

STONE BALANCE WEIGHTS FROM AREA A OF ‘USHIYEH

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Introduction

Weights for balance scales were undoubtedly created as a result of economic activity and were used to weigh wool and metal. In Mesopotamia, “talent”, “mina”, and “shekel” have long been known as units of weight, and studies on their weights and measures have revealed their weight in studies such as Powell [1971]. On the other hand, they are not always the same in each region. There are still under discussion. Studies of balance weights themselves have been reported in various regions such as South Mesopotamia, Anatolia, and Syria. In fact, Hafford is studying the weights of Tepe Gawra [Hafford 2019] in Northern Mesopotamia, Nippur and Ur [Hafford 2005, 2012 and 2019]¹⁾ in Southern Mesopotamia, as well as Ascalone and Peyronel for Ebla in Syria [Ascalone and Peyronel 2001; 2006a and 2006b], and Kulakoğlu for Kültepe-Kanesh in Anatolia [Dercksen 1996²⁾; Kulakoğlu 2017]. In addition, Baratash’s research studies who measured how and who measured it from the cuneiform texts of the third millennium B.C. [Bartash 2019]. Melein is also studying a wide range of areas, focusing on iron oxide rock, which is often used for balance weights [Melein 2018]. Therefore, the main aim of this paper is to publish data on 26 balance weights excavated from Area A of ‘Ushiyeh, which only photographs have been published so far, and to add some consideration based on above the previous studies.

Outline of the site and the find spots

The site ‘Ushiyeh was located on a right bank river-terrace of the Euphrates River between Haditha and Anah³⁾ and excavated by the Japanese Archaeological Expedition of Kokushikan University, under the direction of late professor Hideo Fujii, between 1982 and 1983 [Fujii *et al.* 1984/85: p. 111; K. and H. Oguchi 2006: pp. 157–189]. The excavation was carried out a part of the Haditha Dam Salvage Project of Iraq. Therefore, the site now submerged beneath the waters of Lake Qadisiyah. The site had a vast area of about 1200 m north-south and about 1000 m east-west protruding due to the meandering of the Euphrates River, and the highest excavation area about 137 m above sea level was named Area A [Fujii *et al.* 1984/85: p. 112].

In the northeast side of Area A, mainly two superimposed structures were discovered⁴⁾. The lower structure that we have called an underground structure, and the upper is a circular structure consisting of a gypsum-plastered floor fringed with large stone slabs, together with medium and small stones, and a stone staircase and a drainage system [K. and H. Oguchi 2006: p. 161ff.]. The underground structure had been constructed in a rectangular shaft, 6.8 × 5.5 m, dug into natural soil to a depth of 2.5 m [ibid.: pp. 162–165]. The structure had been consisted by two parts built by

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1) His studies include the balance weights of the Uluburun shipwreck and the Cape Gelidonya shipwreck, the island of Keos and Cyprus.

2) Dercksen summarises the hematite balance weights excavated from the Kültepe-Kanesh area [1996: pp. 251–252]. It contains data on a total of 87 balance weights, including eight from Stratum Ia, two from the surface collection, as well as those from Stratum Ib and Stratum II in the Kültepe-Kanesh area. There were 31 balance weights from Stratum Ib, of which 30 were made of hematite, and 25 from Stratum II, of which 22 were made of hematite (two were duck-shaped). The location of the other finds is unknown.

3) It was located about 30 km northwest of Haditha and about 30 km southeast of Anah, that is, 34 degrees 20 minutes north longitude and 42 degrees 7 minutes 30 seconds east longitude.

4) Please refer to K. and H. Oguchi [2006] and Agha [1987/88] for the excavation information of the other parts and Areas of ‘Ushiyeh.

piling up large and flat limestones. One of the part was consists of a pair of chambers (Rooms W and S) with a front open space (Forecourt Doorway: F. D.) of the entrance of these, and the other was three connected chambers (Rooms N, E and M). The underground structure has been used several times and was destroyed each time. On the other hand, it is known that the times of these destructions are not so far apart, and it is believed that the time from the first construction to the last destruction is within the first quarter of the second millennium B.C. In other words, it is from the Isin-Larsa to the Old Babylonian periods [ibid.: pp. 168–171 and 174: Table 1]. Usage of the underground structure is considered to be a tomb. It is believed that the chambers Room W (RW) and Room S (RS) were used for the burial itself, and chambers Room N (RN), Room E (RE) and Room M (RM) contained the accompanying furniture and other burial goods. However, since it has been destroyed so much, the excavation of human bones has not been confirmed. On the other hand, although it was destroyed, many luxurious burial goods such as cylinder seals, beads and pottery were discovered, and it is thought that it was the tomb of the upper class.

Of the 26 balance weights reported this time, ten examples (Figs. 1 and 2: 4, 7, 9–12 and 16 and 20–22) were discovered from the F. D.; as well as one (Figs. 1 and 2: 19, and Fig. 4) from the chamber RW; four (Figs. 1 and 2: 2, 6, 17 and 3: 1) from the chamber RS, two (Figs. 1 and 2: 5, 8) from the chamber RM; one (Figs. 1 and 2: 14) from the Chamber RE, and one (Figs. 1 and 2: 13) from relative place of the underground structure. In other words, 19 of 26 balance weights discovered from Area A were excavated from relatively deep points or directly above the original floor, *in situ*, of the underground structure. It can be pointed out that one (Figs. 1 and 2: 13) example may have risen to the upper debris when the underground structure were destroyed. The other one example (Figs. 1 and 2: 18) was found in the buried soil of a pit (D3) of the drainage system associated with above-mentioned upper level, and one example (Figs. 1 and 2: 3) was found in the debris in the southeast of the underground structure. Unfortunately, the finding spots of the



Fig. 1 Hematite balance weights from Area of 'Usiyeh.

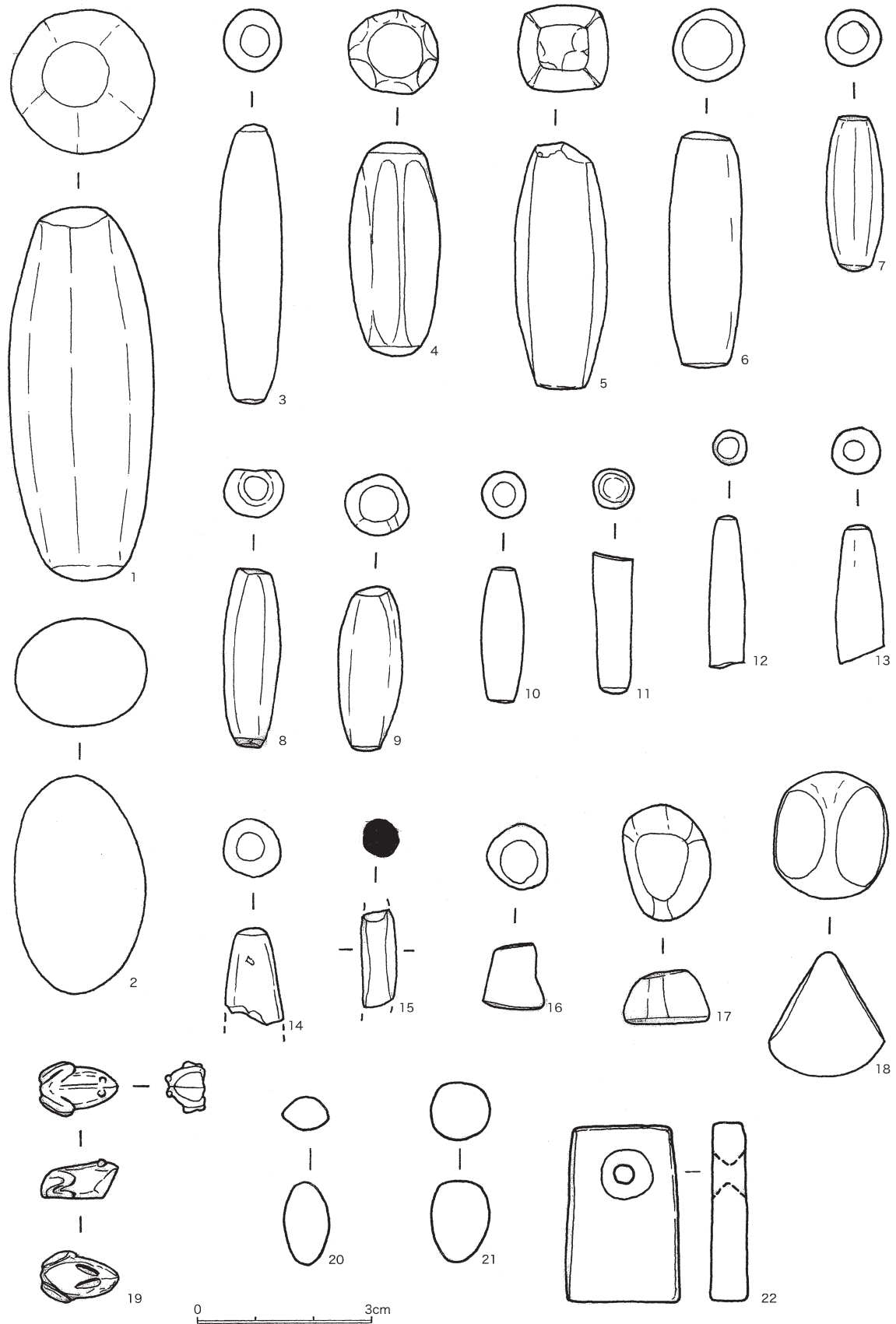


Fig. 2 Balance weights from Area of 'Ushiye (1-19: hematite; 20, 21 and 22: other wstones).

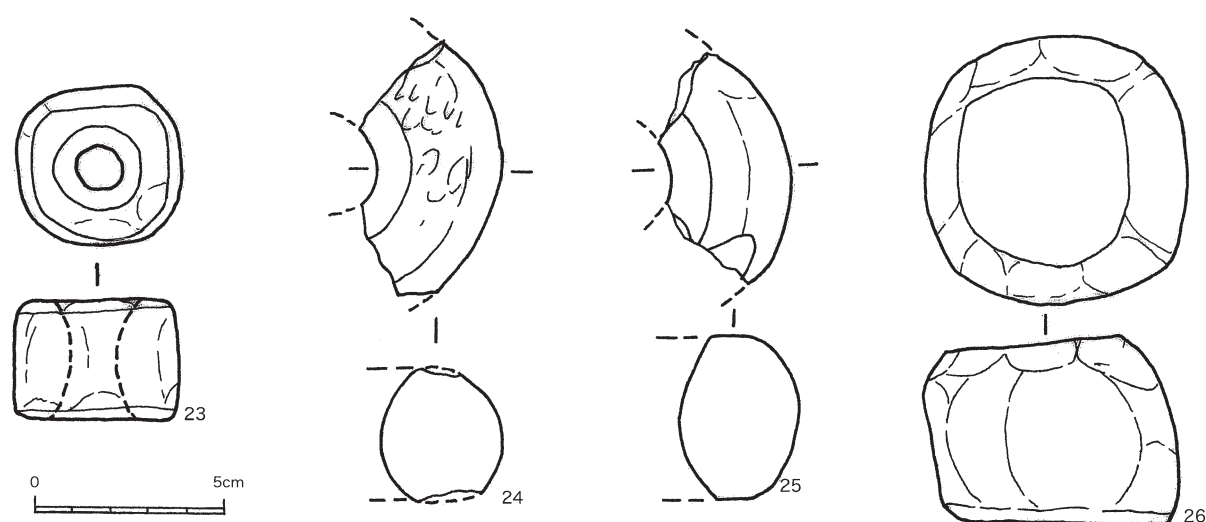


Fig. 3 Stone weights from Are A of 'Usiyeh.

other four examples are unknown. Among them, three (Fig. 3: 24, 25 and 26) are relatively heavy balance weights and may not be equated, but it is likely that they were related to the underground structure, including the other one (Figs. 1 and 2: 15). In other words, it is no exaggeration to say that everything except one (Figs. 1 and 2: 18) were probably related to the underground structure. If the underground structure was a tomb, then these balance weights were part of the tomb's burial goods.

Material for balance weights

Balance weights are generally made of stone or metal and not all shapes are the same [Melein 2018: p. 32], but here we will explain hematite⁵⁾, which is the most common material of the balance weights in the early second millennium B.C.⁶⁾ Similar to these trends, 19 of 26 balance weights excavated at 'Usiyeh were made of hematite. Hematite was called Šadānu in Akkadian and ^{NA}4KA.GI.NA in Sumerian [ibid.: p. 109].

Iron oxide rocks are not present in Mesopotamia, but the powder have long been used as a pigment in painted pottery and for mainly medical-magical [ibid.: p. 124]. According to Melein, the use of iron oxide rock began in Syria in the 7th millennium B.C. [ibid.: p. 109⁷⁾]. It seems that it was a long time later to process the hematite mass itself to make a product. The origin of iron oxide rocks brought to Mesopotamia is thought to be from the Zagros Mountains, Elburz Mountains, Taurus Mountains and the limestone plateau bordering the Euphrates valley near Tell Bazi, Syria [ibid.]. Although it is difficult to know the place of origin by analysis, it is highly possible that the place of origin is relatively close to the Taurus Mountains and the vicinity of Tell Bazi, considering the location of 'Usiyeh.

Hematite is believed to have begun to be used primarily as a material for cylinder seals, around the end of the third millennium B.C. This is because hematite is hard (Mohs hardness 5 to 6.5) and delicate processing is technically difficult, so it lags behind other soft stones. Hematite, with its

5) According to Melein, "hematite", "goethite", and "magnetite" cannot be visually distinguished. She also argues that for the term "iron oxide rock" should be used as a comprehensive term for these unanalysed archaeological finds. The stone weights excavated from 'Usiyeh have not been analysed, and we thought that the term "iron oxide rock" should be used, but in this article to the 'Usiyeh's examples, we use the term "hematite" commonly used in cylinder seals and weights excavated in Mesopotamia.

6) According to Karwiese, Most of the balance weights from the second millennium B.C. are made of hematite or limestone [Karwiese 1990: p. 58], while limestone has not been found in 'Usiyeh. Perhaps the limestone and hematite balance weights weigh differently.

7) Two stamp seals were discovered in Tell Sabi Abyad (7000–6000 B.C.) [Melein 2018: p. 109].

List of figs. 1, 2 and 3: Stone balance weights from Area A of 'Usiyeh

No.	No.*	Field No.	Find spot	Material	Colour	Measurements (mm)	Shape	Weight (g)	Register No.**
1	S1	US-1	U.S. ③	hematite	black to dark brown	64 × 24.5 × 24.5	long barrel shape	82.5	I.M.13-1
2	S11	US-13	R.S.?	hematite	black	37 × 18 × 22.5	oval ball shape	41.6	I.M.76
3	S2	US-2	C-XII ①	hematite	dark brown to dark grey	48 × 10.5 × 10	long and thin barrel shape	16.7	I.M.17
4	S3	US-6	F.D. ②-③, west part	hematite	dark brown to dark grey	36.5 × 15 × 15	long barrel shape	16.95	I.M.14-1
5	S4	US-14	R.M. below Phase 3	hematite	black to dark brown	42 × 15 × 15.5	long barrel shape with square-like horizontal section	25.6	I.M.77
6	S5	US-12	R.S.?	hematite	dark grey	40.5 × 12.5 × 12	cylindrical shape with slight bulge	16.3	I.M.76
7	S6	US-4	F.D. ④	hematite	black	27 × 9.5 × 9.5	long barrel shape	8.4	I.M.13-2
8	S7	US-15	R.M., below Phase 3	hematite	dark brown	31 × 8 × 10	long barrel shape	5.5	I.M.77
9	S8	US-16	F.D. ⑤	hematite	black	28 × 10.5 × 11	long barrel shape	6.0	I.M.78
10	S9	US-9	F.D. ④	hematite	black	23 × 8 × 8	long barrel shape	3.0	I.M.14-2
11	S10	US-17	F.D. ⑤	hematite	black to dark brown	23 × 7 × 7	cylindrical shape with slight bulge (incomplete)	3.0	I.M.78
12	S12	US-5	F.D. ④	hematite	black	26 × 6 × 6	long and thin barrel shape (incomplete)	2.8	I.M.13-3
13	S13	US-3	D-XII ②	hematite	black to dark brown	23 × 8 × 8	long and thin barrel shape (incomplete)	3.4	I.M.16
14	S14	US-7	R.E. -1.8 m, lowest phase	hematite	black to dark brown	16 × 10 × 10	long barrel shape (incomplete)	3.2	I.M.15
15	S15	US-8		hematite	black	16 × 6 × 6	cylindrical-like shape	1.5	
16	S17	US-10	F.D. ④, west part	hematite	black	11 × 11 × 10.5	circular truncated cone shape	1.6	I.M.18
17	S18	US-34	R.S. ④	hematite		9 × 20 × 14.5	truncated cone shape		I.M.11-4(2)
18	S16		D3	hematite	dark brown	21 × 22 × 19	shape in which a sphere is cut on two sides and has a fan-shaped cross section		
19	S19	US-41	R.W. ④	hematite	black	7 × 9 × 13	frog shape		
20	S30	US-20	F.D. ④	whitish stone (polished)	whitish	14.5 × 5.5 × 8	oval ball shape		I.M. 8-2
21	S31	US-21	F.D. ③	light brownish stone (polished)	light brownish	13.5 × 10 × 10	oval ball shape		
22	S28	US-22	F.D. ③-④	dark brownish stone	dark brownish	30 × 20 × 65	thin rectangular parallelepiped with a hole		I.M.8-2
23	S20	US-18	R.S. below phase 4	greyish stone	greyish	32 × 44 × 42	square donut shape		
24	S21	US-21		stone		35 × 100 < 100 <	donut shape		
25	S22	US-20		stone		42 × 90 < 90 <	donut shape		
26	S23	US-19		basalt-like stone	dark greyish to brownish	50 × 50 × 70	truncated cone shape		

* List of plates 142 to 144 by K. Oguchi 1996.

** I.M.No. is the number when temporary registered in the Iraq Museum.

metallic luster, was highly regarded as a material for cylinder seals for 400 years at the beginning of the second millennium B.C.⁸⁾ Iron oxide rock started to be used in cylinder seals with introduction of copper drills, and it is said that the use in cylinder seals is decreasing with the introduction of cutting foil [ibid. p. 41ff.].

In Area A of 'Usiyeh, three of the 15 cylinder seals found are made of hematite [K. Oguchi 2002]. These belong to the first quarter of the second millennium B.C., and their styles are characterised by the Cappadocian style in Anatolia [ibid.: p. 39f., CS10], the North Syrian cylinder seal style [ibid.: p. 37f., CS8], and clay cylinder of Babylonia [ibid.: p. 37, CS7]. It can be seen that these were influenced by various surrounding regions. A hematite bead has been excavated from 'Usiyeh, but only one out of 460 [K. Oguchi 2002]. These show that hematite was especially used for cylinder seals and balance weights. In particular, hematite has a higher specific gravity (5.3) than other stones such as cylinder seals, indicating that it is suitable for balance weights⁹⁾.

Hematite balance weights are found at many sites in an extensive region in the Near East, and are common between B.C. 2400 and B.C. 1200 [Melein 2018]¹⁰⁾. It can be seen that hematite was used as balance weights for a longer period than cylinder seals. As mentioned above, hematite cylinder seals seem to change to other materials due to technological evolution.

At Selenkahiye in Syria, a limestone cylinder seal, unworked hematite, and shaped and polished weights and cylinder seals blanks have been found together in a context of the late third millennium B.C. [Collon 1987: p. 39; Melein 2018: p. 21, Fig. 3-2]. These suggest that cylinder seal craftsmen and weight craftsmen, that is, craftsmen who process small stones, handled different stones and made different products. Especially in Mesopotamia, due to the shortage of stones for processing, it is believed that masons may carry semi-processed stones and inscribe them at the request of customers. Thankfully, stone products that haven't corroded for thousands of years tell us a lot about what happened at the time.

Balance weights

The beginning of the balance weight in Mesopotamia seems to date back to the fourth millennium B.C. [Rashmstone 2014: p. 428f.]. The use of hematite at sites in southern Mesopotamia begins slightly later than at sites in the north, around 2000 B.C. [Melein 2018: p. 75]. Balance weights are generally made of stone or metal and not all shapes are the same [Melein 2018: p. 32]. Most of the balance weights from the second millennium B.C. are made of hematite or limestone [Karwiese 1990: p. 58]. Many hematite balance weights have been found in southern Mesopotamian sites such as Ur, Uruk and Nippur [Woolley and Mallowan 1927; Hafford 2005; Hafford 2012 and Melein: 2018]. At Ur, Hematite is effective for measuring small values, and it is said that more than 50% of those showing 80 g or less are made of hematite [Hafford 2012: p. 31].

In terms of how the balance weights were used, small weights seem to have been used to measure metals, precious stones and pigments [Rahmstorf 2010: p. 95]. 'Usiyeh's hematite balance weights fall into this category and are thought to weigh metals and precious stones. The larger balance weights were used to measure wool and cloth [Melein 2018: p. 30]. They were not used to measure food or to prepare medicines [ibid.]. And, as will be discussed below, not all weights were used accurately and rigorously, and there are several laws in the Code of Hammurabi that prohibit incorrect measurements [ibid.].

The shape of the weight was divided into 22 types by Woolley, but after that, they were divided into 11 categories by Hafford [Hafford 2012: pp. 25–32]. Most of the balance weights of 'Usiyeh

8) Surprisingly, up to 70% of all cylinder seals during this period are made of iron oxide rock [Melein 2018: p. 112].

9) The other stones commonly used in cylinder seals have a specific gravity of 2.4 for lapis-lazuli, 2.7 for marble, and 2.6 for carnelian.

10) In fact, other areas seem to be found in later times [see Joseph D. Martin: online Fig. 2].

(Fig. 2: 1 to 15) are sphendonoid type in the Hafford's category [ibid.], but as Hafford points out, there are various names, so the list of figs of this article. Mentions them as long ballel shapes. Of the 19 hematite balance weights, 15 fall into this category. The lines drawn inside each figure in Fig. 2 are not clear. These are trace lines of polishing adjustment that are difficult to see in the photograph. The other two (Figs. 1 and 2: 16 and 17) are category of the loaf type of Hafford [ibid.], and the other one is frog shape (Fig. 1: 19, and Fig. 4).



Fig. 4 Frog-shaped balance weight(?) from 'Usiyeh.

Initially, the frog-shaped one was judged as an amulet, and unfortunately it was not weighed. However, It is doubtful that it was really a balance weight because it is so small and light, probably around 1 g. Frog and duck amulet [Wooley 1976: p. 217 U.1276 and U1277] believed to be made of frit and faience, have been excavated also in Ur¹¹). It is unlikely that these are used for the balance weights, so it is not really known if the hematite frog of 'Usiyeh was also an amulet or a weight. In particular, duck and frog balance weights have been attributed to Mesopotamia [Barjamovic 2021: p. 60]. The most common animal-shaped balance weights from Mesopotamia are duck-shaped, and rarely lion, frog and boar heads have been excavated [Meleir 2018: p. 32]. Many sets of duck-shaped balance weights have been found, but it is unclear whether frogs were used for balance weights, as many frog-shaped ones seems to be single unit, not a set. However, as far as I know, 'Usiyeh's frog-shaped one is the smallest. An example of a frog-shaped balance weight from Kültepe [Kulakoğlu 2017: p. 400, Fig. 21.11–138] is known to be very large, so it may not be possible to equate them with 'Usiyeh. A lapis-lazuli frog-shaped model has been found at Chagar Bazar since the Jamded Nasr period [Mallowan 1947: Pl. IX and p. 100]. In the case of a frog-shaped stone object, it is difficult to determine whether it was an amulet, a model, or a balance weight.

An unusually shaped hematite balance weight (Figs. 1 and 2: 18) has been found, but it is slightly later than the hematite weights shown above. A pendant-shaped stone balance weight has also been excavated (Fig. 2: 22). This is the Stele type in the Hafford's category [Hafford 2012: pp. 25ff.].

Four large stone weights have also been excavated (Fig. 3: 23 to 26). Three of them have a hole in each (Fig. 3: 23–25), and one has no holes. These seems to have different used than the above balance weights. The three perforated examples may be loom weights, but they may be a little too heavy. Perhaps these four stone weights measure different things, such as wool.

Units of weight

The unit of weight is 'talent (biltu)', 'mina (minu)', 'shekel (šiqu)' from the heavier unit. The lightest unit was 'she' (še / uttatu). 1 talent = 60 mina, 1 mina = 60 shekel, 1 shekel = 180 she, using the sexagesimal system. 1 she represents a grain of barley and 1 shekel is equal to the weight of 180 grains of barley. In a study of units of balance weight, Powell carried out a metrological study of weights and proved that one shekel weighs about 8.33 g [Powell 1971]. The smallest unit, one she, was converted into one grain of barley, which weighed 1 she = 0.046277777777778 g [Monroe 2005: 175]. The next lightest unit, 1 shekel, weighed about 8.3 g (\div 8.257368 g), followed by 1 mina = 499.8 g and 1 talent = 29,980 g [Dercksen 1996: p. 251; Kool 2012: p. 43]. One talent weights about 30 kg (29.980 kg at 8.33 g per shekel), which was considered to be

11) In 'Usiyeh, a faience-made Humbaba-faced amulet and beads, and a frit-made lion-shaped amulet and beads have been excavated from the same period. The lion-shaped one is similar to the one excavated in Kültepe-Kanesh [Özgüç 1986: p. 37 and pl. 76-1; K. Oguchi 1998: p. 82 and Pls. 5 and 6-B180].

the amount that one person could carry [Monroe 2005: p. 175]. As mentioned above, according to Powell, 1 shekel = 8.33 g, but the actual gram weight of hematite balance weights varies, and few of them correspond exactly to the 8.33 figure. For Kültepe in Central Anatolia, Dercksen considers 19 items with a value between 7.8 g and 9 g as one shekel weights, based on the assumption that 1 shekel = 8.3 g [Dercksen 1996: p. 251ff.]. Of these, 10 were close to 8.3 g (8.1 g–8.5 g). Zaccagnini, who examined some contemporaneous example of Northern Mesopotamian, also pointed out that the minimum value of the actual grams of weight corresponding to one shekel was about 8.1 g, and the maximum value about 8.48 g [Zaccagnini 2000: pp. 1203–1209]. This variation in the actual grams of the balance weights means that it was not possible to produce accurate balance weights at that time.

It has also become clear that in areas outside Mesopotamia, such as Ebla, Alalakh, Ugarit in Syria, and the Hittite Empire in Anatolia, a different system of weights and measures was used than in Mesopotamia [Bienkowski and Millard (eds.) 2000: p. 318]. Studies of ancient weights and measures show that in the Hittite Empire a shekel weighed 11.4 g [Ascalone and Peyronel 2006: pp. 50–56], and sometimes as much as 11.75 g [Zaccagnini 2000: pp. 1203–1209]. The unit of measurement of the mina also changed, from 1 mina = 50 ‘shekels’ in the Old Hittite to 1 mina = 40 shekels in the Hittite Empire [Monroe 2005: p. 175]. Weights and measures differed from region to region and from period to period in Western Asia.

The Balance weights from ‘Usiyeh is similar to that used in South Mesopotamia and Central Anatolia, and one ‘shekel’ is thought to be related to 8.3 g. Considering Figs. 1 and 2 (see also the List), 1 could have been 10 shekels; 2 was 5 shekels; 3 and 4 were 2 shekels, 5 was 3 shekels; 6 was 2 shekels; 7 was 1 shekel; 8 and 9 were 2/3 shekels; and 9 was 1/3 shekel. On the other hand, it is not very accurate.

After measuring the lengths of the weights excavated from ‘Usiyeh and Kültepe-Kanesh, and investigating whether balance weights of the same size had the same weight, it was found that some weights were similar, while many others, even though of the same size, had very different weights. This means that weights could not be judged to be the same weight by appearance alone, which would have made unification of weights and measures difficult.

Balance scales

There are various ways to say it, such as weighing scale and mass scale, but here we call it balance scale as weighting tools. The balance scale of ancient Mesopotamia is considered to be a hanging type. The hanging type of balance scales (suspension balance) are well known in figures such as the *Book of the Dead* in Egypt.

The hanging type can be simply classified into three types. The first type in which a hanging rod is attached to the top of an upright support rod and a pair balance plates are hung on both ends of the hanging rod with ropes or strings; the second type the center of the hanging rod is hang with a rope or string by a hand instead of the support rod; the third type the weight is fixed on one side without fixing the hanging fulcrum of the hanging rod, the object is placed on the balance plate on the other side, the position of the fulcrum is moved, and the weight was measured by the ruler scale written on the balance rod.

The third type is said to have appeared in the Roman period. In other words, the first and second types are considered to be older. The first type seems to be suitable for large or fixed use, while the second type is considered to be used for small types or portability. The first type seems to be the most appropriate, on the other hand, the balance weights of ‘Usiyeh is for measuring light things, and the first type is necessary to have a delicately horizontal place. Therefore, we think it may have been the second type in terms of portability which is also depicted on a cylinder seal in the Late Akkadian period [Boehmer 1965: Taf. 38-458; Ascalone and Peyronel 2001: Fig. 8 and

Melein 2018: p. 31, Fig. 3.10]. Two sealings from Kültepe-Kanesh in the early second millennium B.C. also depict the second type of balance scale [Tessier 1994: nos. 532 and 533; Ascalone and Peyronel 2001: Fig. 9].

In 'Usiyeh, one bronze/copper balance scale plate (balance pan) has been excavated [K. Oguchi 2000: M26] (Fig. 5). Initially, it was reported as a bronze object for which the purpose of an ornament or stud [K. Oguchi 2000: p. 87], but it is definitely confirmed that it is a balance plate from the excavated examples of other archaeological sites, such as stratums II and Ib-a of Kültepe-Kanesh [Kulakoğlu 2017: p. 349ff.], Nippur McCown *et al.* 1979: pp. 33 and 52], Nuzi [Starr 1939: Pl. 142, F] and Ugarit [see Melein 2018: p. 30, Fig. 3.9].

'Usiyeh's balance plate is a dome-shaped with four small holes arranged diagonally near the edge (Fig. 5) [K. Oguchi 2000: Pls. 4 and 7d-M26.]. Normally, it seems appropriate that balance plates are hung with three strings, but in the case of 'Usiyeh, it can be inferred that they were hung with four strings. Ugarit [Melein 2018: p. 30-Fig. 3-9], Nuzi [Starr 1939: pl, 142-F], and Kültepe [Kulakoğlu 2017: p. 349f.] examples also have four holes, so it is certain that they were hung with four strings. The initial balance plate was hung with four ropes or strings, but it is believed that it was later changed to an efficient three strings.

Some other bronze objects that can be imagined as parts of the balance scale have been excavated from 'Usiyeh. It may be urgent to think of these as parts that are just balance scales, but we would like to show them here, including their possibilities (Fig. 6).

We think Fig. 6-1 and 2 may have been used for the hanging rod. We thought of these were the cores of the knife, but we decided that they might not have been because they were a little too thick. Only half of remains, but since there are holes on both sides and in the center, we think it may have been used by hanging it on both sides and hanging it through a string in the center. When these total lengths are restored, they are approximately 11 cm and 7 cm, respectively. These may look a little short, but the balance scale plate of 'Usiyeh is as small as about 3 cm in diameter¹²⁾, so it may be possible. Also, Fig. 6-3 shows a metal hook that seems to be tin. It's an incomplete shape, but

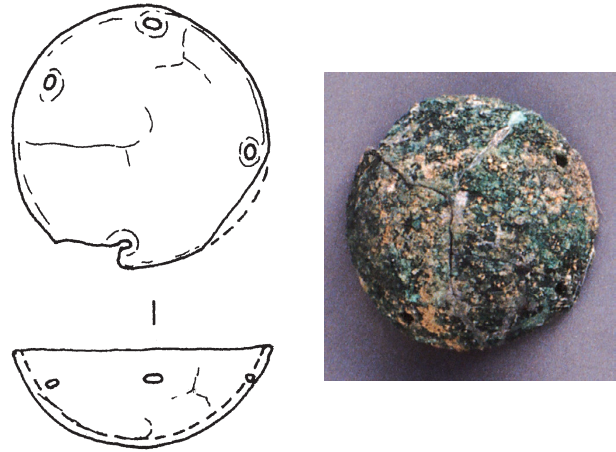


Fig. 5 Bronze/copper balance scale plate from Area A of 'Usiyeh [Oguchi, K. 2000: Pls. 2 and 8-M26, Trench 1 in Grid E-XI].

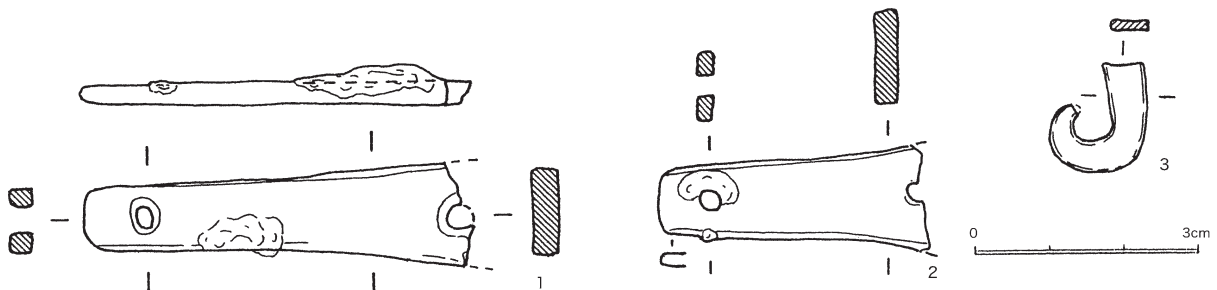


Fig. 6 Related objects? of the Balance scale [1: Oguchi, K. 2000, Pls. 4 and 7d-M54, UM-16, Grid E-XII③, bronze/copper; 2: *ibid.*, Pls. 4 and 7d-M55, UM-51, Room M④, bronze/copper; 3: *ibid.* Pls. 2 and 8b-M33, UM-20, Room S④, tin?].

12) The diameter of the balance pan excavated from Kültepe is 5.7 cm to 8.3 cm [Peyronel 2000: pp. 181–183; Kulakoğlu 2017: p. 149]. It turns out that the balance scale plate of 'Usiyeh is very small.

we think it may have been used for hanging part. However, these are just our imaginations.

Conclusions

From the weight of the balance weights from Area A of 'Usiyeh, one shekel commonly used in Southern Mesopotamia and Central Anatolia seems to be related to the 8.3 g one, but it is not accurate.

According to Rahmstorf, balance weights were found in palaces temples and dwellings in the third millennium B.C., but rarely in graves and foundation deposits [Rahmstorf 2014: p. 433f.]. Perhaps it is only used as a practical tool and was found where it was actually used. In the second millennium B.C. the material change, hematite balance weights became common, and they were more commonly buried in graves in South Mesopotamia. In the case of Ur, nearly half of the weights during the period from the Early Dynastic to Neo Babylonian are related to burials [Hafford 2012: p. 47].

A characteristic feature of the burials excavated in northern Mesopotamia is the presence of weapons in male graves. This is thought to be due to the fact that men often fought as warriors due to tribal conflicts and other reasons, and as a symbol of this, they were buried with weapons [Wygnańska 2019: p. 410]. On the other hand, in southern Mesopotamia, objects related to commerce, such as weights, have been found as grave goods, pointing out that the graves in which these objects were found were those of merchants engaged in trading activities and were buried with their owners [ibid. pp. 397 and 410].

Weights In the case of 'Usiyeh, the burial is likely to have been that of a merchant, as the example was found in a grave. According to Hafford, graves with weights are poor in grave goods [Hafford 2012: p. 48]. The merchant's status may have been low. On the other hand, in the case of 'Usiyeh, the underground structure are assumed to be a tomb, but many luxury objects were excavated there. For example, white-filled engraved pottery from Eshnunna and its eastern regions, shells and shell objects from the Gulf and even from the Indian Ocean, and cylinder seals reminiscent of Central Anatolian and western motifs. Considering these roots, it is certain that it was brought about by trade.

It is true that the location of 'Usiyeh was not suitable for farming and livestock, and was also an area where nomads are wandering around. On the other hand, the middle Euphrates region is one of the meeting places between nomads and sedentary people [Kepinski 2010: p. 169]. It was also the region where it is appropriate for merchants to be stationed as a relay point for remote trade. In fact, it is known that Haradum which is located upstream, was a trading center, karum. In addition to the underground structure, a large artificial mound, Mound 'Usiyeh, and dwellings adjacent to the Euphrates River were built in 'Usiyeh. Area A also has a temple-like structure such as the discovery of many life-sized lion statues which accompanies the remains above the underground structure.

Considering these things comprehensively, it is not known which power belongs to, but it is possible that 'Usiyeh was used as a trading center like karum. Also the underground structure is believed to have been the tomb of people like the chief of power or the chief of merchants.

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