three very important regions (Anatolia, the Black Sea and Eastern Mediterranean); this is an archaeological site where important quantities of ornaments have been found among which there are some assemblages of shell ornaments. It is remarkable that in Aktopraklik, during the Late Neolithic and Early Chalcolithic periods (mid-7th to mid-6th millennia B.C.) shell ornaments continued to appeal its inhabitants but in a greater variety than previous periods (different species of shells, larger or/and harder).³ It is also interesting that at the site of Aktopraklik ornaments and especially beads were in circulation during the Late Neolithic and Early Chalcolithic periods (mid-7th to mid-6th millennia B.C.). Thus, the use of marine and freshwater shells in Aktopraklik finds parallels with a number of other archaeological sites in Central

³ Baysal 2016: 52-53
and Western / Northwestern Anatolia. It is also remarkable that a community which was not depended on marine resources for its nutrition used these objects for ornamentation purposes.4

The site of Barcin Höyük is located in the Eastern Marmara region of Bursa, situated in the plain of Yenisehir to the south of the Iznik Lake and to the northwest of the Uludag Mountain range. Barcin Höyük is about 100km east of the settlement of Aktopraklik Höyük.5 It is good to note that Barcin Höyük was an issue for environmental shifts. This site has a phase of arid conditions and erosion, which lasted until the beginning of the Bronze Age.6 Ornaments and especially beads from Barcin Höyük, are of specific interest not only concerning their materials but also concerning their characteristics. It is worth noting that in Barcin Höyük shell beads constitute 31% of all ornaments and this assemblage consists of marine and freshwater species.7 According the study of bead assemblages from Barcin Höyük, this settlement could have connections with wider exchanging networks, while some ornaments -not only made of shells- seem to be related to traditions from Anatolia and Near Eastern regions and to practices used at the Aegean and Balkan areas.8

This dissertation will consist of the following parts. First, some information about the subject of archaeomalacology and molluscs will be presented. Afterwards, details about the embellishment of the human body will be presented and discussed; that is why and how people in prehistoric communities used means of decoration. In the same section, the goal of this research –the study of shell ornaments- will be clear; this will include their use and their production process. In the following section some details about the paleoenvironment will be given. The next section will deal with information about the settlement of Aktopraklik and its archaeology. The emphasis will be on the use of shell ornaments on this

4 Baysal 2016: 50–51
5 Gerritsen 2008: 411
6 Groenhuijzen et al. 2015: 51
7 Özdoğan 2016: 144
8 Baysal 2014: 1
site. Similar information as mentioned above for the Aktopraklik Höyük, will be given also for the settlement of Barcin Höyük. In the following part, a comparison of the use of shell ornaments between the two settlements will be presented. In the next section the exchange network of shells and shell ornaments between the site of Aktopraklik Höyük, Barcin Höyük and other neighbouring sites will be presented. The final portion of the study will include the discussion and the conclusions reached.
1. **ARCHAEOMALACOLOGY**

1.1 The sector of *Archaeomalacology*.

Archaeology is the scientific study of historic or prehistoric peoples and their cultures, through the examination and analysis of their artefacts, inscriptions, monuments, and other similar remains.\(^9\)

The actual purpose of this archaeological inquiry is to study the way of life of ancient people, as well as the way and the reasons for which it has changed. One very interesting way of answering these questions involves a closer understanding of human environment. It is obvious that only durable materials and physical evidence are able to survive through centuries. An important source of information comprises physical remains from the following groups: mollusc shells, bones, pollen and charcoal.\(^10\)

The research of mollusc and/or shell remains constitutes a specific branch of environmental archaeology and zooarchaeology, called “archaeomalacology” or “malacoarchaeology”. In archaeological contexts, there are molluscs that are natural remains, as well as some man-modified items. Archaeological mollusc and/or shell remains could be categorized according to their taxonomic group and habitat. There are two main groups that molluscs could be classified into, the first including the terrestrial ones, whereas the second one those from marine environments. The group including molluscs of terrestrial origin consists of the gastropods, more colloquially referred to as land snails. Molluscs from marine environments are basically divided into gastropods (e.g., whelks, topshells, limpets) (Fig.:1) and bivalves (e.g., clams, oysters) (Fig.: 2), although there are also some species such as cephalopods (typically cuttlefish) (Fig.: 3) and scaphopods (typically Dentalium shells) (Fig.: 4).\(^11\)

Taking into account the fact that mollusc shells are absent only from the coldest and driest environments, the research of their remains could be a way for

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\(^9\) Cakirlar 2014: 5006

\(^10\) Michael 2017: 19

scholars to face many anthropological and palaeoenvironmental issues. Study of molluscs could reveal information regarding nutritional practices, long-distance contact, artefact technology and use, symbolic uses related to belief systems and aspects of socioeconomic relations and status, or even the seasons when the food was adequate, as well as human exploitation and pressure on marine ecosystems. The most apparent theoretical approaches to archaeomalacology are related to foraging concepts and cultural-historical approaches.¹²

Molluscs belong to a reliable group of natural remains that could assist scientists in reconstructing past environments. In comparison with pollen, which is a well-known element used for investigating past terrestrial environments, molluscs could provide us with safer and more conclusive results. While pollen is tiny in size, airborne and can provide us with information about vegetation and environmental conditions of a wide area, snails (species of terrestrial shells) are able to inform us about the structure of vegetation regime and about more localised environmental conditions.¹³

Apart from the reconstruction of past environments, molluscs could also inform us about ancient people’s dietary preferences. After the collection and consumption of molluscs, shells appear to have been accumulating in archaeological sites, which in several cases could lead to the discovery of a large number of them (Fig.: 5). A detailed study of this assemblage could tell us about the period and location of mollusc collection, the time when the molluscs were over-collected, how far from the settlement the collection practice took place, even whether the local environment was changing over time. One more remarkable result of shell assemblages is the fact that by modifying local alkaline soils to acid soils, some bones and teeth could be preserved.¹⁴

¹² Cakirlar 2014: 5005-5010

¹³ Michael 2017: 20

¹⁴ Michael 2017: 21
1.2 Molluscs.

Although molluscs belong to the group of invertebrates, they have either exoskeletons or endoskeletons. The prominent feature of molluscs is the presence of a mantle. Mantle or pallium is a skin layer that form the protective skeleton of molluscs. The form of their skeleton consists of spines, spicules, sclerites, or plates in the body wall, or solid shells (valves) that are either external or internal. The component of shells and valves is calcium carbonate and is arranged in layers, which consist of an external chalky prismatic or palisade layer and an internal pearly lamellar or nacreous layer and may be covered by a thin organic membrane, the so-called periostracum. Some molluscs is possible to have additional layers while others may have lost the lamellar layer.

Molluscs are separated in groups according their skeleton. Gastropods or gastropoda belong to that group of molluscs which have a single, asymmetrical shell or valve and they are known as univalves. This group include the only terrestrial molluscs. Their habitat is marine and freshwater environments. Most valves of gastropods seem to have coiling around an opening at the anterior end of the mollusc, hence their valve shows torsion. There are three basic types of valves of gastropods, cone, spire, the so-called spiral and flattened disk known as discoidal. It is interesting that every part of the valves has its own designation and use. Apex is called the higher spot of the spire, if the valve is spiral, or the central spot of the disc if the valve is discoidal. Every torsion forms a whorl separated by lines known as sutures. Columella is the term for the central axis of coiling. Valves may bear nodules, beads, or ribs. (Fig.: 6)

15 Brusca et Brusca 2003: 717, 720
16 Brusca et Brusca 2003: 720
17 Brusca and Brusca 2003: 703, 709, 722–725
18 Reitz et Shackley 2012, 347, 351
19 Brusca and Brusca 2003: 723–724
20 Reitz et Shackley 2012, 351
Bivalvia or bivalves belong to the group of molluscs which characteristically have two valves that articulate with one another along the dorsal surface. They live in marine and freshwater habitats. Both valves of this group of molluscs are either symmetrical or asymmetrical. The mantle of bivales attaches to the internal part of each valve along the pallial line. The left and right valves articulate along a dorsal hinge at the thickest part of a valve, near a protuberance known as the umbo.\textsuperscript{21} It is interesting that even molluscs have muscles, some have only one and some other have two muscles. Bivalves could be sessile, such as oysters, at least during their adulthood, or mobile both as larvae and as adults (Fig.: 7).\textsuperscript{22}

Scaphopods or scaphopoda are a group of molluscs that have just one hollow, tubular valve open at both ends. This group of molluscs is comprised of marine species and their habitat is either shallow sublittoral areas or waters greater than 6 m.\textsuperscript{23} An executive feature of scaphopods is that their mantle is adapted entirely within the valve.\textsuperscript{24} Cephalopods or cephalopoda are a carnivore group of molluscs. From this group, only Nautilus has an outer shell for protection. They live in every marine habitat, from the warmer to the near-freezing waters, with the exception of brackish water.\textsuperscript{25}

1.3 The collection of molluscs and the origin of shells.

Although many interpretations have been given for the presence of shells/molluscs at some settlements, it is not always easy not to be misled by these interpretations. Hence, ethnography could provide us with some more reliable reasons for the presence of molluscs at some sites. Methods of gathering shells/molluscs are categorized by three parameters. The first parameter is related to culture, and is depended on the natural conditions, such as currents, calm or stagnant water. The natural environment is the second

\textsuperscript{21} Brusca and Brusca 2003: 722–724
\textsuperscript{22} Reitz et Shackley 2012, 352
\textsuperscript{23} Brusca and Brusca 2003 :714
\textsuperscript{24} Reitz et Shackley 2012, 353
\textsuperscript{25} http://www.thecephalopodpage.org
factor. This one actually determines the use methods through parameters such as the depth of the water or its salinity. Also, the efficiency of fishing methods is important, because some methods render wounds and disfiguration on the shells.26

Each species is characteristic for a particular biotope. Therefore, certain species inhabit the seabed and others prefer rocky and sandy environments. Although some of these habitats were not easily accessible for prehistoric people, most of them were. Hence, in most circumstances the environment of each settlement determines the preferred species for exploitation.27

It is important to note that for species with a deep-water habitat, gatherers were either diving or using boats. The collection of molluscs was taking place by hand but gradually people started to use tools. Knives were the most common tools they were using for the collection of molluscs which lived in a rocky habitat. For molluscs that were living in sandy habitats a kind of two-pronged fork was used and tongs were used for species such as mussels and pinnas. People were using scoop or dip net for species that were living at shallow waters. The use of boats facilitated the collection of more species of molluscs from different depths, hence it increased the exploitation of the aquatic environment. Diving required a weight for the diver’s submergence, usually a stone. Also, it required a knife and a bag in order to bring to the surface whatever the diver had gathered. The collection and the storage of molluscs was possibly using baskets or even with wicker twigs. These objects were used also as traps for some species.28

There are many species of shells but ornaments are made of specific species and especially from gastropods, scaphopods and Bivalvia. Shells that are used for the production of ornaments are classified into two groups. The first group includes those that are collected after the molluscs have died and their surface is smoothed and porous. In the second group belong molluscs that are collected

26 Karali, 1999, 11
27 Karali, 1999, 9
28 Karali, 1999, 10
when the organism was still alive and their feature is the shiny surface. The molluscs that are gathered from remote habitats are remarkable, because they need special effort for their collection; therefore, they are of special importance.\textsuperscript{29}

\textsuperscript{29} Karali, 1999, 27
2. ORNAMENTATION AND ORNAMENTS

2.1. Body embellishment.

Humans have been interested in their body's embellishment as early as the distant prehistoric times. On one hand, body embellishment could be characterized simply as an attempt to adorn the body; on the other hand, there is the view that body decoration is a way of distinction, which is achieved through a variety of means, such as jewels, body painting, tattoos and others. Every sign on one's body could be a communication code that conveys some message about their social, marital, religious status or even their livelihood. Especially jewels have been known to be present since the Middle Paleolithic period (100,000 - 30,000 B.C.), not to mention the fact that during the Upper Paleolithic period (30,000 - 10,000 B.C.) their traces appear to be increasing, so gradually we come up with items that could be used as “accessories”, made of bones or ivory, stone, teeth or even shells.30

Taking into account the rich and bewildering literature concerning bodies in the sectors of anthropology and archaeology, we could conclude that the “body” is identified in accordance with the historical frame of each period; hence, according to the social context, the “body” is determined in a particular way. There is an abundance of beliefs regarding the development of the relation of one’s body and its contexts. Regarding this relation, two views prevail: the first maintains the belief that the body is the keystone of the relation between the human subjectivity and their surrounding environment, whereas the second supports the idea that practices follow deep-rooted models by reproducing them.31

Consequently, the body is deeply related to material culture, since it is that material which defines it. This aspect is greatly supported in archaeology by the figurines, objects where we can observe the design of the body and its embellishment in many ways and with a variety of means of decoration (Fig.:8).

30 Παπαευθυμίου-Παπανθίμου 1997: 118
31 Triantaphyllou, Papadatos & Mina 2016: ix
Although in most cases it is not easy to distinguish which means of decoration are depicted on the figurines, it is not difficult to attribute specific decoration elements (body painting, tattoos, jewels) to the Neolithic figurines. Moreover, remains from burials and funerary practices (Fig.: 9) could inform us of how the body was perceived at that specific time (death). Every kind of human remain, such as, architecture, ornaments, evidence of sensorium (remains of seeds could inform us about the taste of some possible foods, and remnants of oily products give information about some possible odors) and biological data could establish a relationship between the body and the material culture.\textsuperscript{32}

With the production of tools and artefacts, people were able to define their lives and their natural environment. By improving and adapting their tools and artefacts, humans managed to develop their brain - while mental actions and technological evolution were also dependent on the improvement of artefacts. Thus, people gradually acquired mental and symbolic behavior, which helped them to deal with issues of social reproduction. The manufacture of ornaments is definitely an example of this process. It is important to note that ornament manufacturing is a kind of art. At its beginning, art was not related to beauty and the need for being beautiful but it may have been a way for people's livelihood. Art is explained through symbols, so ornaments could symbolize something special for each occasion. Symbols could be characterized as mental categories and the notion of an item/symbol could provide people with power. Therefore, people from prehistoric periods conveyed messages through symbols.\textsuperscript{33}

\textbf{2.2. Manufacture of ornaments.}

In order to comprehend the production of ornaments, it is useful to study the technical aspects of manufacture and the organization of production. Technical aspects determine the process of manufacturing and every step until the final production of ornaments. From the collection of raw material and the tools used in manufacture to the skill level of craftsmen and time required in order to make

\textsuperscript{32} Triantaphyllou, Papadatos & Mina 2016: ix

\textsuperscript{33} Κυπαρίσση-Αποστολίκα 2001: 155-159
the final ornaments, everything is contingent on technical aspects. Raw material, discovered tools, even ethnography and experimental archaeology could constitute evidence for the manufacturing techniques. Several unfinished ornaments, each at a different stage of manufacturing, are likely to inform us of the steps of ornament production (Fig.:10). Nevertheless, completed ornaments are not the best means in order to comprehend the stages of their production, because at the last steps of manufacturing many signs of transformation of raw material vanish through final polishing or smoothing.34

Ethnography could inform us about manufacturing techniques of ornament production because the simple forms of most ornaments are similar even today in many parts of the world. In addition, ethnography provides us with evidence of the tools used in ornament production. When none of the previous means is able to explain the stages of manufacturing then doing experimental archaeology is often possible to help understand the steps of the manufacturing process.35

It is important to mention that each material used for the production of ornaments was dependent on the production line of the specific settlement. This is due to the fact that every craftsman was able to provide specific raw materials, some of which may have been used also in artefacts, other than the ornaments.36 Concerning raw materials of prehistoric ornaments, shells along with stone were the most common materials for ornament manufacturing. After the reconstruction of past shorelines at many prehistoric sites, we are able to talk about the availability of molluscs. Many archaeological sites where shell ornaments have been unearthed were close to marine landscapes (either sea or lakes and rivers), thus ornament production and mollusc collection in these sites was expected.37

34 Miller 1997: 85-87
35 Miller 1997: 87
36 Κυπαρίσση-Αποστολίκα 2001: 155-159
37 Miller 1997: 88-96
Shells that were used in manufacturing ornaments could be divided into two groups: the first group includes those that were collected near the settlement (freshwater sources and land snails); the second group includes those carried from distant places. It is important to note that in many cases, the primary use of shells was for consumption as food. Alternatively, molluscs were eaten at first and the discarded shells were afterward used for making ornaments. For instance, Cerastoderma edule, Dentalidae or even Spondylus are edible, so they could have been collected firstly for food consumption.

Furthermore, it is good to pay attention to the reason why people preferred this specific material (shells) for ornaments, as well as why they seemed to have a preference for some species over others. The most significant reasons for this choice could be practical ones because people used to prefer resistant materials that were easily modified. Also colour, iridescence, gloss and double surface (external and internal) are some characteristics that could direct people towards the choice of one specific material, such as shells. Some other reasons may be related to the shells’ origin, their way of being collected or, in many circumstances, even their initial use, for example, for consumption. The collection of raw material has social outlines, whether it is identified with food collection or it is a special procedure. The degree of difficulty in the collection of raw material, the whole process of its collection, or even its rarity, contribute to the appreciation of its value.

2.2.1. The basic methods of shells modification.

The way according which shell ornaments are manufactured is dependent on the quality and the shape of the mollusc as well as the craftsmen’s choice. Perforation and shaping are the basic methods of shells modification and they are used in combination or separately. For instance, there are some molluscs

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38 Baysal 2016: 50-59
39 Miller 1997: 88-96
40 Βεροπουλίδου 2011: 79
that are perforated from erosion, hence, they need just shaping. Or in other cases, shells are perforated in order to acquire one or more holes and then shaped for their final form. It is not frequent to find tools related to artefacts, so the only safe indication of their relation could be semi-manufactured ornaments, waste of manufacture process and artefacts with traces of their production (Fig.:11). (Fig.: 12).

Perforations on shells could happen for three reasons, the first is natural erosion, which creates naturally pierced shells. The trace of this type of penetration is that the rim of the piercing is naturally smoothed. The second reason is the action of lithophanes, which occurs from some molluscs that are equipped with an organ that perforates the shell of other molluscs like a drill. In most cases the holes of this type are cylindrical and terminate in a regular rim of the same interior and exterior diameter. The last reason of perforations is the man-modified holes, which could be manufactured in five ways.

Percussion is the first technique of human intervention, which was used for the creation of a hole at the upper section of the valve of Bivalvia or gastropods. The trace of this technique is that the perforation creates a polygonal, irregular rim and the surface has a graduated mouth. Another technique of man-modified holes is the two types of abrasion, abrasion of the convex zone and abrasion in combination with percussion. The abrasion of the convex zone is a method in which the shell is rubbed with a hard surface until it is pierced. The eroded, wide, smooth round hole with a slight gradient is the trace of this technique. The method combining abrasion with percussion is the technique which is used for the penetration of the valves of Bivalvia. According to this method, the shell first is abraded and then is pierced. Hence, the characteristics of this technique are the oval section, the intense traces of the abrasion around the mouth and the smoothed surrounding the hole.

41 Karali, 1999: 27-28
42 Miller 1997: 121-122
43 Karali, 1999: 28
44 Karali, 1999, 28
Sawing is the method of human intervention, performed on a shell by the abrasion of a limited area on its surface and this method gives narrow and elongated holes. The most common technique for penetrating schematic ornaments is drilling. According to this technique, the craftsman uses a perforating tool in order to create a hole. Traces of drilling are on one hand a hole of conical section for thin shells and on the other hand a hole of biconical section for thick shells. The reason is that thick shells require two drillings, one from the interior and another from the exterior side. All the techniques that have been referred to above are well known even from the Palaeolithic Age and are encountered through the end of Bronze Age.45

The most common findings of shell ornaments are composed of beads. Shell beads were manufactured either by enlarging and making an existing hole smoother with a grinding tool or by grinding on the surface of the shell and creating a new handmade hole on it (Fig.: 13).46 Moreover, there is the view that some beads made of big species of shells (e.g.: Spondylus gaederopus) were manufactured after having been broken into smaller fragments. Afterwards, these small fragments were processed in order to shape a bead. Next, piercing was done with a small drill and at the end these fragments were smoothed (Fig.: 14).47 Moreover, ornaments made of Dentalia seem to have been manufactured after having been cut into segments and used into longer forms.48 Apart from beads, some other common types of shell ornaments are pendants, rings, bracelets, earrings, buttons, buckles and more rarely, some decorative plaques (Fig.: 15).

Craftsmen who manufactured shell ornaments probably used tools that they had in their daily life. Hence, it is not impossible that they created rings or beads and other ornaments from shells by using stone querns, drills, small hammerstones or even hand-held grinding stones because these tools were

45 Karali, 1999, 28-29
46 Bains, Vasić, Bar-Yosef Mayer et al. 2013: 357
47 Tsuneki 1989: 10-12
48 Baysal 2016: 50-59
the most common ones in a Neolithic settlement. Furthermore, it is probable that they were smoothing their artefacts through the use of sand and water.\textsuperscript{49} One possible technique that people from the Neolithic period could use in order to decorate their shell ornaments and reform them is by fire (Fig.: 16). Perhaps they used to burn some shell beads, in order to create some black and shiny beads for use in a repeated pattern design of black and white beads.\textsuperscript{50}

2.3. \textit{Shapes of shell ornaments.}

The shape and the use of shell ornaments are determined according to the quality of the shell and the peculiarity of every culture. The basic forms of shell ornaments are pendants, annular objects (bracelets and rings), beads and inlays less frequent. Pendants are divided into unworked shells with minimal interventions and worked shells. The first group includes flat, spherical or oblong pendants while the second group is comprised of schematic (square, trapezoid, oval or circular) and zoomorphic pendants which are inspired by nature. Because of the limitation of shells, ornaments made of this material have an important place in the jewellery of the Neolithic Age.\textsuperscript{51} Annular ornaments are objects of carefully worked shells. They are separated into bracelets and rings due to their diameter, those with the largest diameter are the bracelets and the other are the rings. This form of shell ornaments was known even from the prehistoric times and especially during the Neolithic and Early Bronze Age.\textsuperscript{52}

Beads are the most common form of shell ornaments. They are separated into two groups, one of unworked beads with minimal interventions, such as flat, spherical, oblong or fusiform beads, and a second of worked shells, constituted of geometric ornaments, usually disc-shaped, annular, cylindrical, tubular of round or square section, polygonal or trefoil in shape. Beads are often part of

\textsuperscript{49} Tsuneki 1989: 10-12

\textsuperscript{50} Bains, Vasić, Bar-Yosef Mayer et al. 2013: 359

\textsuperscript{51} Karali, 1999, 29

\textsuperscript{52} Karali, 1999, 30
Another remarkable use of shell ornaments is as inlays, pieces created to be placed in larger items. They are modified both in shape and in surface and their common form is flat, rectangular, square or polygonal with two or more holes.\(^{54}\)

**2.4. Possible use of shell ornaments.**

About the exact use of shell ornaments, we do not have much information. Although many examples come from burials from Greece and the Balkans, there are some remarkable shell ornaments in Anatolia that could inform us of their possible use. Shell artefacts could have been used alone or in assemblages for body or clothing embellishment and it is not impossible for them to have been used also in some other ways. The absence of writing and figurative information about shell ornaments, in combination with the absence of close assemblages that could provide us with safer information about their use, makes their interpretation difficult.\(^{55}\)

However, ethnography again could provide us with some possible interpretations about shells and shell ornaments’ use. Shells could have been used as symbols related to humans’ beliefs, worries and needs. For instance, some women wore the Cowrie shell in order to prevent sterility, because the aperture side of this shell is supposed to resemble a vulva. Samoans relate their belief to shells, while they believe that some species of molluscs are representations of gods and humans, formed by a species of mussel.\(^{56}\) Even every shell’s colour could symbolize something different, so anyone who keeps a specifically-coloured shell could acquire a specific position in his community. Some remarkable ethnographic instances could be Iroquoians and Siouans, two tribes which were of the belief that possession of white and red precious items such as shell, crystal and particular stones represented long-life, success

\(^{53}\) Karali, 1999, 29, 30

\(^{54}\) Karali, 1999, 29, 32

\(^{55}\) Βεροπουλίδου 2011: 84

\(^{56}\) Claassen 1998: 203-212
and well-being. Moreover, shells could be related to death, well-being and nutritional habits.\textsuperscript{57}

Use and symbolization of shell ornaments is something that could not be determined in the absence of a specific context. Every community had its own way to express its inhabitants’ needs, worries, beliefs and social status. Although there are many settlements where shells and shell ornaments have been unearthed, it is not easy to define the specific use of these artefacts. Even though research of molluscs is a way to investigate aspects of nutritional practices, long-distance contact, artefact technology and use, the symbolic uses of shells are many and vary from site to site.

\textbf{2.5. Concluding remarks.}

Molluscs are an important part of the material culture, which after its discovery at any archaeological site, is able to provide us much and important information regarding the ancient environments and ancient people’s dietary preferences. They also could tell us about the period and location of mollusc collection, periods when the molluscs were over-collected, how far from the settlement the collection activities took place, even whether the local environment was changing in time.

Even from the early times people understood the importance of ornaments and gradually they were using new materials in order to manufacture distinctive ornaments. Shell is a material that people used even from the Palaeolithic period in order to decorate themselves or to symbolize something special for specific occasions. We could assume that even people from prehistoric times felt the need to convey messages through symbols. Hence, they were manufacturing ornaments and artefacts that could pass these messages.

A crucial question is who was manufacturing shell ornaments at any settlement, however, there is not any reliable answer because only in a few cases is there evidence about craftsmen. Although it is possible some craftsmen who were responsible for the manufacture of ornaments existed in every community,

\textsuperscript{57} Claassen 1998: 203-212
there is not enough evidence to know if this was happening in every prehistoric community. In most Neolithic settlements tools have been found, common in the Neolithic period, such as stone querns, drills, small hammerstones or even hand-held grinding stones, that could be related to ornament production.

Every community expressed its inhabitants’ needs, worries, beliefs and social status in its own way, therefore, use and symbolization of shell ornaments is determined in a different way at every settlement. Despite the discovery of shell artefacts, it is not possible to determine their specific use and symbolism, especially in the absence of a specific context. Even though shells/molluscs could provide us information about aspects of nutritional practices and long-distance contacts.
3. AKTOPRAKLİK HÖYÜK

3.1 The site of Aktopraklik Höyük in Anatolia

Western Anatolia is laid out along the whole eastern coast of the Aegean Sea, its inland and the lowlands around the Marmara Sea. This area could be characterized as the “border” between Southwest Asia and Europe.\(^{58}\)

Regarding the region of northwestern Turkey, although it was not in the foreground of Neolithic novelties it was a crucial region during the prehistory. This region was a crossroad for exchange of goods, ideas and even people among Greece, the Black Sea and Western Anatolia. It is remarkable that after intensive archaeological research in Northwestern Anatolia scholars have concluded that this region is highly significant for the process of Neolithization.\(^{59}\)

During an archaeological survey by the team from the Prehistory Department of the Istanbul University at a site in Northwestern Turkey, where some Byzantine remains had been observed, they discovered a new prehistoric settlement, the so-called Aktopraklik Höyük. (Fig.: 17) The discovery of this settlement was made in 2002 but the excavation research started in 2004 and is still in progress, with some short periods of interruptions. This interesting site was inhabited continuously from the middle of the 7\(^{th}\) millennium B.C. to the middle of the 6\(^{th}\) millennium BC and the occupation of the site was either horizontally and down the slope, or from one valley ridge to the other.\(^{60}\)

The settlement of Aktopraklik Höyük is situated about 25 km west of Bursa, south of the Marmara Sea, on the eastern side of Lake Ulubat. (Fig.: 18) Taking into account the morphological changes of Ulubat Lake over the last 18,000 years the safe reconstruction of its palaeo-topography during the Neolithic period is not easy. Nevertheless, as the settlement of Aktopraklik Höyük is at a distance of about 3 km from the Lake Ulubat nowadays, we can surmise that the lake was closer to the site in prehistoric times, because of the

\(^{58}\) Cakılar 2015: 117

\(^{59}\) Baysal 2016: 50

\(^{60}\) Karul et Avcı 2011:1-11
geomorphology research. Aktopraklik is situated in a strategic position being the last point that provides a pass over Bozüyük through the Eskişehir plateau; thus, forming a natural border of Central Anatolia and a path between the Sündiken and the Uludag mountains. The settlement is located in a forested and fertile landscape near two springs and is surrounded by mountains; (Fig.: 19) hence, occupants of the site during the Neolithic period could exploit freshwater and its resources as well as the opportunity for hunting and farming.61

The settlement of Aktopraklik is laid out in three sectors (units) the so-called Aktopraklik A, B and C. These three sectors (units) that compose the whole settlement of Aktopraklik are related both culturally and chronologically. Site Aktopraklik A is the most southern of the three and despite the fact that the inhabited period of this site is not clear, it seems to date to the Chalcolithic period. Site B is the uppermost part of the settlement, is located on a hill bordered by two streams and has layers of different periods (from Late Neolithic to Early Chalcolithic periods). Site C is on the edge of a brook and although it is dated to the late Neolithic period, there is a layer of the Chalcolithic period.62

3.2. The sectors of Aktopraklik Höyük.

61 Karul et Avci 2013: 45
62 Karul et Avci 2013: 46
3.2.1. Aktopraklik A.

The site of Aktopraklik A is the southernmost of the settlement’s sectors and it is surrounded by a ditch which is about 6 m. wide and has diameter 65 m. It is interesting that this ditch was constructed of mudbrick rubble from houses destroyed by fire; In addition, the lower part of the ditch is better preserved indicating the presence of wattle and daub structures in the region. Outside the ditch two adjoining walls about 30 m wide have been discovered; large stones constitute the southern faces of both of the walls, while the other surfaces were filled with smaller stones. (Fig.: 20) A notable fact is that the exterior sides of both the walls are so smooth, suggesting that they were worn due to contact with water for a long time. Scholars taking into account the high level of the Ulubat Lake, support the idea that this massive structure had not been constructed only for protection from flooding but they assume it could be a place for anchoring for small boats. (Fig.: 21) A remarkable feature is that between the walls molluscs belonging to saline marine environments have been unearthed; this discovery indicates connection with the sea, so the assumption that this structure was a refuge for small boats could be well proposed.63

3.2.2. Aktopraklik B.

The uppermost part of the settlement is the site B, which is surrounded by streams and is located on a slope. (Fig.: 22) Site B includes several layers from the late Neolithic to the early Chalcolithic period. The structures of this site are constituted of huts that are almost adjacent to each other, the walls were built by the wattle and daub technique and the foundations bases of huts were plastered with limestone (Fig.: 23). It is worth noting that each hut has functional installations, such as ovens, either in courtyards or in the rooms, implying domestic activities. A different layer that consists of rectangular mudbrick buildings with niches on the outside, lies underneath the layer of wattle and

63 Karul et Avci 2013:51-52
daub huts. In these structures domed oval ovens were found across the niches.\textsuperscript{64}

At the highest part of Site B a possible habitation area encircled by ditches was discovered. Although a hearth was found there is no evidence for buildings at the ditches, hence there is the suggestion that they were used for other functions. It is worth noting that there are also some pits related to the ditches that were used for burials. An interesting find from one of the pits is a small red slipped pot decorated with limestone bead inlays that accompanied the deceased.\textsuperscript{65} (Fig.: 24)

The pottery of Aktopraklik B consists of globular, short-necked vessels, with everted rims and of carinated jars, often they were decorated by deeply incised lines and small knobs along the belly (Fig.: 25). Other interesting discoveries from this site include some bone tools (Fig.: 26), figurines (Fig.: 27), sling missiles, horn handles, some limestone beads (Fig.: 28) and fragments of marble bracelets (Fig.: 29). In addition, obsidian bullet cores and a bone spoon are included among the remarkable recoveries from the site Aktopraklik B. The number of these discoveries refer to the Chalcolithic period of occupation of this site. It is remarkable that even though the final study of the site has not been concluded, there are some analogies with the Ilipinar site regarding the pottery.\textsuperscript{66}

3.2.3. Aktopraklik C.

The site C of Aktopraklik, is a settlement of the Late Neolithic and the Early Chalcolithic period; the earliest layer of this site is situated on a calcareous rock surface sloping from east to west (Fig.: 30). However, the ground area must have been flat, as the structures were constructed without the need of any platform (Fig.: 31). Despite the damage of the prehistoric architectural remains due to the Late Roman-Early Byzantine structures that were erected above them, their

\textsuperscript{64} Karul et Avci 2013: 48-49

\textsuperscript{65} Karul et Avci 2013: 49-50

\textsuperscript{66} Karul et Avci 2013: 50-51
reconstruction is possible. Hence, there were round wattle and daub huts near which there were domed ovens and some refuse pits. It is worth noting that under the floor of the huts there were some pits with human burials.67

Pottery from this site is separated in two phases. The first phase of pottery consists of monochrome, “S” profiled open shaped vessels, small bowls with everted rims, which are decorated in dark tones and occasionally with blackish and well-polished surfaces. The second phase includes pottery that continues the previous norms, but at the same time narrow necked pots appear. Also, the surface of the vases has tones of reddish brown and they are finished with a dull uneven burnish.68 (Fig.: 32).

According to the archaeological excavations, by the end of the Neolithic period the habitation moved from the Aktopraklik C to the Aktopraklik B. Hence, by this period the Aktopraklik C was used as a cemetery, the so-called Chalcolithic cemetery from which 25 burials have been unearthed (Fig.: 33). Despite the fact that during the Neolithic period settlers preferred to keep their deceased in their houses, by the Chalcolithic period a new place for them was created. From this cemetery some double burials have been unearthed. Scholars concluded that the earliest burial was intentionally preserved. Among burial gifts were pottery, bone tools, stone axes, beads and a marble bracelet. Most of the burials were very close to the surface of the ground and as a result agricultural activity has damaged them.69

The stable isotope analysis in Aktopraklik showed that the settlement was located in a very “rich” landscape. Therefore, its inhabitants were able to exploit freshwater and saltwater resources as well as exercise hunting and farming. However, it is remarkable that the diet of the Aktopraklik population was based on the use of domesticated plants and animals, a fact that contrasts with the

67 Karul et Avci 2013: 46
68 Karul et Avci 2013: 47
69 Karul et Avci 2013: 46-47
nutritional habits of the earlier population of the region, which was based more on marine and hunting and gathering resources.\textsuperscript{70}

### 3.3. Aquatic shell ornaments at Aktopraklik Höyük.

Archaeological research can provide many interesting results about the past of a region. It is worth noting that the science of archaeology is able to answer questions only if it is surrounded by well contexted and carefully excavated archaeological material. Although the most common finding at an archaeological excavation is pottery and it can inform us about many aspects of life in antiquity, every settlement has unique findings of material culture that provide us with distinct information. For instance, although ornaments have received less attention from researchers, they can offer much to archaeology because by studying them, many wider questions could be answered.

Northwestern Turkey is an important region in understanding the process of changes, especially during the prehistoric periods. There are some settlements such as the Fikirtepe, the Barcin Höyük, and the Kantilas, which have an abundance of prehistoric ornaments and especially beads that could offer answers to many questions about these cultures. Apart from the impressive variety of personal ornaments that exist among regions in this area, it is also remarkable that there is variety among the assemblages from the same region, which could be consisted of simple natural forms and complex, well-finished products.\textsuperscript{71}

From the settlement of Aktopraklik approximately 13,000 beads have been recovered. They are made of a variety of stones, such as serpentine, peridotite, apatite, meerschaum and marble. Also, some of these beads were made of shells from aquatic molluscs, such as Unio and Spondylus gaederopus (Fig.:34).\textsuperscript{72} Although, inhabitants from Aktopraklik were not exploiting marine

\textsuperscript{70} Bud at al: 860-867

\textsuperscript{71} Baysal 2016: 52

\textsuperscript{72} Baysal 2016: 54
resources for food consumption, according Stable isotope analysis\(^{73}\), they were using marine shells for ornamentation—an assumption that is supported after taking into consideration contacts with other coastal areas that were exploiting marine molluscs.\(^{74}\)

A confined assemblage of shell ornaments was recovered from the settlement of Aktopraklik. Perforated shells that could have been used as ornaments are the most common type and in majority they were recovered complete just with a hole. Also, complete marine shells were recovered, having a man-made bore through the umbo - these belong to a separate group of shell ornaments. In some cases around the bore signs of wear are detectable, which indicate the use of tools in order to pierce the shell.\(^{75}\) Moreover some examples of shell ornaments that are circular in shape and one special ornament shaped as a flower with four petals with holes drilled into each petal have been unearthed.\(^{76}\)

These two groups are made from marine shells such as the *Cerastoderma glaucum* (Fig.: 35) known colloquially as “lagoon cockle”. The natural environment of this species are the coasts of Europe and North Africa, including the Mediterranean and the Black Seas, the Caspian Lake and the low-salinity Baltic Sea.\(^{77}\) Hence, *Cerastoderma glaucum* could either have been imported at Aktopraklik from a possible exchange network, or the Aktopraklik inhabitants could have collected them from their close aquatic sources.

Another interesting group of marine shells that was found at the site of Aktopraklik is the so-called *Dentalium Shells*. This species has been recovered cut into large segments - a fact that indicates process of raw material. The segments were either in small or larger forms and in many cases they were very worn.\(^{78}\) Although *Dentalium Shells* were discovered in segments, there is

\(^{73}\) Bud at al: 860-867

\(^{74}\) Baysal 2016: 54

\(^{75}\) Baysal 2016: 55

\(^{76}\) Özdoğan 2016: 146

\(^{77}\) Russell et Petersen 1973: 223-232

\(^{78}\) Baysal 2016: 55
no other evidence, such as specific tools for manufacture, which could indicate a handcrafted activity. Hence, it is not impossible, that segments of this shell were imported ready for use as ornaments. *Dentalium Shells* belong to the family of *Dentaliidae* and they are marine scaphopod molluscs, known in colloquial as *tuskshells* or *tooth shells* (fig.: 36). Their natural environment is the sediment of the ocean floor or river and lake beds.\(^{79}\) As the settlement of Aktopraklik was so close to the Lake Ulubat it is possible that people gathered them although, there is not enough evidence say where inhabitants were gathering shells for the purpose of manufacturing ornaments.

People encountered species of *Spondylus gaederopus* through the extensive use of marine molluscs. This special species brought changes in the use of marine shells during the Late Neolithic period. What is so special about this mollusc is that its shell is so hard that many times it resembles stone. Hence, people used to create beads from *Spondylus gaederopus*, in large barrel and cylinder shape, following the methods they were using for hard materials such as stone.\(^{80}\) *Spondylus gaederopus*, known also as *thorny or spiny oyster* (fig.:37), belongs to bivalve molluscs; this species prefer warm waters and rocky or coral environment so they live in the Mediterranean (especially Aegean and the Eastern part of the Mediterranean) and Adriatic Sea in a depth of 6 to 30 meters.\(^{81}\)

Considering aquatic shell ornaments, inhabitants from the settlement of Aktopraklik did not stop looking for other species that could provide them materials for easily processed ornaments. Therefore, during the later Neolithic and the earlier Chalcolithic periods, freshwater shells came into the foreground and *Unio shell* is considered the most widespread of these species. At Aktopraklik shiny and perforated ornaments made of *Unio shells* were recovered, some of which have one or more bores. This shell is considered a


\(^{80}\) Baysal 2016: 55

\(^{81}\) Gardelková-Vrtelová et Golej, 2013: 265–277
species from which plenty of ornaments can be produced, thanks to its large dimensions and to its naturally shiny surface, which make it visually arresting. Unio shells are medium-sized aquatic bivalve molluscs that belong to the family of Unionidae (Fig.: 38). They are fresh-water molluscs and they live in lakes. Therefore, it was possible for the inhabitants from Aktopraklik to procure these shells from Ulubat Lake, which was very close to them.

Aktopraklik could be considered a crossroad for three important regions, the Black Sea, the Aegean and the Anatolia region. This settlement is situated at a very prosperous area close to two springs and surrounded by mountains. But, the most important feature of Aktopraklik is its proximity with the Lake Ulubat. Although, according to stable isotope analysis, inhabitants from Aktopraklik did not consume seafood, the discovered assemblages of processed shells from this settlement indicate that people probably gathered molluscs only for ornaments’ production and not for consumption. Despite the fact that the majority of ornaments in Aktopraklik Höyük are made of stone, marble, limestone and other materials, there is a confined assemblage of beads made of shells.

According to the director of the excavation, Necmi Karul, most buildings of the settlement were huts and there were some constructions either for protection from the water or for protecting small boats. Although, there is no reference that could characterize any building as workshop, it is possible that people manufactured ornaments at their courtyards or in their huts. Moreover, the tools that were recovered are for hunting or farming. Nevertheless, it is wise not to reject the idea that these tools could have been used for other activities - or that part of them could have been used for the production of ornaments. On one

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82 Baysal 2016: 55
83 The IUCN Red List of Threatened Species, 2017: http://www.iucnredlist.org/details/22740/0
84 Karul et Avci 2013: 45-68
85 Bud et al: 860-867
86 Özdoğan 2016: 145
87 Bud et al: 860-867
hand, since there is not any evidence for a specific building where people were manufacturing ornaments, or for specific tools, it is possible that there was not any expert craftsman for the production of shell ornaments. Therefore, any woman or man who was able to use tools for other activities, could have manufactured these objects. On the other hand, the existence of some special ornaments, made of shell, stone, marble, limestone or other similar items such as white disc beads, could imply that there were some craftsmen who were able to make these ornaments. Hence, the same craftsmen could manufacture shell ornaments.

The proximity to the Ulubat Lake could indicate the source from which prehistoric inhabitants collected some shells’ species. However, due to the lack of evidence about ornament production in the settlement of Aktopraklik, it could be said that people may have traded freshwater shells in order to acquire processed ornaments made of shells. Taking into consideration that some of the recovered shell artefacts resemble assemblages from other settlements, combined by the indication for the participation in wider trade networks (for instance the discovered blue apatite beads) and the increasing production of specific artefacts, such as white disc beads, we could not reject the possibility of trade relations. An interesting case is the marble bracelets from burials at Aktopraklik Höyük, that have been found on the wrists of the deceased, and resemble those made of Spondylus gaederopus. In southeastern Europe, where people were using bracelets of Spondylus gaederopus as symbols of prestige, it is not impossible that marble bracelets were meant to imitate those of Spondylus gaederopus. Alternatively, since marble bracelets are among the most characteristic artefacts of the Neolithic period in Anatolia, it is possible that the opposite was happening.

With regard to the use of shell ornaments, it is difficult to explain their specific use in the settlement of Aktopraklik, due to the prehistoric period to which they belong and the absence of any clear archaeological context. However, we could

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88 Baysal 2016: 55
89 Özdoğan 2016: 147-148
assume their possible use; some shell ornaments with one hole could have been used as pendants, others with multiple perforations, could be embedded in other items or even attached to clothes as decorative accessories. Furthermore, beads made of shells could have been used as part of necklaces; even some beads that seem to have been burnt could have been used to compose a necklace with white beads, for a more colourful result. However, taking into account that at the settlement of Aktopraklik apart from shell beads, beads made of a variety of stones. e.g., ivory and bones, were also recovered, materials may have been combined for a more outstanding effect.\textsuperscript{90} It is worth noting that in many settlements where shells were used for ornaments, although they were edible, inhabitants were not consuming them as food, so attributing them a different value.\textsuperscript{91}

Moreover, an interesting issue is who was possessing these ornaments and if they had a specific meaning for their owner or owners. Unfortunately, there is no relevant literature about the usual context of discovery of shell ornaments or even stone, ivory and bone ornaments. Hence, it is impossible to conclude if people who acquire these were women or men in gender, if they were wearing these ornaments during specific occasions or as religious symbols or even as expression of socioeconomic relations and status.\textsuperscript{92} However, taking into account ethnographic parallels we could assume that both genders could have been wearing ornaments. For instance, in some contemporary tribes some women wore the Cowrie shell in order to prevent sterility. At the same time there are tribes where men wear shell ornaments in order to indicate that they had a certain status among others in their community.\textsuperscript{93} Taking into account that in the Aegean and the Balkans shell ornaments had trade value, it is possible for the same to have happened in Anatolia. Therefore, who possessed these ornaments and the symbolization of them could not be reliably interpreted and

\textsuperscript{90} Baysal 2016: 55
\textsuperscript{91} Özdoğan 2016: 148
\textsuperscript{92} Cakırlar 2014: 5005-5010
\textsuperscript{93} Claassen 1998: 203-212
only parallel examples from contemporary tribes could provide some possible theories, which cannot be proven.

3.4 Concluding remarks.

The settlement of Aktopraklik Höyük is located at a strategic position south of the Marmara Sea, on the eastern shore of the Lake Ulubat and it is surrounded by a forested and fertile landscape near two springs. The location of Aktopraklik is interesting because its inhabitants during the Neolithic and the Chalcolithic periods had alternative solutions either for their nutrition or trade and raw material procurement. Therefore, the people at Aktopraklik could manufacture shell ornaments, even though they were not using molluscs for food, a habit that is common in many settlements that produced shell ornaments. There is also the assumption that shell ornaments from Aktopraklik Höyük may have been manufactured in situ or people from the site traded freshwater shells in order to acquire ready-made shell ornaments.

By studying shell ornaments new questions arise. Who was manufacturing these ornaments, during which period of the year they were manufactured, who was wearing them and what did they symbolize? Due to the prehistoric period at which they belong and due to deficiency of information it is not possible to give a reliable answer. However, taking into account ethnography and experimental archaeology we could reach some conclusions. Ethnography and experimental archaeology could help us to develop theories about the manufacturing method of shell ornaments and their possible symbolism.
4. BARCIN HÖYÜK

4.1. The site of Barcin Höyük in Anatolia.

An important region, which could be characterized as the “border” between Southwest Asia and Europe, is Western Anatolia. According to the results of intensive archaeological research, Western Anatolia and especially the Northern part of it, indicate the process of Neolithization in the area. This region has played an important role for the exchanges of goods, ideas, and even people among Greece, Black Sea and southern Europe.

The region around the Sea of Marmara is characterized as the “contact zone” between Asia and Europe. The first systematic excavation was conducted at the site of Ilipinar, which located at the west of Iznik Lake. According to scholars the site of Ilipinar was founded 8,000 years ago and had a developed farming economy. Mentese is another noteworthy settlement of the region, which also has been excavated. This settlement is situated in the plain of Yenisehir and according to researchers it must be occupied by the middle of the 7th millennium B.C. At the same time in the southern Balkans the first farming settlements had appeared. (Fig.: 39)

The site of Barcin Höyük has been discovered by James Mellaart in the early 1950s and David French has described it as one of the few Neolithic settlements in the area. It is interesting to note that during the surveys of David French in the region the site of Barcin Höyük was known as Yenisehir II. The “Netherlands Institute for the Near East” and the “Netherlands Institute in Turkey” since 2005 have conducted an archaeological research program including the settlement of Yenisehir II, which was renamed Barcin Höyük. Due

94 Cakirlar 2015: 117
95 Baysal 2016: 50
96 Roodenberg et Roodenberg 2008: 53
97 Gerritsen et Özbal 2009: 457
98 Roodenberg et Roodenberg 2008: 53
to the intensive agricultural activity, the site lost its uppermost levels. The excavation is still in progress with short breaks during the winter.\textsuperscript{99} (Fig.:40)

Researchers have selected this settlement for excavation because of its apparent importance for the beginning of farming life in the region and its role in the expansion of farming from Central Anatolia to Northwest Anatolia and to Southeastern Europe.\textsuperscript{100} According to the current evidence, Barcin Höyük has been inhabited around 6600 BC and the habitation has lasted roughly six centuries, representing one of the earliest occupation phases of farming communities in northwest Anatolia.\textsuperscript{101}

The site of Barcin Höyük is located in the Eastern Marmara region of Bursa, situated in the Plain of Yenisehir to the south of the Iznik Lake and to the northwest of the Uludag Mountain range. Barcin Höyük is about 100km eastern from the settlement of Aktopraklik Höyük.\textsuperscript{102} (Fig.: 41) The settlement consists of two low mounds which are linked by a saddle and it covers an area of about 20,000m\textsuperscript{2}, the eastern mound rises about 4m. above the plain. Areas suitable for arable farming, aquatic sources and highland areas for pastoralism must have been within walking distance from the prehistoric settlement.\textsuperscript{103} According to the stratigraphy and pottery material, the settlement of Barcin Höyük is represented by five phases of the Neolithic period, the latest is “Phase VIa” and the earliest is “Phase VIe”.\textsuperscript{104}

It is good to note that Barcin Höyük was an issue for Environmental shifts. This site has a phase of arid conditions and erosion episodes, which lasted until the beginning of the Bronze Age. Although followed by a period of more humid conditions and rising lake levels, the above-mentioned phase lasted for two

\textsuperscript{99} Gerritsen et al. 2010: 197
\textsuperscript{100} Gerritsen 2008: 411
\textsuperscript{101} Gerritsen et al. 2014: 10
\textsuperscript{102} Gerritsen 2008: 411
\textsuperscript{103} Gerritsen 2010: 197
\textsuperscript{104} Baysal 2014: 1
millennia and while arid conditions and decreased lake levels gradually reoccurred. Moreover, it is noted that environmental conditions of Barcin Höyük during Neolithic Age resemble that of the site of Çatalhöyük at the Central Anatolia. This indicates that the population of northwestern Anatolia preferred environmental conditions similar to those of Central Anatolia, a tendency that changed in the later years; at the same time there are some slight differences seen in the environmental conditions of the sites of that periods.\(^\text{105}\)

Close the settlement of Barcin Höyük there are other settlements which have been founded near aquatic sources. The Late Neolithic Mentese in the Yenisehir Basin, the Early Chalcolithic İlıpınar near Lake Iznik and the Late Neolithic/Early Chalcolithic Aktopraklık near Lake Ulubat, are the most known of them (Fig.: 42). Although Barcin Höyük was founded on a high point in a generally wet environment, it has many similarities with other settlements of Central Anatolia, such as Çatalhöyük,\(^\text{106}\) while the other sites (Mentese, İlıpınar, and Aktopraklık) have some differences in their topography.\(^\text{107}\)

\subsection*{4.2. The phases of Barcin Höyük.}

The site of Barcin Höyük is situated several kilometers west of the town of Yenişehir and the settlement was established on two mounds near a marsh or retreating lake. The occupation of the central part of the site probably began in the Neolithic period and lasted until the Byzantine period, as the remains of a Byzantine cemetery at the site indicate.\(^\text{108}\) Regarding the Neolithic period of Barcin Höyük, according the \(^{14}\)C dates, it started around cal. 6,600/6,500 B.C. and lasted until cal. 6,000 B.C.; scholars have divided the Neolithic period of the site into five phases (the latest is phase \textit{Vla} and the earliest is phase \textit{Vle}).\(^\text{109}\) (Fig.: 43)

\begin{footnotesize}
\begin{enumerate}
\item \(^{\text{105}}\) Groenhuijzen et al. 2015: 51
\item \(^{\text{106}}\) Groenhuijzen et al. 2015: 59
\item \(^{\text{107}}\) Groenhuijzen et al. 2015: 60
\item \(^{\text{108}}\) Gerritsen et Özbai 2016: 199-200
\item \(^{\text{109}}\) Baysal 2014: 1
\end{enumerate}
\end{footnotesize}
According to the ceramics the later phases of the Neolithic occupation of Barcin Höyük (phases VIc, VIb and VIa) have parallels to the so-called Archaic and Classical Fikirtepe culture. As it is not easy to compare the earliest phases (Vle, Vld) with some other settlement’s periods, they are categorized as the so-called Pre- Fikirtepe culture.\footnote{Gerritsen et Özbal 2016: 200} It is worth noting that phases VIc, VIb and VIa from Barcin Höyük could relate in time with the habitation at Aktopraklık C and probably the older part of Aktopraklık B. While an assemblage of pottery (calcite tempered pottery) from the phase Vld probably corresponds in form with a pottery assemblage of the nearby Menteşe, which belongs to the lower levels of the so-called middle occupation levels and in the lower occupation levels.\footnote{Gerritsen et Özbal 2016: 200-201} (Fig.: 44)

\subsection*{4.3. The “Pre- Fikirtepe” phases of Barcin Höyük.}

Settlements in the eastern Marmara Region seem to have been constructed through complex social values and spatially well-defined social practices. This also could be ascertained at the Neolithic settlement of Barcin Höyük and especially from one of the latest phases the Vld phase. The aforementioned phase is divided into three shorter phases (Vld1, Vld2, Vld3) according to structures. The plan from phase Vld1 demonstrates an intertemporal, highly organized layout.\footnote{Gerritsen et Özbal 2016: 207}

From phase Vld1 onwards walls were found, open spaces enclosed by some of the walls, as well as groups of houses and postholes. From phase Vld1 to phase Vld2 the overall layout of the settlement has changed a little. In phase Vld3 there are some not so important changes.\footnote{Gerritsen et Özbal 2016: 201-204} According to the available evidence it is possible that the organization of the space was the same even during the phase Vle.\footnote{Gerritsen et Özbal 2016: 207}
4.4. **Shell ornaments from Barcin Höyük.**

The archaeological research of a site could provide us with many and interesting results. The excavations from Barcin Höyük has enriched the archaeological research regarding the importance of the northwestern Anatolia as well as the amount and the variety of ornaments that could be unearthed from a site.

The Neolithic and Chalcolithic phases of Barcin Höyük are extended on both the eastern and western mounds of the settlement. According to the stratigraphy and pottery, the Neolithic phases include five phases (Vla latest to Vle earliest phases, 6.600/6.500-6.000 cal. B.C. According to the bead assemblages from the site, Barcin Höyük could have connections with wider exchanging networks, while some ornaments seem to be related to traditions from Anatolia and Near Eastern regions and practices that were used in the Aegean and Balkan areas.115

Ornaments and especially beads from Barcin Höyük, are of specific interest not only concerning their materials but also their characteristics. The largest group of beads at Barcin Höyük consists of *blue beads* (made of stone or not) and constitute 41% of all ornaments. *Shell beads* constitute 31% of all ornaments, a significant amount while other stone ornaments consist of 24%; bone and clay ornaments are only of 2%. Regarding their shapes there are disc-shaped beads flat and round-shaped in a variety of widths and lengths.116 (Fig.: 45)

The large amount of shell beads assemblage from Barcin Höyük (31% of all ornaments) consists of marine and freshwater species, including *Dentalium sp.*, *Columbella, Unio sp.*, *Glycymeris* and *Spondylus sp.*, although these species were not used frequently. Beads made of Dentalium are shaped after being sliced into short or long forms. Columbella was drilled in order to shape beads, whereas other species were reshaped and modified into beads. Among these shapes there are also large conical and biconical beads, disc-shaped, round

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115 Baysal 2014: 1

116 Özdoğan 2016: 144
and oval beads, while there is no absence of flat and round forms of beads.\textsuperscript{117} (Fig.: 46)

Beads made of Dentalium sp. constitute the largest group of shell ornaments (60\%) and they belong to the group of shells largely used in their natural form, the only modification being that they were cut into large or short forms. A unique example of Columbella shell belongs in the same category. Both species belong to the marine shell species although, it is not certain that they were gathered from the sea, because there is a suggestion that some of them could have been used as fossils. The habit of fossil collection was usual in settlements of Central Anatolia and therefore it would be expected to be found in North-Western Anatolia.\textsuperscript{118}

Regarding ornaments made of Bivalvia shells, the most common cases are those from freshwater shells such as Unio sp. Ornaments from these species are pendants and especially flat-ended ones. Due to the fragile nature of these species, there are only a few pieces of them. More specifically, at the site of Barcin Höyük, there are only nine definite examples of pendants made of Unio sp. and forty broken examples. The broken pieces are pierced and they may have the same pendant shape or a similar one between them. This form of shell ornaments belongs to the man-modified ones. The main type of shell pendant was based on the modification of the surface of the shell in order to shape a curved side and to pierce the surface from the internal side; this partly relied on the natural shape of the lip of the shell’s valvia. Whereas the secondary type of pendant has a circular shape and its surface was modified in order to remove the original surface to expose mother of pearl as the main visible surface for a more outstanding result.\textsuperscript{119}

Among the shell ornament assemblages from Barcin Höyük belong beads made of harder shells such as Spondylus sp.. Although, there are not many examples the larger pieces have been found in close proximity to each other.

\textsuperscript{117} Özdoğan 2016: 144-145

\textsuperscript{118} Baysal 2014: 6-7

\textsuperscript{119} Baysal 2014: 7
The examples of disc beads made of Spondylus shells could belong to an ornament category that uses white materials for the production of beads and annulets.\textsuperscript{120} (Fig.: 47) During the Neolithic and Chalcolithic periods in the Aegean, western Anatolia and the Balkans white raw materials for the production of annulets and beads were being exploited. Among the materials used were also shells such as Spondylus and Glycymeris.\textsuperscript{121}

Although, there are no publications regarding where the abovementioned ornaments have been found, some scholars have referred to the great importance of beads at the burials. During the Neolithic period (mid-7\textsuperscript{th} millennium) the intramural burials were a tradition for the region of Anatolia, at the same time that grave goods increased and among the votives some beads have been found. Hence, it is not impossible that beads were gifts for the deceased.\textsuperscript{122}

\textsuperscript{120} Baysal 2014: 8

\textsuperscript{121} Ifantidis 2011: 123-137

\textsuperscript{122} Özdoğan 2016: 144
5. EXCHANGE NETWORKS.


“Trade” during prehistoric periods is an ambivalent issue. The combination of archaeological information with ethnographic evidence is perhaps the best way to address issues of exchange during prehistoric times.\(^{123}\) Initially, the definition of terms “trade” and “exchange” is needed in order to understand aspects of their use during prehistory.

The meaning of “trade”, as it is known today, was probably absent in the prehistoric communities; therefore, it would be better to adopt a broader definition regarding this term. By the term “trade” we refer to a reciprocal exchange mechanism and the transportation of goods among sites. The most important is that goods were transported from a distant settlement to others by any way.\(^{124}\) Regarding that of “exchange”, when it comes to material goods it means almost the same as the term “trade”. Nevertheless, in many circumstances it refers to any kind of interpersonal contact, involving either material or non-material goods that were exchanged, including the exchange of information. In this context, the term “exchange” acquires a broader meaning.\(^{125}\)

It is important to note that goods were exchanged among communities in a variety of ways. Distribution of products is not only the result of trade or exchange, there are also other ways of transporting goods. For instance, in some communities, goods were distributed in a monetary context, such as gifts, dowry or even as proof of blood-price. Moreover, transportation of goods was practised under specific organised activities such as colonization or rivalries. Also, goods that represent technological expertise and ideas could be

\(^{123}\) Dogan, Michailidou 2008: 17

\(^{124}\) Renfrew 1977, 72

\(^{125}\) Dogan, Michailidou 2008: 19
distributed from one settlement to another with the eventual adoption of ideas and the imitation of objects.\textsuperscript{126}

Luxury goods and necessities must be separated regarding their exchange, because although the first group is distributed between distant settlements, the second group is transported among local communities. There is a difference between these two groups because they are distributed in different ways. On one hand, staples are transported in a familiar region and they are based on ordinary conditions, while luxury goods as they are transported to distant regions need security and accommodation for the people who transport them. Moreover, the long-distance exchanges need a more collective and organized background. Long-distance exchanges are relating to the consumption of rare, luxurious, exotic items, which in most cases are used for the production of ornaments.\textsuperscript{127}

We should have in mind that there is a variety of interpretation dealing with the reciprocity of exchanges, because a return of goods could range from knowledge and skills to services. Among the aforementioned examples, there are some other factors related to the exchanges of exotic goods. The origin of a raw material from a distant area and the absence of the specific material from a local settlement could contribute to the creation of exchange relationships. Additionally, the production of more artefacts than could be consumed in the local site could be a reason for exchanges.\textsuperscript{128}

It is worth noting that the gathering of inhabitants of a region on special occasions, such as rituals, is a great chance for exchanges of material and non-material products. People with developed skills and craftsmen are an important example of an exchange with no trace in the archaeological record. People who have special knowledge could provide specific products in a community and subsequently the community could trade or exchange these products.\textsuperscript{129}

\textsuperscript{126} Dogan, Michailidou 2008: 22
\textsuperscript{127} Dogan, Michailidou 2008: 23
\textsuperscript{128} Dogan, Michailidou 2008: 23-24
\textsuperscript{129} Dogan, Michailidou 2008: 25
5.2. Exchanges in Anatolia during late Neolithic and early Chalcolithic periods.

Northwestern Turkey could be described as a crucial area during prehistoric times for a great number of reasons. This area, and especially the Asian side of the Marmara region has been intensively researched archaeologically for Neolithic and Chalcolithic periods. On the one hand, Northwestern Turkey was an area through which an abundance of ideas, materials, and even people have been transferred to Greece, the Balkans and through these areas to Europe. On the other hand, the Asian side of the Marmara region is of great importance due to the evidence about the process of Neolithization that it provides us.\(^{130}\)

Surveys indicate that there were some exchange networks in Northwestern Turkey, Anatolia and beyond, during the late Neolithic and early Chalcolithic periods. It is assumed that some Neolithic communities of Northwestern Turkey belong to the same “kind of culture”, which means they had similarities possibly due to contact with each other.\(^{131}\) A significant example is found in regions such as Fikirtepe, Pendik, Ilipinar, Barcin Höyük, Mentese and Aktopraklik Höyük, which belonged to the Fikirtepe culture.\(^{132}\) These Neolithic settlements seem to have common traces regarding their pottery and their planning as communities. However, there were some differences regarding the architecture and nutritional habits of their population.\(^{133}\)

In reference to exchange networks of ornaments in Anatolia, although there is a great variety of ornaments from region to region, within regions and even within assemblages, there is a relation to wider trends.\(^{134}\) The most detailed studied ornaments’ assemblage is from Barcin Höyük, a 7th-millennium-B.C. settlement. This assemblage consists of more than 700 beads made of a variety

\(^{130}\) Baysal 2016: 50

\(^{131}\) Karul et Avci 2011:6

\(^{132}\) Özdoğan 1997

\(^{133}\) Karul et Avci 2011: 6-7

\(^{134}\) Baysal 2016: 53
of materials and forms, such as marine shells and many kinds of stones. It is remarkable that inhabitants of Barcin Höyük used time and again white aquatic shells for the manufacture of beads and pendants.\textsuperscript{135}

In addition to beads, bracelets were notable as a type of ornament; most of them were made of white marble, and found at settlements of Northwestern Turkey, such as Orman Fidanlığı\textsuperscript{136} and Kanlıtaş. Bracelets’ manufacture and trade must have been part of wide exchange networks that extended through the Aegean and southeastern Balkans. Moreover, it must be noted that even broken bracelets have been reused, a fact that lead us to the assumption that there were some “value systems” that relied on social attributes and not only on economy.\textsuperscript{137}

At the end of Neolithic and during the Chalcolithic period in Northwestern Anatolia the dominant trends in ornamentation relied on the available raw materials, therefore, the frequent manufacture of certain artefacts from specific materials was also based on the availability of raw materials. The expertise on the manufacture of specific artefacts makes a match with wider systems of shared ornamentation practices and aesthetic values. Regarding shell ornaments we could assume that they appertain to a wide trading network, which includes the Aegean area, Western and Northwestern Turkey, and parts of the Balkans.\textsuperscript{138}

\textbf{5.3. Exchange networks of shell ornaments in Aktopraklik Höyük.}

From the site of \textit{Aktopraklik Höyük} almost 13.000 beads of various materials have been recovered, in some cases modified in a specific way that belong to the late Neolithic and early Chalcolithic periods. This assemblage indicates participation in wider exchange networks and similarity to artefacts from other assemblages. For instance, the large-shaped shell beads from \textit{Aktopraklik Höyük}...
Höyük have parallels only at Barcin Höyük, which is a settlement from which ornaments and especially beads have been extensively studied.\textsuperscript{139}

Concerning the marble bracelets from Aktopraklik Höyük, we could assume that they were imitating bracelets made of Spondylus gaederopus, which were extensively known; these bracelets must have had a great value not only economic but also social, during Neolithic and Chalcolithic periods. However, we should not ignore that rings of Spondylus gaederopus appeared from the end of the Neolithic and traveled through the Balkans later. Hence, it is not impossible that rings of marine shells were imitations of marble bracelets. Inhabitants of Northwestern Turkey may have met this special shell through their contact with the Balkans and the Aegean. One possible settlement where they may have met Spondylus gaederopus is Gökçeada-Uğurlu, a settlement between the Aegean and Eastern Mediterranean. While it was difficult for inhabitants of Northwestern Turkey to acquire these special ornaments made of Spondylus gaederopus, due to the distance from the production centers, we could assume they used materials they were disposing in order to imitate the abovementioned items.\textsuperscript{140}

Regarding the number of beads that have been found at Aktopraklik, scholars claim that they had a special use. Simultaneously, their use indicates complex networks of communication and probable exchanges with other sites. Whereas we should not omit to mention that the amount of beads from Aktopraklik Höyük could imply a possible early craft specialization.\textsuperscript{141}

According to the repeated appearance of shell ornaments in the interior of Central Anatolia, it is probable there were connections through exchange networks, despite the poor evidence for stylized forms of ornaments. Furthermore, it is worth noting that during the end of the 7\textsuperscript{th} millennium (Late Neolithic – 6400 B.C.) the styles of beads were moving towards larger items and emphasis of white colour. What is more, shell ornaments continued to be

\textsuperscript{139} Baysal 2016: 56

\textsuperscript{140} Özdoğan 2016: 147-148

\textsuperscript{141} Baysal 2016: 50
preferred in Central Anatolia and they were transported from site to site. The only change involves the species of shells, as the edible large bivalves such as *Spondylus* and *Glycymeris* are now preferred. Also, at the same time the distribution of raw materials and especially the white marble was intensified and probably was linked with the circulation of other white raw materials including shells.\(^{142}\)

Beads made from freshwater *Unio* shells are usually found not only at Aktopraklik Höyük but also at other sites such as *Barcin Höyük, Canhasan I*, and *Suluin*. This species is directly available as there are water sources around these areas. Hence due to the water sources we could assume that shell ornaments in “fin” shapes could have been produced at every settlement separately.\(^{143}\)

Regarding shells from Aktopraklik although there is no evidence for use of edible molluscs, marine shells were used as ornaments in a variety of ways. Concerning the artefacts from the abovementioned settlement, there is resemblance among some assemblages from other regions, such as some shell beads or even white rings from Barcin Höyük. Beads and rings made of *Spondylus* predate an increase in manufacture of shell artefacts and their distribution around the Aegean, the Balkans and western Anatolia during the Chalcolithic period.\(^{144}\)

It is worth noting that the enduring use of marine shells in the production of ornaments could imply their great value, which was not lost during the years. At the same time their constant use could suggest a deep-rooted circulation of these ornaments around the Mediterranean. Beads at Anatolia constitute a variety regarding not only spatial but also chronological factors.\(^{145}\) According to the existing research, beads from Aktopraklik Höyük belong to wider trends of

\(^{142}\) Baysal 2016: 52-53

\(^{143}\) Baysal 2016: 57

\(^{144}\) Baysal 2016: 56

\(^{145}\) Özdoğan 2016: 148
later Neolithic and Chalcolithic periods while there are examples of the same beads at a number of other settlements at Central and northwestern Anatolia.  

5.4. Exchange networks of shell ornaments in Barcin Höyük.

At the settlement of Barcin Höyük more than 700 beads have been recovered of which stone and shell beads are dominant.  

It is remarkable that most bead assemblages from this settlement show greater affinity to similar artefacts from western sites than to the practices of Central and southeastern Anatolia. The forms of shell ornaments from Barcin Höyük show proximity to the Balkans and Aegean and the most common example is the use of Spondylus sp. in the production of beads and rings.  

At the same time at Barcin Höyük there are ornaments that show similarities with ornaments' traditions from Anatolia and Near East. For instance, the use of Dentalium in both forms (sliced and non-modified) show proximity with the abovementioned regions. The fact that there are similarities with traditions not only from the East but also from the West indicates the participation of the settlement in wider material culture practices. This indicates either exchanges in wider exchange networks or the movement of special techniques.  

It is interesting that large bead forms made of shells from Barcin Höyük find parallels only at Aktopraklik Höyük, which indicates exchanging and/or producing activity between these settlements. Both settlements are near aquatic sources – Aktopraklik is near Lake Ulubat and Barcin Höyük is near Iznik Lake, which means that inhabitants from those two settlements could collect shells from nearby lakes and process them.  

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146 Baysal 2016: 58  
147 Baysal 2016: 53  
148 Baysal 2014: 9  
149 Baysal 2014: 8-9  
150 Baysal 2016: 56  
151 Karul et Avci 2013: 45  
152 Gerritsen 2008: 411
Moreover, it is worth mentioning that at both Barcin Höyük and at Aktopraklik there are some shell ornaments made of aquatic shells which likely were harvested and processed locally, without any exchange process. These shell ornaments are made of *Unio* shells, a species that was available at each lake.\textsuperscript{153}

Therefore, Aktopraklik Höyük and Barcin Höyük are two regions with strategic positions. Both settlements are near aquatic sources. In many cases, shell ornaments from both settlements could belong to wider exchange networks or they could be produced within the sites. The first case is supported by the fact that there are similarities with standardized typologies of shell ornaments either from inland sites or from the Balkans and the Aegean.\textsuperscript{154} The assumption for local production could be deduced from the fact that there are shell ornaments made from local species and no evidence for mass consumption but just for residential.\textsuperscript{155}

\textsuperscript{153} Baysal 2016: 57

\textsuperscript{154} Baysal 2016: 52

\textsuperscript{155} Baysal 2016: 50
Evidence of mental and symbolic behavior was the motive for people of prehistoric periods to deal with issues of social reproduction; a good instance of this process is the production of ornaments. Whether they used these to embellish their body or not, the fact is that during the prehistoric period there was production of adornments. The use of every mode of decoration (use of specific objects as ornaments, body painting or body marking) is relevant to special occasions, ceremonies, as well as with matters of individual and social identity, age, gender and sexual availability, group affiliation and wealth. Therefore, we could assume the decorated human body becomes the mean through which everyone could express his socially and religiously prescribed role and the decorative items could be the symbols of everyone’s role.156

The study of ornaments made of shells is interesting regarding their specific material. The use of shells as ornaments pose interesting problems, such as questions about their collection or/and their exchange and the use of shells in people’s nutrition or not. It is not impossible shell ornaments were appreciated due their rare provenance (exotic material) as well as the diversity of its appearance (shape, colour etc.). Moreover, it is remarkable that shell ornaments were used even from the Upper Palaeolithic period.157

Although, there is not adequate evidence regarding to the exact use of shell artefacts, they could have been used as adornments to decorate bodies or clothes.158 Furthermore, we could abstract some information for their possible use from the decoration of contemporaneous figurines as they depict specific decorative elements (body painting, tattoos, ornaments). Also, ethnographic parallels provide us with some possible suggestions regarding to the use and probable symbolic meaning of shell ornaments.159

156 Κυπαρίσση-Αποστολίκα 2001: 155
157 Baysal 2016: 52-53
158 Βεροπουλίδου 2011: 84
159 Triantaphyllou, Papadatos & Mina 2016: ix
Northwestern Anatolia was among the regions where ornamentation practices had undergone a period of important changes during the Late Neolithic and Early Chalcolithic period (mid-7th to mid-6th millennia B.C). Aktopraklik Höyük and Barcin Höyük, where important assemblages from ornaments of a variety of materials have been found, are considered as crossroad regions among Anatolia, the Black Sea and Eastern Mediterranean. From the mid-7th until the mid-6th millennia B.C. shell ornaments at these sites seem to concern the locals increasingly, possibly due to the different species which had been imported or collected. At the same time, ornaments from Aktopraklik Barcin Höyük find parallels at a number of sites at Central and Western / Northwestern Anatolia.160

Molluscs that were used for the production of ornaments at Aktopraklik Höyük are mostly aquatic shells. It is possible to collect them from the nearby Ulubat Lake. However, the possibility for trading some shell species for the production of ornaments or the ornaments themselves, is not rejected because there are some indications regarding to exchanges. For instance, there are a great number of blue apatite beads and white disc beads, which were part of exchange networks.161 Moreover, many white marble rings / bracelets which could imitate equivalent ornaments made of Spondylus from Balkans and Aegean have been unearthed at this site.162 Consequently, there are two Views concerning the existence of shell ornaments at the settlement of Aktopraklik Höyük, on one hand the collection of molluscs from nearby water sources and their use in situ and on the other hand the exchange of shells or shell ornaments with other regions.

In the Plain of Yenisehir and at the south of the Iznik Lake, there is the settlement of Barcin Höyük. From this site have been discovered many ornaments and especially beads, their materials and their characteristics show specific interest. Ornaments made of shells are the second greatest group of

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160 Baysal 2016: 50-51
161 Baysal 2016: 55
162 Özdoğan 2016: 147-148
beads at the site after the assemblage with stone blue beads.\textsuperscript{163} Ornaments from Barcin Höyük have similarities to others from Anatolia, the Aegean and Balkans.\textsuperscript{164} Also, as already mentioned, some shell ornaments from Barcin Höyük are similar to Aktopракlik.

Barcin Höyük is situated near the Iznik Lake, which means that inhabitants could collect some molluscs from the lake and they could connect with other settlements through the lake. Shells for the production of ornaments at the abovementioned site was mostly from aquatic sources. Hence, shell ornaments from Barcin Höyük could be either made in situ or imported through exchange networks.\textsuperscript{165} At this settlement have been found ornaments made of Spondylus shells, which belong to a category that uses white materials for the production of ornaments. The largest assemblage of ornaments from the site are non-local blue beads.\textsuperscript{166} Hence, it is possible these ornaments to have been imported from other regions as exchanging goods.

From the study of the abovementioned settlements we can make some additional observations. Some of the ornaments from Aktopракlik Höyük and Barcin Höyük, have been made of the same species of shells. At both settlements there are ornaments made of Dentalium Shells, Unio shells and Spondylus. Ornaments made of Dentalium, could have been produced in situ as near the two settlements there are lakes from which inhabitants could have collected shells. Unio shells are considered to be the most common species of Bivalvia used for the production of ornaments.\textsuperscript{167} It is important to note that there are some semi-processed ornaments, which indicate that someone tried to produce a hole, or to cut the shells. Also, there are some tools that could have been used for the production of ornaments, though there is no clear evidence that these tools were used for this process, only some indications and

\textsuperscript{163} Özdoğan 2016: 144

\textsuperscript{164} Baysal 2014: 1

\textsuperscript{165} Özdoğan 2016:145

\textsuperscript{166} Baysal 2014: 8

\textsuperscript{167} Baysal 2016: 55 / Baysal 2014: 6-7
assumptions. Hence, we should not ignore that these shells could have been imported through exchange networks, either as raw material or processed for any possible use as ornaments in situ.

Regarding the ornaments made of *Spondylus*, it is interesting that although this species lives in the Mediterranean (especially the Aegean and the Eastern part of the Mediterranean) and Adriatic Sea, they are found in some assemblages in the Northwestern region of Anatolia.\(^{168}\) During the Neolithic and Chalcolithic periods in the Aegean, western Anatolia and the Balkans there was a tendency for exploitation of *white raw materials* for the production of ornaments.\(^{169}\) Hence, rings, beads or any other kind of ornaments made of *Spondylus* could have been imported as instances of ornaments made of white raw materials. Furthermore, it is interesting that especially at Aktopraklik Höyük, there are some assemblages made of white marble that either imitate ornaments made of *Spondylus*, or they inspired the production of ornaments made of shells.\(^{170}\)

The study of shell ornaments raises many questions, however while we deal with Neolithic and Chalcolithic periods, we cannot answer with certainty these questions, we can only make some assumptions. The specific period of time when people gathered shells could be posited by the study of paleoenvironment, however the specific time when people produced shell ornaments is not determineable. Moreover, it is not possible to answer who was wearing these ornaments, during which period of his life and if these ornaments symbolised something special. Ethnography and experimental archaeology could lead us to some results but even these could be tentative.

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<th>Bead/pendant form</th>
<th>Beck equivalent</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disc</td>
<td>A.1,b, A.2,b Perforation I, II, III, IV or V</td>
<td>Length less than 1/3 of diameter, either straight or slightly curved sides. Piercing types may vary.</td>
</tr>
<tr>
<td>Chip</td>
<td>—</td>
<td>No specific form, piercing through the shortest section. Piercings very small.</td>
</tr>
<tr>
<td>Sub-spherical</td>
<td>LD1.a Perforation II, IV or V</td>
<td>This type has no flattening at the end around piercing. Piercings always from both ends.</td>
</tr>
<tr>
<td>Long with round section</td>
<td>Similar to LD.1.b</td>
<td>Length at least 1.3 times diameter.</td>
</tr>
<tr>
<td>Long with lenticular section</td>
<td>Similar to LD.1.b but with IV.C.2.b section</td>
<td>Length more than 5 mm, average more than 8 mm.</td>
</tr>
<tr>
<td>Very long with lenticular section</td>
<td>Similar to LD.1.b but with IV.C.2.b section</td>
<td>Length more than 15 mm</td>
</tr>
<tr>
<td>Short with wide lenticular section</td>
<td>I.C.1.b but with IV.C.2.b</td>
<td>This type has flattened ends around the piercing. Wide size variation but maximum width at least 2/3 of length.</td>
</tr>
<tr>
<td>Bell-shape with wide lenticular section</td>
<td>I.D.1.g, but with group IV lenticular profile</td>
<td>Some have small flattened end areas. Proportions variable.</td>
</tr>
<tr>
<td>Double sphere</td>
<td>I.C.1.a</td>
<td>Two spheres joined together. All examples are man made.</td>
</tr>
<tr>
<td>Elongated drop</td>
<td>I.D.1.g</td>
<td>Length is at least twice maximum diameter.</td>
</tr>
</tbody>
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Foreing (English) titles


Aydin, M., Güngör, Y., 2015, Effects of Lake Uluabat and Gölyazi to human activities and tourism, Academic Journal of Science, Bursa Orhangazi University, Bursa, 89-99.


Baysal, L., E., 2016, Beads at the place of White Earth – Late Neolithic and Early Chalcolithic Aktopraklik, northwestern Turkey, BEADS: Journal of the Society of Bead Researchers 28, 50-59.


Miebach, A., Niestrath, Ph., Roeser, P., Litt, Th., 2016, Impacts of climate and humans on the vegetation in northwestern Turkey: palynological insights from Lake Iznik since the Last Glacial, Climate of the Past 12, 575–593.

Miller, M. A., 1997, Jewels of Shell and Stone, Clay and Bone: The Production, Function, and Distribution of Aegean Stone Age Ornaments, Michigan, UMI.


**Greek Bibliography.**

Βεροπουλίδου Ρ., 2011, Όστρεα από τους οικισμούς του Θερμαϊκού Κόλπου. Ανασυνθέτοντας την κατανάλωση των μαλακίων στη Νεολιθική και την Εποχή Χαλκού, Διδακτορική διατριβή, Θεσσαλονίκη.

Κυπαρίσση-Αποστολικά, Ν. 2001, Τα Προϊστορικά κοσμήματα της Θεσσαλίας, Αθήνα, Έκδοση του Ταμείου Αρχαιολογικών Πόρων και Απαλλοτριώσεων.

Παπαευθυμίου-Παπανθίμου, Αικ., 1997, Τελετουργικός καλλωπισμός στο προϊστορικό Αιγαίο, Θεσσαλονίκη, Βάνιας.

Web- Bibliography


