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Shell ornaments and artifacts in Neolithic Cyprus and correlations with other Mediterranean regions

Daniella E. Bar-Yosef Mayer [a, b, *]

[a] The Steinhardt Museum of Natural History and Institute of Archaeology, Tel Aviv University, Israel
[b] Peabody Museum for Archaeology and Ethnology, Harvard University, USA

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ABSTRACT

The incipient human population of Cyprus came from Southwest Asia in the Late Pleistocene/Early Holocene. In the Neolithic of Southwest Asia mollusk shells were commonly used as personal ornaments that were made mostly of Mediterranean, and to a lesser extent, Red Sea species. A comparison of the shell ornaments found in Neolithic sites of Cyprus enhance our understanding of the processes that led to the settlement of Cyprus. Shells ornaments and shell artifacts collected in Cyprus point to a similarity in choice of species between Cyprus and the Levant and Anatolia, but a major difference is constituted by the presence of *Charonia* and *Spondylus*, rare in the Levant and Anatolia, that apparently were collected as raw materials for various tool and utensils. The familiarity of the humans who inhabited coastal sites on Cyprus with the marine environment as a source of both food and raw materials, motivated and enabled seafaring in that it assured the continuity in their lifeways after landfall.

1. Introduction

The initial colonization of Cyprus, as the first Mediterranean island to be permanently inhabited, was dependent on the ability to sail, survive the journey, arrive there, and to survive after arrival on the island (Knapp, 2010, 2013; Broodbank, 2013; Bar-Yosef Mayer et al., 2015). The ability to obtain food from the sea is probably one of the main conditions for initiating any voyage involving setting out to the open sea as well as for basic livelihood during the first weeks and months after landfall (Bar-Yosef Mayer, 2013a). Here I shall review the evidence for marine resources, with emphasis on shells used as artifacts and raw material, exploited by pre-Neolithic and early Neolithic societies of the mainland of Southwest Asia, comprising the Levant and Anatolia, that are understood to be the original cultures for the Cypriote Neolithic cultures. This assertion is based on numerous studies that refer to both faunal correlations, specifically the introduction of Levantine animals into the island by humans, as well as botanical introduction of domesticated plants, and on lithic correlations (e.g., Horwitz et al., 2004; McCartney, 2010; McCartney et al., 2010; Vigne et al., 2013; Knapp, 2013 and references therein). Following a long development in the use of shell beads during the Palaeolithic around the Mediterranean (Bar-Yosef Mayer, 2005, 2015; Bouzouggar et al., 2007; Stiner et al., 2013; Bosch et al., 2015), by the time of the Neolithic, those are part and parcel of humans' material culture. As such, they contribute, along with lithics, faunal and floral remains, to our understanding of the continuity in choice of artifacts when populations migrate, and to the importance of such artifacts as identity markers for migrating populations. In comparing between the shell assemblages from sites in the Mediterranean Levant and those of the sites from the newly occupied island, as well as other sites in the Mediterranean we offer clues for the connections between populations. This information reflects a continuation or discontinuation of certain traditions, and may complement our knowledge from other material evidence.

2. Cultural and chronological background

The Natufian culture (15–11.5 cal BP) dominates the end of the Epi-Palaeolithic and is considered to be the precursor to the "Neolithic Revolution", distinguished, among other characteristics,

* The Steinhardt Museum of Natural History, Tel Aviv University, Tel Aviv, 69978, Israel.
E-mail address: baryosef@post.tau.ac.il.

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by increased sedentism (e.g., O. Bar-Yosef, 2011). This sedentism is accompanied by increased long distance exchange actions, including of marine shells. The Natufian culture is divided into Early Natufian, 15,000–13,000 cal BP and Late to Final Natufian, 13-11,500 cal BP). Contemporaneous cultures in Anatolia are referred to as "Late Epipalaeolithic". Their economy was based on a wide spectrum of fauna and flora (e.g., Stiner, 2001; Munro, 2004). Although the Natufians' broad spectrum economy has been widely discussed in the literature, the role of aquatic resources has only recently been studied (Bar-Yosef Mayer and Zohar, 2010).

The Neolithic period in the Levant is divided into various cultures and phases. These main entities include Pre-Pottery Neolithic A (PPNA; 11,600–10,500 cal B.P.), Pre-Pottery Neolithic B (PPNB; 10,500–8200 cal B.P.), Pre-Pottery Neolithic C (PPNC; ca. 8200–7500 cal B.P.), and The Pottery Neolithic (ca. 7500–7000 cal B.P.). Table 1 presents the chronological context and dates.

The distribution of Natufian and Neolithic sites as known to us today pose a challenge for the study of marine resources: Because of sea level rise during the Holocene, if there were any coastal sites during those periods, they are now submerged (Bailey et al., 2008). Thus, only a few Neolithic sites are known from the coast, one of which, Atlit Yam, was extensively excavated (Galili et al., 2004), and no submerged Natufian sites are known. Yet the Natufian sites of the Mt. Carmel range and the western Galilee are a few km to the east of the present Mediterranean coast, and contain very little evidence for the use of marine resources. Whereas shell beads were fairly common and present in all sites, evidence for marine fishing and shellfishing is very scant, yet present. In particular, fish bones are known from the Natufian sites of Hayonim Cave, el-Wad Terrace, and Kebara Cave, and edible *Patella* shells were discovered at el-Wad Terrace (for details see Bar-Yosef Mayer and Zohar, 2010; Bar-Yosef Mayer, 2013a with reference to Cyprus). This suggests, that the coastal environment was familiar to the Natufian and Neolithic populations, marine resources were certainly exploited at the time, and the submerged Neolithic village of Atlit Yam with evidence for active fishing (Zohar et al., 1994) leaves no room for doubt on this matter.

The sequence of visits and settlement of humans in Cyprus (Table 1) begins with the 'Akrotiri phase' as known from the rock shelter of Akrotiri Aetokremnos (Simmons, 1999, 2013), exhibiting a microlithic industry similar to that of the Southwest Asian mainland Epipalaeolithic. At the site, dated to 11,700–11,400 cal BP, few pig bones suggest the introduction of mainland fauna to the island. Native pygmy hippopotami are also considered by the excavators as a food source (Simmons, 2013, 2014).

Following a short time gap, the next settlement phase is attributed to the Cypriot Pre-Pottery Neolithic A (PPNA; correlating the local sequence to the mainland periodization, or Initial Aceramic Neolithic, Knapp, 2013: 83) with the sites of Ayios Tychonas *Klimonas* (Vigne et al., 2012), and Ayia Varvara- *Asprokremnos* (Manning et al., 2010), dated to 11,100–10,600 cal BP. The sites of Nissi Beach and Aspros (Ammerman et al., 2011) possibly belong to this phase, yet the complicated stratigraphy at Nissi Beach (Simmons, 2014: 164) hinders us from including its malacological assemblage in this study. The settlers built round structures, similar in plan to those of PPNA sites on the mainland. Subsistence was based on imported cereal cultivation and hunting wild boar. The lithic industry contains sickle blades and arrowheads, as well as obsidian blades.

The next phase is known as the Pre-Pottery Neolithic B (PPNB), or Cypro-PPNB (McCartney et al., 2010; or Early Aceramic Neolithic, Knapp, 2013:83), roughly equivalent in time to the Levantine PPNB, and lasted from 10,500 to about 9000 cal BP at Paraklessia *Shillourokambos* (Guilaine et al., 2011). Other sites include Kissonerga *Myloutkhia*, Kritou Marottou *Ais Giorkis*, Kalavassos-*Tenta*, and Tatlısu-Çiftlikdüzü/Akanthou-Arkosykos. (Simmons, 2012; Todd, 2001; Peltenburg et al., 2000, 2001; Şevketoğlu, 2006). A later phase includes the sites of Sotira, Khirokitia and Cap Andreas *Kastros* (Dikaios, 1961; Le Brun, 1981, 2001). The lithic industry was dominated by blades, some arrowheads of the Byblos and Amuq types, and evidence for farming, including wheat and barley, goat, cattle, sheep and domesticated pigs, all elements brought from the mainland.

Sites in Cyprus include several early sites on or close to the coast, and a few inland sites (Fig. 1). Those are ideal for exploitation of marine resources, especially in light of what seems to be repeated contacts with the mainland, comprising of the Levant and Asia Minor, during the relevant periods (Horwitz et al., 2004; Ammerman, 2013; Bar-Yosef Mayer, 2013a; Vigne, 2013; Vigne et al., 2013).

3. Shell artifacts

The use of fish as a food source and mollusks as both food and raw material for ornaments and other artifacts is known from the Palaeolithic throughout the old world and around the Mediterranean (McBrearty and Brooks, 2000; Erlandson, 2001; Colonese et al., 2011). The intensification of their use in the Neolithic is significant because it contributed to their ability to make long term "expeditions" to Cyprus (Bar-Yosef Mayer, 2013a). Beyond the physical survival, i.e., the consumption of fish and shellfish, mollusk shells of gastropods, bivalves, and scaphopods were collected. Here I present a survey of the literature on this topic, which will enable a comparison of the finds from Cyprus to those of other regions, and will explain the value of shells to the newcomers of Cyprus. Most of the data was collected from published reports and is presented in Tables 2–4. Because of variability between the various studies which is expressed both in discrepancies in taxonomic identifications, and in various quantitative methods presented in the different studies (it is not always clear when researchers used NISP and when MNI, for example), these table are intended to give a general impression of presence and absence of shell species. I tried to select mostly sites with relatively large assemblages, however, it

Table 1
Chronological chart of Late Natufian and Neolithic periods and cultures of the Levant with correlation to Cyprus (after Bar-Yosef Mayer, 2013a).

Period	Culture and/or phases in the Levant	Date cal BP	Culture/phase in Cyprus
Epi-Paleolithic	Late Natufian	13,500–11,500	Akrotiri phase
Pre-Pottery Neolithic A (PPNA)	Khiamian and Sultanian	11,500–10,500	CPPNA
Pre-Pottery Neolithic B (PPNB)	Early, Middle and Late PPNB	10,500–8700/8600	Early
Pre-Pottery Neolithic C (PPNC)	Final PPNB	8800/8600–8400/8300	Middle
Pottery Neolithic (PN)	Yarmoukian, Lodian, etc.	8400/8300–7900/7700	Late CPPNB Followed by Khirokitia Culture[a]

[a] The division of the PPNB and later Neolithic cultures in Cyprus is not exactly parallel to the Levant, but generally overlaps in time.

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