The Metal Assemblage from Early Iron Age IIA Khirbet Qeiyafa and Its Implications for the Inception of Iron Production and Use

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A large metal assemblage was uncovered at the late 11th–early 10th century B.C.E. *fortified town of Khirbet Qeiyafa. At this early date, iron was already used rather extensively for utilitarian purposes at the site, though bronze was not yet restricted to decorative use. The metal assemblage from Khirbet Qeiyafa, therefore, provides a rare glimpse into the transition from bronze to iron at the beginning of Iron Age II. This article presents the typology and spatial distribution of the finds, followed by a discussion of their possible cultural and social implications.*

Keywords: Khirbet Qeiyafa; Iron Age; metal objects; bronze/iron transition

In recent years, remains relating to iron production have been identified at several Iron Age IIA settlement sites in the Southern Levant. These indicate that the establishment of iron as the main metal industry was connected with the formation of new complex societies that saw the advantages of iron over bronze and invested concentrated efforts into the adoption and consolidation of ironworking (Bunimovitz and Lederman 2012; Yahalom-Mack et al. 2014, 2017; Yahalom-Mack and Eliyahu-Behar 2015).

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The large corpus of metal objects from Khirbet Qeiyafa—a well-planned and fortified settlement in the Shephelah that is radiocarbon dated to the late 11th–early 10th centuries B.C.E.—has the potential to further our understanding of the bronze/iron transition in this region, on the levels of both consumption and production.

Khirbet Qeiyafa: Location and Excavations

Khirbet Qeiyafa is located in the Upper Shephelah on one of the hills that form the northern border of the Elah Valley (**Fig. 1**). It is a relatively small site of 2.3 ha and lies about 30 km southwest of Jerusalem, to which the Elah Valley served as one of the main routes. The site is situated ca. 2 km from two prominent archaeological sites: Tell Zakariyah, identified as biblical Azekah, and Khirbet Shuweikeh, identified as biblical Socoh (Hasel, Garfinkel, and Weiss 2017). It is located 12 km east of Tell es-Safi, identified as Gath, one of the major Philistine cities.

The Khirbet Qeiyafa Archaeological Project was directed in 2007–2013 by Yosef Garfinkel (The Hebrew University of Jerusalem) and Saar Ganor (Israel Antiquities Authority), with Michael G. Hasel (Southern Adventist University) serving as associate director. About 20% of the area of the ancient site, or ca. 5,000 m^2, was exposed and six strata, from the Late Chalcolithic to the Ottoman periods, were defined. The major architectural remains date from two periods: the early Iron Age IIA, built directly on

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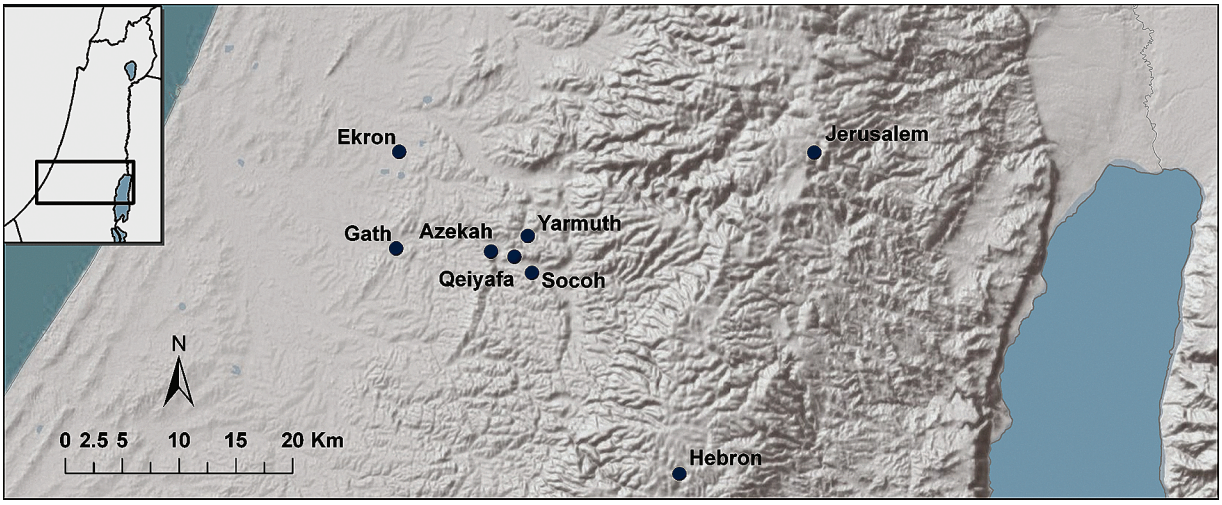

Fig. 1. The geographical setting of Khirbet Qeiyafa. (Map by H. Cohen Klonymus)

bedrock, and the Late Persian–Early Hellenistic period, in some places built over and into the Iron Age remains (Garfinkel and Ganor 2009; Garfinkel, Ganor, and Hasel 2014). Although the remains of both periods were extensively excavated and documented, the primary focus of the research design was on exposing and articulating the early Iron Age IIA remains. The remains include a massive casemate wall encircling the site (**Fig. 2**), with two four-chambered gates and open courtyards or piazzas in front of them, private dwellings that used the casemates as their back rooms and formed a peripheral belt along the city wall (in Areas B, C, and D), and two public buildings. One of the latter, situated on top of the hill in Area A, probably served as the administrative building. It is not well preserved, but a 30 m-long wall was found with two corners and remains of a row of rooms. The wall is two to three times wider than the walls of the dwellings unearthed in the domestic quarters of the site and could support a building three stories high. The second public structure is a pillared building interpreted as a storage facility, found in Area F. The excavators concluded that any prior construction that may have existed in the area was removed by the building activities of the early Iron Age IIA settlement. The Iron Age city was destroyed shortly after its construction (Garfinkel 2017).

The excavations at Khirbet Qeiyafa initiated a vibrant discussion of various aspects, such as its dating and identification, the identity of its inhabitants, and its geopolitical affiliation (Garfinkel, Kreimerman, and Zilberg 2016).

Relative Dating

The site was attributed by the excavators and other researchers to the early Iron Age IIA, mainly based on the pottery assemblage (Kang and Garfinkel 2009; Cohen-Weinberger and Panitz-Cohen 2014; Gilboa and Waiman-Barak 2014). However, Lily Singer-Avitz (2010) suggested that the pottery from the Iron Age layer of Khirbet Qeiyafa should rather be dated to the late Iron Age I. This debate has not been resolved and continues to engage scholars (Garfinkel and Kang 2011; Singer-Avitz 2012, 2016; Kang 2015). In the excavators' view, the settlement at Khirbet Qeiyafa, with its massive fortifications and city planning, is more suitably dated to the early Iron Age IIA than to the late Iron Age I.

Absolute Dating

Based on two ^{14}C dating projects using short-lived organic material from the Iron Age occupation, the foundation of the Iron Age city at Khirbet Qeiyafa has been dated to the late 11th or early 10th century B.C.E., and its destruction to the first third of the 10th century B.C.E. (Garfinkel et al. 2012; Garfinkel and Streit 2014; Garfinkel et al. 2015). An alternative model of interpreting the results of radiocarbon dating, developed as part of a regional project (Finkelstein and Piasetzky 2015), gave a very similar result for the dating of the site: the first half of the 10th century B.C.E. In a recent article, Alexander Fantalkin and Israel Finkelstein took into account only some of the samples and arrived at a somewhat later date for the destruction "not too late in the second half of the tenth century B.C.E." (2017: 54). The more perplexing chronological question, however, is not when the site was destroyed, but when it was built. It seems that the occupation was relatively short-lived, so that the inception of the well-planned and fortified city took place not too long before its destruction.

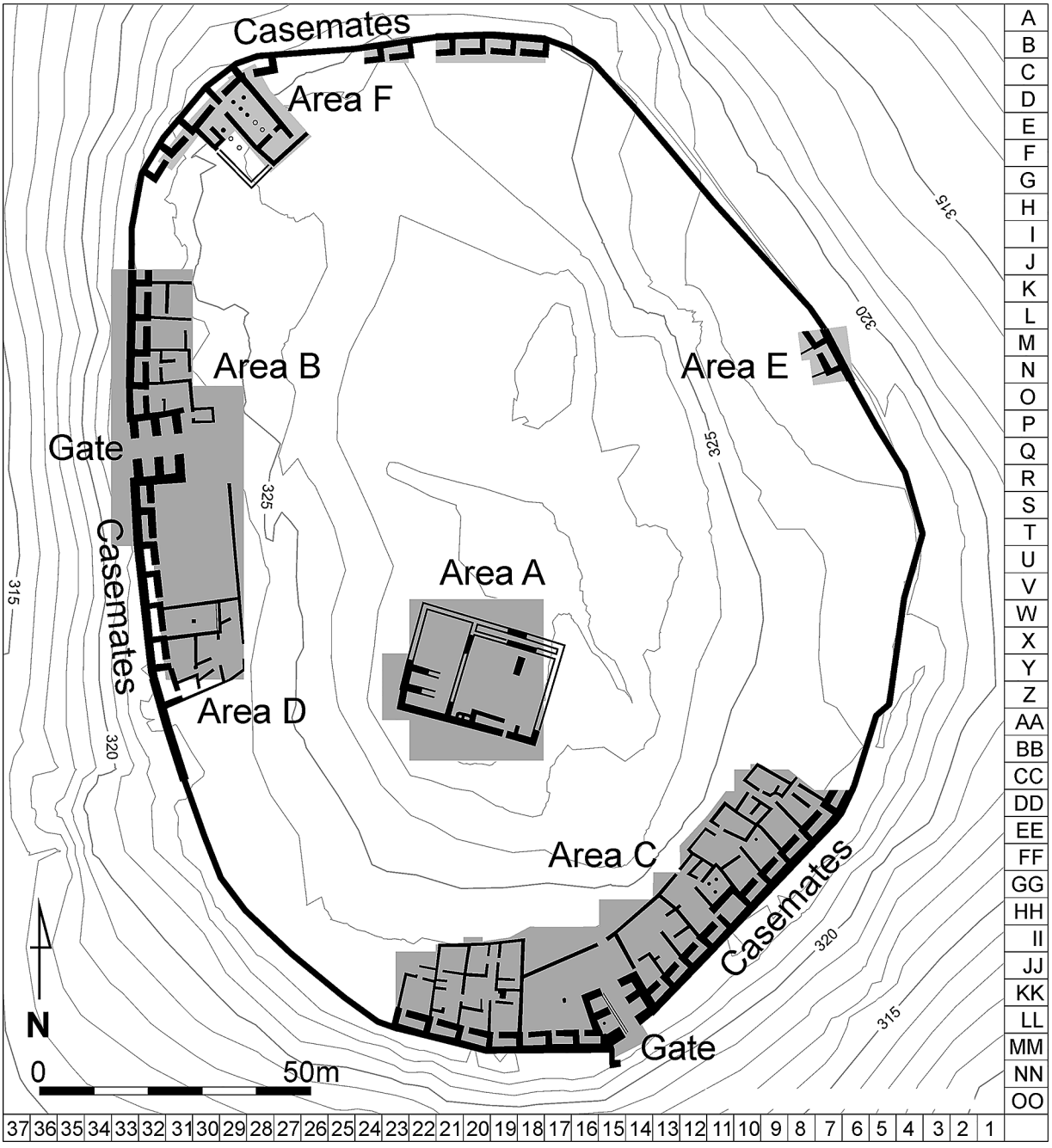

Fig. 2. The Iron Age remains at Khirbet Qeiyafa. (Plan by J. Rosenberg; courtesy of the Khirbet Qeiyafa Archaeological Project)

Ethnic and Geopolitical Affiliation

Various suggestions have been put forth regarding the identification of the builders and inhabitants of Khirbet Qeiyafa. Nadav Naʾaman (2008) initially suggested that it was a Philistine site. He later changed his mind, suggesting that the site was Canaanite (Naʾaman 2012), a view that was also expressed by Ido Koch (2012: 55–56) and Zvi Lederman and Shlomo Bunimovitz (2014: 69–70). Gunnar Lehmann and Hermann M. Niemann (2014: 86) suggested that Khirbet Qeiyafa was built by a local chiefdom in the Shephelah. Finkelstein and Fantalkin identified Iron Age Khirbet Qeiyafa with an emerging northern Israelite entity centered at Gibeon and stressed

its connections with Transjordan (Finkelstein and Fantalkin 2012; Fantalkin and Finkelstein 2017).

The excavators of the site (most recently Garfinkel, Ganor, and Hasel 2014; Garfinkel 2017; Garfinkel, Ganor, and Hasel 2018a, 2018b) identified Khirbet Qeiyafa as a Judahite settlement built on the border of the Kingdom of Judah on the basis of the similarity of its material culture, specifically the architectural plan of the casemate wall and gate, to that of the later Judahite cities. This view was supported by Aren Maeir (2017) and William G. Dever (2017: 327, 344). Amihai Mazar (2014: 361–64) recognized the continuity with the later Judahite culture while pointing out a strong Canaanite element in the material culture of the site, which suggests that the population of the city was indigenous. Avraham Faust (2014: 45–47) similarly suggested that the site was a Judahite colony with a mixed Israelite-Canaanite population. Naʾaman (2017) subsequently refrained from proposing a clear definition but negated any connection between the Iron Age settlement at the site and the later Judahite cities.

Trade Relations and Cultural Influences

In addition to the local pottery there are several imported vessels and other finds, including "Ashdod ware" from Philistia, storage jars from the southern Shephelah, basalt vessels and implements testifying to connections with the north, "black juglets" from Transjordan, Cypriot juglets, and various Egyptian imports, including scarabs, faience amulets, and small alabaster vessels (Garfinkel, Ganor, and Hasel 2014; Garfinkel 2017: 28; Garfinkel, Ganor, and Hasel 2018b).

The Assemblage of Metal Finds

Some 1,000 metal objects, dating from all of the excavated periods, were collected during the seven seasons of excavations at Khirbet Qeiyafa. Of these, 89 items were found in clean Iron Age IIA contexts.[1] About half of these are made of bronze (44 items; 49%) and the other half of iron (42 items; 47%). The remaining items are two objects made of gold and one of silver.

The Iron Age IIA metal items were classified into four major typological categories, tools/weapons, jewelry, varia, and production remains (these include two pottery crucibles), as well as 21 unidentified fragments (**Tables 1–3**). Only finds from completely reliable and clear contexts, mainly floors and destruction debris, were taken into consideration, although this decision naturally reduced the number of objects included in the assemblage. Some of the finds will be presented here in more detail than others, where this is necessary for further discussion. A full catalog of the finds, with exact measurements, lists of parallels, etc., for all objects, can be found in Rabinovich 2016.

Iron

The iron objects include blades that might be tools or weapons (twelve knives and three sickles/swords), one point, six bracelets, two rivets, a strip of unclear function, seven objects identified as production remains, including a complete iron slag cake, and ten amorphous fragments (**Table 1**).

The twelve knives (**Table 1:1–12**; **Figs. 3, 4**) and three sickles/swords (**Table 1:13–15**; **Fig. 5**) comprise one of the largest assemblages of iron blades known from this period in the Southern Levant (cf. Rabinovich 2016: 17–23).[2] The knives are heterogeneous in shape. One (**Table 1:2**; **Fig. 3:2**) is of a relatively rare, recurved type with a roughly S-shaped blade. Three knives (**Table 1:5**, **9**, **10**; **Fig. 3:5**, **4:3**, **4**) are straight-edged with a convex back, the most popular blade shape in the Southern Levant throughout the 12th–9th centuries B.C.E. (Iron Age I–IIA). A notable find is a completely preserved bimetallic knife (**Table 1:5**; **Fig. 3:5**), an iron blade with bronze rivets that fastened the handle, which was made of organic material and was therefore not preserved. Many such knives dating from the 12th century B.C.E. onward have been found in Cyprus (Waldbaum 1982). Additional examples have been found at Philistine sites and elsewhere in Canaan (Tufnell 1953: pl. 56:10; Mazar 1985: 6–8, fig. 2; Dothan 2002: 14–22, fig. 12; Ben-Shlomo 2005: 187–88, fig. 3.81:1; 2012: fig. 5.25:13; Hall, Eliyahu-Behar, and Yahalom-Mack in press), most dating from the Iron Age I.

The three sickles/swords (so designated in order to represent the differing views of the authors of this paper on their identification) are relatively long blades[3] found together as a cache in a context that is considered cultic by the excavators (Hasel 2014: 300–4). Blades 1 and 3 (respectively **Table 1:13**; **Fig. 5:1** and **Table 1:15**; **Fig. 5:3**) curve for approximately one-third of their length, starting from the hilt, and resemble typical Cypriot knives with a curved blade (cf. Type 2a in Gjerstad 1948: 213, fig. 21, which appears from the Cypro-Geometric I through

[1] About 380 objects were found in the Late Persian–Early Hellenistic layer (Stratum III, the second major settlement at Khirbet Qeiyafa after the Iron Age IIA). About 150 objects belong to Hellenistic, Roman, Byzantine, and Islamic layers. The rest were found in unstratified or unclear contexts.

[2] The only comparable assemblage is that from Megiddo Stratum VIA; see Loud 1948: pl. 181; Hall, Eliyahu-Behar, and Yahalom-Mack in press.

[3] Blade 1 (**Table 1:13**; **Fig. 5:1**) is at least 57 cm long, Blade 2 (**Table 1:14**; **Fig. 5:2**) is 36 cm long, and Blade 3 (**Table 1:15**; **Fig. 5:3**) is 33.5 cm long, measured as a straight line between the two ends of the blade.

Table 1. Iron Objects from the Iron Age IIA at Khirbet Qeiyafa

No.	*Basket*	*Locus*	*Area*	*Context*	*Class*	*Type*	*Notes*	*Figure*	*IAA number*
1	478	284/285	B	Building B2, Room A (courtyard), floor	Tool/Weapon	Knife	Nearly intact	**Fig. 3:1**	
2	4285+ 4333	2414	D	Building D100, Room A (entrance room), floor	Tool/Weapon	Knife	Complete (restored)	**Fig. 3:2**	2016–693, 2016–700
3	8937	6210	C	Building C3, Room F, destruction debris	Tool/Weapon	Knife	Partially preserved	**Fig. 3:3**	
4	9038	6211	C	Building C4, Room I (courtyard), floor	Tool/Weapon	Knife	Partially preserved	**Fig. 3:4**	2016–701
5	9075	6211	C	Building C4, Room I (courtyard), floor	Tool/Weapon	Knife	Intact; bimetallic	**Fig. 3:5**	2016–692
6	9196/1	6232	C	Building C3, Room D, drainage	Tool/Weapon	Knife	Fragment	**Fig. 3:6**	2016–699
7	10831	6724	C	Cavity in bedrock north of piazza	Tool/Weapon	Knife	Nearly intact	**Fig. 4:1**	
8	11027	6789	C	Building C10, Room G (cultic room), bench/drainage	Tool/Weapon	Knife	Nearly intact	**Fig. 4:2**	2016–694
9	11118	6789	C	Building C10, Room G (cultic room), bench/drainage	Tool/Weapon	Knife	Partially preserved	**Fig. 4:3**	2016–698
10	10260	6543	C	Building C2, Room F, floor	Tool/Weapon	Knife	Partially preserved	**Fig. 4:4**	
11	11415	6872	C	Building C10, Room E (courtyard), floor	Tool/Weapon	Knife	Fragment	**Fig. 4:5**	
12	11603	6794	C	Building C10, Room G (cultic room), floor	Tool/Weapon	Knife	Fragment		
13	3802/1	2298	D	Building D100, Room J (cultic room), destruction debris	Tool/Weapon	Sickle/ sword	Partially preserved; hooked tang	**Fig. 5:1**	2016–686
14	3802/2	2298	D	Building D100, Room J (cultic room), destruction debris	Tool/Weapon	Sickle/ sword	Partially preserved; hooked tang?	**Fig. 5:2**	2016–688
15	3802/3	2298	D	Building D100, Room J (cultic room), destruction debris	Tool/Weapon	Sickle/ sword	Almost complete (restored)	**Fig. 5:3**	2016–687
16	11352	6896	C	Building C10, Room E (courtyard), destruction debris	Tool	Point	Partially preserved		
17	9063	6211	C	Building C4, Room I (courtyard), floor	Jewelry	Bracelet	Nearly intact	**Fig. 6:3**	2016–691
18	10149	6508	C	Building C4, Room C, destruction debris	Jewelry	Bracelet	Partially preserved	**Fig. 6:4**	
19	10295	6561	C	Building C4, Room B, floor	Jewelry	Bracelet	Partially preserved	**Fig. 6:2**	2016–690
20	8824+ 8897	6160	C	Building C3, Room G (cultic room), floor	Jewelry	Bracelet	Partially preserved	**Fig. 6:1**	
21	9217	6436	C	Building C3, Room D, floor	Jewelry	Bracelet	Fragment		
22	10708	6719	C	Open area north of piazza, debris	Jewelry	Bracelet	Fragment		
23	11410	6902	C	Building C11, Room C (casemate), destruction debris	Varia	Rivet	Intact		
24	10559	6666	C	Building C4, Room F, destruction debris	Varia	Rivet	Fragment		
25	9216	6436	C	Building C3, Room D, floor	Varia	Strip	Fragments		
26	8749	6043	C	Building C1, Room D, destruction debris	Production remains	Slag cake	Intact		
27	10159	6503	C	Building C2, Room A (entrance room), floor	Production remains	Slag	Fragment		
28	9203	6232	C	Building C3, Room D, drainage	Production remains	Slag	Fragment		

Table 1. *continued*

No.	*Basket*	*Locus*	*Area*	*Context*	*Class*	*Type*	*Notes*	*Figure*	*IAA number*
29	10495	6632	C	Building C3, Room B (courtyard), destruction debris	Production remains	Prill	Intact		
30	1368	593	B	Piazza, destruction debris	Production remains	Metal remains?	Fragment		
31	8017	6000	C	Building C1, Room C (courtyard), floor	Production remains?		Fragment		
32	4676	2499	D	Building D100, Room C (corridor), floor	Production remains?		Fragment		
33	7639	5240	C	Building C1, Room C (courtyard), floor	Unidentified		Fragments		
34	10134	6513	C	Building C3, Room B (courtyard), destruction debris	Unidentified		Fragment		
35	11471	6933	C	Building C10, Room E (courtyard), floor	Unidentified		Fragments		
36	11058	6794	C	Building C10, Room G (cultic room), floor	Unidentified		Fragment		
37	11120	6794	C	Building C10, Room G (cultic room), floor	Unidentified		Fragment		
38	11681	6956	C	Building C10, Room L, destruction debris	Unidentified		Fragments		
39	11531	6941	C	Building C11, Room B (courtyard), destruction debris	Unidentified		Fragment		
40	11682	6968	C	Building C11, Room B (courtyard), floor	Unidentified		Fragment		
41	3460	2149	D	Casemate N, floor	Unidentified		Fragment		
42	8188	6068	C	Building C1, Room G, floor	Unidentified		Fragment		

the Cypro-Archaic II periods). Similarly shaped knives were found at Tel Miqne (length of the blade without the handle, 29 cm; Dothan 2002: fig. 13, dated to Iron Age IB) and in the Askar burial cave near Shechem (length, 27.5 cm; Magen and Eisenstadt 2004: pl. 18:5, dated to Iron Age IIA), although these blades were shorter than the Khirbet Qeiyafa blades. The cutting edge of Khirbet Qeiyafa blades is the concave one. Another notable feature, shared by Blades 1 and 2 (respectively **Table 1:13**; **Fig. 5:1** and **Table 1:14**; **Fig. 5:2**), is a folded tang.[4] Such tangs are known in the Iron Age Southern Levant only in sickles (e.g., Horbat Rosh Zayit: Gal and Alexandre 2000: fig. 3.118:2, late 10th–early 9th centuries B.C.E.; Lachish: Tufnell 1953: pl. 59:3, Level III; Tel Rehov: Yahalom-Mack and Rabinovich forthcoming, Stratum IV, 9th century B.C.E.; Hazor: Ben-Tor 2012: fig. 10.1:1, surface find). Earlier examples of iron sickles with folded tangs are known in Cyprus in the Late Cypriot period (Catling 1964: 83–84, fig. 8:2). Based on these considerations, two of the authors (Rabinovich and Yahalom-Mack) believe that the objects should be identified as agricultural tools. The excavators of the site, however, based on the iconographic historical sources[5] and the context of the finds, have suggested that these are the first archaeological representations of "typical Judean curved swords" (Garfinkel, Ganor, and Hasel 2012, 2018a; Hasel 2014: 300–304, 2018). The suggestions remain tentative, since contemporary and later archaeological parallels have not been found to date in the southern Levant (Rabinovich 2016: 24–28).

Six iron bracelets were found at Khirbet Qeiyafa (**Table 1:17–22**), four of them in domestic contexts (**Table 1:17–19**, **21**; **Fig. 6:2–4**), one in a cultic context (**Table 1:20**; **Fig. 6:1**), and another one in an open area (**Table 1:22**). The bracelets are noteworthy as they represent one of the earliest types of objects made of iron in

[4] Blade 3 (**Table 1:15**; **Fig. 5:3**) appears to have a straight tang, like the knives described above.

[5] Namely, the Assyrian relief depicting the siege of Lachish found in Sennacherib's palace at Nineveh (Maeir 1996: 210), the relief possibly depicting the Samaria siege found in Sargon II's palace in Khorsabad (Franklin 1994: fig. 7), and the "Governor of the City" bulla (Barkay 1994: 142).

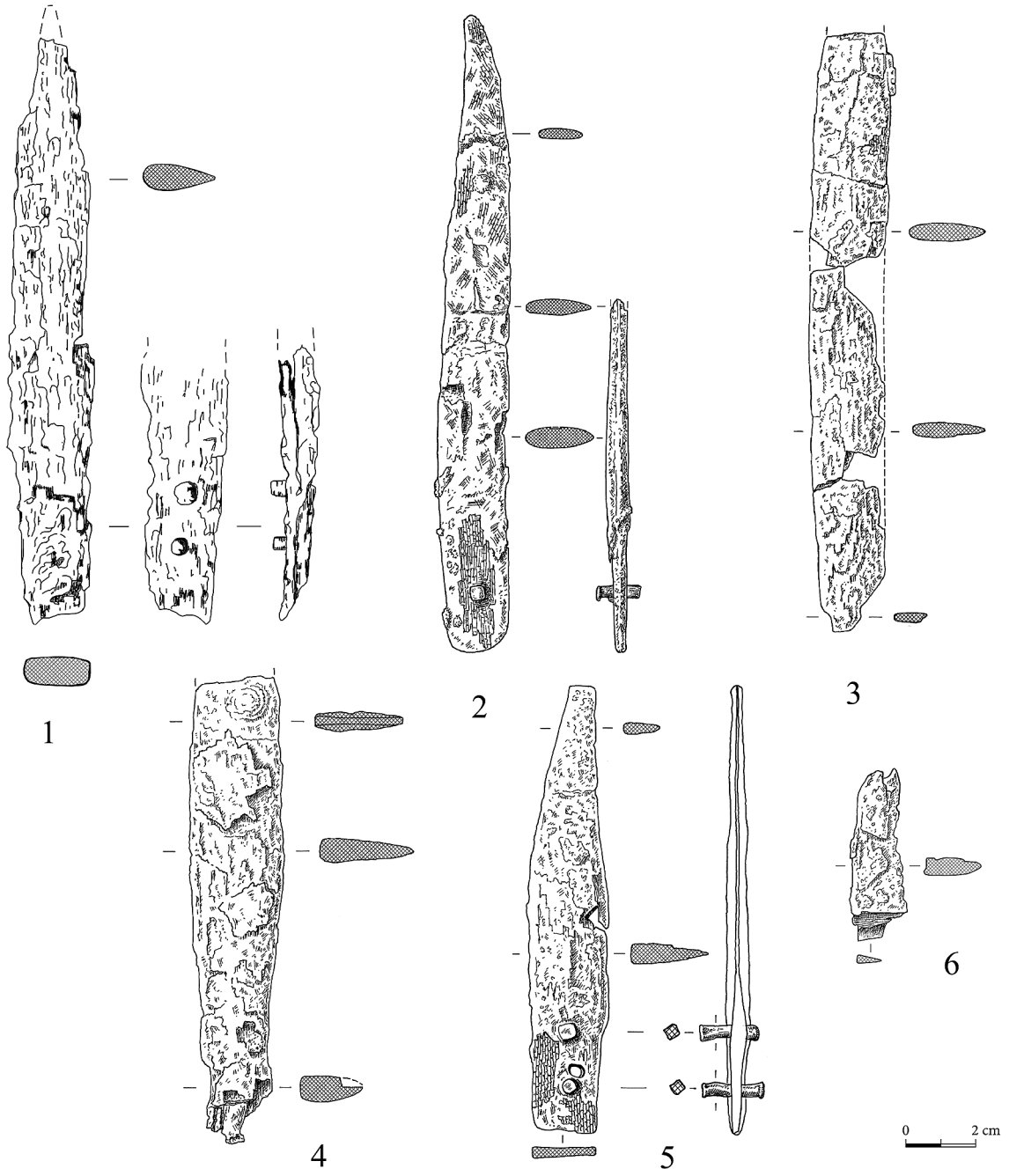

Fig. 3. Iron knives from the Iron Age IIA at Khirbet Qeiyafa. (Drawing by O. Dubovsky; courtesy of the Khirbet Qeiyafa Archaeological Project)

the Southern Levant, alongside the iron knives discussed above. Dozens of bracelets dating from the Iron Age I were found, among others, in burial caves in the Baqʿah Valley and in Pella in Jordan (Waldbaum 1999: 32–34), as well as in Israel's hill country in the Khirbet Nisya burial cave (Livingston 2002: 26, fig. 8) and the tomb at Al-Jib (Dajani 1953: pl. 10:39).[6]

[6] Iron bracelets have been found in additional Iron Age I contexts, including hoards from Megiddo (Zarzecki-Peleg 2016: 310–11, fig. 98:

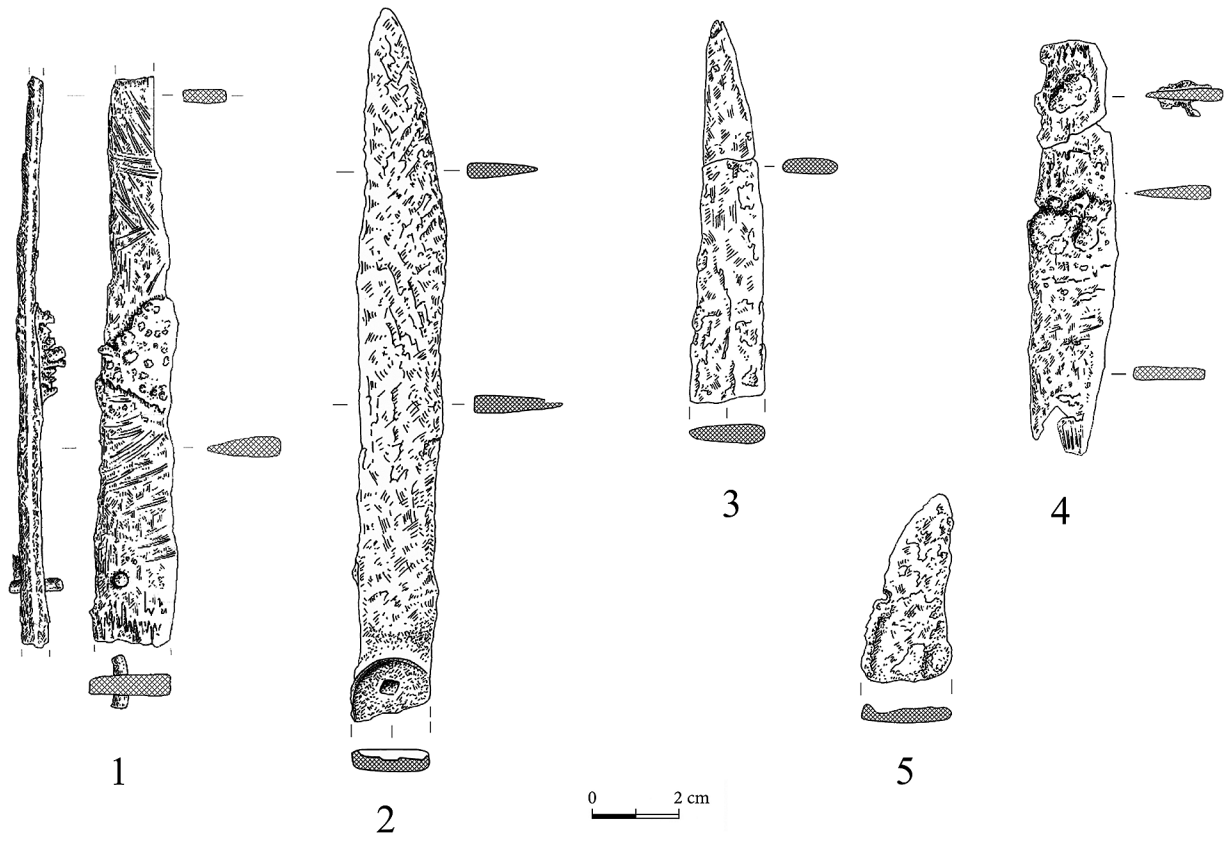

Fig. 4. Iron knives from the Iron Age IIA at Khirbet Qeiyafa. (Drawing by O. Dubovsky; courtesy of the Khirbet Qeiyafa Archaeological Project)

Most of these iron bracelets were found in tombs or in hoards. The bracelet from Tell Qasile was found on the floor of the temple, and that from the Megiddo hoard was unearthed outside a room with a possible cultic function. Notably, the only examples that originate in domestic contexts are from Beer-Sheba Strata V and II (Paz 2016: fig. 23.9:2–5), which postdate Khirbet Qeiyafa. It seems, therefore, that the iron bracelets from Khirbet Qeiyafa may be the earliest ones known to date that originate in domestic contexts.[7] This could possibly signify that iron was becoming a less prestigious material that could be worn in everyday life (cf. Tufnell 1953: 389).

The iron production remains are very meager and are not concentrated in one place. However, a hearth was discovered on an Iron Age IIA floor in the southwestern corner of the administrative building in Area A. The hearth was lined with small stones and contained magnetic, very dark (almost black) sediment with numerous metal chips. This suggests that iron production, or forging activities at the very least, occurred on-site, and indicates a degree of technological knowledge of iron production, alongside the obvious iron consumption at the site.

Bronze

The bronze finds include weapons and tools (a javelin-head, two daggers, a fragment that is possibly of a blade, an axe, two points, two chisels, and an additional chisel/point), jewelry items (two earrings, five rings, a bracelet, and a fibula), a bowl, four sheets, three needles, and a rivet, as well as five objects identified as production remains and eleven amorphous fragments (**Table 2**). Two pottery crucibles, one of them with adhering bronze slag, will also be discussed here.

The bronze javelin-head (**Table 2:1**; **Fig. 7:5**) is of a type that developed during the Late Bronze Age and was most widespread in the 14th century B.C.E. The type grad-

2–5; Hall, Eliyahu-Behar, and Yahalom-Mack in press), the "Philistine" tomb at Tell ʿEitun (Edelstein and Aurant 1992: fig. 13:18–22), and Stratum X at Tell Qasile (Mazar 1985: fig. 2:2). Iron Age II contexts with iron bracelets include Lachish Tomb 1002 (Tufnell 1953: 230, pl. 57:19), Tel Halif Tomb 2 (Borowski 2013: pl. 3:21), Tell en-Nasbeh Tomb 32 (McCown 1947: 270), Megiddo Stratum VA "south of Locus 2081," where Locus 2081 is a room with numerous cult objects (Loud 1948: 45, pl. 226:7), Hazor Stratum VA–VIII "between the city wall and revetment" (Yadin et al. 1961: pl. 221:21), and Beer-Sheba Strata V and II domestic quarters (Paz 2016: fig. 23.9:2–5).

[7] An iron bracelet (Reg. No. 114235) was found at Iron Age IB Rehov (Stratum VII) in a context that might be domestic but is not entirely clear (Yahalom-Mack and Rabinovich forthcoming).

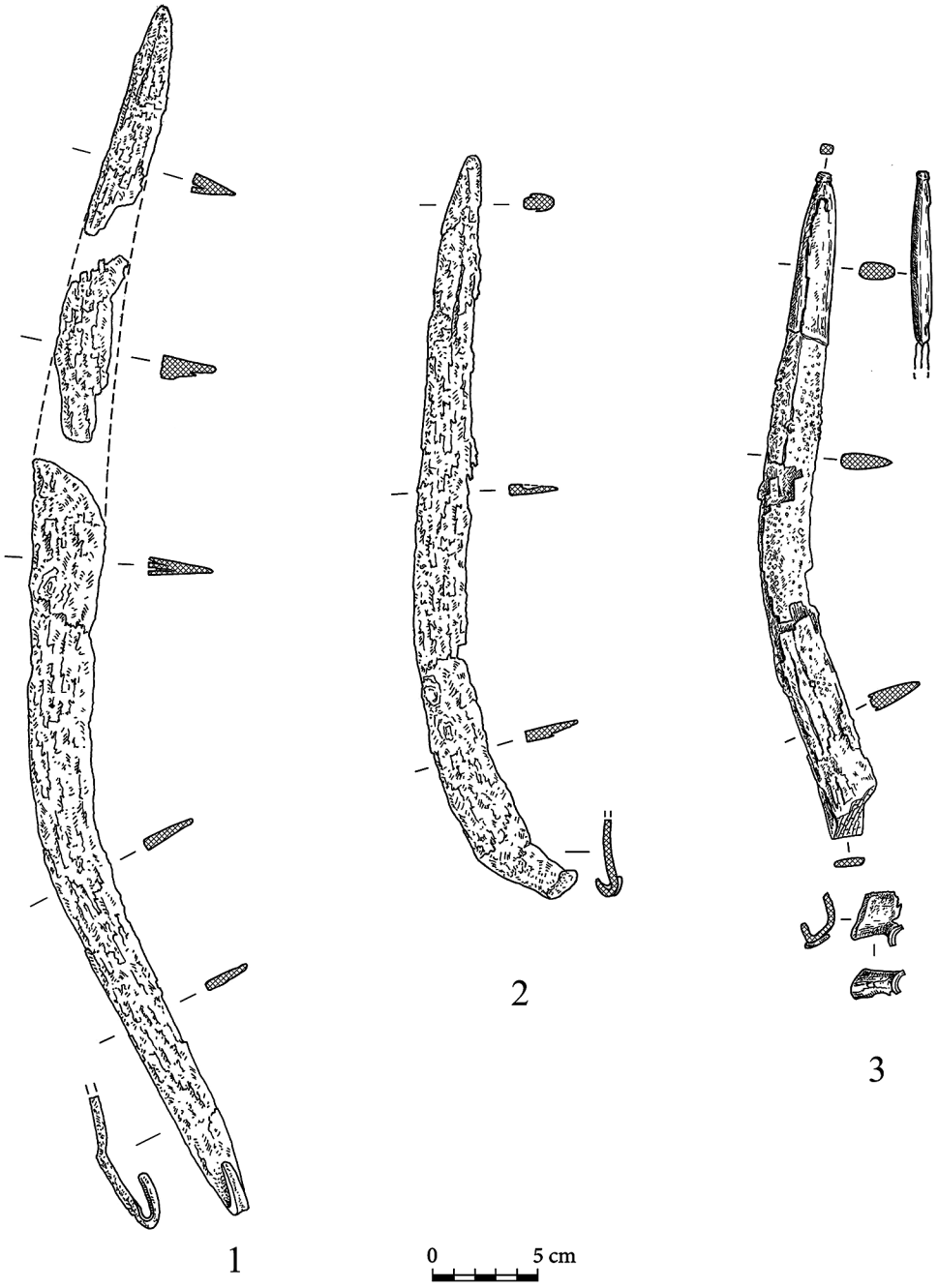

Fig. 5. Iron sickles/swords from the Iron Age IIA at Khirbet Qeiyafa. (Drawing by O. Dubovsky; courtesy of the Khirbet Qeiyafa Archaeological Project)

ually declined in popularity but was still used throughout Iron Age I and during Iron Age IIA.[8] Noteworthy is the group of arrowheads and javelin-heads of this type from El Khadr (some of them inscribed), dated epigraphically to the 11th century B.C.E. (Cross and Milik 1956; Cross 1992: 25*).

Two blunt-pointed bronze daggers (**Table 2:2**, **3**; **Fig. 7:1**, **2**), of which only the tips were preserved, probably

[8] Examples from the 14th century B.C.E.: Tel Batash (Yahalom-Mack 2006: 198, photo 85), Tel Dan (Ben-Dov 2002: 124, figs. 2.91, 2.93) and the Persian Garden in Akko (Ben-Arieh and Edelstein 1977: figs. 21, 22). Examples from the Iron Age I and Iron Age IIA: Hazor (Yadin et al. 1961: pls. 204:17, 18, 205:10; Ben-Tor 2012: fig. 10.7:7), Beth-Shean (Yahalom-Mack 2009: 566–68, figs. 10.1:1, 2, 10.2:1, 3–8), Aphek (Yahalom-Mack and Shalev 2009: 425–27, fig. 13.1:12–15), and Tel Rehov (Yahalom-Mack and Rabinovich forthcoming: fig. 40.3:2).

Table 2. Bronze Objects from the Iron Age IIA at Khirbet Qeiyafa

No.	*Basket*	*Locus*	*Area*	*Context*	*Class*	*Type*	*Notes*	*Figure*	*IAA number*
1	9196/2	6232	C	Building C3, Room D, drainage	Weapon	Javelin-head	Intact	**Fig. 7:5**	2016–699
2	3923	2298	D	Building D100, Room J (cultic room), destruction debris	Weapon	Dagger/ Spearhead	Fragment	**Fig. 7:1**	
3	11041	6793	C	Building C10, Room D, destruction debris	Weapon	Dagger/ Spearhead	Fragment	**Fig. 7:2**	
4	10067	6480	C	Building C4, Room B, debris	Tool/Weapon	Blade?	Fragment	**Fig. 7:3**	2016–746
5	8944	6211	C	Building C4, Room I (courtyard), floor	Tool	Axe	Intact	**Fig. 8**	2016–685
6	10760	6723	C	Cavity in bedrock north of piazza	Tool	Point	Intact	**Fig. 7:4**	
7	819	428	B	Building B2, Room D, destruction debris	Tool	Point	Fragment		
8	11478	6933	C	Building C10, Room E (courtyard), floor	Tool	Chisel	Intact	**Fig. 7:6**	
9	11034/1	6769	C	Building C10, Room G (cultic room), destruction debris	Tool	Chisel	Fragment		
10	528	284	B	Building B2, Room A (courtyard), floor	Tool	Chisel/ point?	Fragment		
11	4433	2452	D	Building D100, Room A (entrance room), destruction debris	Jewelry	Earring	Intact	**Fig. 9:1**	2016–702
12	9015	6227	C	Building C3, Room D, floor	Jewelry	Earring	Intact	**Fig. 9:2**	2016–697
13	1382	611	B	Building B1, Room A (entrance room), floor	Jewelry	Ring	Nearly intact	**Fig. 9:3**	2016–703
14	11086	6793	C	Building C10, Room D, destruction debris	Jewelry	Ring	Intact	**Fig. 9:4**	
15	11107	6793	C	Building C10, Room D, destruction debris	Jewelry	Ring	Nearly intact	**Fig. 9:5**	
16	11108	6759	C	Building C10, Room I, floor	Jewelry	Ring	Nearly intact	**Fig. 9:6**	
17	11034/2	6769	C	Building C10, Room G (cultic room), destruction debris	Jewelry	Ring	Fragment		
18	11046	6793	C	Building C10, Room D, destruction debris	Jewelry	Bracelet	Intact	**Fig. 9:7**	2016–695
19	10205	6528	C	Building C4, Room C, floor	Jewelry	Fibula	Intact	**Fig. 9:8**	2016–689
20	10850/2	6745	C	Piazza, cavity in bedrock	Vessel	Bowl	Partially preserved	**Fig. 10**	
21	1164	535	B	Building B3, Room B (courtyard), floor	Varia	Sheet	Fragment	**Fig. 11:1**	
22	7516	5177	C	Building C1, Room D, construction fill below floor	Varia	Sheet	Fragment	**Fig. 11:2**	
23	8777	6160	C	Building C3, Room G (cultic room), floor	Varia	Sheet	Fragment	**Fig. 11:3**	
24	8009	6000	C	Building C1, Room C (courtyard), floor	Varia	Sheet	Fragment; folded	**Fig. 11:4**	
25	858	267	A	Administrative building, debris	Varia	Needle	Intact		
26	10942	6769	C	Building C10, Room G (cultic room), destruction debris	Varia	Needle	Nearly intact		
27	11033	6769	C	Building C10, Room G (cultic room), destruction debris	Varia	Needle	Nearly intact		
28	7650	5240	C	Building C1, Room C (courtyard), floor	Varia	Rivet	Intact		
29	1369	605	B	Piazza, debris	Production remains	Prill	Fragment		
30	1376	593	B	Piazza, debris	Production remains	Slag	Fragment		
31	1130	441	B	Building B3, Room B (courtyard), destruction debris	Production remains		Fragment		
32	8663	6152	C	Building C3, Room D, destruction debris	Production remains		Fragment		

No.	*Basket*	*Locus*	*Area*	*Context*	*Class*	*Type*	*Notes*	*Figure*	*IAA number*
33	8969	6186	C	Building C4, Room H (courtyard), ash	Production remains?	Prill	Fragment		
34	11040	6793	C	Building C10, Room D, destruction debris	Unidentified		Fragments		
35	7468	5128	C	Building C1, Room A (entrance room), floor	Unidentified		Fragment		
36	7520	5177	C	Building C1, Room D, construction fill below floor	Unidentified		Fragment		
37	8896	6160	C	Building C3, Room G (cultic room), floor	Unidentified		Fragment		
38	10362	6551	C	Building C4, Room H (courtyard), floor	Unidentified		Fragments		
39	10913	6764	C	Building C4, Room J (casemate), floor	Unidentified		Fragments		
40	11331	6872	C	Building C10, Room E (courtyard), floor	Unidentified		Fragment		
41	4545	2481	D	Building D100, destruction debris	Unidentified		Fragment		
42	1305	445	A	Administrative building, floor	Unidentified		Fragment		
43	10108	6507	C	Building C4, Room B, destruction debris	Unidentified		Fragment		
44	485	81	F	Debris	Unidentified		Fragment		

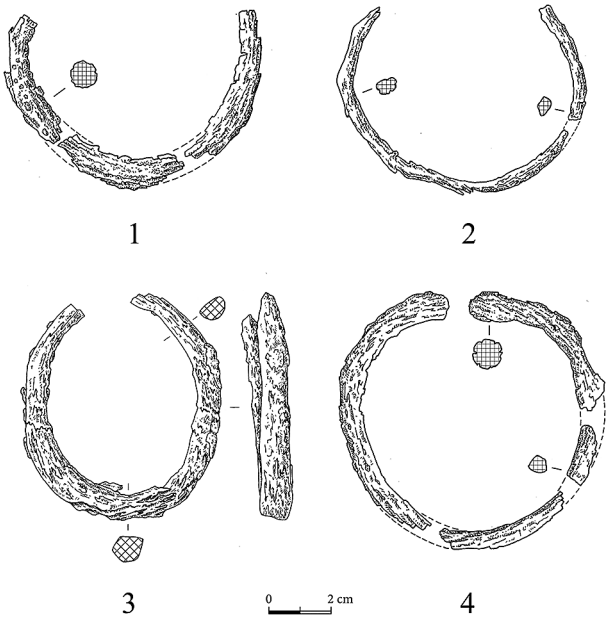

Fig. 6. Iron bracelets from the Iron Age IIA at Khirbet Qeiyafa. (Drawing by O. Dubovsky; courtesy of the Khirbet Qeiyafa Archaeological Project)

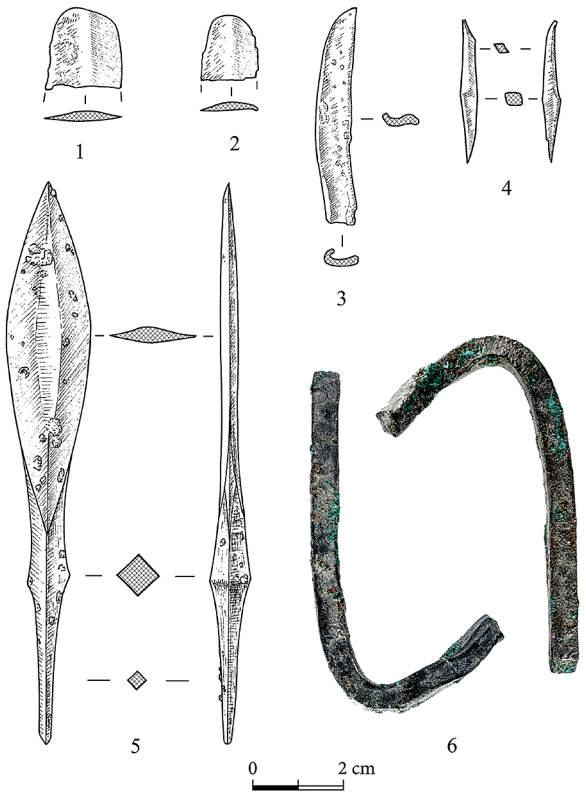

Fig. 7. Bronze tools and weapons from the Iron Age IIA at Khirbet Qeiyafa. (Drawings by O. Dubovsky, photo by T. Rogovski; courtesy of the Khirbet Qeiyafa Archaeological Project)

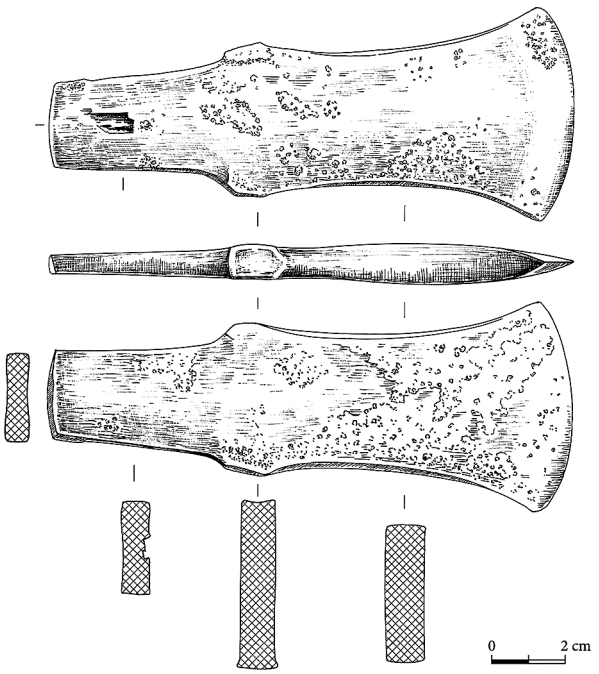

Fig. 8. Bronze axe from the Iron Age IIA at Khirbet Qeiyafa. (Drawing by O. Dubovsky; courtesy of the Khirbet Qeiyafa Archaeological Project)

belong to the type defined by Sariel Shalev (2004: 7–9) as "Narrow Tanged Dagger" (Type 2). These objects might equally well be spearheads (Yahalom-Mack 2006: 199). They were fairly widespread in the Late Bronze Age and Iron Age I and continued to appear sporadically during the Iron Age II.[9]

The bronze lugged axe (**Table 2:5**; **Fig. 8**), Eli Miron's Type IV (1992: 43–44), which possibly first appeared in the northern parts of Canaan at the end of LB II, was widely used throughout the region during Iron Age I. This type also appears in several Iron Age IIA contexts.[10]

[9] Iron Age I examples: Tel Batash (Yahalom-Mack 2006: 199–200, nos. 20, 21, photo 87, pls. 48:1, 57:12), Tel Rehov (Yahalom-Mack and Rabinovich forthcoming: fig. 40.1:1), Lachish (Ussishkin 2004: 1584, figs. 23.57:6, 23.58:5), Megiddo (Loud 1948: pls. 181:48, 56, 62; Sass and Cinamon 2006: fig. 18.25:573), Hazor (Yadin et al. 1961: pls. 205:11, 347:2), and the fortress at Gilo near Jerusalem (Mazar 1990: fig. 4). Iron Age II examples: Tel Esdar (Kochavi 1966: 19–23, fig. 6:6, pl. 6:3) and Tell Abu Hawam (Hamilton 1935: 26, nos. 121, 126).

[10] Iron Age I examples: Tel Masos (Crüsemann 1983: pl. 173:11), ʿAfula (Dothan 1955: fig. 18:22), Hazor (Yadin et al. 1961: pl. 205:3), Megiddo (Loud 1948: pl. 183:16, 17), and Tel Dan (Ilan forthcoming: fig. 11.4:2). Iron Age IIA examples, some from less secure contexts than others: ʿAi (Marquet-Krause 1949: 42, pl. 64:114), Tell Qasile from B. Mazar's excavations, possibly Stratum X (Miron 1992: 197), and Tell Abu Hawam Stratum III (Hamilton 1935: 26, no. 130), re-dated to the Iron Age IIA–B (Balensi, Herrera, and Artzy 1993: 9–10).

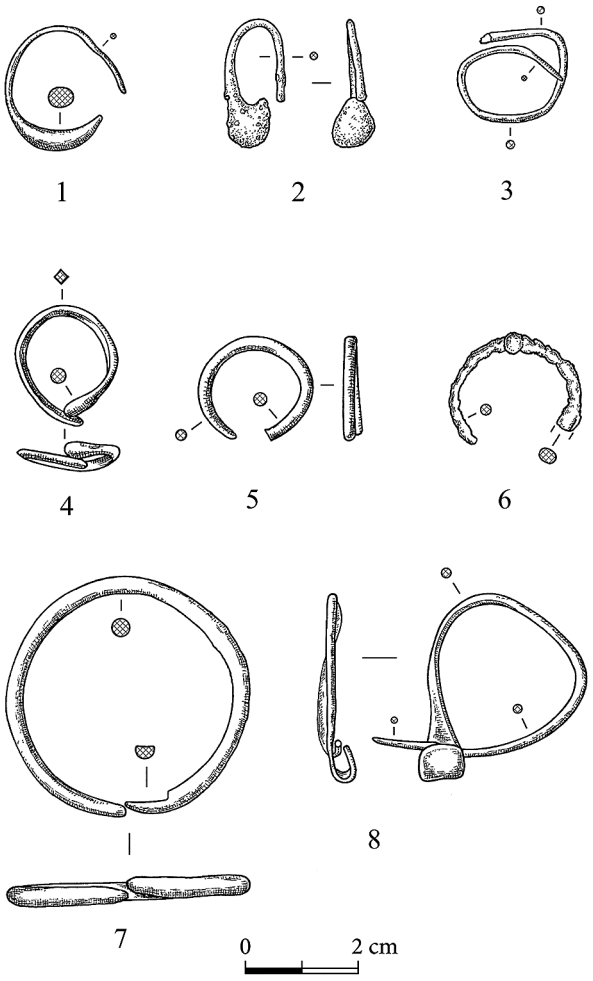

Fig. 9. Bronze jewelry from the Iron Age IIA at Khirbet Qeiyafa. (Drawing by O. Dubovsky; courtesy of the Khirbet Qeiyafa Archaeological Project)

These four bronze objects (the javelin-head, the daggers/spearheads, and the axe) are typical examples of traditional Canaanite bronzework and link Khirbet Qeiyafa to the material culture of the second millennium B.C.E., although, as mentioned above, all the types continue to appear sporadically through the Iron Age II.

The jewelry items generally represent plain undecorated types that were widespread in the region for many centuries: lunar earrings (**Table 2:11, 12**; **Fig. 9:1, 2**), simple open rings, some of which could have been used as earrings (**Table 2:13–17**; **Fig. 9:3–6**), and an open bracelet (**Table 2:18**; **Fig. 9:7**). However, the fibula (**Table 2:19**; **Fig. 9:8**) deserves special attention, since it is of a unique shape to which no parallels were found.

All known types of fibulae in the Mediterranean are composed of a bow (straight, semicircular, or knee-shaped) and a pin, connected by a spring or a rivet. The

Fig. 10. Bronze bowl from the Iron Age IIA at Khirbet Qeiyafa. (Photo by Tal Rogovski; courtesy of the Khirbet Qeiyafa Archaeological Project)

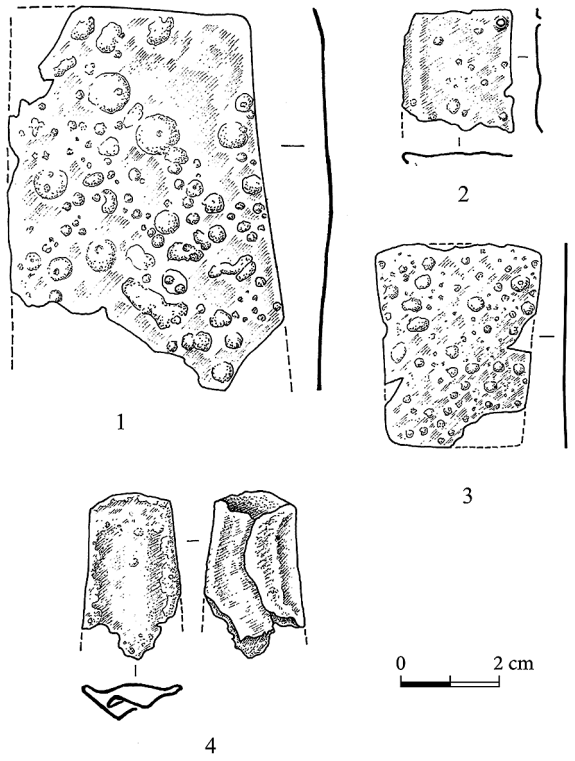

Fig. 11. Bronze sheets from the Iron Age IIA at Khirbet Qeiyafa. (Drawing by O. Dubovsky; courtesy of the Khirbet Qeiyafa Archaeological Project)

earlier examples were cast as a single object and the later ones as two separate parts (Pedde 2000).[11] The fibula from Khirbet Qeiyafa has a roughly triangular shape lacking a pronounced bow that is clearly separated from the pin. It is essentially a pin bent in such a way that the two ends meet, and the pointed end is inserted into the catch-plate. It is reminiscent of several *ad hoc* fibulae made by bending a pin or needle (for example, Macalister 1912: pl. 134:13; Åström 1967: fig. 63:9). However, the Khirbet Qeiyafa fibula is unique in the sense that it was designed and cast in the shape of a bent pin from the start. We suggest here that this object should be regarded as an invention by a local smith who had heard of closed garment fasteners[12] or had arrived at that idea himself. From the technological point of view, it represents a "missing link" between the proto-fibulae that were improvised implements made from pins or needles and the fibulae proper that were purposefully created as closed garment fasteners.

The bronze bowl (**Table 2:20**; **Fig. 10**) is of a type that was popular at the end of the Late Bronze Age and in the early Iron Age I in the Near East and in Cyprus, as shown by Gershuny (1985: 2–4), and continued to appear in the Iron Age II.

Of the four bronze sheets (**Table 2:21–24**), at least one (**Table 2:21**; **Fig. 11:1**) has a trapezoidal shape and belongs to a known type of objects that are sometimes interpreted as razors (Yahalom-Mack 2009: 127). They were popular in the Iron Age I and continued in use in the Iron Age II.

Two crucibles (**Table 3:4**, **5**; **Fig. 12**), one of which contained a layer of adhering bronze slag (**Table 3:5**; **Fig. 12:2a–c**), were found at Khirbet Qeiyafa. The crucibles are shaped like flower-pots, with a thick base and flaring walls. Crucibles of this type are widespread in the Iron Age I at sites such as Megiddo, Tell Qasile, Aphek, and Tel Dan (Yahalom-Mack 2009: 80–81, fig. 2.32), but also appear at Iron Age II Tell es-Safi and Hazor (Yahalom-Mack et al. 2017: 61).

Contexts and Spatial Distribution

The large majority of the metal finds were found in domestic contexts, on the floors and in the destruction debris of rooms that were identified as private dwellings.

[11] About 50 fibulae of such types (mostly with a knee-shaped bow) were uncovered in the Late Persian–Early Hellenistic layer of Khirbet Qeiyafa.

[12] To the best of our knowledge, only a few fibulae predating Iron Age IIA are known in Israel: Tell Abu Hawam Stratum IV (Hamilton 1935: pl. 33:192), Akhziv (Prausnitz 1997: 22), Megiddo Stratum VI, VIA (Loud 1948: pl. 223:76, 77), and Tell el-Farʿah (N) Stratum VIIb (Chambon 1984: pl. 72:26, 32, 37); notably all of them are from northern sites.

Table 3. Other Metal Objects and Crucibles from the Iron Age IIA at Khirbet Qeiyafa

No.	*Basket*	*Locus*	*Area*	*Context*	*Material*	*Class*	*Type*	*Notes*	*Figure*	*IAA number*
1	9226	6175	C	Building C4, Room H (courtyard), floor	Gold	Varia	Leaf	Fragment		
2	9080	6175	C	Building C4, Room H (courtyard), floor	Gold	Varia	Leaf	Fragment		2016–696
3	3178	2040	D	Casemate N, floor	Silver	Varia	Fragment	Fragment	Farhi 2016: Pl. 7:619	
4	626	206	A	Debris	Pottery	Production remains	Crucible	Fragment	**Fig. 12:1**	2016–684
5	8469	6128	C	Building C4, Room H (courtyard), floor	Pottery	Production remains	Crucible	Fragment; with remains of bronze slag	**Fig. 12:2a–c**	2016–735

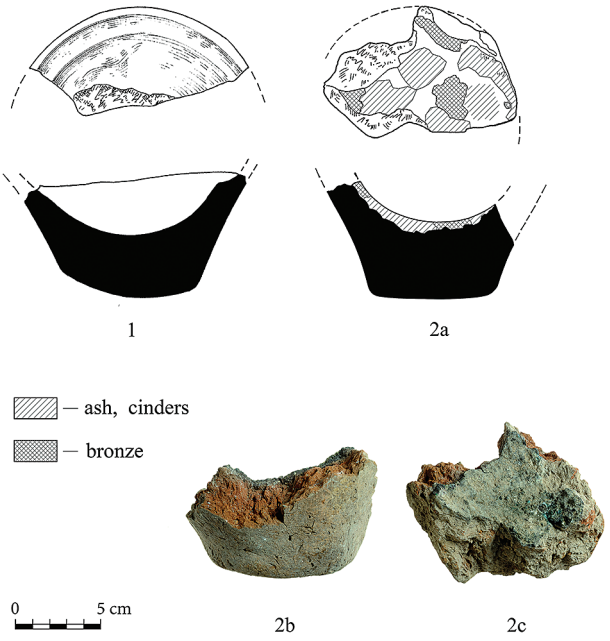

Fig. 12. Crucibles from the Iron Age IIA at Khirbet Qeiyafa. (Drawings by O. Dubovsky, photo by Clara Amit; courtesy of the Khirbet Qeiyafa Archaeological Project)

This is in itself an innovation for certain types of objects, like the iron bracelets (see above).

Some of the excavated houses are characterized by a relatively high concentration of metal finds. One of these, Building C4, nicknamed "the house of the metal merchant" (Freikman and Garfinkel 2014: 184–95, fig. 7.137), will be described in detail here. Fifteen metal items and a crucible were found in this building, nearly all of them complete objects or identifiable fragments. These include the complete bronze axe (**Table 2:5**; **Fig. 8**), a possible bronze blade (**Table 2:4**; **Fig. 7:3**), two iron knives (**Table 1:4, 5**; **Fig. 3:4, 5**), the intact bronze fibula (**Table 2:19**; **Fig. 9:8**), three iron bracelets (**Table 1:17–19**; **Fig. 6:2–4**), an iron rivet (**Table 1:24**), two tiny pieces of gold foil (**Table 3:1, 2**), the crucible with adhering bronze slag (**Table 3:5**; **Fig. 12:2a–c**), and a bronze fragment that is part of metal production, perhaps a prill (**Table 2:33**). Most of the finds were uncovered in primary deposition on the living surface of the open courtyard. The crucible was found in the southern corner of the courtyard, and the bronze prill was found not far from the crucible in the ash layer surrounding a tabun. These two finds point to the possibility of local small-scale bronze production that took place in the courtyard of the house.

A clay portable shrine (Garfinkel, Ganor, and Hasel 2012: 150, fig. 34; Zilberg 2018) in the shape of a simple container tapering toward the top, with an opening in one side, was found in the courtyard in the same area as the crucible, the bronze prill, and the two pieces of gold foil (which may have been part of the coating of a figurine that was kept in the shrine). This might hint at some cultic activity that accompanied the bronze production (cf. a similar model uncovered at Tel Dan in a bronzeworking area of the 11th century B.C.E.; Ilan forthcoming).

Another group of metal finds was found in the two rooms next to the entrance of the house—Rooms B and C. These rooms contained the possible bronze blade, two iron bracelets, and the fibula. Based on the analysis of pottery and stone tools, Room B was identified as a center of domestic activities with installations and many stone tools, and Room C as a storage room with many pottery vessels connected with these activities (Cohen Klonymus 2014: 80–81, tbl. 5.1.5).

Only a few metal objects were found in the public areas of the settlement, and a pattern that points to the use of metals by the central authority cannot be discerned. However, with regard to production, the iron hearth in

the public building in Area A suggests that ironworking may have been initiated and controlled by the administration (see discussion).

Three cultic areas were defined at Khirbet Qeiyafa: two cultic rooms in Buildings C3 and C10 in Area C and Building D100 in Area D (Garfinkel and Hasel 2018). They contained various features and objects of cultic significance, such as standing stones, benches, model shrines, libation vessels, etc. However, the metal finds in the cultic rooms did not show any special characteristics. All the types found there were also found in domestic contexts in other rooms (except for the sickles/swords; see the discussion above). It is therefore presumed that everyday chores were executed in the cultic rooms along with the ritual activity or that the ritual activity included the use of everyday tools.

Discussion

Khirbet Qeiyafa, a relatively small site in the Shephelah dating from the early Iron Age IIA, yielded a very rich assemblage of metal finds, including an exceptionally high proportion of iron objects (knives, sickles/swords, bracelets, a point, rivets, etc.) that characterize the beginning of iron production and the transition to the utilitarian use of iron, alongside bronze objects (a javelin-head, daggers/spearheads, an axe) that are typical examples of Canaanite bronzework. In what way can this assemblage contribute to the ongoing debate on the nature of the site and to our understanding of the transition from bronze to iron in the Southern Levant?

Relative Dating

The extensive use of iron for tools and weapons has been considered a hallmark of the Iron Age II, as opposed to its use for ornamentation, burial gifts, and/or limited everyday use in the Iron Age I (Snodgrass 1980; Waldbaum 1980; Yahalom-Mack and Eliyahu-Behar 2015). At Khirbet Qeiyafa the metallurgical assemblage seems to represent a transitional phase in the process of adopting iron for utilitarian purposes. The amount of iron objects is exceptional for the period (cf. Gottlieb 2010), and most were found in domestic contexts. However, from the typological point of view, the assemblage of iron objects is more typical of the Iron Age I; it consists mostly of knives and bracelets, it may contain sickles (although this is still an open question), and it does not contain any of the tools and weapons, such as plowshares or arrowheads, that are abundant at typical Iron Age II sites of the Southern Levant such as Beer-Sheba (Paz 2016) and Horbat Rosh Zayit (Gal and Alexandre 2000).

Garfinkel and Hoo-Goo Kang (2011: 181) observed that "the pottery assemblage of Khirbet Qeiyafa is a typological 'bridge' between two periods. It maintains the Iron Age I tradition, while introducing several characteristics that later became the classical markers of the Iron Age IIA." Subsequently, Anat Cohen-Weinberger and Nava Panitz-Cohen (2014: 409) noted that "the architectural, ceramic and paleographic finds at Khirbet Qeiyafa as a whole clearly represent a cultural beginning, which can naturally contain some elements of the previous material culture." These statements seem to be applicable to the metal assemblage of Khirbet Qeiyafa as well.

Cultural Affiliation

It has been shown that among the metal objects unearthed at Khirbet Qeiyafa, some of the bronze items are typical examples of the Canaanite bronzework that had been produced in the region for several centuries, starting in the Late Bronze Age. These include the javelin-head, the lugged axe, and the blunt-pointed daggers/spearheads. Alongside these objects are other types of metal objects that made their appearance during the Iron Age I due to the influx of various influences from east and west. Thus, the iron knives, with either bronze- or iron-riveted handles, were first produced in large numbers in Cyprus in the 12th century B.C.E. (Sherratt 1994) and appeared in the Southern Levant around the same time. The iron bracelets emerged as typical burial deposits in Transjordan during the 12th century B.C.E. (Notis et al. 1986: 276–77; Waldbaum 1999: 32–34) and later spread westward.

By the time Khirbet Qeiyafa was settled, these types had been distributed throughout the Southern Levant for some time (see selected parallels above). Were they considered "foreign" by the inhabitants of Khirbet Qeiyafa?

Iron knives appeared in the Southern Levant almost as early as in Cyprus and some of the earliest examples may actually be imports found together with other features of Cypriot material culture, like the bimetallic knife from the Philistine temple at Tel Miqne (Dothan 2002). However, these objects have not been chemically analyzed and their provenance, therefore, remains unknown. Lead isotope analysis of the bronze rivets from the Khirbet Qeiyafa bimetallic knife and from the two knives found in the Megiddo Stratum VIA hoard (Hall, Eliyahu-Behar, and Yahalom-Mack in press) showed that the copper used in their production came from the Arabah rather than from Cyprus.[13] Consequently, the iron

[13] Five bronze objects from Khirbet Qeiyafa were tested: a bronze rivet from the iron knife (**Table 1:5**; **Fig. 3:5**), the javelin-head (**Table 2:1**; **Fig. 7:5**), the axe (**Table 2:5**; **Fig. 8**), the fibula (**Table 2:19**; **Fig. 9:8**),

blades themselves were most probably produced locally. It thus seems that, a century after the Philistine temple at Tel Miqne, the bimetallic knives (and probably the other iron knives as well) were produced in the Southern Levant. But did they come to Khirbet Qeiyafa (and to Megiddo, for that matter) as Philistine products? Or was the idea borrowed and implemented by the local residents, whether in imitation of Philistine products or, perhaps, detached from such an affiliation?

Similar questions are raised by the iron bracelets. They are first attested in Transjordan and in the Jordan Valley (Notis et al. 1986: 276–77; Waldbaum 1999: 32–34) and, at least in the former case, were considered to be locally produced. They were disseminated throughout the country during the Iron Age I (see the parallels above). The bracelets found in the Khirbet Nisya burial cave in the Judean hill country were interpreted as an evidence for trade relations "and perhaps industrial connections" with Transjordan (Livingston 2002: 29).[14] As for the later examples, they too might have been imported from Transjordan, in this case probably attesting to connections with a workshop or an otherwise organized group producing them in that region. Similarly, the "black juglets" found at Khirbet Qeiyafa were shown petrographically to originate in Transjordan (Cohen-Weinberger and Panitz-Cohen 2014). If, however, the bracelets found at Khirbet Qeiyafa were of local production, they represent an idea introduced from Transjordan and put into practice at the site.

Consequently, the key question is where these objects were produced. As noted above, there is evidence for metalworking at Khirbet Qeiyafa: a crucible with bronze slag was found in Area C and an iron hearth in Area A. Thus, the iron objects (and the bronze rivets) from Khirbet Qeiyafa may well have been produced at the site itself.

The case of the bronze fibula is different. As mentioned above, the earliest types of bronze fibulae reached the Levant by way of Cyprus around 1200 B.C.E. but appeared in the Southern Levant only in the 11th century B.C.E. (Pedde 2000). The bronze fibula is still an extremely rare object in this region during the period discussed here, since no more than ten examples that could predate the settlement in Khirbet Qeiyafa are attested, all of them from sites in northern Israel (see above) and none of the same shape, which is unparalleled anywhere in or beyond the Southern Levant. This fibula is probably an unusual example of a local imitation of a foreign idea, but not of a specific foreign product (cf. Renfrew 1984: 391). It seems that this is an invention by a local smith based on the general idea of a fibula, as opposed to the well-known toggle pin, and can attest to cultural influence coming via trade contacts with Cyprus.

The sickles/swords with the folded tangs might also be items of local production under Cypriot influence, since both the curved shape (not "crescent"-curved but angular, as described above) and the folded tang are features typical of Cypriot blades and are not attested earlier in the Southern Levant. However, more local comparative material is needed to support this proposal.

In summary, the metal assemblage from Khirbet Qeiyafa includes, on the one hand, traditional Canaanite products, such as the lugged axe, which are known locally from the Late Bronze Age onward and whose numbers declined in the Iron Age II but still appeared sporadically. These probably attest to a Canaanite population that remained at the site. On the other hand, the metal assemblage includes iron products that first appeared and started to spread in the region in the Iron Age I. During this time, various cultural influences intermingled, as new ethno-political entities were taking shape. We suggest that the types introduced during the Iron Age I (the iron knives, including the bimetallic version, and the iron bracelets) had become part of the metal assemblage of the Southern Levant by the early Iron Age IIA and were no longer perceived as "Philistine/Cypriot" or "Transjordanian," and had probably lost their prestige nature.

Examples of objects that may display foreign influence are the fibula and the sickles/swords. The fibula differs considerably in shape both from the few fibulae known in the Southern Levant and from those from Cyprus, and as such reflects local production inspired by a Cypriot or Cypriot-transmitted idea. The sickles/swords resemble Cypriot tools in their folded tangs and Cypriot knives in the shape of their blade. Similar blades (without folded tangs) have been found in Philistia.

Metal Production at Khirbet Qeiyafa in Context

As mentioned above, the metal production remains found at Khirbet Qeiyafa include the ironworking installation in Area A in what the excavators interpret as a public, probably administrative building, two pottery crucibles, one of them (with adhering bronze slag) found in a private dwelling in Area C, and slag and prills of both bronze and iron, including a complete iron slag cake, distributed throughout the site.

The location of the ironworking installation in a public building hints at a connection between iron production and the administration of the city, possibly in a

and a spear-butt that may have originated in the Iron Age layer but did not come from a clear context and consequently is not discussed here. Except for the latter, all the objects were most probably produced from copper that originated in the Arabah ore deposits (Yahalom-Mack, Segal, and Finkelstein forthcoming).

[14] Before the discovery of the iron bracelets in Transjordan, similar objects from Tell Qasile and Tell el-Farʿah (S) were interpreted as part of the Philistine cultural assemblage (Mazar 1985: 9).

mode of "attached specialization" (Costin 1991). Such a connection has also been suggested at Megiddo, Hazor, and Beth-Shemesh, where the ironworking installations were uncovered in association with public architecture, prompting the assumption that the iron technology was initiated and controlled by the administration (Bunimovitz and Lederman 2012; Yahalom-Mack and Eliyahu-Behar 2015: 290–93). On the other hand, some of the bronzeworking remains were found at Khirbet Qeiyafa in domestic contexts. Consequently, there may have been a dichotomy between what appears to be autonomous bronze production and iron production under the auspices of the city administration. Alternatively, the bronze production might have been organized on a household level while serving the administration, as in Costin's "dispersed corvée" type (1991), or it might have supplied bronze products to both the administration and the population of the site. In any case, such a dichotomy by location has certainly not been observed in any of the other sites, where iron and bronze were worked together in the same context (e.g., Eliyahu-Behar et al. 2012; Yahalom-Mack et al. 2014, 2017). However, as the sediments from the hearth were not analyzed for their copper contents (as they were, for instance, at Tell es-Safi/Gath), this observation remains to be validated.

The evidence for on-site iron production is especially important in view of the dating of Khirbet Qeiyafa to the late Iron Age IB–early Iron Age IIA. Evidence of ironworking in the Iron Age II has been uncovered at several sites in the Southern Levant: Tel Hammah, Hazor, Megiddo, Tel Rehov, Tell es-Safi, and Beth-Shemesh (Yahalom-Mack and Eliyahu-Behar 2015: 290–93). However, most of these finds date from a later stage of the Iron Age IIA, or even later. As for absolute dating, the ironworking installation at Beth-Shemesh, for example, was dated to around 900 B.C.E. and that at Tell es-Safi to the late 10th–9th centuries B.C.E. (Eliyahu-Behar et al. 2012: 262; Yahalom-Mack and Eliyahu-Behar 2015: 293), whereas Khirbet Qeiyafa is dated to around a century earlier. At Megiddo some production remains were dated to Level Q-5, equivalent to the Stratum VB/VA–IVB transition (Yahalom-Mack et al. 2017: 60) and hence very close in relative dating to Khirbet Qeiyafa. At Abel Beth Maacah, scanty evidence of iron forging was found inside an administrative building at Area A, dated to late Iron I (Yahalom-Mack, Panitz-Cohen, and Mullins 2018). The iron hearth found in the administrative building at Khirbet Qeiyafa, therefore, remains one of the earliest ones known to date.

Metal Use at Khirbet Qeiyafa in Context

As noted above, among the 89 metal finds from the Iron Age layer of Khirbet Qeiyafa, 44 are made of bronze and 42 of iron. In the tools/weapons category, however, iron prevails, with sixteen objects against ten made of bronze. Especially notable is the assemblage of twelve iron knife blades and the three sickles/swords. No other site has yielded such large numbers of iron tools/weapons at such an early date, and certainly not in relation to bronze.

At the great site of Megiddo, only thirteen iron tools/weapons are reported from the Iron Age IB (Stratum VIA), although this number probably does not include fragmentary objects that may not have been published in the reports of the earlier excavations. This number is, however, small in relation to the number of bronze tools/weapons from the same stratum (n=47). Stratum VB, contemporary with Khirbet Qeiyafa, produced barely any metal finds at all, while in Stratum VA–IVB the numbers of tools/weapons are similar to those at Khirbet Qeiyafa: fifteen of iron and six of bronze (Yahalom-Mack et al. forthcoming).

As for other regions, the Shephelah, where Khirbet Qeiyafa is situated, was generally quite poor in metals during this period. In Philistia, iron objects are scarce during the Iron Age I–IIA (at least according to the current state of publication; see also McNutt 1990). In the hill country, iron was used for tools and weapons and at some sites even outnumbered bronze, but the overall numbers of both metals are relatively small, and sites in the region are often difficult to date more precisely than the general "Iron Age I–early Iron Age IIA," due to lack of stratigraphic sequence and destruction layers. Notably, at the newly founded sites of Arad and Beer-Sheba in the Beer-Sheba Valley, iron was the dominant metal used (Gottlieb 2010).

Khirbet Qeiyafa seems to belong with the Beer-Sheba Valley sites in the sense that it was a newly founded site that used iron extensively. On the other hand, unlike the Beer-Sheba Valley sites, it preserved connections with the old Canaanite bronzeworking tradition and benefitted from the Arabah copper sources, while Beer-Sheba VII and Arad XII, apparently contemporary with Khirbet Qeiyafa (Garfinkel and Kang 2011: 181), yielded only a few, mostly ornamental, bronze objects despite their closer proximity to the copper sources. In its use of iron and bronze in similar proportions Khirbet Qeiyafa resembles the hill country sites, where iron might have already begun to be used in the Iron Age I, although the finds there are in small numbers and are poorly dated. In fact, no site dated to the early Iron Age IIA seems to have produced a similar overall amount of iron objects. The assemblage of iron blades is reminiscent of that from Area Q at Megiddo (Stratum VIA), although most of the Khirbet Qeiyafa blades were dispersed in domestic units and were not hoarded together. It should be taken into account, of

course, that the quantitative data may be misleading, since the numbers depend on various factors, ranging from the scope of the excavated area and the overlying strata to the state of publication.

Conclusions

The metal assemblage of Khirbet Qeiyafa, a relatively small site of the early Iron Age IIA, is one of the largest metal assemblages known from this period in the Southern Levant. The following points summarize the results of this study:

- Iron was used rather extensively at Khirbet Qeiyafa in the early Iron Age IIA.
- One of the earliest iron hearths known to date was found at the site in an administrative building, indicating a possible connection between iron production and the local administration.
- Bronze continued to be used for tools and weapons alongside iron and was not restricted to decorative use as occurred later in the Iron Age in the southern Levant, when iron became predominant. The traditional Canaanite bronze objects and evidence of bronzeworking testify to the presence of a Canaanite population at the site (or individuals working in the Canaanite tradition).
- The working of bronze and iron may have been performed in different venues and possibly on different levels of production, in contrast to what has been observed at Iron Age IIA sites where the production of the two metals was strongly linked. This may be due to contingency of excavation.
- Several of the metal objects may show a cultural connection with Cyprus. However, the objects themselves, of both bronze and iron, were most likely locally produced.

Khirbet Qeiyafa remains a unique and complex case of a small short-lived site, founded in a period when new territorial kingdoms were being established, new identities formed, and new technologies developed. Like the trajectory identified at different Iron Age IIA sites, such as Beth-Shemesh, Megiddo, Tel Rehov, and Hazor, iron production (or forging) at Khirbet Qeiyafa appears to be linked with the central administration, albeit at a relatively earlier date. The correlation between the development of central administrations and the use of iron is apparent here. Assuming that Khirbet Qeiyafa belongs to the rising kingdom of Judah (which is based on reasons expressed by the excavators of the site in various publications, see above), it illustrates that preferring iron over bronze was a common strategy adopted by both the northern and the southern kingdom from the very start.

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