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## A B-SERIES IN LINEAR B

Dedicated to the Memory of Michael Ventris

### 1. Introductory remarks

When in 1953 Michael Ventris and John Chadwick published their epoch-making Evidence for Greek Dialects in the Mycenaean Archives (henceforth: Evidence), their Experimental Syllabic Grid (their fig. 2) included only one labial series *p*-, namely *pa* (\*03), *pe* (\*72), *pi* (\*39), *po* (\*11) and *pu* (\*50), and they made no discrimination between the labials /p/, /ph/ and /b/ in the Linear B script. This opinion has been generally accepted, though it has never been confirmed by the Mycenaean Greek lexical material.

At present this view seems hardly acceptable for a number of reasons. First, J. Chadwick admitted in the second edition of Documents in Mycenaean Greek that "there is still no evidence that *p*- can represent β" (Docs.<sup>2</sup> 389).

Second, H. Pedersen (1951) has pointed out, like others after him, that the voiced labial stop \**b* was a very rare phoneme in Indo-European.<sup>1</sup> If so, its frequency must have been low in such a straightforward descendant of the protolanguage as Mycenaean Greek, and could have been represented in those signs which were left undetermined in Evidence. One would expect to find it for the most part in the non-Greek nomenclature, personal names and place-names.

Third, the opposition occurring among dental stops (*t*- vs. *d*-series and *tw*- vs. *daw*-series) seems to suggest *per analogiam* at least a possibility of two labial series in the Linear B syllabary, namely the voiceless *p*- beside the voiced *b*-series.

Fourth, a second labial series *p*<sub>2</sub>- has been recently proposed by José L. Melena (1987), who has identified its three basic values: \*56 *pa*<sub>2</sub> (earlier trans-

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<sup>1</sup> It has been suggested that this phoneme was quite foreign to Indo-European (cf. E. P. Hamp, Modern Language Notes, January 1954, 40). On the basis of the above, the so-called glottal theory has been proposed by Gamkrelidze and Ivanov (1973; 1984).

cribed as  $pa_3$ ), \*22  $pi_2$  and \*29  $pu_2$ . In his words, "there is therefore a whole series — we are assuming that this series preserved the Minoan three-vowel pattern — noting the combination of front, middle, and back vowels with the preceding consonant to be traced back to Minoan" (1987: 227).

Melena's transliteration of this second labial series keeps the traditional pattern and could be accepted in the form  $p_2$ -, as at least two values  $pa_2$  and  $pu_2$  seem to be well-grounded. As J. Chadwick himself pointed out,  $pa_3$  (i.e. Melena's  $pa_2$ ) "still remains a possible value, being built mainly on the equation of \*56-*ra-ku-ja* with *pa-ra-ku-ja*, but no decisive confirmation has been forthcoming. In any case it is likely to have a special value" (Docs.<sup>2</sup> 386). He accepts also the value  $pu_2$  for \*29, noting that "the transliteration is certain, but the exact value is still unclear. It appears to be usually *phu* e.g.  $pu_2$ -*te-re* = *phuterēs*, but also *bu*, if *da-pu\_2-ri-to-jo* is really the equivalent of  $\Delta\alpha\beta\upsilon\rho\acute{\iota}\nu\theta\omicron\iota\omicron$ " (Docs.<sup>2</sup> 386). In fact, the value  $pu_2$  can be found in nearly all the editions of the Linear B texts. Thus there appears to be no need to discuss both these values. On the other hand, the proposed value  $pi_2$  is quite new and will now be reviewed.

## 2. The Linear B sign \*22 and its value

The syllabic sign \*22 occurs in the Cretan place-name *da*-\*22-*to* and in a number of non-Greek personal names<sup>2</sup>. L. Palmer (Int.<sup>1</sup> 22) noted that \*22 shows "a curious preference for the neighbourhood of the syllable *di*", e.g. *a-di*-\*22-*sa* (KN F 841.2), *o*-\*22-*di* (KN As 1520), *ta-di*-\*22-*so* (KN X 5564). Such a distribution of the sign as well as its very limited frequency would suggest "a sound of a non-Greek character" (ibid.). According to Palmer's opinion (Int.<sup>1</sup> 22-23), its value can be established on the basis of the possible equivalence (see Landau 1958: 13) between the proper name *ta*-\*22-*de-so* (TH VII) with the Knossian *ta-mi-de-so* (KN DI 944). This would suggest a value  $mi_2$  (as given by Janda 1986 following Landau) or rather 'quasi *mi*' (as proposed by Palmer). The well-known non-Greek alternation  $\mu/\beta$  (see P. Kretschmer, *Zeitschrift für vergleichende Sprachforschung* 35, 1899, 603-608; C. Poghirç, *Linguistique Balkanique* 6, 1963, 97-100), occurring in a number of substratum borrowings<sup>3</sup> (compare e.g.  $\tau\acute{\epsilon}\rho\beta\iota\nu\theta\omicron\varsigma$ ,  $\tau\epsilon\rho\acute{\epsilon}\beta\iota\nu\theta\omicron\varsigma$  beside  $\tau\acute{\epsilon}\rho\mu\iota\nu\theta\omicron\varsigma$ ,  $\tau\epsilon\rho\acute{\epsilon}\mu\iota\nu\theta\omicron\varsigma$  'the tree *Pistacia terebinthus*' with a typical Pre-Greek suffix - $\iota\nu\theta$ -), may lead us to suppose that a more precise value of \*22 is *bi*.

This assumption is supported by the convincing suggestion that the value  $mi_2$  or 'quasi *mi*' in the cluster \*22-*ri* (cf. the personal name \*22-*ri-ta-ro* KN

<sup>2</sup> For a dossier of words containing \*22, see M. Lejeune (*Minos* XI, 1972, 79-80), *Index gén.* 353, Janda (1986: 44) and recently Melena (1987: 220).

<sup>3</sup> See especially Furnée (1972: 203 ff.).

Dw 1216) must be re-defined as *bi* because the initial group *\*mRi-* (= *\*22-ri-*) – where *R* represents Greek  $\lambda$  or  $\rho$  – yields regularly  $\beta R$ - in Greek. Further, in the consonantal clusters *\*22-di* and *di-\*22* (listed above), the sign *\*22*, if it belongs to a labial series, must contain the voiced labial stop /b/, to co-ordinate with the voiced dental /d/, and so to represent - $\beta\delta i$ - and - $\delta\beta i$ -, respectively.

Finally, it is worth emphasizing that the sign *\*22* is an ideogram for 'goat' in Linear B as well as in Linear A. In such contexts it could be that the ideogram *\*22* (*bi*) was 'originally' connected with the Pre-Greek ("Pelasgian"?) term  $\beta\acute{\iota}\omega\nu$  m. 'bison, buffalo'<sup>4</sup>, a straightforward descendant of IE. *\*a<sub>3</sub>bhisōn* m. 'goat' or 'goat-like animal', cf. Gk. (Sicilian)  $\delta\phi\acute{\iota}\omega\nu$  m. 'wild mountain animal', probably 'muflon' or 'mousmon'.

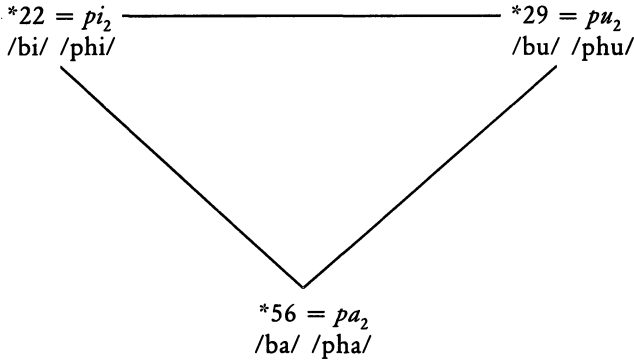
However, Melena's argument for the value *pi<sub>2</sub>* is rather different. After analyzing the context, he concludes that "all the forms containing *\*22* belong to a linguistic stratum which is likely to be non-Greek" (Melena 1987: 222). In his opinion, Minoan features of *\*22* also appear in the observed graphic variants such as the alternation *\*22* (*pi<sub>2</sub>*)/mi/Ø, e.g. *ta-\*22-de-so* vs. *ta-mi-de-so* (KN DI 944) and *ta-de-so* (TH Z 869). He compares the alternation *\*56* (*pa<sub>2</sub>*)/ma/Ø, e.g. *tu-\*56-da-ro* (KN Dv 1370.d) vs. *tu-ma-da-ro* (KN Db 1368) and *tu-da-ra* (KN Do 924.b). On the basis of the above, Melena (1987: 223) suggests that "both *\*56* and *\*22* render one and the same non-Greek consonant in Linear B forms from the Minoan substratum". The same distribution is rightly postulated for the sign *\*29* (*pu<sub>2</sub>*) and he therefore includes the Linear B sign *\*22* (*pi<sub>2</sub>*) in the second labial series.

As Melena's results are confirmed by my own independent analysis of the sign distribution, the value *pi<sub>2</sub>* (or more precisely *bi*) seems secure. But if the syllabogram *\*22* possessed, as I argue, the exclusive value /bi/, then its connections with other syllabograms of the *p<sub>2</sub>*-series prove, by association, their purely voiced character.

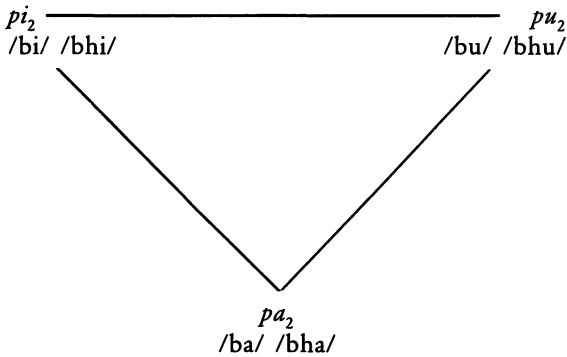
### 3. Melena on the character of the *p<sub>2</sub>*-series

In his excellent article José L. Melena follows M. Lejeune (1966: 139-140 = *Mémoires* III 95-96) and many others, when he maintains that *pu<sub>2</sub>* stands generally for /phu/ or /bu/. He concludes by analogy that similar values can be ascribed to *pa<sub>2</sub>* and *pi<sub>2</sub>*. The whole series is contained in the following diagram (Melena 1987: 227):

<sup>4</sup> However, Janda (1986: 44-48) finds a Hesychian gloss  $\mu\acute{\iota}\kappa\lambda\alpha\varsigma$ .  $\alpha\acute{\iota}\gamma\alpha\varsigma$  and posits a Minoan origin of the GOAT ideogram *\*22*.



Melena supposes in addition that “at the time of the Linear B script adoption from Minoan Linear A [ . . . ], the Greek aspirated stops still preserved their IE. voiced character”. He reconstructs the pre-tablet phase of Linear B as follows:



After discussing the existence of the  $\mu/\beta$  alternation in words from the pre-Greek substratum, Melena attributes to Minoan a complex phoneme  $/m^b/$  and further suggests that the  $p_2$ -series is “the continuation of a Minoan series for  $/m^b/$ ”.

It is obvious that Melena’s explanation presumes the voiced character of the second labial  $p_2$ -series. However, there is no need to attribute to Minoan a complex phoneme  $/m^b/$ , as  $/b/$  is sufficient. It was extremely rare in Indo-European and its frequency in Greek before the disappearance of the Indo-European labiovelars (IE.  $*g^*$  is a basic source of Greek  $\beta$ ) was minimal. In Mycenaean times  $/b/$  had to be treated by the Greek scribes as a quite strange

non-Greek phoneme. In any case, we can easily explain the observed alternation between the  $p_2$ -series and  $p$ -,  $m$ -,  $\emptyset$ - and sometimes  $w$ -<sup>5</sup> as an attempt to render the foreign phoneme /b/. Even if we should agree with Melena's argument about /m<sup>b</sup>/, it would remain evident that the Mycenaean Greeks adopted this phoneme as the cluster /mb/. It had to be written as *b*- by the Greek scribes, as any nasal is omitted before a consonant according to the well-known principles of the Linear B script. This is why we should expect the  $p_2$ -series to represent a voiced equivalent of the voiceless  $p$ -series.

In what follows I shall try to demonstrate that a voiced labial  $b$ -series really existed in the Linear B script and that the syllabic signs such as \*56 ( $pa_2 = ba$ ), \*22 ( $pi_2 = bi$ ), \*29 ( $pu_2 = bu$ ) had to belong to this  $b$ -series (not to a highly hypothetical  $mb$ -series).

#### 4. The $p_2$ -series and its exclusively voiced character

Though Melena made a significant contribution in identifying the second labial series, it is obvious that he did not know how to classify the  $p_2$ -series within the Linear B syllabary.

The exact value of the  $p_2$ -series may be established on the basis of the following arguments:

(4a) A tendency to opposition between voiced and voiceless stops.

In the Linear B script we find two different dental series (with voiceless  $t$ - and voiced  $d$ -) and also two dental-labial series (with voiceless  $tw$ - and voiced  $dw$ -). If the  $p$ -series contains both Greek /p/ and /ph/, then the corresponding  $p_2$ -series should, by analogy, represent the voiced labial stop /b/.

(4b) The distribution of the signs.

We consider the clusters  $pa_2$ -*da*,  $pi_2$ -*di* and  $pu_2$ -*du*, whose first vowel is suppressed.

The man's name *a-pa<sub>2</sub>-da-ro* (KN C 911.12) stands for /Abdāros/, Gk. Ἀβδηρος; see PN Ἀβδήρα/Ἀβδάρρα.

MN *tu-pa<sub>2</sub>-da-ro* (KN X 1488) along with *tu-ma-da-ro* (see above) = /Tumbdaros/, cf. Gk. Τύνδαρος.

MN *o-pi<sub>2</sub>-di* (KN AS 1520) = /Obdis/.

MN *ko-no-pu<sub>2</sub>-du-ro-(qe)* (MY An 102)<sup>6</sup>.

<sup>5</sup> Cf. the well-known comparison of Myc. *mo-ri-wo-do* (KN Og 1527) with μόλιβδος 'lead' (I. Hajnal, *Voprosy Jazykoznanija* 1992, No. 2, 40-42). It is not sure whether we have to do with a variant form of \*42 (*wo*), which bears the value *bo* and appears four times in the Knossian tablet Og 1527, or only with the fact that an unidentified scribe has used the closely related phonogram *wo* for rendering an extremely rare sign *bo* ( $po_2$ ).

<sup>6</sup> The name can alternatively be read *ko-no-ŋq-du-ro-qe* (Sacconi 1974: 23) or *ko-no-i-du-ro-qe* (J.-P. Olivier, *Kadmos* 8, 1969, 48), see DMic. I 378.

I think that M. Lejeune (*Revue des Études Anciennes* 69, 1967, 284) is right when he interprets it as a compound with the final element  $-pu_2-du-ro = -\beta\delta\upsilon\lambda\lambda\omicron\varsigma$ . Also F. Bader (*Minos* 12, 1972, 174) notes that it can be read as \*Κνώφ-υδρος ‘serpent d’eau’, “mais pourrait aussi être un sobriquet en  $-\beta\delta\upsilon\lambda\lambda\omicron\varsigma$ ”. However, the reading \*Κνώφυδρος is philologically impossible ( $-\upsilon\delta\rho\omicron\varsigma$  should be written  $-u-do-ro$ , not  $-u-du-ro$ ).

We have throughout to do with the voiced group  $-\beta\delta$ , which indicates the voiced character of the  $p_2$ -series. The same is the case with the clusters  $di-pi_2$  or  $du-pu_2$ , where the first vowel is suppressed.

*a-di-pi\_2-sa* (KN F 841.2);

*ta-di-pi\_2-so* (KN De 5032);

*du-pu\_2-ra-zo* (KN V 479+);

*du-pu\_2-so* (KN Fh 343).

(4c) Evidence from vocabulary words.

The vocabulary word  $pa_2-ra-ku-ja$  (KN Ld 587) occurs with its scribal variant  $pa-ra-ku-ja$  (KN Ld 575) in the context of garments. According to Melena’s opinion (1987: 225), it can be directly compared with Hesychius’ gloss: βαρακίς, γλαύκινον ιμάτιον (‘bluish-grey cloth’). The alternative spelling  $pa-ra-ku-ja$  should be treated as ‘an orthographic variant’ generated by a folk etymological conflation with the Mycenaean term  $pa-ra-ku$ .<sup>7</sup> For the alternation  $p_2-/p-$ , compare Gk. πατέω beside βατέω ‘I tread, walk’ and so on.

Further, the word  $pu_2-ru_2$ \*19- (PY Wr 1374) is connected with the CLOTH ideogram TELA+PU. It has been suggested elsewhere (Witczak 1992: 18-20) that the Mycenaean word is related to a number of Hesychian glosses (e.g. βρυτιγγοί, χιτώνες ‘tunics’, βρυτίνην, βυσσίνην adj. f. in acc. sg., etc.) and corresponds with an adjective βρύτινος ‘silken’ or ‘linen’ (originally \**brutwinos*).

The word  $pu_2-te-re$  (a man’s trade) is usually equated with  $pu-te$  (KN Uf 835+), from \*φυτήρ ‘planter (of trees)’. This equation is not necessary, since  $pu_2-te-re$  (KN V 159, PY Na 520) can be successfully transcribed as nom. pl. \**bustēres* ‘who plant vegetables’, through a Hesychian gloss (βύστριαι, αἱ τῶν λαχάνων ἐνθίσσαι, ἐνιοὶ δὲ <βυστήρας> τοὺς ἐκ τῶν λαχάνων ἐψομένους<sup>8</sup>).

The name  $ku-ru-su-pa_2$  (KN K 740.4) refers to a vessel or flask with three legs. The interpretation of Kazanskene and Kazanskij (PPS 121), that  $ku-ru-su-pa_2$  was a transformation of Linear A  $ka-ro-pa_2$ , ‘a vessel’, seems attractive,

<sup>7</sup> Note that L. R. Palmer (1968: 298, 442) was also inclined to explain the words  $pa_2-ra-ku-ja/$   $pa-ra-ku-ja$  as adjectives describing cloths ‘of the colour of  $pa-ra-ku$ ’.

<sup>8</sup> K. Latte, *Hesychii Alexandrini Lexicon*, amends the text as follows: βύστριαι, αἱ τῶν λαχάνων ἐνθέσεις, ἐνιοὶ δὲ τοὺς ἐκ τῶν λαχάνων ψωμοὺς (cod. Marc. ψομένους).

because the Mycenaean term could have arisen by popular etymology through the analogy of the noun χρυσός 'gold' (Myc. *ku-ru-so*). Furthermore, it cannot be excluded that Linear A *ka-ro-* meant 'gold' (cf. Hebrew *hāruš* 'id.') and in such case the Mycenaean name may represent a partial calque of *ka-ro-pa<sub>2</sub>*. On the other hand, there is no Greek vessel name capable of being equated with the Linear B word.

It is clear that three vocabulary words provide strong evidence for the voiced character of the *p<sub>2</sub>*-series, whereas the fourth term probably represents a borrowing from the Minoan substratum and cannot be interpreted with certainty.

#### (4d) Evidence from the theonyms.

It was observed many years ago that the theonym *da-pu<sub>2</sub>-ri-to-jo po-ti-ni-ja* could easily be interpreted as Λαβυρίνθοιο Ποτνία 'for the Lady (Mistress) of the Labyrinth' and that the sign \*29 (*pu<sub>2</sub>*) is to read as /bu/ in this case.

Another god recipient of an oil offering bears the name *pa<sub>2</sub>-ti* on the tablet KN Fp 15.2 and *pa<sub>2</sub>-i-ti* elsewhere (KN Fh 1057+). The preservation of /t/ before the vowel /i/ suggests the reading /Baistis/. The same theonym appears later in Sicily; cf. Hesychius' gloss Βαῖστις (cod. Marc. Βαιῶτις). Ἀφροδίτη παρὰ Συρακουσίοις. We may compare the connection between the Mycenaean goddess *si-to-po-ti-ni-ja* (MY Oi 701) and the Sicilian deity Σιτώ.

Both these Mycenaean theonyms confirm the voiced character of the *p<sub>2</sub>*-series.

#### (4e) Evidence from place-names and personal names.

Though most non-Greek place- and personal names cannot be interpreted with certainty, some kind of positive evidence can be prepared from their shape and attestation. The prime example is the Messenian toponym *a-pu<sub>2</sub>* attested in dat.-loc. sg. *a-pu<sub>2</sub>-we* (PY An 427.1, Cn 608.7, Jn 693.5, Jn 829.8, Ma 124.1, qa 1294), in the allative form *a-pu<sub>2</sub>-de* (PY Vn 20) and even in a variant form *a-pu<sub>2</sub>-ja* (PY Jo 438.11). As M. Lejeune (Revue des Études Grecques 75, 1962, 327-343 = Mémoires II 339-355) demonstrated, the name cannot be compared with τὸ Αἰπύ, the town of Nestor's kingdom (so in Homer, B 592) for phonological, linguistic and scribal reasons. The only expected writing for the Homeric name is \**ai-pu*, which is attested *implicite* on the Pylian tablet PY Fn 79.1 in the woman's name *ai-pu-ke-ne-ja*/Aipugeneia/, lit. 'born in Aipu' (Ruijgh 1967: 256). Homeric εὐκτιτον Αἰπύ is a neuter form, while *a-pu<sub>2</sub>* as well as its longer equivalent *a-pu<sub>2</sub>-ja* are undoubtedly feminine. *A-pu<sub>2</sub>-ja* recalls the classical town Ἀβία (Paus. 4.30.1) in Messenia. The same alternation -υα/-ια appears in the name of the pre-

Greek goddess Eleuthia, see Homeric Εἰλεῦθια, Cretan Ἐλεύθια vs. Laconian Ἐλευθία, Ionic Ἐλευθήη, Mycenaean *e-re-u-ti-ja* /Eleuthija/ (KN Gg 705.1). *A-pu<sub>2</sub>* (Ἀβυς) or *a-pu<sub>2</sub>-ja* (Ἀβυια, Class. Ἀβία) evidently supports my interpretation of the *p<sub>2</sub>*-series.

The evidence from other place-names is rather doubtful, though the Cretan toponym *pa<sub>2</sub>-ko-we* is perhaps to be identified with the modern village Βαχός, which is — according to P. Faure (Kadmos 6, 1967, 53) — of Pre-Greek or Minoan origin.

(4f) The acrophonic principle.

G. Neumann (Kadmos 21, 1982, 5-8) mentions a Hesychian gloss (βύρτη. λύρα 'lyre'), from which he posits a Minoan origin for the Linear B syllabogram \*29, on the acrophonic principle. He assigns a value close to *bu* to the Linear B sign \*29, agreeing with Furumark (1976: 12, fig. 6) and Ventris — Chadwick (Docs.<sup>2</sup> 33, fig. 5) that this sign, as well as its Linear A cognate L34, originate from the Hieroglyphic Cretan sign H29 representing apparently 'lyre' (so already Evans in SM I 129; PM II 834). Thus, if βύρτη 'lyre' is "ein minoisches Wort", connected with the value of the Hieroglyphic Cretan sign H29, as seems likely, then acrophony suggests the exact value /bu/ for \*29 *pu<sub>2</sub>* (not /pu/, nor /phu/).

It is worth emphasizing here that the acrophonic explanation of \*22 (*pi<sub>2</sub>*), given by me in sect. 2, though undoubtedly weaker than that of \*29 (*pu<sub>2</sub>*), demonstrates the analogical value /bi/.

(4g) The principle of 'economic utility'.

It may be taken as axiomatic that there are no purely optional 'homophones' in the Linear B script. Since the *p*-series represents evidently /p/ as well as /ph/, but not /b/, the alternative labial *p<sub>2</sub>*-series had to be used for the voiced labial stop /b/ (but not for /ph/ or /p/). There are two separate labial series in Linear B.

(4h) Frequency of the second labial series.

The signs belonging to the voiced *p<sub>2</sub>*-series are attested above all in non-Greek proper names (and to a lesser degree in the cultural terminology of Minoan origin) and therefore it is obvious that their frequency agrees with the Linear A sign distribution. D. W. Packard (Atti III, 98) showed that "the vowels *e* and (to a lesser extent) *o* are less frequent in the Knossos place-names and personal names than in Linear B as a whole. This fact may be connected with the apparent weakness of these vowels in the Linear A syllabary". Thus it is not strange that no signs have been reliably identified as representing the values *pe<sub>2</sub>*(= *be*) and *po<sub>2</sub>*(= *bo*).



## 5. Conclusions

(a) The syllabograms  $pa_2$  (\*56),  $pi_2$  (\*22) and  $pu_2$  (\*29) are not homophones of the  $p$ -series, but belong to a separate  $b$ -series. In other words, these three signs represent basic values and therefore we should transcribe them as *ba*, *bi* and *bu*, respectively.

(b) Linear B distinguishes voiced stops not only in the dentals, but also in the labials (special signs for  $d$ - and  $b$ -, but not for  $g$ -). This lack of symmetry is not unique, for in early Latin texts the phonemes / $g$ / and / $k$ / were written also by means of one sign (namely as  $c$ ).

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