

**History of the Ancient Near East / Monographs - III/3**

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# **LANDSCAPES**

**Territories, Frontiers and Horizons in the Ancient Near East**

**Papers presented to the XLIV Rencontre Assyriologique Internationale  
Venezia, 7-11 July 1997**

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**Part III**

**Landscape in Ideology, Religion, Literature and Art**



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**Sargon srl  
Padova 2000**

**THE EBLAITE METROLOGY IN THE MIDDLE BRONZE AGE**  
Archaeological Context and Distributive Analysis of Weights

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The corpus of Middle Bronze Age weights (ca. 2000-1600 BC) from Tell Mardikh-Ebla is constituted by more than one hundred specimens: 38 weights are related to architectural complexes and were found directly over the floors in their primary functional context or in the destruction layers over them.<sup>1</sup>

The articulated town planning of Old Syrian Ebla (Fig. 1), well-known for the extensive excavations and for the lacking of substantial archaeological remains of later periods in the Lower Town, makes the contextual approach to this material very interesting. The aim of this preliminary study is in fact, on the one hand, to point out the distribution of weights in the main buildings and, on the other hand, to underscore significative correlation with other broad functional categories of artifacts (*i.e.*, seals and sealings, stone and metal tools, unfinished objects or raw materials). This kind of analysis could permit a functional characterization of the architectural space. In spite of methodological problems concerning a correct identification of primary or secondary deposits, we believe that it is quite important to point out peculiar

links among artifacts, thus producing out hypotheses on their meanings, although one must be very cautious regarding a superficial correlation between objects and findspots.

**1. Metrological Analysis**

The following table shows the weights according to their absolute weight, system, unit value, ratio, material and shape. The metrological analysis has revealed the presence of different systems.

As regards terminology and standard values we adopted the following scheme:<sup>2</sup>

*Syrian System* (abbr. S):

unit value of 7.80 gr (60 shekels = 1 mina)

*Egyptian System* (abbr. E):

unit value of 9.40 gr (50 shekels = 1 mina)

*Mesopotamian System* (abbr. M):

unit value of 8.40 gr (60 shekels = 1 mina)

*Anatolian System* (abbr. A):

unit value of 11.70 gr (40 shekels = 1 mina)

No.	Exc. number	Weight (gr)	System	Unit value (gr)	Ratio	Material	Shape
1	TM.87.P.213	1.70	M	8.50	1/5	haematite	ovoidal
2	TM.88.P.150	1.80	E	9.00	1/5	haematite	ovoidal
3	TM.87.P.163	2.10	M	8.40	1/4	haematite	ovoidal
4	TM.87.P.225	4.10	M	8.20	1/2	haematite	emispherical
5	TM.79.Q.205	5.00	S	7.50	2/3	haematite	pebble
6	TM.93.P.509	6.00	E	9.00	2/3	limonite ?	emispherical
7	TM.72.N.463	6.80+x	S ?	6.80+x	1	haematite	ovoidal

1. Most of the weights found before 1986 are published in Archi 1980; 1987 (see also De Maigret 1980). The assyriologist focused his attention chiefly on the metrological evaluation of the material and presented the weights together with the main group dated to the EB IVA (ca. 2400-2300 BC). We present here only specimens found inside buildings, not considering weights found in stratigraphical levels not directly correlated to architectural units but dated to the MB Period.

2. The adopted terminology is used only for convenience and not to indicate necessarily a geographic origin of metrological classes. The unit value represents here the average weight of the supposed standard "shekel," and it is delimited by upper and lower values, according to the principle of ranges of accuracy or "Normzonen" elaborated by O. Viedebantt (1923). For a detailed introduction to the methodological problems regarding the analysis of ancient scale weights see Petruso 1992, 1-11, 69-75.



No.	Exc. number	Weight (gr)	System	Unit value (gr)	Ratio	Material	Shape
8	TM.69.E.733	6.90+x	S ?	6.90+x	1	basaltic stone	cylindrical
9	TM.74.E.342	7.70	S	7.70	1	basaltic stone	cylindrical
10	TM.69.E.772/1	8.00	S	8.00	1	haematite	emispherical
11	TM.87.P.91	8.40+x	M ?	8.40+x	1	haematite	emispherical
12	TM.78.Q.406	8.50	M	8.50	1	haematite	ovoidal
13	TM.78.Q.228	8.60	M	8.60	1	pyrite	ovoidal
14	TM.78.Q.259	10.30+x	S ?	6.86+x	3/2	haematite	spherical
15	TM.86.P.36	11.80	A	11.80	1	haematite	cylindrical
16	TM.70.E.557	11.90	A	11.90	1	basaltic stone	emispherical
17	TM.79.Q.270	14.10+x	S	7.05+x	2	haematite	pebble
18	TM.96.V.209	14.20+x	S	7.10+x	2	haematite	emispherical
19	TM.80.Q.31	14.80	S	7.40	2	brown stone	ovoidal pebble
20	TM.72.N.437	15.60	S	7.80	2	haematite	ovoidal
21	TM.87.P.178	22.00	S	7.33	3	gray stone	spherical
22	TM.96.V.210a+b	23.30+x	S ?	7.76+x	3	haematite	ovoidal
23	TM.96.V.376	32.60	M	8.15	4	haematite	spherical
24	TM.95.V.506	51.00	M	8.50	6	limestone	ovoidal
25	TM.96.V.174	58.40	S	7.30	8	stone	ovoidal pebble
26	TM.96.V.172	61.60	S	7.70	8	basaltic stone	ovoidal pebble
27	TM.96.V.484	81.80	M	8.18	10	haematite	spherical
28	TM.78.Q.157	82.10	M	8.21	10	galena ?	ovoidal
29	TM.95.V.507	87.40	M	8.74	10	limestone	emispherical
30	TM.78.Q.297	89.50	E	8.95	10	haematite	ovoidal
31	TM.96.V.208	90.20	E	9.02	10	breccia	spherical
32	TM.96.V.253	91.20	E	9.12	10	siliceous stone	ovoidal
33	TM.96.V.187	382+x	S	7.64+x	50	limestone	spherical
34	TM.96.V.266	389	S	7.78	50	limestone	spherical
35	TM.79.Q.339	913.00	E	9.13	100	haematite	lion
36	TM.78.Q.298	fragment				granitic stone	emispherical
37	TM.86.P.106	fragment				haematite	emispherical
38	TM.96.V.190	fragment				basaltic stone	ovoidal

The corpus permits some metrological observations which reveal the general character of the MB Eblaite metrology.<sup>3</sup>

The series of 7.80 gr (nos. 6-8, 13, 16-19), also attested in Early Bronze Age, persists in the period taken into consideration together with the series of 9.40 gr (nos. 2, 5, 25-28) and of 8.40 gr (nos. 1, 3-4, 9-12, 20-24).<sup>4</sup>

3. These preliminary observations match well with the other unpublished Middle Bronze specimens, weighed with a precision balance when filed. For a more detailed evaluation of the metrological aspects see Archi 1987.

4. The Syrian System is attested in Inner Syria and Mesopotamia before the Late Bronze Age: some specimens clearly

The "Phoenicians Standard" (Syrian System with shekel of 7.80 gr) is documented in the eastern Mediterranean Basin especially during Late Bronze and Iron Ages. Ebla testifies for its presence during Early Bronze Age, as the local system of the kingdom, and

related to the unit of 7.80 gr was found at Byblos (Dunand 1958, 188 no. 2955, 246 no. 6566), Tarsus (Goldman 1956, 275 no. 129), Tell Sveyhat (Holland 1975), Ebla (Archi 1987, 47-48, 53 nos. 1-4, 11, 17, 19, 21, 24-26) and Tepe Gawra (Speiser 1935, 92 no. 22). Moreover, some texts from Tell Mardikh-Ebla inform us that the Syrian mina of ~ 470 gr was divided in 60 shekels (Archi 1987, 84).



during Middle Bronze Age as a persistence with other systems.<sup>5</sup>

The so-called "Egyptian System" or *qdt* (unit of 9.40 gr) was used in Syria from the Early Bronze Age and became the main system of the coastal area during Late Bronze Age. It appears for the first time in Egypt during the Vth Dynasty (Parise 1970-71, 9) and constitutes a point of contact between the Syro-Palestinian region and the Nile Valley becoming the most common weight system with the XVIIIth Dynasty.<sup>6</sup>

The Mesopotamian Standard<sup>7</sup> is attested widely in the corpus of Eblaite Middle Bronze weights, probably reflecting the radically changed political conditions of Inner Syria during that period. The absence of specimens ascribable to the unit of 8.40 gr from archaeological contexts dated to the EB IVA (Royal Palace G, Building P4) testifies for the occurrence of this metrological innovation probably at the beginning of the IIInd Millennium BC when the Mesopotamian System seems to be the most used one also at Mari (Joannès 1989, 21 and fn. 34).

The Anatolian System based on a unit of 11.70 gr is also present with two specimens (nos. 14 and 15) revealing links with the northern regions.<sup>8</sup> It is used in Anatolia and Syria since the Early Bronze Age and therefore it cannot be considered a Hittite innovation of the Late Bronze.<sup>9</sup>

5. The Syrian and Egyptian Systems were used together at Ebla in the Early and Middle Bronze Age (Mardikh IIB - IIIA-B): Archi 1987, 48f.; *contra*, De Maigret 1980, 161-164, 169). The shekel of 9.40 gr is widely documented in several sites of Syria, Anatolia and Northern Mesopotamia (*i.e.* Tarsus, Tell Ta'yinat, Alalakh, Tepe Gawra) during the Early and Middle Bronze Age: see Parise 1970-71, 25 and fn. 29 for references.

6. W.M.F. Petrie identified the Qedet standard in Egypt at the beginning of the Ist Dynasty, when "a dozen alabaster cones were placed in graves, sometimes singly, or else two together" (Petrie 1926, 14).

7. Concerning the Mesopotamian System N.T. Belaiew distinguished three main values: Daric I (mina of 491.20 gr), Daric II (mina of 502.20 gr) and Daric III (mina of 511.83 gr): Belaiew 1929, 13. More recently it has been demonstrated that the Mesopotamian mina is of ~ 504 gr fluctuating within 30 to 40 gr (Powell 1979, 88; see also Roaf 1982, 140).

8. The Hittite mina was divided into 40 shekels (Otten 1954-56, 129).

9. D. Arnaud maintained that the Hittites introduced the Anatolian shekel in Syria following the conquest of the region (Arnaud 1967, 167f.). However N. Parise identifies weights of Anatolian System at Tarsus and Byblos from Early Bronze Age layers: Parise 1970-71, 25, fn. 29; the Ebla specimens have confirmed the presence of the Anatolian standard during the Early Bronze Age (Mardikh IIB1; Royal Palace G): Archi 1987, 50, 53 nos. 7-8 and perhaps 9.

In conclusion, we can identify three main systems:

- a) the Syrian one which seems to be the local system and has a long tradition in Inner Syria;
- b) the Mesopotamian one which became the standard unit value of the town;
- c) the Egyptian one which is not so frequently attested, albeit the lion-shaped weight from Palace Q (no. 35), corresponding to a double mina of ~ 913 gr, seems to indicate the use of the standard for economic transactions under the control of the royal administration.

The Syrian and Mesopotamian Systems were probably employed for everyday metrological activities while the Egyptian Standard could be employed for economic transactions with the coastal area.

## 2. Archaeological Context and Distributive Analysis

The corpus of weights from Ebla is constituted by two chronologically distinguished main groups: the Early Bronze IVA-B (ca. 2400-2000 BC) and the Middle Bronze I-II (ca. 2000-1600 BC). As regards the former, we can identify two architectural contexts: Royal Palace G, with most of the specimens, and Building P4 in Lower Town north at the foot of the Acropolis, which is quite a large public complex with many rooms for handicraft and primary activities, excavated during the last seasons.<sup>10</sup> The Middle Bronze age weights, as already mentioned, were found in different public buildings. In this article weights found in layers dated to the MB I-II but not related to architectural structures are excluded. However, some specimens (Archi 1987, nos. 32, 36, 42, 46) could be connected to private houses and were probably part of the dwelling equipment used for normal economic activities inside the town.

Royal Palace E was built on the Acropolis, on the northern and central part of the mound (Matthiae 1985, Pls. 63-64; 1989, 160-162, fig. 36). It was partially excavated during the 1969-1974 seasons, but extensive superimposition of the Aramaic, Persian and Hellenistic Periods has prevented a full archaeological investigation of the Middle Bronze building.<sup>11</sup> Only the peripheral northern wing was brought to light: several rooms are arranged on the north and east sides of an open courtyard (L.156) and there was probably a second court to the east with other rooms around it (L.761, L.760). On the south

10. For the provenience of specimens from Royal Palace G see the catalogue of weights in Archi 1987; for Building P4 see Marchetti - Nigro 1995-96, 14.

11. During the Persian period (Mardikh VIA) a rural palace was built in the north-eastern part of the Acropolis: see Mazzoni 1984; Matthiae 1985, Pl. 94.



side of L.156 some structures were built at a lower level and were connected with the court by a stone-flagged ramp.

The whole excavated area is probably part of the residential complex of the Palace, which probably extends to the east while the southern units were used for a service function (Matthiae 1985, Pl. 63).

The corpus of artifacts recorded from certain stratigraphic contexts in relation to floors or destruction layers is very scanty: therefore, the highly disturbed conditions prevent a co-occurrences analysis of the objects. In spite of this, 4 weights (nos. 8-10, 16; Archi 1987, fig. 4 nos. 34-35, 37ab, 44) can be related to the Palace. Two of them (nos. 8, 10) were found in L.761, which is an unusually large rectangular room, and one (no. 16) can be related to L.759.

It is perhaps meaningful that, in spite of the bad preservation of the original context, some weights are surely part of the equipment of the building, testifying for the importance of metrological activities, which were certainly a practical aspect of the centralized bureaucracy administration.

It is also interesting to point out that in Palace E the Royal archives of Old Syrian Ebla were probably kept, as indicated by some cuneiform tablets dated from Middle Bronze Age found in the debris of the outer Acropolis slope (Matthiae *et al.* 1995, 397 no. 245).

Temple N, excavated during the 1972 season, is situated in the north-eastern part of the Lower Town not far from the Acropolis slope (Matthiae 1985, Pl. 54; 1989, 150-152, fig. 31, Pls. 105-106). It is a typical Syrian temple with a single cella (L.2500), with a longitudinal development and an axial entrance.<sup>12</sup> The entrance, very damaged by the pillage of the walls, used as stone quarry during the Iron Age and Persian Period, is oriented to the east: this peculiarity can be observed only in Temple N among the Eblaite sacred buildings.

The back side of the cella was a low bench with a limestone basin for sacred ablution, decorated with bas-reliefs found *in situ* against the bench, unfortunately with the front completely missing, probably broken at the time of the sack of the city (Matthiae 1985, Pls. 61-62; 1989, 192-194, figs. 131-132). The temple's furniture also includes an offering table and a basaltic base (Matthiae *et al.* 1995, 393 no. 238).

12. Regarding the origin of this architectural tradition and its developments in Syria and Palestine during the Late Bronze and Iron Ages see Matthiae 1975; 1990b.

The eastward orientation, the basin reliefs, which could represent a celebration of a treaty, the presence of the basaltic stone base with couples of bull-men, lead to connect the temple with the god Šamaš (Matthiae 1986, 346-352).

Two remarkable ovoidal haematite weights (nos. 7, 20; Archi 1987, fig. 4 nos. 33, 45), corresponding to one and two Syrian shekels, were found on the floor, together with a decorated bone handle, probably for a dagger or a knife (Matthiae 1989, Pl. 167), and several precious stone beads (near the bench). The presence of weights, from a context with few other artifacts, is surely meaningful and could reflect metrological activities. Nevertheless, in this case, it is perhaps possible to propose another hypothesis: the weights could have been put in the temple for their symbolic value, which could be linked with concepts of justice and rectitude belonging to religious sphere of Šamaš. Moreover, it must be underlined that this is the only sacred building of Ebla with weights found inside the cella.<sup>13</sup>

Western Palace Q was excavated between 1976 and 1982 (see in particular Matthiae 1979a; 1980a; 1980b; 1982; 1984; 1985 Pls. 65-69, 73-74; 1989, 162-171). It was built in the western Lower Town at the foot of the Acropolis, in an area where the bedrock of the tell is higher. Its façade was at the end of the street which runs N-S starting at the monumental south-western city-gate. The oldest phase (Phase I) is dated 1900-1800 BC, during Middle Bronze I of Syria, while the second main phase (Phase II) corresponds to the Middle Bronze IIA-B (Matthiae 1982, 52-53). The building was destroyed at the end of this period (1650-1600 BC) as indicated by thick layers of ash and burnt bricks, scattered everywhere over the floors of the last phase. Palace Q has the main axis running N-S, with a length of ca. 115 m and an irregular width of ca. 70/65 m, covering probably ca. 7500 sqm.

The distribution of the inner rooms and courts reveals an articulated plan with different functional units:

- a) The northern wing composed basically of rooms devoted to the food preparation (in particular L.3135 with several grindstones and grinding equipment *in situ* in front of court L.3200 (Matthiae 1982, 50, figs. 16-18; 1985, Pl. 73; Dolce 1990, 125-126, figs. 13, 15).
- b) The north-eastern unit with small rooms organized around courts (L.2986, L.3037), probably used for admini-

13. This situation could be due to the lack of archaeological materials *in situ* only in the case of temple P2 in the northern Lower Town where the stratigraphy was completely disturbed.



nistrative procedures. Unfortunately the north-eastern corner was completely destroyed at the time of the construction of a little monastic structure during the IV-V cent. AD. Consequently only the south-western portion of L.2986 was preserved.

c) The eastern unit with 4 store-rooms: L.2935, 2965, 2969, 2957 (Dolce 1990, 125-126).

d) The Reception Suite in the center of the Palace, including a large throne-room (L. 3038) with rooms on the east and west sides.<sup>14</sup>

e) The entrance quarter in the southern end, unfortunately barely known due to the pillage of the area during later times, but possibly constituted by an entrance porch with 4 columns.

In the northeastern area three remarkable tombs were found, with the entrance corridors under the floors of L.2975 and L.2950. These burials ("Tomb of the Princess," "Tomb of the Lord of the Goats," "Tomb of the Cisterns") were located in a complex of underground cavities, partially modified for the funerary utilization.<sup>15</sup> They provided a rich funerary assemblage with alabaster and bronze vessels, gold and silver jewels, lapis lazuli, carnelian and quartz beads, ivory plaquettes and other precious items like the famous Egyptian mace of pharaoh Hotepibra (see e.g. Matthiae 1981; Scandone Matthiae 1987).

The building with the princely necropolis is connected with Temple B1 (dedicated to the god of the Netherworld, Rašap) and Sanctuary B2 (probably devoted to the cult of the royal ancestors: Matthiae 1979b; see also Matthiae 1990d), and was probably the Crown Prince's residence. This hypothesis is based on two different observations:

a) Some jar sealings were found in the palace, bearing the impression of a beautiful cylinder seal, with a two-line cuneiform inscription, belonging to a "son of Imdilingur" (Matthiae *et al.* 1995, 180-182, 242 no. 395).

b) The royal name Imdilingur was written in a damaged year-name on a cuneiform tablet, found with its envelope in L.3111 inside a bowl (Matthiae 1984, 22 and picture on the cover).

14. The Reception Suite is composed of a central rectangular space divided with two pillars and by four rooms arranged on the long sides of the throne-room. This planimetric organization, with the entrance of the throne-room on its long side, is attested also in Palace P (see below) and with some differences in the palatine buildings of Alalakh, Tilmen Höyük, and Qatna, and reveals the existence of a peculiar secular tradition during the Old Syrian Period: see Matthiae 1990c.

15. Matthiae 1989, 175-186; Matthiae *et al.* 1995, 180-187 with previous bibliography.

If, as it is probable, the name Imdilingur written on the two documents belonged to the same person, the owner of the seal can be consequently considered the son of the king of Ebla and Imdilingur should be considered the last king of the city (Matthiae 1989, 206-207).

Ten weights were found *in situ* or in the destruction layers (Fig. 4); they show a quite interesting distribution (Fig. 2) with significant concentration in the northeastern unit (L.2986, 2988, 3111), and in the small rooms on the east side of court L.3037 (L.3005 and 3100). L.2988 is a small room (with a staircase on the west side) arranged with two curved thin walls which form two recesses, on each side of the central passage connecting L.2980 with L.2986: three weights (nos. 13, 30, 36),<sup>16</sup> found on the floor with few other artifacts, could indicate that in the room this kind of tools was stored but used in the near court L.2986.<sup>17</sup> L.2986, only partially investigated because of the Byzantine structure on its east side, was certainly the focus of the northeastern quarter. An interesting haematite lion-shaped weight (no. 35) corresponds to a double Syrian mina of 9.13 gr: it is an official weight used by the administrative bureaucracy of the Palace (Mazzoni 1980; Matthiae *et al.* 1995, 503 no. 468); it was found on the floor together with large fragments of storage jars and with 5 pieces of stone roughly worked, which are related to the weight and probably testify to weighing procedures which took place in the court. L.3111 is an important room, between L.2986 and L.3202: it contains a weight (no. 17) together with a high number of artifacts: valuable objects such as alabaster and obsidian vessels, two cuneiform tablets and a cylinder seal impression on jar, basalt grinding stones and pestles, bronze and clay tools (see Tab. 1). It should be a kind of store or working place under administrative control, but with quite a peculiar double entrance.

Other weights are related to L.2945 (no. 12), a vestibule for a four-ramp staircase which led to the upper floor,<sup>18</sup> L.3005 (no. 14) and L.3100 (no. 5), two store rooms with

16. No. 13 is a barrel shaped weight of 8.60 gr, corresponding to a Mesopotamian shekel, whereas no. 30 weighs 89.90 gr corresponding to 10 Egyptian shekels.

17. Only a basaltic tripod, a bronze spear-head and a fragment of tridacna shell can be related to the room.

18. Fragments of three bullae with cylinder seal impressions were found in the same room. Moreover, it is interesting to point out that a large amount of basaltic ovoidal objects, probably a kind of percussion tools or projectiles, was stored in the understairs (L.2887) in front of the vestibule (Matthiae 1980b, 10 and fn. 52; see also Matthiae *et al.* 1995, no. 432, but read correctly L.2887 and not L.2988).



an interesting assemblage of various objects, located on the east side of the court L.3037.<sup>19</sup>

The weight no. 28, from L.2975/2980 is not suitable for a co-occurrences analysis: it was found with broken precious items, lost during the sack of the tombs located under the pavement of L.2975.

Summing up, Western Palace Q shows a distribution of weights that seems to point out a relationship between administrative, metrological and craftsmanship activities and the northeastern quarter. The rooms with weights are all connected to each other and have also the highest percentage of valuable artifacts and craftsmens' tools but it must be pointed out that this area was also the best preserved one in the building.

Palace P was excavated during the 1986-1988 and 1994-1995 seasons (Matthiae 1989, 171-175 Pls. 93-98; 1990a). It is a huge building located in the northwestern part of the Lower Town, not far from the Acropolis, stretching for more than 3500 sqm. The preservation of the structures, especially in the southern part, is unfortunately not good: it was in fact used as stone quarry during the Iron Age and modern times. The plan shows an articulated organization of the inner space. The entrance (L.4261) is located in the central part of the western side, the monumental Reception Suite was in the central sector of the building with the same architectural typology as Western Palace Q. The throne-room (L.4038: 19.5 x 10.3 m) has an official entrance through the south-west side, while a secondary private access is through the southeast side (Matthiae 1989, 173-174). Storerooms and rooms for food preparation are mainly located in the northeastern corner but two peculiar long rectangular rooms (L.4043 and L.4031), east of the Reception Suite, are also storing places for food: they were equipped with several storage jars, probably for oil or cereals (Dolce 1990, 126-127, fig. 17ab; 1994, 303-305, fig. 7). The south-east wing, with some carefully built large rooms, has probably a residential function. This building should be considered as a royal residence with special ceremonial functions related to the sacral aspect of kingship. It was in fact near the most important sacred area of the Lower Town (Temple P2, Monument P3, Sacred Square with *favissae*), dedicated to the goddess Ištar.

19. A meaningful number of tools was found in L.3005: 2 grinding pestles, 4 spindle-whorls and one bronze needle. On the contrary more valuable objects were apparently stored in L.3100: several semiprecious stone and faience beads, one haematite cylinder seal and one limestone pommel (see Table 1).

Six weights can be related to the building (Fig. 5) but the distributive analysis is not very indicative: the weights were found in rooms belonging to different architectural units (Fig. 3). Weights nos. 1 and 37, respectively from L.4021 and L.4022, represent perhaps the only specimens suitable for a functional interpretation of the architectural space. One weight (no. 11) was found inside the store-room L.4043, together with several fragmentary bone inlays, which could be part of a case of the type also documented in Fortress V (Tab. 2).

Finally, nos. 3, 6, 21 were found outside the Palace: nos. 3 and 21 from in the street L.4201, which separates the palace building from the Ištar's sacred area, and no. 6 from the large refuse tip F.5861, located near the street L.4007, north of Palace P (Matthiae 1995, 677f.).

The Western Fort, partially excavated during the last three seasons (1995-1997) (Matthiae 1996, 84-86; Matthiae 1997, 11f.; Matthiae in press; Peyronel in press) was built during Middle Bronze II on the top and on the inner slope of the western defensive rampart. It is an articulated fortified complex, with six main architectural units:

- a) *South-eastern unit* (L.6421, L.6427): it is a peripheral area for food preparation equipped with several basalt tripods, grinding stones and pestles;
- b) *South-western unit* with the rectangular room L.6416 with a large basalt basin *in situ*. The presence of dressing slabs, the existence of stone pivots for a mighty door, the isolation of the room, suggest a peculiar function perhaps related to the care of valuable objects (Matthiae 1996, 85);
- c) *Central-western unit* formed by some parallel rectangular rooms (L.6334, L.6320, L.6318) with a staircase for the second floor;
- d) *Central-eastern unit* (L.6306, L.6631, L.6634) with small rooms probably symmetrically arranged in relation to the north-eastern unit;
- e) *North-eastern unit*: it is an area with several small rooms arranged in two or three rows, related to specific economic activities and with storing functions;
- f) *North-western unit*: Fortress V. This structure (ca. 26 m large), with massive perimetric walls (ca. 2.5 m large), is the focus of the defensive complex: it is composed of six non-communicating rooms, one large rectangular vestibule (L.6522) while a staircase led to a presumed second floor. The western part collapsed outside the rampart, but the original plan can be easily recognized. The building was destroyed at the end of the Middle Bronze Age, and a fire broke out and spread all over the structure, as testified by the numerous cracks on the slabs which



dressed the lower part of the walls of the vestibule and by the thick ash layers.

All the weights (13 specimens) were found in the northern units (Fig. 6): five (nos. 23, 24, 27, 29, 34) in the north-eastern unit (L.6450, L.6528 and L.6534) and the others (nos. 18, 22, 25, 26, 31, 32, 33, 38) in the fortress (L.6516).<sup>20</sup> L.6516 is quite an unusual room, as it is the only communicating one with L.6522 and the only one with a large amount of pottery and objects *in situ* (Fig. 7 and Table 3).<sup>21</sup> It should be under the control of some official, because of the presence of three door-sealings with cylinder seals impressions. The room assemblage was mainly constituted by several functionally differentiated groups of objects:

- 1) Grinding stones and slabs, pestles and mortars, related to a small working area for food preparation in the south-eastern corner;
- 2) Several vessels of medium-small size (jugs, bowls, small globular jars and cooking pots), perhaps stored here and used by soldiers or officials outside (a small *tannur* was found in L.6522);
- 3) Weights, small bronze chisels, whetstones and other tools related to specific craftsmen's activities. Three weights were found together (nos. 18, 22, 31; Fig. 8) near three remarkable bone inlays with incised geometric decorations (simple and double lines, dotted circles), which should be part of a wooden case containing the weights (Fig. 9).<sup>22</sup>

### Conclusion

The preliminary metrological evaluation of the Middle Bronze weights, based only on specimens related to architectural complexes (more than 1/3 of the whole corpus) shows the appearance of the Mesopotamian System not attested in the Eblaite weights dated from Early Bronze IVA. It is the most used system together with the Syrian one, which can be considered the local traditional standard of weights. Therefore we assume that

specimens of the Mesopotamian and Syrian System were used especially for local weight procedures and for everyday commercial activities of the city, while weights of Anatolian and Egyptian Systems are probably related to peculiar economic transactions and could testify for "international" trade.

The distributive analysis stresses the following observations:

a) The palatine buildings of the Lower Town are different as regards the distribution of weights: Palace Q has a meaningful concentration of specimens hinting at architectural units devoted to administrative and handicraft activities; Palace P, on the other hand, is not too indicative, providing weights from individual unconnected rooms. This trend could be attributed to a functional distinction between the two secular buildings with the former conceived as a Crown Princes residence. Also Royal Palace E is not suitable for any distributive analysis. However, in spite of the peripheral and limited area excavated, the presence of some well-made weights could indicate important metrological and administrative activities.

b) Temple N is the only sacred building of Ebla with weights found *in situ* in the cella. We put forward the hypothesis that these weights could have a symbolic value related to Šamaš, god of justice and human rectitude.

c) Most of the weights of Western Fort were found in the Fortress: the analysis of the archaeological context has point out the particular role of L.6516. Inside this small rectangular room (the only open on the vestibule) were probably performed at the same time several different activities, but it is quite unusual that were found either indicators of primary activities as grinding stones and tables, basalt mortars and pestles around the curved installation, or indicators of craftsmen activities, as chisels, whetstones and weights.

As concluding remarks we would like to underline how the analysis of the weight systems might be conducted not only taking into consideration the quantitative evaluation of absolute numerical values or the information inferred from the administrative epigraphic documents, but also the archaeological context of the specimens and the relations with other broad functional classes of artifacts.

### Acknowledgments

We wish to express our gratitude to Prof. P. Matthiae for his help and encouragement throughout. We also thank Prof. A. Archi for the useful discussions about the metrological aspects of the analysis, Prof. N. Parise who introduced us in the study of the ancient weight systems and measures, Dr. F. Pinnock for her suggestions and for

20. We have included in this article only the specimens found during 1995 and 1996 campaigns. During the last excavation season (1997) several other weights were found, including a remarkable ovoidal weight of chalcedony.

21. Some objects listed in Table 3 are not plotted on plan in Fig. 7 because they were found in the destruction level not lying directly over the floor.

22. This kind of cases with decoration of bone strips are well documented during the MB II especially in Palestine (Gezer, Jericho, Megiddo, Tell el-Farah north, Tell Beit Mirsim, Sichem, etc.) but, although not so frequently, also in coastal and inner Syria (Byblos, Ugarit, Alalakh, Tell es-Salihiyeh, Ebla): see Liebowitz 1977.



revising the English text. The metrological and archaeological analysis were elaborated by both authors; Enrico Ascalone wrote part 1 (Temple N and Northern Palace

P) and Luca Peyronel wrote part 2 (Western Palace Q, Royal Palace E and Western Fort).

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LOCUS	WEIGHTS	POTTERY	TABLETS, SEALS & SEALINGS	TOOLS	PRECIOUS ITEMS	WEAPONS	RAW MATERIALS & UNFINISHED OBJECTS	OTHERS
L.2945	n. 12		3 cretulae (seal impressions)					1 clay female figurine 1 bronze fragment
L.2975/80	n. 28			L.2975 3 bronze nails 1 stone loom-weight	L.2975 2 alabaster vessels - bronze sheets 1 bronze snake 1 faience bull figurine 3 bone inlays 1 faience bead L.2980 1 alabaster vessel 1 serpentine vessel - bronze sheets			L.2975 2 clay female figurines 2 clay animal figurines 1 clay chariot wheel L.2980 1 clay female figurine 1 clay animal figurine
L.2986	n. 35	6 storage jars		2 bronze rods			5 semiprecious stones	4 clay animal figurines 3 clay female figurines
L.2988	n. 13 n. 30 n. 36			1 basaltic tripod		1 bronze spear-head	1 shell (tridacna)	1 clay chariot wheel
L.3005	n. 14	- storage jars - common ware - kitchen ware	1 cylinder seal impression on jar	2 grinding pestle 2 stone spindle-whorls 2 bone spindle-whorls 1 bone astragalus 1 bronze needle	1 carnelian bead			
L.3100	n. 5	- storage jars - common ware - kitchen ware	1 haematite cylinder seal 1 cylinder seal impression on jar	1 grinding pestle 1 bronze needle	1 limestone pommel 1 silver ring 3 faience beads 1 carnelian bead 1 steatite bead			1 clay female figurine 1 clay male figurine
L.3111	n. 17	- storage jars - common ware - kitchen ware	1 cuneiform tablet 1 cuneiform tablet (fragm.) 1 tablet envelope 1 cylinder seal impressions on jar	3 basaltic tripods 4 grinding pestles 1 grindstone 1 basaltic mortar 1 bone spindle-whorl 1 holed stone 1 flint blade 1 bone astragalus	1 alabaster vessel 1 obsidian lid 1 faience bead		1 shell 1 shell (tridacna) 1 worked shell	2 clay female figurine 1 clay male figurine 1 clay animal figurine 1 clay door-stop 1 clay object 1 haematite object 1 joint (holed black-stone) 1 bronze wire
L.3202	n. 19			1 steatite spindle-whorl 1 whetstone (?)	1 bronze pin 1 faience vessel (fragm.)	1 basaltic projectile 1 stone club-head	1 shell (tridacna)	6 clay female figurines 1 clay male figurine 6 clay animal figurines

Table 1. Western Palace.



LOCUS	WEIGHTS	POTTERY	TABLETS, SEALS & SEALINGS	TOOLS	PRECIOUS ITEMS	WEAPONS	RAW MATERIALS & UNFINISHED OBJECTS	OTHERS
L-4021	n. 1	- storage jars - common ware			1 stone bead			
L-4022	n. 37	- storage jars - common ware		1 stellite spindle-whorl 1 bronze tool	2 rock chrysal beads 1 shell bead			1 clay female figurine
L-4034	n. 15							
L-4043	n. 11	- storage jars		1 bone punch	1 bronze sheet 1 falence bead 32 bone inlays 1 wood rod		1 stone cylinder	1 clay female figurine 1 clay female figurine 3 clay animal figurines
L-4227	n. 4				1 alabaster vessel 1 gold sheet			1 clay animal figurine

Table 2. Northern Palace.

LOCUS	WEIGHTS	POTTERY	TABLETS, SEALS & SEALINGS	TOOLS	PRECIOUS ITEMS	WEAPONS	RAW MATERIALS & UNFINISHED OBJECTS	OTHERS
L-6450	n. 24 n. 29			1 basaltic holed weight 1 basaltic object 1 bronze nail				1 clay female figurine 1 clay chariot wheel
L-6516	n. 18 n. 22 n. 25 n. 26 n. 31 n. 32 n. 33 n. 38	1 storage jar - common ware - kitchen ware	3 cretulae (seal impressions) 1 cretula 1 bronze stamp seal	5 grindstones 5 grinding pestles 2 grinding slabs 1 basaltic tripod 1 basaltic mortar 1 holed stone 2 bronze chisels 1 bronze needle 1 whetstone	3 bone inlays 1 shell bead 1 stone lead 1 chert inlay	1 bronze spear-head	1 haematite cylinder (seal?)	1 clay female figurine 1 limestone pebble 1 tortoise-shell
L-6530	n. 34	1 storage jar - kitchen ware		2 grindstones 1 grinding pestle				3 clay female figurines 1 bronze fragment
L-6534	n. 23 n. 27				1 bronze pin		1 shell (mother of pearl)	1 clay female figurine 2 clay animal figurines

Table 3. Western Fort.



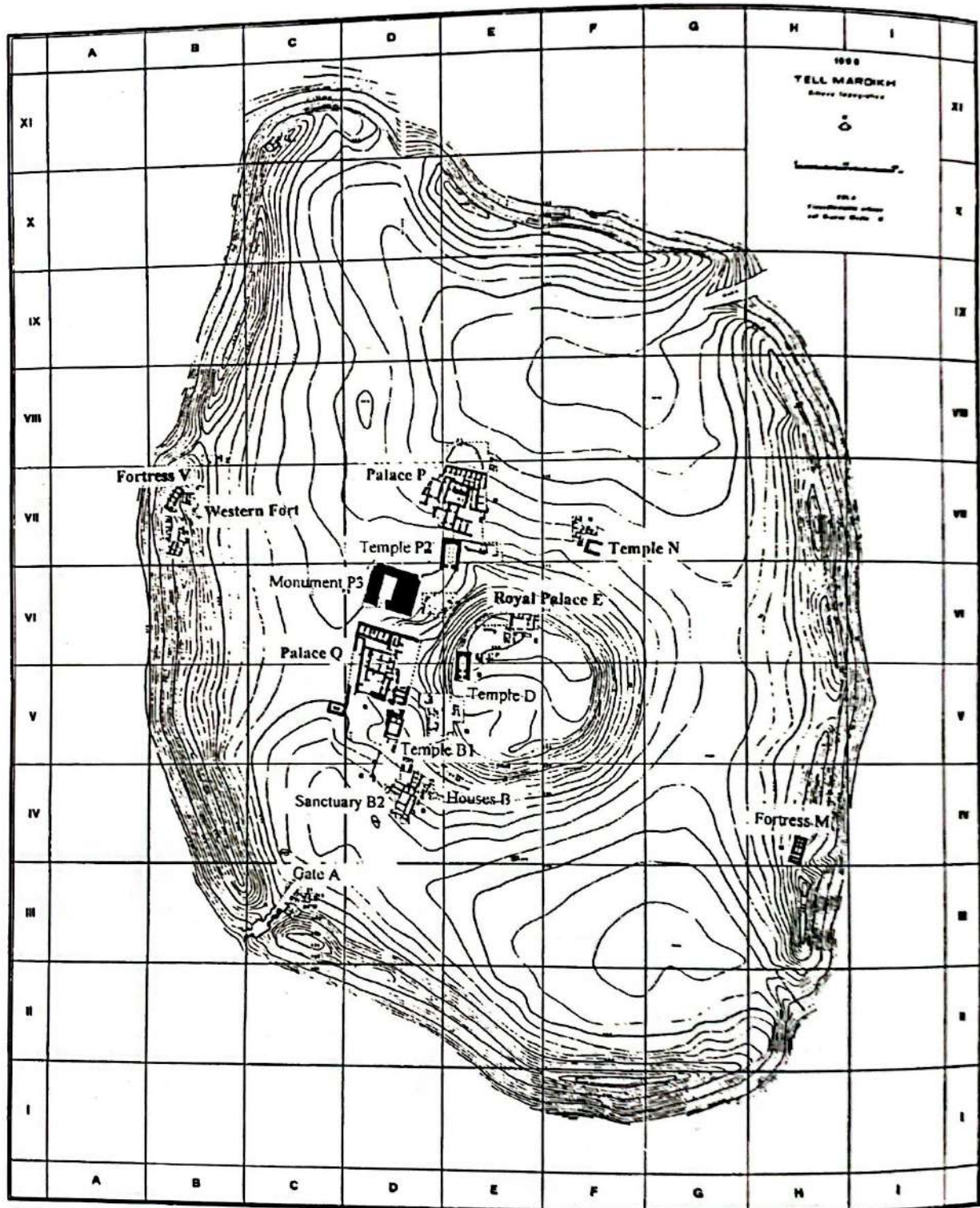


Fig. 1. Tell Mardikh, topographic plan of MB I-II.



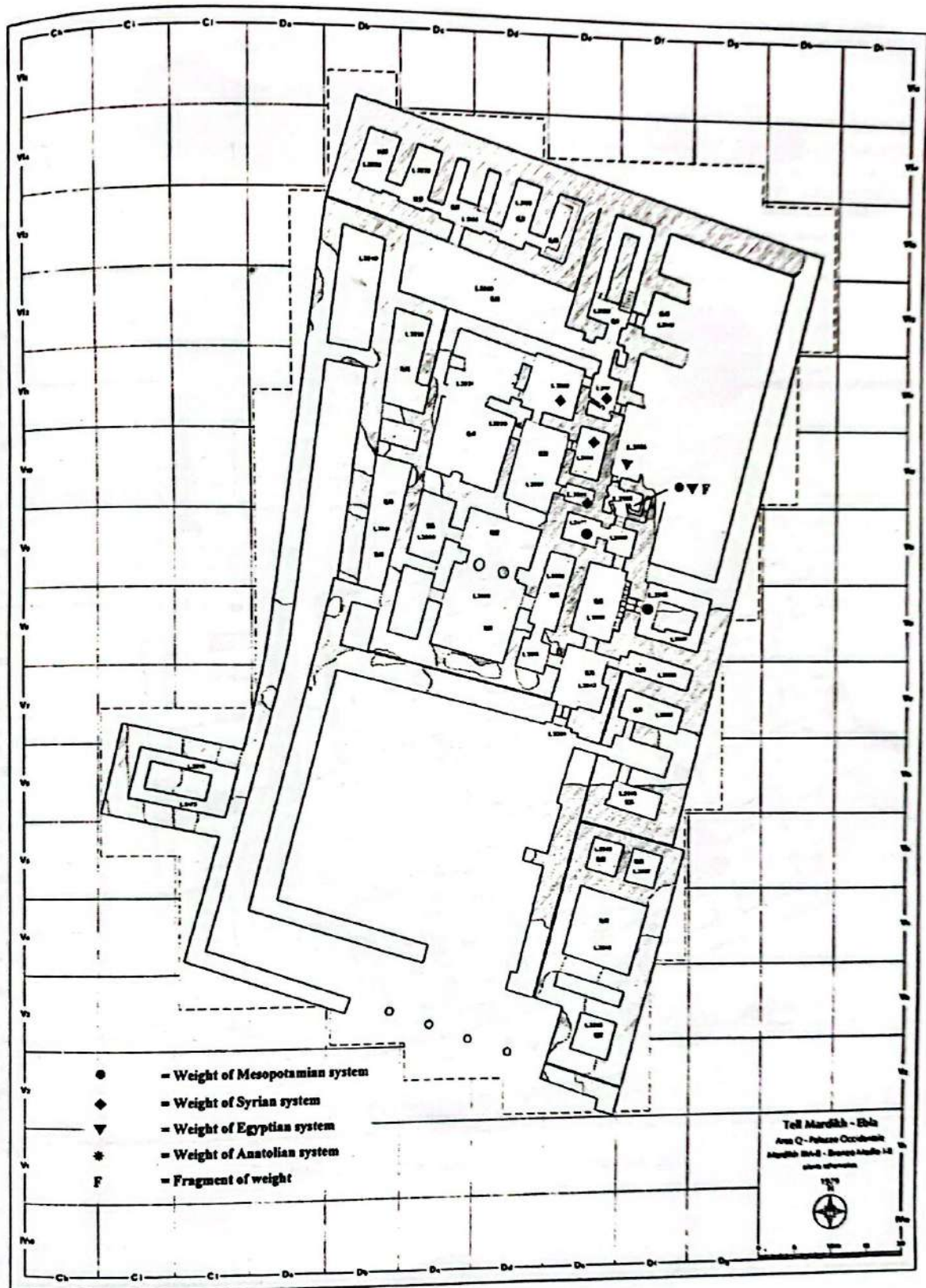


Fig. 2. Distribution of weights in Western Palace Q.



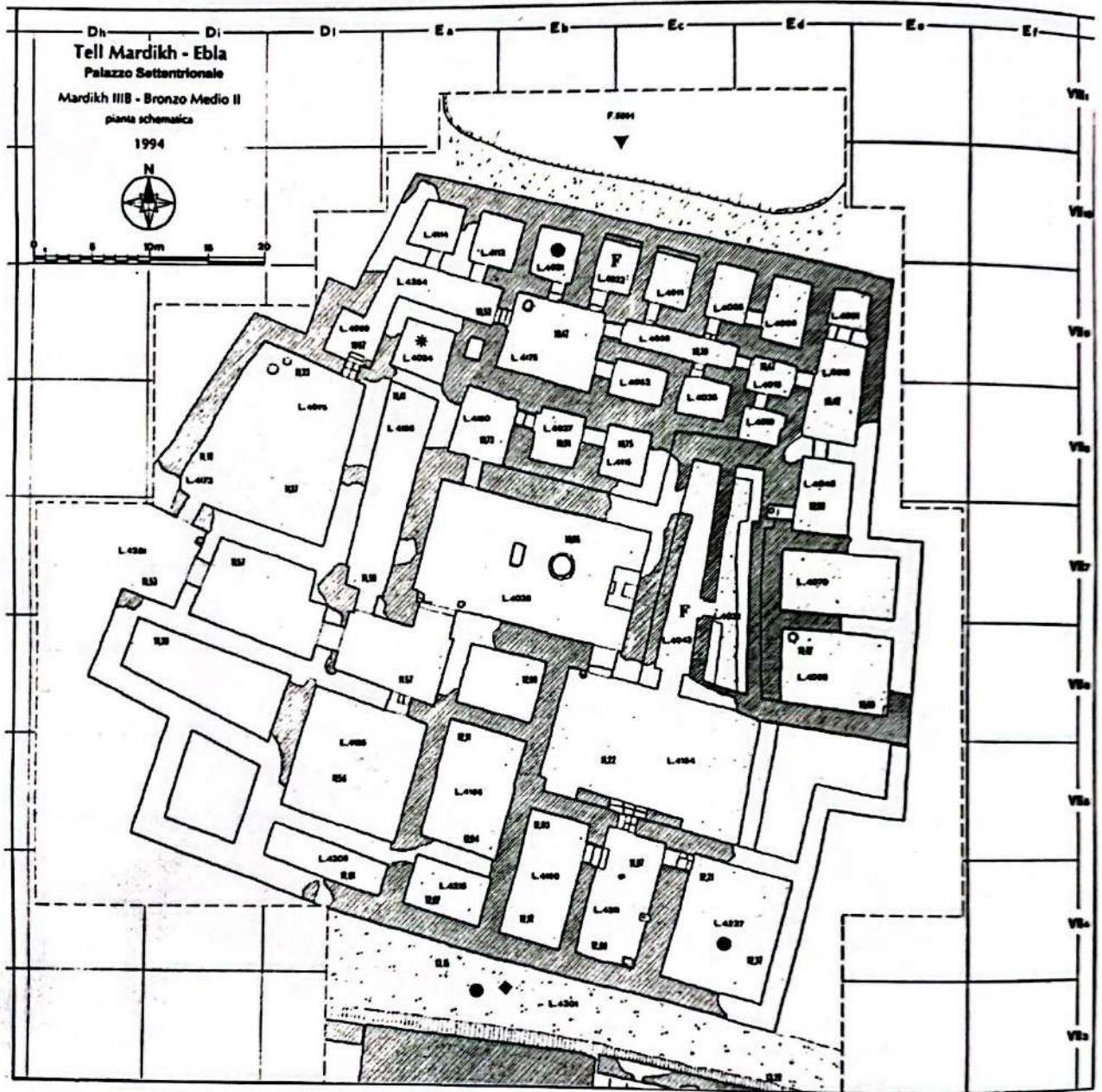


Fig. 3. Distribution of weights in Northern Palace P.



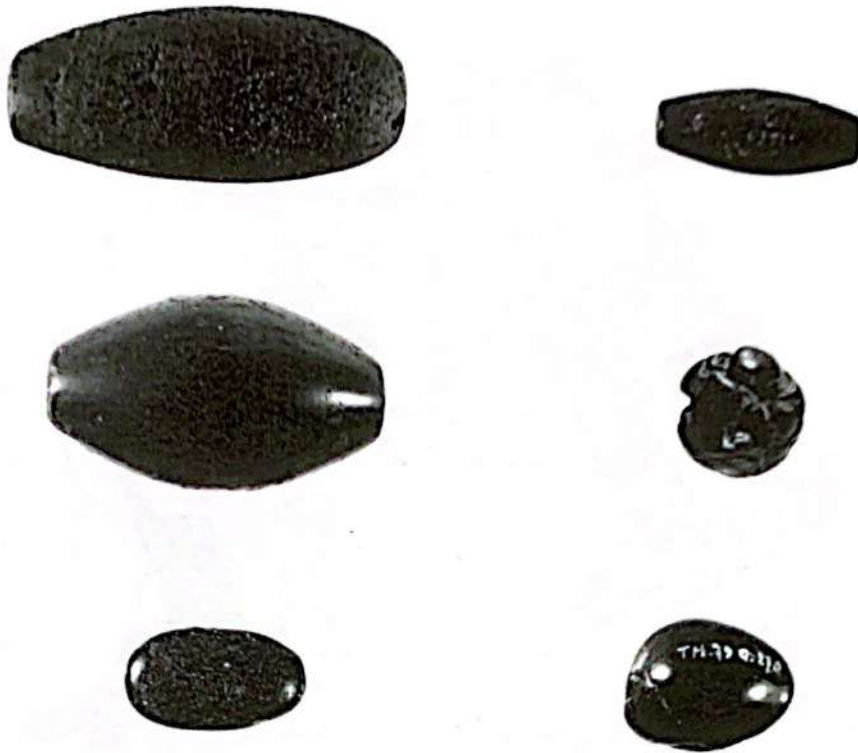


Fig. 4. Weights from Western Palace Q (nos. 28, 13, 30, 14, 5, 19).



Fig. 5. Weights from Northern Palace P (nos. 15, 3, 1, 4).



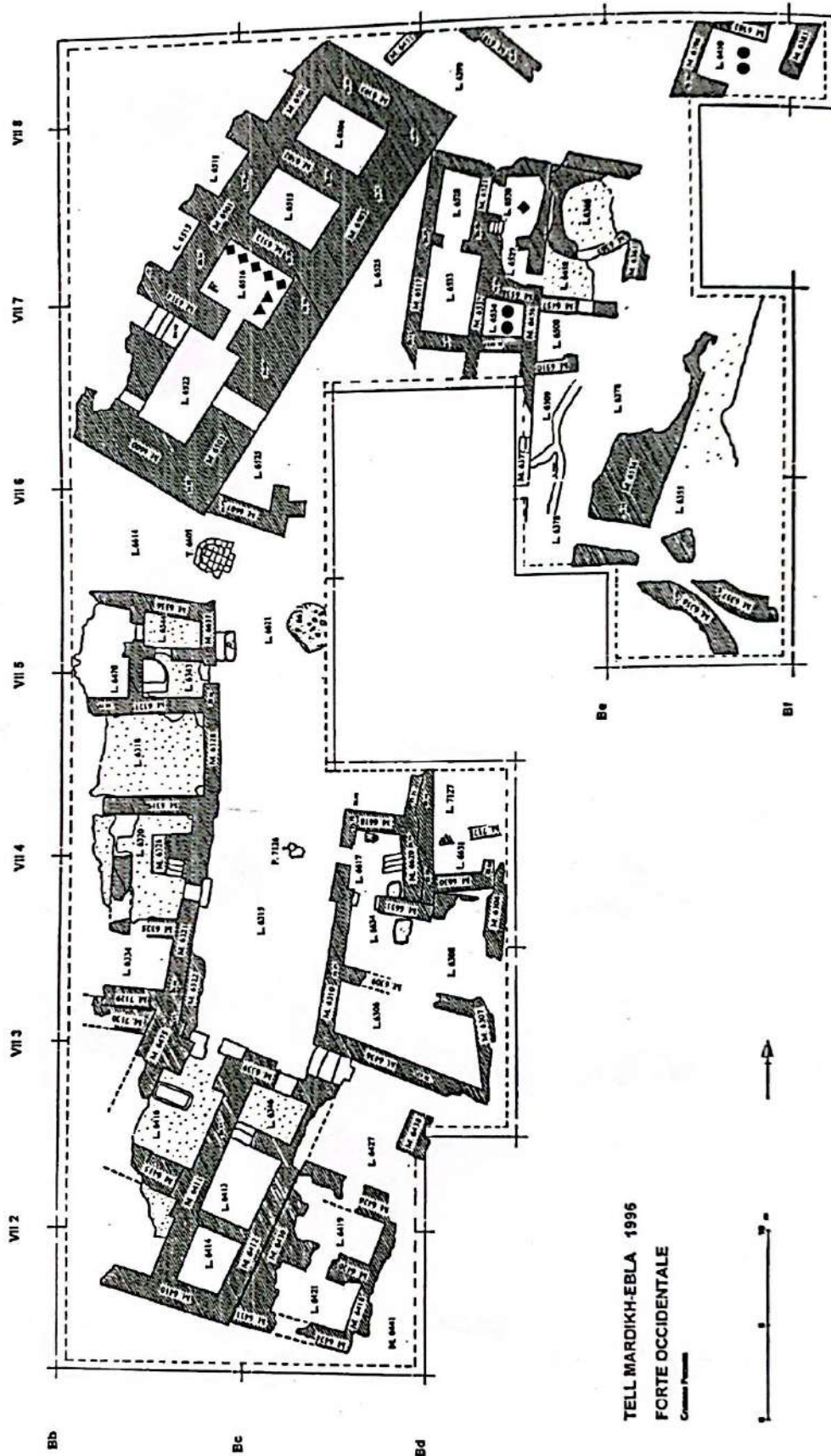


Fig. 6. Distribution of weights in Western Fort V.



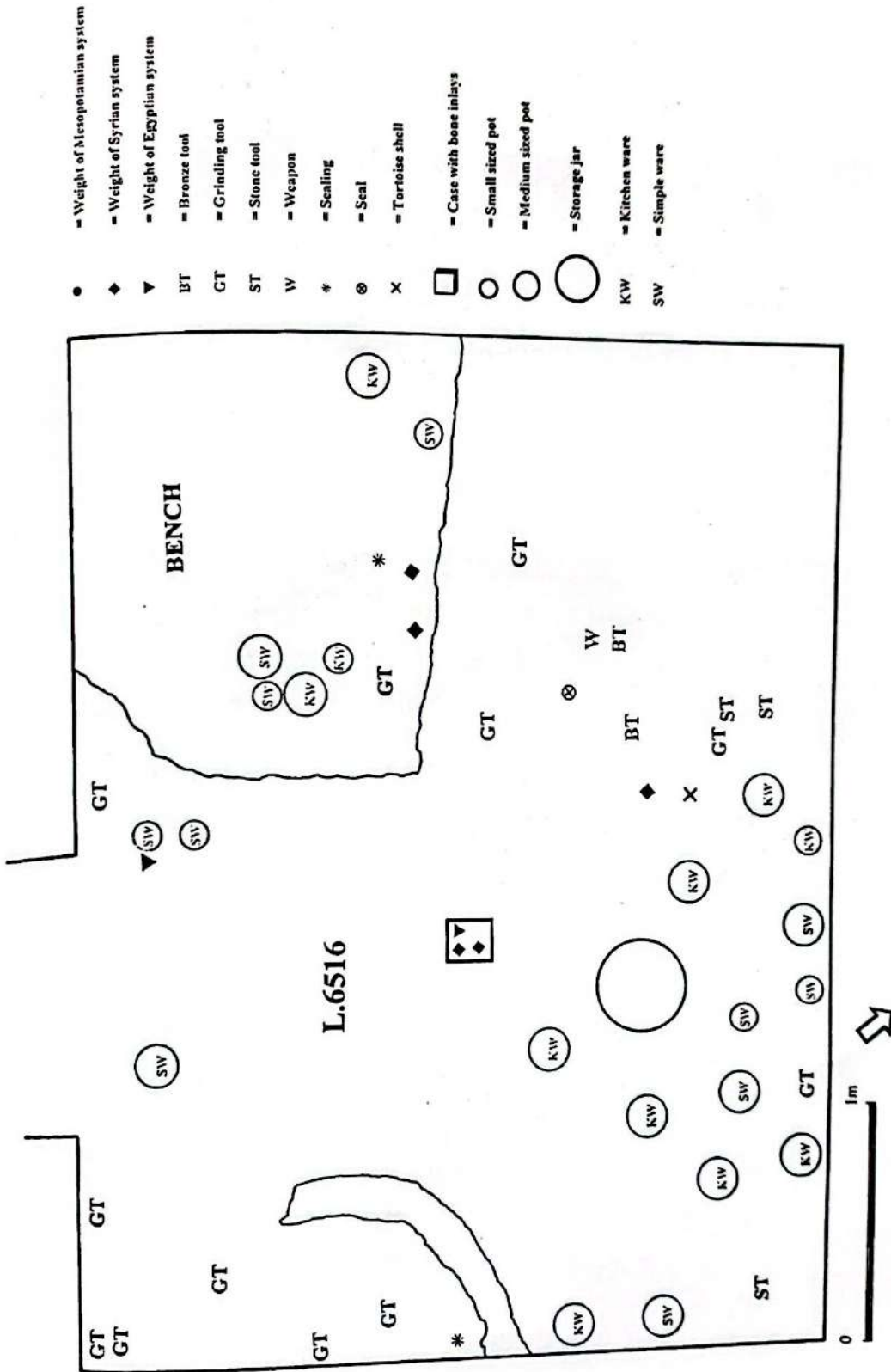


Fig. 7. Tell Mardikh, Fortress V, L. 6516.





Fig. 8. Weights from L. 6516 (nos. 31, 18, 22; scale 1:1).



Fig. 9. Bone inlays and weights on the floor of L. 6516.