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INHALTSVERZEICHNIS

Flint Artifacts from the 1988/1989 Excavations at Giza[1]

By Nicholas J. Conard

Introduction

From late December 1988 until early February 1989 members of the Giza Plateau Mapping Project (GPMP) excavated in research Area A, on the western edge of the plain two hundred meters south of the Harbor Wall, and Area C, the galleries immediately west of the second pyramid (fig. 1). Comprehensive results from these excavations will be presented elsewhere[2]. The principal goals of the present report are to provide a description of the flint artifacts from Giza and to discuss the information these finds provide for reconstructing the activities that took place at the Giza Necropolis. Since there have been no detailed reports on the flint artifacts from the new excavations at Giza, this study will emphasize the first of these goals. Studies of the lithic artifacts from Giza should provide insight into the lives of the multitude of workers at the site and should eventually help to improve our understanding of the dynamics of Old Kingdom society as a whole.

Previous Studies of Predynastic and Dynastic Flint Artifacts

The archaeology of Predynastic and Dynastic Egypt has over its long history been preoccupied with texts, tombs, major monuments and beautifully crafted practical and artistic objects. As a result of this emphasis, chipped flint artifacts have often been ignored. Reisner's statement from 1938[3] typifies this bias: "The practical use of metal had reached its full development in Dyn. I but ceremonial flints continued to be made (with comparatively rude workmanship) down to Dyn. VI. (...) It is well-known that flint knives and other flints continued to be made in the Middle Kingdom; but it is uncertain to what extent these were practical implements." Referring to the finds from his excavations in the temples of Mycerinus at Giza, Reisner often refers to the degeneration of flint working skills during the Old Kingdom and writes "Thus the flints like the stone vessels are impractical ceremonial-traditional objects, made only for the tomb, by craftsmen practising a dead art"[4].

Half a century after Reisner wrote these words, researchers are increasingly recognizing that lithic artifacts occur in a wide range of non-ceremonial contexts and that flint tools continued to be of eco-

[1] This paper, written in connection with the symposium *Beyond the Elite: Old Kingdom Archaeology and the Giza Plateau Mapping Project,* was presented at the 57th annual meeting of the Society for American Archaeology in April 1992 in Pittsburgh, Pennsylvania.

[2] M. Lehner (ed.), *Giza Reports* I (in prep.).

[3] G.A. Reisner, *A provincial cemetery of the pyramid age: Naga-ed-Der* III. *University of California Publications Egyptian Archaeology* IV, Berkeley 1938, p. 154 (hereafter cited as Reisner, *Naga-ed-Der* III).

[4] G.A. Reisner, *Mycerinus: The temples of the third pyramid at Giza,* Cambridge 1931, p. 231 (hereafter cited as Reisner, *Mycerinus*).

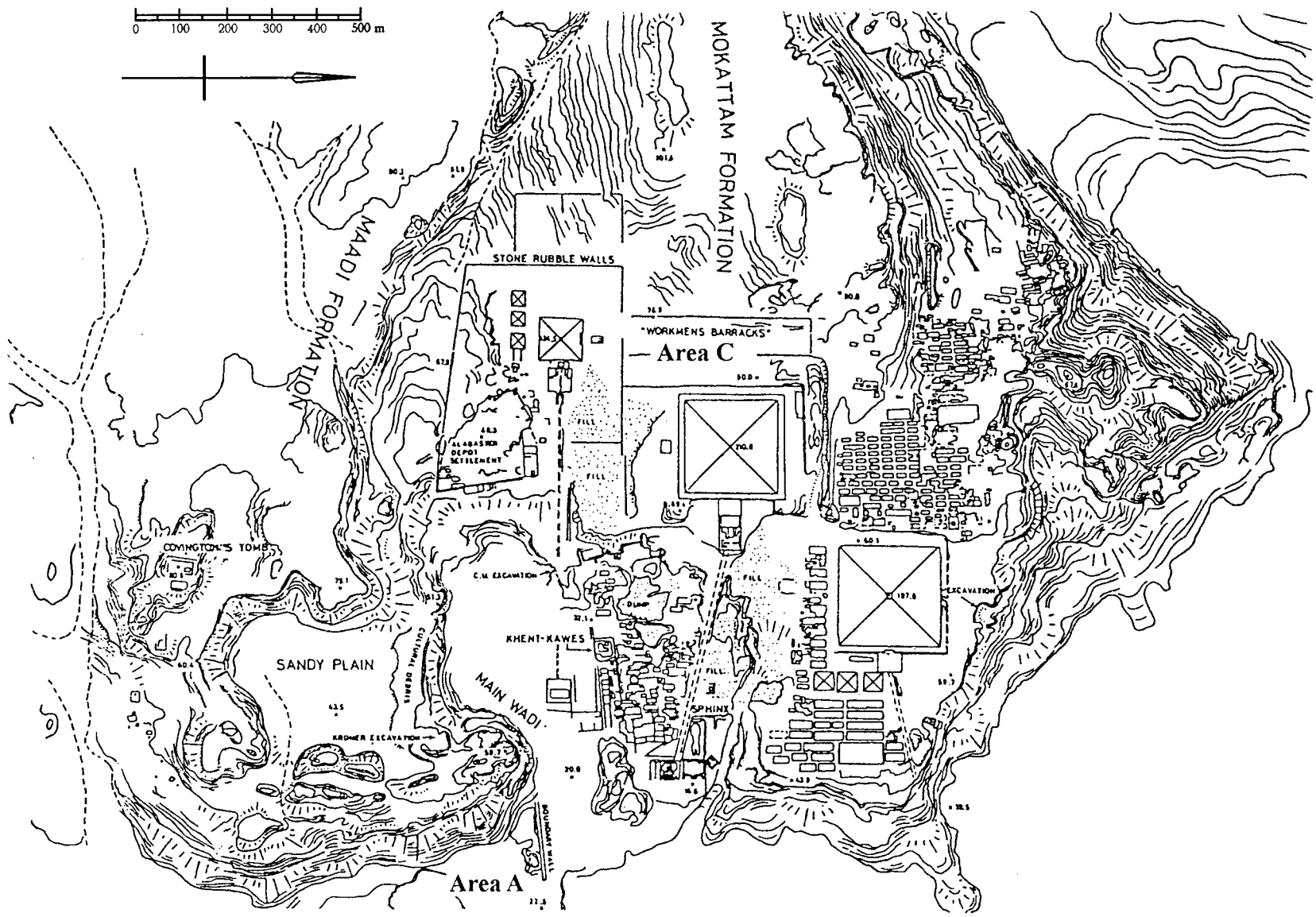

Fig. 1: Map of Giza showing the location of Areas A and C

nomic importance throughout the Dynastic Period. While metal implements are well known in Egyptian archaeology, their numbers are small compared to the countless chipped stone tools and debitage from Predynastic and Dynastic sites. Based on these finds and information from tomb scenes[5] there is good evidence that ancient Egyptians regularly used chipped flint tools for cutting, scraping, drilling, hunting, butchering, harvesting and other tasks.

Despite occasional reports mentioning the presence of chipped stone at sites, most early references are to isolated finds in tombs or other spectacular finds[6]. Generally, little attention has been paid to the systematic study of chipped stone artifacts. Exceptions to this pattern include BAUMGARTEL's[7] consideration of Predynastic flint tools, REISNER's[8] description of six types of chipped flint artifacts from the excavations of the temples of the third pyramid at Giza, and EMERY's[9] outstanding reporting of 305 flint implements of thirteen types from the magazines of the 1st Dynasty tomb of Hemaka at Saqqara. EMERY's monograph also describes wooden handled sickles with flint blades and several varieties of arrows including forms with agate, bone and ivory points. Perhaps the most noteworthy early report is PETRIE's[10] study of flint artifacts from the temples and tombs of the earliest dynasties at Abydos. The report includes many pages of illustrations by HILDA PETRIE and information on the reigns to which the finds date. Commenting on these discoveries, PETRIE[11] writes: "In no other country or age has such an admirable series been found for the study of variations in the types and the rates of variation. And this only adds one more to the bitter regrets that this collection consists of only the scraps left behind after the shameless plundering of these tombs by speculators, with the full assent of the Egyptian authorities." Later PETRIE augmented this work with reports from Tarkhan and other sites[12].

While the reports of finds from burials continue[13], researchers are increasingly reporting lithic artifacts from habitations and workshops. Some recent studies also attempt to look at lithic technologies in a more dynamic context and to consider all classes of debitage and sequences of reduction. HOLMES' comprehensive study[14] of Predynastic flints is perhaps the most noteworthy addition to the literature on Egyptian lithic traditions, and her work at Hierakonpolis continues to emphasize the need to study all classes of artifacts and debitage[15]. Other recent lithic studies include work at the Old Kingdom site of Kom el-Hisn in the delta[16], the work of TILLMANN[17] at the New Kingdom site of Qantir, and CZIESLA's[18] work as a member of the East Sahara Project. At Kom el-Hisn, for instance, chipped flint

[5] e.g. G. STEINDORF, *Das Grab des Ti*, Leipzig 1913; EPRON-WILD, *Tombeau de Ti*; W.K. SIMPSON, *The offering chapel of Sekhem-Ankh-Ptah in the Museum of Fine Arts, Boston*, Boston 1976.

[6] *Gizeh and Rifeh*; REISNER, *Naga-ed-Der* III; A.M. LYTHGOE, *The Predynastic Cemetery N 700: Naga-ed-Der* IV. *University of California Publications Egyptian Archaeology* VII, Berkeley 1965.

[7] BAUMGARTEL, *Prehistoric Egypt* II.

[8] REISNER, *Mycerinus*.

[9] EMERY, *Hemaka*.

[10] *Abydos* I.

[11] *Ibid.*, p. 8.

[12] *Tarkhan* I *and Memphis* V; *Tarkhan* II.

[13] E.C.M. VAN DEN BRINK, in: E.C.M. VAN DEN BRINK (ed.), *The Archaeology of the Nile Delta, Egypt: Problems and Priorities*, Amsterdam 1988, pp. 65–110.

[14] D.L. HOLMES, *The predynastic lithic industries of Upper Egypt: a comparative study of the lithic traditions of Badari, Nagada and Hierakonpolis. BAR International Series* 469, Oxford 1989.

[15] D.L. HOLMES, in: R. FRIEDMAN/B. ADAMS (eds.), *The followers of Horus. Studies dedicated to Michael Allen Hoffman. Egyptian Studies Association Publication* 2. *Oxbow Monograph* 20, Oxford 1992.

[16] R.J. WENKE/P.E. BUCK/H.A. HAMROUSH/M. KOBUSIEWICZ/K.A. KROEPER/R.W. REDDING, in: *JARCE* 25, 1988, pp. 5–34.

[17] A. TILLMANN, *Ein Steingerätinventar des Neuen Reiches aus Quantir/Piramesse (Ägypten): Vorbericht*, in:. *AKorrBl* 16, 1986, pp. 149–155.

[18] E. CZIESLA, in: S. SCHOSKE (ed.), *Akten des vierten internationalen Ägyptologen-Kongresses München 1985*, Hamburg 1988, pp. 313–323.

artifacts are being used to help test models of interregional integration and to reconstruct the activities that took place at this rural village. These reports show that researchers are beginning to examine lithic artifacts within a dynamic social context and are starting to recognize the important role chipped stone industries played in the achievements of ancient Egyptian society.

Recovery of Flint Artifacts

The 1988/89 season at Giza was the first major season of excavation by the GPMP and the crew experimented with different methods of recovery during the course of the six week field season. Some features within excavation units were carefully screened through 0,5 cm mesh to recover small lithic debris while other features were screened less systematically or not at all. Generally, the crew invested more time in screening the rich cultural deposits than other features.

Although most of the workmen had much field experience, few had been asked previously to recover all classes of lithic artifacts. While the workers reliably recovered larger chipped flint artifacts, small debitage and lithic materials other than flint were recovered less systematically. Throughout the

Exc. Unit	# Artifacts	Weight (g)	Features with flint artifacts
A1	254	3106	3,4,5,6,7,8,10,11,14,15,18,20,21,23,24,25,33,34,37,40,45
A2	22	347	1,2,3,4,7,8,25,37,39,45
A3	0	0	
A4	27	372	1,2,4,5,8,21,22,27
A5	4	262	1,8,15,16
A6	2	52	11,16
Total	309	4139	
C1	14	76	1,2,4,5
C2	6	48	1,3,5,9–10
C3	9	86	1,4,5
C4	1	2	1
C5	5	179	2,3
C6	11	263	2,3,4,5,6
C7	0	0	
C8	12	81	1,3,4,5,6,7,8,9,12
C9	16	194	3,4,5
C10	24	676	2,3
C10S	76	1544	2,3,4,5,6
C11	59	1377	1,4,5,6
Surface	2	100	
Total	235	4626	

Table 1: Features from which flint artifacts were recovered during the 1988/89 season.

report the provenience of finds will be identified with an A or C indicating the area of excavation, followed by numbers indicating first the unit of excavation and then the feature. Excavators followed a stratigraphic system similar to that advocated by HARRIS[19].

Excavators in Area A screened all of the cultural deposits from excavation unit A1, while little screening was conducted in other units. Area supervisors observed that all or most of the larger lithic artifacts would have been recovered while small debitage could well have been missed in units where the deposits were not systematically screened. The thorough screening of unit A1 helps explain why 82% of the flint artifacts from the 1988/89 season came from this unit. It should, however, be noted that this unit was by far the richest of the six units dug in Area A, and this is why more rigorous recovery was sought.

In Area C excavators screened all the cultural deposits of units 1, 5 and 11, and did not employ screening in the other units since they were entirely filled by wind blown sand. Only the areas near the entrances of the galleries contained appreciable quantities of cultural materials above the hard packed alluvial mud floors of the building. In the units that were screened excavators probably missed few if any large finds and recovered small debitage. In the other units the crew recovered most of the large flint artifacts, but there is a possibility that small debitage was overlooked. Table 1 lists the features that have produced flint artifacts, and Table 2 summarizes the assemblages from Areas A and C.

	Cores	Tools	Blades	Flakes	AD	SD	Total	Total weight	# Burnt
Area A	16	38	37	150	41	27	309	4139 g	29
%	5,2	12,3	12	48,5	13,3	8,7	100		9,4
Area C	15	17	13	171	10	9	235	4626 g	4
%	6,4	7,2	5,5	72,8	4,3	3,8	100		1,7

Table 2: Classes of flint artifacts from the 1988/89 excavations in Areas A and C. AD = angular debris; SD = small debris with maximum diameter smaller than 2 cm.

Raw Materials

The flint recovered from Giza comes in at least two main forms. Tabular flint occurs in a wide range of brown colors and often has a soft white cortex. BAUMGARTEL[20] mentions one tabular flint mine on the eastern side of the Nile near Maghare and other flint mines certainly provided sources of tabular flint as well. This high quality flint is the raw material from which most of the blades at the site were knapped. Although no true blade cores have been recovered by the GPMP thus far, the few cortical blades among the new material from Giza are from tabular flint cores. Flint knappers also manufactured bifacial knives and large flake tools from this raw material. Several finished knives and scrapers show the characteristic color, banding and soft white cortex of tabular flint. Other artifacts are clearly made from cobbles of desert flint that have eroded from the limestone deposits on the edges of the Nile Valley. This material is ubiquitous on the Giza Plateau. Finds made from this material include simple flakes and flake cores which often preserve the hard, dark pitted cortex characteristic of the desert flint nodules.

[19] E. HARRIS, *Principles of archaeological stratigraphy*, New York 1989[2].
[20] BAUMGARTEL, *Prehistoric Egypt* II, p. 24.

Notes on the Typology of Old Kingdom Flint Artifacts

For the purposes of this paper I will divide the 544 pieces of chipped flint from the 1988/89 excavation into the classes of cores, retouched tools and unretouched debitage (figs. 1–11, tab. 1–5). Since the sample of artifacts from the season is small, the assemblages from Areas A and C undoubtedly lack the full range of flint artifacts used at the site. Nor should one assume that the small number of artifacts within each class represents the full range of variation. With these caveats in mind, the following paragraphs describe the classes of artifacts recovered during the GPMP's first season of excavation.

Core Type	Area A	Mean wt. (g)/s.d.	Area C	Mean wt. (g)/s.d.	Total
Unifacial Cobble	4	91/32	6	106/57	10
Bifacial Cobble	3	125/57	7	188/110	10
Uni-platform	3	40/21			3
Bi-platform	2	108/81			2
Centripetal	1	40			1
Polyhedral			2	113/21	2
Waste	1	15			1
Other	2	31/16			2
Total	16		15	145/90	31

Table 3: Flint cores from the 1988/89 excavations in Areas A and C.

Tool Type	Area A	Area C
Retouched Blades	2	
Sickle Blades		3
Triangular Scrapers	4	5
Unifacial Leaves	1	
Notch/Denticulate	1	2
End Scrapers	2	
Side Scrapers	2	1
Irregular Scrapers	2	1
Unifacial Fragments	9	4
Asymmetrical Bifacial Knives	6	
Symmetrical Bifacial Knives	2	
Bifacial Rectangles	1	
Bifacial Fragments	6	1
Total	38	17

Table 4: Flint tools from the 1988/89 excavations in Areas A and C.

Although flint tools have received some attention in publications of Old Kingdom materials, very few reports systematically present flint cores. The 1988/89 excavations produced unifacial cobble cores, bifacial cobble cores, uni-platform flake cores, bi-platform flake cores, centripetal cores, polyhedral cores and waste cores (tab. 3).

	Total # flakes	# w/ DF cortex	# w/ TF cortex	# Thinning flakes
Area A	150	78	8	22
%		52	5,3	14,7
Area C	171	139	2	4
%		81,3	1,2	2,3

Table 5: Flint flakes from the 1988/89 excavations in Areas A and C. DF = desert flint; TF = tabular flint.

Unifacial cobble cores: Ten examples of these cores were found in Areas A and C (fig. 9). They are made on desert flint cobbles and most of their surface is covered with cortex. As the name indicates, these cores are chipped primarily on one side from a single striking platform. The weight of these cores ranged from 38–170 g with a mean of 100 g. These cores are far from exhausted, and few flakes have been removed from them. Both this form and the following bifacial variation could be classified as choppers based on the acute angle formed by the flake removals. However, since the chipped edges of these finds show little indication of use, the cobbles appear to have been worked in an expedient manner to produce small flakes which could be used for cutting. Given that utilized flakes are rare in the assemblage, this hypothesis still needs to be tested.

Bifacial cobble cores: These cores are made on desert flint cobbles, and most of their surface is cortical (fig. 8). As the name indicates, these cores are chipped on two sides, usually from irregular striking platforms. In all, excavators recovered ten such cores from Areas A and C. The weight of these cores ranged from 80–408 g with a mean of 169 g. These cores have not been exhausted. Four unmodified flakes lay on the floor of excavation unit C10 and could be refitted to a nearby bifacial cobble core (fig. 8.2). These finds show that desert cobbles were knapped within the galleries of Area C.

Uni-platform flake cores: Flakes have been struck from these cores of desert flint from a single striking platform. This form differs from the above forms in that the flakes are removed from an interior striking platform rather than from cortical or near cortical surfaces (fig. 2). Excavation in Area A produced three small uni-platform cores with a mean weight of 40 g.

Bi-platform flake cores: Area A produced two bi-platform cores with a mean weight of 108 g. This form has two clear striking platforms. These may or may not be in opposing directions (fig. 2).

Centripetal cores: This form is characterized by negatives originating from all or most of the circumference of the main flake removal surface. One unifacial centripetal core on desert flint weighing 40 g was recovered from A1/21.

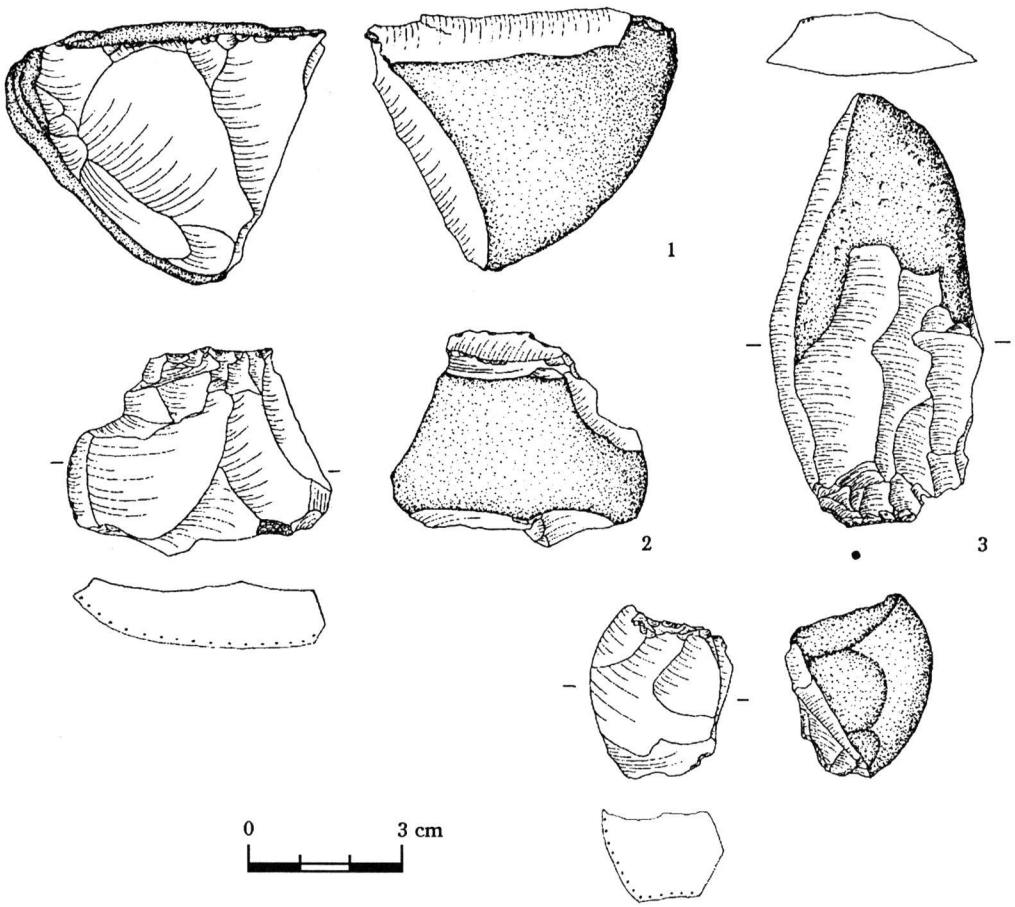

Fig. 2: Flint artifacts from Area A: 1) bi-platform core [A1/45]; 2 and 4) uni-platform cores [both A1/4]; 3) flake from a blade core [A4/5]. All finds on desert flint

Polyhedral cores: This group of cores is characterized by the removal of flakes from multiple directions without preference for well-developed striking platforms (fig. 9). Excavation in Area C produced two polyhedral cores with a mean weight of 113 g. These cores preserve cortical surfaces of desert flint.

Waste cores: This class is for small cores that have been fully exhausted before being discarded. Feature A1/5 produced a single waste core weighing 15 g. This specimen was burnt after being discarded.

Blade cores: Despite the presence of blades in both Areas A and C, blade cores are conspicuously absent from the assemblages. One large flake from Area A4/5 was struck from an irregular, desert flint blade core and preserves several negatives from the removal of blades on its dorsal surface (fig. 2). However, the blades with cortical surfaces recovered from the GPMP excavations were made of tabular flint. The majority of blades found in Areas A and C appear to have been produced elsewhere and to have been subsequently transported to the site.

Tool types from the 1988/89 excavation include retouched blades, sickle blades, bifacially retouched knives, other bifacially retouched forms, unifacial leaves, triangular scrapers, bifacially retouched rectangles, side scrapers, end scrapers, notched pieces, denticulates and irregular scrapers.

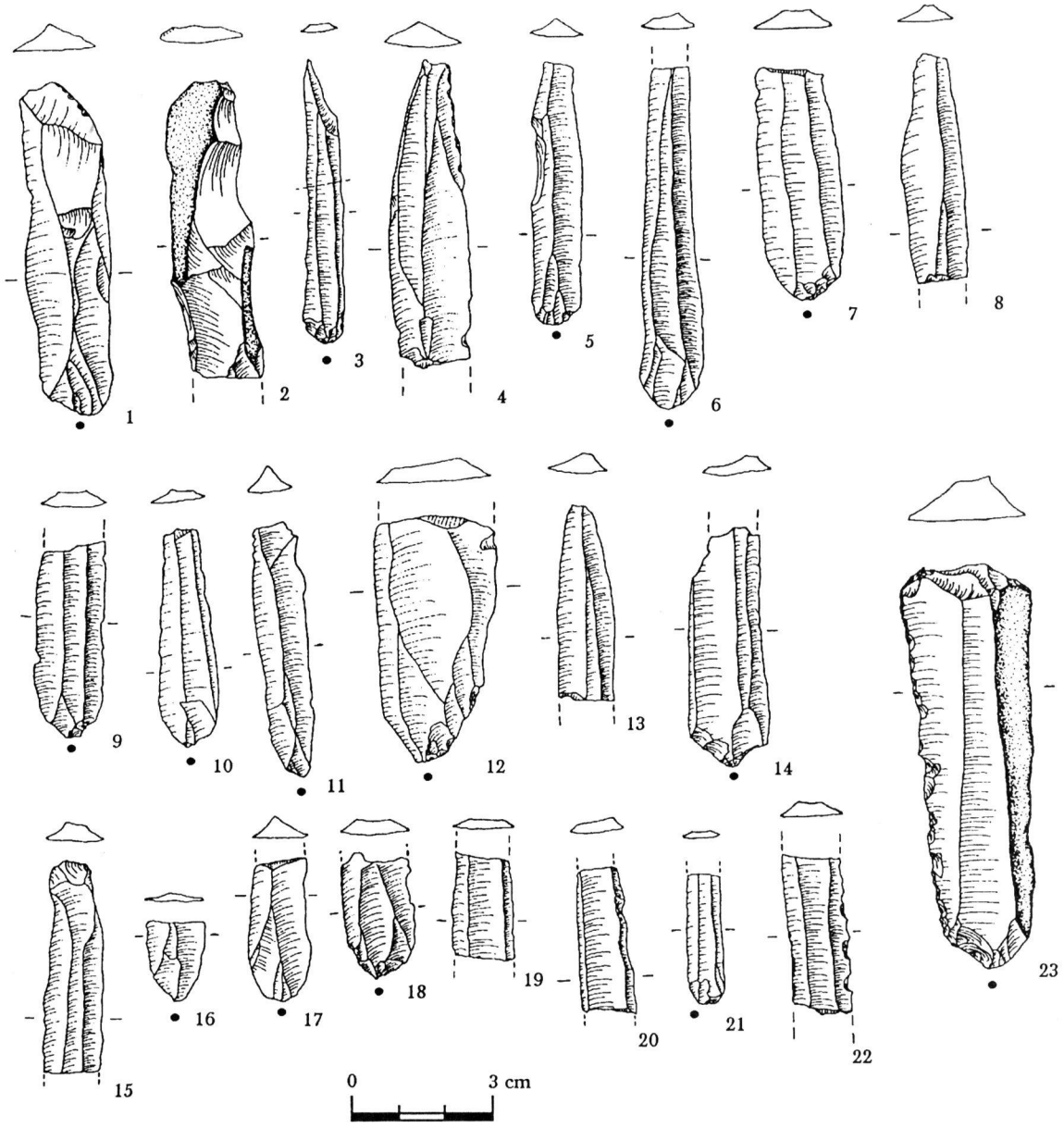

Fig. 3: Flint artifacts from Area A: 1–21) blade and blade fragments; 22 and 23) retouched blades [22: A6/11; 23: A2/3]. 2 and 23 preserve tabular flint cortex

Retouched blades: This category includes blades and blade fragments with chipped edges (fig. 3). Most of these finds have light retouch or localized damage from use. One specimen from A2/3 is a thick cortical blade. These finds lack sickle gloss.

Sickle blades: These finds include both truncated rectangular blade segments and curved, less regular blades. A blade and a blade fragment from C5/2 and C11/5 show clear sickle gloss; a third piece from C8/4 lacks obvious sickle gloss, but has several fine striations along one of its cutting edges that suggest that

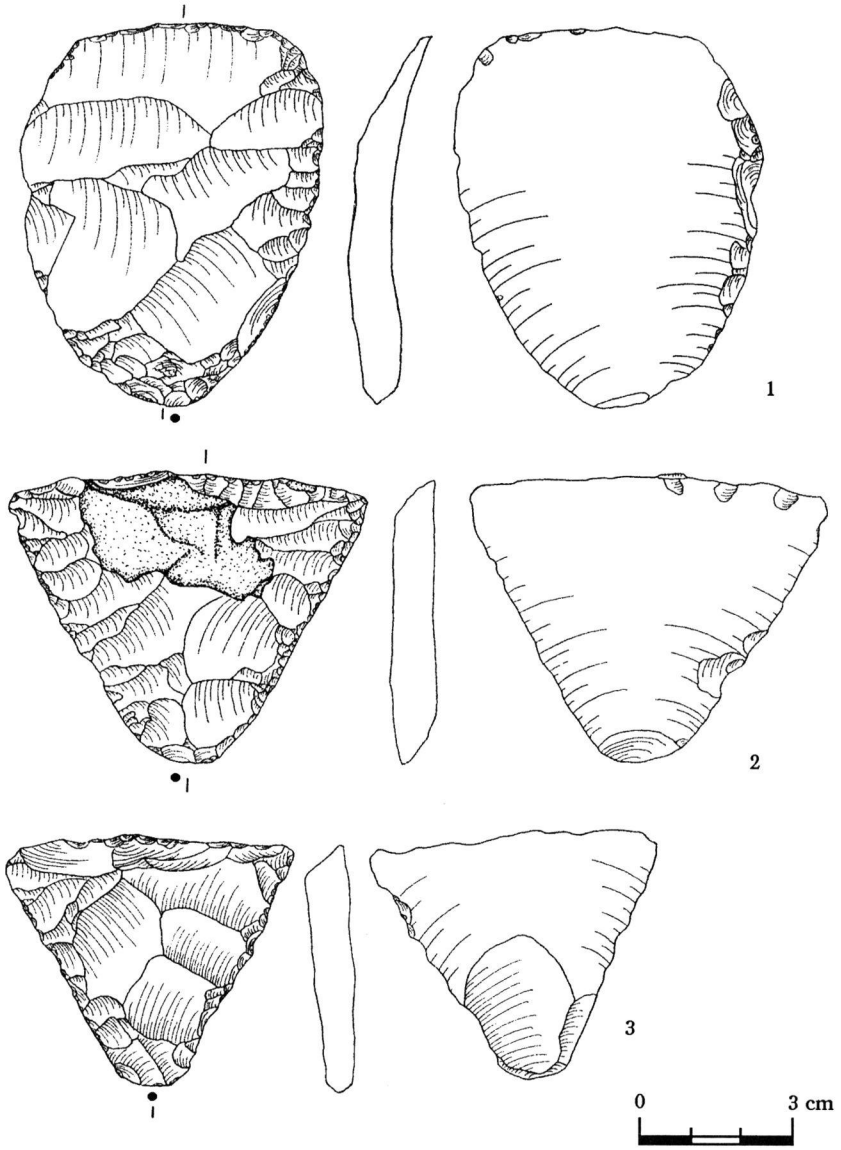

Fig. 4: Flint artifacts from Area A: 1) unifacial leaf [A2/45]; 2) triangular scraper with tabular flint cortex [A1/15]; 3) triangular scraper [A1/4]

it may have been used as a sickle blade (fig. 11). These finds probably served as blades mounted in wooden handled composite sickles similar to the beautifully preserved sickles found in the tomb of Hemaka at Saqqara[21], but it is possible that some specimens could have acquired the gloss from repeated use in other contexts. Blades with sickle gloss are absent in the assemblage from Area A.

[21] EMERY, *Hemaka*, pl. 15.

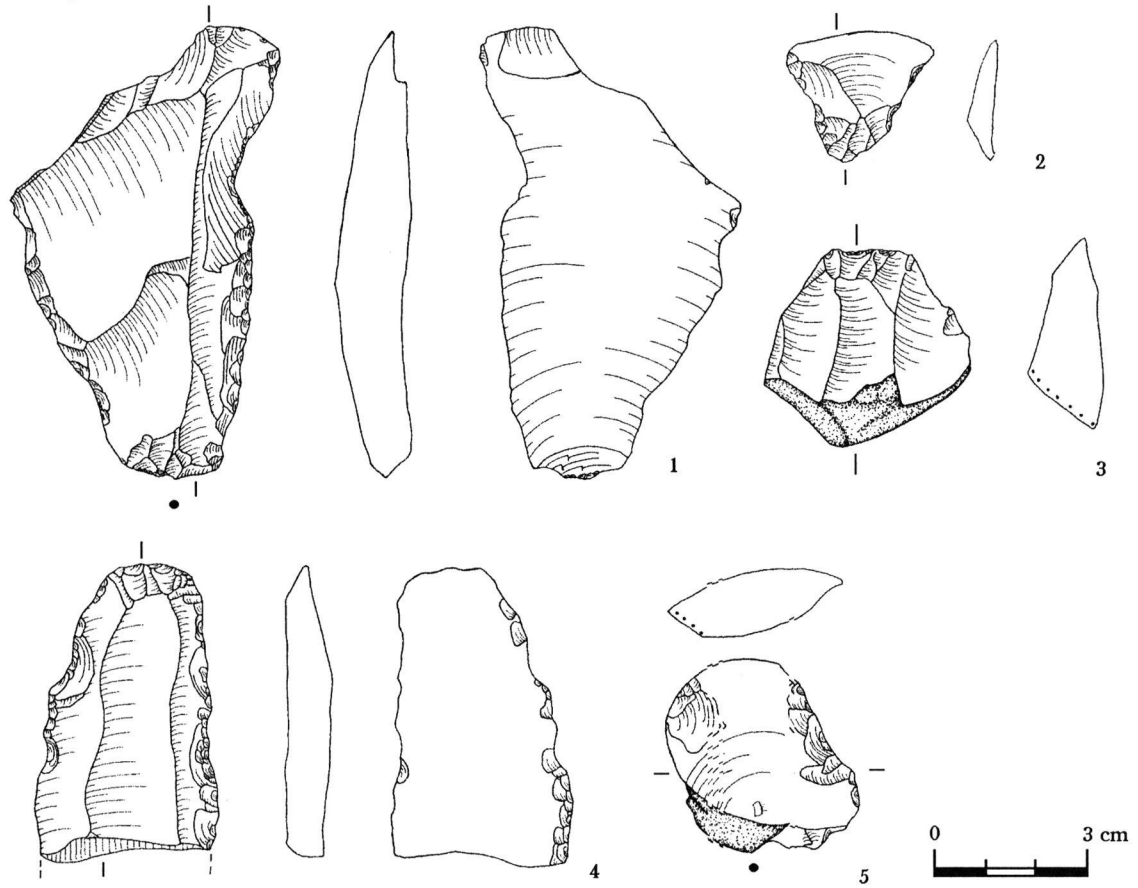

Fig. 5: Flint artifacts from Area A: 1) side scraper [A1/4]; 2) irregular scraper [A1/14]; 3) end scraper with desert flint cortex [A1/15]; 4) end scraper with lateral retouch [A1/4]; 5) side scraper [A1/15]

Bifacially retouched knives: The only complete bifacial knife was recovered from A6/16 (fig. 6), the fill of a mud brick tomb. This knife has a length of 14,6 cm, a width of 3,7 cm and a thickness of 0,6 cm. The knife has an asymmetrical form and a narrow handle. This find is invasively retouched on both sides with two small areas of tabular flint cortex preserved on the handle of the piece. The perimeter of the knife has been steeply retouched on one side. This steep retouch may be the result of resharpening of the kind shown in the butchery scenes in the Tombs of Ti[22] and Sekhem-Ankh-Ptah[23] at Saqqara. While this and other bifacial tools are well-made and have negatives from broad thinning flakes, they lack the spectacular parallel invasive retouch of some bifacially retouched knives from the Predynastic Period[24]. The narrow, straight handle of this form differs from bifacial knives from the Archaic Period with hooked handles such as those from the Tomb of Hemaka at Saqqara[25] and Abydos[26]. Other finds include parts of asymmetrical and symmetrical knives (fig. 6). Asymmetrical knives have steep retouch

[22] Steindorf, *op. cit.*; Epron-Wild, *op. cit.*

[23] Simpson, *op. cit.*

[24] Lythgoe, *op. cit.*, fig. 36e; Baumgartel, *Prehistoric Egypt* II.; A. Aldred, *Egypt to the end of the Old Kingdom,* New York 1965, fig. 24.

[25] Emery, *Hemaka*, pl. 11.

[26] *Abydos* I.

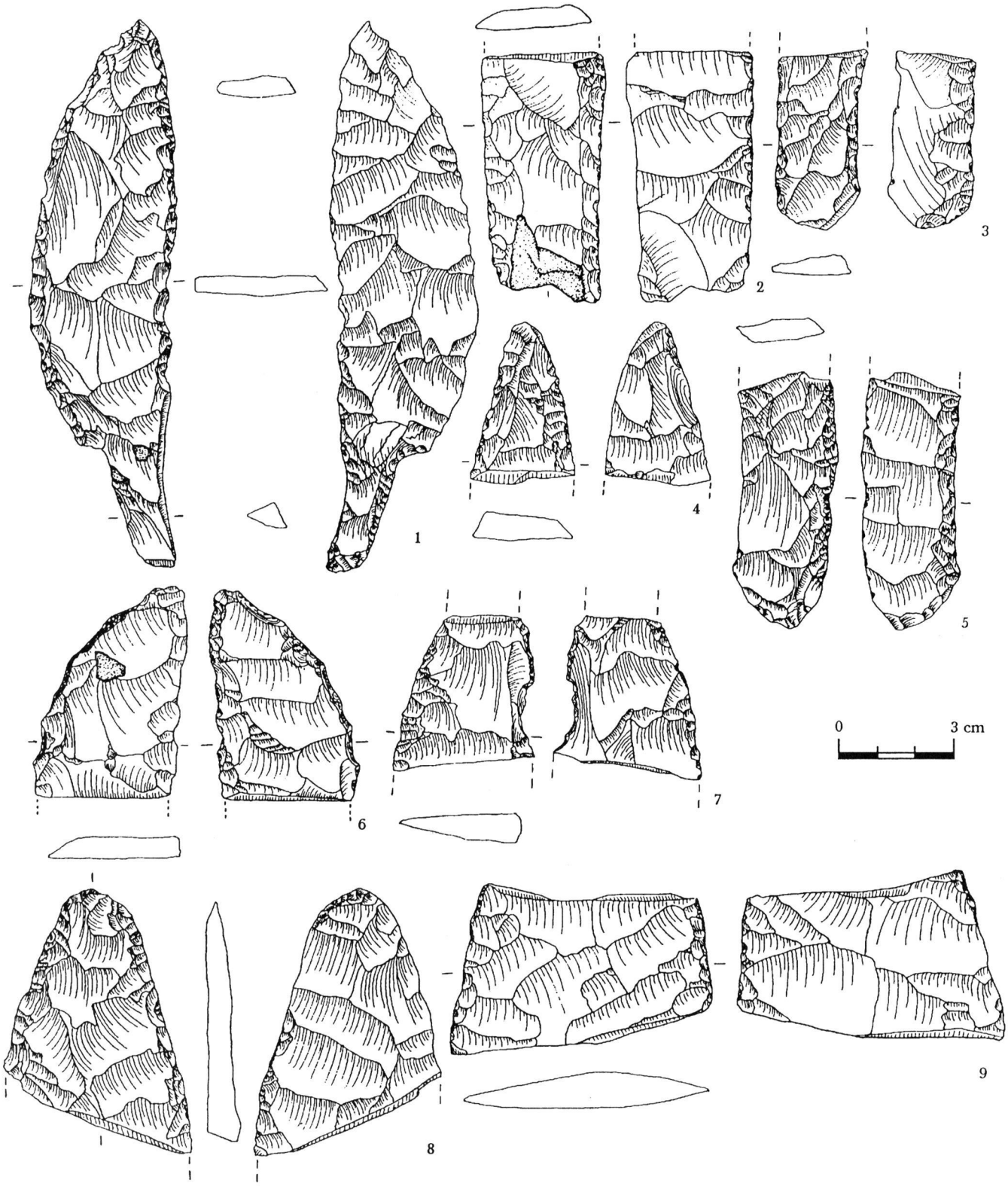

Fig. 6: Flint artifacts from Area A: 1) bifacial knife with handle [A6/16]; 2–7) fragments of bifacial tools [2: A4/8; 3: A1/4; 4,5: A1/14; 6: A1/5; 7: A4/1]; 8 and 9) fragments of symmetrical knives [8: A4/22; 9: A1/4]. 1 and 2 preserve tabular flint cortex

along the perimeter of much of the tool, while symmetrical knives lack steep retouch and are symmetrical in cross-section. Several broken, bifacially worked pieces could be handles, but are wider than the find from A6/16.

Other bifacially retouched forms: These finds include curved fragments of bifacial tools that could be broken handles (figs. 6, 11). Other more rectangular forms represent a different type (fig. 6). These finds, however, all have broken ends which make it difficult to reconstruct their original form. As with the larger bifacial knives, these broken forms preserve cortical surfaces of tabular flint. The bifacial knives in the assemblage were made using soft hammer percussion. There is no evidence of the delicate pressure flaking used to make the "ripple flaked" tools of earlier periods.

Unifacial leaves: This form is represented by a single find from A2/45. This tool is 7,6 cm long, with a width of 6,1 cm and a thickness of 1,0 cm. It is invasively retouched with light retouch or use damage on much of its perimeter (fig. 4). The flake has many small flake removals on the dorsal side of the proximal end and some traces of ventral retouch.

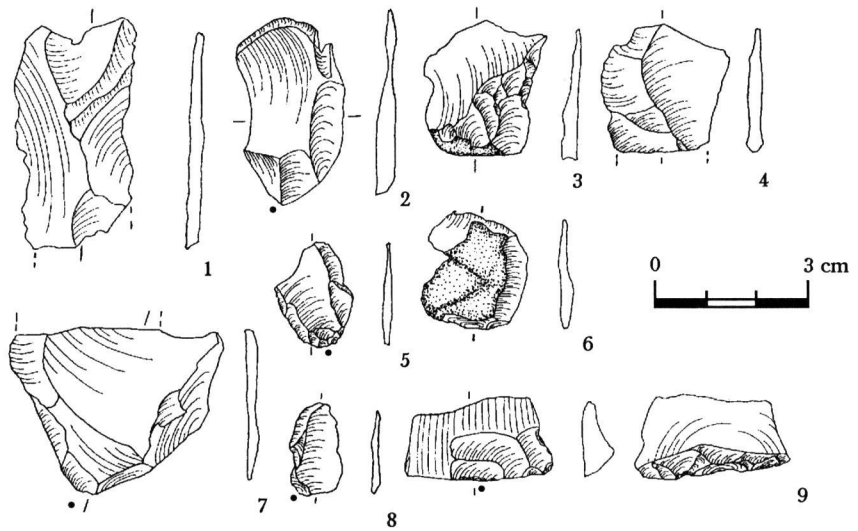

Fig. 7: Flint artifacts from Area A: 1–8) thinning flakes [1: A1/24; 2–6 and 8: A1/4; 7: A1/14]; 9) resharpening flake [A1/4]. 3 and 6 preserve tabular flint cortex

Triangular scrapers: These finds are well-made and have a triangular form, albeit with variable dimensions and thicknesses[27]. The more robust end of the spectrum of these tools can be seen in the specimen from the surface of Gallery 58, while the finds from the surface of Gallery 18, C10/2 and A1/15 are more typical specimens (figs. 4, 10). The smaller thinner specimen from A1/4 represents the small end of the spectrum for this tool type. Three of these pieces preserve cortical surfaces of tabular flint. The edges of these artifacts are sharp and could also be used for cutting. Specimens from both Areas A and C show

[27] cf. Reisner, *Mycerinus*, type IV; Emery, *Hemaka*, types 2–7.

ventral thinning of the bulb of percussion. Such ventral thinning is also common on the flake tools in Reisner's collections from the Mycerinus Valley Temple housed at the Boston Museum of Fine Arts.

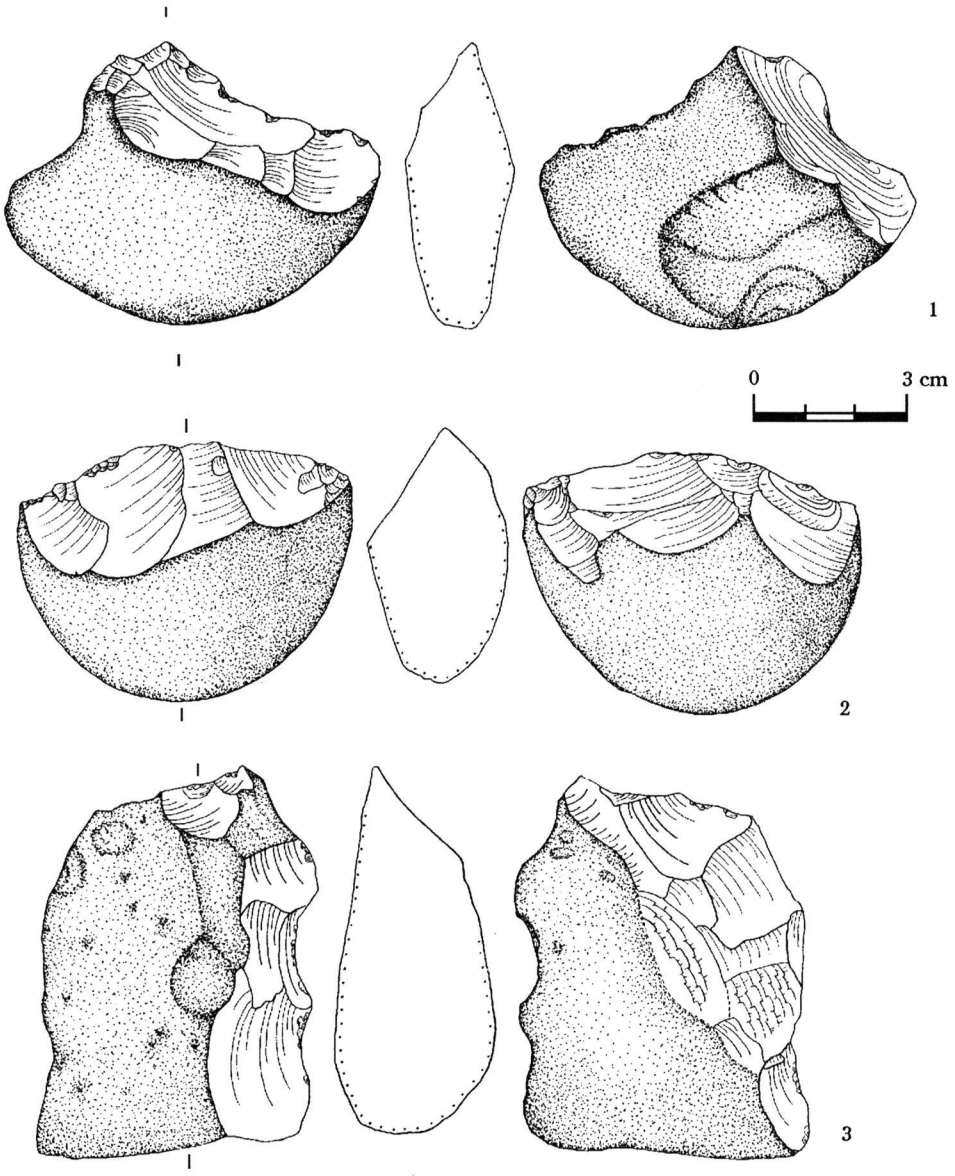

Fig. 8: Flint artifacts from Area C: 1–3) bifacial cobble cores [1: C11/4; 2: C10/2; 3: C11/6]. Four flakes were refitted with core 2. All finds on desert flint

Side scrapers: A few retouched flakes (figs. 5, 11) can be placed in this category. These finds include large, thick, heavily retouched flakes as well as smaller, more delicately worked artifacts. As with other kinds of small flake tools at Giza, these finds show no sign of standardization and probably belong to a group of expedient tools. Artifacts with both dorsal and ventral retouch are included in the collections. These tools

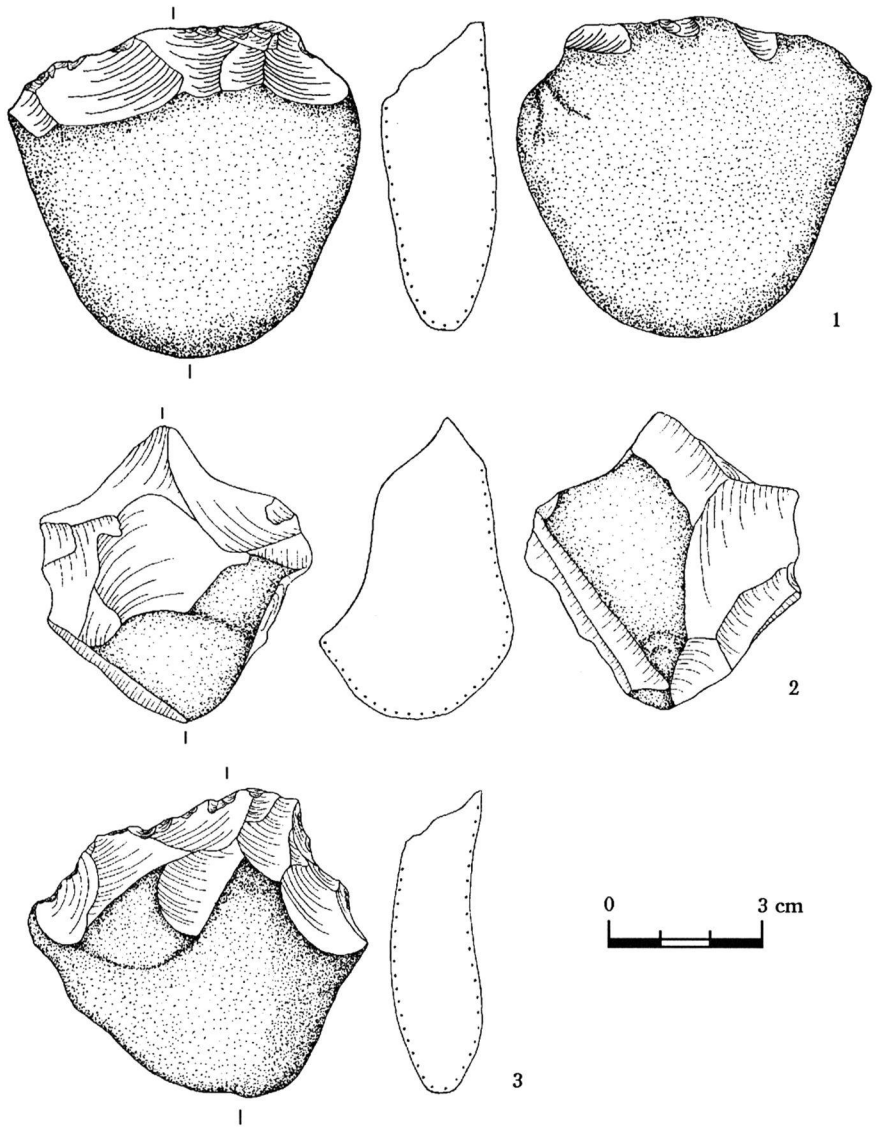

Fig. 9: Flint artifacts from Area C: 1 and 3) unifacial cobble cores [1: C10/2; 3: C11/4]; 2) polyhedral core [C10S/3]. All finds on desert flint

contrast forms such as the triangular scrapers that, while variable in their dimensions, clearly fall into a specific class of implements.

End scrapers: The end scrapers from the first season of excavation also show little standardization. Examples of this class of tool include an end scraper on a thick cortical flake of desert flint from A1/15 and an elongated flake with multiple areas of dorsal and ventral retouch from A1/4 (fig. 5). The finds from the 1988/89 excavations lack the more standardized end scrapers on well-made blades known from other Old Kingdom contexts.

Notched and denticulate scrapers: These finds are not abundant in the collections from the 1988/89 season and include specimens like the notched piece on desert flint from C3/1 (fig. 11).

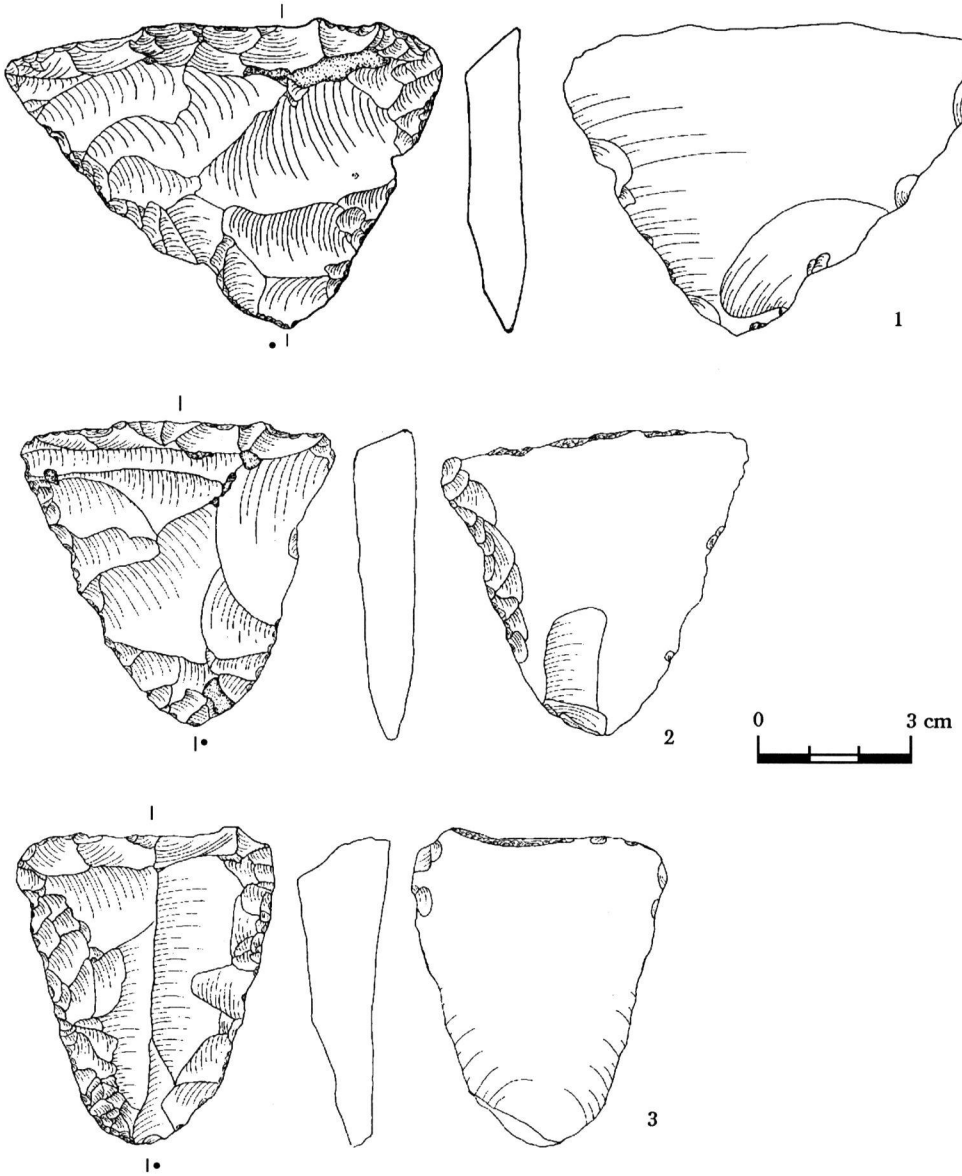

Fig. 10: Flint artifacts from Area C: 1–3) triangular scrapers [1: C10/2; 2: surface find Gallery 18; 3: surface find Gallery 58]. 1 and 2 preserve tabular flint cortex

Other scrapers: These finds include a range of irregularly retouched flakes that do not fall into the categories listed above, and include finds such as the small proximally and ventrally retouched find from A1/14 (fig. 5) and other irregular forms.

The unretouched flints include flakes in a range of sizes and forms, and angular debris consisting of pieces lacking striking platforms, bulbs of percussion and clear striking directions. Flakes twice as long as wide are classified as blades regardless of whether or not they are well-made blades with straight edges and parallel dorsal negatives. Debitage under 2 cm in size is classified as small debris. Table 2 provides a list of the abundance of all classes of artifacts from the two areas of excavation.

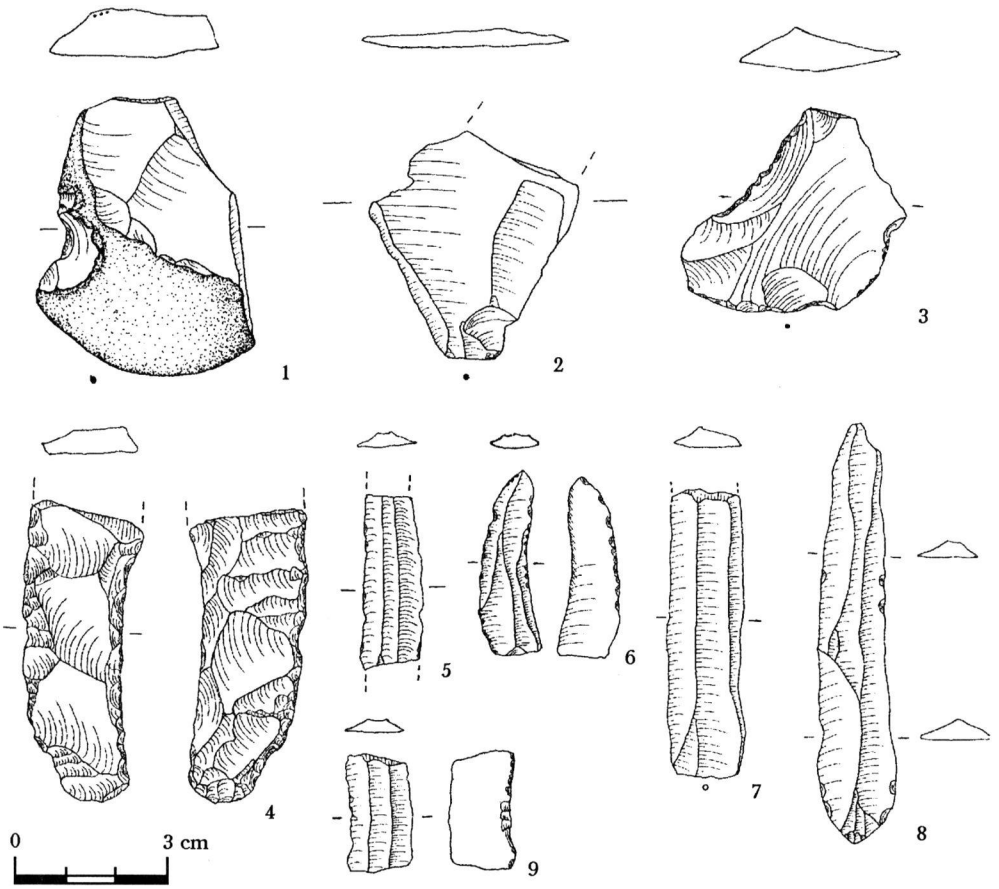

Fig. 11: Flint artifacts from Area C: 1) notched flake on desert flint [C3/1]; 2) thinning flake [C9/4]; 3) side scraper [C11/4]; 4) fragment of a bifacial tool [C11/4]; 5, 6 and 9) sickle blades [5: C5/2; 6: C8/4; 9: C11/5]; 7) broken blade [C5/3]; 8) blade [C1/2]

Excavators recovered a total of 321 flakes, 51 pieces of angular debris, 50 blades and 36 pieces of small debris from Areas A and C. Of these finds 227 flakes, 21 pieces of angular debris, 5 blades and 2 pieces of small debris have at least a trace of a cortical surface. Ten flakes and two blades have cortical surfaces of tabular flint, while the other 243 pieces preserve cortical surfaces of desert flint. Table 5 presents information on the unretouched flakes from the two areas of excavation. The lack of blade cores despite the presence of blades in both areas of excavation, suggests that finished blades were transported to the site.

Although the study season was too short to attempt systematically to refit the artifacts, in one instance it was possible to refit four flakes to a bifacial cobble core from C10/2. These refits provide a strong indication that flint knappers worked within this gallery.

22 thinning flakes from Area A and 4 from Area C (figs. 7, 11) suggest that bifacial tools were at times resharpened in both areas. These flakes are thin with very diffuse bulbs of percussion. The production of bifacial knives results in large numbers of thinning flakes. The lack of large numbers of flakes from primary reduction and unfinished bifacial tools indicates that neither area was a center used for manufacturing bifacial tools. Thus, the thinning flakes probably reflect the maintenance of bifacial tools.

The above typology is in no way intended to be a complete inventory of Old Kingdom flint artifacts but is simply a catalog of the finds recovered during the first season of GPMP excavations. Forms that are conspicuously missing from the collections from the first field season at Giza include arrowheads, drills, standardized end scrapers on thick blades and forms with denticulate edges. The collection from Giza lacks many of the specific forms reported at other early Dynastic and Old Kingdom excavations[28]. This observation is probably in part the result of the small size of the two assemblages. Future excavations in Area A will help to rectify the problem of having only a small collection of artifacts from a narrow range of contexts. At present, no further excavations are planned for Area C.

Comparison of Areas A and C

The excavation in Area A produced 309 flint artifacts weighing a total of about 4140 g, while the excavation in Area C produced 235 lithic artifacts weighing a total of about 4630 g. Table 1 shows the provenience of these finds, and Tables 2–5 indicate the abundances of different classes of cores, tools and debitage.

Comparing the assemblages from Areas A and C one sees points of similarity and difference. Both areas have similar percentages of cores, but Area A has a wider variety and smaller ones. The majority of cores from Area C are simply worked flake cores of desert flint with large cortical surfaces. While excavation in Area C produced 13 cobble cores and 2 polyhedral cores, Area A produced 7 cobble cores as well as uni-platform, bi-platform, centripetal and waste cores. These cores indicate that more diverse patterns of knapping were practiced in Area A than Area C. Although excavators recovered a small percentage of blades, the assemblages from both areas lack blade cores. These and other observations mentioned below show that Giza was part of a much broader lithic economy.

The slightly lower weight per artifact in Area A probably results from a wider range of tools being manufactured, used and resharpened in this Area. The presence of 9% small debris in the assemblage from Area A compared to the 4% in Area C bears out this point. Nonetheless there is no indication that large numbers of bifacial tools, large flake tools or blade tools were made in either of these areas at Giza. These tools appear to have arrived at Giza in finished form, where they were curated and resharpened. Only small, non-standardized flake tools appear to have been produced at Giza from the local desert flint. The bifacial cobble core and 4 refitting flakes resting on the floor of excavation unit C10 are the only examples of flint finds from the 1988/89 season that appear to lie where they were chipped. These finds and other simply worked flint cobbles are the result of an expedient chipping technology which is essentially Oldowan in nature and shows that rudimentary flint chipping technology can be useful to people living in complex societies. The documentation of this simple flint working technology at Giza is important because it appears to have been common in both areas of excavation and because previous reports rarely mention the presence of these expediently made artifacts or even confuse them with Paleolithic artifacts.

The abundance of both cobble cores, some of which could be choppers, and unretouched flakes suggests that, above all else, flakes were produced in Area C. Although most of these flakes have pristine edges, some of the flakes were probably used for cutting. Primary reduction of desert flint cobbles took place in both areas of excavation as is shown by the high percentages of flakes with cortical surfaces, 52% (78/150) in Area A and 81% (139/171) in Area C (Tab. 5). The relative scarcity of flakes with tabular flint cor-

[28] e.g. *Abydos* I.

tex, 5% (8/150) in Area A and 1% (2/171) in Area C, shows that much of the primary reduction of this material took place in other locations. The presence of 15% (22/150) thinning flakes in Area A and only 2% (4/171) in Area C provides further evidence that although bifacial tools were not made in either area, they were more often used, modified and resharpened in Area A than in Area C.

The higher abundance of angular debris in Area A, 13%, versus 4% in Area C, further suggests that flint was knapped more intensely in this area of excavation. The excavations in Area A also yielded higher percentages of tools (12% versus 7%) and higher percentages of blades (12% versus 6%) than Area C. It is only in the abundance of unretouched flakes larger than 2 cm that Area C exceeds Area A, 73% versus 49%.

Turning to tools, excavators recovered a wider range of retouched flints from Area A than C. Given that the assemblage from Area A contains over twice as many tools and tool fragments than the assemblage from the galleries west of the second pyramid, it is not surprising that it contains a wider variety of retouched forms. Some of the more obvious differences between the assemblages are the presence of 15 bifacially retouched finds from Area A and only one from Area C. Most of these finds are parts of symmetrical and asymmetrical knives. Area C has more triangular scrapers and blades with sickle gloss than does Area A. Given that the galleries of Area C appear to have been used for storage and stone working crafts, the presence of sickle blades here is unexpected. Although blades are more abundant in the collection from Area A than C, it is noteworthy that no blade and blade fragments from Area A show sickle gloss.

The abundance of sickle blades in the GPMP assemblages is far lower than in the rural settlement of Kom el-Hisn in the delta where WENKE ET AL.[29] report that sickle blades are the most common flint tool. An examination of the flints from REISNER's[30] excavation of the settlement within the Valley Temple of Mycerinus housed at the Boston Museum of Fine Arts also found sickle blades to be the most numerous kind of flint tool. If one associates agricultural activities with large numbers of sickle blades at Old Kingdom sites, it seems that little primary agricultural production took place in connection with Areas A and C at Giza. Given the sacred nature of the Giza necropolis this conclusion is not surprising. The village inside the Valley Temple of Mycerinus postdates the main phases of building at Giza and probably dates to the 5th or 6th Dynasty[31]. Unlike the inhabitants of Areas A and C at Giza, the inhabitants of the village within the Valley Temple of Mycerinus appear to have been engaged in agricultural activities as well as maintaining the ruins of the temple.

Another difference between the two assemblages is the degree to which they include burnt artifacts. The percentage of burnt flints is over five times greater in Area A than C (Table 2). This trend suggests that fires were more extensively used in Area A and also indicates that a wider range of activities took place in Area A than C.

Conclusions

The conclusions drawn in the previous section are consistent with other lines of evidence. The architecture of Area C is highly repetitive and indicates along with finds described elsewhere[32] that the galleries west of the second pyramid were used for a combination of craft activities and storage. This

[29] in: *JARCE* 25, 1988, pp. 5–34.
[30] *Mycerinus.*
[31] *Ibid.*
[32] N.J. CONARD, *The 1988/89 Excavation of Flinders Petrie's "Workmen's Barracks" at Giza,* in: *Papers presented at the 57th annual meeting of the Society for American Archaeology in April 1992 Pittsburgh,* Pennsylvania (in press).

enormous installation appears to have been built in a short period of time, and been used and abandoned following what appears to be a single period of intense use. Area A has a much more complex architectural history with diverse superimposed architectural structures[33]. Some structures have been identified as part of a bakery, and tombs and several rich middens have been excavated during the 1988/89 and 1991 seasons. As the excavations in Area A proceed, study of the lithic artifacts from this area should help to reconstruct how this part of Giza was used in the past.

Thus far the flint artifacts from the excavations by the GPMP document four different knapping industries. Expedient chipping of desert cobbles is well represented by simple cores and unstandardized flake tools in the assemblages from Area A and especially Area C. A large flake tool industry is documented in both areas of excavation by the presence of triangular scrapers and unifacial leaves made of tabular flint. The first season of excavation recovered bifacial knives in both areas. Finds from this bifacial industry are made of tabular flint and are much better represented in Area A than Area C. Finally, finds from a blade industry on tabular flint are present in both areas of excavation.

Only the complete sequence of reduction of the expedient flake industry on desert cobbles has been documented by the GPMP excavations. The three industries made from tabular flint are represented primarily by finished and broken artifacts. While thinning flakes and small debris provide evidence for the maintenance of these tools, the lack of tabular flint cores and primary debitage shows that these artifacts were made at other locations and that the flint artifacts from Giza are part of a larger network of mining, production and distribution.

Further study of chipped stone artifacts should allow researchers to reconstruct this dynamic economic network. These studies will demonstrate the importance of stone knapping technologies in the day-to-day workings of early Egyptian civilization and will almost certainly refute the earlier view that flint knapping was a "dead art" of little practical use during the Old Kingdom.

Acknowledgements

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[33] M. Lehner, *The Archaeology of the Giza Plateau*, in: *Papers presented at the 57th annual meeting of the Society for American Archaeology in April 1992 Pittsburgh*, Pennsylvania (in press).

Abstract

The lithic artifacts from the 1988/1989 excavations at Giza provide evidence for several different flint industries at the site. The finds include materials from: 1) an expedient flake industry on cobbles of desert flint; 2) an industry of large flake tools on tabular flint; 3) a bifacial knife industry on tabular flint, and 4) a blade industry on tabular flint. This report presents finds from each of these industries. The lithic artifacts from the area south of the Harbor Wall (Area A) indicate that a wider range of activities took place in this part of the site than in the galleries west of the second pyramid (Area C). This conclusion is consistent with the architectural evidence.