

WEIGHTS AND MEASURES IN HITTITE TEXTS

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Although in the last twenty years much has been said about the subject, I would like to discuss in more detail the weights and measures of objects mentioned in Hittite texts, especially in the votive texts.¹

The aim of this article is to investigate whether there was a fixed standard for the weight (and/or dimensions) of the various objects related to the donor and the purpose of the gift. It must be borne in mind that offerings are also mentioned in the prayers and that the same applies to them as to the promised objects. As genre, the prayers are not mentioned again here.

In the first place it is striking that the votive texts nowhere mention the dimensions of objects, whereas this repeatedly occurs in the cult-inventory texts (inter alia in the so-called Bildbeschreibungen), especially in the case of statues of gods and people. Vice versa, dimensions are seldom given in the cult-inventory texts², whereas in the votive texts regularly mention is made of the weight of the metal of which the object is made or is to be made. In most texts, however, the donor mentions neither dimensions nor weight.

There are three categories of descriptions of objects: (1) dimensions, but no weight (cult-inventory texts), (2) weight but no dimensions (votive texts), (3) neither weight nor dimension (both genres of texts). This fact could perhaps be explained as follows.

The cult-inventory texts deal with objects already used in the cult and as such can be measured; the weight, which is mainly an indication of the value of the object, is not an important factor in its identification. The main factor in the second category is the amount of metal; the weight determines the value of the offering. The third category comprises offerings promised in the votive texts by someone who does not wish to specify the size of his donation. It is remarkable that only twice does the person making the vow state explicitly: "I will determine the weight thereof according to my own judgment" (KI.LÁ.BÍ ZI-za *dahhi*); that in fifteen instances the object promised is qualified as being "of unspecified weight" (KI.LÁ.BÍ NU.GÁL) and that 56 offerings are not further specified.

* The Netherlands Institute for the Near East, Leiden. This article was originally prepared for a Gedenkschrift which has ultimately not been published.

¹ Cf. Th.P.J. van den Hout: "Masse und Gewichte bei den Hethitern", RIA 7 1987-1990, 517-527 and J. Siegelová in Fs. Otten 2 1988 317-326.

² The following dimensions occur: 1 iron bull with support: 2 šekan (1 šekan is probably ca. 50 cm); statue of a man: 1½ šekan; 1 statue of a man, ... 1 šekan; 1 statue of a woman ... 1 šekan. This is probably why L. Rost's tabulated survey in *MIO* 9 1963, 204 ff. classifies the materials and the dimensions but not the weights. Objects with a specified weight are, inter alia, 2 *wakšur* casks of silver, their weight is 2 minas of silver, 1 GEŠPU (fist?) of silver of 20 šekels and 1 silver goblet of 8 šekels.

On closer perusal of the second category (only the weight of the objects is given), it appears that the weights given for gold or silver objects in our texts are 3, 6, 10, 16, 20 šekels and 1, 2 and 100 minas³. 1 mina equals 40 šekels⁴. The actual weight of a Hittite mina is not known. If we assume its weight to be the same as that of the Babylonian mina, i.e. ca. 470 grammes⁵, then 1 šekel would weigh 11.75 grammes⁶.

Can a correlation be established between the size of the promised object and the assistance requested of the god?

Naturally one's first assumption tends to be that the greater the need for divine assistance (therefore the greater the urgency), the greater will be the value of the promised object. This prompted H. Otten's⁷ conclusion that the *kammara*-eye disease of the king (nowadays = 'cataract') could not have been a serious illness because of the slight value of the promised 1 fat ox and 4 sheep in Bo 2002a (= KUB 48.119). A. Kammenhuber believes that Puduḫepa's promises made in dreams were a rather cheap way of buying the indulgence of the gods⁸. Such an opinion perhaps underrates the possibility that, as daughter of a priest, Puduḫepa was guided by a deep religious feeling and was not mainly concerned with the cheapest solution. Apart from that, it is difficult to determine what is of little or great value to a person at a certain moment. Are there any text passages which attest that vows have been fulfilled in too cheap a manner and that consequently the god (or another being) admonishes the donor in a dream to give a more valuable offering, as remarked by A. Kammenhuber?⁹ It does indeed (repeatedly) happen that the vow is not fulfilled or that what is promised is found to be inadequate¹⁰.

³ 2 and 100 minas probably pertain only to silver objects. The 44 and 144 šekels of silver which are promised as purely amounts of metal in KUB 15.5 + IV 36' and 37' are not taken into consideration.

⁴ See H. Otten, *Zum hethitischen Gewichtssystem*, *AfO* 17 1954-'56, 128, 131. An instructive passage in this connexion is KBo 17.74 + I 48 f. (Old Hittite) (StBoT 12 1970, 16 f.) where 5 minas of silver are given to 20 bearers of bronze spears with as a result 10 šekels of silver for each. We also know the correlation between the weights, because the Laws mention halved fines and their former amounts. For example a fine of 3 minas is reduced to 1 mina and 20 šekels. In KUB 30. 15 Obv. 3 the reading "a half mina and 20" probably cannot mean 20 šekels. (Cf. H. Otten, *HTR* 1958, 66 and 142). L. Christmann-Frank, *RHA* 29 1971, 65 does give as translation "Une fiole d'argent d'une demi-mine et vingt sicles...".

⁵ The absolute weight of a mina at the end of the third millennium in Syria has once more been confirmed by the finding of a stone weight bearing the inscription "1 mina" and having a true weight of ca. 473 grammes (see T.A. Holland, *Iraq* 37 1975, 75 ff.).

⁶ See M. Dietrich & O. Loretz *WdO* 3 1964-'66, 219 ff. H. Otten assumes that the Babylonian and the Hittite šekels were of the same weight and, since in Babylon there were 60 šekels in 1 mina and the weight of the šekel is taken to have been 8.4 grammes he arrives at a weight of $40 \times 8.4 = 336$ grammes for 1 mina, practically the same as the weight of 1 mina in Karkemiš. E. Edel gives the Egyptian šekel 9 grammes (*SAK* 1 1974, 114⁸). For a possible 12.8 grammes see RIA 7 526.

⁷ Telipinu 1942, 41³.

⁸ THeth. 7 1976, 25. Likewise on p. 27 f. Puduḫepa is accused of trying to bribe the gods with vota, unlike Muršiliš II who looked on the oracles as an objective means of learning the truth from the gods.

⁹ THeth. 7 1976, 25 f.: "Solche Vota werden, wenn sie noch nicht oder nur in ungenugender oder zu billiger Weise erfüllt sind, in den Träumen angemahnt".

¹⁰ An example of the latter is KUB 15.5 + III 9 where Danuḫepa points out to the king in a dream that the golden rhyton which the king commissioned for the Weather-god in order to propitiate him was not adequate. Danuḫepa says to the king: "Take care that, now the Weather-god will come into heaven, he finds no negligence in you!". From the oracle text KUB 22.70, too, it appears that a queen deposited golden necklaces, requested by the god of Aruṣna in a dream, in the house of an official and in their stead had two less valuable silver ornaments made (Obv. 13-15). The dating of this text is not, however, absolutely certain: some scholars date this text in the reign of Tuthaliaš IV, others in that of Muršiliš II.

In a great many of the vows, no direct correlation can be established between the seriousness of the situation and the size of the promised object, while the type of object correlates to the goal aimed at to only a limited degree. Examples of text passages in which a large offering (in our eyes) is promised for something weighty¹¹ are: KUB 15.1 I 1-11: a golden statue with a golden rosette for the life of the king and protection against evil. KUB 15.1 III 32-38: a golden statue of Ištar and silver weapons for the life of the king¹². KUB 15.23. Rev. 17'-21': the invocation of the god and a [golden] image of the king for the king continuing to live for many years. KUB 15.24 I 1-6: a *ḫalentuwa* house and a gateway¹³ for the life (of the king?). KUB 15.28 + II 6-10': silver images of the king and the queen if they both continue to live.

The god's reward would seem relatively small in the following instances: three storage vessels (with oil, honey and fruit) if the king lives one hundred years (KUB 15.1 III 7'-16') and a (silver?) shield and a silver gateway if the enemy does not penetrate into Hatti, if the matter of the king's dying goes no further and if the inhabitants of the countries of Hatti, the court and the king shall remain healthy (?) (KUB 15.22 1'-11'). But in this case perhaps all the goddess needed to do was to hold aloft her shield to provide protection against evil influences, so that a whole list of evils could be averted by one act.

Sometimes there is an obvious correlation between the promised object and the desired goal: a shield for averting evil¹⁴, an ear for hearkening to the person making the vow¹⁵, a silver city if the city of Ankuwa is preserved¹⁶, a golden soul for the life of the king¹⁷, etc. In most cases there is no direct correlation, the offering simply consists of an action or an object that will please the god. Our assessment of the value of what is promised is also often hindered by the lack of any specification of the material (sometimes because of textual damage) and of the weight. Moreover we cannot tell how the value of the objects relates to the property of the person making the vow.

¹¹ If the task of a god could ever be qualified as light or heavy!

¹² But 1 pair of golden breasts is promised for the life of the king in KUB 15.11 II 1-4.

¹³ Provided, at least, that small models are not intended. In a number of cases the objects could be life-size and in others valuable small models made of solid gold or silver.

¹⁴ KUB 15.1 II 13-24 and 15.22 1'-11'.

¹⁵ KUB 15.1 II 25-27, 28-36 and IV 18-22.

¹⁶ KUB 15.1 III 17-26 and 27-31.

¹⁷ KUB 15.19 Obv. 3'-5'.

The weights given for objects in the votive texts

<i>3 šekels</i>	A golden soul ¹⁸ and a golden earpendant ¹⁹ of this weight are promised. They probably weigh 35 grammes.
<i>6 šekels</i>	1 pair of silver eyes ²⁰ , ca. 70 grammes altogether.
<i>10 šekels</i>	1 silver soul ²¹ , 1 golden ear ²² and two other objects unidentifiable because of textual damage ²³ . They weigh ca. 117 grammes.
<i>16 šekels</i>	1 golden solar disk ²⁴ . Ca. 188 grammes.
<i>20 šekels</i>	1 golden soul ²⁵ , 1 silver statue of a lion ²⁶ , 1 golden Ištar ²⁷ . Ca. 235 grammes.
<i>1 mina</i>	1 silver ear ²⁸ , 1 golden soul ²⁹ , 1 silver statue of a lion ³⁰ , 1 silver rhyton ³¹ , 1 silver Ištar ³² . Ca. 470 grammes.
<i>2 minas</i>	1 pair of silver eyes ³³ . Ca. 940 grammes.
<i>100 minas</i>	1 statue of the king ³⁴ , two objects unidentifiable because of textual damage ³⁵ . Ca. 41 kilogrammes.

On the whole, royal diplomatic gifts to foreign princes are considerably heavier than the objects promised to the gods³⁶. For instance Šuppiluliuma I sent a stag rhyton of 5 minas of silver and a ram rhyton of 3 minas of silver to Akhenaten on the occasion of his accession to the throne³⁷. Vice versa, the Egyptian crown prince Sutahapšap sent Ḫattušili III a golden goblet of first quality gold with incrustation, embossed with the face of a bull with horns of white stone and eyes of black stone. The weight of first quality

¹⁸ KUB 15.8 I 6'.

¹⁹ KUB 15.9 III 8'.

²⁰ KUB 15.8 I 7'.

²¹ KUB 15.1 II 12 and 15.1 III 3'.

²² KUB 15.1 II 27 and 15.9 III 7'.

²³ KUB 15.5 + IV 15' and 15.7 8'.

²⁴ KUB 15.5 + IV 5.

²⁵ KUB 15.19 Obv.13'.

²⁶ KUB 48.126 22'.

²⁷ KUB 48.123 I 18'.

²⁸ KUB 15.1 II 27.

²⁹ KUB 15.19 Obv. 5'.

³⁰ KBo 8.61 3'.

³¹ KBo 8.63 I 7'.

³² KUB 48.123 I 18.

³³ KBo 8.61 7'.

³⁴ KUB 15.9 III 2'.

³⁵ KUB 15.9 III 4' and 15.29 I 3'.

³⁶ These brief comments on royal gifts are only meant to give some idea of the weights involved.

³⁷ EA 41. See H. Ehelolf in ZA 45 1939, 71.

gold, which was worth almost twice as much as ordinary gold³⁸, was 93 šekels, ca. 846 grammes³⁹. Ramses II also sent precious gifts to Hittite connexions: according to KBo 28.44 a Hittite prince received a goblet of 49 šekels of first quality gold and according to KBo 28.4 a high-ranking Hittite official received a goblet of 48 šekels of first quality gold, hence approximately half of the weight of the gold received by the king⁴⁰. A necklace of 88 šekels of first quality gold was sent to Puduḥepa by the Egyptian queen Naptera, which was, as E. Edel remarks “für eine Halskette gewiss ein stattlicher Betrag”⁴¹.

CONCLUSION

In conclusion, the most salient point is that in the votive texts a certain object is not characterised by a fixed weight. For instance a golden soul varies from 3 šekels to 1 mina. A comparison between the weights with those of Hittite objects which have been published and of which the weight and dimensions are mentioned in the literature, could perhaps help us to estimate the size of the promised objects. Unfortunately both weights and measures are mentioned only in the catalogue of the Schimmel collection⁴². The famous silver stag rhyton (Sch. no. 123) is 17 x 18 cm and weighs 322.5 grammes = ca. 28 šekels⁴³. The silver rhyton of 1 mina in KBo 8.63 I 7', where the animal is not mentioned, is therefore heavier by 12 šekels. The golden statuette of a sitting goddess (Sch. no. 125) is 4.3 cm high and weighs only 23.2 grammes = 2 šekels, and Sch. no. 131, a silver sitting goddess weighs 21.9 grammes = also roughly 2 šekels. The aforesaid statues of Ištar, a golden one of 20 šekels and a silver one of 1 mina, therefore must have been very much larger and be more solid. Sch. no. 129, a golden solar disk, weighs 9.3 grammes = ca. 1 šekel. Here again the comparable object of 16 šekels (KUB 15.5 + IV 5) promised in the texts must have been a great deal heavier⁴⁴. The other objects in the Schimmel collection which could possibly be used for the purpose of comparison are not mentioned with their weight in the votive texts, hence no comparison is possible. Although the number of significant objects is very small, one might circumspectly infer that the Schimmel objects were not presented to the temple in consequence of an official vow made by a king or queen. They could well have been given by lower-ranking officials or private individuals, though we have no attestations for this⁴⁵. Sometimes there

³⁸ E. Edel, *Der Brief des ägyptischen Wesirs Pašijara...* 1978, 129'.

³⁹ E. Edel o.c. 133. For the weight of an Egyptian šekel, see E. Edel o.c. 128.

⁴⁰ E. Edel o.c. 135⁺¹.

⁴¹ E. Edel o.c. 143. According to E. Edel o.c. 128, the weight of gifts sent elsewhere was mentioned to prevent replacement by gifts of inferior quality during transport. It is clearly manifest from all transportations that Anatolia had more silver than gold, Egypt more gold than silver.

⁴² *Ancient Art, The Norbert Schimmel Collection*, ed. by O. White Muscarella, 1974. The items from this collection are designated as “Sch. no ...”.

⁴³ Hence the silver stag rhyton mentioned previously as a gift of Šuppiluliuma I (note 37) was more than six times heavier.

⁴⁴ In Hittite texts the weight of a solar disk varies from 1 šekel to 5 minas (F. Sommer, *ZA* 46 1940, 33).

⁴⁵ One of the rare occasions when a rhyton plus its weight is mentioned in festival descriptions is KUB 31.76 Rev. 14' and 18' where mention is made respectively of a silver neck of an ox of 20 šekels and a silver oxen rhyton of 1 mina

occurs in the *Bildbeschreibungen* an ALAM TUR = “statuette”, with no specification of weight⁴⁶. A silver goblet of 8 šekels⁴⁷ and a fist (?) (GEŠPU) of 20 šekels⁴⁸ can hardly be reckoned lighter offerings and moreover, the goblet was an offering of a king Muršili⁴⁹ to the Weather-god of Liḫzina. The only really light objects mentioned in the texts are the golden lion of 1 šekel, iron bulls each of 1 šekel, a silver hearth of 1 šekel etc., which were foundation-offerings⁵⁰. The few, golden statuettes of gods found in various places are of a size comparable to those of the Schimmel collection⁵¹. Consequently all the objects were relatively small, were perhaps designated ALAM TUR, and were probably small portable copies of the large statues of the gods.

On the grounds of the whole body of the votive texts, no definite standard can be established for the weight of an offering in correlation to the donor and the purpose of the donation.

(see O. Carruba, *Kadmos* 6 1967, 92). Silver objects plus their weights are also mentioned in royal funerary rituals (H. Otten, *HTR* 1958, 34, 66 and 68; WdO, 2 1959, 477 f.; L. Christmann-Franck, *RHA* 29 1971 65, 67, 76), for example a silver boar’s snout of 10 šekels, a silver well or basin of 10 šekels, a lamp of [?] šekels and a silver axe of 20 šekels. In each case, with the exception of the axe, all objects can be filled with water or oil, therefore the weight was possibly used as an indicator of capacity. Similarly, the functional indication of the weight of an axe is understandable. In any case the valuable objects were not intended as burial gifts: the said objects must, however, be classified among the minutely prescribed cult objects and consequently do not fit into the category in question here.

⁴⁶ KUB 38. 1 I 1 Obv.? 5’ and KUB 38. 17 IV 3’ f., *inter alia*.

⁴⁷ KUB 38.3 I 4.

⁴⁸ As present for Zababa in KUB 38. 1 I 5. At the 27th Rencontre d’Assyriologie in 1980, H.G. Güterbock displayed a silver vase shaped like a fist which is now deposited in a museum in Boston. Published by H.G. Güterbock and T. Kendall in: “The Ages of Homer, a Tribute to Emily Townsend Vermeule”, 1995 45-60. Dimensions are given, but not the weight.

⁴⁹ Since the object could have been in the temple for some time and the text which mentions the offering (KUB 38.3 I 5) can probably be dated later than the last Muršiliš (III), it is difficult to determine which Muršiliš was the donor.

⁵⁰ KUB 2.2 II 7 ff. Translation a.o. in A. Goetze ANET³ 1969, 356. It is remarkable that all the objects mentioned there together with their weight weigh 1 šekel.

⁵¹ Statuettes from *inter alia* Karkemiš, Boghazköy, Yozgat and Çiftlik, in E. Akurgal & M. Hirmer, *Die Kunst der Hethiter* 1961 illus. 53 and K. Bittel, *Die Hethiter* 1976 illus. 167, 168, 170 and 171.