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Hematite Mace-Heads: A Specialized Craft Unique to the Late Chalcolithic Period

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The mace was one of the most important and commonly used weapons for striking and smashing in hand-to-hand combat in the battlefields of the ancient Near East, from the tenth to the second half of the third millennia BCE. Outside the battlefield, the mace served ceremonial and ritual functions, which persisted long after its use as a weapon ceased. Hematite mace-heads are unique in the Late Chalcolithic culture that flourished in the region of Israel and Transjordan from the second half of the fifth to the first half of the fourth millennia BCE. They seem to be one of the definitive typo-chronological markers of this culture. The qualities of hematite allow for the creation of durable, effective and strong weapons, which are suitable for striking and smashing in hand-to-hand combat, as well as exceptional luxury items to be used in ritual and ceremony. The present article presents a comprehensive view of the distribution pattern and use of the hematite mace-heads, with particular attention to typological features; measurements and weights; sources of raw material; production and archaeological context; geographical distribution; and intended function and actual use.

Keyword: mace, mace-head, Late Chalcolithic period, hematite, iron-oxide

Introduction

The mace, a weapon for striking and smashing in hand-to-hand combat, was one of the most important and commonly used weapons on the battlefields of the ancient Near East from the tenth to the second half of the third millennia BCE.[2] Outside the battlefield, the mace maintained ceremonial and ritual functions, which persisted long after its use as a weapon ceased. Maces were considered votive offerings and objects of worship in temples, they were deposited as burial gifts and served as attributes of deities, as well as symbols of rulership and authority (Yadin 1963:11–12, 40–43, 120–125; Calmeyer 1980; Edzard 1980; Korfmann 1980; Ciałowicz 1987; Braun-Holzinger 1991; Sebbane 2009; 2016; 2023).

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[2] All dates mentioned in the article are BCE.

After millennia of use, during which its significance gradually increased, the mace reached the zenith of its distribution and frequency between the fifth and first half of the fourth millennia. This was clearly and unequivocally manifested in the Late Chalcolithic culture of Israel, when the mace became a permanent feature in weapon and cultic assemblages. During this period, three specialized industries—limestone, copper and hematite—produced maces and mace-heads, with a wide array of types (Figs. 1, 2),[3] all three demonstrating a deliberate and careful choice of raw materials, selected to achieve a strong and aesthetically pleasing product.

Limestone mace-heads were manufactured in a relatively limited number of shapes—globular, squat-globular, barrel-shaped, piriform and squat-piriform—each comprising a number of types (see *Typology*, below). They were continuously manufactured from the Neolithic period to Late Bronze Age III by local craftsmen, who used raw material that was available in close proximity to the sites where they lived (Sebbane 2009:52–53, 90–93). In Israel, there was a decided preference for lithographic limestone, a fine grained, high-density limestone that is hard enough to acquire a smooth, lustrous surface when polished (Flexer 1969:79; Bartov 1985:9–12).[4]

Copper maces and mace-heads were the product of a specialized metal industry unique to the Late Chalcolithic culture, which employed the lost-wax technique to cast tools and luxury items, using mainly copper-ores or alloys that contain high concentrations of arsenic, antimony-arsenic or nickel-arsenic copper. The maces and mace-heads were manufactured in a range of shapes: rounded (spheroid and piriform)—sometimes with relief decoration; carinated; and cylindrical. Each shape comprises a number of types (see below). Some of these types are not known in the stone mace-heads industry of the Chalcolithic and Early Bronze Age (for further discussion, see Sebbane 2014; 2019 and references therein).

Hematite mace-heads were also the product of a specialized industry unique to the Late Chalcolithic culture, which exploited exposed ores of iron-oxides in southern Israel, the Sinai and Transjordan. These mace-heads were apparently manufactured near the sources of raw material by specialized craftsmen, who mastered the techniques for quarrying and processing hematite. They were produced in a variety of spheroid and piriform shapes (see *Typology*, below).

The present article focuses on hematite mace-heads, in an attempt to present a comprehensive view of their distribution pattern and use, with particular attention to the following: typological features; measurements and weights; sources of raw material;

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[3] Basalt mace-heads are not common, a fact that should be noted in view of the thriving specialized basalt industry in the Chalcolithic period (Amiran and Porat 1984; Rosen 1986; Gilead and Goren 1989; Epstein 1998:229–267; Scheftelowitz 2004b:61, and references therein). The reason may be the porosity of basalt that makes it impossible to polish the surface to a lustrous finish. Such polished surfaces were highly valued for military and cultic purposes alike, ever since mace-heads first appeared in the Pre-Pottery Neolithic A (PPNA; see below).

[4] These qualities led many scholars to identify the raw material mistakenly as alabaster or marble (Loud 1948: Pl. 26:4, 5; Holland 1983: Fig. 365:5, 6; Hanbury-Tenison 1986:164; Baruch 1987: Fig. 71:3–5).

Fig. 1. Chalcolithic mace-heads, exhibiting the range of types and raw materials: (1) Ḥorbat ‘Ashan, (2) Gerar, (3) Be’er Safad, (4) Gat-Govrin, (5) Be’er Safad, (6) Rasam Ḥarbush, (7) Be’er Maṭar, (8) Be’er Safad, (9) al-Mghar, (10) Be’er Safad, (11) Naḥal Ẕe’elim Basin, Cave 49; (12) Naḥal Shafan, Gerar (Photography: M. Salzberger).

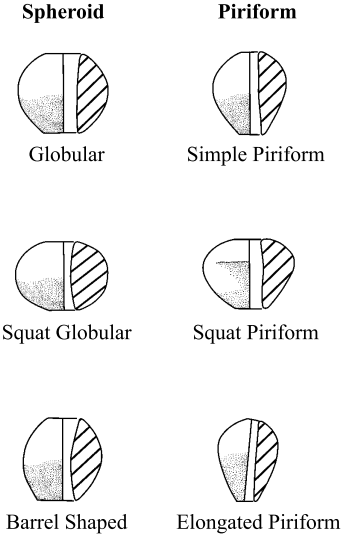

Fig. 2. Rounded mace-heads from Israel: a typo-chronological classification (drawing: N. Zeevi).

production and dispersal; archaeological context; geographical distribution; and intended function and actual use.

The studied corpus comprises 59 hematite mace-heads, most of which were found in archaeological excavations in Israel and Jordan, and a few retrieved from agricultural fields (see Catalogue; for location of sites, see Fig. 7). Although the dataset will likely increase in the future with continued excavations and new discoveries, the current study takes into account the entire corpus of Chalcolithic-period mace-heads discovered in our region (Sebbane 2009), reflecting 90 years of archaeological research, beginning with the ‘discovery’ of the Chalcolithic culture at Teleilat Ghassul in the 1930s (Mallon Koeppel and Neuville 1934). The overall picture and conclusions presented here will likely gain support as more hematite mace-heads come to light.

CATALOGUE OF HEMATITE MACE-HEADS[i]

No.	Type	Site, Context	Curating Institution Reference No.[ii]	Deminsions			Bore Hole				References
				W (g)	H (mm)	D (mm)	Section Profile	Diameter (mm)			
								Upper	Middle	Lower	
1*	Piriform	Abu Ḥamid	JDA, Yarmouk University A.H. 86812.1		51.00	50.00					Doulfus 1986:46–47, No. 26 Doulfus et al. 1988: Pl. 86:7
2*	Barrel-shaped	Abu Ḥamid	JDA, Yarmouk University A.H. 86812.3		42.00	40.00	Straight	15.00		17.00	Doulfus 1986:46–47, No. 28 Doulfus et al. 1988: Fig. 15:5; Pl. 86:9
3*	Piriform with pronounced shoulder	Abu Ḥamid	JDA, Yarmouk University A.H. 86812.4		53.00	43.00					Doulfus 1986:46–47, No. 29 Doulfus et al. 1988: Pl. 86:4
4*	Barrel-shaped	Abu Ḥamid	JDA, Yarmouk University A.H. 86812. 5		52.00	43.00					Doulfus 1986:46–47, No. 30 Doulfus et al. 1988: Fig. 15:1; Pl. 86:3
5*	Globular	Abu Ḥamid	JDA, Yarmouk University A.H. 86812.6		41.00	40.00					Doulfus 1986:46–47, No. 31 Doulfus et al. 1988: Pl. 86:6
6*	Elongated piriform	Abu Ḥamid	JDA, Yarmouk University A.H. 86812.8		53.00	38.00	Straight	8.00	8.00	8.00	Doulfus 1986:46–47, No. 33 Doulfus et al. 1988: Fig. 15:5; Pl. 86:5
7*	Squat piriform with pronounced shoulder; miniature; broken	Azor	Unknown								Perrot and Ladiray 1980:42–44, Fig. 77:4
8	Squat piriform	Be'er Maṭar	IAA 55–421, NCSF	296.29	36.78	56.42	Conical	11.81	10.87	11.26	Perrot 1955:78, Pl. 14:A Sebbane 2009:142, Cat. No. 43

[i] All mace-heads in the catalogue are made of hematite, except for Nos, 23, 24, which are made of manganese oxides. The mace-heads are arranged according to sites, in alphabetical order; mace heads marked with an asterisk were not examined by the author, mostly items originating from sites in Jordan, and others which were uncovered in Israel, but their present location is unknown; mace-heads marked with two asterisks are broken to a degree that prevented weighing or measuring.

[ii] Abbreviations: IAA = Israel Antiquities Authority; JDA = Jordanian Department of Antiquities; GE = Gilat Expedition; SE = Shiqmim Expedition; IMJ = Israel Museum Jerusalem; HUC = Hebrew Union College; NCSF = National Collections Storage Facilities, Bet Shemesh; ADCA = Archaeology Department of the Civil Administration in Judea and Samaria.

Catalogue (cont.)

No.	Type	Site, Context	Curating Institution Reference No.[ii]	Deminsions			Bore Hole				References
				W (g)	H (mm)	D (mm)	Section Profile	Diameter (mm)			
								Upper	Middle	Lower	
9	Elongated piriform, miniature	Be'er Maṭar	IAA 53–562, NCSF	148.20	45.16	36.32	Straight	10.16	10.87	11.18	Perrot 1955:78; Sebbane 2009:142, Cat. No. 44
10	Squat globular	Be'er Maṭar	IAA 58–595, NCSF	175.54	34.73	45.58	Straight	15.33	14.56	16.05	Perrot 1955:78; Sebbane 2009:142, Cat. No. 45
11	Squat piriform, miniature	Be'er Safad, Phase I, L560	IAA 94–1201, NCSF	141.33	36.42	42.38	Straight	11.64	10.56	12.03	Sebbane 2009:143–144, Cat. No. 61
12	Squat piriform, miniature	Be'er Safad, Surface, L626	IAA 94–1195, NCSF	89.73	27.55	37.80	Straight	9.00	9.00	9.00	Sebbane 2009:143–144, Cat. No. 62
13	Piriform	Be'er Safad, Surface, L626	IAA 94–1196, NCSF	176.04	42.09	41.68	Straight	10.58	9.81	10.65	Sebbane 2009:143–144, Cat. No. 65
14	Elongated	Be'er Safad	IAA 94–1278, NCSF	152.13	49.09	34.12	Conical	6.53	8.71	9.43	Sebbane 2009:143–144, Cat. No. 66
15**	Globular, broken	Be'er Safad	IAA 94–1473 NCSF			53.60	Straight	13.00	12.00		Sebbane 2009:143–144, Cat. No. 86
16	Squat piriform, miniature	Bene Beraq, Tomb	IAA 51–53, NCSF	129.05	36.95	37.82	Straight	12.63	10.89	11.90	Kaplan 1963:310, Fig. 9:14; Pl. 34
17	Squat piriform	Gat-Gal'on, Surface	IAA 96–6349, NCSF	236.13	52.08	58.94	Biconical	15.84	11.74	15.70	Sebbane 2009: Cat No. 128
18*	Squat piriform with pronounced shoulder	Gilat, Area D, Stratum IIc, L293, B600	GE 36–87	162.00	35.00	41.00	Straight	12.00	12.00	12.00	Rowan et al. 2006: Table 24.12:21
19*	Globular, broken	Gilat, Area J, Stratum IIa, L818, B2446	GE 40–90		36.00		Straight	12.00	12.00	14.00	Rowan et al. 2006: Table 24.12:11

CATALOGUE (cont.)

No.	Type	Site, Context	Curating Institution Reference No.[ii]	Deminsions			Bore Hole				References
				W (g)	H (mm)	D (mm)	Section Profile	Diameter (mm)			
								Upper	Middle	Lower	
20	Squat globular	Giv‘at Ha-Oranim, Cave 1599, L1369, B3662	IAA 97–3487, NCSF	164.93	31.84	54.28	Straight	8.44	8.86	9.58	Scheftelowitz 2004b:67, Table 4.3; Ilani 2004:69
21	Squat piriform	Giv‘at Ha-Oranim, Cave 1595, L1253, B3117/102	IAA 97–3478, NCSF		39.00	41.00	Straight	11.00	11.00	11.00	Same
22	Squat piriform, miniature	Giv‘at Ha-Oranim, Cave 1595, L1253, B3117/103	IAA 97–3473, NCSF	54.00	37.00	42.00	Straight	11.00	10.00	11.00	Same
23	Elongated piriform	Giv‘at Ha-Oranim, Cave 1597, L1252, B3167	IAA 97–3476, NCSF	362.00	71.63	50.38	Conical	9.00		12.59	Same
24	Globular	Giv‘at Ha-Oranim, Cave 1780, L967, B6294/108	IAA 97–3474, NCSF	206.27	42.08	46.52	Conical	11.70	14.29	17.37	Same
25	Piriform with pronounced shoulder	Giv‘at Ha-Oranim, Cave 1780, L967, B6294/107	IAA 97–3480, NCSF	249.79	48.89	46.64	Conical	9.00	10.63	11.15	Same
26*	Rounded, broken	Ḥorbat Betar, Layers III–II	Unknown								Dothan 1959:29–30, Fig. 18:49

Catalogue (cont.)

No.	Type	Site, Context	Curating Institution Reference No.[ii]	Deminsions			Bore Hole				References
				W (g)	H (mm)	D (mm)	Section Profile	Diameter (mm)			
								Upper	Middle	Lower	
27	Piriform, miniature	Ḥorbat Betar, Layers III–II	IAA 53–562, NCSF	148.13	44.67	37.22	Straight	9.78	8.86	9.58	Dothan 1959:29–30, Fig. 18:55; Pl. 7:4
28	Squat piriform	Naḥal Mishmar (Cave of the Treasure)	IAA 61–187, IMJ	176.00	39.04	43.48	Conical	8.74	10.79	12.34	Bar-Adon 1980:120, No. 186
29	Piriform	Naḥal Mishmar (Cave of the Treasure)	IAA 61–183, IMJ	246.00	46.79	46.02	Straight	11.57	10.25	13.06	Bar-Adon 1980:120, No. 185
30	Squat globular	Naḥal Mishmar (Cave of the Treasure)	IAA 61–186, IMJ	228.00	36.92	49.77	Straight	11.47	9.14	10.78	Bar-Adon 1980:120, No. 184
31	Globular	Naḥal Mishmar (Cave of the Treasure)	IAA 61–182, IMJ	374.00	50.66	55.07	Straight	15.86	12.80	16.05	Bar-Adon 1980:120, No. 189
32	Piriform	Naḥal Mishmar (Cave of the Treasure)	IAA 61–184, IMJ	258.00	63.11	44.82	Straight	9.01	7.91	11.28	Bar-Adon 1980:120, No. 188
33	Piriform, miniature	Naḥal Mishmar (Cave of the Treasure)	IAA 61–185, IMJ	126.00	41.20	36.07	Conical	11.64	12.34	14.74	Bar-Adon 1980:120, No. 187

CATALOGUE (cont.)

No.	Type	Site, Context	Curating Institution Reference No.[ii]	Deminsions			Bore Hole				References
				W (g)	H (mm)	D (mm)	Section Profile	Diameter (mm)			
								Upper	Middle	Lower	
34	Piriform with pronounced shoulder	Naḥal Qana Cave, Tomb VII, L113, B1152/50	ADCA K038112	217.36	49.67	42.89	Straight	16.58	13.88	15.71	Gopher and Tsuk 1996:109, Figs. 4.17:1; 4.18
35	Piriform, miniature	Naḥal Qana Cave, Tomb X, L142, B1572/50	ADCA K038114	103.06	44.27	34.02	Straight	8.31	9.15	9.79	Same
36	Squat piriform with pronounced shoulder, miniature	Naḥal Qana Cave, Tomb I L125, B1591/50	ADCA K038113	92.14	30.22	34.45	Straight	9.93	9.61	11.64	Same
37*	Piriform	Naḥal Ẓe'elim Basin, Cave 49 Naḥal Shafan	Unknown								Aharoni 1961:14, Pl. 8:B
38*	Globular	Naḥal Ẓe'elim Basin, Cave 49 Naḥal Shafan	Unknown								Same
39**	Piriform with pronounced shoulder, miniature, broken	Khirbat en-Nazla, Surface	IAA 96–8534, Kibbutz Gan Ha-Shelosha			23.25		9.68	8.80		Sebbane 2009: Cat. No. 141
40	Squat piriform with pronounced shoulder, miniature	Newe Noy (Be'er Safad)	NCSF IAA 82–1492	78.10	24.90	35.22	Straight	10.46	8.90	10.01	Eldar and Baumgarten 1985
41	Piriform mace head with pronounced shoulder, miniature	Newe Noy (Be'er Safad)	NCSF IAA 82–1493	108.00	36.42	34.58	Straight	9.11	9.92	11.16	Eldar and Baumgarten 1985

Catalogue (cont.)

No.	Type	Site, Context	Curating Institution Reference No.[ii]	Deminsions			Bore Hole				References
				W (g)	H (mm)	D (mm)	Section Profile	Diameter (mm)			
								Upper	Middle	Lower	
42*	Elongated piriform	Newe Ur, Surface	Unknown		56.00	34.00					Perrot, Zori and Reich 1967:220, Fig. 14:1
43*	Elongated piriform	Newe Ur, Surface	Unknown								Perrot, Zori and Reich 1967:220, Fig. 17
44	Piriform with pronounced shoulder	Al-Maghar, Surface	IAA 57–566, NCSF	223.90	58.38	40.13	Conical	8.78	10.00	12.02	Sebbane 2009: Cat. No. 152
45	Piriform	Peqi‘in Cave, Tomb, Area I, L101E	IAA 05–1315, NCSF	242.00	48.90	46.18	Straight	10.69	10.70	12.90	Shalem, Gal and Smithline 2013:330, Fig. 9.3:3
46	Barrel-shaped	Peqi‘in Cave, Tomb, Area I, L105, B1176	IAA 97–3570, NCSF	271.73	50.00	50.00	Straight	11.00	12.00	13.00	Shalem, Gal and Smithline 2013:330, Fig. 9.3:4
47	Globular	Rasm Ḥarbush, Building 11	IAA 81–3015, NCSF	264.15	41.46	49.98	Straight	12.74	9.14	13.78	Epstein 1998:56–57, Pl. 43:26
48*	Squat piriform, miniature	Shiqmim, Cemetery 2, Tomb 51	HUC SE 94–87	105.00	48.00	47.00	Straight	7.00	6.00	9.00	Levy and Alon 1989–1990
49*	Piriform	Shiqmim, Area Y K9/10, L3025, BZ63–3805	HUC SE 97–89	259.00	48.00	47.00	Straight	12.00	10.00	13.00	Unpublished
50*	Piriform	Shiqmim, Area M/Z, L3262, BZ615	HUC SE	180.00	43.00	43.00	Straight	11.00	11.00	13.00	Unpublished

CATALOGUE (cont.)

No.	Type	Site, Context	Curating Institution Reference No.[ii]	Deminsions			Bore Hole				References
				W (g)	H (mm)	D (mm)	Section Profile	Diameter (mm)			
								Upper	Middle	Lower	
51*	Piriform with pronounced shoulder, broken	Shiqmim, Area Y LII, L419, B7189	HUC SE 58–88		37.00	31.00	Straight	9.00	7.00	8.00	Unpublished
52**	Squat piriform with pronounced shoulder, broken	Shiqmim, L818, B2446	HUC SE		37.00						Unpublished
53**	Globular	Shiqmim, Area J/K12, L3254, B523/3254	HUC SE								Unpublished
54	Piriform	Shiqmim Area C, L29, Room 9	IAA 89–110, NCSF	348.00	44.00	46.00	Straight	14.00	14.00	14.00	Levy and Alon 1989–1990
55**	Elongated piriform with pronounced shoulder, broken, miniature	Shoham	IAA 99–501, NCSF			23.26	Straight	7.85	8.77		Nadelman 1995
56*	Globular, broken	Tuleilat Ghassul	JDA		38.00	43.00					Mallon, Köeppel and Neuville 1934:71, Pl. 35:2
57*	Piriform with pronounced shoulder	Tuleilat Ghassul	JDA		58.00	52.00					Mallon, Köeppel and Neuville 1934:71, Pl. 35:3
58*	Piriform, broken	Tubna, Wadi Ziqlab	JDA								Banning, Blackham and Lasby 1998:153, Fig. 11
59*	Rounded, broken	Tubna, Wadi Ziqlab	JDA								Same

Typology

The Late Chalcolithic mace-heads exhibit a large variety of shapes, types and raw materials (Figs. 1–3). Typologically, the rounded mace-heads can be divided into two principal shape-groups—spheroid and piriform—which can be further divided into subtypes. There is still considerable morphological variety within each type, as each mace-head was individually crafted, whether fashioned by hand or cast in a single-use mold. Below is a comprehensive list of the shapes and types spanning the Pottery Neolithic and Early Bronze Age III (Sebbane 2009:80–109).

Spheroid Mace-Heads.— This shape is characterized by its maximum diameter, located at its center (Fig. 3).[5] Within this group, several mace-head types are defined: globular (equal height and diameter); squat-globular (height considerably smaller than diameter); and barrel-shaped (height considerably larger than diameter).

Piriform Mace-Heads.— The maximum diameter of these mace-heads is at their upper half (Fig. 3). Some of the piriform shapes have a pronounced shoulder. Three types are included in this group: simple piriform mace-heads (height slightly larger than the diameter); squat-piriform mace-heads (height smaller or equal to the diameter); and elongated-piriform mace-heads (height considerably larger than diameter).

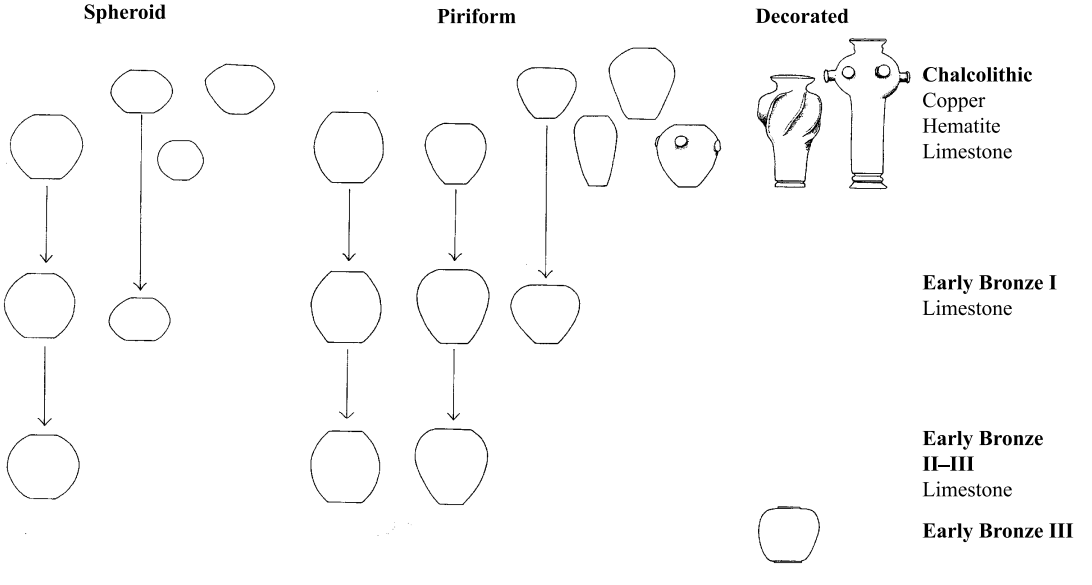

Fig. 3. Typology of rounded mace-heads (drawing: N. Zeevi).

[5] A spheroid is created by rotating an ellipse around one of its principal axes.

The corpus of 59 hematite mace-heads (see Catalogue) includes the full range of shapes and types described above (Figs. 3, 4). Table 1 shows that the piriform mace-heads are the most common (73% of the corpus); spheroid types are much less common (19% of the corpus); and barrel-shaped mace-heads are fairly rare (5%).

DIMENSIONS AND WEIGHTS

Dimensions (height, diameter, bore-diameter) and weight are the main criteria for distinguishing between mace-heads used as weapons and those that functioned as ceremonial or cultic objects (see *Intended Function and Actual Use*, below). It is unlikely that objects weighing less than 150 g, or with a bore-diameter of less than one centimeter could be used

Fig. 4. Hematite mace-heads: (1) Peqi‘in Cave, (2) Peqi‘in Cave, (3) al-Mghar, (4) Newe Noy, (5) Be’er Safad, (6) Be’er Safad, (7) Ḥorbat Betar, (8) Rasam Ḥarbush, (9) Be’er Maṭar, (10) Be’er Safad, (11) Be’er Safad, (12) Newe Noy, (13) Bene Beraq (Photography: M. Salzberger).

Table 1. The (Hematite) of the Mace-Heads According to Types

Type	No.	% Total	Cat. Nos.[i]
Piriform Mace-Heads			
Piriform	12	20.3	1, 13, 27(s), 29, 32, 33(s), 35(s), 37, 45, 49, 50, 58
Squat piriform	10	16.9	11(s), 12(s), 16(s), 17, 20, 21(s), 22(s), 28, 48, 54
Piriform with pronounced shoulder	9	15.2	3, 25, 34, 39(s), 41(s), 44, 51, 52, 57
Squat piriform with pronounced shoulder	5	8.4	7(s), 8, 18, 36(s), 40(s)
Elongated piriform	7	11.9	6, 9(s), 14, 23, 42, 43, 55(s)
Spheroid Mace-Heads			
Globular	8	13.5	5, 15, 19, 24, 31, 38, 47, 56
Squat globular	3	5.2	10, 20, 30
Barrel-shaped	3	5.2	2, 4, 46
Rounded	2	3.4	26, 59
Total	*59*	*100.0*	

[i] Fourteen very small items, weighing less than 150 g, are marked (s).

as weapons. The impact of strikes by maces that weigh so little is negligible and handles with such a small diameter will snap from the momentum.[6] Considering the importance of these data, the absence of measurements and weights in studies of the maces from the ancient Near East is striking. The large collection of rounded mace-heads from Israel fills this gap for the first time. Tables 2 and 3 present the data collected for roughly 400 rounded mace-heads that were found in Israel, spanning the Pottery Neolithic–EB III (Sebbane 2009:85–109); Table 2 summarizes the entire mace-head corpus, while Table 3 is limited to the hematite mace-heads.

As seen in Table 3, the upper range of dimensions and weights of the piriform and globular hematite mace-heads is similar, whereas their lower range is significantly different, skewed by the 14 miniature (votive/ceremonial) mace-heads included in this group (see *Intended Function and Actual Use*, below).

Sources of Raw Material: Hematite and Manganese oxides

Hematite is an iron-oxide mineral. Oxides of iron and other metals were found in Israel and its vicinity along tectonic elements—in the transverse faults of the Negev and the Sinai, the monoclinal flexures of the Syrian Arc system and the east–west faults in Samaria, Transjordan and the Carmel. Ilani (1989:32–93; Ilani et al. 1988) documented the occurrences of iron-oxidation in the area between Be'er Ora in the south and the Carmel Ridge in the north,

Table 2. Summary of Measurements and Weights of All Rounded Mace-Heads Found in Israel, from the Pottery Neolithic to the Early Bronze Age III

Shape	No.	Weight (g)	Height (cm)	Diam. (cm)	Bore diam. (cm)
Spheroid	162	40–560	2.9–7.5	2.4–7.5	0.8–3.0
Piriform	276	30–800	2.5–9.3	3.6–8.0	0.8–2.5

Table 3. Summary of Measurements and Weights of All Rounded Hematite Mace-Heads Found in Israel from the Late Chalcolithic Period

Shape	No. of Complete Objects Examined	Weight (g)	Height (cm)	Diam. (cm)	Bore Diam. (cm)
Piriform	29	65–348	2.5–7.2	3.1–5.8	0.8–1.6
Globular	8	175–375	3.4–5.2	4.1–5.5	0.9–1.7

[6] The diameter refers to the point of entry to the bore. Artistic depictions from Egypt and Mesopotamia show that the handle widened toward the grasping point, where it apparently reached a diameter of 4–5 cm (Sebbane 2009:18; 2016:423).

although noting that these likely continue farther north.[7] The high frequency of hematite mace-heads in Chalcolithic sites, particularly in southern Israel and Transjordan, indicates that certain social groups were aware of the outcrops of iron-oxide veins in these regions. The widest and richest veins are found along the Temed fault in the southern ʻArava, the Wadi Paran fault in the northern ʻArava, the ʻArif Batur fault in the central Negev mountains, the Ramon fault in Makhtesh Ramon and the Yaboq fault in the Gilʻad (Ilani 1989).[8]

Chemical Analyses: Hematite or Other Materials?

Thus far, chemical analyses have only been conducted on mace-heads from Givʻat Ha-Oranim (Ilani 2004). The importance of such analyses for secure identification of the minerals, whether hematite or others, and their source, is self-evident. Ilani classified the analyzed items into four groups based on their mineral composition (Ilani 2004:69: No. 4): hematite with small concentrations of calcite (Cat. Nos. 20, 25); hematite with no calcite minerals (Cat. Nos. 21, 22); manganese oxides (Cat. Nos. 23, 24); and unidentified rock, containing Fe, Na, Mg, Al, Si (6294/106, not included in the catalogue). Ilani notes that other mace-heads previously identified by scholars as hematite may in fact be made of manganese oxides. Visual distinction between the two minerals is difficult, and it is most likely that they were not usually distinguished in antiquity either. The hematite mace-heads (Groups A, B) were created from iron oxide cores found in the southern and central Negev, such as the Wadi Paran fault. The manganese oxide mace-heads (Group C) were produced from natural manganese concentrations found in the ʻArava, in the regions of Timna and Feinan; similar concentrations are also found in southern Sinai, in the region of Umm Bogma. The mace-heads made of an unidentified stone (Group D) may originate from the Edom Mountains, southern Jordan, the Eilat region and southern Sinai, where similar rock-formations were found. Ilani concludes that the four groups were brought to the site from the southern regions of Israel, Jordan and Sinai.[9]

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[7] Iron-oxides veins comprise minerals of hematite and goethite, with calcite, dolomite, quartz, gypsum and barite (Ilani et al. 1988; Ilani 1989).

[8] The veins vary in length, from a few to dozens of meters, but usually up to 5 m. They are a few millimeters to a few meters in width, usually 5–20 cm. A typical example of an accessible rich vein is found in the bottleneck of the Faran fault, where there are three outcrops of the veins-system along roughly 300 m. The central outcrop appears as a single large vein, about 60 m long, 4 m wide and 6 m deep (Ilani 1989: Fig 7).

[9] In view of the results, further sampling is warranted. It is also important to compare mace-heads that were discovered in the southern sites of the Be'er Sheva' Valley, the Judean Desert and Transjordan—areas close to the veins of iron-oxides and manganese in the ʻArava, the central Negev mountains and the area of Feinan—from those in the north, such as Peqiʻin in the Upper Galilee and Rasam Ḥarbush in the Golan, which are close to veins of iron-oxides in the Yaboq and the Carmel areas. Such a comparison will help determine whether the southern and northern mace-heads have common sources or were produced in their respective regions.

Production and Distribution Patterns

The absence of unfinished hematite mace-heads or production debris thereof, in the Chalcolithic period makes it difficult to reconstruct their manufacturing processes and distribution patterns with any degree of certainty. It is reasonable to assume, however, that the production of hematite and limestone mace-heads was similar. Based on the frequency and broad geographic distribution of the latter—complete, broken and unfinished—it is possible to reconstruct three stages of manufacture for the hematite mace-heads: knapping, drilling and polishing (Sebbane 2009:62–64, Pls. 15, 16; Fig. 5; Rowan and Levy 2011):

Knapping. In the first stage, the mace-head was roughly shaped, and the top and bottom surfaces were prepared for drilling. Knapping was apparently undertaken using axes and chisels made of flint and copper (Figs. 5:1–3; 6).

Drilling. This second stage is most critical, as it may have caused some of the mace-heads to break. Bow-drills or pump-drills were used for this purpose (Petrie 1917:38–40, Pl. XLIII; Childe 1955; Burian and Friedeman 1985; Altinbilek et al. 2001). The drill-bits were likely made of flint or copper, with circular drilling-marks visible on some of the mace-heads. The outline of the bores allows for the reconstruction of two techniques: drilling from both ends toward the middle, a method that produced a biconical bore, whose center point is the narrowest; and drilling straight through the mace-head, a method that produced a straight bore, either with an even diameter, or narrowing toward one end, forming a conic section. Drilling through the hard hematite was more complex and difficult than drilling through limestone. Examination of the bores of all the hematite mace-heads indicates that they were usually drilled straight through, producing either even or conic bores (Fig. 5:4).[10]

Polishing. This stage was essentially undertaken for aesthetic purposes. Once finished, the mace-head was mounted on the shaft and ready for use. All mace-heads were polished, regardless of raw material or function. Even when the mace was destined to be a weapon, its appearance was carefully considered (Fig. 5:5–6).

The preference of hematite as a raw material should be attributed to its high specific gravity, high level of hardness (Mohs Scale 5–6), reddish-black hue and metallic sheen. These qualities provided mace-heads with a strong hitting and smashing impact, as well as an impressive appearance, gaining them a status of luxury objects (see *Intended Function and Actual Use*, below).

[10] Mace-heads from Azor (Cat. No. 7), Abu Ḥamid (Cat. Nos. 2, 4), Be'er Safad (Cat. No. 13) and Naḥal Qana (Cat. Nos. 34, 35, 36) have a conic bore.

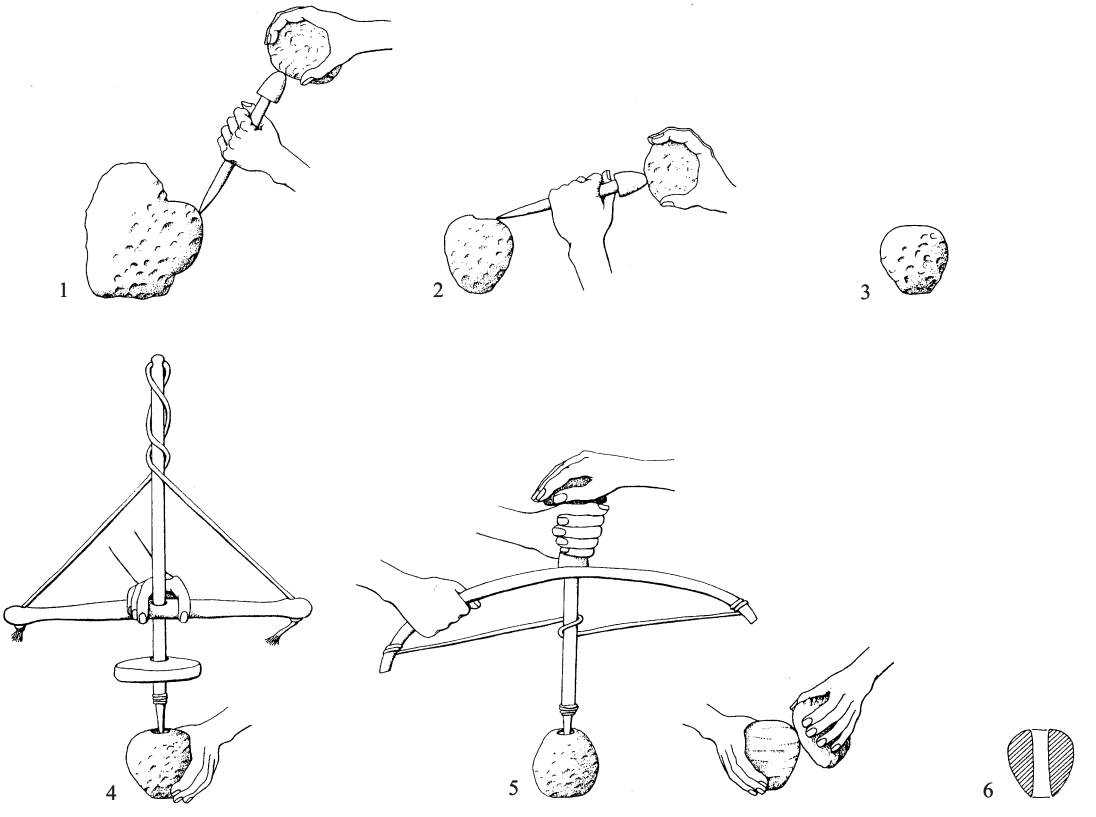

Fig. 5. Reconstruction of the manufacturing process of stone mace-heads (drawing: N. Zeevi).

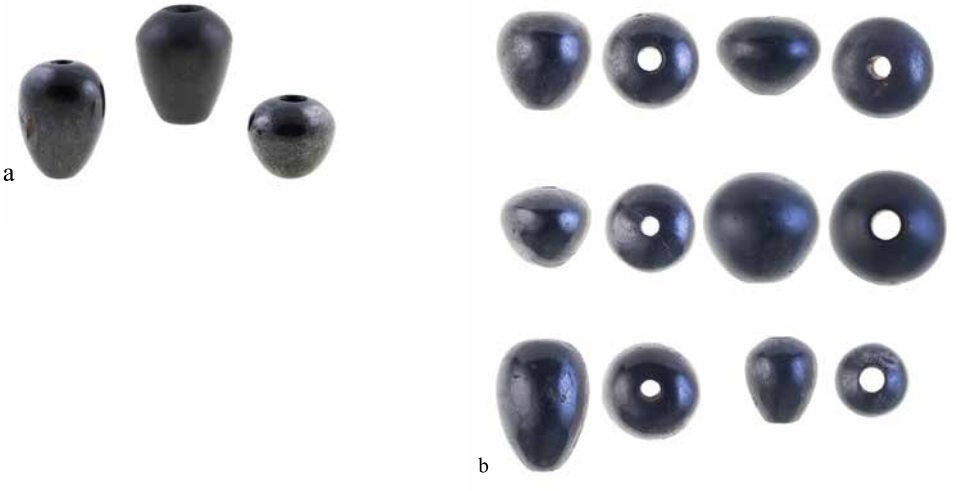

Fig. 6. Hematite mace-heads: (a) Naḥal Qana Cave (b) Naḥal Mishmar (Photography: I. Ostroski).

The total absence of manufacturing debris in the various Chalcolithic sites, coupled with the fact that the raw materials were not available within the settled landscape, and given the range of types unattested in the limestone mace-head industry, it is likely that the hematite mace-heads, in contrast to the limestone ones, were manufactured outside the sites, perhaps close to the sources of raw material, by specialized craftsmen who distributed the finished products.[11]

The Archaeological Context

In this section, the archaeological contexts of the mace-heads is considered and presented according to site types: settlements, burials, hoards, temples and cultic precincts, and surface finds. Table 6 summarizes the available data regarding the distribution pattern of the mace-heads.

Settlement Contexts

Mace-heads were found in buildings, streets, courtyards, pits and granaries, stores, rooms and cells, as well as in dwellings in underground units, caves or open spaces.

Azor
A hewn cave, initially used for ossuary burials (Levels 8, 9) was reused as a burial cave without ossuaries (Level 7), eventually serving as a dwelling cave (Level 6; Perrot and Ladiray 1980:42–44). A broken squat-piriform hematite mace-head with a pronounced shoulder (Cat. No. 7) was found in Level 6.

Be'er Maṭar
Perrot (1955; 1987; 1993) distinguished three settlement phases at this site (see also Be'er Safad, below), comprising subterranean and above-ground dwellings. He attributed the subterranean dwellings to the earlier phases (I, II), and the above-ground ones, to the later phase (IV); between them was an occupation gap (Phase III). Gilead (1986:3–4) questioned the attribution of the subterranean spaces of Be'er Maṭar to an early phase of the Chalcolithic settlements in the Be'er Sheva' Valley, suggesting that the occupation levels on the surface and the subterranean dwellings were contemporary. Although Gilead's interpretation is more commonly accepted in current scholarship, the final reports that discuss the architecture and stratigraphy of the site have not yet been published. Therefore, the mace-

[11] A similar pattern is also notable in the basalt and phosphorite industries that manufactured bowls and pedestal-bowls in a wide range of types and sizes during the Chalcolithic period. In spite of their common presence in the various Chalcolithic sites, no remains of production debris have been found so far, and they were presumably manufactured outside the sites by specialized craftsmen who distributed the finished products.

heads are presented here according to the excavator's understanding of the site. A copper mace (Sebbane 2009: Cat. No. 254) and 11 rounded mace-heads made of limestone, copper and hematite were found in the excavation (Sebbane 2009: Cat. Nos. 43–53). The three hematite mace-heads include one squat-piriform with a pronounced shoulder, one squat-globular, and one elongated-piriform (Cat. Nos. 8–10).With the exception of the pottery, no final report of the stratigraphy and the material culture—stone tools, bones, metals—has been published for Be'er Maṭar, and the archaeological context of the mace-heads cannot therefore be ascertained.[12]

Be'er Safad

Thirty-six mace-heads were discovered in the subterranean systems at Be'er Safad, in buildings above ground and on the surface (Sebbane 2009:143–144, Cat. Nos. 54–89), five of which were made of hematite. The architecture and small finds from Be'er Safad remain unpublished (see n. 16), although the ceramic report includes general plans and brief explanations (Commenge-Pellerin 1990; Perrot 1990), providing the basis for the identification of the archaeological contexts of 14 of the mace-heads; the other 22 are catalogued as non-stratified and of unknown origin. Of the 14 mace-heads attributed to specific contexts, two are of hematite: a miniature squat-piriform mace-head of votive/ceremonial function (Cat. No. 11) was found in a granary (L560, Sq M6, Phase I) and an elongated-piriform mace-head (Cat. No. 14) was found in a dwelling (L409; Sqs N7, O7, P6, Phase IV; Perrot 1990: Figs. 2a, 7). The findspot of two other items is known, although not their specific context (L626, Sq E5a): a miniature squat-piriform mace-head of votive/ceremonial function (Cat. No. 12) and a piriform mace-head (Cat. No. 13). The exact location of the fifth object (Cat. No. 15) could not be determined.

Newe Noy

The site is located about 150 m northeast of Be'er Safad, along the southern bank of Naḥal Be'er Sheva', and is presumably part of the same site. Eight subterranean dwelling complexes were exposed in salvage excavations (Eldar and Baumgarten 1985; 1993).

A copper mace with a rounded head, a globular necked copper mace-head, two axes and a fragment of a cornet were found in Complex 144, dubbed by the excavators 'the Cave of the Treasure' (Eldar and Baumgarten 1993:164; Sebbane 2009: Cat. Nos. 158, 424). In a niche located on the western side of the northern entrance to the complex, two miniature votive/ceremonial hematite mace-heads were found, one squat-piriform with a pronounced shoulder (Cat. No. 40), the other piriform with a pronounced shoulder (Cat. No. 41).

[12] Although the contexts cannot be ascertained, the general nature of the site can be defined as domestic, therefore, the finds are included in this section. The final report of the stone finds from Be'er Maṭar and Be'er Safad (stored in the National Treasures Storerooms at Bet Shemesh), which include the mace-heads, is in preparation by Commenge-Pellerin. The final pottery report published for these two sites (Commenge-Pellerin 1987; 1990) does not contribute to the discussion of the mace-heads.

Ḥorbat Betar

Ḥorbat Betar features both subterranean and above-ground buildings. Dothan (1959) distinguished between three phases: Phase III, the earliest, with subterranean buildings, bell-shaped pits, granaries and small depressions; Phase II consisting of the remains of a circular building; and Phase I, the final occupation phase, with rectangular and square buildings above ground. The material culture includes assemblages of pottery, as well as stone, bone and flint tools, all typical of the Late Chalcolithic, Ghassulian culture. The excavations also yielded eight rounded mace-heads made of limestone, basalt and hematite, but no details are provided in the publication regarding their exact findspot. Two of them, one piriform and one squat-globular, were uncovered in Layer I (Sebbane 2009: Cat. Nos. 91–92). The other six, barrel-shaped, squat-globular and piriform, were attributed by the excavator to Layers III–II (Sebbane 2009: Cat. Nos. 93–98). Among these are two hematite mace-heads, one broken (Cat. No. 26) and one a miniature piriform of votive/ceremonial function (Cat. No. 27).

Giv'at Ha-Oranim

Eight multi-chambered subterranean cave-complexes were exposed at Giv'at Ha-Oranim. The excavators distinguished between dwelling complexes (1595, 1597, 1778, 1779, 1780) and burial (1185) or storage (1186) facilities (Scheftelowitz and Oren 2004:9–22).

Cave Complex 1597.— This complex consists of eight interconnected rooms/spaces (Loci 1309, 1310, 1314, 1335, 1356, 1357, 1373, 1443). Two mace-heads, found in Loci 1252 and 1288, are briefly mentioned in the discussion, but with no additional details (Scheftelowitz and Oren 2004:17). One is squat-piriform, made of breccia (Scheftelowitz 2004b:67; Sebbane 2009: Cat. No. 107), the other, elongated-piriform with a pronounced shoulder, made of manganese oxides (Cat. No. 23). There is no reference to these loci in the stratigraphic discussion, although in the loci list they are defined as a collapse of the complex ceiling (Sqs P24, N/P22–24, entrance to Complex 1597). The mace-heads were assigned to these contexts based on the data presented in Scheftelowitz 2004b:67, Table 4.3.

Cave Complex 1599.— A squat-globular hematite mace-head (Cat. No. 20) was discovered in L1369. This complex is not mentioned in the stratigraphic discussion, but in the loci list it is recorded as originating from Sq N/3, part of Cave 1599. The mace-head is assigned to this locus based on the data presented in Scheftelowitz 2004b:67, Table 4.3.

Tuleilat el-Ghassul

Twelve mace-heads, rounded and carinated, made from various raw materials—hematite, limestone, basalt and diorite—were found at Tuleilat el-Ghassul in the first excavation campaign (Mallon Koppel and Neuville 1934:71, Pl. 35, Figs. 26, 27; Sebbane 2009: Cat. Nos. 215–226). No details of the archaeological context in which they were found are provided in the report. The assemblage includes two hematite mace-heads, one globular

(Cat. No. 56) and one piriform with a pronounced shoulder (Cat. No. 57). The renewed excavations did not yield any mace-heads (Bourke et al. 2000).

Rasam Ḥarbush

A globular mace-head made of hematite (Cat. No. 47) was found on the floor of Building 11 at Rasam Ḥarbush, alongside storage ware, basalt bowls and grinding and pounding stones (Epstein 1998:56–57). This is the only mace-head found in the Golan de spite the extensive study of dozens of settlements in the area since the early 1970s. We can therefore conclude that this absence is real and not the result of random preservation that may be corrected with further research;[13] the Ḥula Valley acting as a contact zone between the Golan and the Ghassul cultures, marking the northeastern boundary of the mace-heads' distribution.[14]

Shoham

A miniature, votive/ceremonial, elongated-piriform hematite mace-head (Cat. No. 55) was uncovered in salvage excavations at Shoham (Nadelman 1994). It was found in Area B, in the fills below dwellings of the Early Bronze Age. The fills contained finds from the Pre-Pottery Neolithic B (PPNB), the Pottery Neolithic and the Late Chalcolithic. The mace-head was attributed to the Chalcolithic period on the basis of typological considerations, including raw material and form.

Shiqmim

Nine rounded mace-heads, made of limestone, hematite and copper, a metal mace and two ivory mace-handles were found in the excavations at Shiqmim (Shalev and Northover 1987; Levy and Alon 1992; Sebbane 2009: Cat. Nos. 238–246, 425, 429). Six of the mace-heads—piriform, squat-piriform and piriform with a pronounced shoulder—are made of hematite (Cat. Nos. 49–54). Most of the finds remain unpublished, with no available details of their original location, apart from the metal mace, which was discovered in Room 1 (Levy 1987:163, Fig. 6.5; Shalev and Northover 1987:358–359).

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[13] Elsewhere, Ornit Ilan and I discussed the absence of metal artifacts in the Chalcolithic culture of the Golan (Ilan and Sebbane 1989:140–142). The absence of copper and ivory artifacts, as well as mace-heads, in the Chalcolithic assemblages of the Golan is yet another difference between the Golan and the Ghassul-Be'er Sheva' cultures. Differences are also manifest in other aspects of material culture, such as pottery, flint tools and the basalt industry, as well as in settlement pattern and the economy (Epstein 1998, and further references therein). The rounded disc- and star-shaped flint tools with central perforations (Noy 1998:277–283) typical of the Golan culture were fitted with wooden handles and used as weapons and ceremonial objects in a similar manner as the rounded and carinated mace-heads in the Ghassul-Be'er Sheva' culture.

[14] The existence of additional contact zones in Upper Galilee can be deduced from the pottery and flint tools that were discovered in the cave at Peqi'in (Getzov 2013:298–300, 302–303, Figs. 7.8–7.12; Shalem, Gal and Smithline 2013:84–85, Figs. 4.126–4.131), Newe Ur in the Jordan Valley (Perrot, Zori and Reich 1967, and see discussion of Newe Ur below), and in Transjordan, at sites such as Abu Ḥamid (Dollfus 1986:46–49; Dollfus et al. 1988).

Tubna Wadi Ziqlab
Three Late Chalcolithic (Ghassulian) occupation levels were identified at Tubna Wadi Ziqlab in central Transjordan. The early phase (Level 1) consisted of stray pottery and lithic finds on bedrock. The excavators assumed that occupation at that time was in dwelling pits. In Levels 2–3, the remains of two large rectangular dwellings were uncovered, as well as pits, granaries, pottery, flint tools and stone tools—all typical of the Ghassulian culture. Two fragments of rounded hematite mace-heads (Cat. Nos. 58, 59) were uncovered. The published information allows only a general attribution to Levels 2–3 (Banning, Blackman and Lasby 1998:153, Fig. 11).

Mortuary Contexts

Mace-heads were found in mortuary contexts, primarily in natural karstic caves at Naḥal Qana, Peqi‘in, Giv‘at Ha-Oranim, in a hewn cave at Bene Beraq, in a grave circle at Shiqmim.

Giv‘at Ha-Oranim
Cave Complex 1185.— This complex, the longest at the site, comprises four units: an entrance hall (L1187), a vestibule (L1188), a corridor (L1189) and an internal hall (L1190). The excavators suggested that this was a burial complex (Scheftelowitz and Oren 2004:21). A copper piriform mace-head with a pronounced shoulder was discovered in the entrance hall, as were fragments of an ossuary, fragments of basalt vessels, a large collection of flint tools and stone stelae (Scheftelowitz and Oren 2004:19; Namdar et al. 2004:70, Fig. 5.1:4, Table 5.1:13; Sebbane 2009: Cat. No. 99).

Bene Beraq
A miniature squat-piriform hematite mace-head (Cat. No. 16) was discovered in an ossuary tomb. Kaplan (1963:300–303; 1993:186–187) noted that the ceiling of the cave collapsed, burying the finds: the ossuaries were placed against the wall, with the pottery and other finds in the center. No details of the human remains were published.

Naḥal Qana Cave
Three piriform hematite mace-heads (Cat. Nos. 34–36; Fig. 6:a) and a copper mace-head with a biconical neck were discovered in a multi-leveled karstic cave at Naḥal Qana. The cave has distinct areas (labeled Entrance, Main Hall, Copper Room, Passage Rectangular Room and Hall of the Terraces) and was in use from the Late Neolithic period to EB I, although most of the finds date to the Late Chalcolithic period, when it served as a burial cave. The mace-heads were discovered in three areas—the Main Hall, the Copper Room

and the corridor leading from the Copper Room to the Hall of the Terraces (Gopher and Tsuk 1996:217–226).[15]

Tomb I, in the northern part of the Main Hall, contained the remains of an infant (Gopher and Tsuk 1996:21; Hershkovitz and Gopher 1996: Table 8.1, 8.2). A miniature squat-piriform hematite mace-head, likely votive/ceremonial, was discovered in this tomb (Cat. No. 36). The state of preservation of the assemblage makes it impossible to establish a clear association between the mace-head or any of the other finds (pottery, fragments of ossuaries, spindle-whorls, flint tools, basalt vessels, beads and shells) and any particular burial in the tomb.

Tomb VII, in the Copper Room, contained the remains of three individuals in its center: a fully articulated adult male, an adolescent and a child (Gopher and Tsuk 1996:30–31; Hershkovitz and Gopher 1996: Table 8.1, 8.2). A piriform hematite mace-head (Cat. No. 34) and a copper mace-head with a biconical neck were discovered together in the southern part of the room (Gopher and Tsuk 1996: Figs 4.18, 4.19:1, 4.20). Although it is tempting to associate the mace-heads with the adult burial, it is also possible that they belong to a burial(s) that did not survive.

Tomb X, in the corridor between the Main Hall and the Copper Room, contained the remains of two individuals: a young child and an adolescent (Hershkovitz and Gopher 1996, Table 8.1, 8.2). A miniature squat-piriform hematite mace-head was discovered in this tomb (Cat. No. 45). Its state of preservation makes it impossible to establish the association between the mace-head or the other finds, some of them unique (ossuary fragments, basalt vessels, flint tools, a turquoise bead and gold ring-ingots) and any of the burials within the tomb.

Peqi‘in Cave

The karstic Peqi‘in Cave has three levels that were adapted for burial by leveling, paving, and constructing shelves and raised steps. The uppermost level (Area I; 7 × 10 m), and the lower one (Area III; 6.0 × 6.5 m), were used for burial. The middle level (Area II; 3.0 × 4.5 m), was defined by the excavators as a transition area that provided access to the lower burial level. The cave was used for secondary burial of approximately 1000 individuals, placed in hundreds of ossuaries and clay burial containers. Hundreds of offerings were found next to the burials: fenestrated chalices, pottery vessels (bowls, jugs, churns and cornets), basalt and pedestal bowls, stone and bone violin figurines, scrapers and disc-shaped flint tools, beads of a variety of raw materials (limestone, calcite, dolomite, turquoise, obsidian, serpentine and carnelian) ostrich eggs and shells (Shalem, Gal and Smithline 2013). The

[15] Remains of 23 individuals were identified: 6 adults, 4 young adults, 2 adolescents, 5 children and 6 infants. They were found in tombs in the Main Hall (12), the Copper Room (3), the Passage (6), and the Hall of the Terraces (1). The bones were poorly preserved, and presumably they constitute only a small sample of the dozens, perhaps hundreds, of individuals that were buried in the cave (Hershkovitz and Gopher 1996).

offerings also included a copper scepter/mace with a piriform head, and five rounded mace-heads that were found in Areas I and III: one copper, squat-globular, necked object; two limestone miniature votive/ceremonial piriform objects; and two hematite mace-heads, one globular (Cat. No. 45) and the other barrel-shaped (Cat. No. 46; Shalem, Gal and Smithline 2013:330, Fig. 9.3:438, Table 20.1). It is not possible to identify the exact archaeological context of the mace-heads and associate them with a particular burial assemblage.

Shiqmim

A miniature votive/ceremonial squat-piriform hematite mace-head was discovered in Tomb 51, a grave-circle in Cemetery 2 at Shiqmim (Levy and Alon 1989/1990: Cat. No. 48). This cemetery is part of a complex of cemeteries that extended over about 800 sq m on a series of chalkstone hills parallel to the Naḥal Be'er Sheva' stream (Levy and Alon 1987).[16] The tomb contained a single burial of an adult male. The mace-head is the only artifact that was placed there, making its association with the deceased certain.

Hoards

Hoards were discovered in a habitation site at Abu Ḥamid in Jordan, in a natural cave at Naḥal Mishmar that was used both as a dwelling and for burial, in a natural cave at Naḥal Shafan that was used as a dwelling and in two subterranean dwelling systems at the site of Giv'at Oranim.

Abu Ḥamid

Three major occupation phases were distinguished at Abu Ḥamid, dating from the Pottery Neolithic to the Late Chalcolithic (Ghassulian) periods (Doullfus 1986; Doullfus and Kafafi 1987; 1993; Doullfus et al. 1988; Lovel, Kafafi and Dollfus 2007). The rounded mace-heads published thus far were part of the Phase III occupation (Layers 1–2d), dating to the second half of the fifth–beginning of the fourth millennia. The assemblage comprises eight mace-heads that were found together as a group. Six are made of hematite (Cat. Nos. 1–6) and include piriform, barrel-shaped and globular examples; the other two are made of limestone (Sebbane 2009: Cat Nos. 36, 41), one barrel-shaped, the other piriform. The publications are general, giving no details of the exact archaeological context in which the mace-heads were discovered (building, level, locus). The excavators suggest that perhaps they had been placed in a leather bag or mat, suggesting it was a cache (Doullfus and Kafafi 1987: Pl. 12; Doullfus et al. 1988:595).[17]

[16] Thus far, only Cemeteries 1 and 3 have been published.

[17] It may likely be that the assemblage reflects a ceremonial deposition, such as a foundation offering.

Naḥal Mishmar

The hoard of Naḥal Mishmar was found wrapped in a reed mat, under a stone slab, in a natural niche in Cave 1. It is difficult to identify the location of the niche within the cave from the published description, or to relate the hoard to the other Chalcolithic remains in the cave, which included pottery, bone artifacts, mortars, hearths, textiles and five burials in Hall B (Bar-Adon 1980:2–5, 135–185, 198; Gilead and Gošić 2014).[18] Gilead and Gošić based their obserbations on Davidovich (2008; pers. comm.), who discusses this in detail. The hoard comprises predominantly artifacts that were manufactured in the lost-wax technique, as well as a small number of tools that were cast in open molds, a few artifacts made of hippopotamus ivory, six hematite mace-heads (Cat. No. 28–33, Fig 6b) and one made of limestone (Table 4).[19]

Naḥal Ẓe'elim Basin, Cave 49 in Naḥal Shafan[20]

Cave 49 was surveyed and excavated by Aharoni as part of the Expedition B campaign and a preliminary report of the finds was published (Aharoni 1961:14–15, Pls. 7, 8a–c). Subsequently, Davidovich processed the finds, including Chalcolithic pottery in a range of types, stone and metal vessels, pendants and beads made of ivory and bone, and artifacts made of organic materials, publishing them as part of his comprehensive study of the Late Chalcolithic period in the Judean Desert (Davidovich 2008:198–203). The nature of the artifacts in the cave,

Table 4. The Composition of the Naḥal Mishmar Hoard

Description	Quantity
Plain rounded mace-heads	240
Decorated rounded mace-heads	18
Carinated mace-heads	16
Cylindrical mace-heads	4
Maces	87
Scepters/standards	11
Crowns	10
Shaft axes	3
Containers	8
Hammer	1
Total cast in the lost-wax technique	*398*

Description	Quantity
Axes	11
Adzes	4
Total cast in open molds	*15*
Total metal artifacts	*413*
Artifacts made of hippopotamus ivory	6
Hematite rounded mace-heads	6
Limestone rounded mace-heads	1
Total artifacts in the hoard	*426*

[18] Bar-Adon placed the niche in the northern wall of Hall B, while Gilead and Gošić concluded that it should be located in the northern part of Hall A. They also doubted a date in the Chalcolithic period for some of the textiles, fauna, the burials in Cave 1 and the burials in Caves 2 and 3.

[19] For a summary and discussions of the hoard, see Sebbane 2014; 2016; 2019 and references therein.

[20] Aharoni placed the cave in Naḥal Badar. Davidovich revised this identification, and attributed the cave to Naḥal Shafan.

in conjunction with the absence of any record of burials, suggests it was a dwelling cave. Davidovich suggested that Cave 49, like others occupied in the Judean Desert during the Chalcolithic period, should be interpreted as a refuge cave (2008:150–160).

The Cave 49 assemblage included five rounded mace-heads of various types of globular and piriform shape. Three are made of copper (Aharoni 1961: Pl. 8:b; Sebbane 2009: Cat. Nos. 206–208) and two of hematite—one piriform the other globular (Cat. Nos. 37, 38).[21] Judging by the publications and by the description of the excavators, the mace-heads were the first objects to be found, on a rock-step next to the 'large rock.' Davidovich assumed that the reference is to the boulder at the front of the cave, but also allowed for the possibility that the mace-heads were found deep inside the cave and interpreted them as a hoard (Davidovich 2008:116, 199–200).[22]

Giv'at Ha-Oranim

A copper mace/scepter, eight rounded mace-heads made of copper, hematite and manganese-oxides, two axes, an adze and a scraper, all made of copper and a stone bead were discovered in two subterranean dwelling systems (Caves 1595, 1780) at Giv'at Ha-Oranim. In view of their archaeological context, they are considered a hoard.

Cave 1780.— This cave comprises seven rooms (Loci 967, 977, 993, 995, 998, 1002, 1038). Locus 967 is the central and largest room. On its floor, next to the western wall, six rounded mace-heads made of copper, manganese-oxides and hematite were discovered alongside an axe, an adze and a scraper, all made of copper, and a stone bead. The manganese oxide mace-head (Cat. No. 24) is globular. The hematite object is piriform with a pronounced shoulder (Cat. No. 25). The assemblage was defined as 'a hoard of luxury items.' Remains of ash around the artifacts led to the assumption that they had been packed in a bag/mat made of organic material (Namdar et al. 2004:70, Table 5.1; Scheftelowitz 2004b:67, Table 4.3; Scheftelowitz and Oren 2004:10).

Cave 1595.— Most of the ceiling of this cave collapsed. Under the collapse, the floor of the central room (L254), with a number of pits, was exposed. Two hematite mace-heads (Cat. Nos. 20, 21), a scepter/mace with a rounded head and a copper axe were discovered in Pit 1255, with the assemblage defined as a hoard (Scheftelowitz and Oren 2004:14, Fig. 2.18).[23]

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[21] The hematite mace-heads were not registered in the National Treasures and are apparently lost.

[22] Davidovich refers to the assemblages of Naḥal Mishmar and Cave 49 in Naḥal Shafan as hoards (2008:116). It should be noted that although there is no doubt that first is a hoard, i.e., a deliberately cached assemblage (see the description of the hoard), this is not necessarily the case for the mace-heads from Cave 49, and they may be an integral part of the general assemblage of artifacts in the cave. Here they are incorporated as a hoard, although this is uncertain.

[23] The discussions of the hematite and manganese mace-heads (Scheftelowitz 2004b:67, Table 4.3) and of the copper maces and mace-heads (Namdar et al. 2004:70, Table 5.1), place these artifacts in L1253. The only mention of this locus is in the loci list in Scheftelowitz and Oren 2004, which locates it in Sq R22.

Both hematite mace-heads are squat-piriform, one of them (Cat. No. 21), a miniature. A copper scepter decorated with three ibis heads emerging from a rounded mace-head (Namdar et al. 2004:70, Table 5.1, Fig. 5.2:1; Sebbane 2009: Cat. No. 427) was discovered in L1300, about 0.5 m east of Pit 1255, within the ceiling collapse.[24]

Temples and Cultic Precincts

The Sanctuary at Gilat

Twenty-five mace-heads were discovered within the cultic precinct at Gilat. The excavators defined the site as a cultic center that served the Chalcolithic settlements of the entire Southern Levant, in particular the northern Negev, during the second half of the fifth and the beginning of the fourth millennia (Levy 2006:831–846; Levy et al. 2006:133–139).[25] Rowan and Ilan (2007:252–253; Ilan and Rowan 2012:96–98, 102) interpreted the combination of dozens of burials within the precinct with large concentration of finds belonging to types that they considered typical of mortuary contexts (e.g., pottery and basalt fenestrated chalices, mace-heads, grinding palettes and pendants) as an indication of a mortuary complex, although the finds were not directly associated with the burial remains.

The assemblage includes intact and broken rounded and carinated mace-heads, made of a variety of raw materials—granite, hematite, limestone, chalkstone, diorite and basalt. They were found in a number of settlement strata, and in different types of archaeological contexts, including on the surface, courtyards, rooms and pits (Table 5; see Rowan et al. 2006:590–592, Table 12.24, Fig. 12.25:1–5; Sebbane 2016:426–430).[26] Two of the hematite mace-heads that were discovered in the cultic precinct are incorporated into this study: Cat. No. 18 (Stratum IIc) and Cat. No 19 (Stratum IIa).

Stratum IIc.— During this phase, the complex plan of the cultic precinct was first established. It included small cult-rooms, a ceremonial courtyard (Area D) and a public assembly area (Levy et al. 2006:109–112, 136–137, Figs. 5.5, 5.16, 5.21). According to the excavators, the public did not have access to the rooms or the ceremonial courtyard, finding support this claim in the distribution pattern of the ceremonial objects—violin figurines, grinding palettes, torpedo jars—and in the large quantities of these artifacts accumulated in pits

[24] Attribution of the scepter to this particular locus is based on Namdar et al. 2004:70, Table 5.1. There is no reference to L1300 in the discussion of Cave 1595; in the loci list it is recorded as part of the cave ceiling (Sqs P-S 20–23).

[25] Results of petrographic analyses of pottery assemblages from the temples at ʻEin-Gedi and Gilat, and from the Cave of the Treasure, led Goren (1995:293–295, 296–298) to dispute the central role of the Gilat Temple for the Chalcolithic settlement of the entirety of the Southern Levant, claiming it only served the Chalcolithic settlements of the northern Negev and Judean hills.

[26] The concluding discussion of Rowan et al. 2006 concentrates on provenance (Egypt/Canaan) and dating. In addition to the data in Table 5, the range of measurements and weights for some artifacts is also presented. The data is not complete, and only four mace-heads are illustrated.

Table 5. The Mace Heads from Gilat (see Rowan et al. 2006:590–592; Sebbane 2009; 2016)

Stratum	Shape			Raw Material				
	Rounded	Carinated	Not defined	Hematite	Granite	Limestone/ Chalkstone	Diorite, Other	Total
IIc	2	3	7	5	5		2 (1 basalt)	12
IIb		2			1	1		2
IIa	2	2	2	1	2	2	1	6
I	1		1	1		1	2	2
0		3				1	2	3
Total	*5*	*10*	*10*	*7*	*8*	*5*	*5*	*25*

and *favissae* around the cult-rooms and the ceremonial courtyard. Twelve mace-heads are attributed to this phase: eight were found broken—their shape, weight and measurements are not specified (Rowan et al. 2006, Table 24.12:15, 17–20, 23–24);[27] and the remaining four—two rounded and two carinated—were discovered in various contexts around the cult-rooms and the ceremonial courtyard (Rowan et al. 2006: Table 24.12:16, 21–22, 25; Sebbane 2016). Of these, one piriform mace-head with a pronounced shoulder was made of hematite. It was found in Pit 293 (Sq L6), east of the cult-rooms (Rowan et al. 2006: Table 24.12:21; Cat No. 18).

Stratum IIb.— Although no hematite mace-heads were found in this stratum, it is mentioned here briefly due to its importance for understanding the development of the cultic precinct at Gilat.[28] The cultic precinct was rebuilt after the destruction of the Stratum IIc precinct, over the earlier large assembly area. The new precinct (Areas J, T, Y) was more structured, with five broad cult rooms around a central courtyard. The excavators stated that this phase also ended in a violent destruction (Levy et al. 2006:102–111, 137–138, Figs. 5.4, 5.17, 5.20).

Stratum IIa.— It seems that by this phase the cultic precinct lost its function and significance. The inherent architectural plan that characterized it in Stratum IIb disappeared, and the area featured a large concentration of pits and stone platforms. The change can also be discerned in the composition of the assemblage. The excavators noted that as the number of ceremonial items decreased, there was a significant rise in the number of loomweights

[27] The assemblage includes five hematite mace-heads (see Table 5), but only one of them is discussed here. Not enough data were published to allow reference to the other four and they were not transferred to the National Treasures Storerooms.

[28] Two carinated mace-heads are attributed to this phase: A granite biconical mace-head in cult-room No. 5, L1215 (Sq L4; Rowan et al. 2006, Table 24.12:13), and a carinated(?) mace-head made of chalkstone in cult-room No. 11, L763 (Sq N2; Rowan et al. 2006: Table 24.12:14)

and flint endscrapers and sidescrapers. These changes attest to the industrial character of the 'precinct' (Levy et al. 2006:128–130, 138–139, Figs. 5.3, 5.18, 5.19).

Six mace-heads were attributed to this phase, three of which were found broken on the surface (L2, Area D; L618, Area T; L1295, Area J). The publication provides no details regarding their shape, measurements or weights (Rowan et al. 2006: Table 24.12:8, 9, 12; they are not included in the catalogue). The other three are a broken globular hematite mace-head found on the the floor of a room(?) (L818, Sq 4K; Rowan et al. 2006: Table 24.12:11; Sebbane 2009: Cat. No. 116); a broken globular limestone mace-head found on the surface of a room(?) (L1030, Sq 1K; Rowan et al. 2006: Table 24.12:10; Sebbane 2009: Cat. No. 119); and a biconical quartz-diorite mace-head with convex sides, found on the surface (L5, Sq 6Ai; Rowan et al. 2006: Table 24.12:7; Sebbane 2009: Cat. No. 121).

Surface Finds

Surface finds were collected in the agricultural fields of Kibbutz Gal'on, Kibbutz Newe Ur, Kibbutz Giv'at Ha-Shelosha (Khirbat en-Nazla) and al-Mghar, near Gedera.

Kibbutz Gal'on

A globular hematite mace-head (Cat. No. 17), was collected in the field of the kibbutz, together with other finds from the Chalcolithic period: basalt vessels (bowls and pedestal-bowls), bifacial flint tools (axes and adzes) and blades. In view of the proximity to the large Chalcolithic site of Gat-Govrin, it is plausible that this is part of the same site.[29]

Al-Mghar

A piriform hematite mace-head with a pronounced shoulder (Cat. No. 44) was found on the surface at al-Mghar. It is dated to the Chalcolithic period based on typological considerations and raw material (see Table 5).

Kibbutz Newe Ur

The Chalcolithic site in the agricultural fields of Kibbutz Newe Ur was not excavated. The rich assemblages were collected by Perrot, Zori and Reich while hiking and 'rummaging' in the area. The artifacts include pottery (bowls, pedestal-bowls, mortars, grinding stones and flywheels), bifacial flint tools (axes and adzes) and drilled flint tools in the shape of discs or stars. They demonstrate the importance and centrality of the site (Perrot, Zori and

[29] The Chalcolithic finds came to light during plowing. The collection was registered and recorded by the IAA in 1996–1998, as part of the project for registering the Kibbutz collections. The collection is on display in the archive of Kibbutz Gal'on.

Reich 1967).[30] These collecting episodes yielded two elongated-piriform hematite mace-heads (Cat. Nos. 42, 43).[31]

Khirbat en-Nazla

The Chalcolithic site in the agricultural fields of Kibbutz Gan Ha-Shelosha was not excavated. The mace-heads, as well as other finds from the Late Chalcolithic period—pottery (jars, juglets and cornets), fragments of basalt vessels, bifacial flint tools (axes and adzes) and violin figurines—were collected by Yitzhak Meyuhas, a kibbutz member (Alon and Levy 1993:169).[32] The collection includes ten mace-heads, nine of which are rounded and one carinated. Seven are made of limestone, five of them globular (Sebbane 2009, Cat. No. 135–139) and two piriform (Sebbane 2009, Cat. No. 142, 143); three are made of basalt, one globular (Sebbane 2009, Cat. No. 139), one squat-globular (Sebbane 2009, Cat. No. 144) and one biconical with straight sides (Sebbane 2009, Cat. No. 140). One miniature votive/ceremonial piriform mace-head with a pronounced shoulder is made of hematite (Cat. No. 39).

Geographic Distribution

The geographic distribution of the mace-heads corresponds to the Chalcolithic settlement pattern. The mace-heads are common in sites from the Ḥula valley in the north to the Be'er Sheva' Valley and the Judean desert in the south, as well as in the Chalcolithic sites in Transjordan (Sebbane 2009:198–201). This distribution pattern, which takes into account the full corpus of mace-heads and maces from the Late Chalcolithic period, of all types and raw materials, can also be discerned when specifically considering the rounded hematite mace-heads (Table 6; Fig 7).

Intended Function and Use

Before embarking on a discussion of the particular function and use of the hematite mace-heads, some aspects concerning their intended function, use and overall significance in the ancient Near East—as weapons and ceremonial and ritual objects—should be touched upon

[30] The disc- and star-shaped flint tools and some of the pottery vessels attest to connections with the sites of the Golan Chalcolithic Culture (Perrot, Zori and Reich 1967: Figs. 1–11, 16:1, 4, 5, 17:1, Pls. 38–41; Noy 1998:277–283, Figs. 49–56).

[31] Their location is unknown. They were published but not transferred to the National Treasures and are apparently lost.

[32] In 1996 the collection was registered and documented by the IAA as part of the project for registering the kibbutz archaeological collections. Selected items are on display in the Cultural Center of the kibbutz, and the rest of the collection is stored in the National Treasures Storerooms at Bet Shemesh. Artifacts from the Roman, Byzantine and Islamic periods were also collected at the site.

(see Ciałowicz 1987; Gilbert 2004:35–41; Solyman 1968; Sebbane 2009:207–305; 2016; 2023 and further references therein).

Maces are the only weapons used between the tenth and the first half of the fourth millennia that were specifically designed for hand-to-hand combat. Other objects, such as axes and adzes, made of flint, stone and copper, were also used as weapons, but their primary function seems to have been as household tools. During the fifth and fourth millennia, the mace reached the zenith of its distribution and frequency in the ancient Near East, apparently

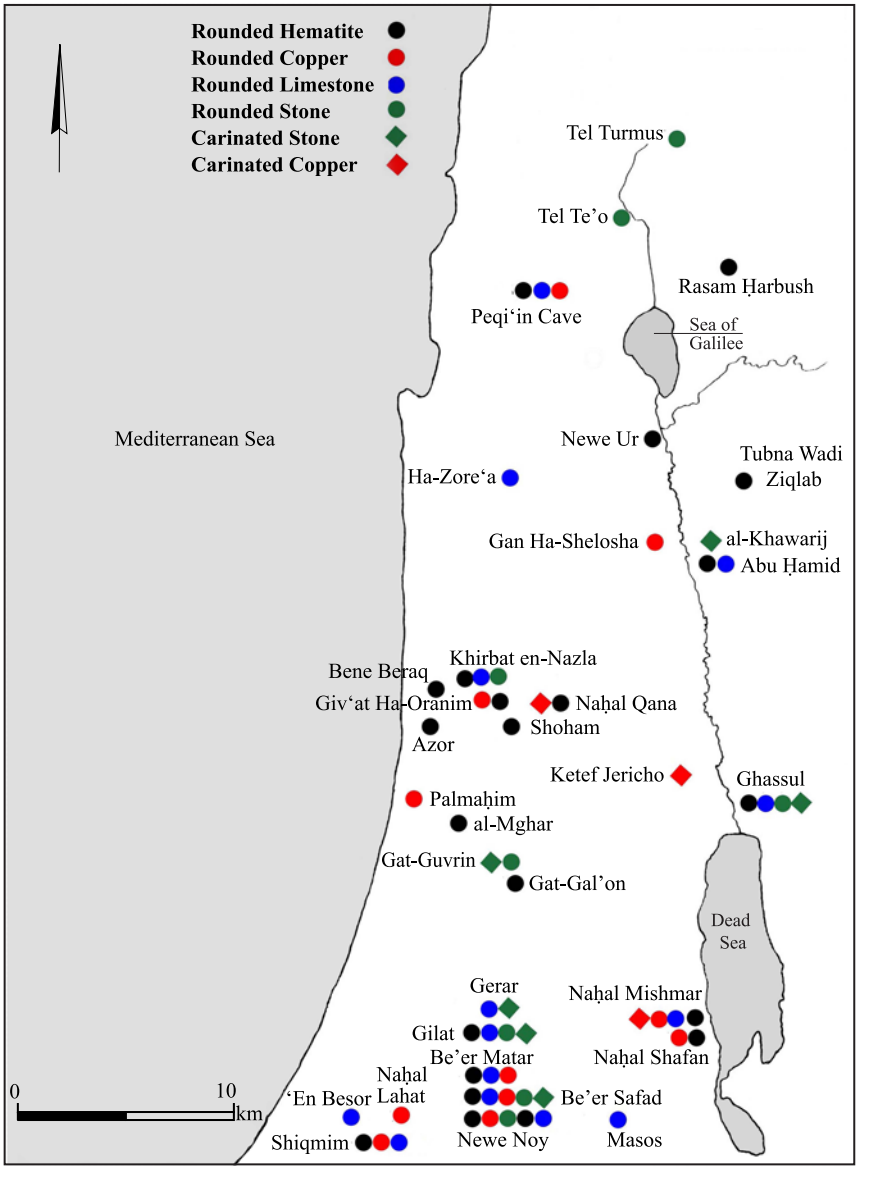

Fig. 7. Geographic distribution of mace-heads in the Chalcolithic period, according to raw material (drafting: N. Zeevi).

Table 6. Distribution of Hematite Mace-Heads According to Sites

Site	Quantity
Rasam Ḥarbush	1
Peqi‘in	2
Newe Ur	2
Abu Ḥamid	6
Tubna	2
Azor	1
Bene Beraq	1
Naḥal Qana	3
Khirbat en-Nazla	1
Giv‘at Ha-Oranim	6
Shoham	1
al-Mghar	1

Site	Quantity
Kibbutz Gal’on	1
Naḥal Mishmar	6
Naḥal Shafan Cave 49	2
Ghassul	2
Be’er Maṭar	3
Be’er Safad	5
Newe Noy	2
Ḥorbat Betar	2
Gilat	2
Shiqmim	7
Total	*59*

becoming the most important weapon for hand-to-hand combat. The metal maces and mace-heads discovered in Israel in contexts of the mid-fifth–mid-fourth millennia indicate that the mace was the first specific weapon cast in metal, and moreover, cast in the lost-wax technique. Although other copper weapons, such as daggers, lance-heads, spearheads and battle axes, were introduced during the second half of the fourth millennium, the mace remained in use. Stone mace-heads, complete and broken, are very common in assemblages dated to the second half of the fourth and the first half of the third millennia in Israel and the ancient Near East.

In its capacity as a ceremonial/ritual object, the mace had four main roles: (1) a symbol of authority and victory of mortals (attested in material culture and pictorial depictions); (2) a votive/dedicatory object (attested in material culture); (3) a cult-object or divine attribute (attested in material culture and pictorial depictions); and (4) a weapon of the gods (attested only in pictorial depictions). Considering the distinct group of hematite mace-heads, several observations are noteworthy:

Archaeological Context. Hematite mace-heads were found in diverse archaeological contexts, including habitation sites, cultic-precincts, hoards and mortuary contexts (Table 7). This variety reflects the wide range of functions and roles they held, as weapons, ceremonial/ritual objects and symbols of status and authority.

Complete Items. Most of the hematite mace-heads (48 items, c. 81% of the assemblage) are complete (see n. 9), enabling determining their dimensions and weights, which are decisive criteria for establishing their intended function, whether for combat or ceremonial purposes, sometimes at odds with the archaeological context in which they were found. This good state of preservation is in contrast with the limestone mace-heads, more than half of which

Table 7. Distribution of Hematite Mace-Heads According to Context

Archaeological context	Complete	Broken	Total	%
Dwellings and surface[i]	23	9	32	54.0
Tombs	7		7	12.0
Hoards	18		18	30.5
Temples/cultic precinct		2	2	3.5
Total	48	11	59	
%	81%	19%	100%	100%

[i] This group includes the surface finds from Kibbutz Gal'on, Khirbat en-Nazla, al-Mghar and Newe Ur, which are not associated with known Chalcolithic settlements.

were broken, whether during manufacture or as consequence of their use.[33] There seem to be two reasons for this difference: (1) limestone mace-heads were manufactured on-site by local craftsmen (see above), while the hematite mace-heads arrived at the various sites as complete products and therefore, no manufacturing debris was found; (2) the considerable hardness of the hematite led to a long use without damage. It should be noted that all the rounded copper mace-heads were also found complete, although broken copper artifacts could be recycled (Sebbane 2009:96–98).

Miniature Items. Of the 32 hematite mace-heads (c. 54% of the assemblage) found in habitation contexts (see above; Tables 5, 7), 9 (Cat. Nos. 9, 11, 12, 14, 16, 27, 40, 41, 55) were defined as miniature, probably manufactured as objects of luxury, status and ceremony.

Hoarded Items. Eighteen mace-heads (c. 30.5% of the assemblage) were discovered in four hoards (see above; Table 7). Interestingly, maces and mace-heads are the main, at times the only, component of Chalcolithic-period hoards. Of the 426 objects in the hoard from Naḥal Mishmar, 372 are mace-heads and maces of various shapes and types: rounded, carinated and cylindrical. The five objects that constitute the hoard from Cave 49 in Naḥal Shafan are mace-heads. The eight objects comprising the Abu Ḥamid hoard are rounded, varying in type. Nine of the fifteen objects in the hoards from Giv'at Ha-Oranim are rounded mace-heads varying in type. Their common presence in hoards seems to be due to their importance as both weapons and ceremonial/ritual objects (Sebbane 2014; 2019).

Burial Gifts. Mace-heads are generally uncommon in Chalcolithic burial assemblages, but in the rare occasions that they were included as burial gifts, hematite mace-heads were clearly preferred. The seven hematite mace-heads that were found in burials comprise

[33] The assemblage of rounded limestone mace-heads from the Late Chalcolithic period comprises 63 items. Of these, 36 (c. 57%) were found broken, and 27 (c. 43%) were complete (Sebbane 2009:96–98)

Table 8. Mace-Heads Found in Burial Contexts According to Raw material and Type

Site	Burial Types	Mace-Head Raw Material and Type					Total
		Copper, Rounded	Copper, Carinated	Copper, Scepter	Limestone, Rounded	Hematite, Rounded	
Bene Beraq	Hewn cave; ossuaries; multiple burials					1	1
Giv‘at Ha-Oranim	Underground burial system; ossuaries	1					1
Ketef Jericho[i]	Natural cave; family burial		1				1
Naḥal Qana	Karstic cave; ossuaries; multiple burials		1			3	4
Palmaḥim (Tomb 9)[ii]	Hewn cave; ossuaries; multiple burials	1					1
Peqi’in	Karstic cave; ossuaries; multiple burials	1		1	2	2	6
Shiqmim (Tomb 51)	Built circular tomb; individual burial					1	1
Total		*3*	*2*	*1*	*2*	*7*	*15*

[i] Data from Segal and Kamenski (2002).
[ii] Data from Gophna and Lifshitz (1980).

c. 12% of the total hematite mace-head assemblage (see above; Tables 7, 8), and roughly 50% of the total number of mace-heads found in burials. The hundreds of burial sites that were discovered throughout the country, including grave-circles, hewn burial caves, natural caves and karstic caves, in the coastal plain (Brink 2005), Upper Galilee (Shalem, Gal and Smithline 2013), the Judean Desert (Davidovich 2008), the western Negev (Levy and Alon 1987; Goren and Fabian 2002) and Transjordan (Stekelis 1960–1961), yielded only 14 mace-heads and a single metal mace. They were found in only seven sites and constitute c. 3% of the 469 mace-heads known (Sebbane 2009:191, 198–201; see Table 6). The small number of mace-heads in burials is particularly striking in light of the dozens and even hundreds of secondary burials in some of the caves, which were accompanied by hundreds, sometimes thousands of burial gifts, including pottery, stone vessels, flint tools, bone tools and beads.

Function. The miniature hematite mace-heads discovered in the tombs (Cat. Nos. 16, 35, 36, 48) were clearly not intended for combat. Presumably, they were specifically manufactured as burial gifts. Three mace-heads from burial contexts (Cat. Nos. 34, 45, 46) are within the range of measurements and weights that would make it possible to define them as combat mace-heads, probably used for combat prior to their deposition as burial gifts and their exclusion from daily life.

Votive Offerings. Only two hematite mace-heads, c. 3.5% of the total assemblage, were discovered in the cultic precinct of Gilat (see above; Tables 5, 7). However, it should be noted that maces and mace-heads are a basic component of votive offerings and ritual-ceremonial assemblages in temples of the ancient Near East in the fourth and third millennia. The assemblages range from a single mace-head to collections, or hoards containing hundreds of artifacts. Plain, standard mace-heads are found together with sumptuous maces and mace-heads, made of precious materials, with relief designs and plastic images, whose ritual-ceremonial function is clear. In Mesopotamia, they are even occasionally inscribed with dedicatory inscriptions. The 25 mace-heads discovered in the Chalcolithic cultic precinct at Gilat provide the earliest evidence of a ceremonial use of mace-heads in temples of the ancient Near East. The nature of the assemblage and its distribution pattern within the precinct indicate that the mace-heads may have been votive offerings, dedicated by individual worshipers.[34]

CONCLUSIONS

Hematite mace-heads are unique to the Late Chalcolithic culture that flourished in the region of Israel and Transjordan from the second half of the fifth to the first half of the fourth millennia. They seem to be one of the definitive typo-chronological markers of this culture, and the decline of the Chalcolithic culture signaled their disappearance from everyday life and ritual contexts alike; they are missing from the Bronze Age cultures of Israel. It is noteworthy that hematite mace-heads were not discovered in other ancient Near Eastern cultures. This absence stands out, particularly in view of the central status and significance of the mace as a weapon and as a ceremonial/ritual object in the Southern Levant, as seen in the large and varied assemblages that were discovered in different contexts, as well as in large collections in temples (Lloyd 1942; Solyman 1968; Adams 1974; Ciałowicz 1987; Gilbert 2004; Sebbane 2009; 2016:431–442, and references therein).

The sudden appearance of the hematite industry in the Late Chalcolithic period, seemingly out of nowhere, corresponds to the appearance of other unique specialized industries that required control over raw materials and technological knowhow, as well as technical and artistic competences (quarrying, stone masonry, carving and metal casting) necessary to manufacture the various utensils and objects. These specialized industries manufactured and distributed a variety of new products: basalt and phosphorite bowls and fenestrated chalices in a range of sizes and types (see n. 3); copper tools and ritual-ceremonial objects manufactured in different techniques (Ilan and Sebbane 1989; Shalev 1991; Tadmor et al. 1995; Goren 2008; Sebbane 2014); and ivory, bone and shell figurines, jewelry and ritual objects exhibiting a variety of types and sizes (Perrot 1959; 1964; Bar-Adon 1980:16–23;

[34] For a comprehensive discussion of maces and mace-heads as votive, ceremonial and ritual objects in the temples of the ancient Near East during the fifth–third millennia, see Sebbane 2016, and references therein.

Tadmor 1985; Levy and Alon 1992; Bar-Yosef Mayer 2002; Scheftelowitz 2004a:84–86; Raban-Gerstel and Bar-Oz 2013; Shalem, Gal and Smithline 2013:329–330).

Production of hematite and other visually similar minerals, such as manganese-oxide, made use of the outcrops of iron-oxide veins in southern Israel, Transjordan and southern Sinai. The mace-heads were apparently manufactured near the sources of raw material by specialized craftsmen who knew the location and mastered the techniques of quarrying and processing the material, and eventually distributed the finished product to the Chalcolithic settlements. The results of the chemical analyses carried out on some of the mace-heads from Giv'at Ha-Oranim, taken in conjunction with the absence of raw material and manufacturing debris in the Chalcolithic sites, reinforce these assumptions. Additional support for the model suggested here can be found in the morphological diversity that is typical of the hematite mace-heads, but is not present in the limestone mace-head industry, manufactured within the settlements by local craftsmen and usually characterized by a 'simple' outline—piriform, squat-piriform, globular or squat-globular.[35]

The choice of hematite for the manufacturing of mace-heads, a very hard raw material with a high specific gravity, whose red and black colors acquire metal sheen when polished, was apparently considered ideal in the Chalcolithic culture for the central functions of the mace as a weapon, a ceremonial/ ritual object and a symbol of rule and power. The attributes of hematite made it possible to create weapons that were durable, effective and strong, suitable for striking and smashing in hand-to-hand combat, as well as exceptional luxury items for use in ritual and ceremony.

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[35] Morphological diversity is typical also of the copper mace-heads (see *Typology*, below, n. 4 and literature therein). It seems that there are contact points between the hematite and the copper mace-heads industries. In both the raw material is not common within the settled landscape, the extraction and processing of both required control over the sources of the raw material, as well as competence and specialization. All of the above probably made the finished product more expensive than the limestone mace-heads.

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