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The Bronze Artifacts of Tall Jalul, Jordan

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ABSTRACT

THE BRONZE ARTIFACTS OF TALL JALUL, JORDAN

by

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ABSTRACT OF GRADUATE STUDENT RESEARCH

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Title: THE BRONZE ARTIFACTS OF TALL JALUL, JORDAN

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Background

It is quite common at excavation sites throughout the Near East to uncover the remains of metallic artifacts, though the practice of investigating these objects has fluctuated over the past 50 years of archaeometallurgical studies. Early scholars of archaeometallurgy, such as R.F. Tylecote, employed the use of elemental analysis, studying early metallurgical technologies necessary to create metallic implements around Europe and the Near East and paying close attention to the resources and energy exerted to manufacture each instrument. Other researchers compiled typological comparisons, building cultural identities off of stylistic features from the material culture. Since then, technological and elemental analyses have been utilized together, applying the study of metal artifacts from their initial ore state, to their manufacture and usage within ancient

societies. Metallurgical analysis of bronze implements from Lachish, Tell edh-Dhiba'i, and Megiddo not only demonstrate an advanced metallurgical culture, but suggest the importance that metal artifacts have on the material culture of archaeological sites. Bronze artifacts have been discovered in the excavations at Jalul from 1992 to 2014, the analysis of which may contribute to the material culture of the site and suggest activities and daily life of people living at Jalul.

Problem

Forty-six bronze artifacts of varying size and type have been recovered from the excavation deposits at the site of Tall Jalul, located on the Madaba Plains of Jordan. Distributed throughout multiple strata, and within every excavated field of the site, these artifacts present a diverse glimpse of daily life, war, and prestige at Tall Jalul that can be accessed only through a tedious analysis of each artifact's function and context. Without the necessary attention to researching each artifact, a significant amount of history would be lost from Tall Jalul. Metals reflect not only technological advancement, but the presence of trade relationships with neighboring and international communities which could increase or decrease the prosperity of a settlement. As the process of corrosion continues to limit the access to specific features of each excavated bronze artifact, the necessity for research on the Jalul bronzes becomes vital.

Justification and Purpose

The metallic artifacts excavated during the past 13 seasons at Tall Jalul comprise roughly 5% of the corpus of excavated findings from 1992 to 2014. The purpose of this

study is twofold; first, to delineate the type of each individual artifact in order to define their utilization at the site. This analysis contributes to the second purpose of research, creating a cultural and chronological framework in which to place each artifact and its user, the scope of which reflects the economic status of inhabitants of Jalul as it fluctuated over time.

Methodology

The bronze objects, which have been placed into groups based on functional classification (Weaponry, Tools, Jewelry and Unidentifiable), require analysis which is exclusive to their specified group. An observation of style, function, and form contributes to the typological classification of each artifact belonging to the Weaponry and Tool groups, which will be assessed alongside the parallels from neighboring sites to establish rough chronological data. The jewelry will be analyzed both stratigraphically for chronological data, and comparatively, alongside Near Eastern parallels. The last grouping of artifacts, which have been categorized as "unidentifiable," will be analyzed by size and stratigraphic data.

Scope and Delimitations

Of the 46 bronze artifacts recorded from excavations at Jalul, 39 were analyzed for the purposes of this study. Several of the artifacts within the collection of bronzes were excavated from the Jalul Islamic Village, a site which contains a material culture not pertinent to the analysis of bronzes from Tall Jalul. However, only 17 of the 39 are currently available at the Siegfried Horn Archaeological Museum, limiting the access to a complete analysis of all the bronze artifacts. Photographs and field reports have supplied

sufficient data to measure and contextually place artifacts which were not available for physical study. However, x-ray fluorescent (XRF) analysis
would enable a non-destructive analysis of the chemical components of each artifact, an examination which could suggest methods of manufacture. Funds for XRF analysis were not available for the current research, but may be accessed at a later date, to improve on the results of individual analysis.

The scope of jewelry throughout the ancient Near East, especially in tombs, provides a multitude of parallels far too extensive for this research. Rings, bangles, and earrings from multiple sites provide little variance from the Early Iron Age I to the Islamic period, suggesting that their utilization cannot be dated by stylistic elements. For this reason, the Jalul bronze jewelry has been analyzed mainly as evidence for luxury and prestige, and not as a means to determine chronology.

Results

The results of the analysis of the 39 bronze artifacts illuminate several areas of interest pertaining to the Iron Age occupation at Jalul. Weaponry, 20.5% of the bronze corpus, consists of long-range and medium-range instruments discovered mainly around the perimeters of the site, in Fields G and E. Pottery readings as well as stylistic parallels from neighboring Near Eastern sites suggest their dating to the Iron Age I and Iron Age II.

The tools discovered in previous seasons at Tall Jalul consist of 43.59% of the bronze implements, the largest grouping of bronze objects. An abundance of fibulae and three cosmetic applicators date to the Iron II/Persian period, at which time 51% of the overall bronze objects were found.

Jewelry, roughly 31% of the corpus, was found during much of the Iron Age, the highest amounts dating to the Iron II/Persian period. Five objects, 5% of the corpus, were undateable, due mainly to their lack of field report records, or a variance in ceramic typologies connected with their associated loci.

Conclusion

The bronze artifacts at Jalul may represent a transition from the need for weaponry, in order to defend the community, to the interests in luxury items, reflecting a period of stability and the emergence of an elite class. Iron Age I artifacts contribute 12.82% of the total bronze corpus discovered at Jalul. Until the Late Iron II/Persian period, bronze artifacts reflect mainly weaponry, with only a few samples of jewelry occurring in the early Iron Age II. The Iron II/Persian period represents a distinct change in bronze utilization. Over 51% of the bronze artifacts analyzed were used during this period, the majority of which belong to the class of luxury and non-essential items. The implications of this research suggest that a heightened relationship between Assyria and Egypt encouraged easy access to luxury items previously unobtainable to inhabitants at Tall Jalul and within the Madaba Plains.

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A Thesis

Presented in Partial Fulfillment

of the Requirements for the Degree

Master of Arts

by

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APPROVAL BY THE COMMITTEE:

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COPPER ALLOYING IN THE NEAR EAST: INTRODUCTION AND PRINCIPALS OF METALLURGY

Introduction

A diverse corpus of bronze artifacts have been recovered from the deposits of Tall Jalul. Distributed throughout multiple strata and within every excavated field, it is difficult to ascertain the precise status of the owners of each artifact without implementing the use of stratigraphy, pottery readings, and stylistic typologies. Through the utilization of data and parallels from neighboring sites, the bronze artifacts supply information which establishes rough chronological data for their utilization, while contributing to the ancient history of the lives and statuses of the inhabitants of Tall Jalul.

In the following chapters, the analysis of 39 bronze artifacts (Table 1) is presented. Stratigraphic data, as well as pottery readings, which were recorded from each excavated location, are given special attention in order to properly address the cultural context of each artifact. Each object has been categorized according to its interpreted form and function, addressing its cultural implications at the conclusion of each section. As the metals in the subsequent chapters are analyzed, the development of the cultural significance they have on the history of Jalul will begin to emerge, from their origins as trade goods within the Madaba Plains, to their stages of wear and utilization within society, where power and status were of utmost importance.

Table 1. Tall Jalul Bronze Artifacts

Obj. No.	Site	Field:Locus:Pail	Date	Description	HAM Allocation
5A	Tall Jalul	B2.4:13	Iron II	Bangle	92.003
5B	Tall Jalul	B2.4:13	Iron II	Bangle	92.003
18	Tall Jalul	B3.15:33	Undated	Unidentifiable	92.0052
33	Tall Jalul	C.Surface	Iron I	Earring	94.0002
63	Tall Jalul	B9.10:17	Iron II	Ring/Earring	94.0027
68	Tall Jalul	B11.15:24	Iron I	Javelin	94.0032
165	Tall Jalul	D2.9:28	L. Iron II/Pers	Fibula	
199	Tall Jalul	D4.0:42	Undated	Unidentifiable	96.0102
248	Tall Jalul	Unknown	Undated	Needle/Chisel	
251	Tall Jalul	A7.14:17	L. Iron II/Pers	Fibula	99.0005
253	Tall Jalul	A7.14:16	L. Iron II/Pers	Fibula	99.0007
275	Tall Jalul	B18.3:0	L. Iron II/Pers	Fibula	
288	Tall Jalul	A3.34:42	L. Iron II/Pers	Fibula	
295	Tall Jalul	B16.19:36	L. Iron II/Pers	Fibula	
300	Tall Jalul	A4.74:83	Iron II	Arrowhead	99.0051
331	Tall Jalul	A8.57:84	Iron I	Earring	99.0081
336	Tall Jalul	C5.18:0	L. Iron II/Pers	Fibula	99.0086
337	Tall Jalul	D4.33:80	L. Iron II/Pers	Bead	
349	Tall Jalul	A7. 26:31	Undated	Nail	99.0099
379	Tall Jalul	D2.24:108	Undated	Earring	99.0129
404	Tall Jalul	E1.Surface	L. Iron II/Pers	Fibula	
407	Tall Jalul	E3.4:14	L. Iron II/Pers	Cosmetic Applicator	
408	Tall Jalul	E3.3:13	L. Iron II/Pers	Stun Bolt	
410	Tall Jalul	E4.8:11	Iron II	Ring	
421	Tall Jalul	E4.8:13	Iron I/II Trans	Arrowhead	

Table 1—*Continued.*

Obj. No.	Site	Field:Locus:Pail	Date	Description	HAM Allocation
423	Tall Jalul	C8.1:2	Undated	Loop-headed Pin	
451	Tall Jalul	C8.3:13	L. Iron II/Pers	Earring	
471	Tall Jalul	E3.12:25	Iron II	Arrowhead	
481	Tall Jalul	A7.70:83	Iron I	Cosmetic Rod/Pin	
524	Tall Jalul	B20.S.BALK:31	Iron II	Ring	
548	Tall Jalul	A16.6:10	L. Iron II/Pers	Earring	
558	Tall Jalul	A16.9:14	L. Iron II/Pers	Ring	
574	Tall Jalul	D1.67:264	L. Iron II/Pers	Ring	
577	Tall Jalul	C7.15:53	L. Iron II/Pers	Needle	
611	Tall Jalul	IVA2.30:33	L. Iron II/Pers	Cosmetic Applicator	
648	Tall Jalul	G2.BALK:54	Iron II	Armor Scale	
672	Tall Jalul	G1.BALK:31	Iron I/II Trans	Arrowhead	
682	Tall Jalul	G1.18:37	Iron I	Arrowhead	
693	Tall Jalul	D3.59:245	L. Iron II/Pers	Fibula	
741	Tall Jalul	C11.5:11	L. Iron II/Pers	Fibula	
904	Tall Jalul	D, surface find	L. Iron II/Pers	Cosmetic Applicator	

The objectives of this research are twofold: (1) to analyze and organize each artifact according to its ancient context at Jalul and (2) to utilize object data in order to obtain a snapshot of Tall Jalul, as seen through each object and its owners.

The Principals Metallurgy

It is quite common at excavation sites across the Near East to uncover the remains of metallic artifacts, though the practice of investigating these objects has fluctuated over the space of 50 years of archaeometallurgical studies. Early scholars of archaeometallurgy, such as R. F. Tylecote, utilized scientific analysis, studying early metallurgical technologies necessary to create metallic artifacts in Europe and the Near East (Tylecote 1976: 26). Tylecote's contributions to archaeometallurgy are extensive in terms of identifying quantitative data of the metallic elements contained within alloyed artifacts (Tylecote 1962: 39). Other researchers, such as P.R.S. Moorey, *in Ancient Mesopotamian Materials and Industries: The Archaeological Evidence,* investigated the ancient peoples who obtained and worked both ferrous and non-ferrous metals, recognizing key elemental transformations during smelting. His analyses, however, did not use scientific x-ray analysis conducted by laboratory scientists (Moorey 1994: 248).

The historical, geographic, and cultural significance of base metals and their alloys is essential in the integration of artifacts within their cultural context; however, many archaeologists were hesitant to move beyond the contextual framework needed for metallurgical analysis. It wasn't until technological and elemental analysis were applied simultaneously as the backbone for archaeometallurgy that recent advancements could be applied to the study of metal objects from their initial ore state, to their manufacture and usage within ancient societies (Eaton and McKerrell 1976: 169; Ben-Yosef et al. 2009: 31). Metallurgical analysis of bronze implements from Lachish, Tell edh-Dhiba'i, and others, has not only contributed to the corpus of other excavated artifacts, but has engaged archaeometallurgists in the importance that metal artifacts have on the material

culture of archaeological sites (Tufnell 1953: 97-105; Muscarella, 1965: 233). In "Near Eastern Archaeometallurgy," Vincent Pigott prescribes the following goals in analyzing archaeological metals: "to determine their methods of manufacture, their composition, and to attempt to trace the connection between artifact and the source of the raw materials from which they were manufactured" (Pigott 1996: 139). When combined with stratigraphic data, metal artifacts provide a story that begins with their creation by the ancient metal smith, and concludes at their final spot within an archaeologically excavated site.

In order to analyze the Tall Jalul bronze corpus, an understanding of the origins of its smelting process is of the utmost importance. The most detailed examination of these processes is included in R. J. Forbes's *Studies in Ancient Technology*, where he suggests that the origins of bronze occured when "1) Cassiterite in the form of stream tin was discovered in working goldplacers" and that "2) . . . was reduced by metallurgists already in possession of the fundamental knowledge necessary for the production of gold, copper, and lead" (Forbes 1971: 143). It is possible that "natural bronze" may have preceded "artificial bronze" when the presence of tin within copper ore was smelted for a harder substance, but was not recognized as a special ore until the properties of bronze were understood by metallurgists as a direct result of consciously adding tin (Forbes 1971: 144).

Copper mining and smelting to form alloys can be traced to as early as 3000 B.C.E., to the ancient society of Sumeria, where it was subsequently diffused throughout the Near East and Mediterranean region (Forbes 1964: 20). Among the most influential areas of copper mining and smelting were the mining areas of Timna and the Fenan

Valley in the southern Levant. Geographically, Timna and the Fenan are on the eastern and western sides of the Wadi Arabah rift valley, where large deposits of copper ore were extensively exploited in ancient times (Pigott 1996: 147). Timna is situated in an area just north of the modern city of Eilat, on the western side of the Arabah, and was mined initially in the Chalcolithic period, as is evidenced in the 1964-1970 excavations at the site by Beno Rothenberg (Rothenberg 1972: 10). Nearly 2,000 years passed before a new power reached the area of Timna in the form of the Egyptian New Kingdom, which began mining the area for both copper and turquoise. On the eastern end of the Arabah, in the Fenan Valley, an estimated 150,000-200,000 tons of ancient copper slag have been located by fieldwork directed by Andreas Hauptmann in connection with the Iron Age (Pigott 1996: 147). It is evident that a massive copper industry, not unlike the production at Timna, was conducted in Fenan, undoubtedly linked to the rising Edomite power in the region (Levy and Najjar 2007: 100). The control of tin mining would have been highly desirable to ancient societies, especially to the rising powers of Assyria in the Iron Age. Researchers have speculated based on modern tin supplies that in ancient times bronze production would have required traveling great distances to obtain tin resources. "The southern and western part of the Near East are singularly poor in tin ores, though some have supposed that the Sinai contained tin ores which had since been depleted, perhaps because of the report on Midian tin in the Bible" (Forbes 1971: 131).

Excavations in Afghanistan, where the presence of cassiterite (tin ore) can be found alongside gold and lapis, suggest that materials were obtained and transported together throughout Mesopotamia, perhaps even arriving in the Levant (Pigott 1996: 159). The Mesopotamian (Sumerian) Metals Project at the University of Pennsylvania

has utilized these observations to suggest that copper and tin were not smelted together consistently for hardness alone, but also for the desirable color the addition of tin to copper produced in items of bronze (Pigott 1996: 159). This should be considered when dealing with the Jalul corpus, especially jewelry, the adornment of which would have represented women of a high status within ancient Transjordanian society.

CHAPTER 2

BRONZE WEAPONRY

Introduction

Several weapons belong to the corpus of bronze artifacts excavated from Tall Jalul. Bronze weaponry has a long-lived history both in the Near East and around the world, making it difficult to locate specific cultural origins for several of the artifacts from Jalul, including arrowheads, javelins, and a possible stun bolt. Of these weapons, careful attention has been paid to their stratigraphic significance at the site, as well as stylistic features which may support their manufacture either domestically or internationally. An integration of a generalized knowledge of early weaponry, with the stratigraphy of the Jalul weapons, may contribute to the understanding of their place in Near Eastern warfare.

The manufacture of weaponry is linked to its usage by the ancient warrior. As ancient societies were developed and conquered, the demand for innovations in weaponry steadily grew, and with it, the relationship of the warrior to his weapon of choice. "Apparently both metalworkers and warriors may have played a part in appropriating and shaping new weapon technologies—the metalworkers most clearly by adopting innovations to a local technological discourse, but also possibly by 'tailoring' weapons for individual fighters or for particularly challenging missions" (Melheim and Horn 2014: 7). This idea, suggested in Melheim and Horn's *Tales of Hoards and Swordfighters in*

Early Bronze Age Scandanavia, may also ring true for the extensive collection of bronze and iron weapons excavated at sites throughout the Near East. The "art of warfare" in the Late Bronze and Iron Age Near East is discussed explicitly by Yigael Yadin, who outlines the requirements of weaponry during war (Yadin 1963: 3). Yadin suggests that "mobility, firepower, and security, as the three basic elements in the art of warfare, are appropriate headings under which the nature of ancient warfare and the weapons used in antiquity may be examined" (Yadin 1963: 4).

The metal smith of the Near East, much like Scandanavia, became the master of all things connected with warfare. With each new enemy, new weapons progressed in a reciprocal relationship that has continued from the beginnings of metal-smithing, to modern times (Yadin 1963: 2). Even the metal used for the manufacture of weaponry was of special consideration to the metal smith and the community to which he worked. Copper and tin, Kyle Keimer suggests, were less abundant than iron in the Near East, which may have stunted the production of large bronze weaponry. Smaller weapons, such as arrowheads, javelins, or stun bolts, however, required less material, and were therefore abundant throughout sites such as Tall Jalul (Keimer 2014: 8). The availability and technological advancements of certain weapons, therefore, impacted the development of weaponry, and thus the style of warfare within the Near East (Keimer 2014: 3). "Weaponry, therefore was constantly assessed to determine whether the advantage in battle would be gained through offense or defense" (Keimer 2014: 7).

By the Late Bronze Age, metal smiths had perfected many of the weapons found in the Iron Age and Persian periods (Keimer 2014: 3). Although excavations of the Iron Age I sites have yielded only small amounts of weaponry, sites such as El Khadr, Hazor,

and several Phllistine and Phoenician sites have led to the discovery of weapons with special properties (Keimer 2014: 5). The inscribed arrowheads of El Khadr and Ruweiseh in Phoenicia are suggested by Samuel Iwry to be objects of divination (Iwry 1961: 28). Their usage in "popular art or divination," as well as war, encouraged their popularity throughout the ancient world (Iwry 1961: 28). As in Iron Age I, Iron Age IIA has not been a prominent period for weaponry finds. Wall reliefs recovered from the archaeological site of Tell Halaf remain one of the most important depictions of weapon utilization (Keimer 2014: 5). Archers in the Tell Halaf reliefs are depicted in chariots, fully engaged in warfare, with points directed toward their enemies (Keimer 2014: 5). The energy that warriors exerted during warfare should be carefully considered at this point. As stated earlier, mobility, firepower, and security were the main priorities of both the metal-smith and the warrior for whom he crafted each weapon (Yadin 1963: 3). Weapons determined in many ways the fate of these ancient fighters, a point that surely was not overlooked by the metal-smith. Obtaining a skillfully crafted weapon was not taken lightly in antiquity. Warriors gave their weapons meaning through their bravery, devoting energy and their lives to raiding villages, whereas almost in a symbiotic relationship, weapons provided them with defense (Melheim and Horn 2014: 8).

Melheim and Horn take this point one step further in pointing out that in Scandinavia, "the fighter's life is embedded in the weapon, and surrendering the weapon may be seen as, at one level, as a substitute for surrendering his or her life" (Melheim and Horn 2014: 8). At Torsted and Bondesgarde, in Scandanavia, spearheads and axeheads were discovered in a structure resembling a grave, presumably buried in a practice of "symbolic killing" (Melheim and Horn 2014: 10). Interpretations of the burial of six

swords in Dystrup, Denmark, have also pointed to the association of weapons with their owners in much the same way (Melheim and Horn 2014: 14). During the Bronze Age in the Levant, a similar relationship can be seen at Byblos ('Depots des Offrandes') and Megiddo, where a diverse array of weapons were excavated in pits, jars, and graves, in close proximity to temples (Philip 1988: 191-94). Although a cultic practice is implied by their context, these weapon deposits may represent the warrior, either as a respected member of Megiddo or Byblos society, or as the embodiment of defeat and conquest, of their warring foes. As the stratigraphic context of the weaponry at Tall Jalul is analyzed, one may question whether or not weapons of the Near East were "surrendered" or revered in much the same way.

A multitude of issues exist when classifying ancient weaponry. Typically points, including spearheads, lance heads, javelins, and arrowheads, are classified according to size, with spearheads being the largest and arrowheads the smallest (Keimer 2014: 1). Distance can be utilized when considering ancient weaponry. Short-range weapons of warfare include: swords, knives, daggers, axes, spears, lances, and maces. Medium-range weapons include mainly javelins, while those used for long-range include the bow and arrow and sling stone (Keimer 2014: 1; Yadin 1963: 6). The corpus of Jalul points belongs mainly to the long-range and medium-range categories, occurring in leaf-shaped, ovoid, triangular, or flat variants, many with central spines or barbs (Keimer 2014: 2). Points were manufactured to attach to a reed or wooden shaft, evidence of which can be seen at the terminus, where a tang or socket occurs (Keimer 2014: 2). The shape of the point was less for aesthetic purposes, but more for effectiveness, both in terms of aerodynamics, as well as its ability to pierce the armor of the enemy (Yadin 1963: 9).

Defensive weapons also were used in addition to those used on the battlefield. Shields, helmets, and armor (cuirasses and grieves) were essential in protecting the ancient warrior during his advance. Cuirasses evolved over time through the advancements in armaments. They were mainly made of either "leather or scales of metal that were sown together" (Keimer 2014: 2). Bronze scales dating to the end of the Late Bronze Age have been discovered at sites throughout the Near East, including Tell Deir 'Alla, a tomb in Madaba, and at sites in Cyprus (Dornemann 1983: 150). Manufacture of armor scales required skilled craftsmen, and represented costs that could be afforded only by elite forces (Yadin 1963: 15). In collaboration with their weapon, an ancient warrior's armor would have prepared him for conflict, maintaining a class distinction that can be suggested perhaps by artifacts found in the excavations at Tall Jalul.

Arrowheads and Javelin

Object 300, Arrowhead

Description: Arrowhead J0300 (fig. 1) was discovered in Field A, Square 4. The total length and blade length characteristics utilized by Cross and Milik (1956: 19), categorize this type of weapon as an arrowhead, with a total length of 6.5 cm, and a blade length of approximately 4.5cm. The arrowhead reaches its maximum width (1.1 cm) at the terminus of the rib, where the blade and stem meet. Due to significant corrosion along the blade and rib of the arrowhead, it is difficult to state with certainty the original form; however, the present artifact contains a linear, rhomboidal blade which flattens at the stem. The arrowhead appears to have broken in antiquity between the stem and tang.

Measurements: Total length: 6.5 cm; Blade length: 4.5 cm; Maximum width: 1.1 cm; Maximum breadth: 0.6 cm.

Context: Square A4, Locus 74, Pail 83, Probe.

Date: Given the pottery reading associated with Locus 74, Pail 83, in which Object 300 was discovered, an estimated date of 1000 B.C.E. or later can be suggested.

Parallels: Madaba Tomb (Harding 1953: pl. V: 181); Adoni Nur (Harding 1953: pl. VII: 30); Sahab Tomb (Dajani 1970: pl. XX: 348) and Tawilan (Bienkowski 1995: 296, fig. 9.7: 7-8).

Figure 1. Object 300, arrowhead.

Object 471, Socketed Arrowhead

Description: Object 471 (fig. 2) is an eliptic arrowhead of 6.0 cm, discovered in Field E, Square 3. The stem of J0471 has a width of 1.1 cm, that terminates with a broken edge, where the tang would have protruded. The rhomboidal shape of the stem appears to taper into the flattened blade, which shows no evidence of a rib.

Measurements: Total Length: 6.6 cm; Blade Length: 4.8 cm; Blade Width: 1.8 cm; Stem Length: 1.5 cm.

Context: Square E3, Locus 12, Pail 25, Soil layer.

Date: Given the pottery reading associated with Locus 12, Pail 25, in which Object 471 was discovered, an estimated date of 1000-550 B.C.E. can be suggested. This locus contained Iron Age II kraters, cook pots, jars, and body sherds.

Parallels*:* Megiddo (Loud 1948: pls. 174: 19, 175: 38); Lachish (Tufnell 1958: pl. 25: 20); Madaba Tomb (Harding 1953: pl. V: 180) and Tawilan (Bienkowski 1995: 296, fig. 9. 7: 4).

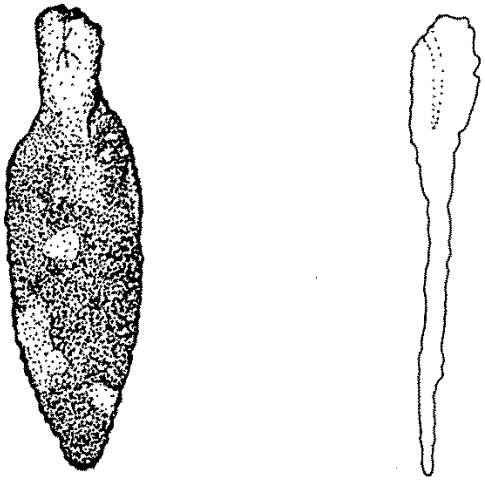


Figure 2. Object 471, socketed arrowhead.

Object 421, Socketed Arrowhead

Description: Arrowhead 421 (Fig. 3) was discovered in Field E, Square 4. Cross and Milik (1956: 19) distinguish between arrowheads and javelins based on blade length, which would categorize Object 421 as a lanceolate arrowhead (Cross and Milik 1956: 17). The blade reaches its maximum width of 0.8 cm just before tapering towards the stem. The rib of artifact J0421 is pronounced, with a maximum width of 0.3 cm, where it intersects with the socket.

Measurements: Total Length: 3.5 cm; Blade Length: 2.7 cm; Blade Width: 0.8 cm; Rib Length: 2.6 cm.

Context: Square E4, Locus 8, Pail 13.

Date: Given the pottery reading associated with Locus 8, Pail 13, in which Object 421 was discovered, a date of 700-550 B.C.E. is suggested. This locus contained Iron Age I store jars, bowls, and a cook pot, while also yielding an Early Iron Age II cook pot, and hole-mouth krater. Similar arrowheads from the El Khadr hoard are associated typologically with the Iron Age I Levant; the prominent rib suggesting a style that is typical of Iron Age arrowheads and javelin (Cross and Milik 1956: 21).

Parallels: Megiddo (Lamon and Shipton 1939: pl. 81: 28); El Khadr (Cross and Milik 1956: 20, AV:11); Adoni Nur (Harding 1953: pl. VII: 30); Busayra (Sedman 2002: 420, pl. 10:214) and Tawilan (Bienkowski 1995: 337, fig. 9. 53: Reg. 420).

Figure 3. Object 421, socketed arrowhead.

Object 672, Arrowhead

Description: Arrowhead 672 (fig. 4) was discovered in Field G, Square 1. Cross and Malik (1956: 17, 19) distinguish between arrowheads and javelins based on blade length, categorizing Object 672 as an *ovate* arrowhead. The blade reaches its maximum width of 1.5 cm, with a gentle tapering towards the point. The rib of artifact J0672 is flat, with a maximum width of 2.5cm. The tang of the arrowhead is missing, possibly due to damage in antiquity.

Measurements: Total Length: 4.5 cm; Blade Length: 4.5 cm; Blade Width: 1.5 cm; Rib Length: 2.5 cm.

Context: Square G1, Pail 31, Locus Balk.

Date: The pottery reading of Object 672 could not be located; however, its placement within the excavations of the balk of Square 1 suggest that its discovery cannot be accurately determined by stratigraphy alone. Arrowheads and javelins from the El Khadr hoard with similar typological characteristics to Object 672 have been dated to Iron Age I (Cross and Milik 1956: 19).

Parallels: El Khadr (Cross and Milik 1956: 20, AIV: 9) and Tawilan (Bienkowski 1995: 296, fig. 9.7: 4).

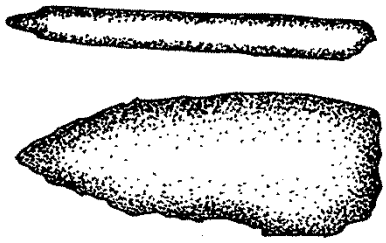


Figure 4. Object 672, arrowhead.

Object 682, Arrowhead

Description: Arrowhead 682 (fig. 5) was discovered in Field G, Square 1. The blade of Object 682 is oblancelate, with a gentle taper towards both the point and the tang. The stem and rib are unpronounced, due to ancient manufacture or post-use corrosion.

Measurements: Total Length: 6.5 cm; Blade Length: 4.5 cm; Blade Width: 1.5 cm.

Context: Square G1, Locus 18, Pail 37.

Date: The pottery reading of Object 682 could not be located; however, similar arrowheads and javelin classified typologically by Cross and Milik (1956: 21) are associated with the Early Iron Age I.

Parallels*:* El Khadr (Cross and Milik 1956: 20, JI: 1, JII: 5, AV: 11); Megiddo (Loud 1948: pls. 175: 26, 176: 60,63); Ain Shems (Grant 1938: pl. LIII: 8); Madaba

Tomb (Harding, G.L. 1953: pl. V: 181, 182); and Tell es-Sa'Idiyeh (Pritchard 1985: fig. 172: 3).

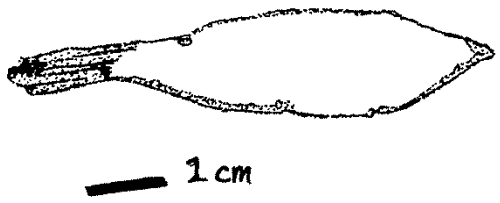


Figure 5. Object 682, arrowhead.

Object 68, Javelin

Description: Object 068 (fig. 6) was discovered in Field B, Square 11. The total length of 8.8 cm categorizes it as a lanceolate javelin, according to length variances determined by Cross and Milik (1956: 19). The blade of this javelin is flattened to the rib, where it becomes rhomboidal throughout the length of the stem, until it tapers to the end of the tang. Although lanceolate in general shape, one side of the blade displays damage, possibly sustained during antiquity, contrasting the smooth blade of the opposing side.

Measurements: Total length: 8.8 cm; Maximum width: 1.8 cm.

Context: Square B11, Locus 15, Pail 24, Probe.

Date: Given the pottery reading connected with Locus 15, Pail 24, in which Object 68 was discovered, an estimated date of 1200-550 B.C.E. is suggested. This locus contained Iron Age I cooking pots and bowls, while also yielding an Iron Age II bowl. Similar javelins from the El Khadr hoard are associated with the Late Bronze Age-Early

Iron Age transitional period, suggesting that Object J0068 can be dated no later than Iron Age I.

Parallels: El Khadr (Cross and Milik 1956: 20, J1: 2); Megiddo (Loud 1948: pl. 174: 11, 12); Sahab Tomb (Dajani 1970: pl. XX: 349); Umm al-Biyara (Bienkowski 2011: 94, fig. 7.1.5); and Tell es-Sa'Idiyeh (Pritchard 1985: fig. 172: 2).

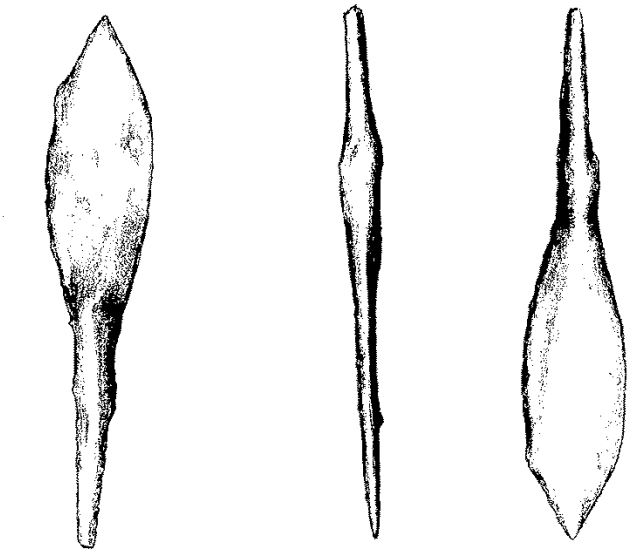


Figure 6. Object 68, javelin.

Stun Bolt

Object 408, Stun Bolt

Description: This small artifact (fig. 7), discovered in Field E, Square 3, consists of a rounded tang of approximately 2.5 cm, and a globular head of 1.0 cm, distinguishing it among a class of stun bolts. Stun bolts were utilized predominantly in the Late Bronze period, with some transition into the Early Iron Age (Genz 2007: 47). Studies have

suggested that these artifacts were utilized as blunt arrows, with the specific purpose of bird hunting (Genz 2007: 50).

Measurements*:* Length: 3.1 cm.

Context: Square E3, Locus 3, Pail 13, Soil Layer above Locus 4, Burial.

Date: Locus 3, Pail 13, in which Object 408 was excavated, was a contaminated locus, with pottery dating from 1000 B.C.E. to 1500 C.E. A burial, discovered in Locus 4 of the same square, however, suggests that much of the soil in Locus 3 was disturbed during the Late Islamic Period. Carinated bowls, kraters, and jars dating to the Iron Age I period were discovered within the soil of Locus 3 along an Iron Age II hole-mouth krater and several Late Islamic bowls. Given that stun bolts were most common during the Late Bronze and early Iron Age, it is unlikely that Object 408 would date any later than Iron Age II.

Parallels: 4.6 cm Nuzi bolt, Hurrian City (Starr 1937: pl. 123H); 4.5 cm Tell Munbaqa (Czichon and Werner 1998: 118, pls. 106: 1044, 206: 1044); 3.6 cm bolt, Tel Gezer (Seger 1988: pl. 30:23) and 4.1cm bolt, Tel Gezer (Seger 1988, pl. 27:10).

Figure 7. Object 408, stun bolt.

Scale Armor

Object 648, (Possible) Armor Scale

Description: Object 648 (fig. 8) is a small bronze pseudo-rectangular artifact of 2.8 cm in length and 2 cm in width. The condition of the artifact is indicative of damage occurring sometime in antiquity, with corrosion contributing to further detriment. The interpretation of J0648 as an armor scale comes mainly from parallels described below at neighboring sites.

Measurements: Length: 2.8 cm; Width: 2.0 cm.

Context: Square G2, Pail 54, balk.

Date: Given the pottery reading connected with the balk of Square G2, Pail 54, in which Object 648 was discovered, an estimated date of 1000-550 B.C.E. can be suggested. Pail 54 contained an Iron II store jar and bowl, as well as a L. Iron II lamp and hole-mouth krater. The pottery reading, however, cannot accurately reflect the date of Object 648, since its context is within a balk that was not systematically excavated. Bronze scales are depicted as early as the 18th Dynasty of Egypt, and have been found at Near Eastern sites with Late Bronze and Early Iron Age phases (Franken 1961: 366).

Parallels: Deir ʻAlla (Franken 1961: pl.12) and Megiddo (Lamon and Shipton 1939: pl. 85: 2, 10).

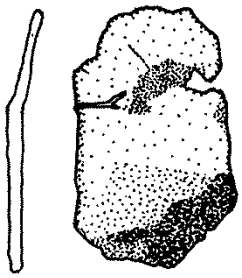


Figure 8. Object 648, armor scale.

Conclusion

Based on the data of the analyzed weaponry from Jalul, several conclusions can be made regarding their date, utilization, and context. First, a quantitative analysis will suggest utilization practices which place each object in their time and space at Tall Jalul. Secondly, the archaeological context of weaponry corpus addresses possible cultural implications and use identity. Thirdly, access to the above analyzed weapons demonstrates the fluctuation in necessity for weaponry during the various periods of occupation at Tall Jalul.

Only eight bronze weapons were discovered during the excavation seasons from 1992 to 2014. This contributes only 20.5% of the total bronze corpus analyzed (Appendix B, Fig. 46**)**. Utilizing the typological guidelines created by F. M. Cross and J. T. Milik (1956: 19) in collaboration with Tall Jalul pottery analysis, several periods of use can be inferred. It would seem that bronze weaponry is not present at Jalul until the Iron Age I period, and only in the form of two points: javelin 068 and arrowhead 682, 25% of the bronze weaponry corpus (Fig. 41). Two other arrowheads (421 and 672) appear at Tall Jalul roughly sometime during the late Iron Age I, early Iron Age II transitional period,

when other parallel forms such as points found at El Khadr (Cross and Milik 1956: 20-1) and the tomb at Adoni Nur (Harding 1953: pl. VII:30) are dated. During Iron Age II, bronze weaponry seems more prominent at Tall Jalul. Four objects (50% of the corpus) date to this period, which may suggest a higher utilization of weaponry at the site, or the possibility of a greater need for protection from the Egyptians or the emerging Assyrian Empire. Among the Iron Age II artifacts is Object 648, a piece of bronze scale armor with a parallel at the site of Deir Alla, known for its final destruction phases occurring in the Late Bronze to Early Iron Age I period (Franken 1961: pl. 12, 366).

The diversity of the bronze weaponry corpus is of further consideration. Not only do the various weapons represent a wide range of offensive and defensive tactics, they also suggest several different cultural groups, either having their residence at Jalul, or those who attacked the settlement. It is important to note that all of the bronze weapons from Jalul belong to the class of medium- and long-range instruments (Yadin 1963: 6). Residents at Jalul during the Iron Age seem to have had more interest in keeping enemies at a great distance. This seems to hold true when analyzed with the architecture found during the Iron Age II period in Field G and might reflect possible architectural features in Field E**.** Scale 648 was discovered in Field G, as well as arrowheads 682 and 672, while Field E contained stun bolt 408 and arrowheads 421 and 471. Given the results of excavations in Field G which revealed a ninth century B.C.E. city wall, it can easily be assumed that arrowheads 682 and 672, which were found both inside and outside the wall, are the remnants of an Iron Age II attack on Jalul (Gregor and Gregor 2010: 495).

The piece of scale armor (648) was also found near the wall, suggesting that its wearer belonged to the occupants defending the settlement. Although excavations in

Field E have not uncovered a section of the Iron Age II city wall as in Field G, other architectural features, such as a late terrace wall running parallel to where a possible city wall should be, as well as the discovery of an Egyptian seal of "Amun-Re, Re of the Two Lands," suggest that Objects 408, 421, and 471 are associated with defensive support for the Jalul settlement even earlier than the Iron Age II period (Younker, Gane, and Al-Sqour 2011: 61). The seal, which may date to the time of Rameses III (Iron I), may support a late Iron Age I relationship with Egypt, or Egyptionalized material culture at Jalul, culminating in an increase in fortifications as demonstrated in Iron Age II architecture and weaponry (Younker, Gane, and Al-Sqour 2011: 64).

The bronze weaponry at Jalul represents the necessity for defense at the settlement, and further reflects the very fragile environs of life in the Madaba Plains. An increase in bronze weaponry during the Iron Age II period seems to directly coincide with the presence of a predominantly Ammonite material culture that was well known for Egyptionalized iconography (Younker, Gane, and Al-Sqour 2011: 62). As the Ammonite settlement flourished, an advanced water system was developed during the seventh century B.C.E. in order to channel water out of an ancient reservoir (Gregor and Gregor 2010: 498). Although it is impossible to prove at this state of research, further excavations may demonstrate that the availability of water provided Jalul with an increased risk for attack. Access to resources sustained the societies of the Ammonites, the neighboring Moabites, and perhaps the Persians, as they traveled and established proxy-rule in the Madaba Plains during the tail end of the Iron II period (Younker, Gane, and Al-Sqour 2011: 64).

CHAPTER 3

BRONZE TOOLS

The Fibulae of the Ancient Near East and Transjordan

Introduction

The migration of fibulae from Greece to the Levant encouraged the development of many new forms, and as a result, a typology that traces the form from the 12th to the seventh centuries B.C.E. within the archaeological record of sites in Cisjordan and Transjordan. Excavations at Tall Jalul and the other Madaba Plains sites have uncovered fibulae with similar and differing forms, that tell the story of the evolution of the fibula and its important role in dress and status throughout Transjordan. Utilizing the complex origins of the fibula, typologies arranged by Christian Blinkenberg and David Stronach, and archaeological data from parallel sites, an examination of the Tall Jalul fibulae demonstrates the continuous emergence of new manufactured forms in the region which reached its popularity during the seventh century B.C.E.

Much discussion has been given to the origins of the development of the fibulae during a century of Mediterranean archaeological excavations. The lack of hard stratigraphic and chronological evidence from sites in the Italian Alps, Yugoslavia, Hungary, and Greece, has given way to a series of typological classifications which researchers have used as a primary focus of situating the earliest fibulae (Alexander 1965:7). For the purposes of this chapter, attention will be placed only on those fibulae

which are directly associated with its appearance in the Near East. In *Fibules grecques et orientales*, the most comprehensive classification of fibulae from the Near East, Christian Blinkenberg suggests that all fibulae in Palestine were imported from Cyprus or Greece (Blinkenberg 1926: 230). "When we examine the chronological appearance of the one-piece fibula, we note that it appears in the Late Terramare period in Italy, and in the Mycenaean IIIB period in Greece" (Muscarella 1964: 35). The one-piece fibula, or violin-bow fibula, is no doubt the earliest example of the metal fibulae, but the precise location of its derivation is not without its discrepancies (Stronach 1959: 182). "This type seems to have originated in either Italy or Greece, in the fourteenth century B.C. before gradually spreading east to the region of Cyprus towards the end of the thirteenth century B.C." (Stronach 1959: 182).

Prior to its invention, however, clothing fasteners were straight, loop-headed, or toggle pins, "less secure and more dangerous" implements that left the pointed edge exposed, where it could easily slip or puncture the wearer (Muscarella 1964: 36). Pins of this nature occur throughout the Mediterranean and Levant, particularly in tombs of the deceased. During the Early and Middle Cypriot periods, pins numbered nearly 33% percent of the artifacts obtained from tombs (Catling 1964: 69). The Lapithos Tomb of Cyprus is one such example, yielding a diverse variety of Early Cypriot III pins, classified as plain shafted, button-headed, or oval-shafted (Catling 1964: 70-72). Perhaps as a direct result for the need of more secure clothing that gave the wearer more mobility, pins became less popular as the development of the fibulae rapidly spread throughout the Mediterranean world. At the end of the 12th century B.C.E., a migration of people from Greece created a spread of technologies, including the fibulae, into the regions of Cyprus,

Crete, and eventually Palestine, where it would play an important role in developing Near Eastern material culture. Excavations at the Cypriot site of Enkomi reveal not only several new Late Bronze Age pin forms (eyelet, bent-top, roll-top, plain-headed, and vase-headed), but also the emergence of several distinct fibulae styles (Catling 1964: 237-40).

In Hermann Thiersch's work, *Aegina das Heiligtum der Aphaia*, the history of the garment fastener is examined by the study of Greek art (Thiersch 1906: 404). Thiersch suggests that it is essential to utilize the artistic representation of deities from the Mycenaean period so that archaeologists can correctly classify artifacts (Thiersch 1906: 404). Although many have misinterpreted bronze pins as "hairpins," there was no depiction of their usage in hair in Greek iconography, unlike its common usage in the Egyptian court (Thiersch 1906: 404). Two distinct styles of dress utilized pins and fibulae in Mycenaean Greece: the *chiton* and the *peplos*, depicted mainly on goddesses (Thiersch 1906: 404). The heavy wool material of the early *chiton* required the use of multiple pins and sewing in order to keep the garment on the wearer. The *peplos*, however, is identified specifically by the use of a fibula on the shoulder, connecting wool, or thin linens, to the individual without risk of puncture to the skin (Thiersch 1906: 405). The convenience of clothing pins, particularly toggle pins and fibulae, was in their ability to limit the need for sewing (Thiersch 1906: 405). Thiersch also suggests that it was the thick heavy wool cloth used by early Greeks that encouraged the development of the fibulae, which could reach through multiple layers and hold the fabric snuggly in place (Thiersch 1906: 404).

The classification of fibulae into distinct types enabled researchers to apply chronologies to those fibulae which arrived the earliest in the Near East, and those which became domestic products (Stronach 1959: 182). Generally regarded as the earliest typological classification of fibulae, Blinkenberg identified hundreds of variations in fibulae throughout the Mediterranean and Palestine, according to their shape, molding, and manufacture. Surprisingly, he categorized all fibulae found at sites throughout the Near East as Cypriot productions, regardless of their advancements in design, or divergences from traditional Cypriot styles (Blinkenberg 1926: 230). Since then, however, excavations on Cyprus have yielded little to suggest parallels to the later forms in Palestine (Gjerstad 1948: 383), leading some scholars to believe that the production of fibulae became a local enterprise within Syro-Palestine during the eighth century B.C.E. (Stronach 1959: 185).

Utilizing Blinkenberg's typology, David Stronach has suggested that the fibulae's "development and diffusion would seem to be most clearly illustrated by the evolution of something like seven distinct types, each of which played an important part in the overall development of the local product" (Stronach 1959: 182). The first of the styles to reach the Near East were what Stronach classifies as "East Mediterranean," while the other styles, such as the "Near Eastern," are those which were "long-lived" and locally produced (Stronach 1959: 182). The "East Mediterranean" types, classified mainly by their manufacture, consisted of one piece of smelted bronze, with an asymmetrical or "violin" bow shape and an elongated forearm (Stronach 1959: 182). Excavations at the cremation cemetery of Hama, in Syria, revealed all three of these "East Mediterranean" types, being the most southern site on the Mainland to do so (Stronach 1959: 184). At

the beginning of the eighth century B.C.E., the popularity of the fibula rapidly increased throughout Syria and Palestine, encouraging several new forms. As Stronach acknowledges, "the new types from Syro-Palestine are not only remarkable for their fresh range of shapes and decoration but also for their improved methods of manufacture which owe nothing to earlier Mycenaean traditions" (Stronach 1959: 185). "Near Eastern" forms evolved out of older forms previously classified by Blinkenberg as "Sub-Mycenaean" (Blinkenberg's Type II), but differed in their innovations in adding sockets and rivets, or additional beading and molding (Stronach 1959: 185). Although a direct evolution from one form to the next is not likely, it seems reasonable to suggest that the early Syro-Palestine fibulae were the asymmetrical and semicircular variety, but as production increased, new forms emerged with a tendency toward angular bows (Stronach 1959: 192).

The semicircular fibulae, known as Type I, was the first to emerge within Palestine, initially in a one-piece form (Stronach 1959: 187). By the tenth century B.C.E., a two-piece semicircular form was developed locally, with variations in molding and the utilization of a rivet through which the pin was attached to the bow (Stronach 1959: 187). Fibulae with an arched bow, Type II, also an early form, "can be regarded as a link between the earlier, more rounded types and the later, more triangular ones that occur on the Asiatic mainland" (Stronach 1959: 190). This fibula became well established in Palestine, appearing in many styles including plain, riveted, or decorated with block molding or beads (Stronach 1959: 191). The "knee" or "elbow" fibulae, with a triangular bow, Type III, developed around the eighth century B.C.E., and was commonly used until the first century C.E., extending from Persia to Egypt (Stronach

1959: 193). "Although most examples are made entirely of bronze, a number of North Syrian and Palestinian examples also attest an iron pin," attached with a riveted bow (Stronach 1959: 193). The triangular bow form has been the subject of scholarly discussion in regard to the origins of its manufacture.

While Blinkenberg assumed that they were yet another representation of Cypriot metallurgy (Blinkenberg 1926: 231), William F. Albright argued for a date of 900 B.C.E. for their origins and manufacture in Palestine (Albright 1943: 79), and Olga Tufnell suggested their presence was not visible in the archaeological record until 750 B.C.E., when invaders brought them into Palestine from the north (Tufnell 1953: 394). Yet another date is suggested by Stronach, calculated using tombs at Sahab and Amman which date to the eighth century B.C.E. (Stronach 1959: 193). "For these tombs attest a number of angular fibulae with a bead on each arm, which are clearly descended from the local arched type with a similar sort of decoration," supporting the view that the angular fibula was developed indigenously during the eighth century B.C.E. (Stronach 1959: 193).

As decorations became increasingly more popular on fibulae, further styles were produced with the same angular form. In the seventh century B.C.E., triangular bows with an accentuated apex of dimpled molding became popular throughout Assyria and Palestine, which Stronach classifies as the Type IV form (Stronach 1959: 201). The latest of these types belongs to the Achaemenid period of the sixth century B.C.E., which were discovered in cemeteries at Deve Huyuk, a late Hittite cemetery, which revealed several fibulae "homogenous in type, though differing greatly in size" (Woolley 1914: 123). As Woolley suggests, this last, more developed fibula form from Deve Huyuk

allowed for multiple functions, which will be discussed in more detail below (Woolley 1914: 123).

As the popularity of fibulae increased, their function transformed from one of necessity, to decoration on the garments of the elite. The organization employed by Stronach to classify the fibulae according to bow shape demonstrates this, noting that the earliest of each form (semicircular, arched, angular) appeared as plain bows around the eighth century B.C.E., with beaded and molded forms appearing a century later (Stronach 1959: 186-202). "Since fibulae had to be worn, and were visible to the public, within a short time they became decorative so that they began to function also as jewelry" (Muscarella 1964: 36). They were made of gold, silver, electrum, but most commonly of bronze (Muscarella 1964: 36).

Oscar Muscarella studied the transition of the fibula from a simple garment fastener, to an adornment by utilizing the relationship of clothing pins to their archaeological context (Muscarella 1964: 36). His work has included the suggestion that fibulae were produced not only for jewelry, but also as votive offerings to the gods (Muscarella 1964: 36). Large concentrations of fibulae have been discovered at both Greek and Assyrian sanctuaries and tombs, including those at the sanctuary of Artemis at the site of Ephesus (Jacobsthal 1951: 88). A gold fibulae with a lion's head attached on either side of the bow was excavated at the base of the sanctuary, alongside several other gold and electrum objects, dating to the seventh century B.C.E. (Jacobsthal 1951: 88). "It is tempting to consider the possibility that if fibulae had some special value in sanctuaries, they may also have had some special value in a tomb where the dead person would soon come into contact with his gods" (Muscarella 1964: 38).

The Deve Huyuk cemetery is just one of many sites containing decorated, bronze fibulae placed in context with the dead (Woolley 1914: 118-19). A tomb dating to the eighth century B.C.E. Phrygian destruction levels at Gordion was excavated containing over 100 fibulae (Muscarella 1967: 62-82). In Assyria, at the site of Marlik, tomb deposits have revealed several bronze artifacts including a fibula, a lamp, and a bowl, dating between the ninth and seventh centuries B.C.E. (Muscarella 1984: 419). It has been suggested that tomb goods not only represent a belief in an afterlife that valued these items, but also that, since in many cases tombs contained a high concentration of fibulae, the gods demanded a surplus and a higher degree of ornamentation and adornment (Muscarella 1964: 38). From the Mycenaean elite, to the tombs of Assyria, it is clear that the fibulae reached many levels of functionality throughout the Iron Age, eventually finding their place in Palestine where they are commonly found throughout the archaeological record.

The fibulae from the Madaba Plains sites of Tall al-Umayri and Tall Hesban contribute to the understanding of the archaeological context of the fibulae from Tall Jalul. All three sites experienced Iron Age activity in fairly close proximity which can be evaluated through the examination of fibulae. Tall al-'Umayri has an extensive archaeological record, spanning from the Early Bronze Age into the Iron Age/Persian period. The rich occupational history of the site is expressed not only in a network of defensive walls and pottery assemblages, but in the fibulae which have been discovered in several areas around the tell. Among the stratigraphy of Field A, the area suggested by excavators to be the Ammonite Citadel, archaeologists suggest that major occupation of the site occurred during the late seventh century B.C.E. Two fibulae fragments and a

complete bow were recovered from this phase which may contribute to the understanding of Jalul fibulae (Lawlor 1997: 51). The two fragments (Nos. 1741 and 1782) are difficult to determine in form other than their bronze composition. However, when included with the angular bow (No. 1654) also recovered in the same stratum, as well as a corpus of loom weights excavated within the same (Platt and Herr 2002: 377), A7K62, and neighboring square (A7K52), this area could have been a weaving area or textile center of the citadel, the fibulae being useful in garment construction (Lawlor 1997: 51). The angular fibulae (No. 1654) fits nicely with Stronach's Type III, which places its dating in the middle of the Iron II Age (Stronach 1959: 193).

Fibulae from several different periods also have been discovered at Tall Hesban, the latest of which belong to the class of Roman crossbow fibulae, dating to the fourth century C.E. (Platt and Ray 2009: 193). Semicircular fibulae similar to those discovered at Tall Jalul have been excavated at Hesban, which may suggest a similar context for their utilization. Object 1343 of Hesban is a miniature fibula with multiple ribs around the lower section of each side of the bow (Platt and Ray 2009: 193). This form most closely resembles Stronach's Type I_3 form, which suggests a seventh century B.C.E date, or later, given the evidence that its popularity spread throughout Assyria and Palestine (Stronach 1959: 187). The other fibula, Object 2040, is a bronze fibula with a small fragment of the pin still attached (Platt and Ray 2009: 194). The bow shape resembles Stronach's Type I_2 form (Stronach 1959: 187), dating from the 12th to the sixth centuries B.C.E. Running down the middle of the flattened bow, a linear design is incised (Platt and Ray 2009: 194). Interestingly, Object 2040 was excavated from Tomb G.10, a tomb that contained Nabataean and Roman artifacts (Waterhouse 1998: 74). It may be

suggested that Object 2040 was an heirloom, utilized during the Iron Age II by inhabitants of the site, who held possession of the fibula until it was deposited within the tomb.

The progression of the fibulae from Mycenaean Greek imports, to locally manufactured products in Palestine, indicates the emergence of different methods of usage. Formerly an essential item needed for clothing, as new forms developed from the 12th century B.C.E., fibulae became used more extensively as jewelry, decorated with molding and grooved rings on bow arms. By the seventh century B.C.E., some forms became so distinctive that they were valued as adornments for the living, the dead, and perhaps as gifts for deities (Muscarella 1964: 38). Tall Jalul provides another representation of the distribution of locally produced fibulae throughout Palestine, contributing significantly to the chronological data of the site as a whole. Five of the nine excavation fields at Tall Jalul have recovered bronze fibulae, many of which can be approximated in date using stratigraphy and typological parallels. In the following sections, fibulae are divided by Field, with their descriptions and parallels.

Field A

A tripartite building was located in the early stages of Field A excavations, yielding a date no later than the seventh century B.C.E., built over the remains of an eighth-century B.C.E. structure (Gregor 2009: 9). The research provided by the excavations of the tripartite building enabled a division of several phases related to the architectural floor of the field. Phase IV, the floor and architectural construction phases of the tripartite building, contained several sealed loci (11, 12, 14) within Square A7, contributing to a rather precise date for the excavated strata. Among these excavations

were two arched bow fibulae which will be examined below. Both Object 251 and Object 253 parallel an unriveted arched bow found at Level III of Lachish, a city level that thrived throughout the eighth century B.C.E., and was destroyed in 701 B.C.E. (Tufnell 1953: pl. 58:22/1953: 72).

Object 251, Arched Fibula

Description: Object 251 (fig. 9) is a fragment of a bronze fibula pin with a plain arched fibula bow excavated from Field A, Square 7. At one terminus a broken projection, 0.3 cm in diameter, presumably the remnants of the spring, protrudes from the bow. The opposing side of the pin flattens significantly at an angle where a break appears to have occurred during antiquity. The arched bow shape is typical of Type II_1 Syro-Palestinian fibulae which appear to have developed directly out of earlier semicircular forms (Stronach 1959: 190).

Measurements*:* Total length of the bow: 5.3 cm; Depth: 0.2 cm.

Context: Square A7, Locus 14, Pail 17; floor of architectural Phase IV, tripartite building.

Date: Early examples of the arched fibula occur in the beginning of the first millennium B.C.E. However, this form does not reach wide utilization until ca. 800-600 B.C.E. within the regions of Syria, Cilicia, and Palestine (Stronach 1959: 190). The pottery reading for Locus 14, Pail 17, in which Object J0251 was discovered, contained pottery dating from 1200-550 B.C.E. Among the discovered sherds were Iron Age I bowls, E. Iron Age II storage jars, and Iron Age II cook pots. Since this locus was within the sealed floor loci of the tripartite building, it is likely that Object 251 dates more specifically to the seventh century B.C.E.

Parallels*:* Lachish (Tufnell 1953: pl. 58: 21; Chitwood 2013: 11); Tell el-Kheleifeh (Pratico 1993: 66, obj. 9010) and Megiddo (Lamon and Shipton 1939: pl. 78: 20).

Figure 9. Object 251, arched fibula.

Object 253, Riveted Fibula

Description*:* Object 253 (fig. 10) is an arched bow fibula fragment with a perforation (rivet), where the end of the pin would have passed. It was discovered in Field A, Square 7. Remnants of an iron pin projection still remain inserted within the perforation. This fragment closely fits Stronach's Type II_2 forms, occurring in both riveted and perforated-projection varieties (Stronach 1959: 191).

Measurements*:* Total length of the bow: 6.9 cm; Width: 0.9 cm; Diameter: 0.2 cm.

Context: Square A7, Locus 14, Pail 16; floor of architectural Phase IV, tripartite building.

Date*:* The arched fibulae with riveted and perforated-projection pins of Stronach's Type II_2 classification are found in Palestine after 600 B.C.E. However, the fact that similar forms were discovered from Lachish III suggest that this variety appeared as early as 700 B.C.E. (Tufnell 1953: pl. 58: 22; Chitwood 2013: 11). The pottery reading for Locus 14, Pail 16, in which Object 253 was discovered, contained

pottery dating from 1000-550 B.C.E. Among the discovered sherds were Iron Age II bowls, a L. Iron Age II lamp, and L. Iron Age II/Persian bowls. Since this locus was within the sealed floor loci of the tripartite building, it is likely that Object 253 dates later than Object 251, but no later than the end of the seventh century B.C.E.

Parallels: Tall Jalul, Obj. J0288; Lachish (Tufnell 1953: pl. 58: 22; Chitwood 2013: 11); Megiddo (Lamon and Shipton, 1939: pl. 78: 6); and Samaria-Sabaste (Kenyon 1957: 443, fig. 103.3: Q. 5031).

Figure 10. Object 253, riveted fibula.

Object 288, Arched Fibula

Description: Object 288 (fig. 11) is an unriveted arched bow fibula with an intact pin. It closely resembles Stronach's Type II_2 forms, occurring in both riveted and perforated-projection varieties (Stronach 1959: 191).

Measurements: Total Length: 6.6 cm; Width: 0.5 cm.

Context: Square A3, Locus 34, Pail 42.

Date: The arched fibulae with the riveted and perforated-projection pins of Stronach's Type II_2 classification are found in Palestine after 600 B.C.E. However, similar forms discovered at Lachish III suggest this variety appeared as early as 700 B.C.E. (Tufnell 1953: pl. 58: 22; Chitwood 2013: 11). The pottery reading for Locus 34, Pail 42, in which Object J0288 was discovered, contained pottery dating from 1000-550

B.C.E. Among the discovered sherds were E. Iron Age II cookpots and bowls, an Iron Age II jar, and L. Iron Age II bowls. Given these data, it would be unlikely that J0288 was utilized any later than the seventh century B.C.E.

Parallels: Tall Jalul, Obj. 253; Lachish (Tufnell 1953: pl. 58: 22; Chitwood 2013: 11) and Samaria-Sabaste (Kenyon, 1957: 443, fig. 103.1: Q 5009).

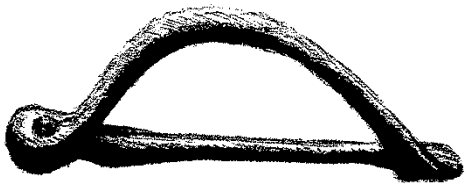


Figure 11. Object 288, arched fibula.

Field B

Object 295, Riveted Fibula

Description: Object 295 (fig. 12) is a riveted fibula with pin, discovered in Field B of Jalul excavations. The bow is semi-circular with arms that form a square-like cross-section as they approach the riveted and hooked ends.

Measurements: Bow Length: 10.6 cm; Width: 1.2 cm; Pin Length: 8.8 cm; Width: 1.6 cm.

Context: Square B16, Locus 19, Pail 36.

Date: The arched fibulae with the riveted and perforated-projection pins of Stronach's Type II_2 classification are found in Palestine after 600 B.C.E. However, similar forms discovered at Lachish III suggest this variety appeared as early as 700 B.C.E. (Tufnell 1953: pl. 58: 22; Chitwood 2013: 11). The pottery reading for Locus 19, Pail 36, in which Object 295 was discovered, contained pottery dating from 1000-550

B.C.E. Among the discovered sherds were an Iron Age II pithos, a jar, and a bowl, and a Late Iron Age II jar.

Parallels: Lachish (Tufnell 1953: pl. 58: 25); Megiddo (Lamon and Shipton 1939: pl. 78: 1) and Samaria-Sabaste (Kenyon 1957: 443, fig. 103.3: Q. 5031).

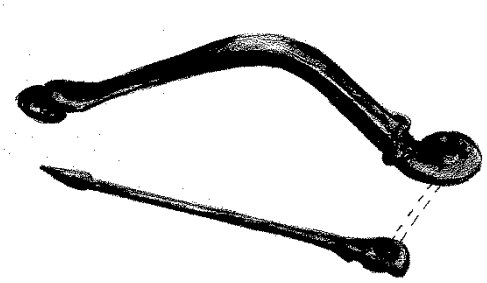


Figure 12. Object 295, riveted fibula.

Object 275, Angular Fibula Fragment

Description: Object 275 (fig. 13) is an angular bow fibula fragment with a missing pin. It has beaded molding on each arms. It seems to belong to Stronach's Type III_7 classification of fibulae which were common until the fifth century B.C.E. (Stronach, 1959: 197).

Measurements: Length: 5.5 cm; Width: 1.3 cm; Thickness: 0.9 cm.

Context: Square B18, Locus 3, Pail unknown.

Date: The pottery reading for Locus 13, in which Object 275 was discovered, contained pottery dating from 1000-550 B.C.E. Although a pail number was not assigned to Object 275, Pails 12 and 13 of the same locus were utilized for the reading. Within Pail 12, an Iron Age II pithos, jar, bowl, and cooking pot were discovered, while in Pail 13, an Iron Age I store jar, an Iron Age II jar, and an Iron Age II/Persian period jar were found.

Parallels: Tall al-'Umayri (Herr and Platt 2002: 382, fig. 16.22: 1654); Busayra (Sedman 2002: 416, pl. 10.201.b: 484); Tawilan (Bienkowski 1995: 329, fig. 9.40: 2) and Megiddo (Lamon and Shipton 1939: pl. 78: 11).

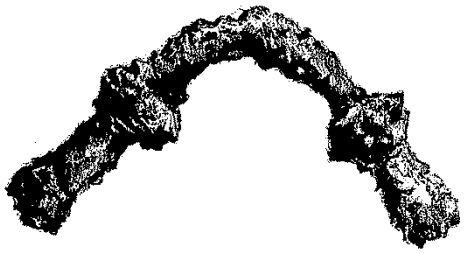


Figure 13. Object 275, angular fibula fragment.

Field D

Object 165, Angular Fibula Fragment

Description: This fibula fragment (fig. 14) is partially preserved, with collared molding along an angular bow. It was discovered in Field D, Square 2. The petite size (4cm in length) suggests influence from other miniature forms (Type I_3), while the arched bow, which reached wide popularity throughout Palestine, suggests a Type III_7 classification (Stronach 1959: 197; Chitwood 2013: 12).

Measurements: Total length of the bow: 4.0 cm; Width: 1.2 cm.

Context: Square D2, Locus 9, Pail 28.

Date: Miniature forms, Type I_3, appear throughout Babylonia and Palestine as early as the seventh century B.C.E., although bows of this typology are distinguished by their semicircular shape (Stronach 1959: 187). Object J0165 appears to be a later triangular form similar to Type III_7, that remained common throughout Assyria in its

small variety until the end of the fifth century B.C.E. (Stronach 1959: 198; Chitwood 2013: 12).

Parallels: Tall Hesban (Platt and Ray 2009: 193-94, fig. 11. 19: 1; Chitwood 2013: 12); Adoni Nur (Harding 1953: pl. VII: 20); Tall al-'Umayri (Herr and Platt 2002: 382, fig. 16. 22: 1654, 1857); Lachish (Tufnell, 1953: pl. 58: 19); Busayra (Sedman 202: 416, pl. 10.201. b: Reg. 484); Umm al-Biyara (Bienkowski 2011: 94, fig. 7.1 12) and Megiddo (Lamon and Shipton 1939: pls. 78: 15, 79:5).

Figure 14. Object 165, angular fibula fragment.

Object 693, Angular Fibula Fragment

Description: Object 693 (fig. 15) is a triangular fibula bow with block molding at the apex of its form, and possible grooved rings on each arm. It was discovered in Field D, Square 3. Although corroded, it appears to have a less angular, more rounded apex, developing out of the earlier arched fibulae forms (Stronach 1959: 195).

Measurements: Length: 5.4 cm; Width: 3.6 cm; Thickness: 1.1 cm.

Context: Square D3, Locus 59, Pail 245.

Date: The pottery reading associated with Object 693 contained sherds only from the Late Iron Age II/Persian period. A storage jar, a juglet, a large platter, and a hole-

mouth krater were among the excavated material. The angular form and block molding at the apex of the bow of Object 693 suggest a date similar to Object 275, no later than the fifth century B.C.E. (Stronach 1959: 197).

Parallels: Adoni Nur (Harding, G.L. 1953: pl. VII: 22); Tall al'Umayri (Dubis 2002: 227, fig. 11: 3: 9); Busayra (Sedman 2002: 416, pl. 10. 201. b: Reg 484) and Megiddo (Lamon and Shipton 1939: pl. 79: 5).

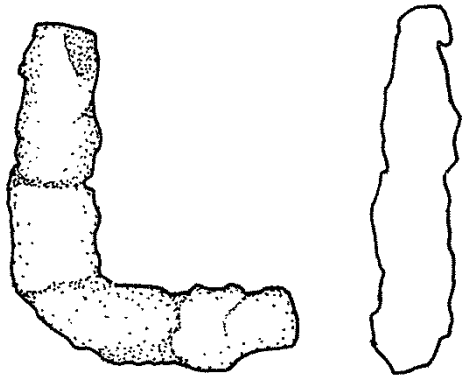


Figure 15. Object 693, angular fibula fragment.

Field C

Object 336, Miscellaneous Fibula Fragment

Description: Object 336 (fig. 16) is a very corroded fragment of a fibula bow, discovered with a miscellaneous bronze object. The bow shape is semi-circular, with no noticeable molding or decoration.

Measurements: Two pieces; Length a: 2.0 cm; Width a: 1.6 cm; Thickness a: 0.3 cm; Length b: 2.6 cm; Thickness b: 0.2 cm.

Context: Square C5, Locus 18, Pail unknown.

Date: The pottery reading for Locus 14, in which Object 336 was only conducted on Pail 43, which according to excavation reports from the 1999 season, occurred prior to the discovery of Object 336. Pail 43 contained pottery dating from many periods, including an Iron Age I store jar, an Iron Age II cooking pot and hole-mouth krater, L. Iron Age II/Persian period bowls, a Byzantine-period body sherd, and a Middle Islamic-period body sherd. With these data it is unlikely that a secure date can be suggested for Object 336. However, its form suggests it likely developed out of Stronach's Type II_2 forms, utilized no later than the fifth century B.C.E. (Stronach 1959: 190).

Parallels: Busayra (Sedman 2002: 416, pl. 10. 201. f: Reg. 690).

Figure 16. Object 336, miscellaneous fibula fragment.

Object 741, Arched Fibula

Description: Object 741 (fig. 17) is a bronze fibula with an arched bow that was discovered in Field C, Square 11. The pin is missing. However it may have been connected by way of a perforation at the end of the bow. The catch and perforated ends of the fibula were molded inversely to common fibulae forms; when the curved catch is oriented to face forward, it appears on the right, and the perforated end of the bow is on the left. It appears to fit Stronach's Type II_2 typology, only varying on the reversal of the catch (Stronach 1959: 190).

Measurements: Bow Length: 7.0 cm; Bow Width: 3.0 cm.

Context: Square C11, Locus 5, Pail 11.

Date: The pottery reading for Locus 5, Pail 11, in which Object 741 was discovered, contained pottery dating from 1000-550 B.C.E. Among the discovered sherds were Iron Age II jars, a plate, and a bowl, a Late Iron Age II hole mouth crater, and Late Iron Age II/Persian period bowls and a store jar.

Parallels: Object 253 of Tall Jalul; Lachish (Tufnell 1953: pl. 58: 22, 24; Chitwood 2013: 11); and Megiddo (Lamon and Shipton 1939: pl. 78: 6).

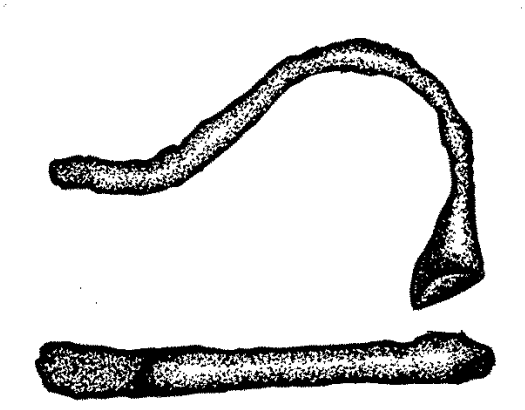


Figure 17. Object 741, arched fibula.

Object 423, Loop-Headed Pin

Description: Object 423 (fig. 18) is a small bronze pin with a looped end of 0.9 cm. Originally described as a nail, further consideration of parallels suggests that it displays the characteristic style of loop-headed garment pins discovered at other sites throughout the Near East.

Measurements: Total Length: 3.5 cm; Head Diameter: 0.9 cm.

Context: Square C8, Locus 1, Pail 2, topsoil.

Date: The pottery reading for Locus 1, Pail 2, in which Object 423 was discovered included pottery sherds that dated from the Middle Bronze Age, Iron Age I, Iron Age II, Late Iron Age II/Persian periods, Hellenistic period, and the Roman period. With such a wide range of pottery associated with Object 423, it is unlikely that an exact date can be established.

Parallels*:* Megiddo (Lamon and Shipton 1939: pl.84:11); Megiddo (Loud 1948: pl. 219: 4); and Lachish (Tufnell 1953: pl. 58: 32).

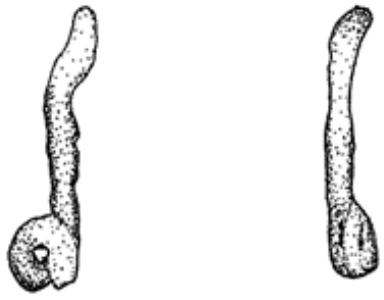


Figure 18. Object 423, loop-headed pin.

Field E

Object 404, Triangular Fibula Fragment

Description: Object 404 (fig. 19) has a triangular bow and grooves extending up onto the apex of each arm. The pin is missing; however, its stylistically grooved arms suggest a type that was prominent throughout much of Syro-Palestine and Transjordan.

Measurements: Length: 8.0 cm; Width: 3.0 cm.

Context: Square E1, Surface.

Date: Stronach classified these fibulae as Type III4, popular throughout much of Syro-Palestine, the latest models dating from the first century C.E. (Stronach 1959: 194).

Parallels: Lachish (Tufnell 1953: pl.58: 15); Tawilan (Bienkowski 1995: 294, fig. 9.5: 3-4); and Megiddo (Lamon and Shipton 1939: pl. 79: 10).

Figure 19. Object 404, triangular fibula fragment.

Cosmetic Applicators of the Near East and Transjordan

Introduction

The presence of cosmetic applicators in the excavations of Tall Jalul emphasizes the significance that beauty held, even in ancient times, to the lives of women. Throughout the archaeological record, cosmetic artifacts have been discovered, their

usage demonstrating the display of beauty within the societies of Rome, Egypt, and Arabia. In his article entitled "Cosmetics, Perfumes and Incense in Ancient Egypt," Alfred Lucas explains that "cosmetics are as old as vanity. In Egypt their use can be traced back to almost the earliest period of which burials have been found, and it continues to the present day" (Lucas 1930: 41). In Rome, makeup is detailed in Latin literature by multiple authors, many of whom were male (Olson 2009: 291). According to these authors, and modern scholars who have noted distinctions, there was a difference between women's cosmetics for the preservation of beauty *"to kosmetikon tes iatrikes meros"* and to create an unnatural look, "*to kommotikon"* (Olson 2009: 294). The two distinctions are suggested to express the distaste of the unnatural, and the approval of makeup worn to gently enhance facial features (Olson 2009: 294).

Smooth complexions and pale skin, and the recognition of a status of leisure and prominence, were desirable in society (Olson 2009: 299). "Most Roman beauty recipes pertain to the skin, and rightly so, since it must have been ravaged by dirt, disease, and the effects of lead and mercury in makeup" (Olson 2009: 299). As Kelly Olson points out, unfortunately the penalty for obtaining pale skin through the use of makeup was often disastrous. Eye paint, from Egypt, also contained many harmful materials thought to have had toxic effects on the skin of women. Many of the materials used in Egyptian eye paint were obtained when mining for copper ore. The two most common substances, found as residue within their applicators, or in tombs of the deceased, were malachite (an ore of copper) and galena, an ore of lead (Lucas 1930: 41). Egyptians, and probably those with whom they traded, traveled throughout the Sinai, Aswan, and along the Red Sea Coast to obtain the materials necessary for cosmetic products (Lucas 1930: 43).

Cosmetic applicators, quite the inverse from the contents that they held, were usually quite cheap to obtain (Olson 2009: 291-92). In both Rome and Egypt, applicators consisted of wood, blown glass, metals, or other widely available resources (Olson 2009: 292). Kohl sticks, made for the application of Egyptian eye paint, first appear in Egypt around the 11th Dynasty (Brunton 1923: 63). Evidence appears in graves, "as fragments of the raw material, as stains on palettes and stones," contained in shells or hollow reeds (Lucas 1930: 41). Roman applicators included the ligula, spoons with a bulbous end, that were used for extracting cosmetics out of a vessel, or, possibly for the mixing of medicinal substances (Olson 2009: 308). Cosmetic tools discovered in Yemen also suggest common makeup usage throughout Arabia. Application sticks and vessels such as the *tawah pot*, composed mainly of wood, were used to hold kohl and face paints (Schonig 1998: 151-52). The consistent theme throughout Arabia, Rome and Egypt is the application of a powdered substance, kohl, by means of a stick, onto the area around the eye. The popularity of eye and face makeup is revealed quite prominently in the presence of cosmetic applicators at Jalul. To what degree they were utilized, either for the enhancement of natural beauty, or, perhaps for the concealment of already-damaged skin, we may unfortunately never know.

Object 611, Cosmetic Applicator

Description: Object 611 (fig. 20) is a cosmetic applicator with a total length of 4.3 cm. It contains a square-shaped spatula where makeup was placed before application, and a tapered stem of approximately 1.0 cm that was damaged in antiquity.

Measurements: Total Length: 4.3 cm; Maximum width of applicator: 1.05 cm; Maximum width of stem of applicator: 0.6 cm.

Context: JIV, Square A5, Locus 30, Pail 33.

Date: The pottery reading for Locus 30, Pail 33, in which Object 611 was discovered, contained pottery sherds from a wide range of periods from the Roman period to the Islamic period. Roman-, Byzantine-, and Umayyid-period body sherds were found within the locus, alongside Mamluk kraters, bowls and jars. This would suggest that Object 611 was utilized most likely during the Islamic period; however, there is little evidence to suggest that bronze applicators were employed during the Islamic period. Parallels from Tell Hesban (Platt and Ray 2009: 203) and Samaria-Sabaste (Kenyon 1957; Crowfoot 1957) place its usage during the Late Iron Age II/Persian periods.

Parallels: Tell Hesban, fig. 12.3:1, 4: objs. 10, 910 (Platt and Ray 2009: 203); Samaria-Sabaste (Kenyon 1957: 444, 446, fig. 104. 3; Crowfoot 1957: 437, fig. 101a: C 905).

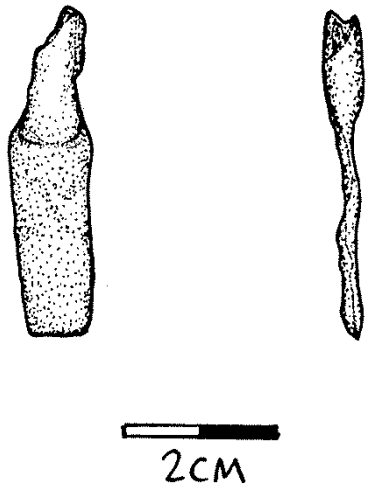


Figure 20. Object 611, cosmetic applicator.

Object 904, Cosmetic Applicator

Description: Object 904 (fig. 21) is a cosmetic applicator that was discovered during the 2014 excavation season at Tall Jalul. It was discovered on the surface, likely from a Field D sift. It contains a square-shaped spatula, much like Object J0611 (fig. 3.12) and the remnants of a narrow stem that was broken in antiquity.

Measurements: Length: 2.0 cm; Width: 0.9 cm.

Context: Field D, "sift."

Date: The date for Object 904 has been assigned based on available parallels from Tell Hesban (Platt and Ray 2009: 203) and Samaria-Sabaste (Kenyon, 1957; Crowfoot, 1957) which suggest it was originally utilized during the Late Iron Age II/Persian periods.

Parallels: Tell Hesban, fig. 12.3:1, 4: Objs. 10, 910 (Platt and Ray 2009: 203); Samaria-Sabaste (Kenyon 1957: 444, 446, fig. 104. 3-6; Crowfoot, 1957: 437, fig. 101a: C905).

Figure 21. Object 904, cosmetic applicator.

Object 407, Cosmetic Applicator

Description: Object 407 (fig. 22) is a cosmetic applicator with a rectangular tip that was probably utilized as a spatula for applying makeup. Only 1.0 cm of the stem remains, the result of breakage occurring during antiquity.

Measurements: Total Length: 4.0 cm; Spatula Width: 1.3 cm; Stem Length: 1.0 cm Spatula Length: 3.0 cm.

Context: Square E3, Locus 4, Pail 14.

Date: The pottery reading for Locus 4, Pail 14, in which Object 407 was discovered, contained pottery sherds from the Iron Age I and Late Iron Age II/Persian periods, as well as two possible Islamic-period body sherds. This would suggest that Object 407 was utilized any time from the Iron Age I to the Islamic period; however, there is little evidence to suggest that bronze applicators were employed during the Islamic period. Parallels from Tell Hesban (Platt and Ray 2009: 203) and Samaria-Sabaste (Kenyon 1957; Crowfoot 1957) place its usage during the Late Iron Age II/Persian periods.

Parallels: Tell Hesban, fig. 12.3:1, 4: objs. 10, 910 (Platt and Ray 2009: 203); Samaria-Sabaste (Kenyon 1957: 444, 446, fig. 104. 4; Crowfoot 1957: 437, fig. 101a: C905).

Figure 22. Object 407, cosmetic applicator.

Needles, Pins, and Nails of Tall Jalul

Object 577, Needle

Description: Object 577 (fig. 23) is a bronze-pointed needle with a total length of 6.9 cm. The "eye" or "head" is pronounced, with a length of 1.05 cm.

Measurements: Total Length: 6.9 cm; Head Length: 1.05 cm.

Context: Square C7, Locus 15, Pail 53.

Date: The pottery reading for Locus 15, Pail 53, contained only L. Iron Age II contents, suggesting that the needle was utilized between 1000-550 B.C.E.

Parallels: Tawilan (Bienkowski 1995: 295, fig. 9. 6: 7).

Figure 23. Object 577, needle.

Object 481, Pin/Cosmetic Rod

Description: The fragmented nature of Object 481 (fig. 24) makes its classification difficult to determine. The small length of 3.6 cm, and the hollow end which tapers to a blunt tip, suggests that it belongs to a class of pins/cosmetic rods. Garment pins, the precursor to the fibulae, were often much longer (4.0 cm) and narrower, utilized by knotting thread through a hooked head (Platt 2009: 195). Metal rods often feature a bulbous end which tapers into a blunt tip, similar to kohl sticks, used for the application of cosmetics (Platt 2009: 207).

Measurements: Total Length: 3.6 cm.

Context: Square A7, Locus 70, Pail 83.

Date: The pottery reading for Locus 70, Pail 83, contained only Iron Age I body sherds and a jar. This suggests that Object 481 was utilized between 1200-1000 B.C.E.

Parallels: Tell Hesban (Platt 2009: 213-15, fig. 12.12: 1, 4).

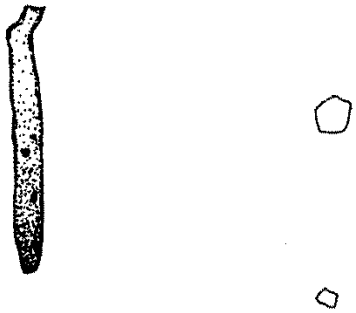


Figure 24. Object 481, pin/cosmetic rod.

Object 349, Nail Fragments

Description: The three nail fragments (not pictured), all found together in situ, display extensive metal corrosion. It is possible to suggest only that they connect to form a nail by observing each fragment individually, noting the broken edges and bronze core.

Measurements: 3.2 cm x 0.2 cm; 2.4 cm x 0.2 cm; 2.0 cm x 0.1 cm.

Context: Square A7, Locus 26, Pail 31.

Date: The pottery reading for Locus 26, Pail 31, contained pottery sherds from a wide range including Middle Bronze Age IIC, Iron Age I, and Iron Age II. It is unlikely that a specific date can be assigned to Object J0349, since it is commonly found throughout the Bronze and Iron Ages.

Parallels: Unknown.

Object 248, Needle/ Chisel

Description: Object 248 (fig. 25) is a pointed instrument of 3.2 cm in length. It appears to have been broken at one end, during antiquity. Its projectile end was likely utilized for puncturing textiles or other materials.

Measurements: Total Length: 3.2 cm.

Context: Unknown.

Date: Unfortunately a date for Object 248 could not be assigned. Pointed implements, for use with textiles, date as far back as the Middle Bronze Age, and as late as the Islamic period. With no access to the field report pottery reading, it is unlikely that any specific date can be determined.

Parallels: Tawilan (Bienkowski 1995: 295, fig. 9.6:8) and Megiddo (Lamon and Shipton 1939: pl. 83: 12, 13).

Figure 25. Object 248, needle/chisel.

Conclusion

Based on the data of the analyzed tools from Jalul, several conclusions can be made regarding their date, utilization, and context. The fibulae, having the most typological variation of all the tools discovered at Jalul, offer a valuable assessment of the chronological framework of activity at the site, as well as demonstrate the likelihood

of an elite class during the Iron Age II. Other tools discovered at Jalul reinforce this view, and suggest that luxury items for both men and women were obtainable through trade with those traveling to Jalul and throughout the Madaba Plains region.

Bronze tools at Tall Jalul would seem to have been readily available, given the amount discovered during excavations. Of the total 39 bronze artifacts analyzed from Jalul thus far, 43.59% belong to the class of tools, those used for assisting in day-to-day activities (Appendix B, Figure 46). A wide range of time has been assigned to the usage of the bronze tools, starting with the appearance during the Iron Age I, and lasting until the Islamic period (Appendix B, Figure 42). Object 481, a pin or possible cosmetic rod, was among the artifacts excavated with a strictly Iron Age I pottery reading. Given its damaged form, stylistic implications cannot be known for sure. However, its context within Field A pinpoints its usage during the Iron Age I, a time when it could have been utilized for either a cosmetic applicator or as a simple garment pin. The most common tool discovered during past seasons has been the various fibulae, which make up over half of the tool corpus. Ranging in typological characteristics from "plain arched fibulae" to "angular fibulae" with beaded molding, the fibulae offer telling details regarding their date and usage at Tall Jalul (Stronach, 1959:180). The earliest examples of fibulae found at Jalul are those belonging to Stronach's Type II_1 and Type II_2 variety. Object 251 is likely the oldest form, discovered in close proximity to Object 253, both found in surface loci where pillars associated with a tripartite building had previously been removed, and above the stratigraphic position of Object J0481. Object J0288, although not discovered in the same excavation square (A7) as J0251 and J0253, has similar Type II_2 stylistic features, suggesting that all three objects date within the seventh century B.C.E. A

majority of the remaining bronze implements also date to sometime during the Late Iron Age II period. Two fibulae, Objects 165 and 275, have stylistic parallels to fibulae at Umm al-Biyara and Tall Hesban, pointing to seventh and sixth B.C.E. century usage. Although it is quite clear that the fibulae were commonly used at Tall Jalul, it seems likely that trade interactions during the Persian period brought with them the introduction of cosmetic implements. Earlier periods of Jalul occupation distinctly lack the presence of luxury items. Three cosmetic applicators, Objects 407, 904 and 611, were found in shallow excavation contexts with pottery sherds representing Iron Age II-, Roman-, and Islamic-period material culture. This may suggest an increase in trade coinciding with the emergence of Persian influence into the Madaba Plains region. The popularity of cosmetic implements increased during the Late Iron Age, when interactions between Egypt and Persia began to escalate (Stern 1982: 147). Tall Jalul reflects the transition from earlier periods where bronze artifacts were utilized mainly for defense, into the Late Iron Age/Persian period, where the material culture reflects an access to implements utilized for beauty.

As mentioned above, Field A at Tall Jalul featured several architectural phases, among which featured a seventh-century B.C.E. tripartite building (Gregor 2009: 15). The various functions of these buildings (Gregor 2009: 15) suggest that Objects 251 and 253 may be evidence for a market or emporium, in which textiles and textile implements were sold during the Iron Age II. This area could have contributed to the large number of fibulae discovered throughout the whole site, many of which also can be attributed to the seventh century B.C.E. Although the inhabitants of Tall Jalul may have utilized both fibulae and applicators during Iron Age II, the use of cosmetics may have been

influenced by the Persian Empire and Egypt, civilizations with access to specialized luxury goods that could have been traded into the Madaba Plains region.

CHAPTER 4

BRONZE JEWELRY OF THE NEAR EAST

Introduction

The jewelry as found in the archaeological record has always represented a rather unbalanced view of ancient society (Boardman 1996: 5). Most commonly deposited within burials and temples, it is often hard to imagine its adornment on the bodies of ancient Near Eastern peoples. However, as John Boardman notes, "jewelry is a luxury, but unlike real luxury, it is not completely useless, since it can serve a purpose of displaying status and wealth" (Boardman 1996: 3). Luxury goods, such as gold, silver, or bronze jewelry, as reflected in grave goods, would seem to represent cultures with a high degree of disposable wealth, a strong reverence for the dead, or a combination of both (Boardman 1996: 5). Within royal or upper-class ancient Egyptian society, death itself provided economic stimulation to the community, employing vast resources including jewelry, weaponry, and gold in order to communicate a level of status (Richards 2005: 59). "The resulting open-ended relationship between the living and the royal dead provided the early Egyptian state with an ideological framework for extracting labor and local resources on an unprecedented scale" (Wengrow 2006: 267). The Tall Jalul jewelry demonstrates a context outside of ancient burial, suggesting that unlike Egyptian and coastal Levantine sites, adornment was much more for the living, than the dead.

Bronze jewelry production has evolved with technological advancements through time, which began as early in the Near East as the Chalcolithic period (Golani 2013: 20). Although tin was rare, and mined only in a limited number of places in the Near East, ancient metal smiths are thought to have deliberately added it to copper, creating a more durable alloy, bronze (Golani 2013: 20). Despite its common usage in tools and weaponry during much of the Bronze and Iron Ages, bronze was not the jeweler's first choice of material when producing rings, bangles, or earrings (Golani 2013: 20). As Amir Golani suggests, "a more malleable (and thus purer) copper would seem to have been better suited for production of small jewelry items" (Golani 2013: 20). Archaeological excavations have, however, recovered large numbers of bronze jewelry at sites throughout the Near East. There were definite advantages to alloying tin with copper; a lower melting temperature prevented material shrinkage, making it easier to cast. Further, copper-tin alloys may have had an aesthetic appeal, bearing a unique silvery-to-golden color that certainly had its appeal in Mesopotamia (Pigott 1996: 159; Golani 2013: 21). On those that it adorned, bronze jewelry would have appeared distinctly different from the more common copper bangles or earrings worn by others, the scarcity of tin resources only further suggesting an elite status of the individual.

Casting was the first step in the production of bronze, silver, or gold jewelry throughout the Near East (Golani 2013: 22). In Egypt, depictions from the Old Kingdom demonstrate the casting process, by which several men would blow air through reeds into embers, heating the contents of a crucible (Golani 2013: 22). This process continued into the New Kingdom, where the advancement of the foot bellows allowed a single man to operate metallurgical activities (Golani 2013: 22). Once metal became molten inside of

the crucible, the contents were poured into a mold, the style of which depended upon the type of jewelry being produced. One-piece or open molds "naturally have a plain flat upper surface, usually marred by slag and cooling contractions" which typically was not useful for earring or fine jewelry production (Golani 2013: 22).

During the Iron Age II, the only objects cast in open molds were bangles, having one rough, flat face, the other with a rounded and smooth texture (Golani 2013: 23). Many of the objects produced by a one-piece mold required further working by hammer to remove the roughness of the casting process (Golani 2013: 23). The more common process of casting was by *cire perdu*, the "lost wax" process, by which a wax model of the desirable item was created with a clay or stone two-piece mold, hardened and heated around it. Once the inner wax model was melted and poured out, metal was then poured into the clay mold, to create the final piece of jewelry (Golani 2013: 23).

Only a very few pieces of jewelry have been discovered in context with casting molds; however, it is assumed that they were utilized for casting jewelry as well as beads and pendants of glass or faience (Golani 2013: 23). All stone jewelry molds seem to date prior to Iron Age II, suggesting that technological advancements occurred during the Iron Age, such as the use of sheet metal, wire, and granulation to form rings, earrings, and necklaces (Golani 2013: 24). Sheet metal and wire, the use of which may be present on jewelry from Tall Jalul, were made by hammering and twisting hot metal (Golani 2013: 24). This process was likely not conducted before Iron Age II, since most examples from the archaeological record begin during this time (Golani 2013: 24).

Earrings

Object 331, Earring

Description: Object 331 (fig. 26) is a large lunate earring with two pointed ends separated by a distance of 1.3 cm.

Measurements: Total length: 1.6 cm; Total width: 1.9 cm; Maximum breadth: 0.6 cm

Context*:* Square A8, Locus 57, Pail 84.

Date: Given the pottery reading for Locus 57, Pail 84, associated with Object 331, an estimated date of 1200-1000 B.C. E. can be considered. Pottery within this locus consisted of Iron Age I lamps, bowls, and a store jar. Excavations at the Early Iron Age tombs of Madaba (Harding 1953: 27) and Sahab (Dajani 1970: 29) support this dating.

Parallels: Tomb at Madaba (Harding 1953: pl. V: 205) and Sahab Tomb (Dajani 1970: pl. XX: 357).

Figure 26. Object 331, earring.

Object 548, Earring

Description: Object 548 (fig. 27) is an earring featuring a ring which was inserted through the ear, and an attached droplet bead. The ring contains a spherical bead near the hook and loop.

Measurements: Ring Diameter: 2.1 cm; Total Length: 4.0 cm; Droplet Bead Length: 2.5 cm

Context: Square A16, Locus 6, Pail 10.

Date: Given the pottery reading for Locus 6, Pail 10, associated with Object 548, an estimated date of 1200-550 B.C.E. can be considered. Pottery within this locus consisted of an Iron Age II "Ammonite jar" and L. Iron Age II bowls and jars.

Parallels*:* Tomb at Madaba (Harding 1953: pl. V: 197); Samaria-Sabaste (Crowfoot 1957: 429, fig. 100: 10-11; Kenyon 1957: 445, fig. 105. 11-12), and Lachish (Tufnell 1958: pl. 25).

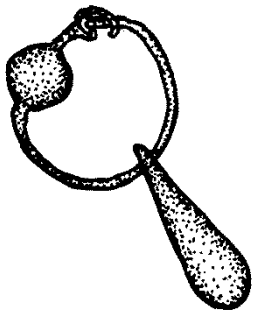


Figure 27. Object 548, earring.

Object 451, Earring

Description: Object 451 (fig. 28) is a small bronze earring with a broken fragment. In antiquity, the earring was composed of one piece of metal, its ends having met with a narrow gap for insertion into the ear.

Measurements: Width: 1.5 cm; Length: 1.4 cm

Context: Square C8, Locus 3, Pail 13.

Date: Given the pottery reading for Locus 3, Pail 13, associated with Object 451, an estimated date of 1000-550 B.C.E. can be considered. Pottery within this locus consisted of Iron Age II cooking pots and jars, as well as L. Iron Age II body sherds.

Parallels: Lachish (Tufnell 1958: pl. 25: 39, 40); Sahab Tomb (Dajani 1970: pl. XX: 364, 357); and Lachish (Tufnell 1958: pl. 25: 39, 40).

Figure 28. Object 451, earring.

Object 33, Earring

Description: Object 33 (fig. 29) is a small lunate earring with two broken ends.

Measurements: Total Length: 1.6 cm; Total width: 1.0 cm; Maximum breadth: 0.3 cm.

Context: Field C, Surface find.

Date: The discovery of Object 33 was along the surface of the area of the Field. Given the circumstances, it is not possible to suggest a specific date for Object 33 based on pottery findings. However, typological features and parallels from neighboring sites contribute a manufacturing period approximately to the Early Iron Age. Tombs at Madaba (Harding 1953: 27) and Sahab (Dajani 1970: 29) feature similar earrings from the Late Bronze and Early Iron Age.

Parallels: Tomb at Madaba (Harding 1953: pl. V: 200, 203, 205); Adoni Nur (Harding 1953: pl. VII: 15.6); and Sahab Tomb (Dajani 1970: pl. XX: 360, 370, 358).

Figure 29. Object 33, earring.

Object 379, Earring (2 Pieces)

Description: Object 379 (fig. 30) consists of two bronze pieces, one of which can be clearly classified as a lunate earring. The other piece, which has a pronounced "head," could be either a broken piece of the bronze earring, or, more likely, a bronze nail.

Measurements: Total Length of "nail": 1.5 cm; Width of head of "nail"; 0.6 cm; Width of point of "nail": 0.1 cm; Width of curve of earring: 1.3 cm; Height of earring: 1.3 cm.

Context: Square D2, Locus 24, Pail 108.

Date: Unknown.

Parallels: The two pieces discovered, which are completely different in function (one being an earring, the other being either a nail or other earring fragment) deplete the availability of parallel forms; however, it should be noted that the following sites produced "u-shaped" and lunate forms which may suggest some similarity with Object 379: Lachish (Tufnell 1958: pl. 25: 39, 40) and Sahab Tomb (Dajani 1970: pl. XX: 357, 364).

Figure 30. Object 379, earring.

Rings

Object 558, Ring

Description: Object 558 (fig. 31) is a circular bronze ring with a diameter of 2.0 cm. Along its perimeter are several grooves in 0.5 cm increments, possibly intentional decoration cast in antiquity.

Measurements: Ring Diameter: 2.0 cm.

Context: Square A16, Locus 9, Pail 14.

Date: Given the pottery reading of Locus 9, Pail 14, associated with the area in which Object 558 was discovered, a date of 1000-330 B.C.E. can be estimated. Pottery within this locus consists of E. Iron Age II cooking pots, an Iron Age II store jar, bowl, and cooking pot, and Late Iron Age II/Persian period bowls and kraters.

Parallels: Tomb at Madaba (Harding 1953: pl. V: 225); Sahab Tomb (Dajani 1970: pl. XX: 373); and Umm al-Biyara (Bienkowski 2011: 94, fig. 7.1: 6).

Figure 31. Object 558, ring.

Object 574, Ring

Description: Object 574 (fig. 32) is a semi-circular bronze ring with a diameter of 2.1 cm. The thickness of the ring varies from approximately 0.5 - 0.2 cm.

Measurements: Ring Diameter: 2.1 cm.

Context: Square D1, Locus 67, Pail 264.

Date: The pottery reading for Locus 67, Pail 264, in which Object 574 was discovered, suggests an estimated date from 1000-550 B.C.E. The L. Iron Age II pottery of the locus consisted of bowls and a storage jar.

Parallels: Tomb at Madaba (Harding 1953: pl. V: 229) and Umm al-Biyara (Bienkowski 2011: 94, fig. 7.1: 6).

Figure 32. Object 574, ring.

Object 63, Ring/Earring

Description: This ring (fig. 33) contains two ends which meet with a 0.2 cm separation. The band is semi-rounded with only slight flattening on the inside.

Measurements: Diameter: 2 cm; Maximum breadth: 0.3 cm.

Context: Square B9, Locus 10, Pail 17.

Date: Given the pottery reading associated with Locus 10, Pail 17, in which Object 63 was discovered, an estimated date of 1200-550 B.C.E. can be suggested. This locus exhibited an Iron Age I bowl, cooking pot, and pitcher, an Early Iron Age II cooking pot, as well as Iron Age II bowls and a jar.

Parallels: Tall Hesban, obj. 2616 (Platt 2009: 261); Lachish (Tufnell 1958: pl. 25: 33, 46); Tomb at Madaba (Harding 1953: pl. V: 223); Sahab Tomb (Dajani 1970: pl. XX: 359); Gezer V (Seger, 1989: pl. 29: 5-7); and Tawilan (Bienkowski 1995:81, 295, fig. 9.6: 1).

Figure 33. Object 63, ring/earring.

Object 524, Ring

Description: One broken band and two fragments are associated with Object 524 (fig. 34). The band curves into semi-circular shape.

Measurements: Diameter: 1.8 cm.

Context: Square B20, Pail 31, south balk.

Date: Given the pottery reading associated with Pail 17 of the south balk of square B20, in which Object 063 was discovered, a rough date from the Iron Age to the Islamic period can be suggested. Iron body sherds were discovered within the removal of the balk, in which a previous removal (Pail 13) had uncovered Iron Age II sherds.

Parallels: Due to its broken and corroded condition, it is not possible to produce specific parallels; however, it is most likely similar to pieces discovered in the tombs of Madaba (Harding 1953: pl. V) and Sahab (Dajani 1970: pl. XX).

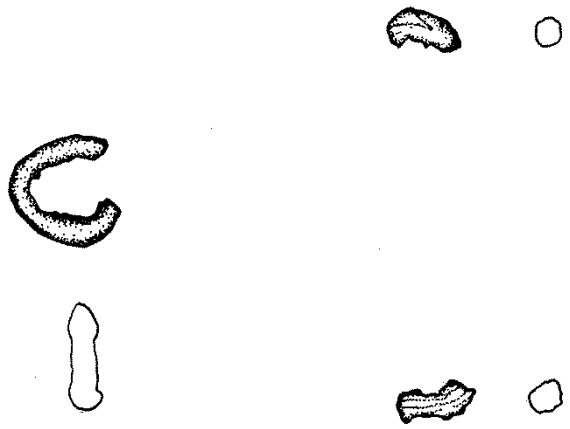


Figure 34. Object 524, ring.

Object 410, Ring

Description: Object 410 (fig. 35) is a ring of bronze with two ends which meet with a 0.1 cm gap between. The band is partially corroded, but thickens towards the middle, opposite the two ends.

Measurements: Outer Diameter: 2 cm.

Context: Square E4, Locus 8, Pail 11.

Date: A pottery reading for Object 410 was not recorded. Locus 8B, an installation that was associated with a 20th-century C.E. burial, yielded Iron II body sherds, a hole-mouth krater, a cooking pot, and a bowl. Although this cannot confirm a specific date for Object 410, parallels (Harding 1953: pl. V) suggest it may have been utilized during the Iron Age II.

Parallels: Tall Hesban, objs. 801, 933 (Platt 2009: fig. 13:16:14-15); Tomb at Madaba, pl. V: 220 (Harding 1953: pl. V); and Lachish (Tufnell 1958: pl. 25: 50).

Figure 35. Object 410, ring.

Bangles

Objects 005A-B Bangle fragments

Object 5A

Description: This bangle fragment (fig. 36) consists of two ends, one of which is shaped into a flattened finial, while the other end appears to have broken in antiquity. Given its small diameter (3.75 cm), the bangle likely adorned an infant (Platt 2009: 243).

Measurements: Diameter of 005A: 3.75 cm; Maximum breadth of 005A: 0.6 cm.

Context: Square B2, Locus 4, Pail 13, Upper-road pavement.

Date: Given the pottery reading associated with Pail 13, Locus 4 of square B2, in which Object 005A was discovered, a rough date from 1200-393 B.C.E. can be suggested. Excavation of this square revealed possible evidence of a road, with pottery from as early as the Iron Age I period, to as late as the Roman Age. Two tombs at Madaba (Harding 1953: 27) and Sahab (Dajani 1970: 29) suggest that this bangle belongs to the Iron Age, likely Iron Age II, like many of its parallels.

Parallels: Tall Hesban, Object 1065 (Platt 2009: fig. 13.7.2, 8); Tomb at Madaba (Harding 1953: pl. VI: 156); Sahab Tomb (Dajani 1970: pl. XXII: 326); Gezer (Seger 1989: pls.17: 14, 21: 19); Lachish (Tufnell 1958: pl.25: 34, 37, 41); and Tawilan (Bienkowski 1995: 81, 295, fig. 9. 6: 5).

Figure 36. Object 5A, bangle fragment.

Object 5B

Description: This bangle fragment (fig. 37) consists of two ends, one of which is shaped into a flattened finial, the other having broken in antiquity. Given its small diameter (3.8 cm), the bangle likely adorned an infant (Platt 2009: 243). Attached in several areas around the bangle are fragments of fabric.

Measurements: Diameter of 005B: 3.8 cm; Maximum breadth of 005B: 0.7 cm.

Context: Square B2, Locus 4, Pail 13, Upper-road pavement.

Date: Given the pottery reading associated with Pail 13, Locus 4 of square B2, in which Object 005B was discovered, a rough date from 1200-393 B.C.E. can be suggested. Excavation of this square revealed possible evidence of a road, with pottery from as early as the Iron Age I, to as late as the Roman Age. Two tombs at Madaba

(Harding 1953: 27) and Sahab (Dajani 1970: 29) suggest that this bangle belongs to the Iron Age, likely Iron Age II, like many of its parallels.

Parallels: Tall Hesban, obj. 1065 (Platt 2009: fig. 13.7.2,8); Tomb at Madaba (Harding 1953: pl. IV: 150, 155, 156); Sahab Tomb (Dajani 1970: pl. XXII: 326); Gezer (Seger 1989: pls.17: 14, 21: 19); Lachish (Tufnell 1958: pl.25: 34, 37, 41); and Tawilan (Bienkowski 1995: 81, 295, fig. 9. 6: 5).

Figure 37. Object 5B, bangle fragment.

Bead

Object 337

Description: Object 337 (fig. 38) is a bronze bead of 1.0 cm in length. The unique shape is reminiscent of pomegranate iconography, with one semi-spherical and the other end flaring outward into three prongs.

Measurements: Length: 1.0 cm; Width: 1.0 cm.

Context: Square D4, Locus 33, Pail 80.

Date: Located to the west of a walled domestic center which dates to the Late Iron Age II/Persian period, Object 337 is likely to have belonged to the inhabitants of the Late Iron Age II. The pottery reading obtained from the excavation report contained only

Late Iron Age II/Persian ceramics, including a krater, a cooking pot, and many body sherds.

Parallels: None.

Figure 38. Object 337, bead.

Conclusion

Bronze jewelry has been discovered in several of the fields at Tall Jalul. It would seem that in ancient times, jewelry was utilized in quite the same way as cosmetics, as a luxury item that became a part of the common adornment, at least as reflected on the bodies of the elite. Several conclusions can be made based on the manufacture, design, and context of the jewelry objects at Jalul which may contribute to the understanding of social status during the Iron Age in the Madaba Plains.

There were 11 artifacts of bronze jewelry analyzed from excavations at Tall Jalul. Of the total 39 bronze artifacts analyzed, jewelry represents 30.77% (Appendix B, Figure 46) or, over one fourth. Although it does not seem that jewelry was commonly worn on many inhabitants, the presence of rings, earrings, and bangles without tomb contexts is of significance. As was discussed at the beginning of this chapter, jewelry is most commonly excavated in tombs throughout Palestine (Boardman 1996: 5). Unlike the tombs at Madaba (Harding 1953: pl. IV), Sahab (Dajani 1970: pl. XXII), or Gezer (Seger

1989: pl. 29), the earrings, rings, bangles, and beads of Jalul were found within the domestic stratigraphic layers, or on the surface of the site. This connects their adornment with the living inhabitants of the tell, those who were actively displaying it at a time when bronze jewelry was regarded as a valuable status symbol (Golani 2013: 21).

The manufacture of bronze jewelry was not an easy task, and was unlikely to have been conducted at Jalul. Before Iron Age II, most jewelry was produced by refining copper in furnaces before casting it in molds, a process which has been discovered at metal manufacturing sites such as Tell Qasile (Masiler 1951: 44). Evidence of on-site jewelry production has not been observed as of yet, leaving room to suggest that inhabitants at Jalul were those which could afford to pay the steep price for these items through trade (Golani 2013: 21).

Of further consideration is the diversity of the bronze jewelry corpus at Jalul, many of which, like Object J0548 (fig. 4.2), required hammering and bending of bronze into a fine wire, a process which was not practiced until the Late Iron Age II in Palestine (Golani 2013: 23). Site reports contribute further details about the utilization of bronze jewelry at Jalul. Every Pail in which the bronze jewelry was excavated contained at least one Late Iron Age II or Iron Age II/Persian period ceramic sherd. Like the cosmetic applicators of the previous chapter (Objects 407, 904, 611), which appear at Jalul during the Iron Age II/Persian period (Appendix B, Figure 42), jewelry at Jalul was a luxury, appearing at the site during a time when inhabitants had not only greater access to such items, but a greater amount of disposable wealth with which to afford non-essential objects (Appendix B, Figure 43).

CHAPTER 5

A DISCUSSION OF THE ANALYZED ARTIFACTS

The previous chapters have presented 39 bronze artifacts with their analyzed data in order to contribute yet another representation of the ancient interactions of the inhabitants of Tall Jalul. The analysis of bronze implements demonstrates the relationship of skilled metal-smiths to a community of merchants, warriors, and elite individuals with whom trade was essential for status, defense, and economic stability.

Over time, the inhabitants of Jalul seem to have experienced a shift from bronze as a necessity in order to defend the community, to bronze as a demonstration of prosperity. As the powers controlling the mining industries of Fenan, Timna, and the Taurus Mountains waxed and waned, bronze production and trade within Transjordan seem to have been directly affected. Excavations of Iron Age I period bronze contribute only 13% (See Appendix B, Figure 45) of the total corpus discovered at Jalul. Until the Late Iron Age II/Persian period, bronze artifacts consist mainly of weaponry, with only a few samples of jewelry occurring in early Iron Age II. The Iron Age II/Persian period represents a distinct change in bronze utilization (Appendix B, Figure 44). Over 51% of the bronze artifacts were used during this period, the majority of which belong to the class of luxury and non-essential items. Fibulae, jewelry, and cosmetic applicators appear at the site during the Iron Age II/Persian period, the result of greater trade

relationships with Assyria and Egypt, who were both vying for control of tin resources in the north, and the southern copper industries at Fenan and Timna.

Future excavations and research conducted at Tall Jalul could contribute an even greater supply of bronze implements for further consideration to the above analysis. Ultimately, an x-ray florescence (XRF) analysis of the tin-copper components of each artifact should be conducted, the details of which could greatly impact what is known about object elemental composition and manufacture.

APPENDIX A

UNIDENTIFED BRONZE ARTIFACTS

Two objects (18, and 199) were left as unidentified during analysis of the bronze corpus. Their size and appearance lacked stylistic features that would enable site parallels to suggest form and function. Below they have been recorded with measurements, but their dates have not been included in the analysis of the remaining bronze implements.

Object 18

Description: Object 18 is 3.7 cm in length with a pronounced lump approximately mid-way. Field reports classify it as a "fibula," however, the image does not parallel any known fibulae, or pin, which would function appropriately when attached to fabric. Its exact classification is unknown.

Measurements: Length: 3.7 cm; Thickness: 0.6 cm.

Context: Square B3, Locus 15, Pail 33.

Date: The pottery reading for Locus 15, Pail 33, in which Object 018 was discovered, contained pottery dating from 1200-1000 B.C.E. Pails 30 and 32 of the same locus also contained Iron Age I pottery. Locus 19, which was excavated directly under Locus 15, contained Late Bronze Age and Iron Age I pottery, suggesting that Object 018 belongs amongst the Iron Age I corpus of bronze fibulae**.**

Parallels: Parallels unknown.

Figure 39. Object 18.

Object 199

Description: Object 199 is a small bronze clump of approximately 1.0 cm in length. Its classification is unknown, however field reports suggest that it could be a form of currency, due to its bronze content.

Measurements: Length: 1.0 cm; Width: 0.5 cm.

Context: Square D4, Locus unknown, Pail 42.

Date: Unknown.

Parallels: Parallels unknown.

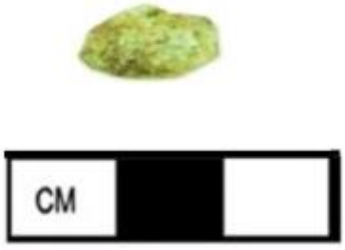


Figure 40. Object 199.

APPENDIX B

FIGURES OF JALUL STATISTICS AND SITE DISTRIBUTION

Figure 41. Weaponry

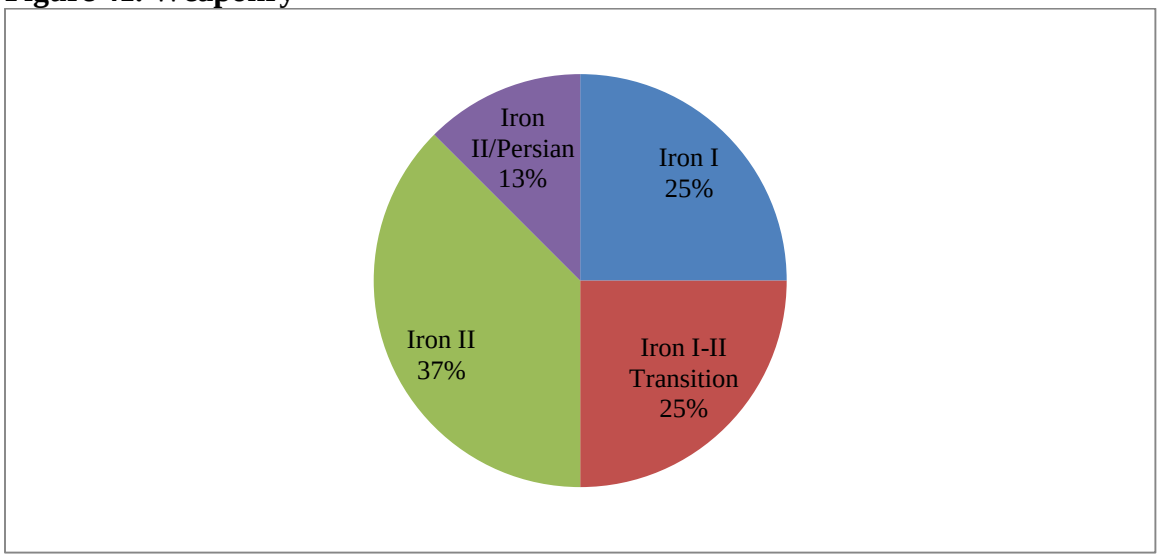


Figure 42. Tools

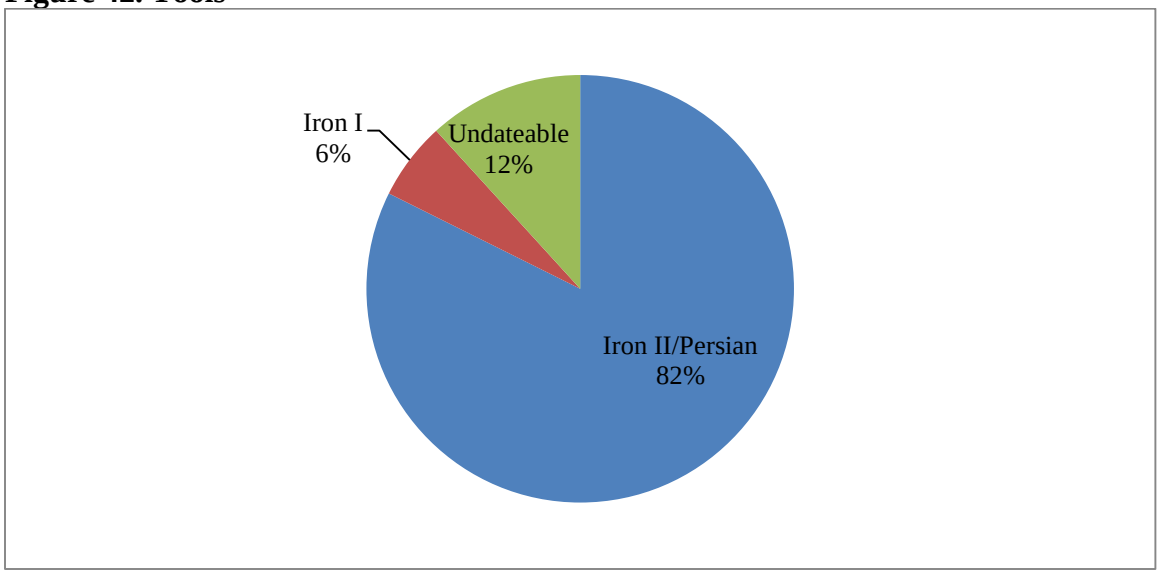


Figure 43. Jewelry

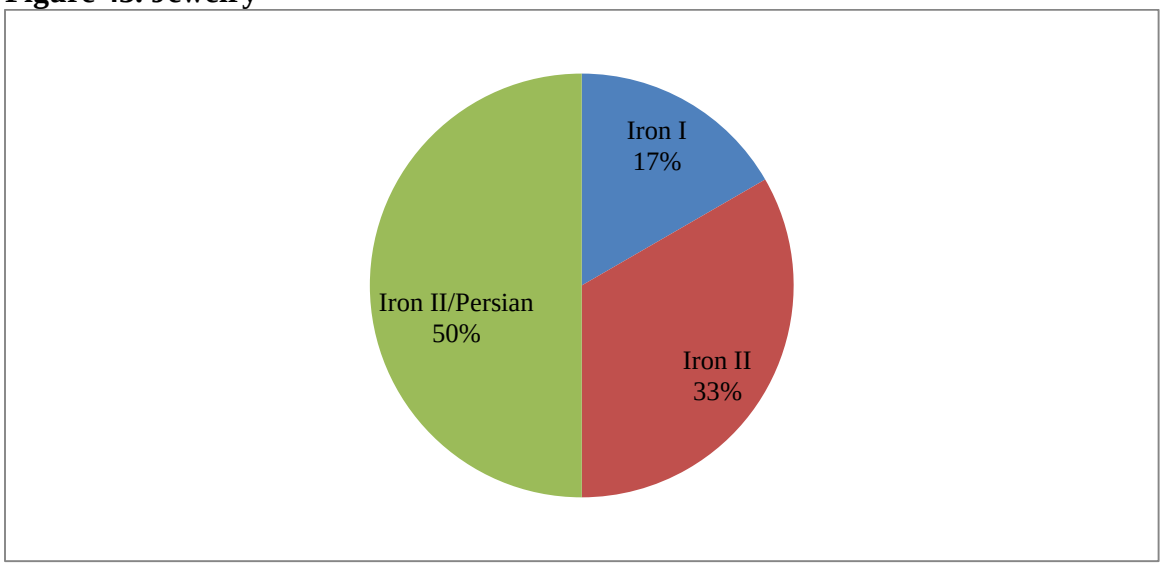


Figure 44. Distribution of Bronze Artifacts Over Time

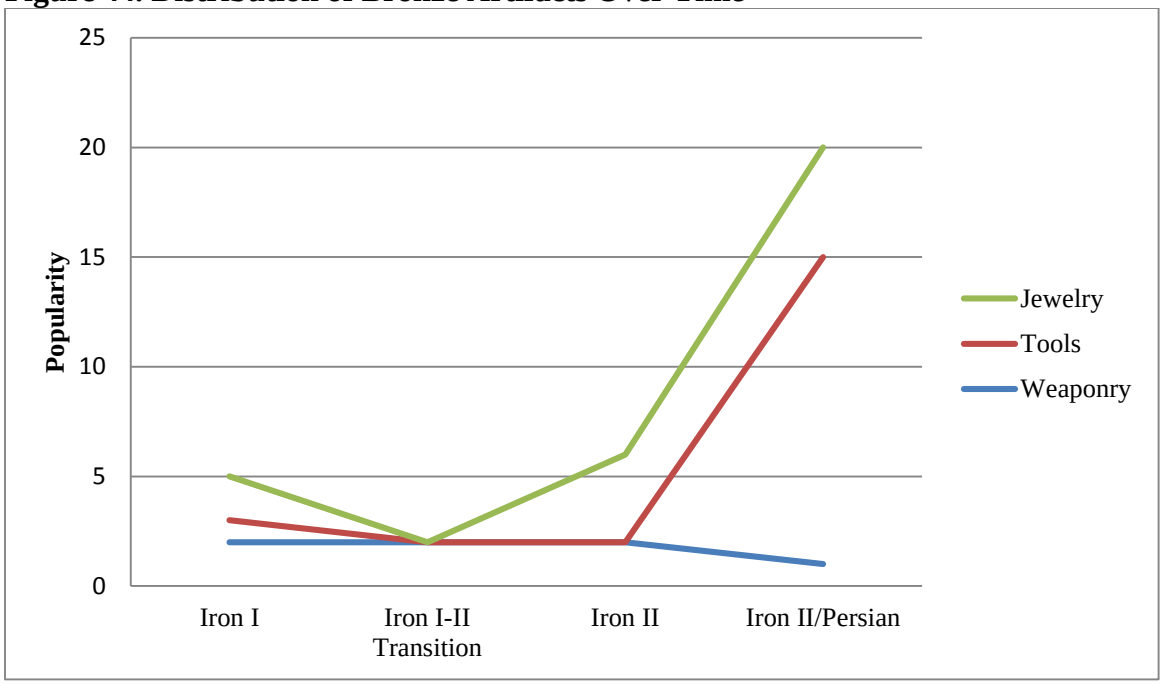


Figure 45. Jalul Bronze Artifacts

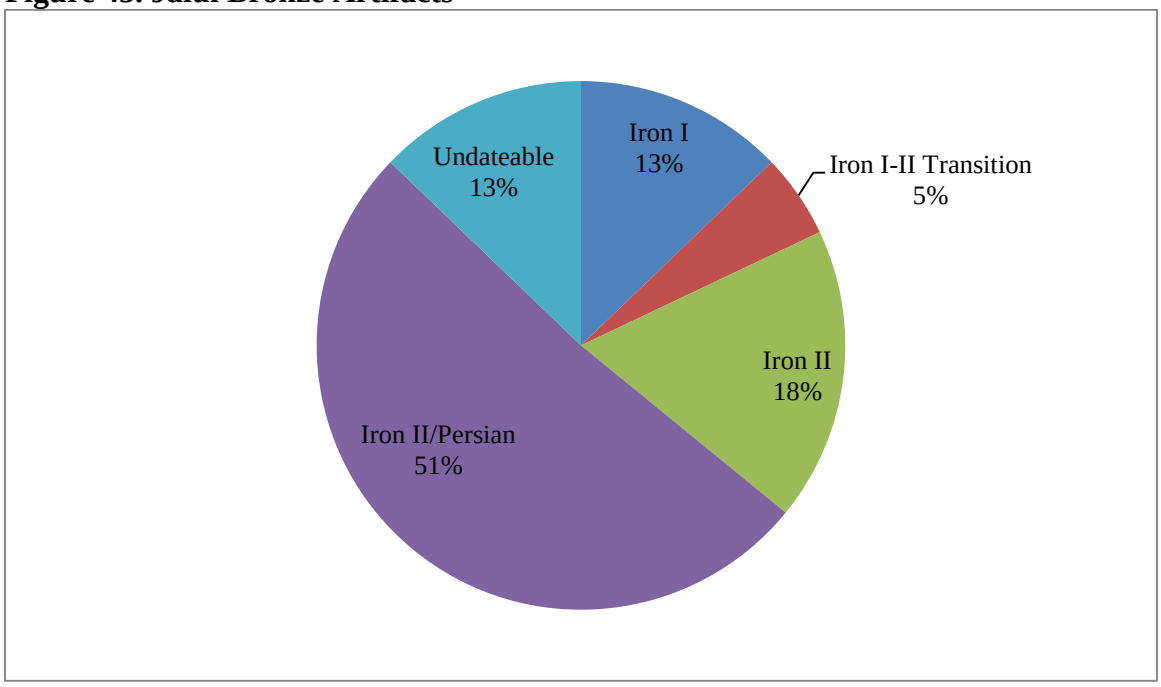
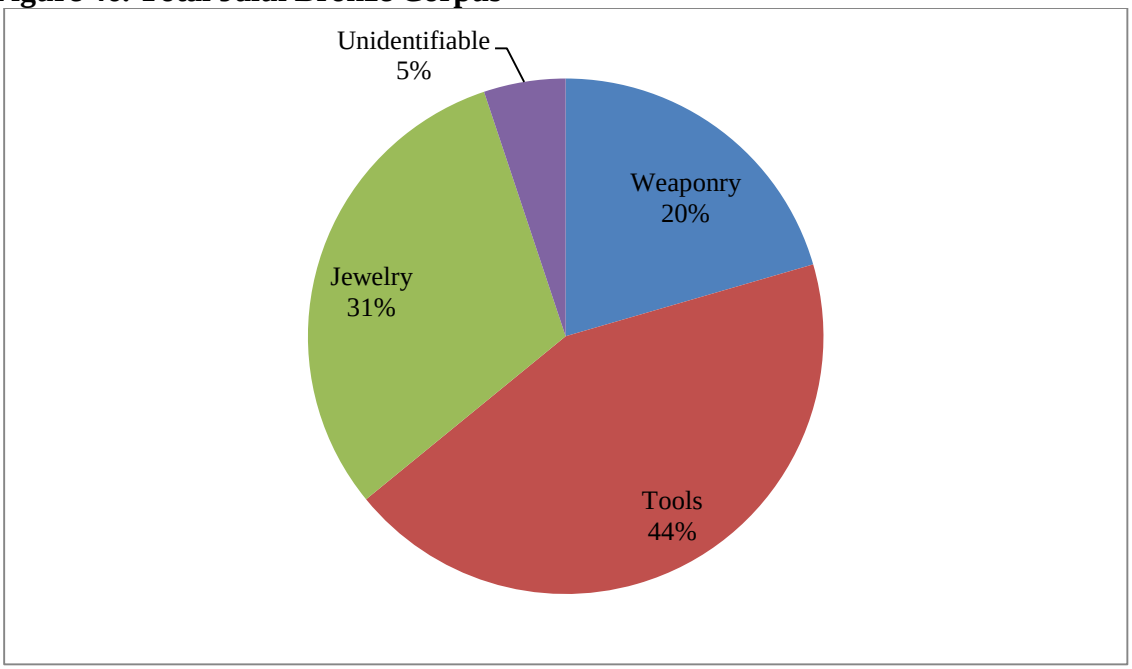


Figure 46. Total Jalul Bronze Corpus



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