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GREEK AND INDO-EUROPEAN SEMI-CONSONANTS: MYCENAEAN *u* AND *w*

§ 1. In recent years the attention of comparative philologists has often concentrated on the problems presented by the IE semi-consonants. Brugmann established for IE two sets of sounds: vocalic [*i, u, ṛ, ḷ, ṃ, ṇ*] and consonantal [*i̯, u̯, r, l, m, n*][1]. However, it was clear to Brugmann —and, indeed, to all his successors— that the two sets were —at least in part— in complementary distribution. Thus the vocalic variant of e. g. *i* would appear regularly between consonants, where the consonantal variant was excluded; *vice-versa,* the consonantal variant would appear between vowels, i. e. in a position in which the vocalic variant was not found. Yet, in one case at least, it looked as if the general rule of complementary distribution broke down: in post-consonantal and pre-vocalic position (e. g. *CiV*) both variants were allowed and the distribution appeared to be completely haphazard. We owe to Edgerton —and before him to Sievers— the most authoritative attempt to establish a set of rules which determined the occurrence of the vocalic or consonantal variant of semi-consonants in that position[2]. According to Edgerton, and to Sievers, the «weight» of the preceding syllable has a decisive effect on the choice of the vocalic or consonantal variant of the following semi-consonant. After a heavy syllable (i. e. a syllable including a long vowel or a vowel followed by a consonant) the vocalic variant appears; after a light syllable (i. e. a short open

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1 E. g. in *Grundriss* I², 1897, pp. 92 ff.

2 Cf. the three articles by F. Edgerton, «Sievers' law and IE weak grade vocalism», *Language* 10, 1934, pp. 235 ff.; «The IE semivowels», *ibidem* 19, 1943, pp. 83 ff.; «The semivowel phonemes of IE. A reconsideration», *ibidem* 38, 1962, pp. 352 ff. For each semivowel Edgerton distinguishes three allophones of the type [*r*], [*ṛr*], [*ṛ*]; [*u̯*], [*uu̯*], [*u*], etc.

syllable) the consonantal variant appears. It follows that we should attribute to IE —as Lehmann does[3]— only one set of semi-consonantal phonemes, each represented by two or three allophonic variants[4]. Edgerton's suggestions have been variously accepted or rejected, but there is no doubt that their influence in determining e. g. the acceptability or otherwise of any piece of etymological reconstruction has been considerable[5].

In this paper I do not intend to re-examine the whole problem of the phonemic status of the IE vocalic and consonantal variants of the semi-consonants —though I hope to do so elsewhere. From the point of view of Greek it would be interesting —and in some cases vital— to know what the respective distribution of the vocalic and consonantal variants of the semi-consonants was in the period immediately preceding that in which the double function of these sounds was lost. In other words, if we assume that at a period X the vocalic variant of e. g. *i* was replaced by zero or e. g. [*h*], it would be useful to know if immediately before the period X defined above there were two or more variants of the phoneme /*i*/ and the occurrence of either of them was entirely

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[3] W. P. Lehmann, *PIE Phonology*, Austin 1955, pp. 10 ff. O. Szemerényi (*Phonetica*, 1967, pp. 65-99) now attributes to IE both /*i*/ and /*u*/ and /*y*/ and /*w*/, but he does not discuss the problem in detail.

[4] In Edgerton's and Lehmann's formulation the following combinations are possible (*t* stands for any obstruent, *y* for the consonantal form of any semivowel, *k* for a second obstruent, *a* for any vowel, *ă* for any short vowel, *ā* for any long vowel, | for pause):

tit |*it* *ti*|
ayi |*ya* *ay*|
ayt
ătya but *ktiya*, *ātiya*, |*tiya*

I am not concerned here with the clusters of two semivowels since it is unlikely that Mycenaean can offer much evidence for them.

[5] For a thorough discussion of the Sievers-Edgerton laws and of the relevant literature see F. O. Lindeman, «La loi de Sievers et le début du mot en indo-européen», *NTS*, 1965, pp. 38 ff. Some fundamental criticism of part of Edgerton's theories is to be found in the important article of A. Sihler, «Sievers-Edgerton phenomena and Rigvedic meter», *Language* 45, 1969, pp. 248 ff. I have not found it possible to see the North-Carolina dissertation by A. Hill (1968) on «Sievers' Edgerton's law and the IE semivowels in Greek», which is quoted by Sihler, and I have not been able in this paper to make full use of G. Nagy's book on *Greek Dialects and the Transformation of an IE Process*, Cambridge Mass. 1970.

determined by the environment, or alternatively whether there were two different phonemes /*i*/ and /*i̯*/.

The point is all the more interesting in that it has often been claimed that Greek may provide some evidence in support of the so-called Sievers-Edgerton law[6]. It has been suggested, for instance, that the contrast between e. g. μέσος (< **medhi̯os*) and τάμνω on the one hand, and ἵππιος and λαμβάνω on the other hand is due to the weight of the syllables preceding respectively the /*i*/ and the /*n*/ of the nominal and verbal suffixes. In ἵππιος *i* would have been vocalic (hence it was preserved) because the preceding syllable was long; in μέσος we would have the continuation of a cluster of dental and consonantal [*i̯*] because the first syllable of the word was short. Forms such as πολιός with a light first syllable and a vocalic [*i*] in the suffix can be explained as due to a later levelling. No one would deny, I believe, that after the disappearance in Greek of either the vocalic or the consonantal variant of the semi-consonants the original pattern was profoundly altered by analogical interference. The point is, however, that the original distribution is likely to emerge through the later levelling only if a specific condition is satisfied, namely that at the time in which e. g. consonantal [*i̯*] and vocalic [*n̥*] disappeared, these were in fact allophonic variants of /*i*/ and /*n*/ respectively. On the other hand, it would seem unlikely that classical Greek could offer any evidence relevant to the IE stage if we were obliged to reconstruct a three-stage development in which, for instance, in the period *a*) there was only one semi-consonantal phoneme /*i*/ with its phonologically conditioned variants, in the period *b*) this was replaced by two distinctive units /*i*/ and /*i̯*/, and in the period *c*) /*i̯*/ was replaced by zero or [*h*] or other sounds. In this case, in fact, analogical levelling could have occurred in two different periods: 1) in the prehistoric stage *b*) when /*i*/ and /*i̯*/ were phonemically contrasted[7]; 2) in the historical stage *c*) when this contrast had been replaced by a contrast between /*i*/ on the one side and zero or [*h*] or other sounds on the other.

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[6] Cf. e. g. Hirt, *Idg. Grammatik* II, p. 198; Edgerton, *Language* 10, 1934, pp. 236 ff.

[7] See below; analogy does not operate at a subphonemic level.

I believe —and I hope to prove it elsewhere— that at least in the case of *i* we can show from purely internal evidence that before the disappearance of consonantal [i̯] there was already some type of phonemic contrast between words including [*i*] and [i̯][8]. I do not feel confident enough to say that this conclusion is also valid for *r*, *l*, *m* and *n* and it may well be that we shall find in future that one of the mistakes made by Edgerton was to assume that in IE all semi-consonants had parallel status and parallel distribution. However that may be, Linear B now provides us with some information whose importance has not been stressed enough. It is in Linear B in fact that we have —for the first and the last time in the history of Greek— some direct evidence for a linguistic stage in which a semi-consonant occurs both in vocalic and consonantal function in practically all environments in which this is possible. Needless to say, we had from later documents evidence for vocalic *and* consonantal *u*, but almost everywhere consonantal [u̯] appeared as a survival on its way out and with only a very limited distribution. This is not the case for Linear B, and it follows that —in theory, at least— Linear B could give us an answer (though obviously limited to *u* only) to the question asked above: did Greek ever know a stage in which the consonantal and the vocalic variants of the semiconsonants were both in existence and were in phonemic contrast?

§ 2. I shall come back to Linear B in a short while, and I shall then analyse the conclusions and the inevitable disappointments which a study of its evidence may yield. Before that, however, it may be instructive to consider the results which we can reach through an examination, however cursory, of the classical Greek evidence.

In Ionic-Attic only the vocalic variant of *u* survives, either as the syllabic nucleus or as the second and, sometimes, the first element of a diphthong[9]. Presumably there was also a [u̯] glide

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[8] I mean here and later that either we accept a phonemic contrast between e. g. /*i*/ and /i̯/ or we have to set up a juncture phoneme (see below § 12).

[9] Here and elsewhere *u* indicates only the short vowel, since I am not concerned with /*ū*/; a propos of Attic I also ignore the phonetic distinction between [*u*] and [*y*], which is irrelevant for my purposes. For a description of the vocalic phonemes of Attic see L. Lupaș, *Studii Clasice* 6, 1964, pp. 87 ff.

which joined a vocalic [*u*] to the following vowel, but no doubt this had no separate phonemic status[10].

/*u*/ (or /*y*/) occurs

1) at the beginning of a word[11]:

a) before a consonant (/*uC-*/: e. g. ὑπό)

b) before a vowel, which is usually heterosyllabic: if the vowel is /*i*/, it may form a diphthong with the preceding /*u*/ (/*uV-*/: e. g. ὑάκινθος, υἱός)

2) at the end of a word:

a) after a consonant (/*-Cu*/: e. g. βαρύ)

b) after a vowel, either as the second element of a diphthong or as an independent syllabic nucleus (/*-Vu*/: e. g. Ζεῦ, ἰΰ).

3) internally:

a) between two consonants (/*CuC*/: e. g. the gen. πυρός)

b) between a consonant and a vowel (/*CuV*/: e. g. θύος)

c) between a vowel and a consonant, either as the second element of a diphthong or in hiatus (/*VuC*/: e. g. αὐτός, ταναϋφής, ἴυγξ)

d) between two vowels, as the second element of a diphthong (/*VuV*/: e. g. αὗος, εὐανθής)[12].

1*a*) (/*uC-*/) requires no comment (but see note 11). 1*b*) (/*uV-*/) is very rare; except when the vowel is /*i*/, it occurs at a morphemic juncture either in inflectional forms (e. g. ὑός, the gen. of ὗς «swine») or in what are obviously later derivatives (e. g. ὑηνία). Apart from these few instances there are a few words of unknown etymology such as ὑάκινθος and ὕαλος; any speculation about their origin would be misplaced here (see

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10 Cf. W. S. Allen, *Vox Graeca*, pp. 77 ff.

11 I ignore here the fact that Attic υ is always preceded by an aspirate when it occurs at the beginning of a word. This is likely to be a late phenomenon and in any case it probably did not occur in Ionic.

12 For αὗος, which may be an Aeolic form, see Kiparsky, *Language* 43, 1967, pp. 626 f.

Frisk *s. uu.*). At present it is sufficient to notice that, although the sequence */uV-/* is admissible in Greek at the beginning of a word, it is in fact rare and can be of little use for our purposes since it occurs in formations etymologically ambiguous.

2*a*) (*/-Cu/* and 2*b*) (*/-Vu/*), 3*a*) (*/CuC/*) and 3*c*) (*/VuC/*) are again straightforward. 3*b*) (*/CuV/*) and 3*d*) (*/VuV/*) are more interesting. 3*d*) in particular creates a problem. We should expect that in intervocalic position only the consonantal variant of the semi-consonant occurred and that this was dropped in classical Greek. It would follow that sequences of the type -εύω should not be attested —and yet we know that they are. The paradox can be easily solved. The evidence for prevocalic *u*- diphthongs in Greek consists mainly of two grammatical categories: that of the -εύω verbs (βασιλεύω etc.) and that of the εὐ- compounds (εὐανθής, etc.). In the first case we have evidence from Elean for an earlier formation which shows an -είω present (from **-eu̯i̯ō*). -εύω is an analogical re-creation on the model of the aorist, and it would be conceivable that this innovation happened at a later stage, when Attic did not know any more an intervocalic consonantal [*u̯*] (though it would be interesting to study the problem in the various dialects). In the εὐ- compounds the diphthong is separated from the following vowel by a morphemic boundary. Moreover, even if [*eu- -V*] had been replaced by [*e- -u̯V*] (- - = syllabic division) and [*u̯*] had then dropped, there is no doubt that analogy would have restored the original form on the model of the preconsonantal instances of εὐ-. The few other cases of *u*- diphthongs in prevocalic position (e. g. αὖος, γεύω, ἀκούω) are normally found at a morphemic juncture and in all cases there is evidence that either *-si̯-* or, more rarely, *-s-* have dropped out between *u* and the following vowel (cf. Lejeune, *Phonétique*, p. 217, and Schwyzer, *Griech. Gramm.* I, p. 348)[13]. Thus it could be argued from the Greek, or rather from the Ionic-Attic evidence, that for an earlier stage we can reconstruct a vocalic and a consonantal variant of *u* which are in complementary

[13] This is a cautious statement: Kiparsky, *op. cit.*, is probably right in assuming that forms like γεύω, etc. are secondary.

distribution at least in the two basic environmental types: intervocalic and interconsonantal position.

3*b*) (/*CuV*/) is more complicated. In classical Greek we have evidence for post-consonantal and prevocalic υ (e. g. in δύο), but also for the absence of υ in forms clearly related to those of the first type (e. g. δώδεκα < δϝώδεκα). Prevocalic υ occurs after consonant in practically any environment (ἀλεκτρυών, στάχυος, δάκρυον), but we have also evidence —again in any environment— for the disappearance of the consonantal [u̯]. The last point is worth stressing. It is not easy to review all the Greek data, but two morphological categories can provide sufficient exemplification. The perfect participle with its -ως suffix (from -ϝως) never shows any trace of an alternative *-υως form. This could conceivably be explained as due to the generalization of -ως, -οτος after the disappearance of digamma, but it is more difficult to accept a similar explanation for the second, much less closely-knit category, that of the -ϝος adjectives. Forms such as ξένος, μόνος, καλός (with their Ionic counterpart: ξεῖνος, μοῦνος, κᾱλός) bear witness to a consonantal form of the suffix in the environment which would require it in terms of the Sievers-Edgerton laws. However, forms like ἀστός «citizen» (from ϝαστϝός), ἴσος (if it is from *ϝίδσϝος) and πυρρός (if it were from *πυρσϝός [??]) could show that the *u* was consonantal even after a heavy syllable, i. e. in a context in which the Sievers-Edgerton laws would require its vocalic variant. It is difficult —if not impossible— to assume that an hypothetical *ϝαστυός (with vocalic *u*) survived till the time in which consonantal *u* dropped and was then replaced by ἀστός on the model of, say, ξένος.

It is time to draw some conclusions about the Greek evidence[14]. We have seen that an analysis of it does not provide strong objections to the theory that at an early stage consonantal *u* and vocalic *u* were in complementary distribution in intervocalic and interconsonantal environment. The results which we can reach considering the cases in which υ either appears, or —more important— does not appear in postconsonantal and prevocalic

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[14] For forms like εἴρηκα (from ϝέϝρηκα) see below § 12.

position are different: here both variants seem to have been possible in the same or similar environments. Not only has vocalic *u* been generalized in some morphological categories, but also consonantal *u* has been generalized both after heavy and light syllables. For this to be possible it is necessary to assume that before the disappearance of the consonantal *u* there was a period in which the Sievers-Edgerton laws did not operate and presum ably [*u̯*] and [*u*] were not in complementary distribution.

We may now consider whether Linear B supports or invalidates these results.

§ 3. I have given a preliminary warning that we should be prepared for disappointments. It will be obvious to anyone at all familiar with the Mycenaean script that these are mainly due to the writing system: its deficiencies in this respect are such that we may well find the material better suited to suggesting possibilities than to furnishing proofs. Nonetheless to present a detailed survey of the evidence may be a rewarding, though tiresome, enterprise and this is the aim of this paper.

Before I proceed any further I should perhaps mention some of the studies relevant to my theme. Of the numerous works concerned with history and prehistory of consonantal *u* in Mycenaean and in Greek only a few can be useful here other than indirectly. Their lists of examples of the preservation of [*u̯*] in Mycenaean are of course relevant, but are to be adapted to a different purpose before they can be used[15]. Nearer to my scope are Bartoněk's article on «Monophonemic diphthongs in Mycenaean»[16], where it is concluded —rightly, in my opinion— that in Linear B the *u*-diphthongs are biphonemic, and Gallavotti's paper on «Le grafie del *wau* nella scrittura micenea»[17], which provides a useful collection of classified evidence. Other contributions will be mentioned later.

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[15] I am not concerned here with those cases —apparent or real— in which an expected *w* does not appear in Mycenaean.

[16] *Minos* 8, 1963, pp. 51 ff.

[17] *Wingspread Colloquium*, pp. 57 ff.

I shall now consider the distribution of Mycenaean *u* and *w* in an order similar to that used above for Ionic-Attic. For the sake of clarity and simplicity I shall start in each case by arranging the evidence as if we were dealing with a single /*u*/ phoneme and were simply considering the environments in which it occurs and the spellings by which it is indicated. How much depends on the correct interpretation of the Mycenaean words is shown *inter alia* by a simple observation. The instances of /*ū*/ are not relevant to this paper, but the *u*-signs of Linear B indicate both /*u*/ and /*ū*/. Here I shall ignore /*ū*/, but we should reckon with this possibility for all those words whose interpretation is not absolutely certain[18].

§ 4. WORD BEGINNING. Six or perhaps seven spellings are possible[19]:

I	*u-CV-* (*C* ≠ *r*)	(*u-po, u-do-ro*)
II	*u-rV-*	(*u-re-u, u-ru-pi-ja-jo*)
III	wV_1-rV_1-	(*wi-ri-no*)
IV	*wV-*	(*we-to, we-pe-za*)
V	*u-wV-*	(*u-wa-mi-ja*)
VI	*u-V-*	(*u-o*[ )
??(VII	*we-V-*	(*we-a-re-jo*))

(For VIII *u-jV-* and IX *wi-jV-* see below § 11).

I. *u* followed by a consonant is normally expressed by a sequence of the *u*-sign and a sign indicating consonant+vowel. The sign *u* obviously stands for a vocalic sound, which presumably may be aspirated (though there are no certain examples) or unaspirated[20]. Though in all the clear examples that we have [*u*] seems to belong to an open syllable, it is also conceivable

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18 I assume here that in Mycenaean *u* indicates [*u*] and not [*y*] as in Attic.

19 I am most grateful to the editors of the fourth edition of the Knossos Tablets (*KT*[4]) —and in particular to John Chadwick— who allowed me to see the manuscript of their new text. In what follows all quotations (prefixes, etc.) refer to *KT*[4].

20 There is no reason to suppose that in Mycenaean, as in Attic, all initial *u*'s were preceded by an aspiration: see Ruijgh, *Etudes*, p. 68.

that this spelling stands for a [*u*] followed by a consonant */r, l, n, m/*, etc. which closes the syllable and is not expressed in writing.

II is not formally different from I, but, when *C* = *r* (i. e. [*r*] or [*l*]), the interpretation(s) may diverge. There are a few words which begin with this sequence, but none of them is clear. In one case, that of the ethnic *u-ru-pi-ja-jo* / *u-ru-pi-ja-jo-jo* (PY An 519 [1], 654 [1], 661 [1], Cn3 [i], Na 928 [1]: cf. KN *u-ru-pi-ja*[in Fh 392 [141??])[21] we should probably recognize a monosyllabic [*u̯ru-*][22]. The normal spelling for a syllable which begins with two consonants (if the first is not *s*) would involve the repetition of the first vowel for purely graphic purposes (*ti-ri-po* = [*tri-*]), but a sign **wu* does not exist.

Is it possible that the same spelling type *u-rV-* indicates a bisyllabic sequence [*urV-*]? If we exclude the fragmentary forms and *u-ru-pi-ja-jo*, we are left with only personal names (*u-ra-jo, u-ra-mo-no, u-re-u, u-ro*$_2$) and one place-name (*u-ra-*86*). All of these could begin with [*u*], [*ū*] or [*u̯*](?), and I do not see any way of making a firm statement about them. Only in the case of *u-ro*$_2$ (KN Db 5367 [117]) could we construct an argument, on the assumption (not totally proved) that *ro*$_2$ indicates either [*rro*] / [*llo*] or [*ri̯o*] / [*li̯o*]. In the first case we should expect a vocalic [*u*] before the geminate [*rr*] or [*ll*] (cf. Gr. Ὕλλος?); in the second case a consonantal [*u̯*] would be conceivable, but would it have been written in this way? In the feminine suffix of the *nomina agentis* (which must be either [*-tria*] or [*-tri̯a*]) we find a spelling alternation between *-ti-ri-ja* and *-ti-ra*$_2$: does this imply that if in *u-ro*$_2$ *ro*$_2$ stood for [*ri̯o*] / [*li̯o*] and *u-* was consonantal, the spelling expected would have been **wi-ri-jo* or *wi-ro*$_2$? If this were so, we should come back to the vocalic interpretation of *u-*, but if there were any connection with ὕλη, the *u* could be long.

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[21] Here and elsewhere we indicate in square brackets after the number of each tablet the hand of the scribe who wrote it (the classification is that of Bennett for Pylos and Mycenae, and that of Olivier for Knossos; NC = not classified).

[22] For (*o*)*-u-ru-to* see below § 8. IV.

III. In this category there are a few clear examples which certainly contain a cluster [u̯rV-]: cf. *wi-ri-no* (PY Ub 1318 [NC]), *wi-ri-ne-we* (KN Fh 5428 [141]; 5435 [141]), *wi-ri-ni-jo* / *wi-ri-ne-o* / *wi-ri-ne-jo* (KN Sd *passim* [128], Sf 4428 [128]), all connected with Gr. ῥινός. Less certain examples are *wa-ra-pi-si-ro* of MY Au 102 [52][23], PY Cn 436 [i], *we-re-ke* of PY Cn *passim* [i], *we-re-ne-ja* of PY Ub 1318 [NC], *wi-ri-za* of KN Od 2026 [NC], 8202 [NC], *wo-ro-ki-jo-ne-jo* of PY Er 312 [24], Un 718 [24]; *wo-ro-ma-ta* of PY Ub 1319 [NC], etc. Other forms beginning *wa-ra-*, *we-re-*, *wi-ri-*, *wo-ro-* can be easily traced in the indexes but most of them remain obscure.

IV. The examples are many and it is not worth while listing them. They correspond to later Greek forms which begin with a vowel, aspirated or unaspirated. There is little doubt that *w* indicates a consonantal [u̯]; it is also conceivable that it stands either for [*hu*] or for [*uh*], i. e. for a voiceless [*ṷ*].

V. A few words from KN and PY begin with the sequences *u-wa-* or *u-we-*:

u-wa-mi-ja	PY Eb 416 [1]; Ep 704 [1]: personal name.
u-wa-si	PY An 656 [1]: place-name.
u-wa-si-jo	KN Ai 115 [«124» b].]*u-wa-si-jo* is a possible reading in KN Vc 7529 [«124» s].
u-wa-ta	KN Dd 1286 [117]; PY Jn 605 [2]: personal name.
u-wo-qe-ne	KN V 145 [«124»]: appellativum.
u-wo-qe-we	KN C 902 [201]: cf. the word above[24].

None of these forms has a certain correspondent in Greek and only the last two are certain to be neither a personal name nor a place-name. *u-wo-qe-we* (and possibly *u-wo-qe-ne*) could be a compound of ὐ- (= ἐπί), but the existence of this prefix in Mycenaean is not proved[25]. The connection suggested by Gallavotti between *u-wa-ta* (KN and PY) and *wa-a₂-ta* (MY Au 102 [52])

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[23] Cf. Heubeck, *BzN*, 1959, pp. 129 f.

[24] In KN As 566.3 *KT*[4] now read]*ke-we-da* (]*u-we-da* *KT*[3]).

[25] Cf. Masson *ap.* Bader, *Etudes de composition nominale en mycénien* I, Roma 1969, p. 26 note 5.

is attractive, but equally unproven. Since none of these words is interpreted with certainty, we have no idea what the Greek equivalent of *u-wV-* would be. However, in view of the facts (I) that there is no evidence for the free variation of the graphemes *u-wV-* and *wV-* in word initial and (II) that the same scribe writes *in different words* both *u-wV-* and *wV-* (e. g. hand 2 at Pylos writes *u-wa-ta* and *we-to*), it seems probable that *u-wV-* and *wV-* correspond to different phonetic realities.

If so, the most likely interpretation is that we have in the one case [$u^{\underline{u}}V$-] or [$\bar{u}^{\underline{u}}V$-] and in the other case [$\underline{u}V$-]. It seems unlikely that in all cases *u-wV-* points to /$\bar{u}$/.

VI is represented only by a very scrappy example: *u-o*[in KN V 117 [«124»]. The tablet belongs to that same group «124» to which belong e. g. V 145 (*u-wo-qe-ne*) and V 280 (*wo-de-wi-jo*)[26].

VII. It has been maintained that in a number of cases *we-* stands for pre-vocalic and syllabic *u* (cf. PY *we-a-re-pe* vs. *we-ja-re-pe*; *we-a_2-re-jo* / *we-a-re-jo*, *we-je-ke-a_2* / *we-je-ke-e*, KN and PY *we-e-wi-ja*, *we-je-we*, etc.). This has also been challenged[27] and it is not very profitable to make use of a type of evidence whose value is still disputed. In any case, it is interesting to notice that the same hand 2 which at Pylos writes *we-a_2-re-jo* / *we-a-re-jo* is also responsible for the spelling *u-wa-ta*.

To sum up: before a consonant at the beginning of a word a vocalic variant of *u* (written *u-*) normally appears. Before [*r*] / [*l*] we have clear evidence for the consonantal variant of *u*, but no conclusive proof that the vocalic variant was also possible;

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[26] It is necessary to remember that in Olivier's classification «124» does not indicate a scribal hand, but a group of tablets with a common origin: «the Room of the Chariot Tablets». John Chadwick, *Studia Mycenaea Brno*, pp. 27 ff., has stressed some of the peculiarities in form and content which distinguish this group and has tentatively suggested that they all may be explained through the assumption that the «124» tablets are the produce of a scribal school «where the next generation of clerks and officials learnt their task». However this may be, what matters here is that it would be wrong to give too much weight to spelling types which belong exclusively to the «124» group.

[27] Cf. e. g. Ruijgh, *Etudes*, *passim* and p. 124 note 123.

in other words we cannot prove that there was a contrast between [*urV-*] and [*u̯rV-*]. Before vowel the position is different. If the spelling *u-wV-* does not point in all cases to /*ū*/, the graphemic contrast between *u-wV-* and *wV-* seems to presuppose a phonetic contrast between a disyllabic pronunciation [*u^{u}V-*] and a monosyllabic form [*uV-*]; it is also possible that the first type was expressed by the alternative spellings (VI) and (VII). If we look for possible phonetic causes to justify this contrast, two at least are not likely to be relevant. *Saṃdhi* cannot be brought in as an explanation, since a Mycenaean sentence may begin with either *u-wV-* or *wV-* (cf. PY Eb 146 and Ub 1318). The other possible suggestion, that *u* is vocalic when it bears the accent, seems to me unlikely unless we assume that from the point of view of accentuation Mycenaean is much nearer to IE than to Greek. In words like *u-wa-mi-ja, u-wa-si-jo,* and presumably *u-wa-ta* (if the last *-a-* is long) the normal rules of Greek accent would make it impossible for the *u* to be accented.

A final warning is necessary. We have seen that the interpretation of all the *u-wV-* words is doubtful. If they were IE words it would be conceivable that *u-* stood for [*hu-*] from IE **su-* (or **i̯u-*??). I do not feel that anything can be said with any confidence about the phonemic status of [*h*] in Mycenaean, but if [*h*] was a normal phoneme, it would follow that, if the spelling *u-wV-* indicated [*hu^{u}V-*], it should be compared to the sequences of consonant+*u*+vowel discussed below (cf. Gr. δύο, etc.). In other words, it could be maintained that we should not speak any more of vocalic *u* in initial and prevocalic position because there may be an unwritten phoneme preceding the *u*. Even so, however, we should have to account for contrasts such as those between the spellings with *u-wV-* mentioned before and the spelling *we-pe-za* «six-footed» (PY Ta 713 [2]), where *we-* presumably stands for [*whe-*] or [*me-*] from IE **su̯ek-*.

§ 5. Word end. In theory three spellings are possible:

I	*-Cu*	(*wa-tu*)
II	*-V-u*	
III	*-V-*65*	(if **65* = *ju*).

In practice we have no certain examples of II or III, i. e. of words for which we can be confident that they did not end with an unwritten /*s*/ or /*n*/. The only exception is the proclitic *o-u-*, Gr. οὐ (see my *Lexicon*, *s. u.*) which is never separated in writing from the word which follows. Also for I the spelling system prevents us from distinguishing in all cases final [*u*] from final [*-us*] or [*-un*]. However, one may mention with some degree of confidence neuters like *wa-tu*, Gr. ἄστυ, *a-pu*$_2$ etc. All things considered it looks as if in this respect the position of Mycenaean did not differ from that of Ionic-Attic.

§ 6. INTERNALLY (A). Between vowels three different spellings are possible, a fourth and a fifth are less certain:

I	*-V-wV-*	(*e-te-wo-ke-re-we-i-jo*)
II	*-V-u-wV-*	(*e-u-wa-ko-ro*)
III	*-V-u-V-*	(*e-u-o-mo*[ )
? (IV	*au-V-*	(*au-u-te*))
? (V	*au-wV-*	(*au-wi-ja-to*))

(For spellings of the type *me-u-jo*/*me-wi-jo* see below § 11). Of the spellings listed above, I is normal and is regularly attested. Whenever we have regular correspondences with Greek, these show the disappearance of [*u̯*] (*e-te-wo-*, Gr. ἑτεο-): we should probably conclude that the spelling must be taken at its face value and it indicates [*Vu̯V*].

In a few cases it is conceivable that *-w-* stands for something different from [*u̯*], i. e. for either an aspirated [*u̯*], that is to say for a voiceless [*ṷ*], or for a geminated [*u̯u̯*]. The words concerned are listed by Ruijgh (*Etudes*, p. 57) and are *a-wo-i-jo* (PY Cn 599 [21]: a proper name, cf. Gr. ἠώς «dawn» < **ausōs* or **āusōs*), *pa-ra-wa-jo* KN Sk 789 [206], 8100 [206], PY Sh 737 [ii/iii], < **par-āusa-*, cf. Gr. παρήϊον), ? *na-wi-jo* (PY Jn 829 [2]: cf. ?? ναός «temple» < **nasu̯os*), (*a-n*)*o-we*, (*a-n*)*o-wo-to*, (*qe-to-r*)*o-we*, (*ti-ri-j*)*o-we* (PY Ta 641 [2], KN K 875 [102]: «without handles», «four-handled», «three-handled»: < -**ous-*).

If these interpretations are correct, the original form included in all cases either a *[*u̯s*] cluster or a *[*su̯*] cluster. A propos of the first cluster Ruijgh (*op. cit.*) argues that in Mycenaean this

had been altered to [u̯h] (written *w*), but the aspiration had not yet been transferred to the beginning of the word. Other scholars may prefer to follow Kiparsky's theory, according to which, in the course of the prehistorical development of Greek, both *-u̯s-* and *-su̯-* converged into *-hu̯-* which was assimilated to *-u̯u̯-* in the Aeolic dialects and in other dialects was simplified to *u̯* with a lengthening of the preceding vowel. If this were so, we could expect that Mycenaean represented any of these stages (*-u̯u̯-*, long vowel followed by *-u̯-*, *-hu̯-*) but the spelling does not allow us a decision as between these three possibilities[28].

The problems posed by *e-wa-ko-ro* and *o-wo-ze* will be discussed below.

II. This type is thinly represented. I can list only the following:

a) *e-u-wa-ko-ro*: PY Jn 431 [2]; personal name (cf. (?) *e-wa-ko-ro* personal name in KN V 1005 [125] and *e-wa-ko-ro* in the Theban amphorae TH Z 850, 883).

b) *e-u-wa-re*: PY Jn 693 [2]; personal name (cf. (?) *e-wa-ra-jo* in KN Db 1367 [117])[29].

c) *e-u-we-to, e-u-we-to-ro*: PY Jn 750 [2]; personal name.

d) *o-u-wo-ze* PY Ep 704 [1] (cf. *o-wo-ze* in PY Eb 338 [41]).

e) *pi-ri-u-wo* KN B 803 [104]; personal name ??

In the first four cases there is at least the presumption (for *b* and *c*), if not the certainty (as for *a* and *d*), that a morphemic boundary occurs between the diphthong and the following vowel. In one case we have a certain doublet, though due to a different scribe (*o-u-wo-ze* vs. *o-wo-ze*), in a second case (*a*) such a doublet may exist if we look outside Pylos for our evidence. The interpretation of the first three names is in part disputed: the suggestion that they are compound of εὐ- is generally accepted (though in the case of *b* and *c* the nature of the second element of the com-

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[28] See Kiparsky, *op. cit.*, p. 133 note 15.

[29] A propos of *e-wa-ra-jo* and its possible connection with *e-u-wa-re* see A. Heubeck, *Athenaeum* 47, 1969, p. 150.

pound is not certain[30]), but recently F. Bader[31] has suggested that *e-u-wa-ko-ro* may show the extension of the preconsonantal form of εὐ- (< **esu-*) to a prevocalic position, while *e-wa-ko-ro* offers some evidence for the phonetic treatment we expect: **esu-V-* > **esu̯V* > **eu̯u̯V-*. This is not the place to discuss the problem at length; here it is sufficient to stress that, whatever the correct explanation for *e-wa-ko-ro* may be, in *e-u-wa-ko-ro* we seem to have an almost certain example where the spelling *Vu-wV-* indicates a polysyllabic sequence of the type [*Vu̯u̯V-*] (as contrasted with [*V- -uV*], where - - is the syllabic division). It still remains doubtful, however, if *e-u-* is to be taken as a diphthong or as a sequence [*ehu-*]. If the latter interpretation were correct *Vu-wV-* would indicate a trisyllabic sequence.

The interpretation of *o-u-wo-ze* is clear: we have a diphthongal morpheme *o-u* joined in a «mot phonétique» to a verbal form *wo-ze* (probably = *worzei*); both *o-u-* and *wo-ze* are attested elsewhere in Mycenaean. Is the alternative form *o-wo-ze* due to a mistake or to a short-hand form of writing? Or should we take it as indicating a pronunciation [*ou̯u̯o*] or even [*ou̯o*]? Unfortunately the spelling is ambiguous and there are not sufficient parallels available to help us in our decision; if the second hypothesis were correct, *o-wo-ze* would show that the tendency to accept only the consonantal variant of *u* in intervocalic position is so strong that it may prevail even over morphemic boundaries (a similar case would be that of *e-wa-ko-ro*, where, however, the second element of the compound does not begin with *u*). An instance of a parallel phenomenon could conceivably be found in *e-we-pe-se-so-me-na* (MY Oe 127 [55]), if it could be proved that it is a compound and that the first element is εὐ- (cf. Hesych. εὐτρόσσεσθαι· ἐπιστρέφεσθαι. Πάφιοι and see Bader, *op. cit.*, p. 26 note 5), i. e. a preverb equivalent to Greek ἐπί.

(*e*) causes different problems. It is likely that *pi-ri-u-wo* is a personal name, but since a reading *pi-ri-jo-wo* is also possible, we remain uncertain about the value of the evidence that it

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30 For *e-u-wa-ko-ro* a connection with ἀγρός is most likely; the connection of *e-u-we-to-ro* with ἧτορ is more doubtful.

31 *Etudes de composition nominale* I, p. 25.

affords. We could feel tempted to compare *ri-u-no* of KN Xd 149 [«124»] and *ri-*65-no* of KN U 49 [«124»] if it were certain that these are variant spellings of the well known place-name *ri-jo-no*.

III. Only one example is available: *e-u-o-mo*[of KN Xd 127 [«124» s][32]. It is likely that here too we have an εὐ- compound; if the word were not broken we could try to guess the value of the second element of the compound, but as it is it would be a useless exercise. It remains unclear whether there was an *-h-* between the *-u-* and the following vowel and whether this explains the unusual spelling.

IV and V. The value of the sign **85* has now been established as *au*. The evidence for this interpretation and a list of the occurrences of **85* have been given elsewhere[33] and I do not need to repeat them here. In this section, however, we should at least mention that in one case **85* appears before a vocalic sign and in a second case it appears before a *wV-* sign. In KN Od 666 [115] the form *au-u-te* is puzzling, but Lejeune (*op. cit.*) has suggested a number of possible explanations; of these I should prefer that first proposed by H. D. Ephron: «the scribe may have added *u* from force of habit of adding *u*'s in diphthongs although it was not needed here». If this is so, we simply have in Od 666 a diphthong in preconsonantal position and this need not concern us here (see below § 8).

More interesting is the personal name *au-wi-ja-to* from Mycenae (Au 652 [62], 657 [62]): it has been shown more than once that this name must refer to the same person as *au-ja-to* of MY Au 102 [52], but it is not easy to establish if the latter form shows an alternative spelling or is due to a scribal mistake. In either case the odds are that we have here a sequence of the type found e. g. in *di-u-ja / di-wi-ja, me-u-jo / me-wi-jo*, etc. Since, as we shall see later, it is almost impossible to be certain about the value of

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[32] The form *e-u-o-mo* which appears in *KT*[3] as belonging to X 1390 is now read again as *e-u-mo* (cf. *KT*[2]): see *Cambridge Colloquium*, p. 71, *BCH*, 1968, p. 125, *KT*[4] (Da 1390+5351+5382+5417+frr.).

[33] Cf. Lejeune's article in *SMEA* 1, 1966, pp. 9-28 (with the previous literature) and his report in the proceedings of this colloquium.

i or *j* in these sequences, it may be convenient to mention *au-wi-ja-to* under a different heading from the one under which we are now discussing it.

To sum up: I, i. e. *V-wV-*, is the normal spelling: it is likely to represent [*V̯uV*] and conceivably either [*V̯u̯u̯V*] or [*V̯hV*]. II, i. e. *V-u-wV-*, is rarer, is used mainly in Pylos, and —if we exclude *o-u-wo-ze* which could be an example of morphological spelling (*o-u* and *wo-ze*), and *pi-ri-u-wo*, whose reading is uncertain, only by one scribe (hand 2). It is probably meant to indicate something different from I, but it is difficult to establish whether this is a sequence formed by a diphthong, a glide and a vowel or it is a trisyllabic [*V- -(h)u- -u̯V*]. III, i. e. *V-u-V-*, is attested only at Knossos and only in a broken word. It may indicate a sequence similar to that indicated by (II)[34], and, needless to say, the same problems arise. Moreover, we may wonder if the use of the simple *-o-* instead of the expected *-wo-* is significant. If the spelling indicates a hiatus, this cannot be due only to the prehistoric change of intervocalic **s* to *h*, since we have seen that Mycenaean shows a different treatment of the cluster **-u̯s-* (see above). We should rather suppose that the *-h-* is preserved because the second element of the compound has a certain autonomy of its own.

On balance it looks as if in intervocalic position the consonantal variant of *u* is the norm; it is also possible that we have to reckon with a geminated [*u̯u̯*] or with a voiceless [*ṷ*]. Moreover it may well be that we have at least a shred of evidence pointing to a situation in which a sequence [*Vu̯V*] or [*Vu-V*] may be contrasted with the regular [*V-u̯V*].

§ 7. INTERNALLY (B): *Cu-C* (*pu-ra-u-to-ro*, cf. Gr. πυραύστρα).

When *u* is between consonants the normal spelling is that exemplified above; presumably it corresponds to a pronunciation [*CuC*]. When the second consonant allows such a sequence, the same spelling may also indicate a closed syllable ending with an unwritten */n, m, r, l/* and, conceivably, */s/*.

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[34] Cf. note 26.

§ 8. INTERNALLY (C): Between a vowel and a consonant a number of spellings are possible[35]:

I	*-V-u-CV*	(*na-u-do-mo*)
II	*au-CV*	(*au-to-jo*)
?? III	*mo-ri-wo-do*	
IV	*-V-u-rV*	(*a-ro-u-ra*)
V	*-V-wV_1-rV_1*	(*e-wi-ri-po*)
VI	*au-rV*	(*au-ri-jo*)

I, II. The normal spelling is I whenever the consonant is not /*r*/ and presumably /*l*/. When the vowel begins the word and is *a*, a different spelling is attested. The sign **85* = *au* appears in a number of examples from KN, PY, MY: the evidence has been fully listed by Lejeune, *opp. citt.* In the same context a spelling of the type I may still be possible, though there is only one example of it, if we exclude the *a-u-qe* of KN Sd 4402 [128], which is obviously a mistake for *o-u-qe*. This is the obscure form *a-u-ta-na* of KN Xd 7649 («124»!). The personal name *a-u-po-no* of KN U 4478 [202] is now read *ta-u-po-no* (KT[4]). This effectively prevents us from making a good case for a phonemic contrast between a monosyllabic [*au*-] written **85* and a bisyllabic [*a-u*-] or [*ahu*-] written *a-u-* (cf. Lejeune, *op. cit.*). It is possible that this was so in the case of *a-u-ta-na*, but it cannot be proved[36].

III. The form *mo-ri-wo-do* is attested only in KN Og 1527 [221?]; if it is an earlier form of the Greek word variously attested as μόλυβδος μόλιβος, μόλιβδος, etc. we should either see in the second part an anaptyctic vowel, as Lejeune does (*Historia* 10, 1961, p. 461), or assume that the vowel is purely graphic and read [*moliu̯dos*], as argued by Chantraine in the Proceedings of this Colloquium. If the latter alternative were clearly preferable, it would be worthwhile to explore its consequences, but the ground on which we are now moving is too slippery for safety.

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[35] It is possible, of course, that a spelling of the type *-V-u-CV-* may indicate [*-VurC-*], [*-VulC-*], etc.

[36] But a propos of «124» cf. note 26.

IV, V, VI. When the consonant following *u* is [*r*] (or [*l*]) three spellings seem to be possible.

(IV) is in all respects similar to (I) above and is by far the most frequent spelling type. I list here the examples known to me (there may be many missing) of the sequence *-Vu-rV-* so that these may be contrasted with those of the second spelling type, which I shall discuss later.

a-pa-u-ro KN Mc 4463 [132].

a-ro-u-ra PY Eq 213 [1]; Gr. ἄρουρα.

e-pi-u-ru-te-we PY Ub 1318 [NC].

e-u-ro-wa-[KN X 408 [NC].

e-u-ru-da-mo KN Xd 166 [«124»]; Gr. Εὐρύδαμος.

e̤-u-ru-po̤-to̤-re-mo-jo PY Fn 324 [45]; Gr. Εὐρυπτόλεμος.

e-u-ru-qo-ta KN V 147 [124].

ka-ra-u-ro PY An 192 [22], Jn 750 [2].

ki-u-ro KN B 801 [104], Dl 47 [NC].

ki-u-ro-i PY An 1282 [NC].

ko-u-ra KN Lc *passim* [103], PY La 623 [ii/iii], 630 [ii/iii], MY L 710 [NC].

ko-u-re-ja KN Ap 694 [NC], (Lc 548 [103]: *ko̤-*[*u-re-ja*), Lc 550 [103], 581 [113/115], Ak 643 [103].

ma-no-u-ro PY Jn 605 [2], Jn 692 [2].

⟦*ma-re̤-u-ro*⟧ PY Jn 725 [2].

ma-ta-u-ro KN Dv 8151 [117].

me-re-u-ro PY Un 718 [24]; cf. μάλευρον and ἄλευρον.

o-u-ru-to PY An 657 [1]: see below.

]*pa-u-ro* KN Db 1196 [117].

pe-re-u-ro-na-de PY An 1 [1]; cf. Πλευρών.

pe-re-u-ro-ni-jo PY An 656 [1]; cf. Πλευρώνιος.

ra-u-ra-ta KN Dd 1300 [117].

ra-u-ra-ti-ja PY Od 300 [ii/iii].

ra-u-ra-ti-jo PY Ad 664 [23].

re-pe-u-ri-jo PY Cb 40 [21].

ru-ko-u-ro PY Es 729 [1].

sa-u-ri-jo KN As 1516 [101].
si-no-u-ro PY Cn 285 [i].
so-u-ro PY Eo 224 [41].
ta-u-ro KN V 832 [102]; cf. Ταῦρος.
te-ra-u-re-o PY Sa 22 [ii/iii].

Whenever we have a certain Greek equivalent this shows that the *u* is preserved before the *r* (or *l*) as the second element of a diphthong. It would be interesting to know the value of the personal name *ki-u-ro* of KN and of the homonymous substantive *ki-u-ro-i* (dat. plur.) of PY, but this remains uncertain. One —and possibly two— words do not follow the general pattern: in *o-u-ru-to o-* is a proclitic (?) particle and *-u-ru-to* is probably to be compared with Homeric ῥύομαι, etc. Normally the form is read as *u̯runtoi*, on the assumption that the sign *u* is here used to indicate a consonantal value of *u*, as in *u-ru-pi-ja-jo* mentioned above (§ 4)[37]. A similar case might be made for *e-pi-u-ru-te-we*, if only we could identify with some confidence the root with which it is connected. A propos of *o-u-ru-to* two explanations may be offered: either the morphemic juncture preceding the *-u-* prevents the formation of a regular sequence of *-u-*diphthong+*r-* and the form must be understood as *o*+*u̯runtoi*, or the correct interpretation implies such a sequence (i. e. *ou-runtoi*) and the Greek form continues the isolated verb (from *u̯ru-*).

V is much rarer, and the certain examples are soon listed:

a) *e-wi-ri-pi-ja* PY Aa 60 [4].
e-wi-ri-po PY An 610 [1].

b) *ra-wa-ra-ti-ja* PY An 830 [1]. Cf. *ra-u-ra-ti-ja*.
ra-wa-ra-ti-jo PY Cn 45 [21]. Cf. *ra-u-ra-ti-jo*.
*ra-wa-ra-*66* PY An 298 [3], Jn 829 [2], Ma 216 [2]; cf. *ra-wa-ra-ta* PY An 723 [1].
ru-ko-wo-ro PY Es 650 [ii/iii]. Cf. *ru-ko-u-ro*.

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[37] The interpretation of this verb has been discussed by P. Wathelet, *Studia Mycenaea Brno*, pp. 105 ff., who prefers to compare Homeric ἐρύω «tirer» rather than Homeric ἔρυμαι «protéger». For our purposes the identification of the verb is indifferent, provided that the reading *u̯ru-* is certain.

All the examples come from Pylos; obviously enough it is possible to find both in Pylos and in Knossos other words which include sequences of the type *-wa-ra-*, *-we-re-*, *-wi-ri-*, *-wo-ro-*, but for none of them can we be certain that the first vowel was purely graphic and was not pronounced. The subdivision into *a*) and *b*) is justified for two reasons: in *a*) we can be certain that the *w*-sign repeats the vowel of the following syllable and not that of the preceding one, in *b*) this is not immediately clear. All the words of *b*) have doublets (see IV above) but this does not apply to *a*). If the place-name *e-wi-ri-po* is in fact a compound of *eu* and *u̯rip-*[38] two explanations are tenable: either the spelling is simply a short-hand form for the expected sequence *eu-u̯u-* or it points to a special rule of internal *saṃdhi* by which [*eu*] or [*ehu*] is simplified to [*e*] before a cluster of consonantal *u* and *r*. That the second syllable of the word in fact begins with this cluster seems to be guaranteed by the spelling which repeats the *i* and not the *e* vowel.

The problems caused by *b*) are perhaps even more complex. We have seen that it is impossible to establish objec ively whether the vowel repeated by the *w*- sign is that of the preceding or that of the following syllable. The second hypothesis is supported by the comparison with *e-wi-ri-po* and with *wi-ri-no* (see above), but the doubt remains. In all cases we have spelling doublets; no one scribe uses both spellings for the same word, but we find that in different words one and the same scribe can be responsible for both types; thus hand 1 of Pylos writes *ra-wa-ra-ti-ja*, *ru-ko-u-ro* and *e-wi-ri-po*.

VI is represented only by three forms: the personal name *au-ri-jo* (KN As 604 [103]; Da 1080 [117], 1116 [117]; Dv 1103 [117]), a place-name *au-ri-mo-de* (KN Fp 13 [138]), and a noun *au-ro* which indicates a part of a chariot (KN Sd 4402 [128]). The interpretation of all these words had been exhaustively discussed by Lejeune, *op. cit.*: we are probably in the presence of a diphthong [*au*] followed by a liquid. In other words, this spelling type is in complementary distribution with IV since **85*

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38 Cf. Bader, *op. cit.*, p. 22 note 1.

appears as the first sign of a word, and there is no instance of *au-rV-*.

So much for the facts; should we now assume that type V indicates a different phonetic reality from IV and VI? This is made unlikely by the existence of doublets and by the fact that the same scribe can use both spellings in parallel contexts. It could be mantained that we have here two different types of syllabification: in the one case a diphthong followed by a *rV-* syllable, in the second case a vowel followed by a *-u̯rV-* syllable. Since it must be admitted that we have no evidence that such a contrast could be significant in Mycenaean times[39], it is possible that there were some oscillations and that the two types could occasionally be in free variation. It would also be possible, however, that in both cases we have a sequence of diphthong+*rV*; since at the beginning of the word the spelling of the type *wi-ri-no* was frequent this could also be occasionally adopted within the word. The later Greek treatment could confirm this view (but see note 39) and, as we shall see, we can find a parallel in the clusters of *u* and consonantal *i*.

§ 9. Internally (D): Plosive+*u*+Vowel.

In this and in the following sections I shall consider only the few forms whose interpretation is certain and the rather more frequent forms about which, however obscure they may be, we can have some information from alternative spellings.

It would probably be more correct to distinguish from the start those cases in which the initial consonant of the sequence is preceded by another consonant from those in which it is preceded by a vowel. However, the first category is scarcely represented in Mycenaean, and it may be sufficient to draw attention to it when an example of it occurs. In this section I shall only consider those words in which *C* is a plosive, but I shall often have to refer to words in which *C* is a continuant.

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[39] But see below § 12.

Four spelling types are possible:

I	*-CV$_1$-wV$_1$-*	(*o-to-wo-we-o*)
II	*-Cu-wV-*	(*o-tu-wo-we*)
III	*-Cu-V-*	(*wa-tu-o-ko*)
IV	Use of special signs: *twe, dwe, two, dwo* (e. g. *o-two-we-o*). (For *nwa* see below § 10).	

I is well attested, even though in a number of cases sequences of this type may remain ambiguous. A few certain examples are listed here:

ne-da-wa-ta PY Jo 438 [i], *ne-da-wa-ta-o* PY Ad 657 [1].
ne-de-we-e PY Cn 595 [21].
ne-do-wo-ta-de PY An 661 [1], *ne-do-wo-te* PY Cn 4 [21].
o-da-ke-we-ta KN So 4446 [131]; Sg 1811 [NC]; cf. *o-da-ku-we-ta, o-da-tu-we-ta, o-da-twe-ta.*
o-to-wo-o PY An 261 [43], An 616 [1].
o-to-wo-we-i PY Vn 851 [ii/iii]; cf. *o-tu-wo-we, o-two-we-o.*
o-to-wo-wi-je MY V 659 [61].
pa-ra-ke-we PY Ta 714 [2]; cf. *pa-ra-ku-we.*
pe-de-we-sa PY Ta 709 [2].
te-mi-de-we-te PY Sa 1266 [26]; cf. *te-mi-dwe-te.*
te-tu-ko-wo-a KN L 871 [114?], *te-tu-ko-wo-a$_2$* PY Sa 682 [NC].
to-qi-de-we-sa PY Ta 711 [2].
wi-do-wo-i-jo PY An 5 [ii/iii], Ae 344 [22]; cf. *wi-du-wo-i-jo, wi-dwo-i-jo.*

It seems likely that in all cases we have a sequence of plosive+ +*u*+vowel.

II is ambiguous and a full list of examples, most of which would remain obscure, seems to be superfluous. The words listed below have not been selected according to any particular criterion, but are the forms which are going to be used for exemplification in the discussion which follows.

a$_2$-ra-tu-wa PY An 519 [1]; cf. *a$_2$-ra-tu-a.*
]*du-wo-jo* PY Jn 750 [2]: personal name[40].

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[40] In Db 531, where *KT*[3] read *du-wo*, *KT*[4] now read **49-wo*.

du-wo-jo-jo PY An 656 [1]: personal name.
du-wo-u-pi PY Eb 149 [41], Eb 495 [41], Ep 617 [1], Ep 704 [1]: cf. *dwo*.
e-te-wa-tu-wo KN C 912 [111].
i-ku-wo-i-pi KN V 280 [«124»].
i-su-ku-wo-do-to KN Fh 348 [141].
ko-tu-we, ko-tu-wo PY An 615 [1], 943 [i], Eq 213 [1], Na 908 [1].
ku-wa-no, ku-wa-ni-jo, ku-wa-no-wo-ko PY Ta *passim* [2], MY Oi *passim* [63, 64].
o-da-ku-we-ta KN L 870 [114?], So 4435 [128?]; cf. *o-da-ke-we-ta, o-da-twe-ta*.
o-da-tu-we-ta KN So 894 [NC]; see above.
o-tu-wo-we PY Jn 658 [21], 725 [2]; cf. *o-to-wo-we-i, o-two-we-o*.
pa-ra-ku-we PY Ta 714 [2].
tu-we-a PY Un 267 [i].
wa-tu-wa-o-ko PY An 519 [1].
wi-du-wo-i-jo PY Jn 415 [2]: cf. *wi-do-wo-i-jo, wi-dwo-i-jo*.

In some cases II probably indicates the same pronunciation as that denoted by I, i. e. a sequence of plosive + consonantal *u*+vowel. This is shown both by the later Greek treatment (for instance in the case of the perfect participles or their derivatives) and by the numerous doublets of the type *o-da-ku-we-ta* / *o-da-ke-we-ta, o-tu-wo-we* / *o-to-wo-we, pa-ra-ke-we* / *pa-ra-ku-we,* etc. It could be suggested that the very existence of these doublets points to a difference in pronunciation, but if that were so, *a*) we could not understand the Greek development, and *b*) we should have to explain why the same scribe can use both spellings indifferently (at Pylos hand 2 writes *pa-ra-ke-we, pa-ra-ku-we, wi-du-wo-i-jo* and *ke-se-ni-wi-jo*).

In other instances common sense suggests that *u* is not purely graphic but indicates a real vowel, while *w* represents the glide between *u* and the following vowel. This is the case, for instance, whith *i-su-ku-wo-do-to,* if the interpretation [*iskhu^{u}odotos*] is correct: parallel instances, but this time with a liquid rather than a plosive preceding the *u,* are *a-re-ku-tu-ru-wo,* Gr. Ἀλεκτρυών, and probably *o-du-ru-we* and its derivatives (cf. ὄθρυν??): for the evidence see below, § 10.II. That this is the correct interpretation could result from the normal spelling rules of Linear B:

if *-u-* appears as a purely graphic expedient in the sequences *-su-ku-wo-*, *-ku-tu-ru-*, *-du-ru-wo-* this could imply that [*u*] is the syllabic nucleus. If this were not so, the vowel repeated in writing should be the following *-o-* or *-e-* (cf. *wi-so-wo-pa-na* = *uisu̯o-*). However even this argument is not completely water-tight, since a doubtful parallel is provided by the *nomina agentis* ending in *-ti-ri-ja*, *-ti-ra*$_2$. There *-ra*$_2$ almost certainly indicates *-ria-* and it is disputed whether we should understand the suffix as [*-triia̯*] or [*-tri̯a*], though the graphic vowel used in the *ti* sign is *i* and not *a*.

Be this as it may —and apart from *a*$_2$*-ra-tu-wa*, for which see III below— there is no other example of II where we can even approach certainty that the *u* is vocalic. That this is so, is a likely guess in cases like those of *ku-wa-no* or *tu-we-a* or even *e-te-wa-tu-wo*, but it cannot be proved in a Mycenaean context. As a result we remain in doubt on a number of points which could be important not only phonologically, but also morphologically. Should we suppose for instance that all *-u-* stems show the same treatment of the semivowel in the indirect cases? If so, should we argue on the evidence of *pa-ra-ke-we* / *pa-ra-ku-we*, that the nominative plural *ta-ra-nu-we* is to be read as *trānu̯es* and the genitive singular *ko-tu-wo* as *Gortu̯os*? These and similar questions remain unanswered. We shall see that the conclusions reached in this section will be of some importance for our main problem, but the basic information will not come from the forms in which *u* is likely to be vocalic, but from those for which we can prove that *u* is consonantal.

III. The evidence is extremely scanty and has already been collected by Gallavotti (*op. cit.*). Only five words or fragments come under this heading:

a$_2$*-ra-tu-a* PY Cn 3 [i]; cf. *a*$_2$*-ra-tu-wa*.
wa-tu-o PY Vn 865 [1].
wa-tu-o-ko PY Ea 136 [43].
]*ku-i*[KN Dv 5618 [117].
]*pi-ku-e-wi*[PY La 631 [ii/iii].

Gallavotti is probably right in reading *wa-tu-o-ko* as *wastu-okhos*. The hiatus is justified by the morphemic boundary between the

two elements of the compound and conceivably by the initial *h* of *hokhos*, if it is true that Grassmann's law is post-Mycenaean[41]. *wa-tu-o* may well be a hypocoristic of *wa-tu-o-ko*[42]; the hiatus would then have been taken over from the original compound. To take it as an equivalent of the later ἀστός (< Fαστϝός) seems to be more difficult. a_2-*ra-tu-a* is probably tetrasyllabic, and this makes it likely that a_2-*ra-tu-wa* too may be interpreted in this way (see above, § 9). Unfortunately we cannot exclude altogether that the *u* is long.]*ku-i*[and]*pi-ku-e-wi*[remain mysterious.

In conclusion there is only one clear example, but even so it is likely that these spellings indicate a disyllabic pronunciation of [*u*] followed by a vowel.

IV. The evidence is not very rich: I list it in full:

a) *o-da-twe-ta* KN So 4430, 4432, 4436, 4440, 4441 [130]; cf. *o-da-ke-we-ta, o-da-tu-we-ta, o-da-ku-we-ta*[43].

b) *te-mi-dwe, te-mi-dwe-ta, te-mi-dwe-te* PY Sa 791, 793 [26]; KN So *passim* [130, 131], So 894 [NC]; cf. PY *te-mi-de-we-te*.]*mi-dwe* KN As 5605 [103] ([ ]*mi-dwe*), Ga 680 [135].

c) *o-two-we-o* PY Ad 261 [43]; cf. *o-tu-wo-we-o, o-to-wo-o, o-to-wo-we-i*.
ke-ke-⟦*two*⟧*-e ibidem*.

d) *dwo* PY Eb 338 [41], Eo 278 [41], Sb 1315 [NC]; cf. *du-wo-u-pi, du-wo-jo-jo,*]*du-wo-jo*.
]*dwo-jo* Kn V 492 [115].
dwo-jo (or *dwo-jo*-[.]) KN X 8126 [NC].
e-re-dwo-e KN As 604 (-*e̯*) [103], V 655 (-*ṛe̯*-) [115].
ma-si-dwo KN Fh 360 [141].
wi-dwo-i-jo PY Ep 539 [1]; cf. *wi-du-wo-i-jo, wi-do-wo-i-jo*.

The special signs alternate with spelled out forms in the work of the same scribe: cf. *o-to-wo-o* (obviously a mistake for *o-to-wo-we-o*) and *o-two-we-o* both written by hand 43. Normally, however,

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41 Cf. e. g. Ruijgh, *Etudes*, pp. 44 f.

42 But cf. Heubeck, *Athenaeum* 47, 1969, p. 149, who wonders whether this may be a different spelling for [*u̯astu̯os*].

43 Where *KT*[3] read *ma-*87-to* (X 7565) *KT*[4] now read *ma*-[.]-*to*[.

each scribe seems to prefer to use consistently only one spelling for each word. An apparent exception is given by the contrast for *dwo* and *du-wo-u-pi* (both written by 41), but here, if we are to judge from the later Greek evidence, there might have been an effective oscillation in the pronunciation. However, it is surprising to find *dwo*, which seems to be a monosyllable, where the Greek has a disyllabic form (but cf. δώδεκα < δϝώδεκα). This word and its derivatives could be the object of highly interesting speculations. Should we assume, for instance, that in addition to *dwo*, Gr. δύο, and *du-wo-u-pi* (the *-phi* case of the same word), there is also evidence for the Greek δοιός in the proper name *du-wo-jo* of PY? And is this the same word as the Knossian]*dwo-jo* and *dwo-jo*? More important, why is *du-wo-u-pi* always written with the *du-w-* sequence, but *dwo* with the special sign? Is this an attempt to indicate a difference in pronunciation? If so, is it the length of the word which justifies this difference? Unfortunately, we can only point out in answer to these questions that Mycenaean does not seem to tell us more than Greek does about the rules (if any) which govern the choice of the vocalic or consonantal variant of the semiconsonant in sequences such as *CuV-* where *C-* begins the word.

To come back to the special signs: if we ignore the problems posed by *dwo*, it is probably accurate to say that all the evidence points to a monosyllabic value of these forms.

§ 10. Internally (E): Continuant+*u*+vowel.

In this section we shall consider those sequences in which *u* is preceded not by a plosive, but by a continuant. Even so, we should distinguish at least three different types, according to the quality of the consonant:

1) *C* = *n* (or *m*). There are no clear examples for *m* and even the evidence for *n* is not great. The nasal is regularly indicated in the spelling and this can be done in five different ways. I shall list and exemplify them here, but I shall ignore the examples whose interpretation is doubtful or too doubtful.

I	$-nV_1$-wV_1-	(*ke-se-ni-wi-jo*)
II	$-CV_1$-nV_1-wV_2-	(*ke-se-ne-wi-ja*)

III	*-nu-wV-*	(*ke-se-nu-wo*)
IV	*-nwa-*	(*pe-ru-si-nwa*)
V	*-nu-V-*	(*me-nu-a_2*)

I. The only certain examples are *ke-se-ni-wi-jo* of PY Fr 1231 [2][44] and *sa-pi-ti*[*-ne-*]*we-jo* / *sa-pi-ti-ne-we-jo*[of KN F 841 [NC] (cf. *sa-pi-ti-nu-wo*). More doubtful is the form *se-ri-no-wo-te* of PY Qa 1290 [NC]. The comparison with *sa-ri-nu-wo-te* and perhaps with *sa-ri-no-te* (see below) would speak in favour of a consonantal value of *u* ([*-nu̯o(n)tei*]), but if the place-name is in fact formed on the substantive *se-ri-no-*, Gr. σέλινον, we should expect that the thematic vowel of the stem was kept in the derivative. However, it is probably useless to speculate on what is obviously a pre-Greek name (even though the suffix may be IE)[45].

Other words present a spelling structure similar to that which we have just been describing, but either they remain obscure or they have to be differently interpreted (cf. e. g. *to-ro-no-wo-ko*, *a-no-wo-to*, etc.).

II. There is only one certain example: *ke-se-ne-wi-ja* of KN Ld 649 [116]; cf. Gr. ξένιος. Here too the *u* is certainly consonantal; it is worth noticing that the same scribe writes *ke-se-nu-wi-ja* elsewhere (see below).

III. There are numerous instances of the sequence *-nu-wV-*, but most of them remain obscure. Here too (see above § 9) there are two possible interpretations: either *-nu-wV-* indicates a monosyllabic pronunciation with a consonantal [*u̯*], i. e. [*nu̯V*], or it indicates two syllables and *u* is vocalic, i. e. [*nu^{u}V*]. The first case can be easily recognized when there are some doublets; alternatively some help may come from later Greek.

I list here the few probable examples of [*nu̯V*]:

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[44] Here and later I assume that the forms *ke-se-ni-wi-jo*, *ke-se-ne-wi-ja*, etc., included a vocalic /*i*/. For consonantal [*i̯*] see below.

[45] It is also possible that the place-name *e-ri-no-wo*, *e-ri-no-wo-te*, *-to* of PY includes a cluster [*nu̯*].

a-mi-nu-wa-ta PY Cn 436 [i]; cf. *a-mi-nwa-*[.
? *e-nu-wa-ri-jo* KN V 52 [NC]; cf. *e-nwa-ri-jo*.
ke-se-nu-wi-ja PY Fr 1245 [NC], KN Ld 573, 574, 585 [116]; cf. *ke-se-ne-wi-ja, ke-se-ni-wi-jo,* etc.
ke-se-nu-wo PY Cn 285 [1]; see above.
pe-ru-si-nu-wo, -wa PY Ma *passim* [2], Ub 1316 [NC]; cf. *pe-ru-si-nwa.*
qa-nu-wa-so KN As 1516 [101]: cf. *qa-nwa-so.*
? *sa-ri-nu-wo-te* PY An 424 [3], Mn 456 [1], Xa 1094 (*sa-ri-nu-*[*wo-te*) [NC]; cf. *se-ri-no-wo-te* (see above) and ? *sa-ri-no-te* PY Vn 130 [i].

In all these words *u* is likely to be consonantal, but there is some doubt in the case of *sa-ri-nu-wo-te* (see above) and of *e-nu-wa-ri-jo*. In classical Greek the name of the god Enualios has a long *u* in poetry: this may be the original form or may be due to metrical reasons. In Mycenaean we could also read [*enūᵘa-lios*], if it were not for the comparison with *e-nwa-ri-jo* of PY An 724 [1]. However, the reading of the *nwa-* form is uncertain and its interpretation not altogether clear; it is quite possible that *e-nwa-ri-jo* indicates a personal name and is not to be identified with the name of the god (see Ruijgh, *Etudes,* pp. 112 and 148). Alternatively we would have to argue that the Mycenaean form of the god's name differs from the classical one.

As before, I find it more difficult to establish formal criteria which allow us to recognize the forms in which *u* may be vocalic. There is one probable example: *me-nu-wa* of KN Sc 238 [«124» h], V 60 [124], Xd 7702 [124] may be the same word (personal name, title?) as *me-nu-a*$_2$ of Pylos (see below): if so a trisyllabic pronunciation is likely. If the proper name *ti-mu-nu-we* (KN M 683 [103], Od 539 [103]) included a cluster *-mn-* (rather than a sequence [*-mun-*]) the *u* would be vocalic, as shown by the spelling, but we cannot be certain of this. Similarly, since we have no evidence that a sequence [*nu̯*] is admissible at the beginning of a word, it is likely that *nu-wa-ja* / *nu-wa-i-ja* of KN L *passim* includes a vocalic *u*, but once more this cannot be proved, and in any case the *u* could be long.

IV. We can only give here a list of the words (divided by localities) in which the sign *nwa* appears:

KN *a-di-nwa-ta* As 1517 [102?].
a-mi-nwa[V 482 [115]; cf. *a-mi-nu-wa-ta*?.
da-nwa Gg 701 [NC].
]*da-nwa-re* Db 1302 [117].
]*nwa* Dv 5349 [117].
]*nwa-jo* Da 8228 [117] ([.]-*nwa-jo*), Uf 1023 [122?].
]*nwa-re* Xd 7840 [«124» s].
pe-ru-si-nwa Dp 7742 (?*pe-ru-si*]-*nwa*) [NC], So 4442 [131]; cf. *pe-ru-si-nu-wa*.
qa-nwa-so Dl 943 [118]; cf. *qa-nu-wa-so*.
qi-nwa-so Dc 1515 [117].
PY *e-nwa-ri-jo* An 724 [1]; cf. *e-nu-wa-ri-jo*.
pe-ru-si-nwa-o Ub 1317 [NC]; cf. *pe-ru-si-nu-wa*.
ti-nwa-si-ja / *-jo* Aa 699 [1], Ab 190 [21], Ea 810 [43], Fn 324 [45], Jo 438 [i].
ti-nwa-ti[Xa 633 [ii/iii].
ti-nwa-ti-ja-o Ad 684 [23].
MY *pe-ru-si-nwa* Oe 111 [51], Ue 652 [NC].

With the exception of *pe-ru-si-nwa* (Gr. περυσινός < -ινϝος) and perhaps *e-nwa-ri-jo* (see above), none of these words is very clear. However, there is no objection to taking *nwa* as [*nu̯a*] in all cases.

V is represented only by two examples. We have already mentioned *me-nu-a_2* (PY An 218 [21], Qa 1293 [NC]: *me*]-*nu-a_2*, Qa 1301 [NC]): for the doublet (?) *me-nu-wa* see above. Presue mably the word is trisyllabic and the use of a_2 need not indicate so much the presence of an aspirate as that of an hiatus or more simply of a syllabic boundary. The other instance of V is a small fragment (KN Xd 7807 [«124» s]), which reads only]*nu-a*-[. In these circumstances there is little hope of obtaining any information from it[46].

2) *C* = *s*. The evidence is bound to be scarce since the original cluster **-su-* had already disappeared in Mycenaean; for the details see above § 6. It follows that if there are clusters of [*su̯*] or [*su*] in Mycenaean they are of secondary origin (with

[46] The fragment belongs to the «124» group: see above note 26.

the exception, of course, of the forms in which *-s-* occurred after a plosive: cf. *ku-su*, Gr. ξύν). The possible spellings of *-suV-* are:

I	*-sV$_1$- wV$_1$-*	(*wi-so-wo-pa-na*)
II	*-su-wV-*	
III	**-su-V-*	

The evidence for all these sequences has been collected and discussed by John Chadwick (*Minos* 9, 1968, pp. 62 ff.). Type I is at least attested, but not frequently. In two cases we have some possible interpretations: *wi-so-wo-pa-na* of PY Sh 740 [ii/iii] seems to be a compound of *uisu̯o-*, Gr. ἶσος (from **u̯idsu̯o-*?). *a-si-wi-ja* (PY Fr 1206 [2]) and *a-si-wi-jo* (KN Df 1469 [117], PY Cn 285 [i], Eq 146 [1], MY Au 653 [62], 657 [62]) are probably *Asu̯iā* and *Asu̯ios*, Gr. Ἄσιος. Apart from these, all other instances are uncertain, though *pi-sa-wa-ta* (KN B 1055 [102?]) may well be *Piswātās*. There is only one possible candidate for type II: *su-we-ro-wi-jo* of PY An 657 [1]: the interpretation is obscure. Type III is not attested.

To conclude: we have only evidence for monosyllabic clusters of *s*+consonantal *u*+vowel. Bisyllabic sequences of *s*+vocalic *u*+vowel may well have existed but we are not able to trace them, since *su-we-ro-wi-jo* may well have had a long *u*. Finally, we should remember that the values *swi* and *swa* have been suggested for the signs **60* and **82* (cf. Chadwick, *op. cit.*), but at present they remain too hypothetical to be accepted with confidence.

3) *C* = *r* (or *l*). Three spellings are possible:

I	*-V-wV-*	(*ko-wo*, Ionic κοῦρος < κόρϝος)
II	*-ru-wV-*	(*a-re-ku-tu-ru-wo*, Ἀλεκτρυών)
III	*-ru-V-*	(*po-ru-e-ro*)[47]

I. Neither *r* or *l* are written. This is a purely graphic fact, but it seems to imply *a*) that the syllabic division falls between

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[47] A fourth spelling *-rV$_1$-wV$_1$-* is conceivable but not attested with certainty. The only possible example would be *ko-ro-we-ja*[of KN X 1013 [NC] if it were to be compared with *ko-u-re-ja* and *ko-we-ja*.

the liquid and the following *u*, and *b*) that the *u* is always consonantal. Unfortunately, it also implies that we can know of the presence of the liquid in this environment only when we are absolutely certain of the interpretation of the word in question. The words which follow seem to fulfil this condition:

a-pa-ta-wa, a-pa-ta-wa-ja, a-pa-ta-wa-jo KN Am 826 [NC]; Ce 144 [124], Co 909 [107], C 902 [201]; V 7670 [125]; cf. Ἄπταρα.

do-we-jo KN Sd 4407 [128], 4413 [128], 4450 [128], PY Sb 1314 (?) [NC]; cf. δούρειος.

ko-wo, ko-wa KN, PY, MY *passim*. Ionic κοῦρος, κούρη.

pa-we-a, pa-we-a$_2$ KN Lc, Ld, Le, L *passim* [103, 113/115, 116, 114], MY Oe 127 [55];]*pa-we-pi* KN L 104 [«124»]; cf. φᾶρος.

?? *pa-wo-ke, pa-wo-ko* PY Aa 795 [1], Ad 691 [23], La 632 [ii/iii]. Perhaps = *par-worges* (??).

? *pu-wa* KN Ap 639 [103]: = *Purwā* ??

? *pu-wi-no* PY Cn 131 [i], 655 [i]: = *Purwinos* ?

? *pu-wo* KN As 1516 [101], C 912 [111], MY Ge 603 [59]: = *Purwos* ?

we-we-e-a KN L 178 [«124»], L 870 [114?], PY Xn 878 *we*]-*we-e-a*$_2$ = *u̯eru̯e(h)e(h)a*; cf. Gr. εἶρος.

II. Formally this spelling corresponds to the type *-Cu-wV-* which we have discussed above (§ 9). Here too we may feel tempted to assume that two different phonetic interpretations are possible: the spelling could indicate either a bisyllabic sequence [*ru̯ᵘV*] or a sequence [*ru̯V*] in which presumably the *r* would close the preceding syllable. Two words in which *r* is preceded by a plosive and in which *u* is almost certainly vocalic provide support for the first interpretation:

a-re-ku-tu-ru-wo, -wo-ne, -wo-no PY An 654 [1], Es 644, 649 [1], 650 [ii/iii]; cf. *a-ku-tu-ru-wo*[KN Fh 364 [141?] ?; Cf. Ἀλεκτρυών.

o-du-ru-we, -wo, u-du-ru-wo, o-du-ru-wi-jo, -ja KN Ai 982 [204], Co 910 [107], C 902 [201], V 145 [«124»], TH Z 839[48].

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[48] We cannot be certain that the *u* of *o-du-ru-we* is short.

Since we do not know that an initial cluster [*ruV-*] was possible, it seems likely that the proper name *ru-we-ta* (PY Cn 599 [31]) also included a vocalic *u* (either long or short). The second interpretation (*-ru-wV-* = [*ru̯V*]) is more doubtful. We know from good evidence that normally such a cluster is expressed by the spelling I above. In order to maintain that *-ru-wV-* may have had the same phonetic value, we need some more concrete proof than a formal parallel with the *-Cu-wV-* spelling.

If we exclude *a-re-ku-tu-ru-wo* / *a-ku-tu-ru-wo, o-du-ru-we* etc. and *ru-we-ta,* there are only a few other words which include the sequence *-ru-wV-*:

a-ra-ru-wo-a,]*a-ra-ru-wo-ja* KN Ra *passim* [126], Sd 4408 [128].
a$_2$*-ru-wo-te* PY An 657 [1].
e-u-ru-wo-ta PY Ep 617 [1] (*e-u*]*-ru-wo-ta*), Eb 156 [41], Jn 310 [1].
ka-ru-we PY Ta 721 [2].
]*ko-ru-we-ja* KN L 472 [210].
o-ru-we-ro PY Jn 725 [2].
]*o-ru-wo-qo* PY Un 853 [i].
po-ru-we-wo PY Sa 796 [26].
ru-wa[KN Xd 7614 [«124»].
]*ru-wa* PY Un 1442 [NC].
]*ru-wa-ni*[KN X 8108 [NC].
]*ru-wo* KN Dk 7300 [120?], X 1045 [NC].
]*ru-wo-i-ko* KN Db 2020 [117].
]*ru̯-wo-we-ja* KN L 586 [103?].
]*te-ru-wo-te* KN C 922 [112].
te-tu-ru-we PY Na 1054 [1], Nn 228 [i].
wa-ru-wo-qo KN As 1516 [101].

None of these words is completely clear. *ka-ru-we* is almost certainly the instrumental or dative of a *-u-* stem *ka-ru-* (for which cf. the thematic form κάρυον attested in Homer and elsewhere). Even so, we cannot establish *a priori* whether the correct interpretation requires a vocalic or a consonantal *u,* i. e. *karu̯ei* or *karu̯̯ei* (see above § 9).]*ko-ru-we-ja* could be more promising if we only knew what the relationship was between this form and the quasi-homonymous *ko-we-ja, ko-ro-we-ja*[(see note 47), *ko-u-*

re-ja. The only light comes perhaps from the perfect participle *a-ra-ru-wo-a* and from its feminine counterpart]*a-ra-ru-wo-ja*. This is generally compared with the Homeric ἀρηρώς which has not preserved the *u* and points to an original **ararṵōs*. Is this the form that we have in Mycenaean? If so, the *u* would be consonantal, but this would also be the only certain example of *-ru-wV-* = [*-rṵV-*], i. e. of a spelling which is different from the normal convention. On the other hand the same scribe 128 who writes]*a-ra-ru-wo-ja* as a secondary form of the feminine of the participle (cf. *a-ra-ru-ja*), also writes *a-ra-ro-mo-te-me-na* in the Sd series (i. e. *ararm-*). In this word too we should not expect to find the *r* written before the *m*; if the scribe has done it, it is at the price of an irregularity which may well find its counterpart in the unusual appearance of *-ru-wV-* for [*-rṵV-*] in]*a-ra-ru-wo-ja*. *a-ra-ru-wo-a*, written by the hand 126, should then be explained in a parallel way.

III. There are only three instances of this spelling type:

po-ru-e-ro PY Jn 658 [21].
]*po-ru-o*[KN X 5952 [NC].
]*ru̱-o-wo*[KN Xd 130 [«124»].

po-ru-e-ro is a personal name and is likely to be a compound with πολυ- as first element. The hiatus may be justified by the morphemic boundary and conceivably by the presence of an *h*. In any case it seems most likely that here the *u* is vocalic.

§ 11. Combinations of *u* (or *w*) and *i* (or *j*).

a)	initially:	I	*u-jV-*	(*u-jo-na*)
		II	*wi-jV*	(*wi-jo-ka-de*)
b)	internally:	I	*-V-u-jV*	(*di-u-ja, me-u-jo*)
		II	*-V-wi-jV-*	(*di-wi-ja, me-wi-jo*)
		III	*au-wi-ja-to*	
		IV	*au-ja-to*	
		V	*-Cu-jV-*	(*pa-ra-ku-ja*)
		VI	*-Cu-wi-jV-*	(*ja-pu$_2$-wi-ja*)[49].

[49] See above note 44.

This section is introduced here for the sake of completeness only. I do not intend to discuss these spellings, since this would imply a thorough analysis of the status of Mycenaean *i* and *j*, a subject which would go far beyond the scope of this paper and on which I do not feel sufficiently competent at present. Part ot the evidence is listed by Gallavotti (*op. cit.*), to whom we must refer. There is only one observation which can be added here. In KN the same scribe can write indifferently either *me-u-jo* or *me-wi-jo* (Gr. μείων): this should imply that the two spellings are equivalent. If we could be certain that IE *$\underset{\wedge}{i}$ was preserved in Mycenaean at least in some environments we could argue that these forms preserve a cluster of $\underset{\wedge}{u}$ and $\underset{\wedge}{i}$. In that case it would be tempting to compare this spelling alternation with that which we have found e. g. between *ru-ko-wo-ro* and *ru-ko-u-ro* (§ 8) although in Mycenaean *r* can hardly count as a semiconsonant.

§ 12. Any conclusion is bound to be as uncertain as the material on which it is based, but there is a number of questions which we may now ask and perhaps a few which we may try to answer.

The first is: Is it possible to recognize in Mycenaean an *état de langue* to which the rules established by Edgerton about the behaviour of the semiconsonants and of their variants may apply? My impression is that here the answer must be an emphatic «no» as far as *u* is concerned; a similar question would of course be inappropriate for *r, l, m, n,* since in my opinion it is likely that these had already lost their vocalic variants; the problems caused by *i* are too complicated to be tackled here. In the case of *u* we find first of all that the rules of external *saṃdhi* postulated by Edgerton do not seem to apply: according to Edgerton a word which began with */uV-/* appeared with either [$u^{\underset{\wedge}{u}}$*V-*] or [$\underset{\wedge}{u}$*V-*] according to the quality of the syllable which ended the preceding word. In Mycenaean we have no written evidence for any variation of the sort, though the scribes could have used for this purpose the graphemic contrast between *u-wV-* and *wV-*. Thus in Mycenaean, as in later Greek, the word seems to have had a much wider autonomy than that which we may want to reconstruct for IE; this is bound to strike at the very root of the

saṃdhi rules established by Edgerton. We may wonder whether these rules apply inside the word. The spelling is obviously an impediment when we try to establish when *u* is vocalic, and when consonantal, but a few observations can be made. In intervocalic position some scribes at least can write either *-Vu-wV-* (*V-u-V*) or the normal *-V-wV-*; the choice between these two (or three spellings) does not seem to be haphazard, and it is likely that we have to recognize a phonetic contrast at the basis of it. The first type of spelling (which is the rarest) seems to occur when a morphemic boundary[50] divides the *u* from the following vowel. This is in itself interesting, since Edgerton has firmly stated for his reconstructed IE stage that «no 'juncture' phenomena ever had the slightest influence» on the behaviour of semivowels (*Language* 38, 1962, p. 356). Obviously the position of Mycenaean is different.

We have pointed out already that Greek words like ἶσος (from **u̯idsu̯os*?) and πυρρός (from **pursu̯os*??) seem to diverge from the expected forms with vocalic *u*. It could be objected (though this objection would not apply to ἀστός < *u̯astu̯os*) that even if the etymologies were not disputed, nothing would prevent us from reconstructing two earlier forms **u̯idsu̯u̯os* and **pursu̯u̯os* and from supposing that after the disappearance of the interconsonantal *-d-* and *-s-* respectively, **u̯isu̯u̯os* and **puru̯u̯os* reverted to *u̯isu̯os* and *puru̯os* in accordance with the general rule: *wi-so-wo-* and *pu-wo* (?) occur in Mycenaean and would not contrast with this theory. This is a suggestion which is impossible to disprove, but it does not follow that Sievers' law is still operating in Mycenaean. Indeed, we shall soon see that this is not so. One of the few Mycenaean words for which the consonantal nature of the *u* is guaranteed by all sorts of doublets and alternative spellings is *o-tu-wo-we* / *o-to-wo-we-i* / *o-two-we-o* (see above § 9). I have not discussed the interpretation of this personal name before, but most scholars

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[50] Here the meaning of «morphemic boundary» remains somewhat vague; the evidence we have would seem to limit it to word boundary and to the boundary between the two elements of a compound. It is doubtful if it can refer to other morphemic distinctions, but a case might be made for reduplication and, conceivably, augment.

would agree, I believe, that it is a compound of the adjective ὀρθός and the word for «ear». The absence of the initial *w* could be due to dissimilation. Now in the first part of the compound we have the usual consonantal suffix -ϝος, but this time after a heavy syllable, where we would expect [*-uos*]. Together with what we have observed before, this is sufficient, in my opinion, to show that the distribution of the vocalic and consonantal *u* in Mycenaean is *not* determined by Sievers' or Edgerton's laws[51].

This conclusion is, I think, interesting in itself, but does not necessarily bring us nearer to the problem that we set out to investigate at the beginning: are [*u*] and [*u̯*] allophonic variants in complementary distribution or are they different phonemes? A straightforward yes or no answer is impossible, but we can try to progress towards it. We have seen that at the beginning of the word in prevocalic position we find a graphic contrast between *u-wV-* and *wV-*; we have also given reasons for assuming that this contrast is also phonetic. At this stage it would look as if we could establish a phonemic contrast between [*u*] and [*u̯*]. However if we consider the same problem inside the word (as in the case of the *e-u-* compounds) we seem to discover that the [*u*] or rather the [*u̯*] sound appears, when it is in prevocalic position, before a morphemic boundary. Since we do not know the value of the words which begin with *u-wV-* the same possibility may apply to them and this is indeed likely for *u-wo-qe-we*. We could then state that when [*u̯*] or [*u*] appear in prevocalic position, either at the beginning of a word or after a vowel, they are divided from the following phonemes by a morphemic boundary. In phonemic analysis there are various ways of dealing with this phenomenon. We may assume for instance that there were two different phonemes /*u*/ and /*u̯*/, and set up a number of rules which account for their neutralization in most environments. Alternatively we may want *a*) to reckon with a juncture phoneme, *b*) to establish that in a sequence /*VuXV*/ (where *X* = juncture phoneme) the [*u̯*] or [*u*] variant of /*u*/ appears[52], while in a se-

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[51] In this respect the form *a-ra-ru-wo-a* mentioned above is equally interesting. If we are to judge from the Attic treatment, the second *a* must be long, and yet the *u* seems to be consonantal. This would be again in contrast with Sievers' law.

[52] I am not concerned here with the distinction between [*uu̯*] and [*u*]. It is likely

quence /*VuV*/ only the [u̯] variant is found. Mycenaean is not the type of language a propos of which we should indulge in the discussion of the finer points of phonemic theory and in any case this is not the place to do so. It is immaterial what solution we adopt here; the point is rather that, if it is accepted that there is in fact a contrast between a simple prevocalic *u*, which appears as [u̯], and a prevocalic *u* which appears as [u̯ᵘ] or [*u*] in front of a morphemic boundary, this may have important repercussions for the history of the language. Normally analogical change does not occur at a subphonemic level[53]. This means that if we were obliged to assume that [*u*] and [u̯] were in complementary distribution in all environments, it would be impossible to account for such phenomena as the extension of the preconsonantal [*eu*-] to a prevocalic position. But if we can now establish either that [*u*] and [u̯] are not in complementary distribution or that [*u*] may be followed by a juncture phoneme, we are then able to account for the diffusion of [*eu*] by assuming that either /*u*/ or the juncture phoneme was generalized.

So far I have been considering [*u*] and [u̯] in intervocalic position or in prevocalic position at the beginning of a word. Should we try to extend the same conclusions to *u* when it follows a consonant and precedes a vowel (*CuV*)? We should leave aside for a moment the instances in which the sequence *CuV* occurs at the beginning of a word. We are then left with a number of examples of the type *o-da-ku-we-ta, te-mi-de-we-ta, o-tu-wo-we,* etc. In all these we must reckon with [u̯]; I have shown before that it is more difficult to establish when, and if, [*u*] is present. However, if we assume that *u* occurs in e. g. *i-su-ku-wo-do-to, a-re-ku-tu-ru-wo, o-du-ru-we* (?), a_2*-ra-tu-a* / a_2*-ra-tu-wa, wa-tu-o-ko, wa-tu-o, me-nu-*a_2 /

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that the Mycenaean spellings of the type *-u-wV-* and *-u-V-* are inconsistent and the distinction is not always significant. In the cases in which there is an effective phonetic distinction this is probably due to the presence of an *h*.

53 An example may make this clear. In Italian there is a phonetic —though not phonemic— contrast between the velar nasal [ŋ] which occurs e. g. in the first syllable of *incredibile* and the dental nasal [*n*] which occurs e. g. in the first syllable of *indicibile*. The presence of either [ŋ] or [*n*] is determined by the sound which follows and nowhere are [ŋ] and [*n*] phonemically contrasted. In these conditions it is unthinkable that e. g. [*i*ŋ] may be introduced into *indicibile* through analogical levelling.

me-nu-wa, po-ru-e-ro we should try to establish what justifies this phonetic pattern. We are now on very uncertain ground but it may be worthwhile to proceed if only to see what questions to ask.

In forms like *wa-tu-o-ko, wa-tu-o* and possibly *po-ru-e-ro* we could maintain that the *u* is vocalic because it is not followed by a vowel but by an *h*. There is no way of establishing or disproving the truth of this statement, but in my opinion this cannot be the whole story. In later Greek [*h*], even when it is preserved, does not prevent elision; moreover we have seen that an original sequence [*VuhV*] (from **VusV*) is not preserved as such in Mycenaean and that in it [*h*] does not cause hiatus. If in *wa-tu-o-ko* the *u* is vocalic, the responsibility for this must fall as much on the morphemic boundary as on the aspirate[54]. It may well be that in this case too we have to set up a juncture phoneme.

me-nu-wa and a_2*-ra-tu-wa* are obscure, and I do not see how we can make use of these examples since the *u* could be long. The case of *a-re-ku-tu-ru-wo* is more interesting. Here we can hardly argue that there is a morphemic boundary between *u* and the following *o*; if anything, the morphemic boundary should precede the *u*. I suspect —but I can hardly say any more— that the presence or otherwise of vocalic [*u*] in the sequence *-CuV-* depended on the shape of the syllable to which it belonged. If the syllable began with two or more consonants, the *u* was vocalic; otherwise, it was consonantal, except in the case in which it was directly followed by a morphemic boundary (*-CuXV-*). This could explain, for instance, why *o-tu-wo-we* has a [*u̯*]: in [*orthu̯os*] the */r/* belongs to the first syllable of the word and not to the syllable which included the [*u̯*]. A similar explanation could also be used for the reconstructed **u̯idsu̯os* (?) and **pursu̯os* (??) if the first syllable was closed in both cases, and could even apply to *u̯astu̯os* if we could assume that the syllabic division followed and did not precede the sibilant.

I should like to stress once more how tentative this conclusion is. That this is so is due in part to lack of evidence, in part to the lack of a complete study of Mycenaean syllabification. This is

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[54] See note 52.

not the place in which to undertake it, but I hope to return to this subject elsewhere. There are few doubts, I believe, that if we were able to plot the results obtained by such an analysis against those obtained by Ed. Hermann[55] in his examination of the Greek evidence, we might reach a clearer understanding of the problems posed by Mycenaean semi-consonants.

We are left with the problem which is best exemplified by *dwo* and *du-wo-u-pi*. Here I admit defeat; it is possible that at the beginning of a word the sequence *CuV* still preserved an alternation between [*u*] and [*u̯*] due to earlier *saṃdhi* phenomena, but there is no way of proving or disproving it. On this point our study comes to completely negative results.

Finally, we should consider the problems posed by the intervocalic cluster of *u* and *r*. I have tried to argue that in Mycenaean there is no evidence that the phonetic realization of the spelling *-wV*$_1$*-rV*$_1$*-* (*ru-ko-wo-ro*) differed from that of the spelling *-V-u-rV-* (*ru-ko-u-ro*). However, a study of Greek points to a different conclusion: the contrast between e. g. εὕρηκα and εἵρηκα can only be explained if we assume that at some stage there was a contrast between *eu-rēka* and *u̯e-u̯rēka*. This implies that here too we may have to establish for the reconstructed period a juncture phoneme which may or may not occur between *u* and *r*. The problem now arises whether the sequence */VXu̯rV/* (where *X* = juncture phoneme) already occurs in Mycenaean or not. Once more the lack of evidence prevents us from answering this question, but it is possible that it was not so and that it was only in a later stage that the contrast between */VurV/* and */VXurV/* was established.

§ 13. The final summing up may be very brief. From an examination of the Greek evidence we concluded that it seems unlikely that the Sievers-Edgerton laws applied to that reconstructed stage of Greek which immediately preceded the disappearance of the consonantal functions of *u*. This conclusion appears to be confirmed by our analysis of the Mycenaean evidence. In Mycenaean [*u*] and [*u̯*] coexist, but the occurrence of either

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[55] Ed. Hermann, *Silbenbildung im Griechischen und in den andern idg. Sprachen*. Ergänzungsheft zu *KZ*, Göttingen 1923.

of them does not seem to be determined by Sievers' law. Moreover, we learn from Mycenaean that in a number of cases we must either establish a phonemic contrast between [*u*] and [*u̯*] or set up a juncture phoneme. This is important because it explains a number of analogical processes which would otherwise remain incomprehensible. In other cases it appears that the shape of the syllable may have some weight in establishing the choice between [*u*] and [*u̯*]; very tentatively we could say that [*u*] appears after two consonants belonging to the same syllable; otherwise, we find [*u̯*], except when the following vowel is preceded by a morphemic boundary. The alternations of the type *dwo* / *du-wo-u-pi* remain obscure.