

Stone tools beyond traditional functions: the journey of lithics from profane to ceremonial

Abstract

The production of flint tools evolved and diversified in response to the increasing and newly appearing demands of the early societies. The maintenance of this tradition coupled with the durability of stone tools resulted in the development of the lithic tool kit and the accumulation of large lithic assemblages mainly in settlements. The twentieth century witnessed the wide investigation of those assemblages through techno-typological approaches that aim at classifying and interpreting lithic assemblages and using them to reconstruct the chronological and cultural phases of given societies. The wide use of stone tools in daily-life activities i.e. hunting, gathering, farming, and food processing, enhanced the perception of lithics as functional objects that are mainly associated with secular activities. However, investigating the changing roles of stone tools over time remained partially overlooked. Apart from finely-made flint knives, the ritual functions of stone tools remain an unexplored research area. The current paper focuses on assessing the symbolic roles of the Predynastic lithics based on their use as grave goods. The results show that varied classes of tools were recruited for funerary purposes and that the evolving roles of lithics were influenced by a long process of human-nature and people-object interactions.

Keywords: Predynastic Egypt, stone tool, grave good, funerary practice, cemetery

Volume 9 Issue 2 - 2024

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Received: June 10, 2024 | **Published:** June 26, 2024

Introduction

The prehistoric period (circa 700,000BC: 3200BC) represents a crucial part of the Egyptian history. It is from this period that huge amounts of varied material culture have been uncovered from all over the Egyptian land.¹⁻³ Lithics, ceramics, personal ornaments, botanical, and faunal remains represent the major physical evidence from this period, with stone tools and ceramics being the most significant due to their abundance, durability, and their importance as chronological markers. The fluctuations between aridity and humidity characteristic to this period had a great impact on the development of the subsistence patterns of Egypt's early inhabitants, and on the development of their ideologies, beliefs, and social structure. The diversity in the produced types of material culture increased over time in response to the increasing and newly appearing demands.⁴⁻⁶

Flint tools gained more visibility after the large-scale excavations, conducted at a number of prehistoric/predynastic sites along the Nile River and in the Egyptian Sahara, especially through the 19th and 20th centuries. F. J. C. Spurrell, Guy Brunton, and J. De Morgan were among the earliest excavators who started to pay more attention to lithic assemblages since 1896.^{7,8} Lithics uncovered from domestic contexts received more attention,⁹ and assemblages of flint tools from upper Egyptian sites were a matter of deeper level of investigation by some scholars.^{10,11} Recently, more efforts were spent to classify and interpret lithic assemblages unearthed from predynastic domestic contexts, i.e., Maadi^{12,13} and Adaima.¹⁴ Additionally, efforts are continuously spent to classify and interpret the dynastic lithic assemblages from both domestic and non-domestic contexts.¹⁵ The analysis of stone tools uncovered from settlements is mostly exploited to reconstruct the evidence of the changing subsistence patterns, regional variations, establish local typologies, and investigate the *chaîne opératoire*.

Although stone tools are already known to be used as grave goods since the prehistoric period in Egypt and worldwide, the investigation of the funerary roles of stone tools remained an overlooked topic, especially in Egypt. This is unlike other classes of funerary goods i.e.

palettes, figurines, ceramics, etc..¹⁶⁻¹⁸ The only focus in this regard is given to the more elaborate types e.g. flint knives, while the rest of the classes are generally neglected. This might be partially attributed to the perception of the early excavators about the stone tools used for funerary purposes, which remained as a legacy. Rizkana and Seeher (1988) explain the difficulty of investigating chipped stone tools from Predynastic non-domestic in Maadi due to their uniform nature “*Settlement flints can tell much more about the type set, the working techniques, and the material sources than the often rather uniform pieces from graves i.e. the ripple flaked knives from Naqada II which even may had a cultic rather than a profane function*”.¹³

The former statement shows how speaking about stone tools as grave goods was usually narrowed and restricted to the well-known types especially flint knives, while also refers to the unfamiliarity with the actual nature of the stone tools uncovered from cemeteries. C. Thompson also considered the flint tools from the Predynastic burials as being of restricted types.¹⁰ Although restriction might be true in terms of the quantity of the flint tools that were deposited in the Predynastic burials, certainly it does not apply to the variety of types and this became clear after investigating the tool types uncovered from the Predynastic cemeteries especially in Upper Egypt.

Additional factors contributed to neglecting the symbolic roles of stone tools unearthed from non-domestic contexts. Among them is the low number of stone tools recorded from burials. In his comment about the burials of Armant, Huzzyn states “*Whereas a large proportion of the graves excavated have yielded pottery of some sort or other, flint implements were found only in a comparatively small number of graves*”.¹⁹ The low preservation condition of the burials in several sites also accounted for the loss of data about the burial's content.²⁰ Further, flint tools found within burials were usually explained by their excavators as intrusive and therefore, less effort was given to record them. Such factors probably resulted in the total or partial neglect of those finds, especially when the deposited tool types were those of non-prestigious nature. e.g. flakes, blades, unretouched pieces, which might not be even considered as tools.

Gero distinguishes between two main types of tools. The first group includes what are referred to as “tools” by archaeologists, which comprise objects whose shapes are standardized and can be grouped under certain categories known to archaeologists. The second group comprises the category referred to as “un-retouched flakes” or “*Debitage*”, which include objects that do not carry clear signs of use nor are they of standardized shape. This also means that the group of objects that archaeologists classify as tools is highly limited when compared to the rest of the objects.²² Hence, unretouched flakes and blades mostly have lower chances of being recorded and considered when found within a funerary context too, or might simply be considered as intrusive objects or debris. Some excavators, e.g., Brunton, mentioned that they collected only the more important grave goods, without specifying which class they considered important. However, we may expect that a small tool or tools that are not of a luxury nature were probably neglected in many cases, following the selective criteria known through the late nineteenth century.¹¹ However, the funerary roles of lithics are better discussed through non-Egyptian contexts, especially in Europe and Asia.^{23–25}

Hence, conducting systematic investigations on stone tools started to be a real demand in order to improve the quality of archaeological interpretations. The accumulated values embodied through objects might evolve and change over time because of the emergence of new ways of interpreting archaeological objects. Hence, the current research offers a chance to investigate Predynastic flint tools from a new perspective that considers reconstructing object trajectories, and goes beyond the traditional functions of flint tools and beyond the traditional discussions of lithic assemblages from Egyptian context. In addition, the current research considers the impact of manipulating those objects among different contexts, and offers an assessment of the classes of stone tools that were used as grave goods through the Predynastic period. Furthermore, the research offers a chance to better understand the possible motivations behind the selection of certain types to be moved from domestic to non-domestic contexts, detect homogenous patterns of the placement of lithic grave goods (LGG) inside the burials, and conduct correlations between the recorded classes and the sex/age of the burial’s occupant.

Materials and methods

Different approaches might be adopted in order to infer about the possible symbolic function of a certain class of objects, including stone tools. These include the investigation of the religious texts which describe using these tools for ritual purposes, analyzing the painted scenes, where such tools are used in rituals, and investigating object’s contexts. However, this is possible only concerning the dynastic times, where the physical, textual, and iconographic evidence refers mainly to the use of flint knives within funerary contexts and for ceremonial purposes. Given the absence of similar sources from the prehistoric/predynastic period, investigating the ritual function of stone tools might be only approachable through the investigation of the burials and their content of LGGs. Hence, the departure point is to identify the classes of objects that were used for this purpose, especially considering that varied classes of flint tools were used for funerary purposes during the Predynastic, unlike the dynastic times. This required conducting a full survey of the data published about the Predynastic cemeteries in Egypt. In addition, earlier sites were also included for further discussions about the emergence and evolution of this tradition.

The investigated Predynastic sites include the sites in the Badarian region i.e. Badari,^{26–28} Matmar,²⁹ and Mostagadda²⁰ Together with sites of Naqada, Koptos and Ballas,⁷ Dispolis Parva,³⁰ Mahsna,³¹ Nag ed

Deir,³² Amrah³³ Hierakonopolis,^{34–36} Armant,¹⁹ Adaima,^{37, 38} Minshat Abu Omer,³⁹ Maadi and Wadi Degla^{12,13} and Gerzeh.^{21,40}

Although the Predynastic cemeteries are not limited to the investigated examples, the data were generally collected based on the availability of data and publications. Complete publications and burial registers were partially available for certain sites, i.e., Badari, Mostagadda, Naqada, Matmar, Nag ed Deir, Maadi, and Wadi Digla. Extracting relevant information from the rest of the discussed sites was surrounded by challenges mainly given the absence of full catalogues of burials or the partial description of the burials and their content, i.e., Mahsna. In addition, the use of heterogeneous terminologies to describe the same tool class among the various publications places further constraints on the identification of the recorded classes, and requires comparing descriptions to illustrations and photos. Such challenges are generally accounted to the early dates of such publications, namely, the late nineteenth century, a phase that coincided with the earliest stages of the development of prehistoric archaeology. However, it was possible to reduce the impact of such difficulties to the minimum through the accurate revision of the published data, comparing descriptions with illustrations and photos of objects, and comparing the data driven from various resources and publications. In addition, recent publications were also consulted as a secondary source of data for a better interpretation of the investigated lithic grave goods classes, although similar catalogues or tomb registers are absent.

The exploitation of the data extracted from publications, required establishing a robust database, where each burial that contained LGG in each site, is described using the same variables. The variables include attributes that describe the burial, the occupant, and the burial content of LGGs and non-LGGs. The classes of the lithic grave goods were provided so that the quantity and placement of each was fully described. The evidence of body treatment and/or ritual practices was accurately recorded based on the scattered notes given by the excavators and also the observations possible from the published photos. Finally, the data acquired from all the investigated sites are compared, analyzed, and interpreted.

Data analysis

Surveying the published data about the LGGs inside the Prehistoric/Predynastic burials was very helpful to obtain insights into the classes of stone tools used for funerary purposes, the frequency of their use, and their placement inside the burials. The use of stone tools for funerary purposes is found to be deeply rooted in the Egyptian history.

LGGs before the predynastic

The evidence from the Middle - Upper Paleolithic site of Nazlet Khater,⁴¹ known as the earliest stone exploitation site in Egypt, refers to the use of stone tools for non-functional purposes since the earliest times. Two Upper Paleolithic burials were unearthed from the site. The first one was of an adult who was inserted into a natural crack, in a contracted position, but on their back. The very bad state of preservation of the bones did not allow for sexing or aging the deceased adult, however, possible remains of a newborn or a fetus were recorded. Fragments of charcoal and ostrich eggshells probably represented part of the grave goods. Although the Middle Paleolithic stone tools found in association with such a burial are believed strongly to be intrusive, the evidence from the second burial offers a different interpretation, since the bifacially-retouched axe found next to the skull of the occupant in the second burial is confirmed as a grave good. The deceased adult was also found inside a crack but in flexed position lying on the back.⁴¹ Hence, this might be the earliest example

so far known for using stone tools as grave goods in association with modern human.

The use of stone tools as grave goods started to be more visible during the Neolithic period. One of the possible earliest examples is recorded in Fayum. Count Byron de Prorok reported the discovery of a cave area and Neolithic burials. The same area was described by C. Thompson as “a prehistoric cemetery of hundreds of graves, some with Neolithic flint stuck on the end as offerings at the east end” and adds “The nature of Porok’s discoveries still awaits publication by its investigators.”²⁷ Although C. Thompson mentioned that Mr. Brunton was appointed by the Oriental Institute to investigate Mr. Porok’s Cemetery, those burials were not investigated at that time and probably not even later. Miss Thompson herself had some doubts about the nature of such early cemetery and the deposition of stone tools as grave goods inside them, arguing that if such burials were very clear on the surface, as stated by Mr. Porok, the discoverer, it would have been hard for her and Mrs. Gardner, who was part of her team, to miss them.²⁷ However, the reported graveyard seemed to be very close to the cultivated areas to the northeast of the Fayum depression, and this position would have made it totally exposed to looters and modern farmers. The fact about this early cemetery in Fayum and the possible deposition of stone tools inside its burials is still unclear. However, Thompson’s comments should also be taken with caution given the fact that there must have been an associated cemetery with the long-lived settlement of Fayum. Hence, if Mr. Porok’s observations were true, and stone tools were placed as offerings in such a clear way, this could be enough reason for this quick disturbance by local communities before such areas were covered by the modern urban expansion.

Another early example is recorded from Gebel Ramlah Neolithic cemeteries E-01-2, E-03-1, and E-03-2, where objects made of flint represented the most common grave goods. These included unretouched arrowheads, scrapers, segments, cores, polished pebbles, retouched and unretouched blades and flakes (Figure 1).⁸ Other limited cases are known from the Neolithic settlement of El Omari. The burials were dug in the abandoned domestic areas, and were mostly found in shallow depths that ranged between 25 cm and 45 cm below the modern surface. Stones of rough/unclear nature were recorded from some burials i.e. burials A35, A.67, A89, A101, and A130, A136, A149. B66. B183. In those cases rough stones or, merely “stones” are recorded from under the head, the feet, or the torso of the deceased.⁴² In addition, three flakes are recorded from burial.



Figure 1 Flakes and blades (unretouched) from the Neolithic burials of Gebel Ramlah.⁸

A.4 under and over the body within a black *redim*, and together with the remains of cereals and charcoal. The aforementioned case

represented a male burial, where the deceased is covered with matting and usually with half of a pot or one complete pot before the face. From the burial A.113, a backed blade was found inside the skull of a deceased female, with red sherds in her hand.⁴²

Furthermore, flint flakes were recorded from the badly preserved burial of an adult in El Omari (A150). The flakes were also found with cereals and charcoals under the body similar to the case with burial A.4. The positions of the flakes, under the body of the deceased, in both of those burials refer to a tendency toward the inclusion of flakes as grave goods and that they were not intrusive despite the disturbance of the burials. More lithic grave goods were recorded from other areas in El Omari, e.g. area C, where “numerous flakes and artifacts” are reported from unspecified burials. Among those artifacts are flakes and arrowheads that lacked signs of patina. A “flint artifact” was also recorded from burial F.1 in Area F with two black sherds inside a disturbed burial where the body of the deceased was covered with large blocks of stones. A fragment of a retouched blade was also recorded from burial F.4, while flakes were recorded from burials F.5 and F.11.

Discerning between Neolithic and Predynastic burials among the Upper Egyptian sites is challenging, especially through the publications of the late nineteenth and early twentieth centuries. In such publications, the term “Badarain” and “Tasian” are used interchangeably as the upper Egyptian Neolithic counterpart of the lower Egyptian culture among the sites i.e. Merimde, Maadi, and Buto, as two successive periods, or to refer to the Early Predynastic Period. However, Hendrickx suggests that the term Badarain implies both cultural and chronological differences. The currently accepted range for the Badarian is (4400-4000 BC), and the extension of the Badarian sites spatially extend between Badari region and Hierakonpolis, with the more robust evidence of the Badarian culture being concentrated primarily in Badari itself.²

The difficulty of distinguishing between Tasian and Badarian as two chronological phases is clearly stated by Brunton, while commenting on the burials uncovered in Mostagadda as he states “The very difficult question of the distinction between the two classes of burial, Tasian and Badarian, will be discussed later. It is quite possible that in many cases the description Tasian is not warranted”.²⁰ However Brunton used the term “Badarian” to describe 49 burials, in Mostagadda, five burials in Matmar, and 44 burials from Badari. The objects associated with these burials included grinders, rough flint, flakes, few arrowheads and few knives. Six of the Tasian/Neolithic burials in Mostagadda contained flint tools namely 427, 429, 474, 2664, 2705, and 2909. These included two flakes, a point, rough flints, and four grinders. The burials were of three subadults, one male, and the rest were not sexed or aged. The fourteen years child in burial 429 was accorded a flint knife, four Ancillaria and three *Narita* shells. These “Town group” burials probably represented residential burials or burials dug in abandoned settlement sections. This is also supported with the presence of subadult burials. The burials described as Badrian by Brunton in Mostagadda, Badari, and Matmar, might therefore be assigned to a transitional phase from Late Neolithic towards the Early Predynastic. The flint tools recorded from these burials further support this discussion. This is clear through the rough nature of these items including knives. The correlations conducted between the types of LGGs recorded from burials and the classes of lithics known from domestic contexts on the level of each site, revealed that similar types existed in both contexts. This means that before the Predynastic, stone tools were probably moved from settlements to burials as they probably represented items of daily use.

LGGs during the predynastic

The Predynastic period witnessed the wide use of stone tools for funerary purposes (Figure 4). From Naqada I onwards, differences between the funerary goods and objects of daily life started to be prominent. This coincided with the need to express wealth and social status, while also the demand to help the deceased in their afterlife journey. The production of goods for funerary purposes was more obvious concerning ceramics and flint knives in particular. The data analysis shows that chipped stone tools were favored over ground stone tools (Figure 3). The latter were used in minor cases i.e. Armant,¹⁹ and even in such cases they were usually accompanied by chipped tools. Variations existed among the sites of Upper and Lower Egypt, in terms of the used types and their frequency. The data analysis refers to the concentration of bifacial tools, especially flint knives as part of the funerary goods in the sites of Upper Egypt. This is especially obvious through the Badarian sites, Naqada, Nag ed- Deir, and Hieraknpolis. Although few examples are recorded from lower Egyptian sites, however, those are mostly present towards the protodyanastic period. The only exception for this case comes from Gerzeh where knives with their varied classes are also recorded. However, it is generally suggested that Gerzeh represented a northward expansion of the Naqada culture, and that the establishment of its cemetery was even done with the purpose of creating a territorial zone for the inhabitants of the south in the northern part of Egypt.⁴³ In addition, flakes and blades were more common in the lower Egyptian sites. The use of blades in the sites of Lower Egypt continued even towards the Protodynastic and the early dynastic period with examples made of flints in sites such as Helwan early dynastic cemetery,⁴⁴ and later from copper such as the case from Saqqara. It is worth mentioning also that metal tools started to be prominent in Lower Egypt before Upper Egypt. Copper tools were found in a high quantity in Maadi (50 worked copper objects and other unidentified 50 objects) since the Predynastic period (Figure 2).

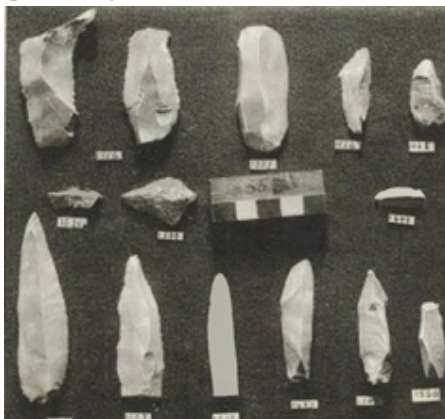


Figure 2 Blades from the predynastic burials of Armant.¹⁹

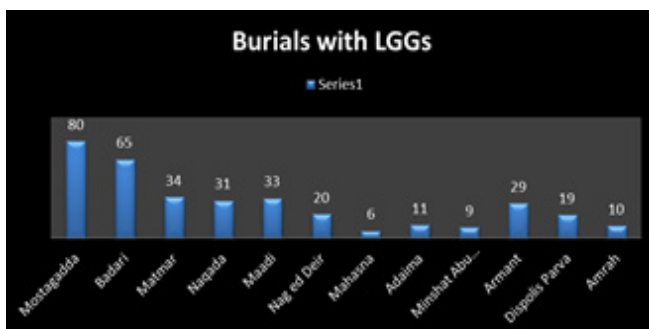


Figure 3 The recorded classes of stone tools from the investigated burials.

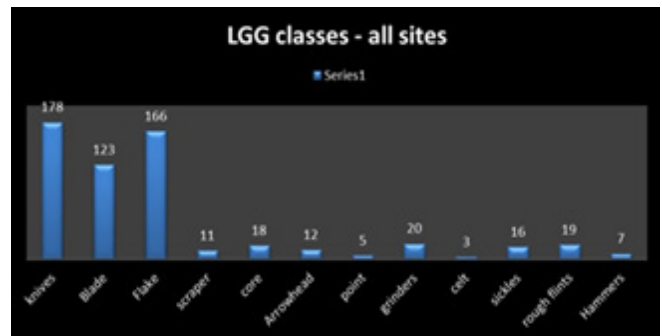


Figure 4 The number of burials where LGG are recorded among the investigated sites.

The classes present in each site were variable, although flakes and blades were common among almost all of the discussed sites, especially in the lower Egyptian sites. The recorded classes (Figure 3) included flakes, blades, knives, scrapers, polishing stones, arrowheads, points, cores, weights, sickles, burins, and rough flints. All of those classes are common between domestic and funerary contexts, except for the luxuries funerary knives of the Predynastic period, which attracted the attention of several authors.⁴⁵⁻⁴⁸ Hence, in the current paper special attention is given to the less explored lithic grave good classes, namely all the aforementioned classes except flint knives.

The data (Table 1) might be considered as a rough estimation of the recorded flint grave goods among the discussed sites. This is given the biased and incomplete nature of the early publications, which required spending more effort on data refining through comparing the described information with the accompanying photos whenever this was possible, as well as refining, comparing, and unifying the used terms. For example, in Lythgoe,s (1965) publication about the Predynastic site of Nag ed Deir, almost all the blades were referred to as roughly worked flakes or worked flakes. In addition, bladelets are rarely distinguished from blades, and identifying them was only sometimes possible through the photos where scales are provided. The “two flint chips” in burial N7121, appeared to be a blade and a bladelet, while the “fragment of a flint spearhead” in burial N7235 was found to be a broken fishtail. Additionally, flakes were described as blades and vice versa in the burials H30 and H59 in Mahsna.³¹

In other cases, photos were not provided and the unclear descriptions hampered the classification of flint tools i.e. burial 1241 In Naqada, where a flint dagger is recorded together with what Quibell described as “a flint in front of place of head”. The abstract descriptions “a flint”, “flint implement”, and “flint balls” were given to the LGGs in some burial too i.e. burials 1348, 1527, 1539, and 1566 in Armant, burials 1865 and 867 in Naqada, and burial 2638 in Matmar. Contradictions also existed between the burial\s registers and the detailed descriptions of burials in some cases. For example, in Armant, among the comments on flint tools from the burials, it is mentioned that burial 1558 contains a fabricator, while the burial register refer to the LGGs as hammer stones and grinders.

Some excavators e.g. Brunton mentioned that they collected only the more important grave goods, without specifying which class they considered important. However, we may expect that small tools or tools that are not of a luxury nature were probably neglected in many cases, following the selective criteria known through the nineteenth century.¹¹ Similar situation is observable concerning the Predynastic burials of Al Amrah as Randall and Mace state “Only tombs which contained objects or combinations of some interest are entered here. Those which yielded nothing more valuable than a few common

and well-known pots or perhaps one slate do not merit any special description".³³ On the other hand, the preservation condition of the excavated burials themselves before and during their excavation certainly affected our knowledge about the actual number of the used LGGs as well as their original arrangement inside the burial. The preservation condition of the burials from which LGGs is recorded is variable among the discussed sites. However, apart from flint knives, the other classes of goods were usually left by the looters i.e. flakes and blades even in disturbed burials. Additionally, the looters seemed to follow criteria similar to that followed by the nineteenth century excavators. They preferred nicely-made tools, but also disturbed the rest of the burial including the smaller finds made of flints, which they left behind. All of such statements emphasize the fact that the actual amount of all the used grave goods cannot be quantified, nor is the nature of all the used classes.

Table 1 The recorded classes of stone tools within the investigated sites

	Sites/ classes	Burials	Knives	Blade	Flake	Scraper	Core	Arrow head	Point	Grinders	Celt	Sickles	Rough flint	Hammers	T. count
1	Mostagadda	80	21	3	38	6	2	7	4	11	2		2		96
2	Badari	65	16		62		12	3	1	4	1	16			115
3	Matmar	34	18	1	26	2		2		1			1		51
4	Naqada	31	41		2								9		52
5	Wadi Degla	33		56	15	2	2						1		76
6	Nag ed Deir	20	11	9	2										22
7	Mahsna	6	2	7											9
8	Armant	25	9	2	1		2			4			4	7	29
9	Hierakonpolis	8	9												?
10	Adaima	11		10	20	1							2		33
11	Dispolis parva	19	32												32
12	Minshat Abu Omar	9	6	6											12
13	Al Amrah	10	13		M										13
	Total sum	351	178	94	166	11	18	12	5	20	3	16	19		540

Brunton describes the flakes from Mostagadda and states "These are the commonest implements found in graves". This agrees with the collected data, since 38 flakes were unearthed from 30 burials in Mostagadda. However, he considered many of them as intrusive, and that they came into the burials through disturbance or as part of the village debris during the burying action itself. Those flakes were described as small objects mostly with pointed tips and worked from one side.²⁰ However, the relatively homogenous placement of flakes inside the burials stands against his assumption. On the other hand, Brunton explained the abundance of flakes in Badari as a result of them being "models of full-sized implements", and mentions finding many flakes in Badari that varied in quantity between one and ten in the same burial. Some of them were found with their cores. The wide use of flakes as LGG among the Badarain sites refers to their actual importance rather than being merely a waste. From Badari, some burials contained only one flake (13 burials, around 61%), the rest contained from two to five flakes. In some instances the brief description "many flakes" was only mentioned. In Adaima, eleven out of the 20 flakes are uncovered from one burial (burial 20), which belonged to a 20-30 year-old adult, while "flint flakes" are briefly mentioned from burial B.146 at Al-Amrah. The same occupant was accorded 14 ceramics and one palette. Flakes were less common in the rest of the investigated sites i.e. Adaima, Nag ed-Deir, Naqada, and Wadi degla, while were totally absent in Mahsna and Hierakonopolis (Table 1).

The data about the deposited LGGs i.e. production technique, raw material, placement inside the burial, and their preservation were generally incomplete but totally exploited for the data analysis. The data analysis shows that flakes (Fig. 3,5) are the most common LGG class following flint knives (Table 1) in terms of their total sum. However, knives were more frequent. It is from the Badarian sites, including Mostagadda, Badari, and Matmar, that most of the flakes are recorded. The nature of those flakes was mostly not detectable through photos or descriptions. Therefore, flakes here mainly refer to the general shape of the recorded flint object or are provided based on the explicit descriptions given by the excavators. This means that part of those flakes might have also been used as scrapers, cutting tools, and other functions.

Flakes were found alone inside the burials of Badari or accompanied by at least one pot, and an object made of ivory, i.e., bangles, spoons, needles, and pins. Examples include ivory spoon with the five flakes in burial 5104, pin, comb and bracelet with the three flakes from burial 5111, pin and bangle with the three flakes in burial 5112, pin with the two flakes from burial 5118, wand with three flakes from burial 5124, and vase, needle, tusk, and comb with the four flakes from burial 5390. The flakes from Mostagadda were usually found with cooking pots that had organic matter inside. From Matmar, the two flakes in burial 3654 and burial 2681 were accompanied by gazelle bones. Other flakes were found with pieces of malachite and a pendant. From Nag ed Deir, the flake in burial N7302 was found with 21 ceramics, including black topped, red ware, and various sherds. This seemed to be one of the rich burials, as it also contained one flint knife, one ivory pin, a copper hook, five stone vases, and a stone jar in the form of a frog.

Although blades come as the 3rd common class after flakes and knives (figure 3,5), 85 of those blades and bladelets were unearthed from 33 burials in Maadi and Wadi Degla, where blades are the dominant LGG class. In addition, 41 of those blades were uncovered from one burial (WD138a), which represented a disturbed burial, while other 10 blades, with the core from which they were struck, were found in burial (WD077). These two burials probably belonged to important persons, since beside blades, the first included six flakes, and the second included ten ceramics. Another important aspect is

that most of them represented retouched blades, which were mostly retouched laterally on one lateral side or with alternate retouch. One example retained a small part of the cortex, while 3 examples exhibited a basal notch on the right edge. The material from which such blades and bladelets were produced is flint of varying colors that ranges between brown, honey, greenish-grey and light brown, while one fragment of bladelet is produced from rock crystal. The selection of blades and bladelets to be the major lithic grave good type in Wadi Degla represent a unique phenomenon. However, it seems that this tradition continued to be somehow prominent through the following Early dynastic period, as evident from the Early dynastic site of Helwan, Blades formed also one of the major LGG types in the site of Minshat Abu Omar, despite of the general low frequency of the recorded LGGs. Blades are recorded from the burials MAO231, MAO687, MAO669, MAO202, MAO761, and MAO242.⁴⁹ The nine blades from Nag ed Deir were generally described as rough flakes or worked flakes, however, photos were helpful to understand the nature of those tools. Most of them were recorded from heavily plundered burials. From the rest of the sites, sporadic use of blades is recorded (Figure 5&6).

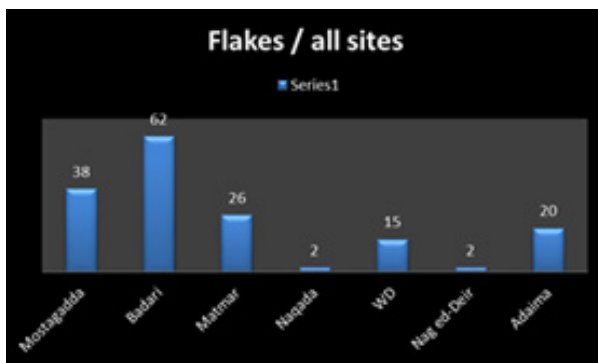


Figure 5 The flakes recorded from the discussed sites.

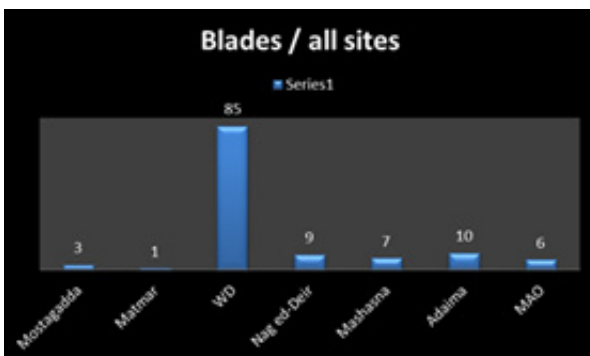


Figure 6 The Blades recorded from the discussed sites.

The less common classes of LGGs include zoomorphic flint figurines, grinders, cores, scrapers, arrowheads, points, celts, hammers, rough flints, and Paleolithic tools. From five burials in Badari, 13 cores are recorded; seven of which belong to the male burial 5401. The cores from the Mostagadda plundered burial 2232 are suggested to have been used for flint chipping. Other cores were recorded from burials 5430, 5719, and 5744 in the same locality. From the few available photos, we know that those are mainly flake cores, whose small sizes refer to their heavy exploitation. Only parts of the rock crystal core and one complete flint core were found among the burials of Wadi Degla in burial WD.77. The latter was found with ten other ten blades that were struck from it as they were refitted. This is although cores were relatively abundant in the settlement of Maadi. Only one core is recorded from Armant burial 1574 with few pots.

Arrowheads are recorded from burials 2227, 595, 596, 1244, 1218, 11731, and 11706 in Mostagadda. Additionally, arrowheads were found inside few burials of the cemeteries 400, and 500 in Qau, and from burials within the villages of Badari, i.e., burial 4803 where, the winged arrow was found with an ivory ring and one pot. Sickle blades are among the tool types that were usually described as a saw -edged knives, saw-edged flakes, or merely as knives among the description of burials. For example, in Badarian burial (5771), nine “saw edged knives” were described through the burial registers, and those were found to be sickles. In burial 3552 in Mostagadda, a sickle blade was found with a pounder. The burial belonged to an old adult. However, the context of the burial might explain the reason for finding such sickle, especially if it might be considered as intrusive. This is given that this burial was found at the edge of a granary in the village.

Rough flints were among the classes of flints found among some of the prehistoric burials, especially those of the Neolithic/Early Predynastic period. The nature of such rough flints is mostly not clearly described. The recorded cases are mainly concentrated in the Badrain sites. Examples include burials 215, 330, and 2803 in Mostagadda, where the brief description “rough flints” is given, and also in the Badarian burials 5451, 5132, 5206, and 51212. In the latter two cases, nineteen and 22 rough pieces are recorded. These might have been hammers, weights, polishing or chopping tools. Ground tools were mainly recorded from Armant, i.e., grinders, polishing pebbles, and hammer stones inside the burials 1550, 1548, 1541, 1522, and 1536. Models of stone tools were also rarely found. In burial N7185 in Nag el Deir, a butt of reed arrow was found in a heavily plundered burial, where four adults are buried inside a wooden box together with pottery offerings and two flint blades.

Holmes mentioned the presence of 305 LGGs known from Naqada “Great cemetery”, including 103 tools and 185 un-retouched pieces unearthed from 130 burials. Three of those burials contained an exceptional number of flint tools that reached 25 in one of them, while the other two contained nineteenth and ten flints, including tools and run-retouched pieces. However, the rest contained the average of two or three tools. Those are housed in the Petrie Museum, and are dated to SD 31-71. However, those were not described in Petrie and Quibell’s publication.^{50, 51} The recorded classes (Figure 7) partially overlap with the those discussed by Mr. Spurrell through his comments on Naqada flint implements. Forty-three Paleolithic flint tools were uncovered from undefined Predynastic burials. Those included heavily patinated blades and flakes with one *levallois* core. Few of them were probably reused during the Predynastic period, as they showed evidence of fresh retouch when excavated, according to Holmes. However, most of those Paleolithic tools were explained by the excavator as being intrusive from the surface while digging the burial. The signs of fresh retouch stand against such an explanation, and might favor the possibility of reusing older tools in later times.⁵²⁻⁵⁵

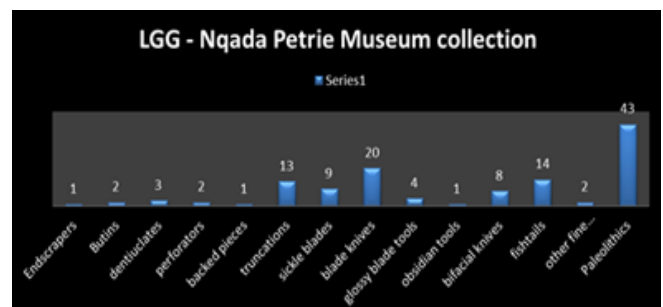


Figure 7 The LGG classes from Naqada burials among petrie museum collection.¹⁰

LGG placements inside the burials

The tendency to place an object in a specific location can be inferred through the repeated placement of the same tool class in the same or nearly the same location through various burials. This might be observable at the level of the same site or different sites. However, the plundering of the burials or performing certain funerary practices, such as secondary burials or secondary rites, do all contribute to decreasing the chance of obtaining accurate or at least satisfying information on this specific aspect. Investigating such repeated patterns is usually hampered by the lack of relevant information and/or disturbance of the burials before their discovery. Therefore, such data might be inferred whether through the notes provided by the excavators or even through checking the sketches that were provided for some burials at some sites. The placement of the LGGs started to follow a more homogenous pattern during the Predynastic period. Through analyzing the discussed sites, it becomes clear that stone tools were placed in four main zones (Figure 8).

- a. **Zone. 1:** refers to the area behind, under or above the head of the occupant. Flakes and blades are mostly detected in this zone.
- b. **Zone. 2:** refers to the corners of the burial, where groups of stone tools were cached in a few instances. This applies for rough flints and cores in the first level.
- c. **Zone. 3:** refers to the placement of LGGs under the chest, in the arm of the deceased and behind or before the torso. In this zone, blades and knives are sometimes detected.
- d. **Zone. 4:** refers to the pelvis and hip area. In this area LGGs were found behind, or before the back or the pelvis, and sometimes below or above the pelvic area. Knives were usually related to this zone.

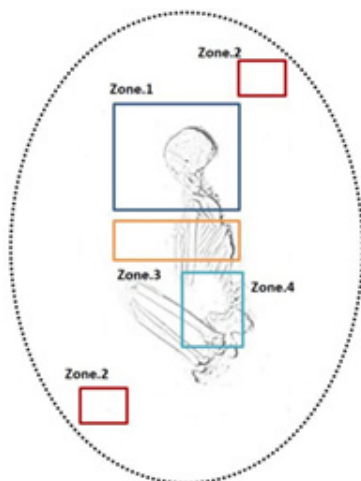


Figure 8 The four main zones where LGG are mostly placed.

The recorded cases refer to favoring the placement of flakes towards the lower parts of the body (zones 1 and 2). In Mostagadda, the flakes are recorded from the areas under, above, before and behind the head of the deceased. The flakes found in the burials 1656, 457, 467, 474A, 209, 1609, 303, and 494B were placed close to the face, under the head of the deceased, beside the arm, inside one deposited pot, close to the head, under the head of the occupant, and over one of two pots placed before the face of the occupant, respectively. In two cases, flakes were placed inside pots, but even here, the pots were placed before the face of the deceased. Even in the one case where a flake was placed inside a shell in Nag ed'Deir, the shell was also placed before the face of the deceased. In addition, one case referred to

finding the flake in the hand of the occupant together with a fish spine from (burial 2727) and near the face in burial 2706 in Matmar.^{55,56}

In the few instances where locations are mentioned, blades were also placed around the area of the head. In the case of Wadi Degla, the position of the lithic grave goods, which were mainly blades, and bladelets with few flakes, were only mentioned concerning eight cases, i.e., WD397, WD307, WD77, and WD11, where the blades are found on, behind, before the head, and inside a hole under the body, respectively. In addition, the blades were found to be placed over the head in the burials WD60, and WD53, while in one case, it was found in the top of the deceased skull in burial WD 397. Similar to this situation is the case from the Predynastic burials of Mahsna H30, H23, H59, and H79, where blades are placed behind the pelvis, before the chest, before the head and under the body. The position of the blades in Minshat Abu Omer was mentioned only for two burials, namely burial 202 where the blade was found before the face, while the blade in burial 242 was found behind the body. The placement of blades in Nag ed Deir was not provided, contrary to the flint knives from the same site, which were described in more detail.

Caching groups of flint tools inside the burials is observed in rare cases. Examples come from lower and upper Egyptian sites, with differences present between the cached stone tools. For example, in the cemetery of Wadi Degla, cases of caching groups of blades and bladelets inside a hole in the burial were recorded in a few cases, including burial WD11, where a flake and blade were buried inside a hole under the body, and in burial 138a, where approximately 48 flint tools, including 40 blades, six flakes, one blade fragment of rock crystal, and one core, were found inside a disturbed burial. Rough flints were mostly associated with caching and were found inside holes at the corners of the burials (zone. 2), generally at low frequency.

Knowing that deposits of rough flints already existed within settlements, this means that depositing flints inside holes represented one of the practices that were closely connected to the ideology of those early inhabitants when they were living in their domestic spaces, and when such same areas were transformed into cemeteries in later times, such practices remained as part of their social memory about the practices. Therefore, such practices continued to be performed even after the site's use has changed. Such an assumption might be reliable, especially when considering the important concepts related to the evolution and development of "mortuary spaces" during the Predynastic period in Egypt.⁵⁷⁻⁶⁰ Another possible explanation is also the continuous use of stones as means of fixing the sides of the structure, in the same way that rough stones were also used to support the housing structure inside the postholes within domestic areas. In this regard, the concentration of rough flints in zone 2 within the burials where flint tools are recorded and also inside burials without other LGGs, refers to their possible use for fixing the mats that were used sometimes for covering the sides of the burials. Another possibility is that these rough and irregular stones were used to fix the body coverings over the body of the deceased or even around it when they were found in a row under the body of the deceased, such as the case with the settlement burials from El Omari.

Based on the few aforementioned examples, it might be assumed that tools that were mostly connected with subsistence activities and acquiring food were normally placed around, under, or above the head (Zone 1), probably in reference to their role in acquiring and consuming food. This assumption might be reinforced by the presence of cooking pots and pots with remains of funerary meals or identified organic matter within the same area. Other varied types of lithic grave goods, including scrapers, arrowheads, knives, celts, awls, axes, and

even flakes and blades, were sometimes referred to merely as being located to the north end or south end of the burial or even to be found at one of the burial's sides without sketches.

LGGs and sex/age of the burial's occupant

Conducting correlations between the sex/age of the burial's occupant and the present LGGs was only possible in limited cases. This is given the lack of information about the sex and age of the burial's occupant in most cases, which hampered the process of detecting gender-related objects or practices. However, analyzing the data related to the limited sexed/aged occupant's shows that certain types were possibly associated with the burials of females, i.e., flakes and blades, while other types appeared to be more frequent in the burials of males, i.e., flint knives, arrowheads, and larger blades.

It is generally suggested that objects produced and mostly used by females are mostly given as grave goods to females, and the same applies for males. However, this cannot be totally confirmed given the insufficient data about the sex and age of burial occupants. In addition, regional traditions probably existed since the data analysis shows that flakes existed in the burials of nine females, five males, seven subadults and nine unsexed occupants in Mostagadda. The subadults in burials 301, 303, and 1865 were described as infant, baby, and fourteen years child. From Matmar, flakes were recorded from the burials of three females, seven males, and six unsexed occupants. From Badari, flakes were recorded from the burials of three males, three females, and thirteen unsexed occupants, while the ten burials with flakes were all not sexed in Wadi Degla. Almost all of the burials with flakes were also not sexed in the discussed sites. In Armant, out of the 25 burials with LGGs, three males were given flake, blade, and a point in the burials 1413, 1421, and 1499a. Six occupants in the burials 12, 22, 60, 99, 107, and 116 in Adaima, including four females and two males, were given flakes and blades. However, the large number of unsexed deceased does not allow for reaching accurate inferences about the presence of gender-related goods. The inclusion of larger and well-documented samples, as well as the future studies of the cemeteries, will certainly contribute to confirming or rejecting such interpretations and detecting clearer gender-related practices.

Conclusion

The settled life that the prehistoric inhabitants of Egypt experienced during the Neolithic period, allowed for major developments to take place. Social connections were properly built for the first time. This came as a result of the greater time spent in settlements, which served as core areas for social interactions. The establishment of graveyards and cemeteries during the Neolithic coincided with the evolving belief in the afterlife. Providing the burial's occupant with grave goods came as a direct and rapid step; however, the earliest grave goods were limited in their quality and quantity, and mainly represented items of daily life. Ceramics and a few stone tools were the first candidates to play these new roles in the funerary realm. Therefore, cooking pots, used bowls, and flints associated with subsistence activities, i.e., flakes, grinders, and rough knives, were selected to be moved from domestic to non-domestic contexts during the Neolithic and Early Predynastic Periods.

This probably came as a result of the important roles played by these tools in the previous periods as a means of survival, protection, and exploiting natural resources. In addition, objects of daily use seemed to embody meanings related to the activities taking place inside settlements. This might be perceived as a secondary phase of what Gijn (2010) considers as moving "pieces of places". These objects were produced by non-specialized craftsmen, and therefore, heterogeneous

types existed, and were probably not originally intended for funerary use. As population density increased, the number of sites increased, and the relation between humans and animals started to change from cooperation to domination, as people started to gain more power and control over natural resources, and the concept of territoriality started to be more evident as well. Stone tools were a major component of all aspects of life, especially as tools for subsistence-related activities and for the production of other types of objects. The roles of stone tools started to diversify and evolve beyond their utilitarian uses. Regional variations in lithic industries did not only imply technical developments but also served as means of expressing identity and as mediums of exchange. Tools made on flakes and blades remained dominant. Labor division and the engagement of males and females in daily-life activities and probably also their role in the production of the varied types of material culture, enhanced the impact of people-object interactions.

The increased population density, increasing social complexity, and the development of hierarchical societies altogether marked the transition towards the Predynastic. Social stratification became clearer mainly through the evolving ritual practices, i.e., size of the grave, its content of grave goods, and the body treatment of the deceased. Flint tools continued to be used as part of the grave goods together with other classes, i.e., ceramics, personal ornaments, faunal remains, and palettes. The production of flint tools for funerary purposes evolved rapidly since Naqada I. Towards Naqada II period, elites started to emerge, and social inequality started to be obvious through burial practices. Therefore, the need to produce prestigious goods was prominent for this purpose. Flint knives, flakes, and blades, represented the dominant and more prevalent classes of LGG. Apart from ripple-flaked knives, fishtails, and the finely-made bifacial knives whose production was probably controlled by elites who recruited specialized craftsmen to produce such luxurious objects mainly for funerary purposes, discerning between flake and blade tools that were moved from domestic to non-domestic context and those made especially for funerary use, is very difficult with the absence of residue analysis studies. However, it might be inferred that two major classes of stone tools were used for funerary purposes during the Predynastic. The first includes objects produced especially to be placed inside the burials to express the high social status of their owners, through their attractive shapes and skillful craftsmanship. These included funerary flint knives, arrowheads, and zoomorphic figurines whose production evolved through the Predynastic and Early dynastic times. The second includes objects valued for their long life history and for their roles in a long process of human-nature interaction, which allowed for imparting accumulated values on such objects and resulted in making them socially valued. Those objects are not necessarily of attractive shapes, but are rather used to embody complex meanings and added value. These include classes such as flakes and blades and tools made of them. The production, use, and popularity of these classes differed among the discussed sites. The use of stone tools for ritual purposes was clearly an Upper Egyptian tradition that extended to Lower Egypt mainly towards the Protodynastic/Early Dynastic.

The insufficient documentation of burial, their content of grave goods, and the limited comments given on the sex/age of the occupant, did not allow for obtaining full insights into the gender-related practices related to using stone tools in funerary contexts. However, from the available limited examples, it might be inferred that lithic grave goods were recorded from burials of males, females, and a few sub-adults. Certain types were more likely to be found inside the burials of males, i.e., flint knives, while flakes and blades were more likely to be associated with females and sub-adults. The placement

of the lithic grave goods followed a relatively homogenous pattern, especially during Naqada II. Four main zones were detected based on the brief descriptions of the excavators and the available burial sketches. Three of them are associated with the body of the deceased, namely, the head, torso, and pelvic area. Through the described cases, it was observed that tools related to subsistence and food and soft materials processing, i.e., flakes and blades, were associated with zones 1 and 3, while rough flints and other less common classes i.e. scrapers, sickles, etc. were more likely to be found in zone. 2. Flint grave goods co-occurred with varied types of funerary goods. However, ceramics were the dominant type with all of the recorded classes.

The long process of human-nature interaction, in which lithics played a significant role, resulted in the development of perceptions about stone tools as socially valued objects. Their selection, use, and arrangement therefore reflect the shared social identity. The secular roles of these tools through such a long time span contributed to imparting added values to them and assigning symbolic roles for these tools. These roles probably imitated their original functions but in different ways that serve for the benefit of the deceased in the afterworld.

Acknowledgments

None.

Conflicts of interest

The authors declare that there are no conflicts of interest.

References

- Baumgartel E. *Predynastic Egypt*. In I. Edwards, C. Gadd, & N. Hammond (Eds.), *The Cambridge ancient history*. Cambridge University Press. 1971;463–498.
- Hendrickx S. Predynastic–early dynastic chronology. In *Ancient Egyptian Chronology*. Brill. Hikade, T. 2010. Stone tool production. *UCLA Encyclopedia of Egyptology*. 2006;1(1):51–93.
- Stevenson A. The Egyptian predynastic and state formation. *J Archaeol Res*. 2016;24:421–468.
- Yletyinen J. Holocene climate variability and cultural changes at river Nile and its Saharan surroundings. *Institutionen för naturgeografi och kvartärgeologi*. 2009.
- Smith AB. An appraisal of the term “Neolithic” and “Neolistation” for use in North Africa in the 21st century. In Shirai N. *Neolistation of Northeastern Africa*. Berlin. 2013.
- Zerboni A. Early Holocene paleoclimate in North Africa: an overview. In Shirai N (ed), *Neolitisation of Northeastern Africa*. Berlin. 2013.
- Petrie WM, Quibell JE. *Naqada and Ballas: 1895*. B. Quaritch. 1896.
- Kobusiewicz M. The production, use and importance of flint tools in the archaic period and the old kingdom in Egypt. *Archaeopress Publishing*. 2015:176.
- Schmidt, K. Comments to the lithic industry of the Buto–Maadi culture in lower Egypt. Environmental change and human culture in the Nile Basin and Northern Africa until the second millennium BC, Krzyzaniak L., Kobusiewicz M., Alexander J.(eds.). 1993;267–277.
- Holmes DL. The predynastic lithic industries of upper Egypt: a comparative study of the lithic traditions of Badari. *Nagada and Hierakonpolis Part i BAR International Series*. 1989.
- Holmes DL. The Predynastic Lithic Industries of Upper Egypt: a comparative study of the lithic traditions of Badari. *Nagada and Hierakonpolis Part ii BAR International Series*. 1989.
- Rizkana I, Seeher J. Maadi: excavations at the Predynastic site of Maadi and its cemeteries conducted by Mustapha Amer and Ibrahim Rizkana on behalf of the department of Geography, faculty of arts of Cairo University, The pottery of the predynastic settlement. *P. von Zabern*. 1987;1.
- Rizkana I, Seeher J. Maadi-2, The lithic industries of the predynastic settlement. *Von Zabern*. 1988;65.
- Briois F, Midant–Reynes B. Lithic industries from Adaima between farmers and craftsmen. *Peeters, Leuven*. 2005;172:21–32.
- Brown CAG. The ideological significance of flint in Dynastic Egypt. Doctoral dissertation, UCL University College London. 2011.
- Ordynat R. Egyptian predynastic anthropomorphic objects: a study of their function and significance in predynastic burial customs. *Egyptian Predynastic Anthropomorphic Objects*. 2018;1–128.
- Stevenson A. Egyptian Sites, Gerzeh, An Egyptian site shortly before history. *Golden House Publications*. 2006.
- Alvarez CM. Predynastic hairpins and combs from the necropolis of Naqada: preliminary conclusions. *Archaeology of early North eastern Africa studies in African Archaeology*. Poznan Archaeological Museum. 2006;781–788.
- Mond R, Mayers OH. *Cemeteries of Armant*. Antiquity, Egypt Exploration Society, London. 1937;13(52):484–485.
- Brunton, G. Mostagedda and the Tasian culture: British museum expedition to middle Egypt; first and second years 1928, 1929. *Quaritch*. 1937.
- Petrie WMF, Wainwright GA, Mackay EJJ. *The Labyrinth Gerzeh and Mazghuneh*. School of Archaeology in Egypt, University College. 1912;21.
- Gero JM. Genderlithics: Women’s roles in stone tool production. *Engendering archaeology: Women and prehistory*. 1991;163:193.
- Gibaja JF, Terradas X. Tools for production, goods for reproduction. The function of knapped stone tools at the Neolithic necropolis of Can Gambus–1 (Sabadell, Spain). *Human palaeontology and prehistory (Prehistoric archaeology)*. *Comptes Rendus Palevol*. 2012;11(6):463–472.
- García OP, Gibaja JF, Cabanilles JJ, et al. Flint blade use–wear in late Neolithic/Chalcolithic collective burials: data from Pastora cave (Eastern Spain). 2014.
- Gurova, M. Towards the meaning of flint grave goods: a case study from Bulgaria. In facets of the past: the challenge of the balkan neo–eneolithic. Presented at the International Symposium Celebrating the 85th Birth Anniversary of Eugen Comşa. 2008;6–12.
- Brunton G, Thompson GC. The Badarian civilisation and predynastic remains near Badari. *British School of Archaeology in Egypt, University College*. 1928.
- Thompson GC, Gardner EW. *The desert fayum*, Royal anthropological institute of Great Britain and Ireland. 1934.
- Anderson W. Badarian burials: evidence of social inequality in middle Egypt during the early Predynastic era. *J Am Res Center Egypt*. 1992;29:51–66.
- Brunton G. *Matmar: British museum expedition to middle Egypt 1929–1931*. Quaritch. 1948.
- Petrie WMF. *Diospolis parva: the cemeteries of Abadiyeh and Hu*. Egypt exploration fund. 1901;20.
- Ayrton E, Loat WL. Predynastic cemetery of mahsna. *The Egypt Exploration Fund*. 1911.
- Lythgoe AM, Dunham D. The predynastic cemetery, N 7000: Naga-ed-Dér. *University of California Press*. 1965.

33. Randall M, Mace AC. El amrah and Abydos: Part I- the archaic periods and twelfth dynasty. *The Egypt Exploration Fund*. 1902.
34. Hoffman MA. The predynastic of hierakonopolis: an interim report. *Egyptian studies association*. 1982.
35. Hoffman MA. The Predynastic of Hierakonpolis: an interim report. 1982;1.
36. Friedman RF. The cemeteries of Hierakonpolis. 2008;18(1):8–29.
37. Adaïma III: demographic and epidemiological transitions before the pharaohs. *Institut français d'archéologie Crubézy orientale*. 2017.
38. Crubézy E, Duchesne S, Midant RB. The predynastic cemetery at Adaima (upper Egypt). General presentation and implications for the populations of predynastic Egypt. 2005;172:289–310.
39. Kroeper K, Wildung D. Minshat abu-omar: ein vor-und frühgeschichtlicher Friedhof im Nildelta. 1994.
40. Stevenson A. The predynastic egyptian cemetery of El-Gerzeh. social identities and mortuary practices. *Peeters publishers and Department of Oriental studies*. 2009.
41. Vermeersch PM. Two upper paleolithic burials at nazlet khater, paleolithic quarrying sites in upper and middle Egypt. 2002:273–282.
42. Debono F, Mortensen B. El omari: a neolithic settlement and other sites in the vicinity of Wadi Hof, Helwan. 1990;82.
43. Stevenson A. Ethnicity and migration? the predynastic cemetery of el-Gerzeh. *Egypt at Its Origins*. 2008;2:543–560.
44. Köhler EC. The development of social complexity in early Egypt. a view from the perspective of the settlements and material culture of the Nile valley. *Egypt and the Levant*. 2017;27:335–356.
45. Roth AM. The psš-kf and the opening of the mouth“ceremony: a ritual of birth and rebirth. *J Egypt Archaeol*. 1992;78(1):113–147.
46. Mazzone D. The fishtail knife amulet UC14892/2 in the Petrie museum of Egyptian archaeology, University College London. 2010; 20.
47. Skarzynski E. Beyond prestige: a ritual production model for stone tool specialization in Naqada period Egypt. 2017.
48. Huyge D, Hendrickx S, Rots V, et al. A group of predynastic flints from the first dynasty “royal mastaba” at Naqada. 2021.
49. Kroeper K. Corpus of potmarks and inscriptions from the pre/early dynastic cemetery at Minshat Abu Omar (northeastern Delta, Egypt). *Recent research into the Stone Age of northeastern Africa*. 2000:187–208.
50. Quibell JE, Green FW. Hierakonpolis Part I. Egyptian research account, fifth memoir. *Bernard Quartich*. 1900;15.
51. Quibell JE, Green FW. Hierakonpolis Part II. Egyptian Research account, fifth Memoir. *Bernard Quartich*. 1902;15.
52. Stevenson A. The aesthetics of predynastic Egyptian burial: funerary performances in the fourth millennium BC. *Archaeological review from Cambridge*. 2007;22(1):76–92.
53. Stevenson A. The material significance of predynastic and early dynastic palettes: proceedings of the sixth annual symposium, 2007;6:148–162.
54. Stevenson A. Social relationships in predynastic burials. *J Egypt Archaeol*. 2009;95(1):175–192.
55. Midant, RB. The predynastic site of Adaima (upper Egypt). Interregional contacts in the later prehistory of northeastern Africa. Polish Academy of Sciences Poznan Branch. 1996:237–239.
56. Midant RB, Baduel N, Briois F, et al. Fouilles IFAO et ministère des affaires étrangères. 2002;12(1):69–86.
57. Rosenberg D, Nadel D. The sounds of pounding: boulder mortars and their significance to Natufian burial customs. *Curr Anthropol*. 2014;55(6):784–812.
58. Figueiredo Á. Locality HK at hierakonpolis: results of the 2000 field season. The cemeteries of hierakonpolis. 2004;18:9–29.
59. Friedman R, Nagaya K. Fine lithic products from hierakonpolis. 2021:341–368.
60. Thompson G, Gardner EW. The desert fayum. Royal anthropological institute of great Britain and Ireland. 1934.