The Materiality and 'Enchantment' of the Gebel el-Arak Knife and the Gerzean Flint Blade Production

Introduction

The finely crafted Gebel el-Arak knife (Figure 1) has assumed an important role in studying Predynastic Egypt since its acquisition. Made of a carved ivory handle[1] (Figure 2) and a knapped flint blade, (Figure 3) it was purchased in February 1914 from a market in Cairo by explorateur and curator of the Egyptology collection in the Louvre Museum, Georges Bénédite.[2] At the time of its purchase, the knife was purported to have come from a village called Gebel el-Arak, just south of Abydos and opposite of Nag Hamadi. (Figure 4) Shortly after its acquisition, the Gebel el-Arak knife was publicly displayed at the Louvre Museum in 1916. The images carved on the knife's ivory handle quickly summoned discussions concerning Egypt's early relationship with the Mesopotamian world. French engineer and archaeologist Jacques de Morgan praised it as "un objet d'importance capitale…soigneusement sculpté"[3] and also incorporated the ivory handle in his early studies of Predynastic Egypt.[4] This enthusiasm emphasizes the knife handle's importance in understanding Predynastic Egypt, whose context may seem more elusive due to the lack of a written record.

For the following study, I propose to approach the Gebel el-Arak knife in its entirety, from a perspective concerned with its materiality. Although the imagery on the ivory handle is the primary reason the knife is valued and studied, I am interested in exploring what can be said about the knife's materials—particularly the flint blade. Throughout this study, I address the technical processes and experiential qualities of the Gebel el-Arak knife and similar Gerzean

[1] Krzyszkowska 1988: 227. Krzyszkowska offers a convincing argument on why hippopotami tusks were the source for ivory during the earliest periods of ancient Egypt. However, Délange 2009 purports that the ivory must have come from elephant tusks.
[2] Bénédite 1916: 8.
[3] de Morgan 1922: 29-31.
[4] The Gebel el-Arak knife is prominently showcased in his 1922 *La Préhistoire orientale*.

flint blades, and of the individuals that would have come in contact with the knife before, during, and after its process of becoming its final form. I should state that the purpose of this study is not to disregard the imagery completely, for it is an important aspect of the knife as a whole. I intend to unite the following exploration of the knife's material properties and production sequence with the information that previous scholars have published regarding the imagery. In this way, I hope to achieve a more complete understanding of the Gebel el-Arak knife's meaning in the context of ancient Egypt at the cusp of the Pharaonic tradition.

A Brief History of Scholarship

About a century has past since the Gebel el-Arak knife was first introduced into the field of Egyptology in the early 20th century. The following discussion of previous scholarship is not meant to be a comprehensive historiography of the Gebel el-Arak knife. Rather, it outlines several emphases and interpretations of the Gebel el-Arak knife in the past. These past interpretations are two-fold. First, there is a focus on drawing parallels between the handle's imagery and Mesopotamian images. Second, many scholars are intent on discussing an asymmetrical relationship between Mesopotamia and Egypt during the late 4th millennium BCE, in which Mesopotamia effectively influenced Egypt's cultural, social, and economic formation.

When Georges Bénédite bought the Gebel el-Arak knife in Cairo in 1914, the flint blade and handle were acquired detached from one another. In 1933, the curator of Egyptian Antiquities, Charles Boreux, issued a memo in *le Bulletin des musées de France*, announcing the handle and blade were reunited by conservator Léon André.[5] However, this unassembled state set precedence for scholarship concerning the Gebel el-Arak knife. In 1916, Georges Bénédite published the Gebel el-Arak knife with a stylistic and formal analysis of the imagery of the knife handle and a brief discussion of the knife's blade in an article entitled "Le Couteau de Gebel el-

[5] Délange 2009.

Arak".[6] Although he mentions the flint blade in this article, he presents the handle and its imagery and the flint blade as two separate entities. In 1924, Bénédite wrote *L'Art égyptien dans ses lignes générales* where he mentions the knife when he briefly discusses the Predynastic period. He draws attention to the imagery's similarity with "primitive Chaldean art" and Babylonian cylinder seals. In this book, Bénédite provides the reader with a plate of two images of both sides of the knife's handle detached from the flint blade; the knife is not shown as a whole (Figure 5).[7] Jacques de Morgan also published the knife in 1922 in "Les Premiers temps de l'Égypte" in *Monuments et Mémoires,* where he employs the Gebel el-Arak knife's imagery as testimony to the possible Chaldean origins of Egypt.[8] Thus, a tradition of understanding prehistoric Egypt's origins and an indebtedness to foreign influences according to the ivory handle's imagery began in France.

In 1951, Henri Frankfort's *The Birth of Civilization in the Near East* mentions the Gebel el-Arak knife three times. Each time, Frankfort's discussion emphasizes that the knife handle's imagery and motifs are un-Egyptian. He concludes that the appearance of the Mesopotamian motifs and style in Egypt indicates a Mesopotamian influence on Predynastic Egypt[9] during the 4th millennium BCE. Like Bénédite, Frankfort publishes images of the knife, yet only showcases two images of both sides of the ivory handles. Throughout his work, Frankfort implies that the knife handle is evidence for progress in Predynastic Egyptian art.[10] P.R.S. Moorey's 1987 publication continues discussion of Predynastic Egyptian culture in light of its economic and

[6] Bénédite 1916.
[7] Bénédite 1924.
[8] de Morgan 1922. de Morgan also speaks about these Chaldean origins in *La préhistoire orientale*, posthumously published in 1926, in a chapter entitled "L'origine chaldéene de la culture pharaonique en Égypte".
[9] H. Frankfort 1951: 79, 102, 109. For more discussion on the ivory handle's imagery and connection with Mesopotamia can be found in the following: Kemp 2006, Smith 1999.
[10] Ibid. Frankfort cites the Gebel el-Arak knife handle and the Hunter's palette as antecedents to the Narmer palette, which is the first instance of a powerful Egyptian pharaoh. The author also maintains that the practice of rendering image on a material shaped into a common, daily-life object is probably a product of earlier Predynastic art objects.

cultural development as a result of Mesopotamian influence.[11] Similarly, Moorey's analysis only discusses the imagery on the knife handle and then concludes that Egypt owed its development during the late 4th millennium B.C.E. to a Mesopotamian influence due to the iconographic and motif studies.

Holly Pittman revisits the Gebel el-Arak knife in 1996 by re-envisioning the relationship between Mesopotamia and Predynastic Egypt during the late 4th millennium BCE.[12] In summary, Pittman suggests that perhaps Egypt is not a passive receptor, sitting at the other end of an asymmetrical relationship.[13] Rather, Egypt is entering into a compelling realm of imagery and iconography that is the language used for an "international" dialogue of different logographic and symbolic devices that are appropriated by the Egyptians from Mesopotamian glyptic art. Craftsmen of Predynastic Egypt emulated Mesopotamian motifs for their own purposes, while how ideas are transferred and information is stored, or the "formulas", remained identical. I agree with Pittman's interpretation and would even say by emulating them, Egypt is competing with outsiders existing in their world, exerting its sovereignty by engaging with a semiotic canon of the time period. By reconsidering the implications of the Gebel el-Arak knife handle, Holly Pittman has challenged the idea that Predynastic Egypt was a passive recipient of Mesopotamian values and ideology. Nevertheless, her studies still rest mainly on the motif and style of the imagery and relief of the ivory handle.

Only one recent publication authored by the chief curator of Egyptian antiquities at the Louvre Museum, Élisabeth Délange, starts to address the Gebel el-Arak knife beyond its imagery in *Le poignard égyptien dit 'du Gebel el-Arak.*[14] In conjunction with discussion of the knife

[11] Moorey 1987.
[12] Pittman 1996.
[13] Inferences of an assymetrical relationship between Egypt and Mesopotamia stem from PRS Moorey 1987.
[14] Délange 2009.

handle's imagery, Délange speaks to how the flint was knapped. Furthermore, her work concludes with the discussion of Egypt's development towards a Pharaonic state internally, rather than assuming a unilateral system of exchange governed by Mesopotamia.[15] This recent exception to the discussion of the Gebel el-Arak knife signals that the time is right for a re-evaluation not only of the knife, but also of the very scholarly approaches we have previously utilized to study it. Furthermore, Pittman notes in her article "on the ivory knife handles and on the palettes the imagery on the obverse and reverse of each face of the object was meant to be understood in relation to the other".[16] To put Pittman's words into perspective, I will engage with the idea of a comprehensive program[17] of the knife, that is, a purposeful amalgamation of material, technology, and pictorial representation that were meant to be understood in relation to each other and has the ability to reveal and perhaps nuance our comprehension of Predynastic Egypt. I will build upon the ideas of past scholarship in order to further distinguish the Gebel el-Arak knife's meaning by observing the knife in its entirety, and not just the handle as a vehicle for a series of reliefs. Thus, a closer attention must be paid to the flint blade, its material properties, the Gerzean flint blade production scheme, and its final form.

What is the Gebel el-Arak Knife?

The Knife

In antiquity, the Gebel el Arak knife's ivory handle and flint blade would have been attached and bound together by a small strip of gold foil.[18] Together, the entire knife measures approximately 28 cm in length; while the flint blade is about 19 cm, the ivory handle is about 9

[15] Délange 2009: 8-9, 26-28.
[16] Pittman 1996: 26.
[17] Winter 1983. I found inspiration of this idea of a "comprehensive program" from Irene Winter's discussion of the Neo-Assyrian reliefs at Assurnasirpal II's palace at Nimrud. Winter argues that the Northwest Palace represents a "comprehensive program…an integrated architectural, pictorial, and textual representation" of the imagined Neo-Assyrian state at the time.
[18] Boreux 1993: 20. Midant-Reynes 1987: 219. Trace elements of gold have been found on the handle and the flint.

cm. Reliefs in registers gracefully enliven the entirety of the ivory handle's surface while masterful workmanship and knapping encompass the flint blade. As previously stated, Bénédite acquired the handle and blade separately. At present, I am unable to find whether this reattachment mimics the way the knife was originally fashioned in antiquity. There is also the small possibility that this exact blade did not belong to the ivory handle, and the lack of burial context limits our understanding. However, this detail is not an impediment to our present understanding of the materiality or the experience of the Gebel el-Arak knife. First, the handle fits perfectly with the hafted end of the existing blade, which makes the idea of an original pairing of the two entities more feasible. Also, existence of other Gerzean flint blades indicate that even if the blade that is currently associated with the Gebel el-Arak knife did not originally belong to the ivory handle, some other very similar hafted one would have. As a whole, the knife is an exemplary art object and represents the peak of technique and design during the latter half of the 4th millennium BCE. Throughout this exploration, it is crucial to keep in mind the multiple, possible functions of the object, or what the form of this object might represent. For example, the object could theoretically be a knife, a portable object, a burial good, and a weapon or protective device.

The Handle

Ivory was a valuable[19] raw material throughout the ancient world, including Egypt, south of Egypt on the African continent, the Aegean, the Near East, and the Far East.[20] Élisabeth Délange's work on the Gebel el-Arak knife states that the ivory was acquired from elephant

[19] Nicholson and Shaw 2000: 323. Ivory was continuously exploited from the Predynastic period throughout the early dynastic periods, specifically in Egypt.
[20] Kryzcsiewska 1988: 226-228.

tusks.[21] If Délange's assessment is correct, then the ivory for the handle must have been imported from elsewhere, an idea that greatly contributes to the knife's value. However, other comprehensive studies on ivory materials found in Egypt suggest that the handle may in fact be made from hippopotamus teeth, which were more readily accessible to Egyptian workshops.[22] Regardless of the ivory's original source, the handle would have been esteemed as a product of high value and beauty by the Predynastic period due to the status that is inherent within the ivory material itself.[23] Since many discussions about the Gebel el-Arak knife handle's imagery have already been published, I will provide only a brief description of the imagery in the present paper.

The shape of the knife handle is curved at the very top (designated by how the imagery is oriented), and the sides of the handle come straight down and connect at the bottom perpendicularly. The form of the knife handle preceded its decoration, and its shape guided the overall composition of the narratives and images. The craftsman carved out an inset on the bottom of the handle for the flint blade to be attached as well as a bulbous knob in the center of the obverse of the ivory handle for a thumb grip. The way that the flint blade is hafted at the upper end indicates the specific association between the shape of the handle and the particular blade. The imagery is in low-relief on both sides, distinguished by previous scholars as the obverse and the reverse sides. The low-relief contributes to the sculptural qualities of the ivory handle and simultaneously demonstrates the technical ability of the relief-carver. Both sides of

[21] Délange 2009: Délange cites that recent studies show that the ivory must have come from elephant tusks. She also claims that elephant tusks were more highly prized than that of hippopotami.
Midant-Reynes 1987: 219-220.
[22] Kryzcsiewska 1988: wrote a comprehensive study on ivory consumption and working in ancient Egypt, and found that elephant tusks were not popular until the beginning of the New Kingdom, when hippopotami, which are indigenous to Egypt, were becoming more endangered and finally extinct. See Nicholson and Shaw 2000.
[23] Nicholson and Shaw 2000: 323.

the handle display careful compositional organization and complement the overall shape of the handle.

The knife-handle is exemplary of artistic and technical ingenuity while its imagery exudes power, control, and dominance. At the top of the obverse side, the "master of the animals" icon (Figure 6) is the most dominant image on the knife handle, where the bearded master[24] tames and grasps two ferocious lions by their necks. Below the "master of the animals" is the imageless, bulbous knob that subtly disrupts the following two registers whose images contribute to the theme of control and power. The register below the "master of the animals" depicts two well-mannered hounds face à face, raising their paws up to each other. It is likely that the third and fourth registers belong to the same narrative scene in one continuous loop. The caprids on the third register move towards the left, while the caprids on the fourth register are under attack by lions. While the first caprid at the very right on the fourth register succumbs to the lioness, the last caprid looks over its shoulder either scouting for predators or to warn the above members of its species. Finally, the fifth register shows a group of canine creatures on leashes actively processing towards the right.

The imagery on the reverse side of the knife handle depicts two different battle scenes, one on land and one at sea (Figure 2). These battle scenes fit metaphorically with the zoomorphic scenes because both sides of the handle contribute to the themes of power, control, and dominance. The first two registers depict nude combatants fighting each other both hand-to-hand and with weapons. The final three registers take place on water. This is designated by the presence of two different types of boats, belonging to both the victors and the defeated, on either side of a lifeless group of dead warriors floating aimlessly in the water.

[24] Smith 1992: 236. H.S. Smith explains that the motif on the knife-handle is "strikingly like the Susan examples in that the figure is shown with face and feet in profile, wearing a wrap-over skirt and a rounded headdress with fillet". On stylistic grounds Smith confirms the date of the Gebel el-Arak knife to the Nagada III period.

The Blade

In order for any stone material to be workable, it must possess several initial, inherent structural characteristics. The stone must fracture conchoidally, which allows basic flaking of the material to occur.[25] The stone must also be homogenous and have an amorphous structure, where the minerals do not crystallize.[26] The Gebel el-Arak knife blade possesses all of these inherent chemical properties that contribute to the quality and the malleability of the flint, for it is of excellent, homogeneous quality, with no observable purposeful breaks or impurities.[27]

There are two columns of indentations and pressure flaking that interlace and lock with each other, encompassing the entirety of one face of the blade while the opposite side of the flint blade is a flat, smooth, and polished surface. The color of the flint blade is a creamy, sandy-brown auburn. The pressure flaking and the ripples give a shallow, three-dimensional quality to one surface of the blade, creating the visual illusion of different shades of a sandy auburn. The blade also carries concentric zones of red and purplish-blue due to the presence of iron oxides.[28] Flint is susceptible to patination, or a weathered and stained surface resulting in a thin layer or patina, of a different color. Patination occurs when either exposure to water or different chemical components come in contact with flint. However, the presence of blue and red colors on the Gebel el-Arak knife blade is probably not a result of patination—which would affect the whole face rather than certain concentric zones of the blade. These concentric zones are inherent within the material of the flint. Importantly, they are independent of and do not influence the pressure flaking. Furthermore, brownish flint comes with a higher concentration of iron at the core,

[25] Whittaker 1994: 12. Conchoidal fracture refers to how surfaces fracture like a cockle shell. With the appropriate amount of pressure in conjunction with the angle and shape of the surface, materials can fracture conically.
[26] Ibid., 12 and 66.
[27] Délange 2010:8.
[28] Ibid. These color descriptions are attributed to assessments made by Délange, who had immediate access to the Gebel el-Arak knife.

which tends to oxidize at the surface.[29] Therefore, it is likely that there is no post-depositional color change in the Gerzean flint blades and the present state of the Gebel el-Arak knife blade and similar Gerzean flint blades is accurate to the original coloration of the blades when they were first produced during the Predynastic period in Egypt.

A careful examination of crafting a Gerzean flint blade via experimentation will provide a more insightful analysis for the Gebel el-Arak knife blade. For this, I will engage with Peter Kelterborn's experiment on replicating Gerzean style flint knives and contribute my own experiences with knapping obsidian arrowheads.

Experiment and Experience

A close examination of the manufacturing process of the Gerzean flint blades, including the production technique and the experiential process, will provide an intimate understanding of the Gebel el-Arak knife blade, and thus the knife as a whole. In 1984, Peter Kelterborn performed an imitative experiment outlined in an article entitled *Towards Replicating Egyptian Predynastic Flint Knives,* where he gives the "technical, not the prehistorical" overview of the process of flintknapping Gerzean blades.[30] In this technical study, Kelterborn analyzed twelve complete and eight incomplete flint knife blades from the Gerzean period, while he performed at least fifty replication experiments of his own. Throughout this process, Kelterborn identifies six stages in Gerzean flint production. I have included another stage in the process of stone-working, "stage 0",[31] which refers to the initial process of collecting the raw material from its source site.[32]

[29] Rottlander 1975: 109.
[30] Kelterborn 1984: 438.
[31] Whittaker 1994. Whittaker talks about the process of stone working and calls the process of collecting raw materials a part of "stage 0".
[32] Kelterborn mentions where he acquired the raw materials for his experiment yet did not include it in his formal flintknapping stages.

Peter Kelterborn's experiment is *imitative.* Although the exact process of flintknapping during the 4th millennium BCE is impossible to know, Kelterborn's study is crucial for understanding this specific category of Gerzean flint production to which the Gebel el-Arak knife blade belongs. Despite the minute degree of uncertainty, these types of experiments are indicative of the manufacturing process via replication[33] and allow us to engage with the Gebel el-Arak knife blade as an important aspect of the entire object. Flintknapper and archaeologist Donald Crabtree confirms "if the finished product is a true replica, then it is safe to assume that the primary and intermediate stages are parallel to those of the aboriginal".[34] In other words, as long as one can achieve the same result, then it is probable that the process the knapper took to achieve the end product is comparable to the processes during antiquity. Different aspects of the flint blades worked by Kelterborn, including approximate size, shape, physical features, and materials, are comparable to that of the original Gerzean flint blades. (Figure 7) Furthermore, because the two types of flint with which Kelterborn performed his experiments are both stronger and weaker than the original material, his technique is most likely valid for the Egyptian flint material used to create the Gerzean blades.[35]

In addition to the explanation of Kelterborn's experiment, I incorporate my own experiences with stone knapping. Kelterborn's article does not speak to the human experience of flintknapping, which is a valid and important observation that contributes to our understanding of the operational sequence of Gerzean flint blade production. My narrative accompanies Kelterborn's empirical experiment and provides the experiential basis for understanding how humans might have engaged with the material as it was transformed into a knapped blade.

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[33] Tringham 1978. Ruth Tringham outlines the importance of experimentation in interpretation, stating "experimentation is the by-product of human behavior" (182).
[34] Crabtree 1973: 10.
[35] Kelterborn 1984: 441. The stronger, coarser substitute is heat-treated French le Grand Pressigny or Danish material. The second, weaker material is either opaque construction or dark window glass.

For my experience, I enrolled in a stone working practicum with Dr. Steven Shackley, an emeritus professor in the Department of Anthropology at UC Berkeley, in the spring of 2011. In this course, I worked primarily with raw obsidian. Although obsidian is more brittle than flint, it was still a useful material for my understanding of the experience of flintknapping[36] and the difference in material in no way lessens the value of my own experience. A group of archaeologists and lithics specialists[37] note that in terms of crystalline and structural makeup, obsidian, quartz, and chert would be comparable materials for a cursory understanding of the prehistoric flints.[38] Therefore, the experiences that I encountered in obsidian knapping offer valid possibilities regarding the human experience of knapping in the production of Gerzean flint blades. Instead of knapping the obsidian into the shape of a typical Gerzean flint blade, my mission was to create arrowheads that are bifacially pressure flaked. My experiment with knapping obsidian into arrowheads has far fewer steps than knapping a Gerzean flint blade, which will be made apparent in the following discussion of my experience. Although my results did not reach a high level of functional or aesthetic qualities, the semester-long experiment was valuable because it illustrated the extent of expertise, patience, and talent that was required for pressure flaking Gerzean flint blades.[39]

Stage "0"

In Kelterborn's experiment, the first step includes obtaining a core, or a workable, amorphous piece of raw material. Whittaker refers to this step as "stage 0",[40] because blanks are nebulous in shape and unworked. In Kelterborn's discussion of the raw material for Gerzean flint

[36] Nicholson and Shaw 2000; Tringham et al 1974: 178-9; Whittaker 1994: 69.
[37] This group includes Ruth Tringham, Glenn Cooper, George Odell, Barbara Voytek, and Anne Whitman in the article "Experimentation in the Formation of Edge Damage: A New Approach to Lithic Analysis" in 1974.
[38] Tringham et al 1974: 178-9.
[39] The tools that were required for this specific experiment included a copper hammerstone or billet, a copper head pressure flaker, coarse abrading brick, leather pad, gloves, and goggles.
[40] Whittaker 1994: 153.

knife blades, the material exhibited a natural sheen and was free of impurities. He describes the Egyptian material as having a color that is "light, toward natural leather, sometimes with pinkish tones" with a pattern of "light concentric bands".[41] The material that was chosen for the bulk of the ancient Gerzean flint blades is so similar that the first stage of production—the procurement of the raw materials—must have been standardized in some way. Kelterborn claims, and I am inclined to agree, that because of this flawlessness, this raw material was not "quarried, dug up or otherwise collected" arbitrarily or aimlessly.[42] Rather, raw materials were sought after methodically and purposefully from more than one source site, and then examined thoroughly. Stage "0" already points to the highly organized process of producing the Gebel el-Arak knife blade and similar Gerzean flint blades.

For my project, I was not directly involved in stage "0" and I did not choose the raw material from the source site for my experiment. The obsidian material was provided by Professor Shackley, which he brought back to Berkeley from various sites including Napa Glass Mountain in the Sonoma Volcanic Field and Iris Black in the Warner Mountains in California and from Government Mountain in the San Francisco Volcanic Field in Arizona. For my experiment, stage "0" was the most time consuming in the entire process. Access to these source sites and then the transportation of the raw materials was the most resource intensive and physically demanding, and it is likely that this was true for the Predynastic workshops as well. Resources for stage "0" would have included a vehicle, an operator and possibly other workmen to help with the procurement process, gasoline, and in many cases, a place to sleep, food, and water.

[41] Kelterborn 1984: 441.
[42] Kelterborn 1984: 441 and Stevenson 2009: 112.

Although I took no part in transporting the material back to Berkeley, I did choose the raw obsidian with which to work from the vast collection of available raw obsidian pieces. Although this step seems simple, it requires a much deeper understanding of the material than I initially presumed. Choosing the right material is critical for the first stage of achieving a flake from its original core. During the selection process, it was necessary for me to examine the obsidian for impurities and natural surfaces that would facilitate removal of a workable flake. In other words, I had to be able to envision the flake while it was still part of the core. Additionally, stage "0" included the search and purchase of the required tools to begin the actual obsidian working process.

Stage 1

After procuring the raw stone materials, a flake, or a workable piece of stone must be detached from the core. Kelterborn is not specific about this step in his article, stating that the first couple stages of flintknapping are similar.[43] Therefore, I will outline my own experience of obtaining flakes from cores instead. Creating a flake for the production of a Gerzean flint blade would have been a more difficult process due to its larger size. Before the knapping process begins, it is necessary to detach a workable flake from its core. The best way to achieve this is to find an almost perpendicular platform surface and strike down at the edge at an angle of about 70 degrees with a copperhead hammerstone. I found this preliminary step the most challenging because although seemingly trivial, discerning an ideal platform surface was difficult. Before putting my tools to the obsidian, I needed to envision every possible scenario that revolved around the surface platform. For example, if I strike at this point *X*, how will the flake break from the core? Will this flake provide a good surface upon which I can thin down the surface and then commence with percussion flaking?

[43] Kelterborn 1984: 440.

Stage 2

The second stage involves bifacial reduction, or thinning and preliminary shaping of the flake by way of pressure flaking. According to Whittaker, this process is known as "edging the blank",[44] and includes a combination of thinning and preparing the surface for bifacial pressure flaking. I believe that it is possible that this step occurred at the procurement site for efficiency. Furthermore, it would have helped in identifying a good piece of stone, for if it was not a good piece or did not prepare well, it could be left behind at the procurement site. Pressure flaking for these blades would have occurred by a long flaker. (Figure 8) The chests or arms add pressure to the long flaker, which in turn transfers the pressure into the edge of the flake.[45] It is entirely possible that due to the larger size of the material, an instrument such as a split bock (Figure 9) was employed to hold the flake in place while thinning and pressure flaking took place.

After achieving a usable flake, the thinning of the faces of the flake while loosely creating the shape of the desired product begins. For this process, the required tools include a pressure flaker and a coarse abrading brick. I filed the edges of the flake with the coarse abrading brick in order to facilitate the process of thinning the obsidian in my experiment. This abrasion creates an edge that is easily manipulated and worked. Then, I held the flake in the palm of my left hand, and with my right hand I started chipping at the obsidian flake with a pressure flaker. I positioned the head of the pressure flaker on the abraded edge, and pushed into the edge rather than downwards or upwards; the motion should trim the flake down. After thinning both faces on both edges, the flake turns into what is called a preform. Although I described my process and technique of thinning and pressure flaking the obsidian, no one exact way in which one can become an expert pressure flaker exists. Rather, this particular motion can only be perfected by

[44] Whittaker 1994: 154-155.
[45] Ibid., 175. Whittaker notes that because copper was becoming increasingly popular during this period, that a long, copper-tipped pressure flaking instrument was most likely employed.

enough practice so that the brain and the muscles in the body know how and where to move. Accomplishing this practiced muscle patterning facilitates the knapping process, hypothetically rendering this step the easiest in the chain of operation if the knapper can understand the inherent organic properties of the material and master the procedures of production.

Stage 3

Stage three involves the grinding of the preform, or more simply put, the process in which both faces of the blade are further flattened and prepared for percussion flaking. This third stage also includes polishing the flint to acquire a flattened surface on one side. The polishing of one side of the blade has two purposes. First, the flat side facilitates stage 4, or pressure flaking or knapping, in order to achieve the rippled effect on the opposite face. Flat surfaces provide better balance with a higher probability that the flaked surface turns out more evenly in design. It also contributes to the aesthetic beauty of the blade as a whole. (Figure 10) According to Délange, it is the most unique and innovative step that was taken by the knapper of the Gebel el-Arak knife blade. This step in no way strengthens the blade as a cutting tool, and instead, contributes to the aesthetic qualities of the finished product.[46]

Stage 4

The fourth stage is where bifacial pressure flaking begins on the unpolished side of the flint blade. Kelterborn refers to this type of pressure flaking as "C-flaking". (Figure 11) C-flaking refers to the shape of the curved and standardized ripples that are organized and created on the surface of the face of the flint. The knapper begins flaking at a platform angle of about 75º. These large, backwards C's are highly regular and precise, and the practice of flaking

[46] Délange 2009: 8. Délange even suggests that the fact because the craftsman polished it in this way, he was trying to emulate metal.

requires an occupation with and an attention to beauty and harmony.[47] Additionally, pressure flaking requires meticulous diligence because every movement must be calculated beforehand,[48] which was evident in my own experiment.

After creating a preform, bifacial pressure flaking was ready to commence. This step required a more careful and precise observation of the fragile properties of both the preform shape and the material. The goal of bifacial pressure flaking is to create symmetrical ripples or scars, up and down both faces, where the two rows of flakes would meet at the middle line. While flaking, it was imperative that I shaped the preform obsidian into a conical shape that pointed into an arrowhead at the top of the flake. I found this particular step challenging because it required consciousness of the faces of the obsidian as well as the overall conceptual shape. After multiple attempts, I eventually came up with several different shapes and forms of an obsidian arrowhead. Creating a corpus of standardized arrowheads was impossible without further experience with the material. Although the technique for this process is the same for thinning the obsidian, I found that it is more difficult because the arrowhead's aesthetic and functional properties must be realized simultaneously.

Stage 5

Stage five includes fine pressure flaking in order to retouch and adjust the worked surface to achieve aesthetic perfection and continuity within the design. Finer and more precise forms of pressure flaking known as delta and lambda flaking, (Figure 11, 12) which have a platform angle of about 60º, are utilized in this process. Delta pressure flaking typically occurs on the upper margins of blades while lambda pressure flaking occurs on the lower margins of blades.[49] Delta and lambda pressure flaking aim to remove any excess "negative" flint from the surface and

[47] Kelterborn 1984: 445.
[48] Whittaker 1994: 152.
[49] The following descriptions of pressure flaking and serration come from Kelterborn 1984.

work to augment the curvature and fluidity of the C-flakes. The products of delta and lambda pressure flaking are evident on the Gebel el-Arak knife flint blade; its upper margin has been affected by delta pressure flaking, while its lower margin has been worked by lambda pressure flaking.

Stage 6

The sixth and final stage is serration (Figure 11, 12) on the lower margin of the blade, from the left point to the right hafting area, or where the handle is attached. Serration refers to the straight pattern of very small and sharp teeth on what would theoretically be the cutting edge of a blade. Not only does it create a sharper edge, but it also facilitates the straightening and flattening of the lower margin of the blade. Serration is executed with a very sharp and precise tool, and is worked from both faces of the blade. Then, one must finesse the lower margin of the blade by deepening the teeth of the serrations. The entire serration process took Kelterborn approximately four hours to complete. According to Kelterborn, because serration is so minute in size, it must only serve as a "functional item on the Gerzean knives". However, the minute size of serration is not a valid distinction because all stages of flintknapping add to the overall visual program.

Cognition and Experience

Although my obsidian knapping experience is more simplified than the empirical process that Kelterborn describes for the Gerzean flint blades, it is important because it provides several points of insight in terms of the experience of the craftsman of the Gebel el-Arak knife blade and similar Gerzean flint blades. Any type of stone working requires years of practice in order to achieve a level of expertise that mirrors the talent that the Gerzean flintknappers must have possessed. Technical skill is not only physical, but also includes the cognitive ability to choose

raw materials, find a platform, and know how much pressure is required for bifacial pressure flaking. While procurement and preparation of materials, outlined in stage "0", might be the most resource intensive and physically exhausting, the knapping and shaping of the materials into a final form was not only physically, but also cognitively demanding. Pressure flaking comprises working the faces as well as the overall final shape of the blade. Therefore, a flintknapper must have been mindful of the surfaces, edges, and the overall form in order to create a perfect Gerzean blade. As Howard Risatti writes:

> Craft technique entails two kinds of learning that leads to two kinds of knowledge: one is a sophisticated technical knowledge of materials and their properties and the second is a high degree of technical manual skill to readily and effectively work material into the requisite form.[50]

Expertise is not accomplished by following a strict set of rules and procedures. Rather, it is realized when an individual possesses an intimate understanding of the tools, an ability to manipulate materials and their properties, a mastery over a specific production sequence, and finally, a clear cognizance of how all of these aspects will result in the final product.

My experience with knapping obsidian arrowheads demonstrated how crucial it is to have had intensive training and practice with working stone. The near perfection and standardization in terms of production and size of the Gebel el-Arak knife blade and similar Gerzean flint blades demonstrate the importance of every single step in the operational chain.[51] Each stage possesses different goals for the material and requires both technical and cognitive mastery. Thus, Kelterborn concludes that the technical steps in creating a Gerzean flint blade most likely included several different craftsmen with specialized skills in each stage.[52] From a modern perspective it seems more likely and efficient to assign different craftsmen with specialized skills to the separate stages of Gerzean flint blade production. Surely this sort of social organization

[50] Risatti 2007: 99.
[51] In terms of length, all of these catalogued blades are very similar according to appendix in Midant-Reynes 1987.
[52] Kelterborn 1984: 452.

would be time-efficient and allow for the craftsmen to hone their specific skills. Although the actual craft of flintknapping is highly ordered and standardized, a fact that is transparent in the present corpus of Gerzean flint blades, this does not indicate that the process needed a highly organized group of different craftsmen in different stages of the production sequence. It is just as likely that there were a few masters and/or workshops of Gerzean flintknapping that communicated with each other but eventually created the blades from start to finish on their own. Perhaps in this production paradigm, inefficiency was what distinguished the finished object as a more valuable artwork. Unfortunately, there is not enough evidence within the archaeological record or about the Predynastic period to assert these claims with certainty.

The Gebel el-Arak Knife as Art

The Gebel el-Arak knife represents a paradigm of Predynastic craft and creativity in many ways. The ways in which both the flint and the ivory were manipulated demonstrate the extraordinary nature of the Gebel el-Arak knife, calling us to evaluate and understand the knife as an entire art object. It achieves the highest levels of value with regard to the quality and manipulation of material, maneuvers, and most importantly, the final visual presentation of the knife as art or the presentation of the art object as a knife. In order to think about the knife as a complete entity and an art object, it is useful to reflect on the value of the knife and thus the implications of its value within Egypt during the Predynastic period.

The "Enchantment" of the Gebel el-Arak Knife

Art does not possess one sole meaning ascribed by the artist or the audience or one interpretation communicated by the art object itself. Things may have a multiplicity of meanings and are often valued for different reasons by different individuals. Alfred Gell discusses the *enchantment of technology* as a significant attribute of an artwork's value:

> The power that technical processes have of casting a spell over us so that we see the real world in an enchanted form […] it is the way an art object is construed as having come into the world which is the source of the power such objects have over us—their becoming rather than their being.[53]

Thus far, we have explored and witnessed the technological virtuosity that the Gebel el-Arak knife embodies. The operational chain of the Gerzean flint blade production sequence is highly organized and precise, and both Kelterborn's and my experiments have shown the amount of time, expertise, and quality of material that would have been needed in order to achieve this level of production and beauty. The production of the Gebel el-Arak flint blade by itself would have been a resource-intensive feat. Though there is no way to show the currency of the Gerzean period or make any comparable monetary conclusions about the production process of the object, it is reasonable that material things which achieve the same level of technical and aesthetic beauty as the Gebel el-Arak knife must have been extremely valuable, creating a "halo-effect"[54] around itself. Time, material, organization of manpower (no matter how large or small), and training of the craftsmen are all factors that contribute to the value of manufacturing as well as the possessing of a Gerzean flint blade. These technological achievements embody the object and give the power of enchantment and value to the Gebel el-Arak knife as art.[55]

It is apparent that within its physical structure, the design of the flint blade has a high value status during the latter half of the 4th millennium BCE.[56] All of these factors may indicate that the Gerzean flint blades were elite objects, owned by individuals that were fully aware of the power, value, and beauty of the blades alone. Similarly, the ivory handle contributes to the high value status of the Gebel el-Arak knife.[57] As previously discussed, the material of ivory was

[53] Gell 1992: 163-164, 166.
[54] Ibid.,168.
[55] Ibid.,163.
[56] Midant-Reynes 1987. The author charts the appearance of flint blades in burial assemblages.
[57] This is certainly the case in modern times. The ivory handle and its imagery are the primary factors for which the Gebel el-Arak knife is so valuable.

valuable at the time the Gebel el-Arak knife was created.[58] In addition to the materiality of the handle, the low-relief imagery carved on both sides of the handle immediately adds value to the knife. If we think about the low-relief and its production in the same way we have looked at the Gerzean flintknapping process, it becomes clear that the images and narratives merited a high value and that the virtuosity of carving the ivory confers a value along with that of the "foreign" images. Thus, the technological feats inherent within the Gebel el-Arak knife handle and blade work together in order to display the powerful status of the possessor while the design itself actively and personally communicated and interacted with the owner of the knife.

Possession and Portability

In addition to enchantment via technological processes and achievement, there is also an enchantment that concerns the ingenuity of design and form. Together, the handle and the blade require the observer to experience the object in the round, for every side represents something visually different. Therefore, attempting to discern which side of the handle was originally displayed with what side of the blade may not be critically essential. Rather, the idea that the object was intended to be viewed actively, in the round is significant to the understanding of the experience of the Gebel el-Arak knife. Referring back to Pittman, every aspect of the handle and the blade was to be read in relation to each other. The self-referential scene of a fighter on the victorious side, holding a weapon in a similar shape of a Gerzean flint blade works to emphasize the programmatic association of the handle and the blade. (Figure 13)

The undisturbed context of tomb 43 at Gerzeh demonstrates the possibility of this type of viewing as well. This tomb contained one Gerzean flint blade broken in half, among the other offerings.[59] Centrally located within the grave, the blade was deposited as if it was one whole

[58] Nicholson and Shaw 2000: 323.
[59] Stevenson 2009: 113.

blade. One half of the blade had the ripple-flake facing upwards while the opposite half's polished side was displayed upwards. The careful and calculated placement of the accompanying grave offerings suggests that the organization of the flint blades was purposeful and planned. Although debatable, it seems likely that the state of the blade is a result of intentional breakage. This particular arrangement demonstrates that the deceased tomb owner as well as the mourner understood the equal value and importance of both sides of the blade, thus reinforcing the visual power of the blade as a whole and the experience the owner might have had with the object in the round.

The idea of how the Gebel el-Arak knife was possessed can be further explored in its physical details. During his experimentation, Kelterborn assumes that serration was visually ineffective and only functional in a utilitarian sense,[60] operating under the assumption that "aesthetics" are separate from "utility", a line of thought that has been challenged successfully in more recent scholarship. Yet, the analysis outlined in Élisabeth Délange's work on the Gebel el-Arak knife shows that the blade was never employed for cutting.[61] In the case of the Gebel el-Arak knife blade, Kelterborn's assessment on the function of serration must be reconsidered. One must then pose the question why the manufacturer would exert so much energy and time to serrate the lower margin of the flint blade. Perhaps serration was "visually ineffective" from a physical distance, yet it seems that it was entirely meaningful to the individuals who both created and owned the knife.

The claim that serration is visually ineffective can also be said of the products of C, delta, and lambda flaking, and the low-relief carving on the ivory handle, specifically when an individual is looking at the Gebel el-Arak knife from a physical distance. When one observes the

[60] Kelterborn 1984: 449.
[61] Délange 2009: 9.

physical size of the miniature details of the combatants, animals, and boats on the ivory handle, it is evident how visually ineffective all of these features would be for a distant observer. The only attributes that this distant observer could possibly distinguish would be the shape of a knife made from ivory and flint. However, all of these physical attributes, including the imagery, ripples, serration, polishing, and the nuances of the flint's color, were visually meaningful for an individual who interacted with the Gebel el-Arak knife in an intimate way.

Equally intimate would have been the experience and engagement of the sense of touch. The sense of touch reaches beyond that of the mere privilege and status equated with the physical holding and possessing of the object and its materials. The Gebel el-Arak knife and the Gerzean flint blades embody various kinds of sensations in one object. The Gerzean flint blades go between rough and smooth surfaces, while the form of the Gebel el-Arak knife lies in a continuum of sharp and soft. Likewise the inconspicuously heavier weight of the object relative to its sleek thinness activates an individual's awareness of touch.[62] Above all, an individual must be conscientious of the potential dangers and pleasures of touch when handling the Gebel el-Arak knife or other Gerzean flint blades.

Thus, the details in the flint blade and the ivory handle present an apparent paradox. On the one hand, the expertise and energy infused into the entire object calls for recognition and esteem by an audience, while the portability and physical size of the art object limit the experience of interacting with the object to one individual, or a small group of privileged individuals, ultimately restricting who does the viewing and the experiencing of the Gebel el-Arak knife. The exclusivity further indicates the elite status of the as well. Regardless, these technological and artistic feats are meant to be viewed and praised, enchanting the individual that shares an intimate experience with the knife.

[62] The Gerzean flint blade from the Hearst Museum at UC Berkeley weighs approximately 183.897 grams.

The Power of Choice and Function

The Gebel el-Arak knife's meaning during the Predynastic period depends on more than the Gerzean flint blade operational chain. In order to understand the role of the knife in the Predynastic context, the ivory handle and the flint blade must be evaluated together as a whole knife. On the one hand, the flint blade of the Gebel el-Arak knife is part of a standardized group of Gerzean flint blades, while on the other hand the unique imagery on the ivory handle indicates that this knife was individualized to some extent. This dichotomy presents an interesting dilemma. Did the possessor of the Gebel el-Arak knife and similar Gerzean flint blades acquire these objects from an exclusive workshop, or did the possessors specifically call for this design due to its obvious value?

There is a clear distinction between the Gerzean flint blades with handles and those that were acquired without handles. This difference lies in that their upper ends were either hafted or rounded. As burial evidence shows, the majority of the Gerzean flint blades were worked from the lower to their rounded upper ends and were excavated without handles. (Figure 14) The absence of handles for the rounded Gerzean flint blades means that these types of Gerzean blades were either never meant to be accompanied by handles, or that all of these handles did not survive. Unfortunately, the certainty of these possibilities may never be known due to the limits of the archaeological record. Yet, the possibility that a handle crafted for a rounded Gerzean blade simply did not survive is not likely. The Gerzean flint blade[63] from the Phoebe A. Hearst Museum of Anthropology in Berkeley is one such blade that demonstrates the likelihood that the rounded Gerzean flint blades were never accompanied by handles, nor were they meant to be. By comparison, the discussion of the Hearst Museum Gerzean blade will provide a stronger argument for the necessity to understand the handle and the blade of the Gebel el-Arak together

[63] Object 6-4752 at the Phoebe A. Hearst Museum of Anthropology at UC Berkeley.

as a whole, for the peculiar design of the Gebel el-Arak knife in particular must have been planned in advance.

The Hearst flint blade, excavated in cemetery 7000, tomb 151 at Nagada[64] by George Reisner at the beginning of the 20th century, has a rounded upper end. (Figure 15) While the back of the blade has been smoothed down and polished, the face of the blade has been bifacially pressure-flaked. These ripple flakes cover the entire surface of the blade from the lower end to the upper end. Furthermore, the C, delta, and lambda flakes are respectively consistent in size and spacing from the lower to upper ends on the upper margin. The blade is finely serrated from the lower tip up two thirds of the blade, where the last third of the blade up to the upper end is pressure flaked on its surface, yet not serrated on its lower end. Although there is no indication that a handle was ever attached, it is likely that area of the blade without serration was in fact the "handle".[65] Thus, in the case of the Gebel el-Arak knife and similar blade-handle pairs, the conscious decision to acquire a handle was made by an individual involved within the production scheme. The sculptor of the handle must have been in contact with the knapper of the blade in some way, either directly or through the possessor as a nexus point in the chain of operation.

Although the possessor's exact role in the process of production of a Gerzean flint blade is uncertain, the possessor's role in how the knives function is distinct. As stated earlier, Délange's studies on the Gebel el-Arak knife blade show that it was never used to cut in antiquity. Furthermore, Délange asserts that no one stage in the production of these types of knives was to actually strengthen the blade as a cutting device.[66] Yet, a comparanda of Gerzean flint blades at the Musée des Antiquités Nationales en Saint-Germain en Laye have been

[64] Lythgoe 1965; Reisner 1908.
[65] I am unable to confirm the possibility that the unserrated area of the blade was indeed the handle, nor offer any other possibilities at present.
[66] Délange 2009: 8.

chemically analyzed and tested for use-wear analysis, showing that these knives were once used to cut plants like reeds or cereals.[67]

Whether or not these blades were in fact ritually linked, and the residue simply does not survive on the Gebel el-Arak knife blade is not the primary issue. Furthermore, I do not find this distinction, or the frequency of how many or how often these blades were employed as cutting devices as crucial lines of inquiry. The importance rests in the idea that the possessors of these blades were responsible for determining how to engage with them. Effectively, they had the power to choose the ways in which the knives ornamented bodies and/or were employed by bodies. The multiplicity of the different types of objects that these Gerzean knives could represent make way for a diverse possibility of symbolic, practical, or theoretical uses and meanings in antiquity. The wide variety of possibilities empowers the possessor by way of his ability to perform and possess the objects at his own will.

Identity by Affiliation and Control

Beyond the enchantment of the process of becoming and being, the Gebel el-Arak knife and Gerzean flint blades appear to have instigated an enchantment of self within the possessor of the object. The feasibility of this specific valence will be further explored by the burial function of the Gerzean knives. It is more than likely that the Gebel el-Arak knife was originally interred along with a deceased individual. This assumption is due to the archaeological fact that the majority of these Gerzean flint blades were found in burial contexts.[68] That the Gerzean flint blades served to adorn and accompany the deceased individual as part of the burial offerings is a legitimate assertion. The deceased were ornamented by the living, and may have been an expression of either the "mourners' reading or representation of the dead person's former self-

[67] Christensen, Walter, and Menu 1992: 493.
[68] Midant-Reynes 1987: 193-199.

representation through dress,"[69] and/or a choice made by the interred individual. Although the archaeological record constrains the parameters of our certainty, it is likely that the deceased actively and intimately possessed these knives while living. This intimacy is fundamentally indicated by how the object works in relation to a human being. Simply put, there is one handle for one individual, specifying a personal relationship with the object. Our examination of the operational chain and the level of engagement on the part of the possessor with the production process reify this concept.

Furthermore, examples of Gerzean flint blades found within tomb contexts may be some evidence for the personal relationship and possessing of the object through the idea of a possible ritual disablement. However, it must be noted that this evidence could be merely circumstantial and the case for ritual disablement is in no way universal. Particularly, it is thought that many of these blades were "ritually killed"[70] because they were supposedly found broken in half at the time of interment. Alice Stevenson's work on the intact context of tomb 25 at Gerzeh shows that the burial contained all of its objects in situ around the body with the two halves of a Gerzean blade in a granite vessel.[71] In the case of tomb 25, then, the evidence for "ritual killing" is strong[72] presumably because their location in a sealed stone vessel should have been deposited by a human actor or protected a blade from later breakage.

The assemblage of Gerzean flint blades found in the undisturbed tomb 32 at Abu Zaidan (Figure 16)[73] is a more dubious example of the purposeful "killing" of the objects. One of the Gerzean knives was found with its blade and the handle detached from each other, as the Gebel el-Arak knife's blade and handle were acquired detached. The act of separating the handle and

[69] Parker Pearson 2000: 9.
[70] Stevenson 2009: 113.
[71] Ibid.
[72] Stevenson also mentions that tomb 43 is also a strong indication of "ritual killing" of these knives.
[73] Needler 1984.

blade could be an indication of this ritual disablement. However, this evidence for possible ritual disablement could be circumstantial, for the other two rounded Gerzean flint blades that were interred were excavated completely intact. Nonetheless the possibility that at least the hafted Gerzean blade was purposefully separated from its handle is interesting.

Physically breaking the continuity of the form of the object permanently disallows further possessing of the intended object by other individuals. The purposeful and physical discontinuing of the objects could have been a plausible way in which the deceased could assert his sole possession of and affiliation with the object. Furthermore, the graves that contained Gerzean flint blades and identifiable skeletons were adult male burials. This evidence seems to reveal that the Gerzean flint blades were gendered objects, available only to elite males, where the image of the male figure holding such a knife within the relief imagery of the Gebel el-Arak knife (Figure 13) consolidates this theory.

Illusions and Landscapes

The chain of operation of the Gebel el-Arak knife and other Gerzean flint blades has demonstrated the resource intensive feat of producing the objects. The idea that the possessor had claim over the materials themselves beyond their final form and design, more than likely resonated with the possessor. I will now offer a reading that, although is not directly substantiated by any textual or archaeological evidence, visually strengthens the rhetoric of the knife as a tangible example of the possessor's participation in Predynastic Egypt's increasing control over natural resources. I propose that in the same way the low-relief imagery was sculpted on the ivory handle, the formulaic and fluid patterns on the flint blade's knapped surface were sculpted as an illusion to natural landscapes. Helene J. Kantor asserts in her discussion of Mesopotamian landscape imagery in glyptic art:

> When natural features, however simply or schematically rendered, are no longer individual isolated elements in the horizontal friezes, but have grown together to form a *unified topographic setting* within which relatively small figures play their roles, we may justifiably speak of landscape.[74]

Kantor asserts the possibility that repeated unified patterns and shapes may be read together as one cohesive landscape. By analogy, the organized marks and indentations of the Gebel el-Arak knife blade display the possibility of a similar reading of the design of the blade as a landscape. The way in which its surface was handled with various types of flaking—C, lambda, and delta—contributes to the harmony and fluidity of the design and the color of the blade (Figure 11) appear to mimic natural landscapes of the Eastern Desert or the Red Sea Coast. (Figure 17).

Joseph Majer explains that the Eastern Desert and the Red Sea Coast were lucrative regions with which Predynastic and Early Dynastic Egyptians interacted in order to acquire raw materials.[75] These raw materials would then profit the Predynastic elite as well as provide the tangible means in which the growing elite could manifest their power, primarily displayed by the burial evidence. Thus, this specific reading of the knife metaphorically and theoretically emphasizes the idea that the possessor had control over natural and foreign resources, but also demonstrates Predynastic Egypt's growing reliance on trade routes and outer regions, thematically complementing the foreign style in which the imagery of the handle was rendered.

Conclusion

The Gebel el-Arak knife and Gerzean blades were thus powerful markers of value and prestige. The objects enchanted the elite social groups of the Predynastic period by the way in which they were manufactured and then subsequently experienced. How materials are experienced before and after the final form of an object was achieved is crucial to our understanding of how and what an object means. In the case of the Gebel el-Arak knife, although

[74] Kantor 1966: 148. The italicizing of the phrase "unified topographic setting" was my own.
[75] Majer, Josef 1992: 227. Juris Zarins also details the importance of the Red Sea as a space for trade of obsidian. Also see Mark 1998.

the imagery itself does demonstrate Egypt's ties with the outside world, I believe that its value in antiquity rested primarily within its materiality, technology, and the intimacy that both the handle and the blade together required by its possessor. The value derived from these specific tenets was crucial to the knife's affiliate, physically and metaphorically ornamenting its possessor with elite status and power. In this sense, the previous studies of the Gebel el-Arak knife concerned with the various possible meanings of the imagery come full circle with our exploration of the materiality and enchantment of the Gebel el-Arak knife and the Gerzean flint blade production.

Figures

Figure 1: The Gebel el-Arak knife. As published in Délange 2009.

Figure 2: Obverse and reverse sides of the Gebel el-Arak ivory handle. As published in Délange 2009.

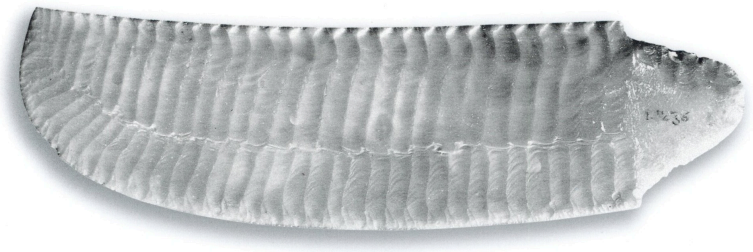

Figure 3: Pressure flaked side of the Gebel el-Arak flint blade. As published in Délange 2009.

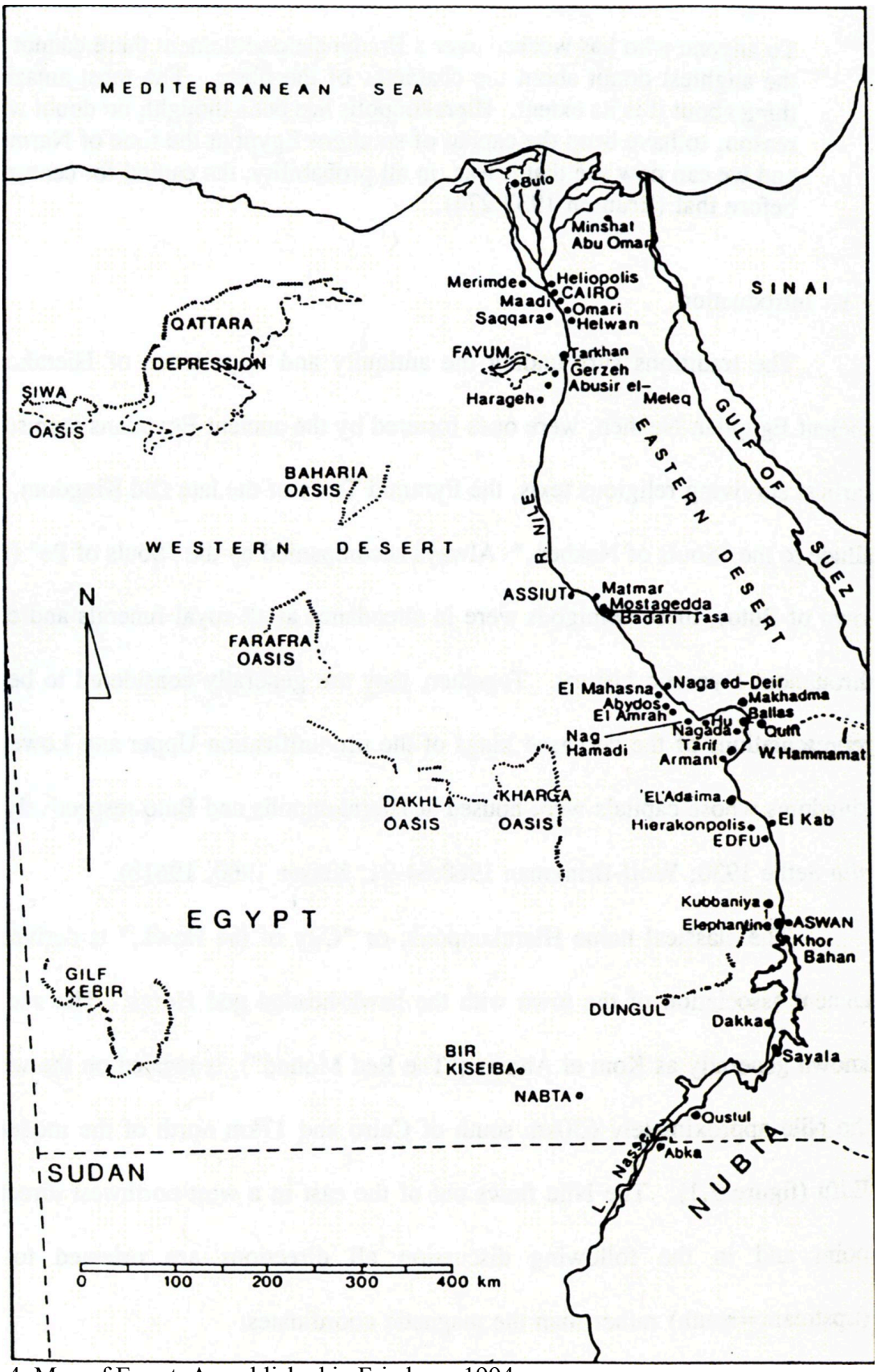

Figure 4: Map of Egypt. As published in Friedman 1994.

Figure 5: Photograph of the Gebel el-Arak knife ivory handle representing scholarly trends. As published in Bénédite's 1924 publication *L'art égyptien dans ses lignes générales.*

Figure 6: Detail of the "master of the animals" icon on the ivory handle. As published in Délange 2009.

Figure 7: Example of Peter Kelterborn's replication of Gerzean flint blades with Danish material. As published in Kelterborn 1984.

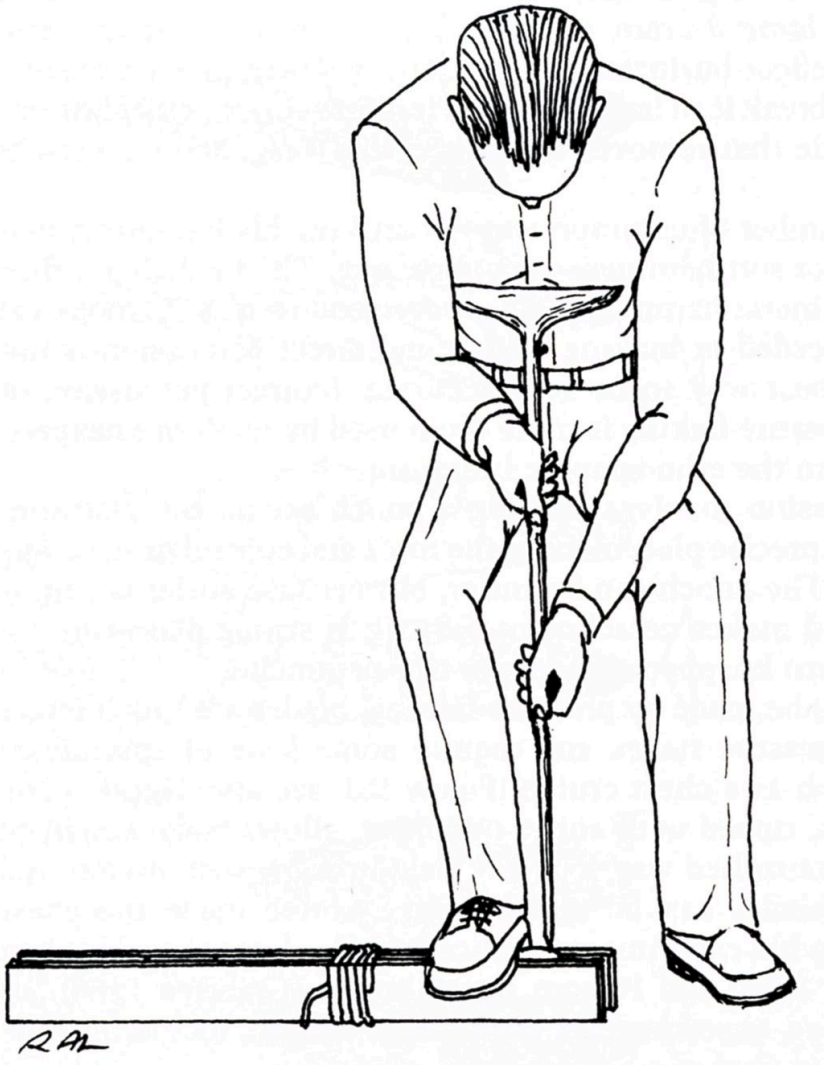

FIgure 8: Drawing of a long flaker. As published in Whittaker 1994.

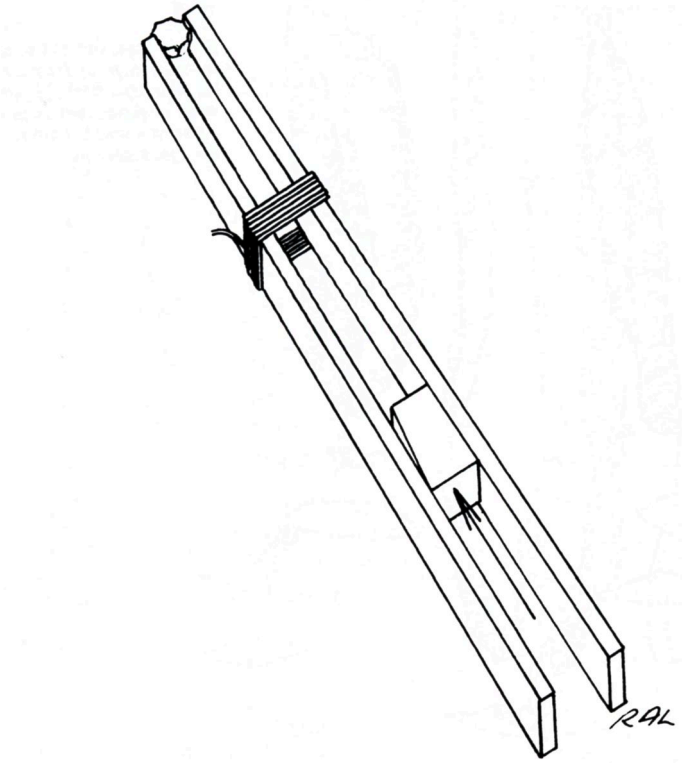

Figure 9: Drawing of a split block. As published in Whittaker 1994.

Figure 10: Polished side of a Gerzean flint blade from Abu Zaidan (09.889.120). The Brooklyn Museum, New York.

Figure 11: Detail of blade. C flaking, lambda and delta flaking, and serration. As published in Délange 2009.

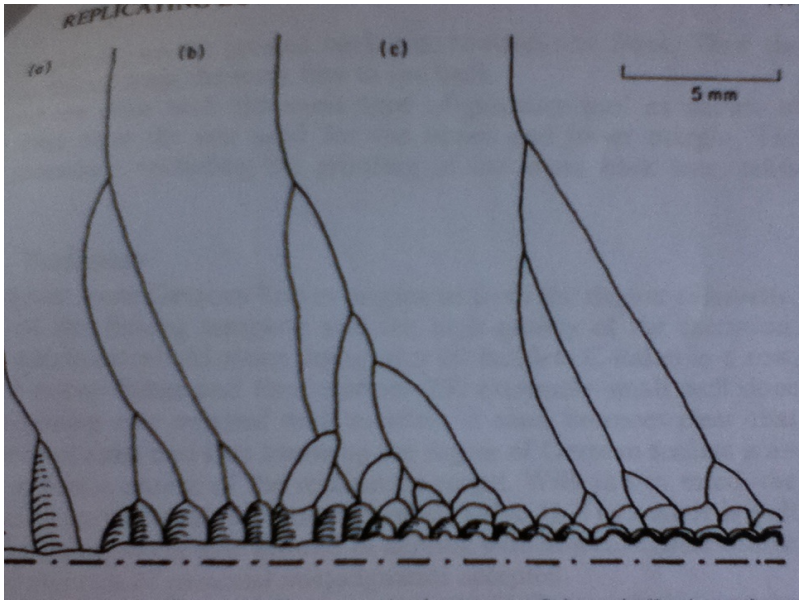

Figure 12 Drawing of lambda and delta flaking and serration. As published in Kelterborn 1984.

Figure 13: Detail of male warrior holding a knife. As published in Délange 2009.

Figure 14: Gerzean flint blades with rounded ends (EA 59235). The British Museum, London.

Figure 15: Gerzean flint blade with rounded end. (6-4752). The Phoebe A. Hearst Museum of Anthropology, Berkeley.

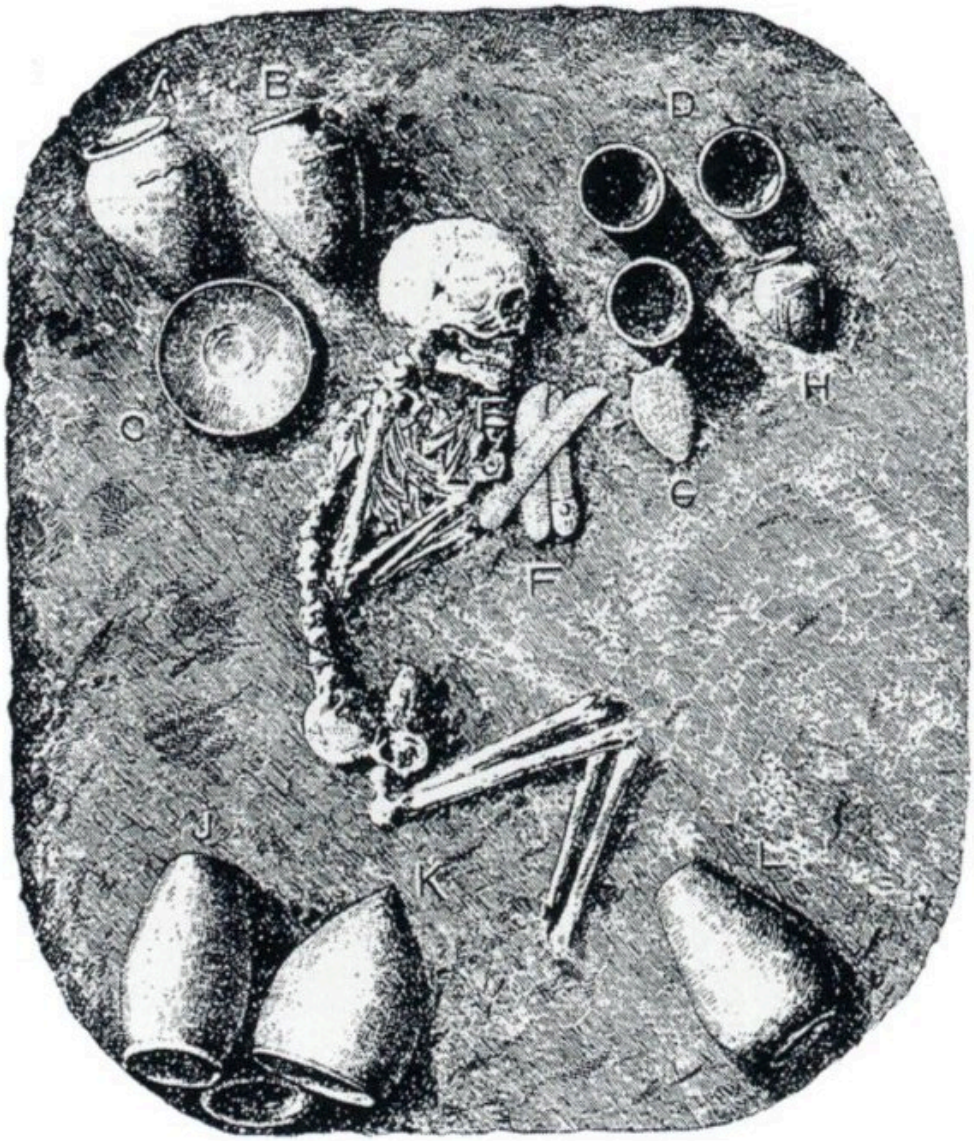

Figure 16: Drawing of grave 32 at Abu Zaidan. As published in Kantor 1944.

Figure 17: The Eastern Desert between the Nile River Valley and the Red Sea. (www.lolyland.net).