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The Zarzian in the Context of the Epipaleolithic Middle East

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Abstract

Although the Zarzian was first identified in the 1920s, it has not been until recently that detailed investigations of it have been undertaken. In contrast to the intensive research on the Epipaleolithic period in the Levant, the Zarzian in the Zagros area is less well known, although it shares some similarities (as well as differences) with the Levantine Epipaleolithic including trajectories of hunter-gatherer subsistence and other behavioral strategies that may have played a role in long-term processes ultimately leading in both regions to the advent of food production economies.

Keywords: Zarzian, Epipaleolithic, Zagros, Lithics, Middle East, Hunter Gatherers.

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Introduction

In the 1920s and 1930s, the British prehistorian Dorothy Garrod investigated a number of sites in the Middle East. Her work led to the recognition of the Zarzian in the Zagros region and the Natufian in the Levant, while her colleague Francis Turville-Petre was instrumental in the initial identification of the Kebaran in the Levant (Garrod 1930, 1932, 1936; Turville-Petre 1932). Since then, there has been intensive research on these and other Levantine Epipaleolithic complexes, but comparatively little such research in or on the Zagros region was done until relatively recently. Our understanding of this important period which immediately preceded the advent of food production economies thus has been downplayed, even though significant processes such as the eventual domestication of goats occurred in the Zagros (Zeder 2006; Zeder and Hesse 2000). The background for the Zarzian and available data from these sites are discussed with the goal of building a somewhat more thorough synthesis of behavioral patterns in the Zagros region. These are used to discuss the Zarzian in comparison to the better-known materials from the Epipaleolithic Levant.

Investigations of the Zarzian

Roughly speaking, investigations of Zarzian sites and their materials can be divided into several research periods. These resulted in the identification and excavation of several important sites, including Zarzi, Warwasi, Pa Sangar, Palegawra, Ghar-i-Khar, and Shanidar Cave (Fig. 1), as well as the eventual study of some of the lithic and faunal assemblages. Other sites have been described from surveys (some recently) and small test excavations.

Early Research (1920s-1960s)

During this period, the Zarzian was first identified (Garrod 1930) and then located at a number of other sites (Braidwood and Howe 1960; Braidwood et al. 1960; Hole and Flannery 1967; Solecki 1955, 1963; Young and Smith 1966). Although basic descriptions were relatively quickly published, these often did not include details such as counts or frequencies of lithics or fauna, bone tools, or other cultural materials. The only relatively complete study was that of Garrod for the lithics and Bate for the poorly preserved fauna from Zarzi, including the identification of two fragmentary bone tools (Garrod 1930: 13-22; Bate in Garrod 1930: 23). Garrod, in fact, described the Zarzi materials from Layer B as Upper Paleolithic, although this was prior to her research in the Levant where she subsequently identified similar industries at Shukbah and El-Wad (Garrod 1932, 1936; 1942), which she attributed to Mesolithic (now generally called Epipaleolithic by most researchers).

Garrod's research noted the presence of

small forms of scrapers (thumbnail scrapers) and microlithic elements such as backed bladelets and geometric forms such as elongated triangles (scalene triangles) (Table 2; Fig. 2). At Zarzi, she identified an apparent shift over time that resulted in the inclusion of geometric microliths in the upper deposits. Whether or not this shift represents changes within the Zarzian or a transition from the Upper Paleolithic to the Zarzian is not clear because Garrod published her study without dividing the lithics into these two phases; some evidence for this shift as a change with the Epipaleolithic, however, is indicated for Warwasi (see below; also Olszewski 1993).

The Shanidar Cave B2 excavations yielded a typical Zarzian assemblage with geometric microliths (Solecki 1963: 183), as did excavations at Warwasi (Braidwood et al. 1961: 2008). Palegawra (Braidwood and Howe, 1960: 57-59), Pa Sangar (Hole and Flannery, 1967: 159-160), and Ghar-i Khar (Young and Smith, 1966: 387-388), in addition to Zarzian lithics including geometric microliths, thumbnail scrapers, microburins, and other tool types, also yielded bone tools, ground stone, and in some cases, pendants (shell, bone, stone, tooth). Most researchers reconstructed Zarzian groups as mobile hunter-gatherers who occupied the Zagros region by at least 14,400 uncal bp, based on radiocarbon dating from bone collagen and charcoal (solid carbon method) from Palegawra (Turnbull and Reed 1974: 84) and Shanidar B2 (Rubin and Suess, 1955: 488), but see below for additional new dates from Palegawra.

Later Research (1970s–1990s)

Subsequently, with the exception of renewed testing at Zarzi in 1971 (Wahida, 1981) and limited testing at Mar Ruz and Mar Gurgalan Sarab (Mortensen, 1974, 1993), little attention was focused on field investigations of the Zarzian. Wahida's research at Zarzi was undertaken in part to examine whether Garrod's observation of a shift to geometric microliths during the Zarzian could be substantiated, which his lithic assemblage (although small) seemed to support. Unfortunately, only the scalene triangles are shown by depth, while all other lithics are recorded as either all tool types (his Table 2) or as the major classes of tools and cores by depth (his Tables 4 and 5) (Wahida, 1981: 27-28). Wahida's research, however, did sample sediments for palynology and macrobotanicals, both of which contribute to a better understanding of paleoenvironment at the time of Zarzian occupation. Seeds of *Rhamnus catharticus* (buckthorn) indicate a cool period, while pollen results document a relatively arid steppic context (Renfrew in Wahida, 1981: 36; Leroi-Gourhan in Wahida 1981: 33-36).

Mortensen's (1974, 1993: 165-166) surveys

and limited testing at several sites in the Hulailan Valley identified several sites with Epipaleolithic assemblages described as Zarzian. These include Mar Gurgalan Sarab B-C and Mar Ruz B. Mar Guralan Sarab yielded thumbnail scrapers, burins, notches, borers, microliths (backed and truncated bladelets, triangles, and trapezes), and microburins, while Mar Ruz had thumbnail scrapers, burins, notches, and backed bladelets. Several other sites also were identified as Zarzian (see Table 1).

Two important detailed studies of Zarzian fauna were published during this research period. These include Palegawra (Turnbull and Reed, 1974) and Warwasi (Turnbull, 1975). In addition to *Capra aegagrus* (wild goat), *Gazella* sp. (gazelle), *Vulpes* sp. (fox), and *Testudo* sp. (tortoise) recorded for Zarzi by Bate (in Garrod 1930: 23) and by Payne (Wahida, 1981: 36-37), fauna from Palegawra and Warwasi included *Sus scrofa* (wild boar), *Equus hemionus* (onager), *Ovis orientalis* (wild sheep), *Bos primigenius* (aurochs), *Cervus elaphus* (red deer), *Ochotona* (pika), and *Lepus* (hare) (Table 3). Although not all these species were present at every site, they document a wide diversity of animals hunted or collected (e.g., tortoise) for food. At Palegawra, fresh-water clam (*Unio tigrides*) and fresh-water crab (*Potamon potamios*) also were recorded (Braidwood and Howe 1960: 59), and fish bones and fresh-water crab were identified at Zarzi (Payne in Wahida, 1981: 36); some of these sites also have *Helix salmonica* (land snail).

In the 1990s, detailed studies of the lithic assemblages from 1960 excavations at Warwasi were published (Olszewski, 1993a, b, 1994, 1996), as also was a specialized study of cores from the upper deposits at Pa Sangar (Hildebrand, 1996). This research suggested that Hole and Flannery's (1967: 153) observation that the Zarzian developed out of the late Upper Paleolithic (late Zagros Aurignacian) was likely correct (Olszewski, 1993). Moreover, similarities with some early Neolithic entities (such as the M'lefatian) might indicate continuity (Olszewski, 1994, 1996).

The Warwasi Zarzian sequence contains four units, ranging from Levels L-O at the bottom to A-D at the top (Olszewski 1993; see Table 1). In the lowest unit (L-O), there are numerous non-geometric microliths, including a substantial frequency of Dufour bladelets, which are the main type of microlith in the preceding late Upper Paleolithic (late Zagros Aurignacian). However, this lowest Zarzian unit also contains thumbnail scrapers (a Zarzian hallmark; see Figure 2); although there are a few geometric microliths present, these likely are intrusive from overlying levels. The next two units (Levels H-K and E-G) are relatively similar, showing not only a variety of non-geometrics (mainly pointed types, although

there are still some Dufour bladelets as well), but also a significant number of geometrics (mainly scalene triangles). One difference between these two units is the elevated number of curved types as well as backed and truncated bladelets in Levels E-G. The pointed, curved, and backed and truncated types continue to be important in the uppermost unit (Levels A-D), which also sees a modest frequency of lunates (another curved type) and the presence of rectangle microliths. Thumbnail scrapers seem to become less important over time. Additionally, there are a small number of microburins, which are present in all but the lowest most units (L-O) (Olszewski, n.d.). The Warwasi sequence thus appears to support Garrod's (1930: 15) observation of a shift to geometrics over time, with the nuance that there may also be a shift from scalene triangles to more curved types including lunates by the end of the sequence.

Recent Research (since 2000)

Renewed active fieldwork, particularly in Iran, has focused primarily on surveys, and occasionally limited test excavations (Conard et al. 2006; Roustaei et al. 2004). These have yielded a number of apparently Epipaleolithic occupations, although they have not usually been attributed specifically to the Zarzian (see Table 1). Many of these sites appear to have good excavation potential, and future research should yield additional, well documented site assemblages that can be added to the Zarzian and/or Epipaleolithic repertoire.

Renewed studies of goat bones from various Zagros sites also have resulted in a series of new radiocarbon dates for Palegawra. These range from about 12,500 to 10,200 uncal bp (Zeder 2006: 194).

The Zagros and Levantine Epipaleolithic

There are a number of similarities, as well as differences, between the Zarzian and Levantine Epipaleolithic complexes. Understandably, some of these result from geographic separation of different hunter-gatherer groups, while others relate to similar ways of life. The more intensive research in the Levant allows for much finer nuancing of behavioral patterns.

The Zagros

Zarzian use of the Zagros region appears to occur during relatively harsh climatic conditions that resulted in a treeless, steppic habitat as indicated by palynology and microfaunal analyses from Zarzi and Warwasi (Leroi-Gourhan in Wahida, 1981: 36; Turnbull, 1975; Turnbull and Reed, 1974), although charcoal samples from Palegawra included oak, tamarisk, poplar, and a conifer likely to be juniper (Braidwood and Howe, 1960: 59). This pattern generally has been interpreted as a long period of cool to cold and dry conditions which

began around the Last Glacial Maximum (ca 18,000 uncal bp) and was not ameliorated in this region until about 14,000 uncal bp (that is, just before the Zarzian occupation at Palegawra). In combination with the description of the microlithic component of the lithic assemblages, this suggests that sites such as Warwasi and Zarzi were initially occupied prior to the period of climatic amelioration resulting in the spread of trees in the region, while sites such Palegawra and Shanidar Cave B2 (and the uppermost deposits at Zarzi and Warwasi) were used during the climatic amelioration and thus late in the Zarian sequence (Table 4; Olszewski 1993: 222). Unfortunately, the lack of radiocarbon dating from all sites but Palegawra and Shanidar Cave B2 means that the Zarzian sequence cannot be anchored in time for its initial appearance, other than to say that data from Warwasi suggest that the Zarzian originates from the late Upper Paleolithic (late Zagros Aurignacian).

Many of the Zarzian sites are interpreted as temporary camps, including Warwasi, Palegawra, and Pa Sangar, where selected parts of the carcasses of animals hunted and killed (e.g., gazelle and onager) in the valleys below the rockshelters or in the steeper topography (wild goats and wild sheep) closer to the rockshelters were brought to be butchered and consumed. Such sites are thought to represent short-term summer occupations when higher temperatures would have facilitated higher elevation activities during an otherwise cold paleoclimate. Other Zarzian sites have been interpreted as longer-term base camps, for instance, Shanidar Cave (Hole and Flannery, 1967: 163) and Mar Gurgalan Sarab (Mortensen, 1993: 165). Hole and Flannery (1967: 163) also interpret Palegawra as a base camp rather than a short-term camp, primarily because of the diversity of cultural materials found there compared to other sites. Overall, the Zarzian appears to represent a relatively highly mobile way of life, perhaps with seasonal movements between valleys, foothills, and mountains.

As noted above, the Zarzian has evidence for a diverse diet, including not only larger mammals, but also small, quick animals such as hare; they also made use of shellfish and crustaceans, land snails, and fish, at least on occasion. There are shifts through time (although the length of time is currently unknown) from a nongeometric microlith emphasis to one that increasingly incorporated geometric microliths; these are initially mainly scalene triangles, but later include increased numbers of curved forms, including lunates, at the end of the Zarzian sequence. Use of organic materials for tools (e.g., bone tools) is known, and marine shell used for personal ornamentation is present in some assemblages, suggesting long-distance transport or informal

trade and exchange networks. There also are other items of personal ornamentation (beads and pendants of various materials, such as at Palegawra and Pa Sangar).

The Levant

In the period from just prior (ca 22,000 uncal bp) to the Last Glacial Maximum through the Younger Dryas (ending about 10,200 uncal bp[2]), there are several major Levantine Epipaleolithic complexes including the Kebaran, Nebekian, Geometric Kebaran, and Natufian (Goring-Morris & Belfer-Cohen, 1998; Olszewski 2008). Generally speaking, the Kebaran and the Nebekian are roughly contemporary (both appearing just prior to the Last Glacial Maximum), with Kebaran sites found mainly west of the Jordan Rift Valley (although there are notable exceptions found in the western highlands and Azraq regions of the eastern Levant) and Nebekian occupations to the east of the rift valley. Both complexes are characterized mainly by habitats that were considerably cooler and drier due to glacial climate, non-geometric forms of microliths, small sites suggesting relatively high mobility, hunting of animals such as gazelle, onager, aurochs, and in more forested areas of the western Levant, red deer; some sites in steeper topography also have wild sheep/wild goat. A few sites have some ground stone implements, and in one case (Ohalo II in the western Levant), extraordinary organic preservation indicating use of wild barley in the diet, as well as fish (Nadel, 2004). Some personal ornamentation (often marine shells made into beads) is occasionally found, and there are bone tools of various types. One difference between the Kebaran and Nebekian is the use of microburin technique in the Nebekian.

Beginning about 15,000 uncal bp, climatic conditions begin to ameliorate, and many Epipaleolithic sites now contain geometric forms of microliths (triangles and trapezes) made using the microburin technique, although there are notable exceptions to this pattern in the Azraq region of Jordan (where some sites do not have a microlithic component, e.g., Byrd 1994). This Geometric Kebaran complex is found widely throughout the Levant. There are still many small sites suggesting high mobility, but others that contain evidence for subtle shifts in behaviors that may have resulted in part from longer-term occupation at some sites, for instance, the cemetery at Uyun al-Hammam and the aggregation site at Kharaneh IV, both in the eastern Levant (Maher et al. 2011; Richter et al. 2011). Ground stone seems to become somewhat more abundant, and personal ornamentation and bone tools are present. Hunting of the same species of animals as seen

2. I use uncalibrated bp dates (even though these can be calibrated) for the Levant in order to more easily compare the sequence in the Levant with that of the Zagros.

earlier in the Epipaleolithic continues, as does use of tortoises, birds, and other small game.

The climatic amelioration reaches its peak during the early part of the Natufian complex, beginning about 12,500 uncal bp. The archaeological signature of this period is quite unusual, with small villages built in the Mediterranean forest of the western Levant, and abundant evidence for ground stone, art, burials, personal ornamentation, bone tools, and so forth (Belfer-Cohen, 1991). It is generally believed that the Early Natufian made extensive use of wild cereals and acorns, in addition to hunting large and small game, the species of which are the same as during earlier periods. Additionally, Early Natufian groups made geometric microliths (mainly bifacially backed Helwan lunates) using microburin technique. In the eastern Levant, the early portion of the Natufian complex is characterized by groups who seem to have retained a more mobile lifestyle, possibly due in part to the more open steppic landscape. During the late part of the Natufian complex, however, the advent of the Younger Dryas (about 11,500 uncal bp) meant a return to relatively cool and arid climatic conditions. Most Natufian village sites are abandoned and Mediterranean forest groups seem to have returned to a much more mobile lifeway, with their contemporaries in the steppic regions continuing to engage in relatively high mobility. Geometric microliths are still made (mainly abruptly backed lunates) using microburin technique. Nonetheless, there is evidence for complex social behaviors and rituals, for example, feasting and the burial of a shaman at the Late Natufian site of Hillazon Tachtit in the western Levant (Grosman et al., 2008; Munro and Grosman, 2010).

Discussion

One of the most striking material culture similarities between the Zagros and Levantine Epipaleolithic is the shift from non-geometric to geometric forms in the microlithic component of the lithic assemblages. In fact, the Warwasi sequence documents scalene triangles among the first geometrics (in the Levant, there are either triangles or trapezes in Geometric Kebaran assemblages), with lunates occurring later, although the later Zarzian does not have a dominance of lunates that would mirror the Natufian in the Levant. In both regions, the appearance of geometric microliths is accompanied by the use of microburin technique (however, microburin technique in the Levant first appears in Nebekian assemblages where it is used to make nongeometric microliths). Although microburin technique is present in the Zarzian, it is not heavily used, as can be seen in its indices (Imbtr), for example, at Warwasi, the Imbtr ranges from 6.9 to 7.3, whereas at comparable Levantine sites, the Imbtr can be 30 or higher (Goring-Morris, 1987; Olszewski, n.d.).

Both regions document the incorporation of ground stone implements into tool kits, although with the exception of the Levantine Early Natufian complex, these tools tend to be few, suggesting that if they were used for processing plant foods such as wild cereals and acorns, these food resources may have been mainly a minor component in the diet for much of the Epipaleolithic sequence in both regions. The hunting of large mammals in both regions reflects the opportunities that were available in proximity to the sites, with those sites in steeper topographies including wild goats and sheep, and sites in more forested regions containing red deer and/or roe deer. Many of the animals are widely distributed throughout the Middle East, so it is not unusual to find Epipaleolithic groups in both the Zagros and the Levant exploiting aurochs, gazelle, onager, and wild boar. The capture of both slow-moving tortoise (especially notable in the Levant) and fast-moving game such as hare and birds in both regions shows a relatively broad diet (see Table 3; Stiner & Munro, 2002), that also occasionally included fish, freshwater shellfish, and freshwater crabs. The mountainous habitat in which Zarzian sites are situated, however, has meant that studies of the exploitation of wild goats during this period can be used to assess the long-term processes leading to the eventual domestication of this species (e.g., Zeder, 2006; Zeder & Hesse, 2000).

Evidence for either long distance transport or informal trade and exchange relationships is found in both the Zagros and Levant in the form of marine shells that are made into beads and pendants for personal ornamentation. In the Levant, these come from either the Mediterranean or Red Sea, while in the Zagros, it is likely that the source is the Persian Gulf. This type of far-ranging interaction on the part of mainly mobile hunter-gatherer groups has been described for the Levantine Kebaran, Nebekian, and Geometric Kebaran complexes as also incorporating the exchange of "concepts, knowledge and ideas" (Richter et al., 2011: 108), and such exchange networks likely also were characteristic of Zarzian groups, who may have interacted with other hunter-gatherers living primarily in the lowlands of the Mesopotamian Plain. Whether or not such interaction networks also resulted in the sharing of ideas such as the efficacy of particular forms of microliths as hafting and/or tool designs changed over time currently cannot be determined, although similarities between the Zagros and Levant could be interpreted as possible interaction networks across the northern Fertile Crescent, as suggested by Hole (1996).

With so few radiocarbon dates available for the Zarzian, it is difficult to place Zarzian sites and their assemblages into a framework such as exist for the Levant. What can be said is that

known Zarzian sites suggest high mobility and there is no parallel in the Zarzian to the Early Natufian complex of the Levant with its settled small villages. This is somewhat intriguing as the new Palegawra dates (Zeder, 2006: 194) indicate that part of the Zarzian sequence dates to the same period as the Early Natufian. The lack of small villages during the climatic optimum in the Zagros thus may reflect in part the more steppic habitat (analogous to the Early Natufian in the eastern Levant) in which reforestation was delayed compared to the Levant, the presence of such villages at lower elevations which have not yet been more thoroughly investigated, or a combination of these and other factors such as different cultural trajectories in the two regions. As Zarzian sites that likely predate Palegawra based on lithic assemblage composition (see Table 4) indicate cool and dry habitats, it is possible that the Zarzian may originate around the time of the Last Glacial Maximum, as do Epipaleolithic assemblages in the Levant.

Conclusion

Compared to the Levant, detailed study of the Zagros Epipaleolithic is in its infancy. There are not many excavated Zarzian sites, and of those, relatively few that have been adequately published. The lack of dates, except for two sites (Palegawra and Shanidar Cave B2) that likely fall into the later Zarzian period, is a significant factor in any attempt to understand long-term changes in behavioral strategies. Although a relatively detailed lithic sequence from Warwasi exists (see Tables 2 and 4), which is suggestive of stone tool changes over time (however those might be interpreted), when a sequence (in this case, undated) is known from only one site, it is difficult to place absolute confidence in its applicability to an entire region. However, this sequence perhaps could be tested with existing collections from sites such as Palegawra which have 70cm or more of Zarzian deposits and might show changes within the later Zarzian period.

Although most Zarzian evidence indicates highly mobile hunter-gatherer behavioral strategies, future work on both older collections as well as more recently located Zarzian sites has great potential to broaden our understanding of this important temporal period, much as research in the eastern Levant since the 1980s has greatly enhanced and sometimes altered models that were based on western Levantine research (Olszewski, 2008). One of the most significant aspects of this will be the eventual addition of these data to our understanding of the processes leading to goat domestication, which appears to be underway by the succeeding proto-Neolithic (called Epipaleolithic by Zeder [2011: S227]) at sites such as Zawi Chemi Shanidar and Shanidar Cave B1. As both of these contexts continue to

contain microliths, including small lunates (Kozlowski 1996; Solecki 1980), it is possible that they represent the terminal Zarzian, and thus would include village contexts (as at Zawi Chemi Shanidar) although not until after the end of the Younger Dryas period.

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References

[1] Belfer-Cohen, A (1991). The Natufian in the Levant. *Annual Review of Anthropology* 20: 167-186.

[2] Braidwood, R.J. and B. Howe (1960). *Prehistoric Investigations in Iraqi Kurdistan*. Studies in Anient Oriental Civilization No. 31. Chicago: University of Chicago Press.

[3] Braidwood, R.J., B. Howe, and C. Reed (1961). The Iranian Prehistoric Project. *Science* 133: 2008-2010.

[4] Byrd, B.F (1994). Late Quaternary Hunter-Gatherer Complexes in the Levant between 20,000 and 10,000 B.P. In *Late Quaternary Chronology and Paleoclimates of the Eastern Mediterranean*, O. Bar-Yosef and R. Kra (eds.), pp. 206-226. Tucson: Radiocarbon, University of Arizona.

[5] Conard, N.J., E. Ghasidian, S. Heydari, and M. Zeidee (2006). Report on the 2005 Survey of the Tübingen-Iranian Stone Age Research Project in the Provinces of Esfahan, Fars and Kohgiluyeh-Boyerahmad. *Archaeological Reports* 5: 9-34.

[6] Garrod, D.A.E (1930). The Palaeolithic of Southern Kurdistan: Excavations in the Caves of Zarzi and Hazar Merd. *Bulletin of the American School of Prehistoric Research* 6: 8–43.

[7] Garrod, D.A.E (1932). A New Mesolithic Industry: The Natufian of Palestine. J*ournal of the Royal Anthropological Society* 62: 257-269.

[8] Garrod, D.A.E (1942). Excavations at the Cave of Shukbah, Palestine, 1928. *Proceedings of the Prehistoric Society* 8: 1-20.

[9] Garrod, D.A.E (1936). A Summary of Seven Seasons Work in the Wady Mughara. *Bulletin of the American School of Prehistoric Research* 12: 125-129.

[10] Goring-Morris, A.N (1987). At the Edge: Terminal Pleistocene Hunter-Gatherers in the Negev and Sinai. Oxford: British Archaeological Reports International Series 361.

[11] Goring-Morris, A.N. and A. Belfer-Cohen (1998). The Articulation of Cultural Processes and late Quaternary Environmental Changes in Cisjordan. *Paléorient* 23(2): 71-93.

[12] Grosman, L., N.D. Munro, and A. Belfer-Cohen (2008). A 12,000-year-old Shaman Burial from the Southern Levant (Israel). *Proceedings of the National Academy of Sciences, USA* 105(46): 17665-17669.

[13] Hesse, B (1989). Paleolithic Faunal Remains from Ghar-i Khar, Western Iran. In E*arly Animal Domestication and Its Cultural Context*, P.J. Crabtree, D.V. Campana, and K. Ryan (eds.), pp. 37-45. Philadelphia, PA: University of Pennsylvania Museum of Archaeology and Anthropology Publications.

[14] Hildebrand, E (1996). Changes in Methods and Techniques of Blade Production during the Epipalaeolithic and Early Neolithic in the Eastern Fertile Crescent. In *Neolithic Chipped Stone Industries of the Fertile Crescent, and Their Contemporaries in Adjacent Regions*, S.K. Kozłowski and H.G. Gebel (eds.), pp. 193–206. Berlin: *ex oriente*.

[15] Hole, F (1996). A Syrian Bridge between the Levant and the Zagros? In *Neolithic Chipped Stone Industries of the Fertile Crescent, and Their Contemporaries in Adjacent Regions*, S.K. Kozłowski and H.G. Gebel (eds.), pp. 5-14. Berlin: *ex oriente*.

[16] Hole, F. and K.V. Flannery (1967). The Prehistory of Southwestern Iran: A Preliminary Report. *Proceedings of the Prehistoric Society* 33: 147-206.

[17] Kozlowski, S.K (1996). From Zawi Chemi to M'lefaat. In *Neolithic Chipped Stone Industries of the Fertile Crescent, and Their Contemporaries in Adjacent Regions*, S.K. Kozłowski and H.G. Gebel (eds.), pp. 175-182. Berlin: *ex oriente*.

[18] Maher, L.A., J.T. Stock, S. Finney, J.J.N. Heywood, P.T. Miracle, and E.B. Banning (2011). A Unique Human-Fox Burial from a Pre-Natufian Cemetery in the Levant (Jordan). *PLoS One* 6(1): e15815.

[19] Mortensen, P (1974). A Survey of Prehistoric Settlements in Northern Luristan. *Acta Archaeologica* 45: 147.

[20] Mortensen, P (1993). Paleolithic and Epipaleolithic Sites in the Hulailan Valley, Northern Luristan. In *The Paleolithic Prehistory of the Zagros-Taurus*, D.I. Olszewski and H.L. Dibble (eds.), pp. 159-186. Philadelphia: University of Pennsylvania Museum.

[21] Munro, N.D. and L. Grosman (2010). Early Evidence (*ca*. 12,000 B.P.) for Feasting at a Burial Cave in Israel. *Proceedings of the National Academy of Sciences USA* 107(35): 15362–15366.

[22] Nadel, D (2004). Wild Barley Harvesting,

Fishing and Year-Round Occupation at Ohalo II (19.5 Ky, Jordan Valley, Israel). In *General Sessions and Posters. Section 6: The Upper Paleolithic*, le Secrétariat du Congrès (ed.), pp. 135–143. Acts of the XIVth UISPP Congress, University of Liège, Belgium, 2-8 September 2001. Oxford: Achaeopress.

[23] Olszewski, D.I (1993a). Zarzian Microliths from Warwasi Rockshelter, Iran: Scalene Triangles as Arrow Components. In *Hunting and Animal Exploitation in the Later Palaeolithic and Mesolithic of Eurasia*, G. Peterkin, H. Bricker, and P. Mellars (eds.), pp. 199-205. Washington, D.C.: Archaeological Papers of the American Anthropological Society No. 4.

[24] Olszewski, D.I (1993b). The Zarzian Occupation at Warwasi Rockshelter. In *The Paleolithic Prehistory of the Zagros-Taurus*, D.I. Olszewski and H.L. Dibble (eds.), pp. 206-236. Philadelphia: University of Pennsylvania Museum.

[25] Olszewski, D.I (1994). The Late Epipaleolithic Chipped Stone "Heritage" in Early Aceramic Neolithic Assemblages in the Northern Fertile Crescent. In *Neolithic Chipped Stone Industries of the Fertile Crescent*, H.G. Gebel and S.K. Kozłowski (eds.), pp. 83-90. Berlin: *ex oriente*.

[26] Olszewski, D.I (1996). The Lithic Transition to the Early Neolithic in the Zagros Region: Zarzian and M'lefatian Industries. In *Neolithic Chipped Stone Industries of the Fertile Crescent, and Their Contemporaries in Adjacent Regions*, S.K. Kozłowski and H.G. Gebel (eds.), pp. 183-192. Berlin: *ex oriente*.

[27] Olszewski, D.I. The Palaeolithic Period, Including the Epipaleolithic. In *Jordan: An Archaeological Reader*, ed. R. Adams, pp. 35-69. Oakville, CT: Equinox Publishing.

[28] Olszewski, D.I (n.d). Reductive Technology and the Epipaleolithic of the Middle East and North Africa. In *Assemblage Formation and Archaeological Interpretation in Global Perspective*, D.I. Olszewski and A. Sullivan (eds.). Salt Lake City: University of Utah Press.

[29] Perkins, D., Jr (1964). Prehistoric Fauna from Shanidar, Iraq. *Science* 144: 1565-1566.

[30] Richter, T., A.N. Garrard, S. Allcock, and L.A. Maher. 2011. Interaction Before Agriculture: Exchanging Material and Sharing Knowledge in the Final Pleistocene Levant. *Cambridge Archaeological Journal* 21(1): 95-114.

[31] Roustaei, K., H. Vahdati Nasab, F. Biglari, S. Heydari, G.A. Clark, and J.M. Lindly (2004). Recent Paleolithic Surveys in Luristan. *Current Anthropology* 45(5): 692-707.

[32] Rubin, M. and H.E. Suess (1955). U.S.

Geological Survey Radiocarbon Dates II. *Science* 121: 481-488.

[33] Solecki, R.S (1955). Shanidar Cave, a Paleolithic Site in Northern Iraq. *Annual Report of the Smithsonian Institution*, 1954: 389-425.

[34] Solecki, R.S (1963). Prehistory in Shanidar Valley, Northern Iraq. *Science* 139: 179–193.

[35] Solecki, R.L (1980). *An Early Village at Zawi Chemi Shanidar*. Bibliotheca Mesopotamica 13. Malibu, CA: Undena Publications.

[36] Stiner, M.C. and N.D. Munro (2002). Approaches to Prehistoric Diet Breadth, Demography, and Prey Ranking Systems in Time and Space. *Journal of Archaeological Method and Theory* 9(2): 181-214.

[37] Tsuneki, A. and M. Zeidee (2005). Report on the Fieldwork in the Tang-e Bolaghi Region. Report submitted to the ICAR.

[38] Turnbull, P.F (1975). The Mammalian Fauna of Warwasi Rockshelter, West-Central Iran. *Fieldiana Geology* 33(8): 141-155.

[39] Turnbull, P.F. and C.A. Reed (1974). The Fauna from the Terminal Pleistocene of Palegrawra Cave, a Zarzian Occupation Site in Northeastern Iraq. *Fieldiana Anthropology* 63: 81-145.

[40] Turville-Petre, F (1932). Excavations in the Mugharet el-Kebara. *Journal of the Royal Anthropological Institute of Great Britain and Ireland* 62: 271-276.

[41] Wahida, G (1981). The Re-excavation of Zarzi, 1971. *Proceedings of the Prehistoric Society* 47: 19-40.

[42] Young, T.C., Jr. and PE.L. Smith (1966). Research in the Prehistory of Central Western Iran. *Science* 153: 386-391.

[43] Zeder, M.A (2006). A Critical Assessment of Markers of Initial Domestication in Goats (Capra hircus). In *Documenting Domestication: New Genetic and Archaeological Paradigms*, M.A. Zeder, D.G. Bradley, E. Emshwiller, and B.D. Smith (eds.), pp. 181-208. Los Angeles: University of California Press.

[44] Zeder, M.A (2011). The Origins of Agriculture in the Near East. *Current Anthropology* 52(supplement 4): S221-S235.

[45] Zeder, M.A. and B. Hesse (2000). The Initial Domestication of Goats (*Capra hircus*) in the Zagros Mountains 10,000 Years Ago. *Science* 287: 2254-2257.

Table 1. Zarzian and Epipaleolithic sites in the Greater Zagros Region.

MAJOR ZARZIAN SITES	References	Lithic Analyses
Ghar-i Khar	Young and Smith 1966	Brief; no counts
Mar Gurgalan Sarab	Mortensen 1974, 1993	Brief; counts given
Mar Ruz	Mortensen 1974, 1993	Brief; counts given
Palegawra	Braidwood and Howe 1960; Turnbull and Reed 1974	Brief; no counts
Pa Sangar	Hilldebrand 1996; Hole and Flannery 1967	Brief; no counts
Shanidar Cave B2	Solecki 1955, 1963	Brief; no counts
Warwasi	Braidwood and Howe 1960; Braidwood et al 1961; Olszewski 1993a, b, 1994, 1996; Turnbull 1975	Yes
Zarzi	Garrod 1930; Wahida 1981	Yes
OTHER SITES		
Babkhal, Barak, Hajiyah, Kowri Khan, Turkaka	Braidwood and Howe 1960	No; attributed to the Zarzian
BV 75	Tsuneki and Zaidee 2005 (reported in Conard et al. 2006)	Attributed simply to the Epipaleolithic
Dar Mar, Ghar-i Gagel, Ghar Qalajaha, Sal Mar, Saimarreh D, Sar Sarab B, Warbar	Mortensen 1974, 1993	Brief; attributed to the Zarzian
Ana, Sarab Siah, GPS 93, GPS 100, Khanahmad Cave, Khanahmad Rockshelter, Sukhteh Cave, Sukhteh Rockshelters I, II, III, Yagheh Sangar caves and rockshelters	Conard et al. 2006	Attributed simply to the Epipaleolithic

Table 2. Zarzian Tool Assemblages*.

Tool Classes	Warwasi L-O	Warwasi H-K	Warwasi E-G	Warwasi A-D	Zarzi (Garrod)	Zarzi (Wahida)
Scrapers	70 [12.2]	119 [13.6]	46 [5.8]	33 [2.7]	128 [21.2]	17 [7.6]
Thumbnail	25	27	10	6	79	-
Other scrapers	45	92	36	27	49	-
Burins	17 [2.9]	27 [3.1]	19 [2.4]	3 [0.2]	19 [3.1]	13 [5.8]
Borers	- -	11 [1.2]	20 [2.5]	68 [5.5]	4 [0.7]	2 [0.9]
Backed Pieces	16 [2.8]	35 [3.9]	8 [1.0]	11 [0.9]	38 [6.2]	5 [2.1]
Truncations	12 [2.1]	32 [3.5]	9 [1.1]	26 [2.1]	- -	- -
Notches/Denticulates	163 [28.4]	150 [17.1]	203 [25.6]	352 [28.7]	196 [32.5]	68 [30.4]
Multiple Tools	1 [0.2]	7 [0.8]	15 [1.9]	18 [1.5]	- -	- -
Special Tools	17 [2.9]	33 [3.8]	13 [1.6]	16 [1.3]	- -	- -
Pièces ésquillées	3	4	1	3	-	-
Sidescrapers	14	29	12	13	-	-
Retouched Pieces	60 [10.4]	116 [13.2]	89 [11.5]	155 [12.6]	88 [14.6]	34 [15.2]
Nongeometric Microliths	210 [36.6]	248 [28.2]	303 [38.6]	450 [36.7]	95 [15.7]	68 [30.8]
Dufour	99	22	27	44	?	?
Pointed types	26	71	63	71	some	?
Curved types	3	14	46	60	most	?
Blunt distal end	18	13	20	9	?	?
Backed and truncated	1	11	20	38	?	?
Truncated	8	32	37	73	?	?
Other	25	16	3	16	2	2
Fragments	30	69	87	139	?	?
Geometric Microliths	8 [1.4]	97 [11.0]	59 [7.5]	81 [7.4]	35 [5.8]	16 [7.2]
Bitruncated	-	1	1	5	-	-
Rectangles/trapezes	1	2	2	8	-	-
Isosceles triangles	-	1	-	7	-	-
Scalene triangles	7	93	52	54	31	16
Lunates	-	-	4	11	4	-
Other	-	-	-	6	-	-
Varia	- -	3 [0.3]	- -	4 [0.3]	1 [0.2]	- -
TOTAL	**574**	**878**	**784**	**1227**	**604**	**223**

* Descriptions from Garrod (1930) and Wahida (1981) have been standardized to those used by Olszewski (1993) for Warwasi wherever possible. Numbers in brackets indicate percentage within total tool assemblage.

Table 3. Fauna from Zarzian Sites*.

	Ghar-i Khar	**Pa Sangar**[1]	**Palegawra**	**Shanidar Cave B2**[2]	**Warwasi**	**Zarzi**
Bos primigenius	Yes	Yes?	Yes	?	-	-
Capra aegagrus	Yes	Yes	Yes	?	Yes	Yes
Cervus elaphus	Yes	Yes?	Yes	?	-	-
Equus hemionus	-	Yes?	Yes	?	Yes	-
Gazella	-	Yes?	Yes	?	-	Yes
Lepus	-	Yes?	Yes	?	Yes	-
Ochotona	-	-	Yes	?	-	-
Ovis orientalis	Yes	Yes?	Yes	?	-	-
Sus scrofa	-	Yes?	Yes	?	Yes	-
Testudo	-	Yes?	-	?	-	Yes
Vulpes	-	Yes?	Yes	?	-	Yes

* Data from Bate in Garrod (1930: 23), Hesse (1989), Hole and Flannery (1967: 161–162), Payne in Wahida (1981: 36–37); Turnbull (1975), Turnbull and Reed (1974); Zeder 2006.

[1] The faunal list in Hole and Flannery (1967: 161–162) does not specify fauna by site; species listed above are thus extrapolated from their list.

[2] Abundant mammalian fauna is noted for Layer B (of which only B2 is Zarzian) but not described in Solecki (1955: 410). A description by Perkins (1964) concerns the proto-Neolithic layer of Shanidar Cave B1.

Table 4. A Tentative Temporal Distribution of Major Zarzian Sites*.

Latest: Scalene triangles and quadrilaterals; pointed, curved, truncated, and backed and truncated types of microliths; microburins; increased lunates	Warwasi A-D; Palegawra; Shanidar Cave B2 [after 12,500 uncal bp]
Later: Scalene triangles; pointed and curved types of microliths; rare lunates; microburins	Warwasi E-G; upper Zarzi B
Later: Scalene triangles; pointed types of microliths; microburins; thumbnail scrapers	Warwasi H-K; Pa Sangar, upper Ghar-i Khar; Mar Gurgalan Sarab B-C
Earliest: Dufour bladelets; no geometric forms of microliths; presence of thumbnail scrapers	Warwasi L-O; lower Zarzi B; lower Ghar-i Khar; Mar Ruz B?

* Using the Warwasi lithic sequence as a guide, in addition to radiocarbon dates for Palegawra and Shanidar Cave B2.

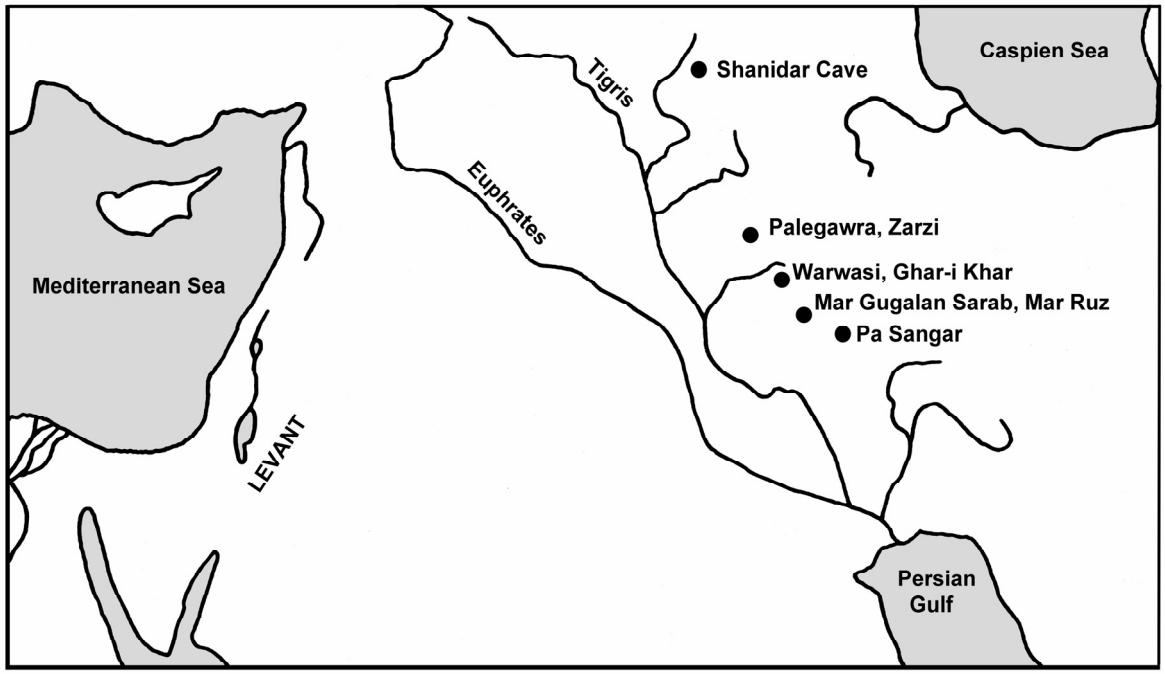

Figure 1. Map showing major Zarzian sites.

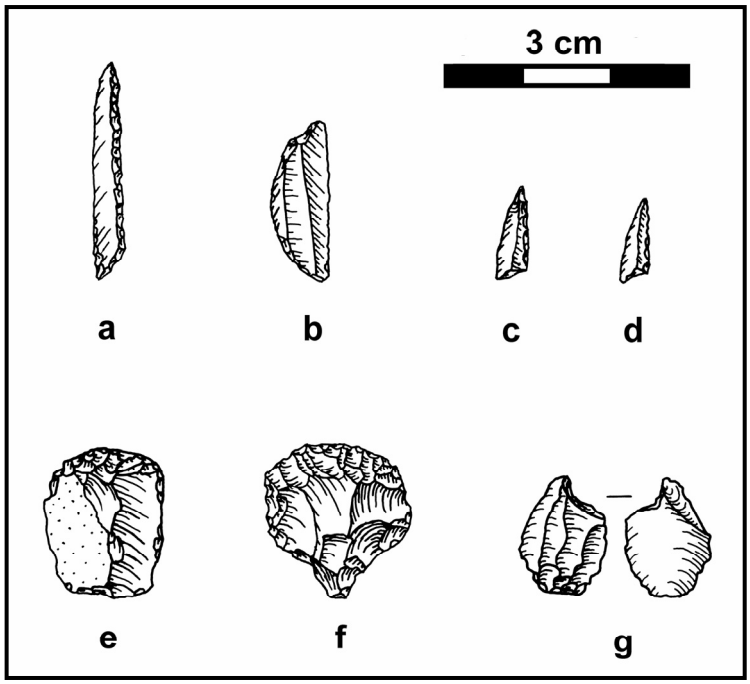

Figure 2. Examples of Zarzian lithics from Warwasi: a) elongated scalene triangle; b) lunate; c, d) scalene triangles; e, f) thumbnail scrapers; g) microburin.

زرزی در بستره فراپارینه‌سنگی خاورمیانه

دبورا اولژوسکی[۱]

تاریخ دریافت: ۱۳۹۱/۸/٤ تاریخ پذیرش: ۱۳۹۱/۱۰/٦

گرچه سنت تراشه‌برداری موسوم به زرزی نخستین‌بار در دهۀ ۱۹۲۰ میلادی شناسایی و معرفی شد، دیر زمانی از تحلیل دقیق و گونه ـ فن‌شناختی آن نمی‌گذرد. برخلاف فراپارینه‌سنگی لوانت که مداوماً و با دقت مورد نقد و بررسی قرار گرفته، ناحیۀ زاگرس و سنت زرزی کمتر شناخته شده است. این در حالی است که این سنت شباهتها (و در عین حال اختلافاتی) را در نحوۀ تعامل با محیط و سیستمهای معیشتی با فراپارینه سنگی لوانت داشته که در نهایت احتمالاً در خلال روندی مشخص منجر به بروز اقتصاد تولیدگر در هر دو منطقه گردیده است.

واژگان کلیدی: زرزی، فراپارینه‌سنگی، زاگرس، دست‌افزار سنگی، خاورمیانه، شکارورز ـ جمع‌آوری‌کننده.

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