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A STONE OR A WEIGHT? The tale of the fish, the melon and the balance (Plates I–X)

Introduction

In the last twenty years the study of the Bronze Age Aegean weight—system has improved considerably and some very important group of balance weights have been successfully studied from Crete, Akrotiri, Ayia Irini, and mainland Greece¹. Despite these results, however, many aspects of the question are still obscure. Although a general metrological model seems to have been established, there is still some incertitude about other more archaeological features, mostly concerning typology. Some efforts have been made to reach a well

¹ Crete: see K.M. PETRUSO, Systems of Weight in the Bronze Age Aegean, Ph.D. Diss., Indiana University, 1978; K.M. PETRUSO, Keos VIII. Ayia Irini: The Balance Weights, Mainz on Rhine 1992 (with bibliography); N.F. PARISE, "Ricerche ponderali", in AIIN, 38-41 (1994), pp. 13-21, and T.M. Brogan, "Minoan Lead Weights and Bronze Scale Pans: Evidence from the LMIB Levels at Mochlos (Procc. Of the Annual Meeting of the Archaeological Institute of America)", in AJA, 102 (1998), fasc. 2, p. 391 (Mochlos); M.E. Alberti, "Il sistema ponderale egeo tra omogeneità e flessibilità: continuità e discontinuità tra il mondo minoico e quello miceneo", in Simposio Italiano di Studi Egei, dedicato a L. Bernabò Brea e G. Pugliese Carratelli, Roma, 18-20 Febbraio 1998, V. LA ROSA, L.VAGNETTI eds., 1999, pp. 339-350 (forthcoming). Akrotiri, Thera: A. MICHAILIDOU, "The Lead Weights from Akrotiri: The Aechaeological Record", in TAW III, vol. I, pp. 407-419. Ayia Irini, Keos: PETRUSO, Keos VIII; cited above; M.E. Alberti, "Ayia Irini: les poids de balance dans leur contexte", in NAC, 24 (1995), pp. 9-37. Mainland Greece: V. ΑRAVANTINOS, "Μυκηναϊκά σταθμά από τη Θήβα", in Επέτηρις της Εταιρείας Βοιωτικών Μελετών. Β Διεθνές Συνέδριο Βοιωτικών Μελετών, Λιβαδειά, 6–10 Σεπτεμβρίου 1992, Τόμος Β, Τεύχος α', Αρχαιολογία, Αθήνα 1995, pp. 97-137 (Thebes); ALBERTI, "Il sistema ponderale", cited above.

defined balance weights typology2, but it seems to be far from an ultimate definition. Many finds occur as weights in the archaeological literature, even if they do not fit any of the already distinguished types: lead/stone discs, parallelepipeds or cubes, cylinders, sphendonoids. The problem is especially serious when very heavy weights are concerned: at Akrotiri a large lead disc with a bronze handle has been found, but in all the other cases the form of these big weights is rather uncommon. The best example is the stone pyramid with a carved octopus relief from Knossos, that has been considered a standard talent after Evans' studies. The discussion about it is still open, since some scholars wonder if it is not an anchor4. Perhaps, from a very strictly typological point of view, these non canonical objects should not be taken as weights. It is also very likely that for weighing such large masses, another kind of system was used, apart from the double-pan balances, so that the form of weights could vary too5.

One of these big non canonical items is inscribed and deserves further discussion.

Description (Figs. 1-4)

The object is an ovoid stone, now in disposal of the Herakleion Museum, Crete, with a Linear A inscription and a carved fish on its

² MICHAILIDOU, "The Lead Weights", cit. fn. 1; Alberti, "Il sistema ponderale", cit. fn. 1.

'It weighs ca. 15 kg. See Sp. Marinatos, Excavations at Thera VII (1973 Season), Athens 1976, pp. 36, 362; pls. 15b, 56a; Petruso, Keos VIII; cit. fn. 1, n.

147, pp. 43-44.

⁴ On display in the Herakleion Museum. It weighs ca. 29 kg. It would be a standard talent, according to A.J. Evans, "The Palace of Knossos", in *ABSA* 7 (1900–1901), pp. 1–120 (pp. 42–3); IDEM, "Minoan Weights and Minoan Currency from Crete, Mycenae and Cyprus", in *Corolla Numismatica: Numismatic Essays in Honour of Barclay V. Head*, Oxford 1906, pp. 336–367 (p. 342, n. 1); IDEM, *The Palace of Minos, IV*, London 1935, pp. 650–1; PETRUSO, *Keos VIII*; cit. fn. 1, p. 18; ARAVANTINOS, "Μυκηναικά σταθμά", cit. fn. 1, pp. 115, 117. Contra: especially C. DAVARAS, "Une ancre minoenne sacrée?", in *BCH* 104 (1980), I, pp. 47–71.

⁵ PETRUSO, Keos VIII, cit. fn. 1, p. 77.

surface. It is long 16,0 cm. and large 10,5 cm. There is no base, but the extremities are flat, with a diameter of 5,8 cm., and it can stand on them. It is quite well preserved, and its mass is 3.511 gr. Although the inscription is already known as SI Zg1*, it would also be useful to call this stone APH.01, according to the system used for weights of Ayia Irini, Akrotiri, Mycenae, Thebes and many others Minoan sites.

Previous Publications (Figs. 5-6)

In the first publication of 1957¹⁰, Platon mentions a melon–shaped object, with a carved fish on, without any mention of inscription. On the other hand, the following publications (in Raison – Pope 1971 as SI Z1 and in *GORILA* IV and V as SI Zg 1) are mostly regarding the inscription. In Raison – Pope 1971 it is reproduced ¹¹ and listed ¹²; in *GORILA* IV, besides a reproduction and a standardization of the signs, there is also a picture of the inscribed part of the stone ¹³ and a drawing of the carved fish ¹⁴. The inscription is often recorded in the same corpus ¹⁵. In any case, no drawing or picture of the whole object is presented.

"HM 2615, cage 125, room IX. This study has been made possible by the courtesy of the Herakleion Museum staff. My warmest thanks to the Director Dr. A. Karetsou for allowing me to examine some weights kept in the HM, and to Dr. I. Serpetsidaki Marsellou for helping me during my practical work at the Museum in May 1998. Many thanks are also due to the photographer, Mr. Stephanakis, and to the restoration laboratory staff. I would like thank also the Greek Ministry of Culture, the S.A.I.A., the E.F.A. and the B.S.A. for the studying and publishing permits and bureaucratic support.

⁷ According to the less accurate balance of the HM, its mass is 3.450 gr.

* GORILA IV, p. 168.

"See Alberti, "Ayia Irini", cit. fn. 1. Eadem, "Il sistema ponderale", cit. fn. 1, tab. 1.

 10 N. Platon, "Ή ἀρχαιολογικὴ κίνησις ἔν Κρήτη κατὰ το ἔτος 1957", in Kr. Chron., 11 (1957), pp. 326–340.

¹¹ J. RAISON – M. POPE, Index du Linéaire A, Rome 1971, pp. 56–7.

12 *Ibidem*, p. 315.

13 GORILA IV, p. 168

4 GORILA IV, p. V, and n. 1, p. XLI.

¹⁵ GORILA IV, pp. XXIV, XXX–XXXI, XLI (SI Zg 1); GORILA V, p. 111, 142, 273.

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Provenance and Chronology

Very little is known about the findspot of APH.01. Platon ¹⁶ simply reports that it was found in the area of Ayia Photia, Siteia. The catalogue of the HM records that someone gave it to Platon for the Museum. So it seems almost impossible to have more precise information about the provenance and the context of the stone.

It should be reminded, however, that the Siteia area has been inhabited since Neolithic times, with an important occupation in the Protopalatial and Neopalatial periods. The site of Petras, with so many palatial features, was probably the main centre: a MMIB hieroglyphic archive and some Linear A inscriptions (mainly LMIB) have been found there. At Ayia Photia itself a EMI–II necropolis (Glyphada) and a MMIA large rectangular fortified building, followed in MMIIA by two strong circular constructions (Kouphota), have been excavated. The occupation of the same hill of Kouphota continues during MMIII/LMI and LMIII 17.

¹⁶ Platon, "Η ἀρχαιολογικὴ κίνησις", cit. fn. 10, p. 340: "Παρά την' Αγ. Φωθιάν Σητείας ἀνευρέθη περίεργον ἀντικείμενον μορφῆς πέπονος, φέρον ἐπ' αὐτοῦ χαρακτόν ἰχθύν. "Ομοιον ἀκόσμητον περισυνελεγη ἐν Πραισῷ. 'Εκ τῆς αὐτῆς περιοχῆς προῆλθον χαλκοῦς διπλοῦς πέλεκυς καὶ μαχαίριον ἐλαφρῶς κυρτόν".

¹⁷ The Linear A inscriptions from Petras are two tablets (PE1, PE2) from surface layers, a pithos with an inscription on the rim (PE Zb 3), a pottery sherd from a closed vessel with an inscription (PE Zc4) and a possible inscribed nodulus (PE Wy 5), all from sealed LMIB deposits. Archaeological evidence and inscribed documents from the Siteia area: Μ. ΤSΙΡΟΡΟULOU, "Αγία Φωτιά Σητείας το νέο εύρημα", in Problems in Greek Prehistory, Paper presented at the Centenary Conference of the British School of Archaeology at Athens, Manchester, April 1986, E.B. FRENCH and K.A. WARDLE eds, Bristol 1988, pp. 31-47; M. TSIPOPOULOU, Archaeological Survey at Aghia Photia, Siteia, SIMA pocket-book 76, Partille 1989; M. TSIPOPOULOU, and E. HALLAGER, "Inscriptions with Hieroglyphs and Linear A from Petras, Siteia", in SMEA, 37 (1996), pp. 7-46; M. TSIPOPOULOU, E. HALLAGER, "A New Hieroglyphic Archive from Petras, Siteia", in Kadmos 35 (1996), pp. 164-167; M. TSIPOPOULOU and A. PAPACOSTOPOULOU, ""Villas" and Villages in the Hinterland of Petras, Siteia", in The Function of the "Minoan Villa". Proce of the 8th Int. Symp. Swedish Institute Athens, 6-8 June 1992, R. Hägg ed., Stocholm 1997, p. 203-214. My best thanks to Dr. L. Vagnetti for this information.

The Linear A inscription is quite lightly carved ¹⁸, just above the fish. One can see four recognisable signs, plus an extra, quite rare one. The first four signs are: AB *08 – [.] – *01 – *118¹⁹. The first and the third are deeply marked and engraved. The second sign is badly preserved, but it is still possible to see two shallow vertical lines ²⁰. The fourth one is more lightly carved, as well as the fifth sign. This fifth one, never mentioned before ²¹, can hardly be identified with a Linear A sign: its shape recalls a Z²². Its relation with the rest of the inscription seems quite unclear. The phonetic values of the corresponding Linear B signs are respectively <a> (*AB 08) and <da> (*AB 01). The fourth sign, AB *118, reproducing a double–pan balance, is attested in Linear B as an ideogram, representing the higher weight unit L or talent. In the above mentioned publications, no attempt has been made to reconstruct the damaged sign, since the range of suitable Linear A signs is quite large ²³.

The Fish

Below the inscription, though not really centred, a fish is carefully engraved. The carving is quite deep, and the mark rather

19 GORILA V, p. 273.

²⁰ See also Raison-Pope, *Index*, cit. fn. 11, p. 56.

21 It does not appear in Raison Pope, Index, cit. fn. 11, neither in GORILA IV,

but it is almost clear on the surface of APH.01.

²³ See the "Tableau des variantes des signes du Linéaire A", in *GORILA* V, pp. XXVIII–LII. At a first glance, some suitable signs could be: AB *21 F, AB *44, AB *45,

AB *51, AB *131a, AB *306, A* 307, A* 409, A* 410, A* 411.

¹⁸ That is probably the reason why Platon did not notice it in 1957.

²² One could wonder if there is not a relationship with some fractional signs as A *703 D, A *707 J or A *732 JE. Some engraved signs, very close to that one carved on APH.01, have been found on many blocks of the Great Circular Building from the Stratigraphical Museum excavations at Knossos (LMII–IIIA2). See: P. WARREN, "Circular Platforms at Minoan Knossos", in *ABSA*, 79 (1984), pp. 307–323 (figs. 4 – 6 left). These masons' marks are exactly "a three–stroke Z in reverse" (*ibidem*, p. 316). My best thanks to G. Owens for this suggestion.

large. Many details are represented (fins, tail, head, mouth, eyes), with a typical outline technique. As a general view, the fish is much more visible and clear than the inscription is.

Although it is not very different from the fish painted in some very famous frescoes, like the *Flying Fish Fresco* from Phylakopi²⁴, or, even more, the *Fisherman* from Akrotiri (*Figs.* 7–8)²⁵, this resemblance can only be intended in a very general sense, since marine representations in minoan art are often standardized and have a mixed character²⁶.

Comment

APH.01 is certainly a strange object, not very easily understandable. Much attention has been paid to it, since it is both inscribed and carved at the same time. The idea that it could be a weight is mainly based on the presence of AB *118, the ideogram for the talent in Linear B. Until now, no metrological analysis has been attempted on it, because its mass was unknown. It could be useful, in any case, to remember that it does not appear in the main list of Aegean Bronze Age balance weights by Petruso²⁷.

Concerning AB *118, it is mostly attested, in Linear B inscriptions, at Pylos and Knossos²⁸. In the Linear B syllabary,

²⁴ Flying Fish Fresco from Phylakopi. Athens, NM 5844. Early phase of the Third City. See: S.A. IMMERWAHR, Aegean Painting in the Bronze Age, 1990, pl. 16; C. RENFREW, "Phylakopi and the Late Bronze Age I Period in the Cyclades", in TAW I, pp. 403–21 (p. 411 for a date in the IIID phase, early LMI).

²⁵ Fisherman, Akrotiri, West House, Room 5, North Wall. See CH. DOUMAS, The Wall-paintings of Thera, (transl. By A. Doumas), Athens, 1992, pp. 52–3, pl. 19–23.

²⁶ M.A.V. GILL, "Some observations on Representations of Marine Animals in Minoan Art and their Identification", in *L'iconographie minoenne*, O. PICARD ed., BCH Suppl. 11 (1985), pp. 63–81. See also: J.-C. POURSAT, "Poissons minoens à Mallia", in Aux origines de l'hellenisme. La Crète et la Grèce. Hommage à Henri Van Effenterre, Paris 1984, pp. 25–28, pl. IX.

PETRUSO, "Systems of Weight", cit. fn. 1; PETRUSO, Keos VIII, cit. fn. 1.
 PY Jn 320.11, 415.7, 431.7, 601.9, 658.11, 706a.13, 725.10 (AES); PY Ja

however, one finds a similar, but not identical, sign, B *90 <dwo>²9. The main difference between them, is that the latter one does not have the vertical stroke ³0. Apparently, this difference does not exist in Linear A, since the same sign AB *118 seems to play indifferently the double function of syllabogram and ideogram, with or without the stroke ³1. The shape has been reduced to a standard with a short stroke ³2.

Actually, AB *118 occurs in another twenty-two Linear A inscriptions ": apparently, thirteen times as a syllabogram 4, four times

749.1 (see *PTII*, pp. 39, 48, 60, 72, 79, 85, 415; *PTT* I, pp. 163, 165, 167, 168, 169, 170, 172, 173, 180). KN Mc 4457.2 (*142); KN Oa 730–731–732– (*167); KN Oa 733; KN Og 5515–7504 (e–re–pa); KN Wb 5527.1 (*CoMIK* I, p. 277; II, p. 231; III, p. 90, 243. See also the list in F. Vandenabeele et J.–P. Olivier, *Les idéogrammes archéologiques du Linéaire B, Etudes Crétoises* 24, Paris 1979, pp. 154–160, pl. XCIII–XCVI). A recent reconsideration of the AB *118 question: C. Consani, "AB 118/DWO tra minoico e miceneo", in F. Aspesi, C. Consani, M. Negri, *Κρήτη τις γαῖ' ἔστι. Studi e ricerche intorno ai testi minoici*, C. Consani ed., Roma 1996, pp. 71–81, figs. 1–3, p. 80.

²⁹ PY Eb 338.B; Eo 278; Ub 1315.3 (dwo); KN X 8273, 9022 (-dwo[); KN X 8126 (dwo-jo); KN V(3) 492.1 (]dwo-jo); KN As(1) 604.1; V(3) 655.1 (e-re-dwo-e); KN Fh 360.b (ma-si-dwo); PY Eb 1186.A; Ep 539.12 (wi-dwo-i-jo). My best thanks to Dr. Maurizio Del Freo for these indications and some other useful

suggestion about Linear A and Linear B problems.

See Acta Mycenaea I, pp. XVII–XXI. It should be noticed, however, that in some of the Pylos inscriptions AB *118 (= L) lacks of the vertical stroke (PY Jn 658.11, 706.14, both by scribe H21). According to VANDENABEELE et OLIVIER, Les idéogrammes, cit. fn. 28, pp. 156–60, the two Linear B types of AB *118 could depend on scribal hands and relate to two different types of double–pan balance. On the relation between B *118 and B *90, see C. Consani, "AB 118/DWO", cit. fn. 28, pp. 73–77.

Most of the attestations do not have any stroke. The examples with a stroke

are very few: HT 12.4, HT 13.5, HT 85a.3-4; ZA 14.1, KH 10.3.

⁵² GORILA V, p. XXII.

"See GORILA I–V and the list of the attestations in GORILA V, p. 273. In the present work, the very uncertain attestation in KN (?) 32.a.1 has not been considered. According to C. Consani, "AB 118/DWO", cit. fn. 28, the Linear A attestations of AB *118 are twenty–six, but four of them are illegible.

³⁴ ARKH1a.4, ARKH2.3–4, HT13.5, HT44a.1, HT85a.3–4, HT96b.1–2, HT99b.1, HT122a.2, HT131a.2–3, HT140.2, KH10.3, PA 1, ZA14.1. See: *GORILA* I, pp. 26, 84, 130, 155, 162, 206, 226, 236, 284; *GORILA* III, pp. 2, 6, 36, 180. According to C. Consani, "AB 118/DWO", cit. fn. 28, p.72, in four, may be six,

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as a probable syllabogram³⁵, three times as an ideogram³⁶ and one time as a probable ideogram³⁷. In another more case, it does not seem possible to figure out its function³⁸. To sum up, the use as syllabogram represents more than 75% of the total evidence. On the other hand, its function as ideogram may be found in less than 20% of the cases³⁹. In this sense, it would not be very surprising for AB *118 to have a phonetic value in APH.01, as the structure of the inscription seems to suggest⁴⁰. Since there is no recognisable numeral after this sign, it could hardly be considered an ideogram. Obviously, much depends on the interpretation of the last Z–shaped sign⁴¹.

From a chronological point of view, all the datable Linear A attestations of AB *118 are from the LMIB period, except for KN2.2, which could be from MMIIIB ⁴². It is interesting to note that this is one of the few cases of ideographic function of AB *118. This sign is generally attested on clay tablets: just two of the mentioned inscriptions are carved on another kind of support, SI Zg 1 (on APH.01) and KN Za 19 (on a fragment of a stone offering table) ⁴³.

Moreover, a further analysis should be done upon other aspects of APH.01, generally neglected in previous publications, like typology

cases the word where AB *118 appears is an anthroponym (HT13.5, 85a.3-4, 99b.1, 122a.2, perhaps HT44a.1, 131a.2-3).

and metrology. The shape of APH.01 is actually quite regular, but it does not match any of the canonical types of Aegean Bronze Age balance weights ⁴⁴. The similarity with a sphendonoid is rather superficial, mainly because it does not have a flat base, and it was not worked and polished enough to make the faces clear ⁴⁵. Moreover, such large dimensions would be very unusual for a sphendonoid, since this type, generally used for accurate weighing operations, is therefore much smaller ⁴⁶. Compared with other heavy balance weights, like the lead disc with bronze handle from Akrotiri and the discussed carved pyramid from Knossos, APH.01 appears rather different, since it does not have any kind of hole or perforation by which to be suspended.

The mass of APH.01 has been recently measured ⁴⁷, making metrological speculations possible. Despite all the efforts made on this subject, however, it does not seem very easy to find out a suitable metrological value for APH.01: all the envisaged possibilities are not very satisfactory ⁴⁸. The resultant units are mostly too heavy or too light to fit the assessed measure series. The few compatible attributions are generally not convincing from a mathematical point of view. Even if APH.01 could perfectly result in 1/9 of a talent, as an absolute value, this ratio is quite unlikely in the economy of the system – a 1/10 or 1/8 value would fit better, but the resulting masses are not suitable at all. Other good attributions should probably be rejected on a metrological base: 10 "double mina" (or "heavy mina" *M*) can hardly be taken as a unit of measurement *per se*, and 58x⁴⁹ does not seem to have any

³⁷ KH88.1 and KN Za 19.2; also HT70.2 and ZA21a.7, this one almost illegible. See: GORILA I, p. 122; GORILA III, p. 194; GORILA IV, p. 14; GORILA V, pp. 40.

⁵⁶ HT24b.1.2.2, HT38.3 and KN2.2; see GORILA I, pp. 42, 72 and 258.

³⁷ HT12.4 and; see *GORILA* I, p. 24.. ³⁸ ZA5a.1; see *GORILA* III, p. 152.

More precisely, 77,27% and 18,18% respectively. The unclear case represents the 4,54%. It could be interesting to note that AB *118 occurs often with AB*21 $^{\rm f}$ (KH88, ZA5a, ZA14) and with AB*28 – AB*16 (HT44a, HT96b).

^{**} That is also the opinion of Prof. L. Godart and G. Owens (personal communication).

 $^{^{\}rm 41}$ Actually, AB *118 and this fifth sign are both more lightly carved than the other. It does not seem impossible to imagine some kind of relationship between them.

⁴² Some items are, however, not datable. See GORILA V, pp. 83–113.

⁴⁹ GORILA IV, p. 14, AM1938.872. According to C. CONSANI, "AB 118/DWO", cit. fn. 28, p. 72, n. 2, AB *118 occurs also on metallic objects.

⁴⁴ See fn. 3.

The best examples of this sphendonoid shape, very carefully worked, are from Thebes. See Aravantinos, "Μυκηναϊκά σταθμά", cit. fn. 1, εικ. 7–10, 12.

^{**} See Alberti, "Il sistema ponderale", cit. fn. 1. One could wonder if such a heavy and large stone could have been really weighed by a double–pan balance. Generally, the weights found with a double–pan balance are not heavier than 1,5 Kg. See: G. Bergonzi, "Bilance nelle tombe: qualche considerazione su di un rituale funerario del Tardo Elladico", in *Il Congr. Int. Mic.*, vol. III, pp. 1531–1542 (pp. 1533–4).

⁴⁷ As already recorded, it has been weighed on two different electronic balances, giving the two results of 3.511 gr. and 3.450 gr. The average mass is 3.480,5 gr. The following calculations are based on the value of 3.511 gr.

^{**} For a list of the attempts see Table 1. In bold are the more suitable values.

⁴⁹ The letter x indicates the main Aegean weight unit of 65,5 gr. ca.

meaning. Another series of valuations could be made if one considers hypothetically AB *118 as an ideogram of measure (that is however, as discussed above, very improbable) and the Z-shaped sign as a fraction, but also in this way the resulting reference units are quite unlikely. Probably, the best possibilities offered by this hypothetical system are related to the textile measures series (unit r) 50, but the reason why such a stone object should be connected to this kind of commodities is unclear. Even more, considering the Z-shaped sign as one of the known Linear A fraction signs, still does not offer a good solution 51. To sum up, it does not seem possible to find a suitable metrological value for APH.01: it should be assumed that its identification as a balance weight could be very problematic.

Unfortunately, no good confrontation elements can help to assess the question. Actually, among the Linear A inscribed items there is nothing similar to APH.01. Only one other inscribed stone has been published: a very irregular disc from Knossos dated to LMIA (*Fig.* 9)³². Also in this case no definitive metrological value is really suitable, even if some attributions could be acceptable³³. However, the similarities between these two objects are not very strong, regarding shape, dimension and characteristics of inscriptions. Moreover, the stone from Knossos lacks any figurative carving⁵⁴.

About this metrological series for textiles, see: N.F. PARISE, "Una serie ponderale "minoica" e "micenea" per tessuti", in *AION Arch. St.*, 9 (1987), pp. 1–7. For the wool series, see: N.F. PARISE, "Pesi egei per la lana", in *PP*, 227 (marzo–aprile 1986), pp. 81–88; K.M. PETRUSO, "Wool–Evaluation at Knossos and Nuzi", in *Kadmos*, 25 (1986), pp.26–37.

Quantities in Minoan Bookkeeping", in AJA, 54 (1950), pp. 204–222; N.F. PARISE, "Appunti per lo studio del sistema ponderale miceneo", in PP, 19 (1964), pp. 5–21; E.L. BENNETT, "Linear A Fractional Retractation", in Kadmos, 19 (1980), pp.12–23.

"The shape is very irregular. Dimensions: D. 4,3 cm., Th. 4,9 cm. Mass: 96,4(–) gr. From Hogarth's House A at Gypsades. On one face, two Linear A signs (AB *41 + *07) composing the "complex sign" A*528. See GORILA IV, p. 164; GORILA V, p. XXIV and p. 159 (KN Zg <21>).

"Especially 3 f. It should be noticed that the mass of APH.01 is 36 times that one of this stone from Knossos. It is not surprisingly, since the best metrological attribution for both objects fall in the r/f series.

One could wonder if a better parallel could be not found in the inscribed

The "melon" from Ayia Photia is therefore still a unicum. It seems at least possible, however, to make some chronological hypothesis, and try to give it a rough date. To the LMIA period is dated the inscribed stone from Knossos, and the other datable Linear A attestations of AB *118 are from the LMIB period ⁵⁵. Most of the inscribed Linear A documents from Petras come from LMIB sealed deposits ⁵⁶. Therefore, a LMI chronology for APH.01 would be not very surprising, even if any definitive conclusion about this point is not really possible, without details about findspot and archaeological context.

Conclusiosn

The main characteristic of APH.01 seems to be its uniqueness. One can not find another similar stone with both a figurative carving and a Linear A inscription, or a known balance weight with its shape. No support can be offered from contextual information. In the inscription (SI Zg 1), there is not any assessed measure ideogram or numeral, since AB *118 seems to have a syllabic function (rather than ideographic) and the meaning of the Z–shaped sign is completely obscure. Moreover, no suitable metrological value can be attributed to its mass and both the use on a double–pan balance and in a suspension system seem unlikely. Therefore, one can hardly consider APH.01 as a balance weight, made expressly for that. On the other hand, its ultimate purpose is still not easy to understand.

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and carved stone from Kafkania. See: X. ARAPOYIANNI cited by D. BLACKMAN, "Archaeology in Greece 1996–7", in JHS/AR 1996–7, pp. 44–45.

[&]quot;But one, KN 2.2, perhaps from MMIIIB.

⁵⁶ See fn. 17.

Abbreviations

Acta mycenaea I = Acta Mycenaea. Actes du cinquième Colloque International des Études Myceniennes, tenu a Salamanque, 30 mars-3 avril 1970, M. S. RUIPÉREZ ed., vol. I, Salamanca 1972, pp. XVIII, XX (= Minos 11).

CoMIK I-IV = J. CHADWICK, L. GODART, J.T. KILLEN, J.-P. OLIVIER, A. SACCONI, J.A. SAKELLARAKIS, Corpus of Mycenaeans Inscriptions from Knossos, voll. I-IV,

Cambridge-Roma 1986-1998.

GORILA = L. GODART et J.P. OLIVIER, Receuil des Inscriptions en Linéaire A, voll. I-V, Etudes crétoises XXI, 1-5, Paris 1976-1985.

PTII = E.L. BENNETT, JR., The Pylos Tablets. Texts of Inscriptions Found 1939-1954, Princeton 1955.

PTT I = E.L. BENNETT, JR. and J.-P. OLIVIER, The Pylos Tablets Transcribed, P art I: Texts and Notes, IG LI, Roma 1973.

II. Congr. Int. Mic. = Atti e Memorie del Secondo Congresso Internazionale di Micenologia, Roma-Napoli, 14-20 ottobre 1991, E. DE MIRO, L. GODART, A. SACCONI curr., IG XCVIII, voll. I-III, Roma 1996.

TAW I = Thera and the Aegean World I, Papers presented at the Second International Scientific Congress, Santorini, Greece, August 1978, CH. DOUMAS ed., London 1978.

TAW III = Thera and the Aegean World III, Proceedings of the Third International Scientific Congress, Santorini, Greece, September 1989, CH. DOUMAS, D.A. HARDY, J.A. SAKELLARAKIS, P.M. WARREN eds., vol. I-III, London 1990.

Tables and Illustrations pl. I-X

- Table I (p. 22) Possible metrological attributions for APH.01. Each column lists respectively: the hypothetical relative value of APH.01, the absolute value of the resultant unit, the deviation of the resultant unit from the standard, too heavy (+) or too light (-), the absolute value of the resultant typical aegean unit x, the relative value of AB *118 and the hypothetical relative value of the Z-shaped sign. In bold are the more likely suitable attributions. None of them is fully convincing.
- Fig. 1 APH.01, HM 2615 (courtesy of HM). Scale 1:1,45.

Fig. 2 - APH.01. Scale 1:1,45.

Fig. 3 - Carvings on APH.01 (developed). Scale 1:1.

Fig. 4 - Sections of APH.01. Longitudinal section (A-B) at the bottom. At the top, C-D section (left) and E-F section (right). Scale 1:1.

Fig. 5 - APH.01 in GORILA IV, p. 168 (SI Zg 1).

- Fig. 6 APH.01 in J. RAISON M. POPE, Index du Linéaire A, Rome 1971, p. 56
- Fig. 7 The Fisherman Fresco, Akrotiri, West House, Room 5, North Wall. CH. DOUMAS, The Wall-paintings of Thera, (transl. by A. Doumas), Athens 1992, pl. 19.

A STONE OR A WEIGHT?

Fig. 8 - Fish. Detail of fig. 7. CH. DOUMAS, The Wall-paintings of Thera, (transl. by A. Doumas), Athens 1992, pl. 20.

Fig. 9 - KN Zg <21>. Stone object from Knossos. GORILA IV, p. 164. Scale 1:1.

Fig. 10 - Signs common both to Linear A and B. GORILA V, p. XXII.

Fig. 11 - Linear B syllabograms and their phonetic value. Acta Mycenaea I, p. XVI.

Fig. 12 - Linear B ideograms. Acta Mycenaea I, pp. XX-XXI.

Fig. 13 - Linear A fractional signs. GORILA V, p. XXVII.

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TABLE I - POSSIBLE METROLOGICAL ATTRIBUTIONS FOR APH.01

| Rel. Val. | ABS. VAL. RES. UNIT. (GR.) | DEVIATION RES. UNIT. (-) (+) | ABS. VALUE OF RES X (GR.) | REL. VALUE OF AB *118 | REL. VALUE OF THE Z– SHAPED SIGN |
|---|---|------------------------------|---------------------------------|--------------------------|--|
| 1/10L = 1 | L=35110 | (+) | 73,14 | L (= talent) | 1/10 |
| | l = LANA=3511 | | | | |
| 1/9L | L= 31599 (if calculated from the average value of 3480,5, L=31324,5) | | 65,83 | L (= talent) | 1/9 |
| 1/8 L. Se Z=1/8. | L=28088 | (-) | 58,51 | L (=talent) | 1/8; A *705F =1/8 |
| 70 W | W=50,15 | | 60,18 | | |
| 54 x = = l+2y = =l+1/8(l). | l=3120.48 y=195,03 | | 65,01 | 1 = LANA | 1/8 |
| 56 x =l+2N | 1 = 3009,12 | | 62,69 | | |
| | N = 250, 76 | | N. 10 | | |
| 58x | | | 60,53 | | |
| 60x=5z= =10 (2y)= =20y | z=702,2 y=175,55 | (-) | 58,51 | | |
| 2/3 (5M) | M=1053,3 | | 65,83 | 5M? | A*703D=2/3 (?) |
| ¹/₄ (1/2L) | L=28088 | (-) | 58,51 | 1/2L? | A *704 E =1/4 |
| ¹/₂ (10z) | z=702,2 | (-) | 58,51 | 10z(?) | A *707 J =1/2 |
| ³/₄ (10mine)= ³/₄ (5M) | M=936,26 | (-) | 58,51 | 5M? | A *722 EJ = $^{3}/_{4}$ |
| 1/3(10M) (mathematically is the same as 1/9 L) | M=1053,3 (if calculated from 3480,5, M=1044,15) | | 65,83 | 10M? | A *706 H =1/3 |
| '/ ₄ r –1/16 r =3/16 r. | ¹ / ₄ r = 4681,33 r=18725,33 | | 65,01 | ¹/₄ r | 1/4 |
| ³/ ₄ (¹/ ₄ r) | '/ ₄ r = 4681,33 r=18725,33 | | 65,01 | ¹/ ₄ r | 3/4 |
| 4M-M=3M | M= 1170,33 | (+) | 73,14 | 4M | М |

DELFINI E IPPOCAMPI SULLO STRETTO: RIFLESSIONI SU ALCUNE SERIE IN BRONZO DI SIRACUSA (Tavole XI–XVI)

Al fine di determinare alcune caratteristiche delle serie siracusane con D/ ΣΥΡΑ, testa di Atena, R/ Ippocampo si sono riuniti 360 esemplari¹ scoperti in scavi e recuperi e conservati nei monetieri della Soprintendenza Archeologica della Calabria di Reggio Calabria, del Museo Regionale Eoliano di Lipari (ME), del Museo Interdisciplinare Regionale di Messina, della Soprintendenza BB. CC. AA di Messina, degli Uffici Scavi di Capo d'Orlando e Patti (ME) e del Museo della Fondazione E. Pirajno di Mandralisca di Cefalù (PA). Ad essi, per i necessari confronti stilistici e ponderali, si sono aggiunti circa 50 esemplari della serie più pesante con D/ ΣΥΡΑ, testa di Atena R/ Stella tra due delfini.

Questo studio è stato realizzato grazie alla disponibilità di numerosi Amici che ringrazio vivamente: Elisa Lissi Caronna, Madeleine Cavalier, Elena Lattanzi, Soprintendente Archeologico della Calabria, Claudio Sabbione, Direttore della Soprintendenza Archeologica della Calabria e responsabile della zona di Locri, Umberto Spigo, Direttore del Museo Regionale Eoliano e responsabile degli scavi di Adrano, nel 1981, e di Francavilla (ME), Giovanna Maria Bacci Spigo, Soprintendente ai Beni Culturali per la provincia di Messina, Manlio Peri, Presidente della Fondazione E. Pirajno di Mandralisca di Cefalù. Inoltre sono grata per alcuni proficui scambi d'opinione alla dott.ssa Maria Teresa Vitale, per la collaborazione ai dott.ri Antonella Bonsignore, Anna Carbè, Piero Coppolino e per l'affettuosa assistenza ad Anna Pirajno. Fondamentale è stata la disponibilità di Guglielmo Mondio e di Maurizio Triscari che con entusiasmo hanno accettato di condurre le analisi sui materiali. Utilissime sono state le informazioni fornite da Gioconda La Magna, sulle monete dagli scavi recenti di Adrano e la disponibilità di Concetta Ciurcina e Rosalba Amato, nonché del Personale del Monetiere di Siracusa.

Devo molto a Francesca Cicala Campagna, Direttore del Museo Interdisciplinare Regionale di Messina, ed a tutto il Personale, grazie alla cui attività e collaborazione posso quotidianamente svolgere il mio lavoro. Infine un sentito ringraziamento va alla Professoressa Sara Sorda che mi ha offerto ospitalità negli Annali e mi ha incoraggiato a presentare la ricerca ed al Professor Luciano Camilli per l'attenzione e i preziosi suggerimenti.



Fig. 1 – APH.01 (courtesy of HM). Scale 1:1,45

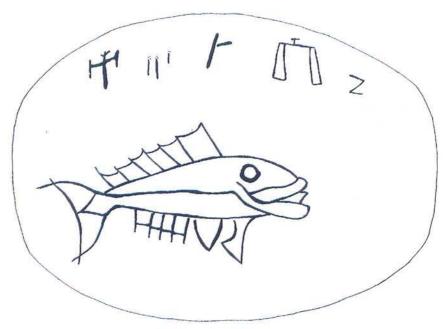


Fig. 2 – APH.01. Scale 1:1,45

A stone or a weight?

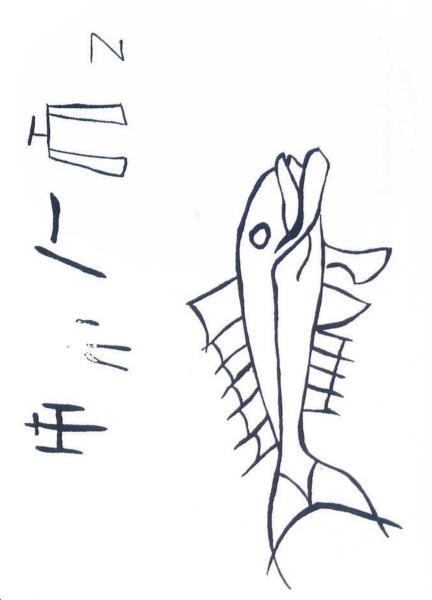


Fig. 3 - Carvings on APH.01 (developed). Scale 1:1

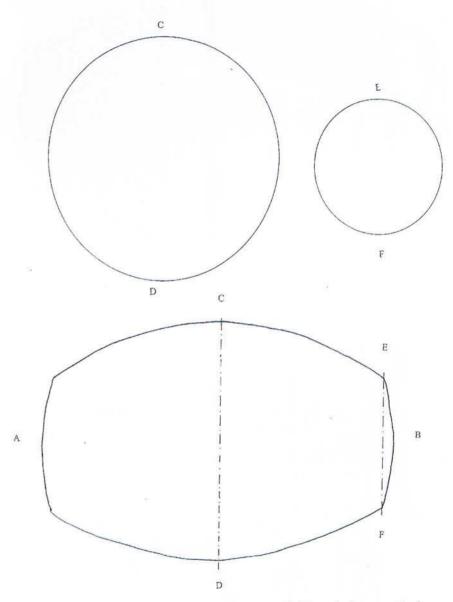


Fig. 4 – Sections of APH.01. Longitudinal section (A–B) at the bottom. At the top, C–D section (left) and E–F section (right). Scale 1:1,45





Fig. 5 - APH.01 in GORILA IV, p. 168, SI Zg 1



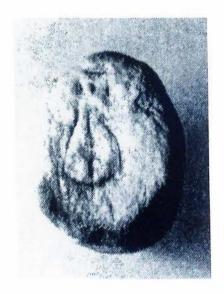
Fig. 6 – APH.01 in J. Raison – M. Pope, *Index du Linéaire A*, Rome 1971, p. 56, SI Z1



Fig. 7 – The Fisherman Fresco, Akrotiri, West House, Room 5, North Wall



Fig. 8 – Fish. Detail of fig. 7



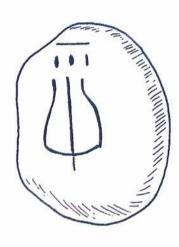


Fig. 9 - Stone object from Knossos (KN Zg <21>). Scale 1:1



| АВ | F | AB | 9 | AB | V | AB | FI | АВ | ?? | AB | 0 |
|-----|----------|-----------------|-----|----|----------------|----|-------------------|--------|-------------|-------|----------|
| 01 | | 21 | 1 | 31 | 1 | 54 | m | 76 | ((| 123 | 4.1 |
| AB | + | AB | R | AB | _ | AB | Ħ | AB | \oplus | AB | F |
| 02 | Т | 21 ^f | /// | 34 | _ | 55 | П | 77 | Ψ | 131 a | FF |
| AB | + | AB | đ# | AB | \wedge | AB | 月 | AB | ① | AB | F |
| 03 | 丁 | 21 ^m | + | 37 | /\ | 56 | П | 78 | | 1316 | |
| AB | * | AB | 7 | AB | A | AB | | AB | 0 | A | Ť |
| 04 | Ψ. | 22 | 1 | 38 | 77 | 57 | | 79 | V | 131 c | 1 |
| AB | Ŧ | AB | 个 | AB | 木 | AB | C | AB | \boxtimes | AB | 59 |
| 0.5 | - | 22 ^f | 1 | 39 | 777 | 58 | Lum. | 80 | Δ. | 164 | |
| AB | ī | AB | 4 | AB | A | AB | | AB | 3 | AB | 王 |
| 06 | 1 | 22 ^m | | 40 | ш | 59 | | 81 | _ | 171 | ユ |
| AB | П | AB | 92 | AB | 4 | AB | 5 | AB | 13: | AB | 2 |
| 07 | 1 | 23 | 1 | 41 | - | 60 | ы | 82 | ید | 180 | 77 |
| AB | H | AB | \$ | AB | * | AB | ß | AB | 2 | AB | B |
| 08 | 1 | 23 ^m | + | 44 | /1\ | 61 | El | 85 | <u>D</u> | 188 | Ш |
| AB | Щ | AB | Ξ | AB | ¥ | AB | M | АВ | V | AB | 0 |
| 09 | 1 | 24 | 1 | 45 | 111 | 65 | V- | 86 | 0 | 191 | |
| AB | A | AB | Ψ | AB | X | AB | Y | AB | 7 | A | Я |
| 10 | 1 | 26 | , k | 46 | 21 | 66 | <u>'</u> | 87 | μ | 301 | /1 |
| AB | 1 | AB | 4 | AB | × | AB | 夕 | A | A | A | 7 |
| 11 | 1. | 27 | ı | 47 | Λ. | 67 | <u> </u> | 100/10 | 02 | 302 | / |
| AB | 94 | AB | 甲 | AB | \mathfrak{M} | AB | $\overline{\Phi}$ | AB | D'A | А | i. |
| 13 | 1 | 28 | Т | 49 | iit | 69 | <u> </u> | 118 | ПП | 303 | 1 |
| AB | 7 | А | 晔. | AB | λ | АВ | P | АВ | P | А | 1 |
| 16 | 1 | 28 b | Τ, | 50 | M | 70 | y | 120 | | 304 | 1 |
| AB | P | AB | ₩ | AB | 74 | АВ | ايا | А | Ŧ | A | 2 |
| 17 | T | 29 | M | 51 | / | 73 | U | 120b | 1 | 305 | 4 |
| AB | 1 | AB | * * | AB | 2 | AB | þ: | AB | 900 | A | 9% |
| 20 | 1 | 30 | ı | 53 | Z | 74 | C. | 122 | 7 | 306 | /\ |

Fig. 10 - Signs common both to Linear A and B

| 01 <u> </u> | 16 P | 31 M | 46 X | 61 1 | 76 <u>{</u> |
|---------------|---------------------------|---|------------------------|---|----------------|
| 02 ± | 17 <u>Q</u> | 32 Th | 47 | 62 <u>M</u> | 77 <u>(+)</u> |
| 03 + | 18 | 33 😼 | 48 NI IV | 63 | 78 |
| 04 | 19 0 | ra, == 34 | 19 III | 64 | qe |
| 05 F | 20 1 | 35 | 50 A | 65 VĀ | 80 / |
| 00 | 21 7 | 36 F | pu <u>111</u> 51 }π | | ma <u>{!}}</u> |
| na <u>I</u> | qi | 37 0 | du 1115 | 66 y | ku <u>57</u> |
| di | 23 | ti <u>/1</u> | no TA | 67 V ki V 68 1 | 10 |
| a | mu | c H | ri A | ro ₃ | 1(1) |
| se | 24 2j5 ne | 39 A | 54 ma | 69 tu <u></u> | *84 |
| 10 [F | 25 <u>0 0</u> | 40 A | 55 nu | 70 P | 85 <u>Q</u> |
| 11 <u>5</u> | 26 W | si A | 56 | 71 Q dwe 1 5 | 86 |
| 12 15 so | 27 <u>y</u> | 42 <u>\(\) \(\) \(\) \(\) \(\)</u> | 57 <u>-</u> | 72 pc | 87 twe |
| 13 P2 | 28 ¥ | 43 Ziii | 58 <u> </u> | 73 mi | *88 |
| 14 & do | 29 *## pu ₂ | 44 XXX ke / | 59 H | 74 [=] | 89 1 |
| 15 37 mo 7 | 30 XX | 45 XX de | 60 | 75 Z | 90 TÃ |
| 110 | , m | de 11 | ra 🗀 | * Numeri | 91 |
| | <u> </u> | | | deleti | two W |

Fig. 11 – Linear B syllabograms and their phonetic value

| \$ - 100 X VIR | 108= SUS= | Th 118 | 125+P.1 T CYP+PA | 142 | TELA+KU |
|-----------------------|--------------------|--------------------|-----------------------|-----------------------------|-------------------|
| 5 102 MULier | 108+KA | T 120 GRAnum | 17 127 69 KAPO | T CROCus | 159+PA TELA+PA |
| CERVus | 108+51 SUS+51 | 120+PE B GRA+PE | S 128 S KANAKO | LANA | TELA+PU |
| 105 EQUus | 23-109 1 MU-BOS | 121 HORDeum | 129 FAR | 146 | 159+TE TELA+TE |
| EGO, 10A, | 109' BOS' | 122 OLIVa | 45 130 7 OLEum | 146+PE | 159+Z0 TELA+Z0 |
| 105m EQUm | H 109m BOSm | ₩ 122+A OLIV+A | 의 130+.1 턴 OLE+.1 | 150 | M 160 |
| 21-106 | 109+51 H BOS+51 | 122+T/ OLIV+T/ | 60 130+PA T OLE+PA | O CORNu | 18 161 |
| ₩ 10 0 | © 110 Z | A 123 | 130+IVE OLE+WE | ₩ 152 | 25 162 TUNica |
| OT 106m | 4 m | AROME 123+KO | 三 131 VINum | 验 153 | 162+KI TUN+KI |
| 14 106+TA | - 112 | 124. | 132 | 交 154 | 162+QE TUN+QE |
| 22-107 | 丁 T 113 S | 2 124+QA PYC+QA | III 133 AREPA | ₹ 155 155 ^{VAS} | 162+RI TUN+RI |
| CAPer 107' CAP' | ς 114 | 124+0 PYC+0 | 134 | 5 155 TURO, | 163 ARMs |
| → 107= | 2 115 | 125 CYPeros | MERI | A 157 | <u>3</u> 164 |
| 85+108 | 廿 116 | P -125+KU CYP+KU | 上 140 上 AES | ₫ 158 | 三岁 165 |
| SUS 108' | 7 117 z M | 125+0 11 CYP+0 | 141 AURum | 159 TELA | ☐ 166 |

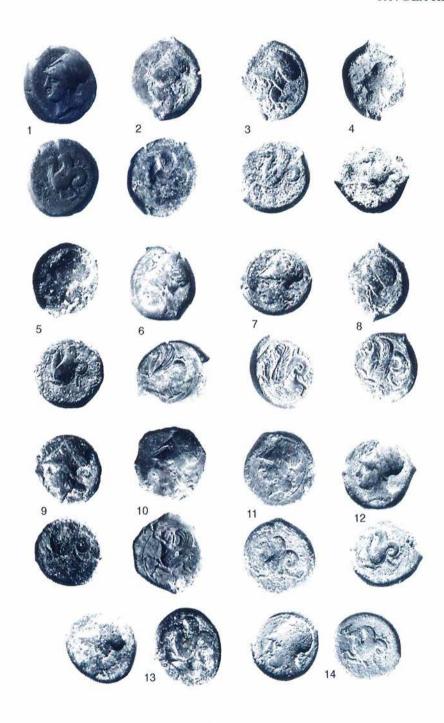
| 13 166+WE | £179 | ₹ 205 205*AS | 218 218 YAS | CAPSus | Numeri vacantes (vel *deleti) |
|------------------|---|--------------------------|---------------------------|-------------------------|---|
| ≥ 167 | 180 | 97 206 VAS | 219 219 219 XAS | 243 ROTA # 243+TE | *101, *103, |
| 167+PE | Q 181 | 207 207VAS | <u>1</u> 220 | ROTA+TE | *119, *124+123, *126, |
| ☐ ¹⁶⁸ | 答 182 | 208 208V.us | ALVeus | T | *130+PO, 135-139,*143, |
| 168+SE | K 183 | 209 209VAS | 75 226 226 VA | 型 247 | 147-149,*175, *186,*187, *188,*192- |
| EN 169 | 形 184 | 209+A 209VAS+A | ₹ 227 227VAS | DIPTE | 193, 194-199, *141+213, |
| B 170 | FA 185 | 210 210 VAS | 228 228 ^{VAS} | Q 218 249 | 221-224,*235, 236-239,*244, |
| Ī 171 | fry 189 | 211 211 VAS | 229 229 VAS 230 | 250 | *251-252, 259-298,*299. |
| D 172 | 190 | 17 212 212 VAS | HASta 231 | -LE 250VAS | |
| 3 172+ KERO | A GALea | 15 212+U 212×A3+U | SAGitta | 254 | |
| LUNA LUNA | 200 × | · = 213 213 VAS | 232 ▲ 233 | JACulum | |
| 验 174 | H 201 VAS | 1 214 vas | PUGio | 124 | |
| 176 ARBor | 202 202 vas | 215 215 v.s 57 216 | 1 | <u> </u> | |
| 177 | 203 203 203 203 | 7 216 216 7 217 | BIGae | 元 258 | |
| 178 | \$5 204 204*AB | 217 YAS | OFF CURNS | 111 200 | in the second second |

Fig. 12 – Linear B ideograms

| A 663 | А | A | A 719 | A 728 | A 737 |
|-----------------|---------------------------------|---------------|---------------|--------------|-----------------|
| ₩ _{a=} | 2 | # | 7+ |]79[| LL |
| 417 YAS 1/21 | 706 H | 711 X | EB | 3FLC | II |
| A 664 | A | A | A 720 | A 729 | A 758 |
| 173 | 4 | P | 77 | ZТ | LT |
| 418VAS'L2' | T fof | 712 Y | EE | нĸ | JK |
| | Α | A cum 405 VAS | A 721 | A 730 | A 739 |
| æ | T | t ' | 77 | 4 | ZJ= |
| | 708 K | 713 O | EF A 722 | JA A 731 | JL2 |
| | Α _ | | A 722 | A 731 | A 740 |
| | 0 | | 71 | 4 | TO |
| | 709 L | | EJ | 7B | KL ² |
| A | Α | A 714 | A 713 | A 732 | A 741 |
| + | Q: | ‡ + | 70= | 5 | dd |
| 701 A | 7092 L2 | ABB | Ers | JE A 733 | ĻĻ |
| A | A | A 715 | A 724 | A 733 | A 742 |
| 1 + 1 | <u>(</u> : | ++ | 7Œ | 5+ | |
| 702 B | 703 ³ L ³ | 8B A 716 | EL4 A 725 | JEB A 734 | LLe |
| Α . | | A 716 | | 10 | A 743 |
| 5 | Œ |]+(] | J () | ≥ @[| 4:0[|
| 703 D | 7094 L4 | | EL | JELZ | L2 L4 C |
| . A | AcumBetE | A 717 | A 726 | A 735 | |
| 7 | | 2 | 1 PA | 47 | |
| 704 E | 7036 L6 | DD 718 | EYYY A 717 | JF | - Longia |
| n . | A | | 1 9 | A 736 | |
| 7 | + | 2 2 | 7T | 42 | |
| 705 F | 710 W | DDDD | FK | JH | |

Fig. 13 – Linear A fractional signs

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Delfini e ippocampi sullo Stretto.

Serie III: 1–2 (sottoserie I); 3 (sottoserie II); 4–7 (sottoserie III);
8 (sottoserie IV); 9 (sottoserie V); 10 (sottoserie VI); 12–14 (sottoserie VII).