More than people and pots: identity and regionalization in Ancient Egypt during the second intermediate period, ca. 1775-1550 BC

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WEAPONS

In this chapter, the focus is on determining the network of contacts suggested by an analysis of the metal weapons of the Late Middle Kingdom and the Second Intermediate Period. The weapons examined in this chapter include axes (and hatchets), spearheads, daggers, and knives. During the periods under examinations, the Egyptians also made use of weapons made from other materials than metal, such as stone. However, only metal weapons have been analysed, because metal objects are subjected more frequently to changes in style across a shorter span of time, therefore they have a more varied typology, which is helpful in detecting similarities and differences between sites.

The axes studied in this chapter have a metal blade with one cutting edge. On the side opposite the edge the blade was attached to a wooden haft, which often has not survived. Axes were used throughout the Egyptian historical periods.[1] A problem shared by all weapons apart from swords is that they were originally developed as tools. An example is the axes with a semi-circular blade, which were like the hatchets used by woodcutters.[2] Axes could have longer or narrower cutting edges. In the first case, it is possible that they were used for cutting or slashing unprotected flesh, while in the second case they were mostly used for piercing through body armour.[3]

Spearheads were also made of metal and attached to a wooden shaft. They could be thrown at the enemy, like javelins, used as thrusting weapons (lances), or even used for cutting and slashing, like halberds.[4] The spearheads unearthed at Tell el-Dab'a were most likely thrown due to their small dimensions and light weight, and because of the fact that they were often found in pairs.[5] Carrying multiple spears into battle allows a warrior to hurl a spear at

1 Shaw 1991, 34–36.
2 Shaw 1991, 35–36.
3 Philip 2006, 139; Spalinger 2005, 16. It is possible that part of the wounds on the heads of Seqenenra-Ta'a, the ruler of the XVIIth Dynasty who started the war against the Hyksos, were caused by a narrow axe: Philip 2006, 139.
4 Philip 1995a, 71; Philip 2006, 147–48; Shaw 1991, 37; Spalinger 2005, 18–19.
5 Philip 1995a, 71; Philip 2006, 147–48.

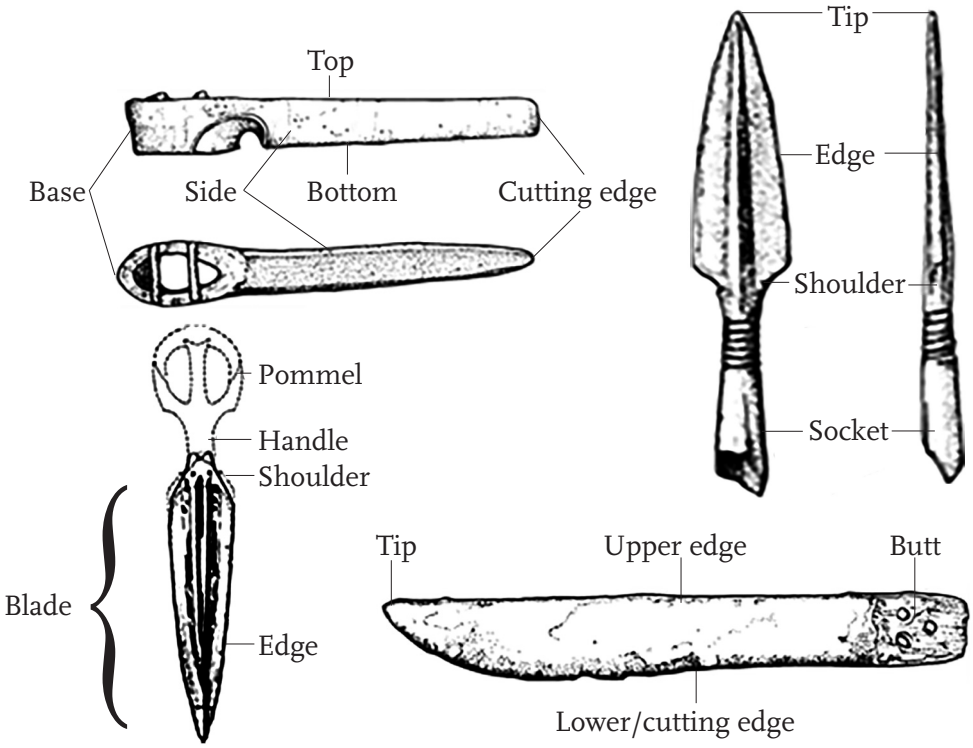
the enemy while still having one or more in reserve. From the Middle Kingdom onwards, daggers became the more common weapon for stabbing and slashing.[6] Daggers have two cutting edges and a piercing tip, to make it easier to stab with. In contrast, knives only have a single cutting edge, so that they could only be used to cut, and were inserted in a wooden handle.[7] Knives were usually made of thin metal and broke off easily, which is why they are often found incomplete.[8]

In the present work, the parts considered in the description of the axes are: the blade (the part with the cutting edge and attached to the wooden haft); the base (the side of the blade in contact with the haft); the sides (the larger surfaces of the blade); the top and the bottom (the upper and lower edges of the blade). Concerning the spearheads, the parts considered are: the tip (the piercing top of the spearhead); the edges (at each side of the larger surfaces of the spearhead); the shoulders (the two bottom edges of the spearhead, in contact with the tang or the socket, through which the spearhead was attached to a wooden shaft). For the daggers, the parts considered are: the blade; the edges (at each side of the larger surface of the blade); the shoulders (the two top edges of the blade, in contact with the handle); the handle; the pommel (at the top of the handle). As far as the parts of knives are concerned, they include: the blade; the upper edge of the blade; the cutting edge (i.e. the lower edge of the blade); the tip of the blade; the butt (which connects to the handle).

Only the weapons from dated contexts are included in the analysis. Though previous research on the weapons unearthed at Tell el-Dab'a has remarked that, especially concerning the axes and the daggers, each phase had its own preferred type(s),[9] no attempt has been made to date contexts through weapons in the present research, and only specimens from contexts dated through other means have been taken into consideration. This is because only published material has been used for the present research, and the quality of the available data is often not accurate enough for using the weapons for dating purposes.

When two or more sites feature similar objects it is probable, depending on the quantity of objects and contexts, that they share an overall similar material culture. Because of the social value of weapons, examined in the next section, encountering the same types across more sites further suggests that these places perhaps shared the same social values. However, similar types excavated at two or more sites, while they suggest contacts between these places, do

6 Shaw 1991, 37.
7 Philip 1995a, 72.
8 Philip 1995a, 72.
9 Philip 1995a, 76; Philip 2006, 141–44.



Drawing 7: Parts of the weapons considered in the present analysis: blade of an axe (top left, side and top view); a spearhead (top right, front and side view); a dagger (bottom left), a knife (bottom right). Drawings after Philip 2006.

not imply direct ones.[10] This comes from the fact that the data examined are only a sample, made of what has been unearthed and published so far.[11]

Weapons and burial customs

Most metal weapons have been found in tombs and were used as burial equipment. As metal is valuable, the weapons indicate and confer social status. This also suggests that the types recovered from tombs do not necessarily represent the entire range of types nor can they be used uncritically to reconstruct possible fighting techniques, but are only a selection, made of what was considered important or prestigious enough to be deposited as grave goods.[12] Other types of metal weapons not retrieved could actually have been kept in use and reused, and not preserved because no social significance was attached

10 Brughmans 2013, 638–39; Sindbæk 2013, 74–76, 82; Sindbæk 2007b, 66.
11 Brughmans 2013; Brughmans, Isaksen, and Earl 2012; Knappett 2013; Östborn and Gerding 2014, 81–83; Peeples and Roberts Jr. 2013, 3002.
12 Philip 2006, 152.

to them.[13] This is supported by the fact that there are differences between the types of metal weapons retrieved and the ones reported in texts. For example, a comparison of the metal weapons unearthed at Tell el-Dab'a with the metal weapons from Avaris mentioned in the stela of Kamose or in the inscription in the tomb of the general of Ahmose son of Ibana demonstrates the differences.[14]

Which metal weapons were deposited in the tombs also varied across time and space, fluctuating with changes in what society considered prestigious. As a result, the same types of metal weapons could be considered differently at different sites, according to the customs of the local communities.[15] From this point of view, striking differences can be noticed between the Eastern Delta and the Nile valley. Only in the Eastern Delta, and not in the Nile Valley, axes and daggers are often found together in tombs, positioned respectively across the abdomen and at the head or shoulder of the deceased, in a fashion common in the Levant.[16] Lastly, at Tell el-Dab'a the axe–dagger pair was associated with pairs of spears during the Late Middle Kingdom.[17]

However, both in the Nile Valley and in the Eastern Delta knives were often deposited in tombs. While daggers were positioned beside the deceased,[18] knives were positioned further from the deceased. It is possible that knives were used in burial equipment because they had a symbolic association with the offering of meat.[19] This is supported by depictions of knives in butchery scenes in tomb paintings, as well as by the fact that they have also been found in association with animal bones.[20]

Another difference between the Eastern Delta and the Nile Valley concerns the types of axes and spearheads found in the tombs.[21] In the Nile Valley, the axes belong to the types with a wider cutting edge and attached to the haft through lashing, while in the Eastern Delta the axes belong to the types with fenestrations or with narrow cutting edges and attached to the haft through a socket;[22] these socketed axes are first found in the Levant.[23] Concerning the spearheads, the types found in the Nile Valley were larger, attached to the shaft using a tang, and found singularly in tombs, while the types found at

13 Philip 2006, 137.
14 Shaw 1991, 39–40.
15 Philip 2006, 137.
16 Philip 1995a, 67.
17 Philip 1995a, 67–71.
18 Philip 1995a, 72; Philip 2006, 218–19.
19 Philip 1995a, 72–74; Philip 2006, 150.
20 Philip 2006, 150 and 219.
21 These differences can be noted also in the database compiled for the present research.
22 Philip 1995a, 71; Philip 2006, 151–52.
23 Philip 1989, 37–41 and 49–55; Philip 1995a, 71; Philip 2006, 138–40.

Tell el-Dab'a were often found in pairs, were usually smaller, and attached to the shaft using a socket;[24] these small socketed spearheads are first found, like the socketed axes, in the Levant.[25] Moreover, it has been noticed that the types of daggers found in the Eastern Delta resemble types unearthed in the Levant.[26]

Lastly, it should be noticed that archery was also an important part of Egyptian warfare,[27] but while archers' equipment has been unearthed in tombs in Egypt, this is not the case in the Eastern Delta.[28] Clearly, this suggests that archery equipment was not considered something that was worth to deposit in tombs by the communities who lived in the Eastern Delta. As stated previously, this does not necessarily have any implications as regards the actual style of warfare engaged by these communities.

All the described differences demonstrate that the Eastern Delta and the Nile Valley attributed different values to weapons and had differences in burial customs. Furthermore, they indicate that the Eastern Delta featured objects and burial customs similar to the ones found in the Levant.[29] Nevertheless, the types of weapons found in the Eastern Delta also show that during the Late Second Intermediate Period they stopped imitating closely the ones found in the Levant and acquired features that set them apart.[30]

Metal weapons could be included in tombs because they had come from distant lands and, therefore, acquired economic value. Hence, metal weapons that, at the site where they were produced, would normally not be an item for burial equipment, could become one at a site where they were imported. This is the case, for example, with an Egyptian axe found in Beirut.[31] Metal weapons could also have a ritual or ceremonial use,[32] as shown by the burial of a woman and her dog at Tell el-Maskhuta; both the woman and her pet had wounds that could have been caused by a narrow axe.[33]

24 Philip 1995a, 71; Philip 2006, 152; Shaw 1991, 32.
25 Philip 1989, 88–99; Philip 1995a, 71; Philip 2006, 147–48.
26 Philip 1989, 115–21 and 132–35; Philip 1995a, 71; Philip 2006, 141–44.
27 Shaw 1991, 37.
28 Philip 2006, 152; Shaw 1991, 37.
29 Philip 2006, 138–40 and 151–52.
30 Philip 1995a, 71; Philip 2006, 151–52.
31 This is further suggested by the fact that the mentioned axe had never been sharpened: Philip 2006, 137.
32 Philip 2006, 141.
33 Holladay Jr. 1982, 45.

Weapons: types and production

Weapons from the Levant have been the subject of a detailed typological analysis by G. Phillip.[34] The features that Philip uses to distinguish between types have been used here as a guide to develop a new typology for the weapons found in Egypt. Certain types developed by Philip have been kept in the present research and renamed in order to fit the typology elaborated.[35] It should also be mentioned that the shape could be slightly modified by resharpening the weapons.[36] Nevertheless, the overall shape usually remained the same, therefore the typology is not affected.

Metal weapons, as well as other metal objects, could be shaped through hammering or casting. In both cases, the metal had to be smelted in kilns or furnaces. After the metal was smelted, it was then hammered into shape or poured in open moulds or complex, closed forms. Sometimes, hammering could be used after casting to refine the shape or its details.[37] Evidence for metalworking has been found in Tell el-Dab'a, where kilns to smelt the metal,[38] tuyères (bellows: these deliver a blast of air to a kiln or furnace when compressed),[39] as well as clay and stone (limestone and steatite) moulds and forms in which metal was cast to give shape to objects,[40] and metal remains[41] have been unearthed. The use of specific types of moulds further allowed the development of types: it has been suggested, for example, that the fabrication of daggers with decorated blades was made possible using two-piece steatite moulds.[42]

The materials used for the fabrication of the metal weapons was copper or, as chemical analyses on the weapons from Tell el-Dab'a have shown,[43] an alloy including copper and arsenic (i.e. arsenic bronze), which can be derived from copper ores rich in arsenic,[44] or copper and tin (i.e. bronze), which could be mined in the Eastern Delta and the Sinai,[45] or derive from reworking scraps of bronze.[46] These alloys made it easier to work the weapons and allowed the

34 Philip 1989.
35 An example is given by two types of daggers, which Philip calls Type 13 and Type 17, while in the present work are respectively called type 2 and type 3.
36 See various examples in Philip's catalogue: Philip 2006, 32–83.
37 Lucas 1948, 228–36; Ogden 2000, 149–55.
38 Bietak and Forstner-Müller 2006.
39 Philip 2006, 197–203.
40 Philip 2006, 171–96.
41 Philip 2006, 169–70.
42 Philip 1989, 175–76; Philip 2006, 141.
43 Philip 1995a, 75–77; Philip 1995b; Philip 2006, 209–12.
44 Ogden 2000, 153–54; Philip 1995a, 75–77; Philip 2006, 209–12.
45 Ogden 2000, 171.
46 Philip 1995a, 75–77; Philip 2006, 209–12.

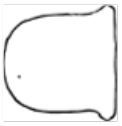
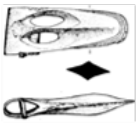
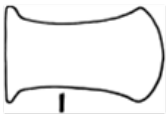
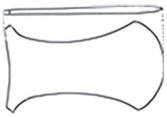
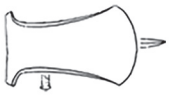
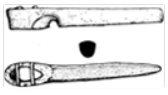
production of sharper and more resistant weapons.[47] The chemical analyses on the weapons from Tell el-Dab'a also show that, while in the strata dating up to and including the Early Second Intermediate Period, daggers and axes were made of the aforementioned alloys, during the Late Second Intermediate Period they were made mostly of simple copper.[48] This, together with the fact that weapons were not present in tombs dating to the later part of the Second Intermediate Period, suggests that weapons were not considered objects that conferred or indicated status in tombs anymore: this also reflects a switch from Levantine to Egyptian customs.[49] Rarely, silver was used for spearheads.[50]

A last problem concerns how to distinguish between tools and weapons. Sometimes, the same object could be meant as one or the other, at different stages of its life or if the context where it was used changed. Unfortunately, the fact that nearly all of objects come from tombs does not allow us for comparisons with similar objects from settlements. Therefore, we cannot say if a type of object – for example a knife or an adze of a certain shape – from a tomb could have been used as a tool in a settlement context, and, as a consequence, with what meaning it was deposited in a tomb. However, the objects included in the analysis are informative of burial customs, as explained above, and lend themselves to an interesting typological classification, as followed in the present work. Therefore, they have been analyzed even if their intended use as weapons and/or tools is not always intelligible.

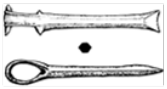
THE LATE MIDDLE KINGDOM

Half of the contexts of the Late Middle Kingdom with weapons is in Tell el-Dab'a[51] (Table 12 in Appendix I; Appendix VI). The second site with the higher number of contexts is Hu.[52] These two sites, together with Lahun,[53] are also the sites with the largest variety of types. From the other sites examined,

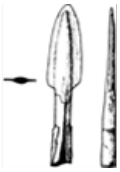
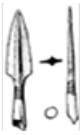
47 Ogden 2000, 151–54.
48 Philip 1995a, 75–77; Philip 1995b; Philip 2006, 209–12.
49 Philip 1995a, 75–77; Philip 2006, 209–12.
50 Bietak and Hein 1994, n. 19; Bietak et al. 1994; Philip 2006, 64–67; Schiestl 2009, 377–82.
51 Bietak and Hein 1994, ns. 18–19, 23, 34–37, 39; Bietak et al. 1994; Forstner-Müller 2008, 129–33; Philip 2006, 32–35, 42–46, 52–55, 60–68, 75–77; Schiestl 2002, 2009, 269–90, 304–26, 377–82, 405–23, 451–56.
52 Bourriau 2009, 68-69, and 80; Petrie and Mace 1901, 43–44 and 52, pls. XXVII and XXXII.
53 Petrie, Griffith, and Newberry 1890, 12, 22, 26 and pls. XIV, XVII; Petrie et al. 1891, 12–13 and pls. VII, XIII.

Type	*Description*	*Outline*
Axe Crescent 1	The blade of this type of axe is shaped like a semicircle with a short height and two protrusions from the straight base. It is inserted into collars, through which it is attached to the haft.	
Axe Crescent 2	The blade of this type of axe is shaped like a semicircle with a tall height and two protrusions from the straight base. Probably attached to the haft through lashing.	
Axe Fenestrated 1	The blade of this type of axe has two fenestrations, namely holes, cutting through the side, on which a sharp medial line is also visible, and a convex cutting edge with concentric ridges. It is attached to the haft through a socket.	
Axe Flaring 1	The blade of this type of axe has a flaring profile, with concave top and bottom, a convex cutting edge, and two protrusions from a straight base. Probably attached to the haft through lashing.	
Axe Flaring 2	The blade of this type of axe has a flaring profile, with concave top and bottom, a convex cutting edge, and two protrusions from a concave base. Probably attached to the haft through lashing.	
Axe Flaring 3	The blade of this type of axe has a thick cross-section and a wide flaring profile, with concave top and bottom, a convex cutting edge, and two protrusions from a straight base. Probably attached to the haft through lashing.	
Axe Flaring 4	The blade of this type of axe has a flaring profile, with concave top and bottom, which have also ridges, a convex cutting edge, and two protrusions from a straight base. Probably attached to the haft through lashing.	
Axe Narrow 1	The blade of this type of axe has parallel top and bottom, a square or trapezoidal cross-section, and a straight or concave narrow cutting edge. It is attached to the haft through a socket.	

(continued)

Type	*Description*	*Outline*
Axe Narrow 2	The blade of this type of axe has a narrow flaring profile, with concave top and bottom, a hexagonal or oval cross-section, and a straight or concave narrow cutting edge. It is attached to the haft through a socket.	
Axe Narrow 3	The blade of this type of axe has a narrow flaring profile, with concave top and bottom, a hexagonal cross-section with raised ridge, and a straight narrow cutting edge. It is attached to the haft through a socket.	
Axe Trapezoidal 1	The blade of this type of thin axe is shaped like a wedge with a convex cutting edge and a flaring base, which is probably attached to the haft through lashing.	
Axe Trapezoidal 2	The blade of this type of thin axe is shaped like a trapezoid with a convex cutting edge and a triangular base, which is probably attached to the haft through lashing.	
Spearhead Tang 1	This type of spearhead has a rounded tip, a slender and elongated shape, and a narrow midrib. It is attached to the shaft through a tang.	
Spearhead Medium-sized 1	This type of spearhead is large and has a triangular shape with a midrib. It is attached to the shaft through a socket.	
Spearhead Medium-sized 2	This type of spearhead is larger, with very concave edges. It is attached to the shaft through a split socket.	
Spearhead Small 1	This type of spearhead is smaller than the medium-sized ones. It has a rounded tip, a slender shape with angular shoulders, and a narrow midrib. It is attached to the shaft through a long socket.	

(continued)

Type	*Description*	*Outline*
Spearhead Small 2	This type of spearhead is smaller than the medium-sized ones. It has convex edges, a round midrib, rounded or square shoulders, sometimes with "fins", and a split socket, which can be decorated with grooves or horizontal ridges or other incised decoration. The shape can also be elongated, and the tip can be also rounded or bevelled.	
Spearhead Small 3	This type of spearhead is smaller than the medium-sized ones. It has convex edges or a tapering shape, incurved or square shoulders, and a pronounced midrib. The tip can be angled.	
Spearhead Very small 1	This type of spearhead is smaller than the medium-sized and the small ones. It has convex edges or a tapering shape, a rounded midrib, a split socket, and square, rounded, or angled shoulders.	
Spearhead Very small 2	This type of spearhead is smaller than the medium-sized and the small ones. It can be slender and tapering, with V-shaped midrib and socket pinched at the junction with the edges, or it can have convex edges, a round midrib, straight shoulders, and a split socket.	
Dagger 1	The blade of this type of dagger has convex edges and a V-shaped midrib with central groove. The handle has a stem with square cross-section and a crescent-shaped ivory pommel secured by metal studs.	
Dagger 2	The blade of this type of dagger has convex, or rarely concave, edges, or a tapering shape, as well as square shoulders, and three or five midribs converging in V-shapes towards the tip; between the outer midribs can be lines perpendicular or parallel to the same midribs, or the top of the midribs can end in spirals. For the handle there is a tapering, or rectangular, or trapezoidal, or semi-circular tang; it can have rivets, or an extension with square cross-section, with a sub-globular pommel. In one example, the handle has gold leaf and a tang tapering to a stem, to which a sub-globular ivory pommel, covered by a lotus-shaped copper-base wire framework, was attached.	

(continued)

Type	*Description*	*Outline*
Dagger 3	The blade of this type of dagger has convex edges, or a thin or slender and tapering shape, with square shoulders and sometimes a lens-shaped cross-section; it is characterized by a raised medial zone, sometimes flattened. The handle can be riveted and with triangular, or rectangular, or trapezoidal tang; one example has a symmetrical handle with central upper point indented, and a round or crescent ivory pommel.	
Dagger 4	The blade of this type of dagger has a slender and tapering shape, or concave edges, with square or angled shoulders, and a cross-lens or rhomboidal cross-section; it is undecorated, but sometimes it has a medial line. The handle has a rectangular or trapezoidal tang with rivets.	
Dagger 5	The blade of this type of dagger has convex edges and a plain surface. The handle is riveted and can be symmetrical with central upper point indented, ending in a round ivory pommel; one example has silver rosettes on the handle.	
Dagger 6	The blade of this type of dagger has concave edges, mostly angular shoulders, and a raised medial zone. The handle is riveted and can have a rectangular tang; one example has a symmetrical handle with central upper point indented and a crescent ivory pommel.	
Dagger 7	The blade of this type of dagger is undecorated has a triangular, more rarely tapering, shape, angled or, more rarely, square shoulders, and sometimes a lens-shaped cross-section. The handle can be flaring and with a crescent at the top; in a few examples a trapezoidal or triangular tang, often riveted, is visible.	
Dagger 8	The blade of this type of dagger is broad and most often undecorated, with concave edges and sometimes angular shoulders, and sometimes a lens-shaped cross-section. The handle can have a riveted or a rectangular tang.	
Dagger 9	This type of dagger is shaped like a sickle, with midrib on the side and a tapering tang with three rivet holes in a triangular arrangement.	

(continued)

Type	*Description*	*Outline*
Dagger 10	The blade of this type of dagger has a slender and tapering shape, with rhomboidal cross-section and a sharp medial line. The handle is thin and has a crescent at the top.	
Dagger 11	The blade of this type has concave edges and a sharp medial line. Concerning the handle, in one example only its rectangular tang is visible, while in another example it is worked with rosettes, which are filled with stones, and has a crescent at the top.	
Knife 1	This type of knife has the cutting edge curving in a more rounded or angular shape near or at the tip. The blade is attached to the handle through a riveted trapezoidal, rounded, or stepped butt; the number of rivets is two, or three, or four, respectively arranged in a horizontal line, in a triangle, or in a square. The tip can be rolled.	
Knife 2	The blade of this type of knife has the cutting edge curving in a more rounded or angular shape near the butt. This blade is attached to the handle through a rectangular tang, usually thin, which can sometimes be long.	
Knife 3	The blade of this type of knife has parallel edges and a round tip. This blade is attached to the handle through a riveted butt, which curves down at the end.	
Knife 4	The blade of this type of knife has parallel edges and a straight tip. This blade is attached to the handle through a tang, which has a downward protrusion at the end.	
Knife 5	The blade of this type of knife has a concave upper edge and a convex cutting edge. This blade is attached to the handle through a rectangular tang.	

Table 6: Description and outline of the main types of weapons.
Drawings after: Bietak and Hein 1994; Brunton and Morant 1937; De Morgan 1895; Forstner-Müller 2008; Garstang, Newberry, and Milte 1901; Petrie, Griffith, and Newberry 1890; Petrie and Mace 1901; Petrie and Duncan 1906; Petrie and Walker 1909; Philip 2006; Randall-MacIver et al. 1902; Redmount 1989; Yacoub 1983.

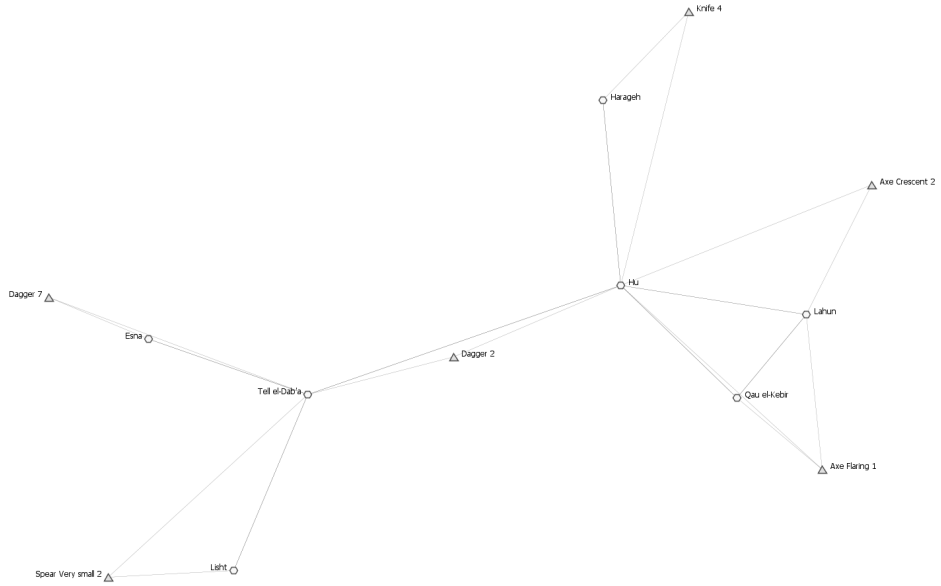


Figure 106: Contexts of the Late Middle Kingdom and the most common types of weapons.

namely Dahshur,[54] Lisht,[55] Harageh,[56] Qau el-Kebir,[57] Abydos,[58] Esna,[59] and Edfu,[60] only one or two contexts with weapons, and one type of weapon, have been included in the analysis. Nearly all the contexts come from non-royal burials, while the only two contexts from royal burials are found at Dahshur.[61] The only contexts that are not burials have been excavated at Tell el-Dab'a[62] and Lahun.[63]

The axes included in the analysis of this period are of both crescent (Crescent 1 and 2) and trapezoidal (Trapezoidal 1 and 2) types, as well as nearly all the types of flaring axes (Flaring 1, 3 and 4), the fenestrated axes, and only the narrow axes with parallel edges (Narrow 1). Nearly all the types of spearheads (Small 2 and 3, and Very small 1 and 2) are examined for this period, with the exception of three larger types, as well as nearly all the types of knives (types 1, 2, 4, and 5), with the exception of the type with parallel edges and rounded

54 De Morgan, Legrain, and Jéquier 1903, 48–52 and pl. VI; De Morgan et al. 1895, 113.
55 Bietak and Hein 1994, n. 49.
56 Engelbach and Gunn 1923, pl. XV.8.
57 Brunton, Gardiner, and Petrie 1930, 13 and pl. XXI.
58 Peet and Loat 1913, 26–27 and pl. IX.22.
59 Downes 1974, 8 and 102–5.
60 Michałowski et al. 1939, 51–53 and pl. XXIII.
61 De Morgan, Legrain, and Jéquier 1903, 48–52 and pl. VI; De Morgan et al. 1895, 113.
62 Philip 2006, 53–54.
63 Petrie, Griffith, and Newberry 1890, 12, 22, 26 and pls. XIV, XVII; Petrie et al. 1891, 12–13 and pls. VII, XIII.

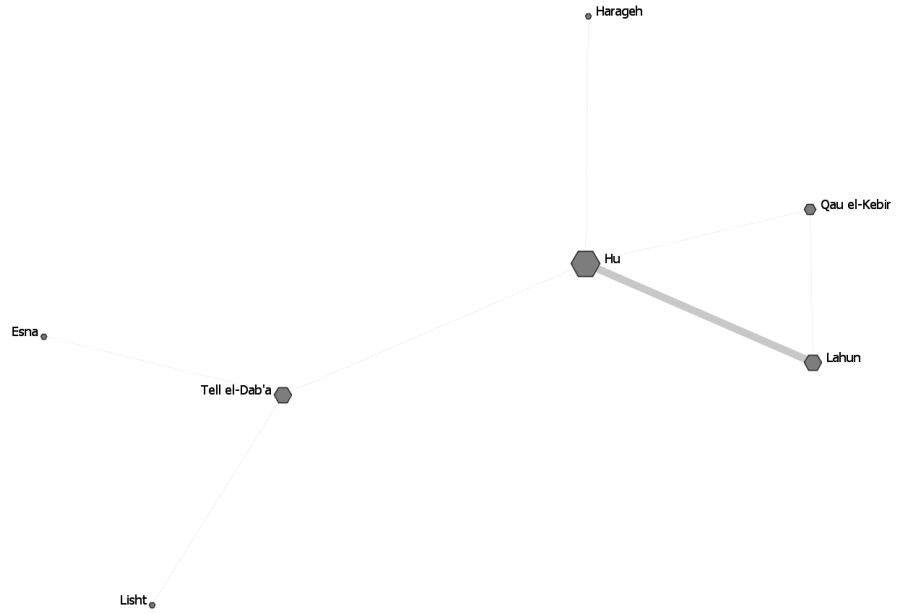


Figure 107: Degree centrality of the first one-mode graph of the weapons during the LMK.

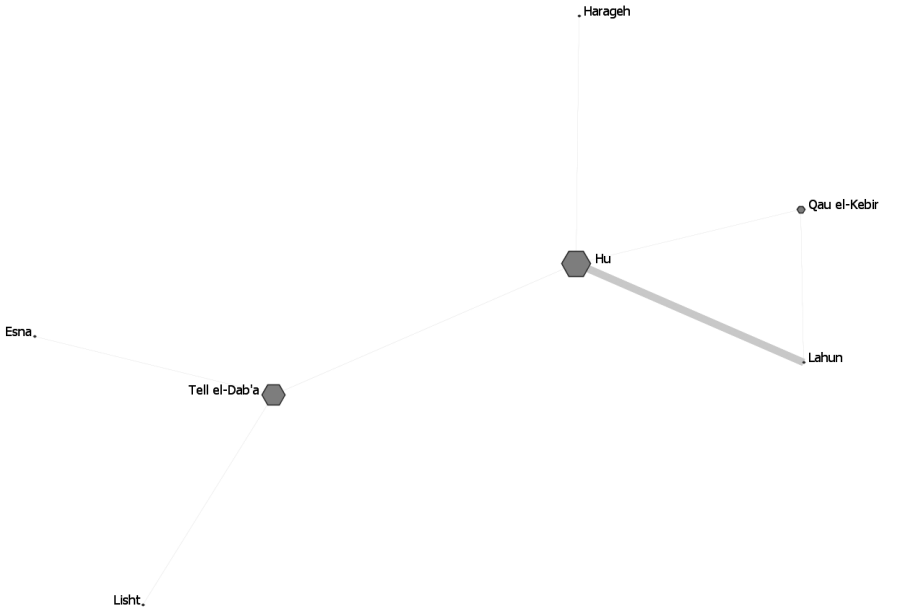


Figure 108: Betweenness centrality of the first one-mode graph of the weapons during the LMK.

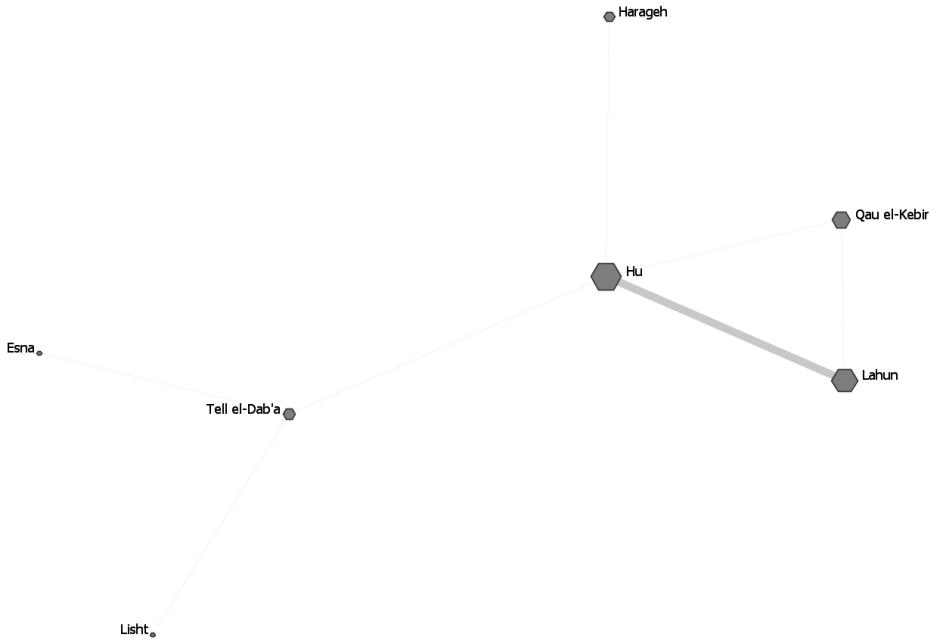


Figure 109: Eigenvector centrality of the first one-mode graph of the weapons during the LMK.

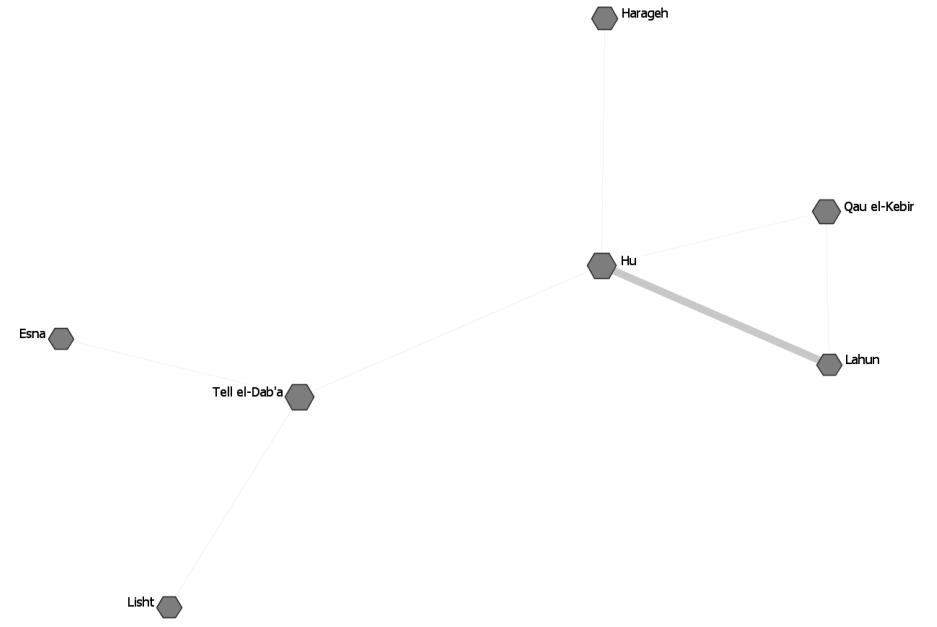


Figure 110: Closeness centrality of the first one-mode graph of the weapons during the LMK.

tip. Finally, the daggers analysed for this period include types with decorated blades or types with plain blades and concave edges (types 1, 2, 3, 6, 7, 8, and 11). All these types and their connections to the sites where they are found can be seen in Figure 106.

All the weapons are made of copper, either simple or in alloys as explained above. The only exception is a pair of silver spearheads from a tomb in Tell el-Dab'a.[64]

The first one-mode graph

The network constructed for the Late Middle Kingdom based on the types of weapons shared (Figures 107–110) show few connections, involving mostly Tell el-Dab'a in the north and Hu in the south. Besides Hu, Tell el-Dab'a is connected also to Lisht in the Memphis-Fayyum area and Esna in the south, based mostly on shared types of daggers and spearheads. Hu is connected to Qau el-Kebir in Middle Egypt and to Harageh and Lahun in the Memphis-Fayyum area, while Qau el-Kebir and Lahun also share a connection: all these connections are based on shared types of axes and knives. Lastly, Dahshur, Abydos, and Edfu do not share any connection.

The centrality measures (Tables 29, 42, 55, 68 in Appendix II) show that the closeness centrality is very similar for all the sites connected and does not demonstrate differences in how these could be reached in the network; therefore, this measure is not very informative. Concerning the other measures, Tell el-Dab'a, Lahun, and Hu score in the high or very high rank for the degree and the eigenvector centrality. Therefore, they are the better-connected sites, with the higher number of types in common with the higher number of sites, in the network of the weapons. Qau el-Kebir has a similar pattern too, but its scores are in the middle and high rank, thus its role looks less prominent in the network. Hu also has a very high betweenness centrality, which increases its importance in the network and suggests a role of intermediary for the site in the network of the weapons. Lisht, Harageh, and Esna have low or very low scores. This means that they created no, or very weak, connections in the network of the weapons, based on the available data. Finally, Dahshur, Abydos, and Edfu have very low scores for all the measures, because they are not connected to any site and are, thus, isolated in the network of the weapons.

The one-mode graph based on the Jaccard similarity

The structure of the network elaborated through the Jaccard algorithm (Figures 111–114) is, as usual, like the one of the first one-mode graph, elaborated

64 Bietak and Hein 1994, n. 19; Bietak et al. 1994; Philip 2006, 64–67; Schiestl 2009, 377–82.

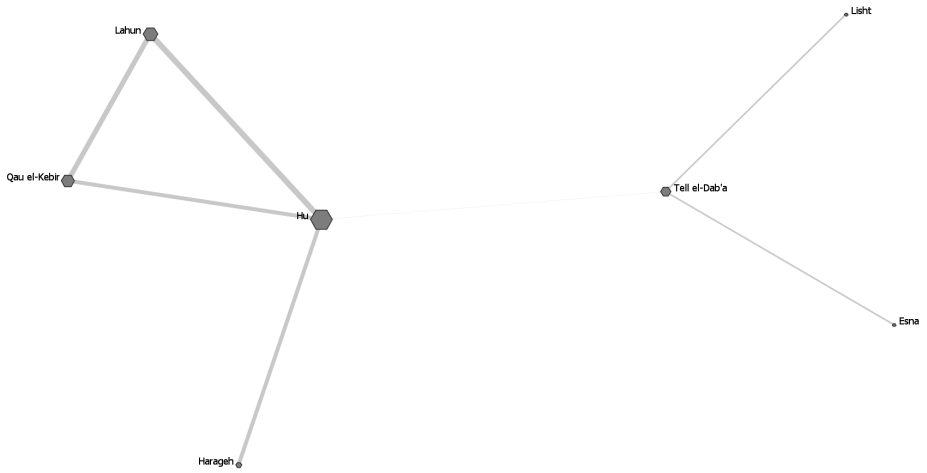


Figure 111: Degree centrality of the second one-mode graph of the weapons during the LMK.

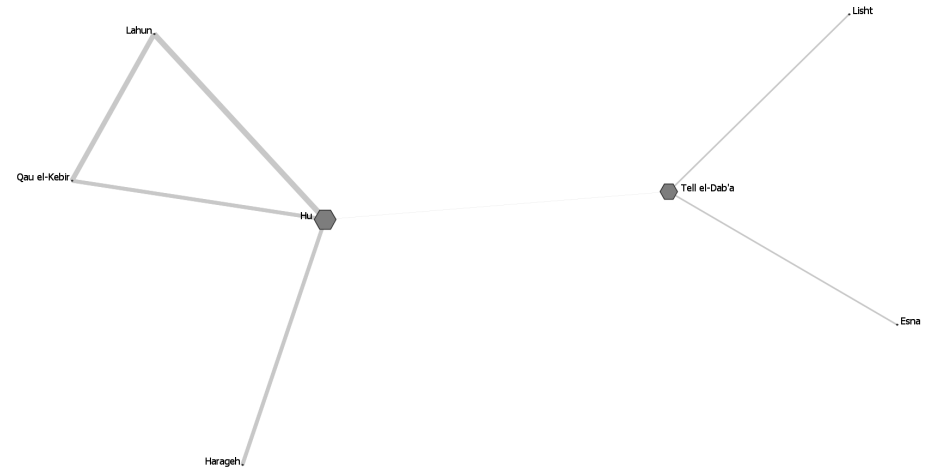


Figure 112: Betweenness centrality of the second one-mode graph of the weapons during the LMK.

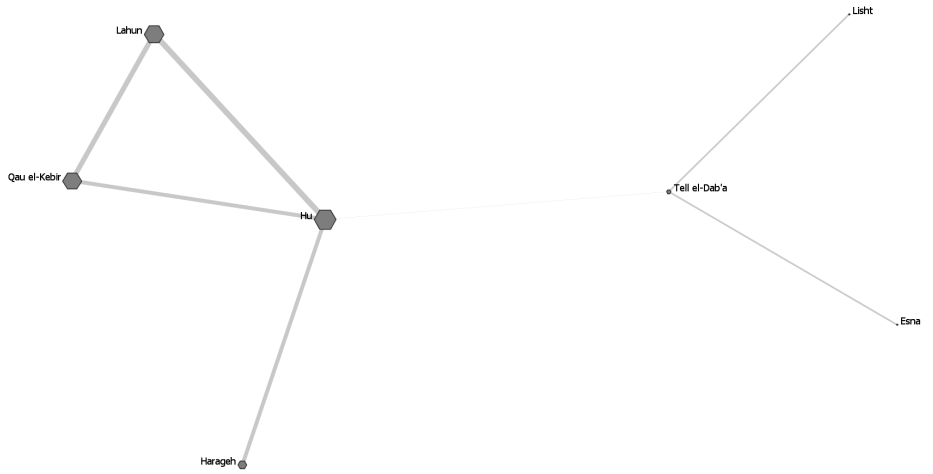


Figure 113: Eigenvector centrality of the second one-mode graph of the weapons during the LMK.

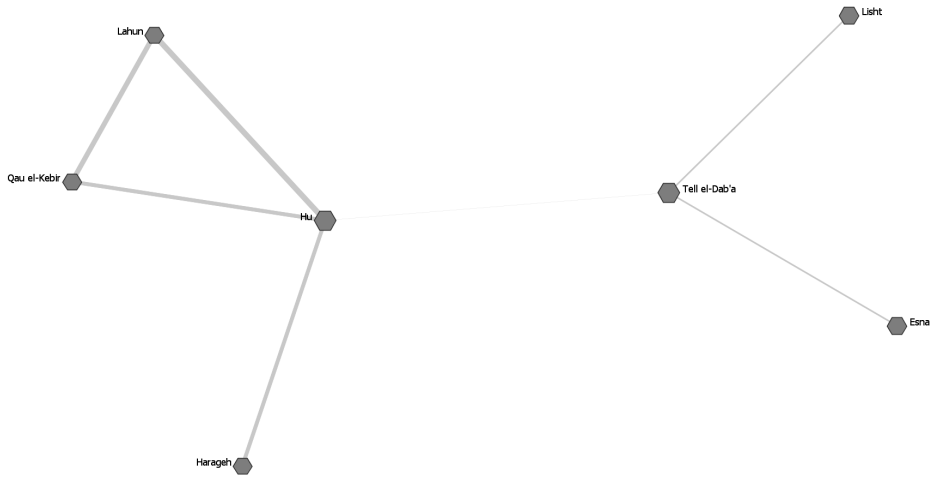


Figure 114: Closeness centrality of the second one-mode graph of the weapons during the LMK.

based on the shared types. The centrality measures (Tables 81, 94, 107, 120 in Appendix III) follow a very similar pattern to the one detected for the first one-mode graph. Therefore, the closeness centrality is still very similar for all the connected sites. Hu and Lahun are still among the better-connected sites, and Hu still has a very high betweenness, while Lisht, Esna, Dahshur, Abydos, and Edfu have low or very low scores. Only Tell el-Dab'a and Harageh show a small difference, because they respectively score lower for the degree centrality and higher for the eigenvector centrality.

The similarity of the scores of the two networks derives from the fact that there are no types of weapons really common among the sites, because even the types that create connections are found at no more than two or three sites. Hence, considering only the shared types or the full range of weapons does not create much difference. Nevertheless, there are still types found at more than one site and types unique to a site. The proportion between these two groups in the range of Tell el-Dab'a and Harageh accounts for the differences in the scores of these two sites: they appear more important when only the types in common are taken into consideration.

Summary

During the Late Middle Kingdom, the main players in the network created by the weapons are Tell el-Dab'a, Lahun, and Hu. Thus, these have the same result patterns as the starting or ending points of the lines of communication in the network, and where new trends could be spread from.[65] Moreover, Hu appears as an intermediary, thus it brings together types of objects that are found separately at different sites, like a passageway or a (re)distribution centre.[66]

Weapons have been found mostly as grave goods. Therefore, the deposition of different weapons can indicate different burial customs. This can be seen by the fact that the group including Tell el-Dab'a, Esna, and Lisht is connected through daggers and spearheads from burial contexts, while the group including Hu, Qau el-Kebir, and Lahun is connected through axes and knives from both burial and settlement contexts. Hu could be the site where the two groups came together. However, the sample examined is very small, hence the suggested theory can be further developed and adjusted when data are added.

65 Östborn and Gerding 2015.
66 Gjesfjeld 2015; Rivers, Knappett, and Evans 2013.

Figure 115: Contexts of the Early Second Intermediate Period and their weapons.

THE EARLY SECOND INTERMEDIATE PERIOD

The sites with weapons analysed for this period are only four (Table 18 in Appendix I; Appendix VII). These sites include Tell el-Dab'a,[67] Qau el-Kebir,[68] Abydos,[69] and Hu,[70] all of which are included also in the analysis of the Late Middle Kingdom. The contexts examined for this period are noticeably fewer than in the Late Middle Kingdom. Half of them has been excavated in Tell el-Dab'a,[71] which has also the larger variety of types. From Abydos,[72] four contexts have been included in the analysis, while from Qau el-Kebir[73] and Hu[74] only two contexts have been included. All these contexts come from burials, while only one context comes from a settlement, from Tell el-Dab'a.[75]

As far as the types examined for this period are concerned, these include axes only of flaring or narrow types (types Flaring 1, Narrow 1, both of which are also in the analysis of the Late Middle Kingdom, and Narrow 2). The

67 Bietak and Hein 1994, n. 209; Bietak, Mlinar, and Schwab 1991, 54–70; Forstner-Müller 2001, 217; Forstner-Müller 2008, 148–51 and 177–99; Philip 2006, 33–47 and 59–77.
68 Brunton, Gardiner, and Petrie 1930, 13 and pl. XXI.
69 Garstang, Newberry, and Milte 1901, 11–12, pls. XIV and XVI; Randall-MacIver, Mace, and Griffith 1902, 101 and pl. XLVII.
70 Bourriau 2009, 74; Petrie and Mace 1901, 45 and 52, pls. XXXII and XXXVIII; Bourriau 1981, 34.
71 Bietak and Hein 1994, n. 209; Bietak, Mlinar, and Schwab 1991, 54–70; Forstner-Müller 2001, 217; Forstner-Müller 2008, 148–51 and 177–99; Philip 2006, 33–47 and 59–77.
72 Garstang, Newberry, and Milte 1901, 11–12, pls. XIV and XVI; Randall-MacIver, Mace, and Griffith 1902, 101 and pl. XLVII.
73 Brunton, Gardiner, and Petrie 1930, 13 and pl. XXI.
74 Bourriau 1981a, 34; Petrie and Mace 1901, 45 and 52, pls. XXXII and XXXVIII.
75 Philip 2006, 75–77.

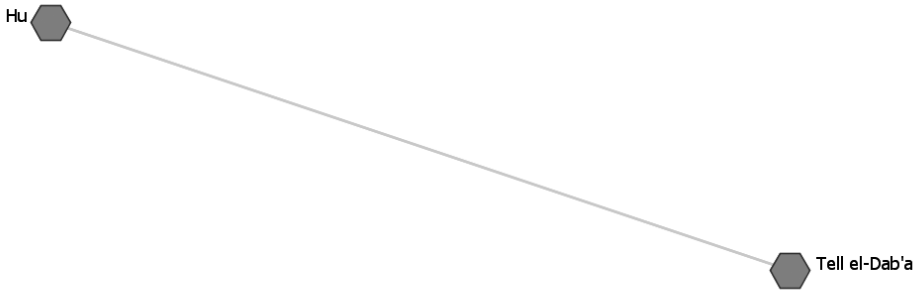


Figure 116: First one-mode graph of the weapons during the ESIP.

spearheads included in the analysis of this period are tanged or of larger size (types Tang 1 and Medium-sized 2), as well as the smaller ones, included also in the analysis of the Late Middle Kingdom (types Small 3 and Very small 2). The knives included in the analysis of this period are only of riveted types (types 1, found also in the analysis of the Late Middle Kingdom, and 3). The daggers included in the analysis of this period have a V-shaped midrib or a raised medial zone (types 2 and 3), found also in the analysis of the Late Middle Kingdom, or a convex plain blade (type 5), or are sickle-shaped (type 9).

All the weapons analysed are made of copper or copper-based alloys.

Contacts in the Early Second Intermediate Period

For the Early Second Intermediate Period (Figure 115), only Tell el-Dab'a and Hu share one type, specifically a knife of type 1 (Figure 116). Hence, only these two sites are in contact through weapons. Nevertheless, the very small size of the sample does not allow to rule the possibility that more contacts could exist based on the weapons, even between more sites of this chronological phase.

THE LATE SECOND INTERMEDIATE PERIOD

Among the sites with weapons examined for this phase, Tell el-Dab'a[76] and Qau el-Kebir,[77] were included in the analysis of both the Late Middle kingdom and the Early Second Intermediate Period, while all the other ones are found

76 Bietak and Hein 1994, ns. 207–8; Bietak, Mlinar, and Schwab 1991, 182–89, 281; Forstner-Müller 2008, 232–37, 251–82, 294–99, 377–82; Philip 2006, 35–41, 47–55, 65–82.

77 Brunton, Gardiner, and Petrie 1930, 5 and 13, pls. IX and XXI.

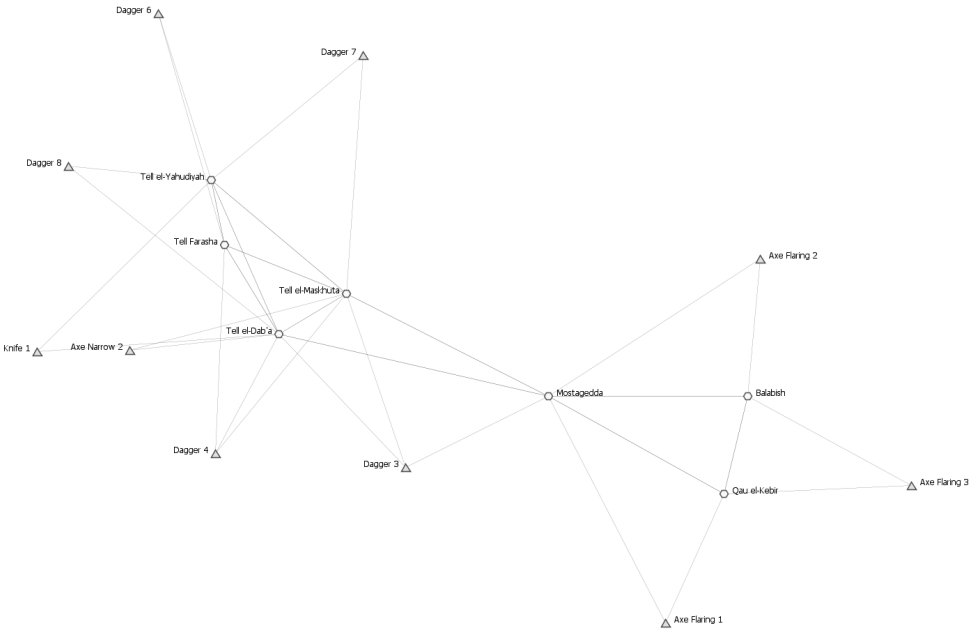


Figure 117: Contexts of the Late Second Intermediate Period and the most common types of weapons.

for the first time (Table 22 in Appendix I; Appendix VIII). These sites are Tell el-Maskhuta,[78] Tell el-Yahudiyah,[79] Tell Farasha,[80] Mostagedda,[81] Balabish,[82] and the Theban area.[83] During this period, like during both the Late Middle Kingdom and the Early Second Intermediate Period, Tell el-Dab'a is the site with half of the contexts included in the analysis and with the larger variety of types,[84] and the only site where settlement contexts have been examined.[85] The second site with the highest number of contexts and the larger variety of types of weapons analysed is Mostagedda.[86] The same variety is found also

78 Redmount 1989, 910–45.
79 Petrie and Duncan 1906, 12–13 and pls. V–VI.
80 Yacoub 1983.
81 Bietak and Hein 1994, n. 304; Brunton and Morant 1937, 127–28, pls. LXXIV and LXXVII.
82 Wainwright and Whittemore 1920, 9–13 and 32, pls. III and XIII.
83 Bietak and Hein 1994, n. 382; Bourriau 1981a, 34; Petrie and Walker 1909, 7, pls. XXII and XXV.
84 Bietak and Hein 1994, ns. 207–8; Bietak, Mlinar, and Schwab 1991, 182–89, 281; Forstner-Müller 2008, 232–37, 251–82, 294–99, 377–82; Philip 2006, 35–41, 47–55, 65–82.
85 Philip 2006, 54–55, 71–72, 78–82.
86 Bietak and Hein 1994, n. 304; Brunton and Morant 1937, 127–28, pls. LXXIV and LXXVII.

in sites of the Delta, namely Tell el-Yahudiyah,[87] Tell el-Maskhuta,[88] and Tell Farasha.[89] These three sites, as well as Qau el-Kebir,[90] Balabish,[91] and the Theban area,[92] have contributed between two and four contexts to the analysis of the weapons during this period.

Concerning the types analysed for this period, visible in Figure 117, these include axes of nearly all the flaring and narrow types, and of all the trapezoidal types (types Trapezoidal 1 and 2, Flaring 1, all three found in the analysis of both the Late Middle Kingdom and the Early Second Intermediate Period, Flaring 2, Flaring 3, found also in the analysis of the Late Middle Kingdom, Narrow 2, found also in the analysis of the Early Second Intermediate Period, and Narrow 3). The spearheads included in the analysis of this period are of all sizes (types Medium-sized 1, Small 1, and Very small 1; the latter is found also in the analysis of the Late Middle Kingdom). The types of knives included in the analysis of this period are the same as in the analysis of the Late Middle Kingdom (types 1, 2, 4, and 5). The daggers included in the analysis of this period have a raised medial zone or a plain blade, or a tapering blade with sharp medial zone (types 3, found in the analysis of both the Late Middle Kingdom and the Early Second Intermediate Period, 4, 5, found also in the analysis of the Early Second Intermediate Period, 6, 7, 8, all three found also in the analysis of the Late Middle Kingdom, and 10).

All the weapons analysed are made of copper or copper-based alloys.

The first one-mode graph

The network elaborated for the Late Second Intermediate Period based on the types of weapons shared (Figures 118–121) shows two main clusters. Of these, one involves the sites in the Eastern Delta, namely Tell el-Farasha, Tell el-Yahudiyah, Tell el-Maskhuta, and Tell el-Dab'a, with the stronger connections between the last three sites. The other one involves the sites in Middle and southern Upper Egypt, namely Mostagedda, Qau el-Kebir, and Balabish. Mostagedda is the sites that connects these two clusters, because it shares connections also with Tell el-Maskhuta and Tell el-Dab'a. Lastly, the Theban area share no connections with the other sites.

Concerning the centrality measures (Tables 37, 50, 63, 76 in Appendix II), the closeness centrality is very similar for all the sites that are connected.

87 Petrie and Duncan 1906, 12–13 and pls. V–VI.
88 Redmount 1989, 910–45.
89 Yacoub 1983.
90 Brunton, Gardiner, and Petrie 1930, 5 and 13, pls. IX and XXI.
91 Wainwright and Whittemore 1920, 9–13 and 32, pls. III and XIII.
92 Bietak and Hein 1994, n. 382; Bourriau 1981a, 34; Petrie and Walker 1909, 7, pls. XXII and XXV.

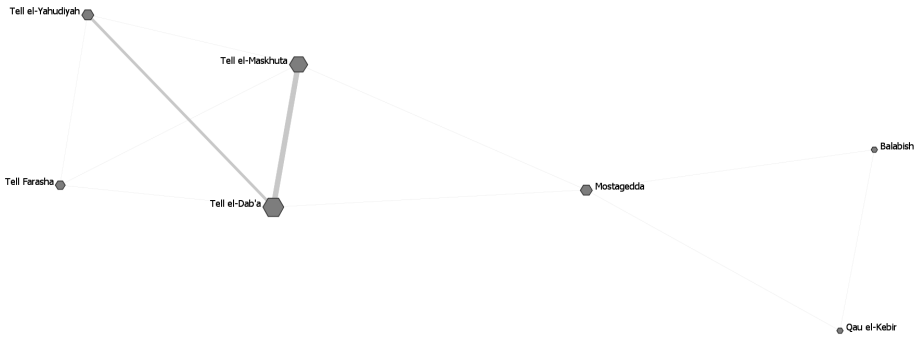


Figure 118: Degree centrality of the first one-mode graph of the weapons during the LSIP.

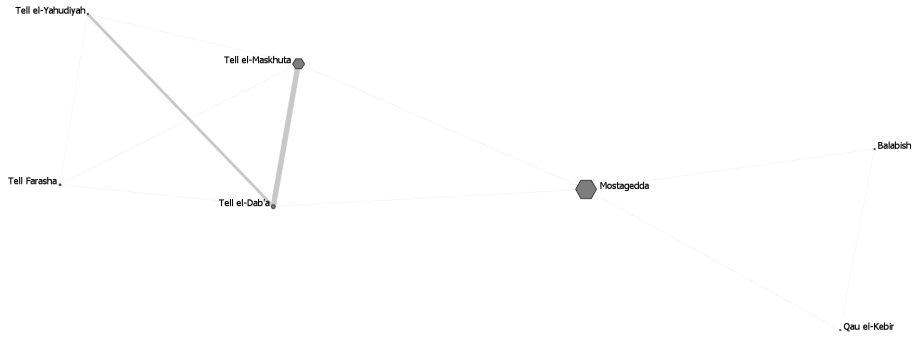


Figure 119: Betweenness centrality of the first one-mode graph of the weapons during the LSIP.

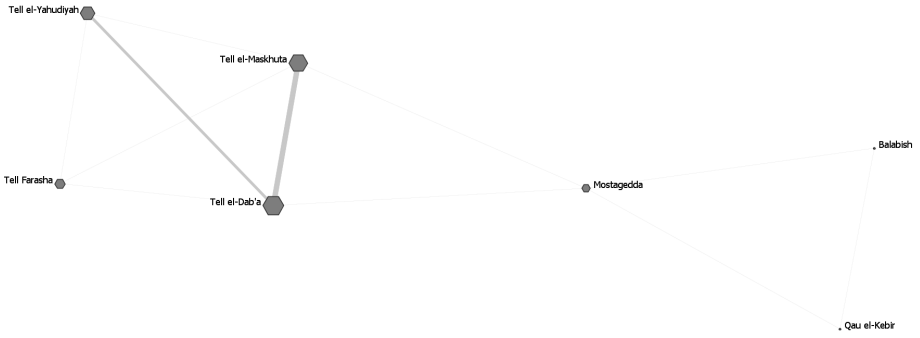


Figure 120: Eigenvector centrality of the first one-mode graph of the weapons during the LSIP.

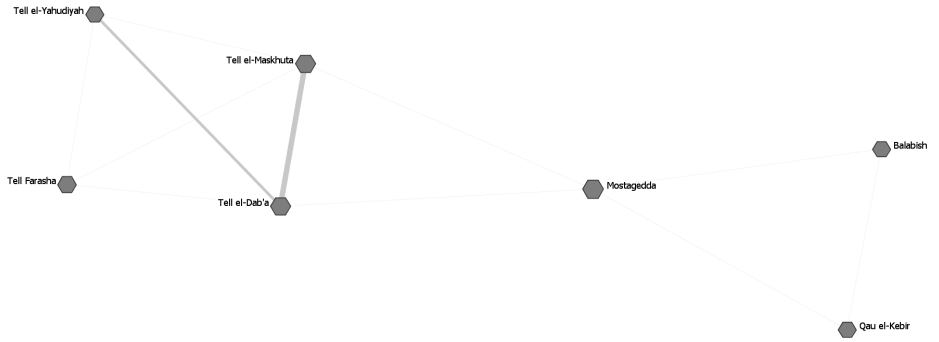


Figure 121: Closeness centrality of the first one-mode graph of the weapons during the LSIP.

Therefore, it does not indicate differences in how these could be reached in the network of the weapons. Tell el-Dab'a and Tell el-Maskhuta score in the high or very high rank for the degree and the eigenvector centrality. This means that they are the better-connected sites, with the higher number of types shared with the higher number of sites, in the network of the weapons. Also Tell el-Yahudiyah and Tell Farasha has a similar pattern, but they score mostly in the middle rank, thus they appear to have a less prominent in the network. Mostagedda is characterized by a very high betweenness centrality, which suggests its role of intermediary in the network of the weapons. This is already expected from the shape of the network because it connects the two main clusters of sites. At the same time, Qau el-Kebir and Balabish are characterized by low or very low scores. This implies that they established no, or very weak, connections in the network of the weapons, based on the available data. The Theban area has very low scores for all the measures because it is not connected to any site and is, therefore, isolated in the network of the weapons.

The one-mode graph based on the Jaccard similarity

The structure of the network detected through the Jaccard algorithm (Figures 122–125) is, as usual, like the one of the first one-mode graph, which is based on the shared types. As far as the centrality measures (Tables 89, 102, 115, 128 in Appendix III) are concerned, the closeness centrality is still very similar for all the connected sites. Moreover, for half of the examined sites the measures follow a pattern like the previous one. Hence, Tell el-Dab'a and Tell el-Maskhuta are still among the better-connected sites, while Tell Farasha scores mostly in the middle rank, and the Theban area has very low scores.

The remaining four sites appear more important than in the previous graph, because they score in the high or very high ranks for the degree and

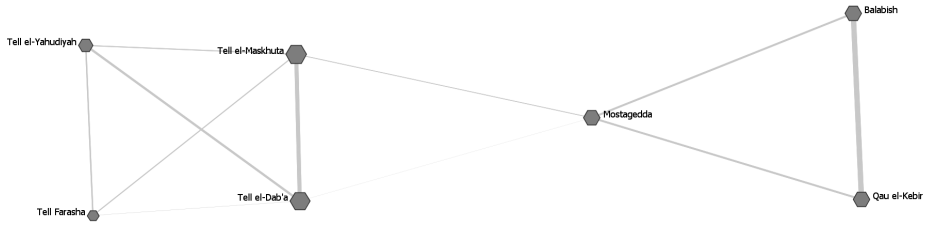


Figure 122: Degree centrality of the second one-mode graph of the weapons during the LSIP.

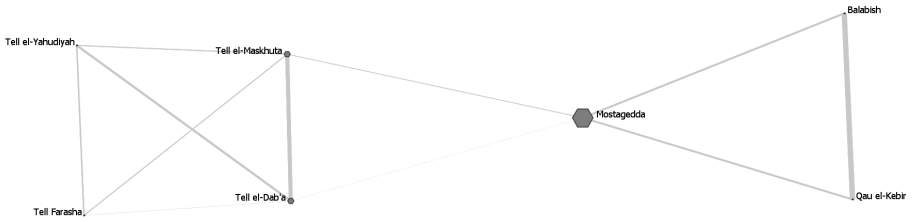


Figure 123: Betweenness centrality of the second one-mode graph of the weapons during the LSIP.

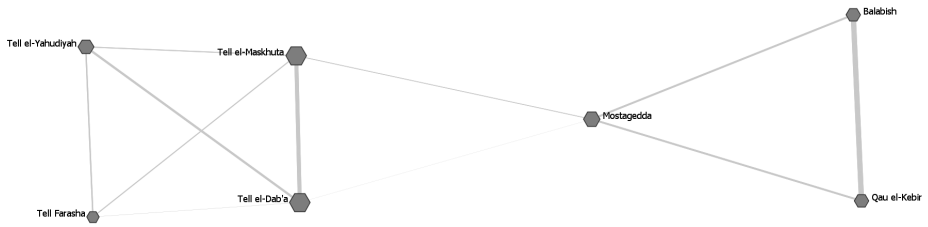


Figure 124: Eigenvector centrality of the second one-mode graph of the weapons during the LSIP.

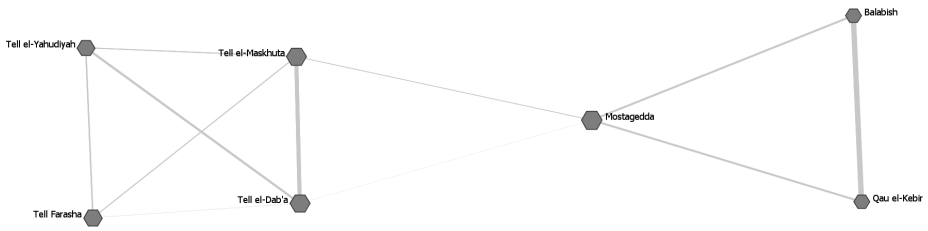


Figure 125: Closeness centrality of the second one-mode graph of the weapons during the LSIP.

the eigenvector centrality, appearing also like the better-connected sites. Mostagedda still has a very high betweenness, thus its role as an intermediary is still suggested. The differences detected derive from the fact that the mentioned sites share part of their range of types of weapons, but this part does not include the types more often shared among the sites. Hence, these sites appear less important when only the shared types are analysed.

Summary

During the Late Second Intermediate Period, the main players in the network of the weapons are Tell el-Dab'a, Tell el-Maskhuta, and, when the full range of types is analysed, Tell el-Yahudiyah, Mostagedda, Qau el-Kebir, and Balabish. Therefore, these sites were probably the starting or ending points of the lines of communication in the network, and where new trends could start.[93] Furthermore, Mostagedda look also like an intermediary, thus as a passageway or a (re)distribution centre, where the weapons could pass through or be (re) distributed from.[94]

THE CORRESPONDENCE ANALYSIS

The scores detected in the analysis of the weapons have been also examined through correspondence analysis. The aim is to study if the variety of types discovered at the sites affects the measures calculated in this chapter, thus if a correlation between the scores and the archaeological bias is present. The results (Appendix IV) for the Late Middle Kingdom and the Late Second Intermediate Period show a slight tendency of sites with higher variety of types to score higher for the degree centrality and the eigenvector centrality, but not for the betweenness centrality. This tendency increases slightly in the analysis of the Late Second Intermediate Period, probably because the number of sites and types is smaller and thus, the results are slightly more susceptible to archaeological bias. Nevertheless, the same tendency decreases when the scores of the second one-mode graph are considered. Therefore, a larger number of types does not necessarily imply higher scores, and the results are not ineluctably influenced by archaeological bias.

CONCLUDING REMARKS

During the Late Middle Kingdom, the sites of Tell el-Dab'a, Lahun, and Hu look like the main sites in the network of weapons, while Hu appears as an intermediary. There is the possibility that the group formed by Tell el-Dab'a,

93 Östborn and Gerding 2015.
94 Gjesfjeld 2015; Rivers, Knappett, and Evans 2013.

Esna, and Lisht, and the group formed by Hu, Qau el-Kebir, and Lahun reflect communities with two different social practices, while Hu could be the site where both of them came together. Nevertheless, it has been remarked that the sample examined is very small: the possibility for further discoveries and developments in the suggested theory is expected.

During the Early Second Intermediate Period, only Tell el-Dab'a and Hu are connected, through only one type of knife. At this stage no further remarks can be made, given the small sample analysed.

During the Late Second Intermediate Period, the network is divided into two clusters, of which one involving the sites in Lower Egypt, and one involving the sites in Middle Egypt. Tell el-Maskhuta, Tell el-Dab'a and, possibly, Tell el-Yahudiyah, are the main players in the first cluster, while Mostagedda, Qau el-Kebir, and Balabish are the main players in the second clusters: these were possibly the sites where the weapons sent from or destined to, and where new trends could spread from. Mostagedda was also a passageway or (re)distribution centre, thus the place where the weapons would pass by to reach other sites, or where they would be (re)distributed from. The isolation of the Theban area, which thus appears as a third, separate cluster, in the network of weapons could support what is known from previous research on burial customs: that its burial customs differed from the ones followed in the rest of Egypt.[95]

95 As shown by the pottery and burial customs discussed in: Miniaci 2011; Seiler 2005.