Stone Tools in the Paleolithic and Neolithic Near East: A Guide

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New York: Cambridge University Press, 2013, 408 pp. (hardback), $104.99.
ISBN-13: 978-1-107-00698-0.

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In reading the Preface and Introduction to Shea's book where he discusses why he wrote this volume on Near Eastern stone tools, I had to smile because his experience as a graduate student was analogous to mine. Learning about stone tools in this world region was not easy because no single typology had been developed, at least in the sense of a widely accepted set of terminology that could be applied to the Paleolithic and Epipaleolithic there, or even the Neolithic period. In retrospect, it is somewhat surprising that in the several decades since no one, until this book by Shea, undertook producing a compendium of information on the Paleolithic and Neolithic Near Eastern stone artifact assemblages, even though a vast array of researchers have continued to classify, study, and interpret these ubiquitous remnants of our past.

Stone Tools in the Paleolithic and Neolithic Near East: A Guide consists of eight chapters, two appendices, and a free online Adobe pdf file containing supplemental figures and references (although locating this file was not as simple as inputting the website link provided in the Introduction (p. 5); one also must then choose Resources [a tab located under the image of the book] and then the resources link directly below General Resources to get to where the file is located; do not use the search function available in General Resources as returns nothing). The first two chapters provide background for the book, the region, and stone artifacts; the next five chapters deal with stone artifacts from different chronological periods; and, the final chapter provides a discussion and summary of the issues and time periods. I discuss some points related to each of these below.

In Chapter 1 (Introduction), Shea provides information on how this book came about, the chronology for the Paleolithic and Neolithic periods, the geography of the Eastern Mediterranean Levant, examples of theoretical frameworks (e.g., culture-stratigraphic, culture-historical, and behavioral-strategic) which have been used to interpret stone artifact assemblages in this region, and an overview of the rest of the book. Importantly, Shea notes that how archaeologists classify stone artifacts into types and industries is heuristic, that is, it is our method of organizing information today (an etic approach) rather than how prehistoric peoples may have recognized and/or grouped such artifacts (an emic approach). This chapter is an easy read and quite useful, especially for those who may be new to the region or to stone artifacts. My one small quibble is that Table 1.1 (p. 7) is titled "Major Periods of Levantine Stone Age Prehistory," and lists the origins of genus *Homo* in the Lower Paleolithic period, which is incorrect both temporally and geographically (*Homo ergaster* appearing ca 1.8 Mya in Africa, or *Homo habilis* ca 2.5 Mya in Africa, if one accepts this hominin as sufficiently derived as to belong to genus *Homo*). And the same is true in this table for several other major evolutionary events for which our earliest evidence is African rather than Levantine.

For Chapter 2 (Lithics Basics), the reader is immediately immersed in how stone fractures (using terminology from mechanics), is abraded, and is knapped. The first section is not the easiest reading, particularly if one is not already a specialist in stone artifacts. There is quite a bit of terminology that creeps in prior to when it is actually explained (e.g., cortex), an aspect that possibly could be ameliorated with the addition of a glossary (perhaps as a supplemental online resource). The chapter proceeds from fundamental processes (fracture, etc.) to an explanation of the basic terms for stone artifacts to interpretation, including stone raw material sources, making, using, and discarding tools, and social/cultural interpretive potentials. Along the way, Shea makes a number of essential points that are, unfortunately, not necessarily accepted by all archaeologists who do stone artifact analyses. These include the fact that the *chaîne opératoire* (operational chain) technological approach to interpretation is based on **how archaeologists think** about the processes of shaping stone and which of the resulting pieces of stone are useful. He also notes that "names" that have been given to certain artifact forms do not necessarily mean that those artifacts functioned in those ways—is a pointed artifact that we name a "point" a functional point or simply a pointed piece—and mentions the "finished artifact fallacy," that is, the morphologies of artifacts that are recovered at sites do not necessarily mean that prehistoric people deliberately chose that form. Artifacts can and often do have use-lives that alter their morphology and discarded artifacts can later be picked up and used for other tasks which change their forms. I admit that I was not sure why the Conard et al. (2004) core typology introduced in this chapter was selected for use in this volume; the stated purpose was to make comparisons between different time periods easier, but I found several problems with this approach. First, their core typology is mentioned in later chapters on the Lower and Middle Paleolithic, but not as much in the Upper Paleolithic, Epipaleolithic, or Neolithic chapters. Second, it seems to me that the Co-

  ISSN 1545-0031
doi:10.4207/PA.2015.REV147

nard et al. (2004) types are so basic/reduced in number as to gloss over much important variation because it ends up either subsuming quite different flake removal strategies such as a Levallois core and a single platform Upper Paleolithic core into the same category (parallel), or parsing the same technology over more than one category (e.g, discoid cores, see p. 53). Moreover, the Conard et al. (2004) system is not widely used in the Eastern Mediterranean Levantine assemblage analyses with which I am most familiar (Upper Paleolithic, Epipaleolithic, and Neolithic), and thus seems to add a layer of additional terminology that is not necessary.

In the subsequent chapters (3–7) dealing with the various time periods Shea follows a similar outline of topics. This begins with an introduction presenting information about the hominins during that period, their chronology, a table of sites that have provided lithic information, and references to lithic resources such as the main typologies used for that period. All of these are excellent resources. Following this are sections dealing with core technology, retouched flake tools, pounded pieces (if applicable), the major stone artifact industries, and an overview and conclusion. In this last section of each chapter, Shea provides suggestions on how to improve how we deal with and interpret stone artifacts, assemblages, and industries. This is one feature (among others) of his book that I thought was particularly useful as it serves in part to demonstrate that there are still many things left for us to learn about stone artifacts and that the ways in which our current interpretations of these artifacts / assemblages / industries might change if we apply other ways of classifying, analyzing, and thinking about them. Overall, each chapter does an excellent job of presenting relevant information, written in a style that is easy to follow. Due to length limitations, I offer only a few additional comments on each time period chapter below.

The Lower Paleolithic stone artifact record is treated in Chapter 3. In addition to the chapter sections mentioned above, there is also one on Large Cutting Tools (LCTs), which include bifaces (i.e., handaxes, cleavers, picks). I found it interesting that the Tayacian is treated as a real industry when it has been recently pointed out that the majority of the stone artifacts in these assemblages are formed by taphonomic rather than cultural processes, such that the so-called abrupt retouch on many of the pieces resulted from being rolled about and smashed against other stones (e.g., see Dibble et al. 2006). That one of Shea's suggestions at the end of the chapter is to abandon the industry names of the Levantine Lower Paleolithic is thus most welcome, although Shea is proposing this more in the context of the fact that these industries span too much time and too much geography to be useful analytical units.

Chapter 4 concerns the Middle Paleolithic stone artifact record. Here Shea notes that typologies appear to begin to be more regionally distinct compared to those of the Lower Paleolithic and that changes over time within the regional Middle Paleolithic sequences are more discernible. He dives into using Bordian typology without first providing a brief introduction to it, especially that the types include both special forms of unretouched flakes (Levallois) and retouched tools (the retouched component is given in Table 4.3). Shea notes that within the retouched flake tools, the most important types are scrapers and points, and that several researchers (e.g., publications by H. Dibble and/or N. Rolland) have identified reduction processes that demonstrate the effects of resharpening of stone artifacts on artifact typology. That is, archaeologists have partitioned some artifacts into presumably distinct types when in fact these types reflect points along a sequence of reduction rather than discrete categories. I note in passing that in Table 4.5 the lithic assemblage from Warwasi Cave in the Zagros Mountains is marked as "selectively curated," when in fact Bruce Howe (who excavated this site for Robert Braidwood's project) saved everything including very small (<20mm) artifacts. Paralleling many recent publications, including some of his own (e.g., Shea 2014), Shea suggests that one improvement would be to abandon Bordian typology, partly because the types in this typology are not very common in the Levantine Middle Paleolithic.

In Chapter 5 (The Upper Paleolithic), the use of retouched flake tool typologies by Levantine researchers begins to be much more eclectic. While Shea is correct that many Levantine Upper Paleolithic classification systems are based (in some sense) on that of de Sonneville-Bordes and Perrot for Europe, including the Hours typology from the late 1960s London Conference on the assemblages from the site of Ksar 'Akil (Lebanon), it is my impression that most researchers pick and choose what they need from those, and other, typological sources, as well as adding types when they see fit to do so. Interestingly, the lack of a single standardized retouched flake tool typology has not generally impacted the ability of archaeologists to compare Upper Paleolithic stone artifacts from different parts of the Levant. Perhaps this is because there still are relatively few researchers overall involved in these analyses and such a small community means that how various types are defined is not only readily accessible but also widely shared. Endscrapers and burins are two classic Upper Paleolithic retouched flake tool categories, as Shea notes, and there are several other types that can be analytically useful. These include Emireh points, chamfered pieces, Dufour bladelets, el Wad points, Aurignacian blades, and Ouchtata bladelets. In point of fact, both Dufour and Ouchatata bladelets fit within the tool class of microliths rather than retouched blades. The definition of Ouchtata, as presented by Shea, is not completely accurate as Marks (1976: 377) defined it as **fine** semi-steep to steep retouch, contra to Shea's description of Ouchtata retouch as steep. While Dufour bladelets technically can have alternating retouch, my experience with Levantine assemblages with this type is that they exhibit mainly inverse retouch. Additionally, retouch on Dufour pieces is not marginal retouch. Naturally backed knife or Clactonian notch to describe Levantine Upper Paleolithic types are not, in my opinion, commonly used, as they are in Middle Paleolithic assemblages. I note also that in Table 5.7, Wadi Madamagh is placed in the Arqov/Di-

vshon Group which is described as a flake-based industry with abundant laterally carinated pieces (p. 156). However, Wadi Madamagh's Upper Paleolithic assemblage is not flake-based and does not have many (if any) laterally carinated pieces (see Byrd 2014; Olszewski and al-Nahar 2011). I would also argue, based on my study of the Warwasi Cave Upper Paleolithic assemblages (Olszewski 1993, 2007, 2009), that the Baradostian (Late Zagros Aurignacian) of the Zagros Mountains is not flake-based as described in this chapter (p. 157). Among the suggestions for future improvement, Shea recommends collapsing a number of the subtypes within scrapers, burins, truncations, and backed pieces; a very good idea indeed. At the same time, he calls for expanding the subtypes of points, although this seems to me to increase the likelihood that these will be deemed functional points, even if they were not used as such.

The Epipaleolithic is presented in Chapter 6. If some aspects of the Upper Paleolithic appear to be rather confusing or confounding due to the increased number of types during that time period, then the Epipaleolithic is even more so. This is not because Shea is creating these categories; he is simply reporting them as used by various researchers. The plethora of microlith tool types in conjunction with the increased number of named industries makes for what I would call "microlith madness," if I may have a bit of license after spending several decades examining the stone artifacts of the Levantine Epipaleolithic. Given the complexity of this period with respect to stone artifacts, Shea delivers a good overall presentation. Of course, as this is a specialty of mine, there are any number of minor issues that struck me. Among them are that: a definition of the Epipaleolithic should be that microliths feature prominently (not geometric microliths alone: p. 161); most cores are not carinated types (p. 166), but single or opposed platform types; most cores on tabular pieces (Figure 6.3) require little else than striking off a cortical flake across the top to establish a striking platform, and from there on occasional removals of core tablets or platform blades/bladelets (a type of crested blade/bladelet) to refurbish the core striking platform; Krukowski microburins (Table 6.4) are generally thought to be accidental breaks, not the application of microburin technique (even though Tixier's definition says they are due to microburin technique); a scalene bladelet (Table 6.5) is not a Qalkhan point as this type involves the use of micorburin technique; a straight backed and truncated bladelet (Table 6.6) is not really a geometric but a nongeometric microlith type, contra how it is presented in the Goring-Morris typology (which incidentally is not necessarily widely used in the region east of the Jordan Valley); like some nongeometric microlith types, many types of geometric microliths (p. 180) reflect temporal slices within the Epipaleolithic period; the Early Epipaleolithic at Kharaneh IV (p. 194) actually contains several phases of the Epipaleolithic and the attribution of one of them to the Nizzanian is only tentative (Byrd and Garrard 2013: 382; Richter et al. 2011: 100–102); Table 6.12 has some issues with presence/absence of types noted (e.g., the Nebekian is defined on the basis of narrow double arched (curved) backed bladelets, yet although these are mentioned in the text, they are not marked as present); the arched backed bladelets of the Nebekian are not obliquely truncated (p. 200) but have curved backed distal and proximal ends as well as a backed lateral edge; and, for the Natufian (p. 208), Helwan lunates mark only the Early Natufian. I would also note that in the Goring-Morris typology, there is a type ("Helwan point") which is also a point type in the Neolithic period; the morphologies of the Epipaleolithic "Helwan point" and that of the Neolithic are completely different and thus could be quite confusing to some readers. It is unfortunate that the Madamaghan is described as an industry (p. 204) because it is quite spurious from the point of view that the assemblages of its so-called type site (Wadi Madamagh) do not match the assemblages described by D. Henry in the Ras en-Naqb area nor do they fall within the same temporal period within the Epipaleolithic (see Olszewski 2006). In the overview and summary section to this chapter, Shea proposes reducing the number of subtypes within various macrotool classes (as for the Upper Paleolithic); again, this is a good suggestion. It is too bad that he does not also recommend this for the microlith class, which could use quite a good deal of pruning. Shea also suggests that the division between the Upper Paleolithic and Epipaleolithic should be removed due to their many shared overall behavioral strategies. This was proposed some years ago by Isaac Gilead (e.g., 1984), although Gilead seemed to suggest that the Natufian (Late Epipaleolithic) should retain its Epipaleolithic classification; virtually no researchers subsequently followed through on Gilead's suggestion.

Chapter 7 concerns the stone artifacts of the Neolithic period, which is divided into Early (PrePottery Neolithic A or PPNA), Middle (PrePottery Neolithic B/C or PPNB/C), and Late (Pottery Neolithic or PN). In the description of the Middle Neolithic, Shea notes that the end of this phase is marked by the use of "ceramic vessels made out of marl and clay" (p. 221), although it should also be mentioned that these are **unfired**. In discussing the chipped stone artifacts, Shea uses the framework for lithic analysis established by the working group on NeoLithics, which began in 1993 with a workshop/conference in Berlin, Germany, and has continued to meet every several years, publishing results in a series of monographs as well as the newsletter, *Neo-Lithics*. Core technologies of the Neolithic include not only core types seen previously, but also quite specialized ways of preparing cores, such as naviform blade cores (found earliest in the PPNA in the northern Levant, but then are a common feature during much of the PPNB phase in the north and south Levant), and bullet bladelet cores (which are mostly found in the Zagros region and northern Levant, rather than in the central and southern Levant). In contrast to the Epipaleolithic, which in a sense was all about microliths, this tool type is not typical of the Neolithic after the PPNA. Instead, Shea notes that typical tools of the Neolithic are projectile points ("arrowheads"), knives (many of which look like points), and sickle inserts. Neolithic projectile points generally are useful in assessing the temporal placement of assemblages within the Neolithic

framework, and, to some extent, also geographical regions within the Middle East. And, just like microliths of the Epipaleolithic, there are rather a lot of projectile point types. I was surprised to see in Table 7.11 (p. 281) that Jordan was not listed as having Big Arrowhead Industries (BAI), when in point of fact, such projectile points are found in this part of the eastern Levant. Ground stone implements, as Shea discusses, become much more prominent and diverse in the Neolithic, with forms ranging from mortars, pestles, querns and handstones to perforated stones, bowls, platters, and grooved or incised stones. Much of this, of course, speaks partially to the settlement (now mainly sedentary) and subsistence (increasing dependence on fewer plant and animal species) aspects of Neolithic lifeways. In concluding this chapter, Shea observes that many of the Neolithic stone tool types fit more easily into functional categories (compared to earlier in prehistory), and this can be seen in forms such as sickle inserts (which have sickle gloss demonstrating their use in cutting plants with high silica content such as cereals and reeds), projectile points, and heavier tools such as celts (adzes, axes, and the like). He offers several suggestions for improving Neolithic typologies including reducing the number of projectile point and knife types by augmenting descriptions with careful metric descriptions, as well as rethinking how stone artifacts can be used to better understand Neolithic phases, especially the PN, that currently are defined more on the basis of ceramic wares.

The final chapter (Chapter 8: Conclusion) serves to draw together an overall picture of Levantine stone artifact trends, patterns, and biases that influence how archaeologists think about and interpret this record. Among these are factors such as the use of so-called "type-sites," different theoretical approaches, older excavation methodologies compared to those in use today, a Eurocentric focus that meant many comparisons of this region's stone artifacts were made to those of Europe rather than to North Africa or South Asia, etc. It is a great presentation, written in a style that is easily readable, although a paragraph on taphonomic processes and how they impact site assemblages might also be appropriate. The formatting of Table 8.1 (p. 293) might be rethought as currently it shows industries such as the Nebekian and Qalkhan as in the North Levant, which is not accurate as these industries are found in the Eastern Levant (and thus are both North and South). Being of the same school of thought in general as Shea, I could not agree more that focusing on lithic industries as representative of past cultures is rather a dead end, and that archaeologists should be examining aspects of lithic patterning that have evolutionary significance and/or that aid in understanding long-term trends in hominin evolution. In the Epipaleolithic overview (p. 306), it probably should be noted that Shea's characterization of the co-occurrence of microliths and ground stone implements as representative of increased sedentism/economic intensification is mostly true for the Early Natufian rather than all of the Epipaleolithic. The final section of the chapter presents a perspective on the lithic record in the Levant, which makes for quite good reading.

There also are two appendices. Appendix 1 is a series of stone artifact type lists for the different chronological periods. Appendix 2 discusses how to measure lithic artifacts and shows a number of illustrations of various aspects of morphology in cores, flakes, and tools, as well as ground stone. The one small thing I note here is that in Figure A2.4, the hinge termination is shown incorrectly, as it should curve toward the exterior (dorsal) surface.

There are some small typographic errors here and there, e.g., *Homo* should be italicized; it is Yutil al-Hasa Area D, not Level D (p. 198); in Chapter 7, HaParsa is not standardized (Haparsa; Ha-Parsa), among others. And, it would be great to see a brief paragraph that stresses fact that typologies are descriptive in nature and this is one of their main functions—a standardized way to compare forms within and across assemblages. The other aspect that might be helpful would be to describe removals from cores in general not as flakes but as blanks. This would then allow use of the term "flake" without confusion, especially as the term "blade/bladelet" would not sometimes be subsumed under "flake," as in Figure 7.19 (p. 257) where most of the sickle inserts are clearly made on blade/bladelets.

In summary, while above I have remarked on a number of things that I thought needed some level of correction, many of these are minor points and/or represent the biases I likely have when it comes to analyzing and interpreting stone artifact assemblages. They should not detract from or dissuade anyone from purchasing and reading Shea's book as it is overall an excellent resource and one that certainly fills a long-standing gap in the literature for the Levant. Shea's volume on Levantine stone tools should be on every stone artifact researcher's book shelf and also would serve as an excellent resource for a course on lithics. In this context, the supplemental figures (as an Adobe pdf file) available on Cambridge University Press's website should not be overlooked as it contains extremely useful figures and references.

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