Some metrical problems of the Rigveda

In Arnold's *Vedic Metre*, especially in chapters IV–VI, but also on p. 157–160, p. 195–197 and p. 202–205, we find, treated in considerable detail, certain metrical facts of the Rigveda which pose phonetic problems. In all but a few of these cases, archaic sandhi phenomena are involved. Here they are, systematically arranged:

A. Problems of contraction and hiatus (i. e., problems concerning the number of syllables).

§ 1. *ă* + any vowel or diphthong, *ĭ̆* + *ĭ̆*, *ŭ̆* + *ŭ̆*, in compositional or phrasal sandhi;

§ 2. the same in word-internal position (between root and suffix, root and ending, stem and ending);

§ 3. *ĭ̆*, *ŭ̆* + any other vowel (or diphthong) in external sandhi (that of composition or phrase);

§ 4. the same in word-internal sandhi.

B. Problems of quantity.

§ 5. A final sequence *short vowel + single consonant* (including *-e*, *-o*, *-aḥ*), occurring before an initial vocalic element, stands for a long syllable.

§ 6. A short internal syllable bears the ictus (i. e., appears in the place of a long syllable).

§ 7. A final short vowel has the value of a long one before an initial consonant[1].

Basing ourselves on the results of our investigation into the consonantal nature of Indo-European *ə*, we will here go through these problems one by one. We will see that to the extent that they are phoneti-

[1] This is the only instance where the writing of the *Saṁhitā* provides direct evidence. In all other cases, the only thing to go by is the metre.

cally determined (part of them are of a morphological nature and will be dealt with elsewhere), they can be ascribed to causes and tendencies common to all of them. Most of the instances involved have already been discussed in our articles *Les effets du ə* (especially p. 219–232, 239–243) and *ə indoeur.* Here we will mainly dwell upon the parallelism of external and internal sandhi.

Abbreviations: *Les effets du ə* (= *Les effets du ə en indoiranien*, *Prace filologiczne* XI, 1927, p. 201–243); *Origine indoeur. d. r. a.* (= *Origine indoeuropéenne du redoublement attique*, *Eos* XXX, 1927); *ə indoeur.* (= *ə indoeuropéen et ḫ hittite*, *Symbolae Grammaticae* presented to J. Rozwadowski, 1927, p. 95–104).

§ 1. In his study *Das Dehnungsgesetz der griechischen Komposita*, p. 24–27, Mr. Wackernagel has examined a special case of sandhi observed in compounds in the Rigveda. This has enabled him to formulate a rule according to which, if the second term has an initial vocalic element occurring in an open syllable, its contraction with the first term (ending in *ă*) suffers virtually no exception; and that in the opposite case, that of an initial vowel in closed syllable, hiatus is still allowed in a large number of instances. The figures, based on Mr. Wackernagel's account, are as follows (only nominal compounds are taken into consideration):

final *ă̆* + initial *ă* in open syllable: contraction in 142 instances (81 different stems); 3 instances of hiatus: *citrá-āyuḥ* VI, 49, 7; *saptá-āsiyam* X, 40, 8; *ūrja-adaḥ* X, 53, 4; the last instance could, however, go back to **ūrjo-ad-* (cf. *ūrjasvat-*).

final *ă̆* + initial *ă* in closed syllable: contraction in 107 instances (33 different stems); hiatus in 59 instances (12 different stems).

final *ă̆* + initial *ĭ* in open syllable: contraction in 29 instances (21 different stems).

final *ă̆* + *i* in closed syllable: 3 instances of contraction as against 3 instances of hiatus.

final *ă̆* + initial *ŭ* in open syllable: 48 instances of contraction (9 *u* + 39 *ū*).

final *ă̆* + initial *ŭ* in closed syllable: 4 instances of contraction as against 6 instances of hiatus.

final *ă̄* + *ṛ* in open syllable: 4 instances of contraction.
final *ă̄* + *e*: 3 instances of contraction, 2 instances of hiatus.
final *ă̄* + *o*: 8 instances of contraction (3 different stems).

These figures provide compelling evidence for the assumption that, prior to the stable situation reached in the classical language – that to which the Rigveda is already tending – there must have been, in prehistoric times, an equilibrium between contraction and lack of contraction (= hiatus), conditioned by the structure of the initial element of the second member. As Mr. Wackernagel (*loc. l.*, p. 25) was right to emphasise, this did not depend on rhythmic (metrical) conditions, for a short vowel in closed syllable behaves wholly unlike a long segment in open syllable. The figures also show that *e*, *o*, which arose from **ai*, **au* only after the period of Indo-Iranian unity, occupy an intermediary position between long vowels and diphthongs (which involve short vowels in closed syllables).

The reason for this distribution seems to be of a negative nature. Contraction always takes place except in those cases where it would give rise to a long vowel in closed syllable. *a* + *ă̄* yields just a long vowel[3], whereas *-a* + *ag-* (e. g., in *ag-níḥ*) yields *āg*, i. e., an ultralong syllable.

This can be put on a level with the classical *-y-*, *-v-* occurring after a sequence *long vowel* + *single consonant*, as opposed to *-iy-*, *-uv-* in the Rigveda (Wackernagel, *Altindische Grammatik* I, p. 204); here as well, the classical language presents a long vowel in closed syllable, avoided in the Rigveda.

Are any traces of this tendency to be found in phrasal sandhi? According to Oldenberg, *Hymnen des Rigveda*, p. 441 (cited by Mr. Wackernagel, *Das Dehnungsgesetz*, p. 25), contraction is avoided in the case of a long initial syllable in general (regardless whether a vowel in closed syllable or a long vowel in open syllable is involved). It is impossible to assess the accuracy of this observation, as the numerous instances of

[2] Where contraction is observed throughout.

[3] Similarly, *-ā̄* + *ā̄* (the first *ā̄* being shortened according to the rule *vocalis ante vocalem*).

contraction appearing in the text have not yet been collected and systematically arranged. But we have, at least, the instances of hiatus collected by Arnold, p. 73–75. The figures are as follows:

Overall number of instances with hiatus ($\breve{a}$ + any vowel; $\breve{i}+\breve{i}$, $\breve{u}+\breve{u}$):	688 cases;
The two words are separated by a caesura in	228 cases;
remain	460 cases;
The initial syllable is closed in	279 cases;
The initial syllable contains a diphthong in	24 cases;
In all	303 cases.

The initial element is a long vowel in open syllable in 59 cases[4].

However, in order to be able to assess this ratio of 5 to 1 (303 : 59), one would, of course, have to know the overall number of contractions and to establish the relative frequency of initial short vowels in closed syllables and initial long vowels in open syllables. One would then arrive at either of the following conclusions: (1) In phrasal sandhi, the tendency coincides with that established by Mr. Wackernagel in the case of compounds, or (2) the poetical texts partly reflect a state of affairs more archaic than that existing, in the same prehistoric period, in the spoken language to which the compounds can be traced back. They allow hiatus even in the case of a short initial vowel in open syllable, and apply contraction only for metrical reasons. Thus, in the case of a short initial vowel in open syllable, we would have a sequence of two short vowels, which is favoured only after the caesura of a hendeca- or dodecasyllable; but such a position of the compound is possible only if the first term is a monosyllable, which is rare.

§ 2. What both groups of instances considered until now have in common is the opposition between a short vowel in closed syllable and a short vowel in open syllable. The former are not amenable to contraction, as is additionally confirmed by the examples of internal hiatus cited by Arnold, §§ 140, 142, 143 and 151.

[4] There remain 98 cases with short initial vowels in open syllables; they will be dealt with further on.

(a) Thus, in 42 verbal forms belonging to roots in *ā*, this *ā* has a disyllabic value (*ă̆* + *ă̆*)[5]. In 31 cases, this *ā* is closed by a tautosyllablic consonant, e. g., *pānti* (to be read *pa-anti*), *pā́t pátiḥ* (to be read *pa-at patiḥ*), *gāt* (before a pause; to be read *ga-at*). E. g., for the root *yā*, we find:

	monosyllabic	disyllabic
ā in closed syll.	13	2 (15% of forms with *ā* in closed syll.)
ă̆ in open syll.	333	5 (1,7% of forms with *ā* in open syll.)

The forms with *ă̆ă̆* in open syllable can be conveniently used only after the caesura of a hendeca- or dodecasyllable. They are thus relatively rare, but they are even rarer than one would expect. Whereas the sporadic occurrence of a disyllabic *ā* in open syllable is not surprising (cf. *Les effets du ə*, p. 219), we must, on the contrary, ascribe a great conclusive force to such cases as *pā́t*, *ásthāt*, with disyllabic *ā* before an initial consonant and before a pause; here, contraction does not occur only because the final consonant is tautosyllabic with regard to the preceding vowel.

The same holds for root nouns in *ā*. We have, in all, 45 instances of internal hiatus of the type *-aaḥ*, *-aā*, *-aam*; out of these, 27 occur before a pause, 16 (including the compounds) before a following consonant, and only 2 before a following vowel (VII, 34, 16a *abjáam*; I, 63, 5c *kā́ṣṭhaaḥ* [uncertain]). We find, moreover:

gā́m, *gā́ḥ* with disyllabic *ā*: 8 times before a consonant, once before a pause, twice before a vowel[6];

dyā́m with disyllabic *ā*: once before a consonant, 4 times before a pause;

pánthām, *pánthāḥ* with disyllabic *ā*: 5 times before a pause;

dās, *bhās* with disyllabic *ā*: 11 times before a consonant, twice before a pause, 4 times before a vowel[7];

(b) *mām* with disyllabic *ā*: 8 times before a consonant, twice before a vowel[8];

[5] The origin of these forms will be left out of consideration here.
[6] VI, 46, 2; VI, 47, 24.
[7] I, 63, 7c; VI, 10, 4b; VII, 32, 10a; X, 3, 1c.
[8] V, 40, 7a; X, 165, 6c.

vām with disyllabic *ā*: thrice before a consonant, thrice before a pause, once before a vowel[9];

-ām (in the genitive plural) with disyllabic *ā*: 141 times before a consonant, 364 times before a pause, 16 times before a vowel[10];

-āt (in the ablative) with disyllabic *ā*: 7 times before a pause;

-ā- (lengthened vowel of the sigmatic aorist) disyllabic: once before a consonant, 7 times before a pause;

vā́ḥ with disyllabic *ā*: thrice before a consonant;

ārkṣá- (proper name) with disyllabic *ā*: VIII, 68, 1b;

a) *náuḥ* V, 59, 26 disyllabic before a consonant;

déṣṭha-, *dhéṣṭha-*, *jyéṣṭha-*, *yéṣṭha-* with disyllabic *e* (=*ai*): 25 times;

deṣṇá- with disyllabic *e*: 5 times;

b) *réknaḥ* with disyllabic *e*: thrice (*rékaṇaḥ*?).

§ 3. For the distribution of hiatus and contraction in the case of *-iy-* (*y*) and *-uv-* (*v*) we obtain similar results. We only have to replace the expressions: *before a consonant cluster*, with *after a heavy syllable* (i. e., after a consonant cluster or after a long vowel followed by a consonant); *before a pause*, with *after a pause*; *before a heterosyllabic consonant*, with *after a light syllable* (i. e., after a short vowel followed by a single consonant).

In the first two cases we observe hiatus, if we may use this term here: *-iy-*, *-uv-*; in the third case, contraction normally takes place, and we obtain *-y-*, *-v-*.

The classical language differs from Vedic in that a sequence *long vowel + consonant* has just the same influence as *short vowel + consonant*, whereas in the Rigveda it is equivalent to a short vowel followed by a consonant cluster.

Among the instances with external sandhi (including the compounds), we find only 184 examples with contraction: 79 cases of contraction between *áti*, *ádhi*, *ánu*, *ápi*, *abhí*, *pári*, *práti* and the initial

[9] IV, 42, 9a.

[10] I, 134, 6a; 167, 10d; II, 20, 3b; V, 56, 1c; VI, 24, 1d; VII, 73, 3a; X, 88, 6c; 115, 5d; – I, 7, 9b; 133, 7c; V, 52, 3c; VIII, 69, 2d; 93, 33b; 94, 8b; 102, 10a; X, 93, 3a.

vowel (augment) of a following verb; 89 more cases of contraction after a light syllable; 11 cases of contraction after a heavy syllable; 5 cases of contraction after a pause (the first term is a monosyllable).

§ 4. For internal sandhi, the most important examples are the following:

a) *jyắ* hiatus: once after a heavy syllable, once after a pause; – contraction: once after a heavy syllable, once after a light syllable;

jyākắ hiatus 6 times after a pause[11];

jyók hiatus: once after a heavy syllable, 11 times after a pause; – contraction: twice after a pause[12];

vy- (< *vī*) hiatus: 6 times after a heavy syllable, thrice after a pause, once after a light syllable – contraction: twice after a heavy syllable, once after a pause, once after a light syllable;

sy- (< *sī* 'bind') hiatus: once after a heavy syllable, thrice after a light syllable.

Stems in *ī*, *ū* – contraction once after a heavy syllable, 12 times after a light syllable[13];

b) *syắm*, *syắma* etc. hiatus 90 times after a heavy syllable, 16 times after a pause, 4 times after a light syllable – contraction 21 times after a heavy syllable, 9 times after a pause, 30 times after a light syllable;

tya- contraction 7 times after a heavy syllable, 4 times after a pause, 107 times after a light syllable; hiatus 26 times after a heavy syllable, 15 times after a pause, thrice after a light syllable[14];

śy- (< *śā* 'sharpen') hiatus twice after a heavy syllable;

bhiyas- contraction once after a pause[15], once after a light syllable;

dyáuḥ, *dyắm* hiatus 9 times after a heavy syllable, 27 times after a pause, once after a light syllable;

dyut- hiatus once after a pause, thrice after a light syllable;

[11] X, 133, 1–6.

[12] IV, 27, 3c; 166, 3b.

[13] V, 45, 1a; IX, 95, 5b; X, 30, 11c.

[14] Among the 14 opposite cases, 8 are found in the Xth Maṇḍala (Wackernagel, *Altind. Gr.* I, § 182 β).

[15] IX, 19, 6b.

svarita forms: contraction thrice after a heavy syllable, 20 times after a light syllable;

dvā hiatus 17 times after a heavy syllable, 18 times after a pause – contraction twice after a heavy syllable, 7 times after a light syllable;

śvan- hiatus once after a pause, twice after a heavy syllable – contraction once after a pause, thrice after a light syllable;

dviḥ hiatus once after a heavy syllable, twice after a pause;

sva- hiatus 25 times after a heavy syllable, 15 times after a pause, 5 times after a light syllable;

tva- 'many' hiatus 4 times after a heavy syllable, once after a light syllable – contraction twice after a heavy syllable, 12 times after a light syllable;

tvám etc. (2nd person pronoun) contraction thrice after a heavy syllable, 8 times after a pause, always after a light syllable; hiatus 13 times after a heavy syllable, 93 times after a pause (1st Maṇḍala);

svár contraction once after a light syllable[16];

suffix *-(i)ya-*: hiatus after a heavy syllable, contraction after a light syllable.

This distribution holds in over 90% of the cases (Arnold, p. 85).

Sporadic hiatus after a heavy syllable[17]: in the declension of *-i-*stems (*-iyā-*, *-iyoḥ*), in the endings *-bhyām*, *-bhyaḥ*, in the declension of *-yā*-stems (*-iyām*, *-iyai*, *-iyāḥ*), in the suffixes *-yā*, *-tyā* of the gerund, in the verbal suffixes *-ya-*, *-sya-*, in the declension of *-u*-stems (*-uvaḥ*, *-uvā*, *-uve*), in the declension of *-vā*-stems (*-uvām*), in the suffixes *-tvā*, *-tvī* of the gerund, in the verbal endings *-dhvam*, *-dhve*, *-dhvai*, *-sva*, in the nominal suffixes *-tva-*[18], *-vas-*, *-va-*, *-vī-*.

Within each of the categories dealt with above (1: *-ā-* with disyllabic value; 2: *-y-*, *-v-* with syllabic value) we should distinguish two groups, referred to above with (a) and (b). As we have attempted to

[16] II, 35, 6a.

[17] Arnold, p. 93–96, §§ 144, 146; p. 86, § 139. – Traces of the distribution with suffixes in *n*: p. 88, § 139 VII, p. 99, § 149 IV. Hiatus with suffixes in *r*: p. 88, § 139 VI, p. 97, § 149 I–III.

[18] With gerunds in *-tva*, *-ītva* we always observe hiatus (Arnold, p. 88, § 140). The root being in the full grade, *-va* always follows a heavy syllable.

show in *Les effets du ə*, p. 219–232, the former groups, (a), owe their hiatus to the loss of intervocalic *ə̯*. Generally speaking, the contraction observed in group (a) of the second category takes place in accordance with Sievers' Law, i. e., after a light syllable; but the number of forms with hiatus after a light syllable is still considerable, which allows us to conclude that group (a) is more recent than group (b). Cf. such forms as *dī́diyat-*, *dī́diyāna-*, *dī́dhiyat-*, *dī́dhiyāna-*, *pī́piyāna-*, *pīpiyāná-*, *dīdiye*, *dīdhiye*, *śūśuve*, *śūśuvuḥ*. The sequence *-iy-* (*-uv-*) is not due, in this case, to the length of the reduplication vowel. On the contrary, it is the absence of an initial cluster *dy-*, *dhy-*, *py-* that has made the lengthening possible. Cf. also the inflection of *ī-* and *ū*-stems (*Les effets du ə*, p. 223–224), isolated forms like *dhuvam*, *juhuve*, *jigiyuh*, *suvāná-* (< *sū*) as opposed to *svāná-* (from *su*). Similarly, within the first category we find forms like *vāta-*, *vātāpya-* (with disyllabic *ā*), *go*, *maghon-* (with disyllabic *o*). In all these cases, loss of intervocalic *ə̯* is involved. Whereas in group (b) of the 2nd category, *-iy-*, *-uv-* arise from *e̯i*, *e̯u* before a vowel, in group (a) these sequences go back to *-iə̯-*, *-uə̯-* before a vowel.

We are here dealing with a language which, after the loss of intervocalic *ə̯* (both initial and word-internal) is in the process of eliminating, through contraction, the instances of hiatus that result from it. The situation of the Rigveda shows a certain equilibrium between hiatus and contraction: the latter is avoided in those cases where a long vowel in closed syllable, or a cluster of three consonants, would result from it. It should be noted, however, that this equilibrium is not a rule, but only a tendency. If one goes into the details, one finds a considerable number of contractions of the modern type (i. e., as in the classical language), and a small number of hiatuses more archaic than those generally found in the Rigveda. We could say that the ratio oscillates around the ideal equilibrium formulated above. But what stands in the way of a correct assessment of this tendency is the lack of complete statistics of the cases involved, especially those of contraction. The custom has always been to regard the state of affairs observed in the classical language as normal, and to take notice only of those facts that depart from it.

The vowels with disyllabic value occurring in the Gāthās of the Avesta belong to the same categories as those of the Rigveda. A comparison between the two texts enables us to set the common inheritance

of Indo-European date apart from innovative formations and analogical extensions. The following sequences with disyllabic vowels are archaic:

1. *ă̆* + any vowel, *ĭ̆* + *ĭ̆*, *ŭ̆* + *ŭ̆*.

a) In external sandhi: *dəǰāmāspa-*, *vištāspa-*, *frąšta-*, *frōsyāṯ*, *ārəm*, *parāhūm*, *fraēšta-*, *āitē-*, *zastāišta-*, *xvaēta-*, *ϑwā*, *ištīš*, *fərašaoštra-*, *fraoxta-*, *frōrətōiš*, *paitīsāṯ*.

b) In internal sandhi: Thematic forms (or subjunctives) of verbal roots in *ā*: *gāṯ*, *dāṯ*, *dąn*, *dāhī*, *dāitī*, *dāntē*, *frā*, *hanānī* (< **sanā-ā-ni*). – Stems in *-ah-* (< **as*) built on roots in *ā*: *yāh-*, *māh-*, *dāh-* (*hudāh-*).

c) *vāta-*.

d) *-ąm* in the genitive plural.

2. *ĭ̆*, *ŭ̆* + other vowel.

a) In external sandhi: *paityāstīm*, *paityaogəṯ*, *pairyaoŋžā*, *vyādarəsəm*, *paiti*, *ərətē*, *hvapå̆*, *hvaršta-*, *hvaŋhəvīm*, *xvīti-*, *xvāϑra-*.

b) In internal sandhi: stems and roots in *ī*, *ū*: *ərəžə*, *ǰyōi*, *hizū-*, *tanū-*, *ahū*, *fsəratū*, *zbayā*, *zbayentē* (*zŭvaya-*, *zŭvay-* < *zū*).

hvar-, *xvan-*. – Persian: *tya-* (never **ϑya-*, **ϑiya-*).

As for the 2nd person pronoun, it seems that Iranian has preserved the ancient distribution of *-v-* and *-uv-* in all its clarity. In the nominative, the Avesta and Old Persian retain the plosive (Avestan *tv-*, Old Persian *tuv-* < **tuv-*), whereas in the oblique cases they always have the spirant (Avestan *ϑw-*, Old Persian *ϑuv-* < **tv-*). The alternation *-uv-*/*-v-* which the Rigveda presents in the oblique cases as well could therefore be based on the parallel alternation *-uv-*/*-v-* occurring in the nominative.

3. A further significant fact is that both texts agree in never assigning a disyllabic value to the *ā* occurring in *-āi̯* (*-āya*), *-āis*, and *-ās* (*-āsas*) (dative singular, instrumental plural and nominative-vocative plural of *-a-*stems). This is natural, as these long vowels arise from an Indo-European contraction (*o* + $a^{x}i̯$, *o* + $a^{x}i̯s$, *o* + *es*) rather than from an Indo-Iranian contraction subsequent to the loss of *ə̯*.

It follows that the contraction *-o* + *ōm* (in the genitive plural) cannot be put on a level with the contractions *o* + $a^{x}i̯$, *o* + $a^{x}i̯s$, *o* + *es*, the

ōm of the genitive plural being disyllabic in Indo-Iranian even in the athematic inflection.

The cases where only Indic presents a disyllabic vowel are the following: (1) *gām*, *gāḥ* (s. above): in all conclusive instances the Gāthās have monosyllabic forms (Y. 32, 10; 44, 6; 44, 20; 46, 4; 47, 3; 51, 5; 51, 7); (2) *-āt* in the ablative of *-a*-stems: nowhere in the Gāthās does one come across a disyllabic *-āt* even though before the enclitics *-čā*, *-čiṯ* the usual spelling is *-āaṯ*. It is therefore likely that the disyllabic *-āt* of the Rigveda is a metrical innovation of Indic. The parallelism between *-āt* and *-āi*(*a*), *-āis*, *-ās*(*as*) leads us to postulate a monosyllabic *ā*. The hypothesis of an innovation is all the more probable since, out of the 389 instances of the ablative ending *-āt* attested in the Rigveda, only 7 seem to be disyllabic (two of them are found in the popular Rigveda); (3) *-ā-* as lengthened grade of monosyllabic forms of the sigmatic aorist: always monosyllabic in the Gāthās: *dāiš* (Y. 43, 10), *dārəšt* (43, 13), *tāšt* (44, 7).

On the other hand, we find in the Avesta a series of instances with a disyllabic *ā* in subjunctives not belonging to roots in *ā*: *bairyå̊ntē* 32, 15; *išāṯ* 44, 2; *išå̊ntī* 45, 7; *pərəsāi* 44, 12; *hačå̊ntē* 48, 12; *vīdāṯ* 53, 4; *vīdāitī* 51, 6; *manyāi* 43, 9; *mānāi* 45, 3; *isāi* 50, 11.

§ 5. As a rule, a short internal vowel followed by an ancient cluster *consonant* + *ə̯* is short in the metrical system of the Rigveda, the consonant having shifted to the onset of the following syllable after the loss of *ə̯* (*ja-na-* < **jan-a-* < **gen-ə̯*$_1$*o-*). Yet the text still shows palpable traces of the ancient syllable boundary (cf. *Les effets du ə*, p. 240 and 242). – In principle, before an initial vowel of the following word, (word-final) *-e*, *-o*, *-aḥ* display the same metrical value as *a short vowel followed by a final consonant* occurring before an initial vowel. The consonantal element (*y*, *v*, *ḥ* or any other consonant) belongs to the following syllable, which implies shortness of the syllable in question. As an initial vowel goes back to a former initial *ə̯* (cf. our articles *ə indoeuropéen* and *Origine indoeur. d. r. a.*), we are here dealing, in external sandhi, with the same phenomenon observed above in the case of internal sandhi. In nothing whatsoever does *ja-na-* < **jan-a-* differ from *rayi-maśnavat* < *rayim aśnavat*. Here as well, in both verse types (dimeter and trimeter), the clausulae have preserved traces of an ancient syllabi-

fication. In the 10th syllable of the hendeca- and dodecasyllable we find 9 instances of *-e*, *-o*, *-aḥ* and 3 instances of *short vowel + consonant* before a following word-initial vowel. The 6th syllable of the octosyllable offers 13 + 35 examples (s. *Les effets du ə*, p. 242 and 240).

As for other parts of the verse, it is almost impossible to decide whether the ancient syllabification has anywhere been preserved or not. The metre is not rigid enough to allow any reliable conclusions. Let us note, however, that among 1008 occurrences of two successive short vowels in the 2nd and 3rd syllable (Arnold, p. 157, § 189; p. 195, § 216 I–II), we find:

127 instances of final *-e*, *-o* (*aḥ*) (before an initial vowel) in the second syllable (48 in the dimeter + 79 in the trimeter)

62 instances of final *-e*, *-o* (*aḥ*) (before an initial vowel) in the third syllable (24 in the dimeter + 38 in the trimeter)

180 instances of *short vowel + final consonant* (before an initial vowel) in the second syllable (57 in the dimeter + 123 in the trimeter)

46 instances of *short vowel + final consonant* (before an initial vowel) in the third syllable (11 in the dimeter + 35 in the trimeter)

In all 415 instances.

Among 545 instances of short vowels in the 8th position of the trimeter (Arnold, p. 202, § 220 I), there are

158 instances of final *-e*, *-o* (*aḥ*) before an initial vowel

167 instances of *short vowel + final consonant*

In all 325 instances.

Among 186 instances of two successive short vowels in the 4th and 5th position of the trimeter (with a caesura after the 5th syllable; Arnold, p. 197, § 216 III), we find:

75 instances of final *-e*, *-o* (*aḥ*) before an initial vowel

57 instances of *short vowel + final consonant*

In all 132 instances.

We must reckon with the possibility of the syllables in question standing for long syllables. Future investigations into the metre of the Rigveda will have to deal with this problem, for the solution proposed by Oldenberg (ZDMG, XL, p. 331–335) is certainly not definitive. The 60 instances observed in the clausulae (s. above) provide us with a solid basis for the assertion that the general rule (shift of the final consonant

to the onset of the following syllable, causing the syllable in question to be counted as short), though valid in a large majority of cases, allows of exceptions[19].

§ 6. As for internal short vowels (originally followed by *consonant* + *ə̯*), their use with the value of long vowels outside the clausula (in the 2nd or 3rd position or in the 8th position of the trimeter) cannot be substantiated unless they appear with the same value in the clausula (6th position of the dimeter and 10th position of the trimeter). Thus, the *a* of *jani-/a-* appears 13 times in the 10th position of the hendeca- (dodeca-)syllable (cf. *Les effets du ə*, 240, 242). It is therefore possible that in the 7 cases where it occupies the 2nd position of the verse (the third syllable being short), it bears the ictus, i. e., functions as a long vowel. Similarly, one finds the *a* of *jani-/a-* 5 times in the 3rd position (the second syllable being short) and once in the 8th position of the trimeter.

Table of the internal vowels in open syllables[20] functioning as long vowels both in the clausulae and in other positions of the verse requiring length.

	6th position of dimeter	10th position of trimeter	2nd position (3rd short)	3rd position (2nd short)	8th position of trimeter
jani-/a-	–	13	7	5	1
prathi-/a- (*pṛthi-*)	2	–	9	–	–
pavi-/a-	3	–	5	5	–
savi-/a-	7	–	4	1	–
tari-/a- (*taru-*)	4	2	2	4	–
havi-/a-	5	3	–	1	–
vani/a-	2	4	2	–	–
ratha-	7	12	1	1	3
iṣi-	–	3	–	–	2
mahi-/a-	7	3	–	7	in 4th pos., 3rd short
śavi-/a-	20	7	–	6	–

[19] Just as in internal sandhi (in cases of the type **jan-a-*).

[20] The vowels in question are set in roman.

pathi-/a-	3	–	1	3	in 4th pos., 3rd short
sakhi-/a-	4	5	–	3	–
sani-/a-	5	–	1	3	–
tavi-/a-	4	2	–	–	2
duhitar-	2	–	–	–	1
dadhi-/a- (*vidha-* etc.)	7	5	8	–	3
avi-/a-	32	9	1	–	–
hari-	7	–	2	3	1
tama- (*-ama-*)	–	20 (+2)	–	7(+1)	1
ajara-	32	9	1	–	–
marut-	6	3	3	2	–
varuṇa-	16	–	3	–	–
pati (short preceding vowel long by position)	5	–	6	–	–

In positions other than the clausula, it remains doubtful whether the syllables in question had the value of long ones. As for the clausulae themselves, the assumption that these syllables originally counted as long is guaranteed, so it seems to us, by the statistical data (*Les effets du ə*, p. 239–242). Besides, it is additionally confirmed by the instances of hiatus. As we saw above, out of 688 cases of hiatus ($\breve{a}$ + any vowel, $\breve{i}$ + $\breve{i}$, $\breve{u}$ + $\breve{u}$) noted by Arnold, p. 73–75, 228 are explained by a caesura, and 303 (279 + 24) are explained by the consonant clusters that follow them. Even if one admits, with Oldenberg, that contraction is also avoided between a final vowel and a long initial vowel (59 examples), we are still left with 98 instances of hiatus calling for an explanation. It has long been noted (Wackernagel, *Altind. Gr.* , p. XV; Arnold, p. 72, § 120) that monosyllables are not amenable to contraction; we should therefore discard a further 40 instances of hiatus in which either the first or the second word is a monosyllable (*ca*, *pra*, *na*, *ā*, *mā*; *id*, *a* of the augment, privative *a*). Among the 58 remaining cases of hiatus, one may easily distinguish two groups: the first consists of a few words each represented by several examples (34 instances), the second consists of isolated cases (24 instances).

In the first group, the most frequent root is *avi-/a-*, with 9 instances of hiatus: II, 6, 6a; V, 17, 1d; 65, 5a; VI, 14, 1d; VIII, 1, 16c; 24, 25a;

71, 14; X, 26, 1d; 9b. – In V, 17, 1d; 65, 5a; VI, 14, 1d; VIII, 71, 4a, *av-* occupies the 6th position in an octosyllable; in VIII, 1, 16c it is the 10th position in a dodecasyllable. We see that the capability of *av-* to act as a long syllable (s. the table above) – a capability we have explained as the reflection of an ancient syllable boundary (*aṷ-ə̯e-* etc.; s. *Les effets du ə*, p. 243 and 233), is in keeping with the facts of hiatus: *a* in *av-* having originally been followed by a consonant cluster (*ṷ* + *ə̯*), it resists contraction just as, e. g., *a* in *aśva-* does. Similarly, the *a* of *atithi-* occurs in hiatus 4 times: V, 18, 1b; VI, 16, 42b; VII, 74, 7d; 103, 10b, always in the 6th position in an octosyllable[21]. Similarly, the *i* of *iṣ(i)-*: VI, 18, 5c; VIII, 1, 21a is capable of bearing the ictus (*Les effets du ə*, p. 242). In 7 instances we have a sequence *short vowel + consonant* before an initial vowel (i. e., an original *ə̯*). Thus I, 129, 9b (*pathā́ an-ehásā*); I, 30, 3b (6th position in an octosyllable); II, 17, 1b; VIII, 16, 4a; 20, 17c (6th position in an octosyllable); X, 93, 12d; 105, 8b (6th position in an octosyllable). In the 4 following instances, where we are dealing with the particle *-am*, we must also assume a reflection of the ancient syllabification: *ah-ám* X, 145, 3a; *ay-ám* X, 60, 7a; *iy-ám* VI, 75, 3d; *im-ám* VIII, 17, 1b, whence possibly also *im-é* VIII, 21, 3a; X, 121, 4a; *im-ā́ḥ* X, 121, 4c[22]).

§ 7. The instances of lengthening of the final vowel can be divided into six groups:

1. Lengthening of the vowel in the first term of a compound.
2. Lengthening of the augment.
3. Lengthening of the reduplication syllable in the perfect.
4. Lengthening of the reduplication syllable in the aorist.
5. Lengthening of the final stem vowel before the suffixes *-ya-*, *-yā-*, *-yu-*, *-van-*, *-vant-*.
6. Lengthening of the word-final vowel.

[21] As is known, the *a* of *átithi-* can bear the ictus in the clausula of an octosyllable (*Les effets du ə*, p. 240).

[22] Remain unexplained: 3 instances of hiatus with *uṣā́ḥ* I, 48, 7c; 16c; X, 134, 1b. – 2 instances of hiatus with *iva* V, 45, 2d; VIII, 101, 13a.

As for the last two groups, we propose to deal with them elsewhere, as the problems they pose cannot be discussed in a few words here. Suffice it to note that, in these two groups, the starting point for the alternation *short vowel / long vowel* is not phonetic, but morphological (except for a small minority of cases which will be listed below, together with the compounds).

Here are the materials offered by the Rigveda:

ad 1. a) *ap*: *dvīpá-*, *anūpá-*, *abhīpa(táḥ)*, *pratīpá-*, *nīpá-* (in *nī́pātithi-*),

añc: *pratīc-*, *śvitīc-*, *dadhīc-*, *nīc-*, *samīc-*, *kadrīc-*, *devadrīc-*, *sadhrīc-*, *urūc-*, *anūc-*, *viṣūc-*, *ghṛtāc-*, *apāc*, *viśvāc-*, *viṣvāc-*, and their derivatives.

aj: *vīj-* < *vyaj-* (*vi* + *aj*); occurs only in the epics. But if *jū* is an expansion of *aj* (as *drū* is an expansion of *der* 'run'), then *apī-jū́-* and *vasū-jū́-* belong here as well.

as: *āsat-* 'non-existent', *abhī́ ṣat-* (II, 41, 10b; VII, 32, 24a). To the same root belongs *su* (Greek ἐύ, Hittite *aššuš*): *abhī́ ṣú* (IV, 31, 3a; VIII, 93, 21a; X, 59, 3a), *ū ṣú* (32 times).

i(ay-): *avāyatī́* (VIII, 91, 1).

nar-: *viśvānara-*, *abhī́ naráḥ*, *náram* (V, 9, 7a; IX, 101, 3a; X, 97, 49c), *sūnára-*, *sūnṛ́ta-*.

naḥ (pronoun): *abhī́ naḥ* (I, 140, 13a; IV, 31, 4a; IX, 97, 51a).

naś (*aṅś*): *parī-ṇáśe* (I, 54, 1).

nah ('bind'): *akṣā-ṇáh-*, *parī-ṇáh-*.

maghá-: *śatā́-*, *citrā́-*, *sahásrā-*, *áśvā-*, *tuvī́-magha-*.

rudh, *ruh* (ἐλυθ-): *anū-rúdh-*, *vī-rúdh-*, *upā-rúh-*, *gartā-rúh-*.

ru: *tuvī-ráva-*, *purū-rávas-*, *vṛṣā-ravá-*.

vas ('clothe'): *adhī-vāsá-*.

vasu: all compounds with *vasu-* except *sahávasu-*; *vaibhūvasá-*.

vidh: *hṛdayā-vídh-*.

vṛṣ: *prā-vṛ́ṣ-*, *prā-vṛṣíṇa-*.

van: *vāvā́ta-*, *vāvā́tṛ-*.

vṛ: *ápā vṛdhi* (I, 7, 6b; II, 3, 2, 7b; IV, 31, 13a; VII, 27, 2d; VIII, 23, 29c), *ápā-vṛta-*, *ápā-vṛti-*, *prā́-vṛta-*, (*a*)*parīvṛta-*, *ápīvṛta-*, *abhī́vṛta-*.

b) *vṛt*: *abhī-vartá-*, *dakṣiṇā-*, *hrādunī-*, *viṣū-vṛ́t-*, *ánapāvṛt-*.

vṛj: *ápā-vṛkta-*, (*su*)*daśaprā-vargá-*.

vṛdh: *ṛtā-*, *tugryā-*, *parvatā-*, *ghṛtā*), *annā-*, *āhutī-*, *ṛdū-vṛ́dh-*.

sah: *yajñā-*, *rathā-*, *janā-*, *dyumnā-*, *vīrā-*, *turā-*, *prā-*, *dhanvā-*, *vibhvā-*, *viśvā-*, *carṣaṇī-ṣáh-* (*-sáh-*).

nas ('nose'): *urū-ṇasá-*, *ijū-nas-*.

yudh: *vṛṣā-yúdh-*, *amitrā-yúdh-*.

vī: *pratī-vī́-*, *devā-vī́-*.

Proper names: *lópā-mudrā-*, *ugrā́-deva-*, *viśvā-mitra-*, *nárā-śaṁsa-*, *vārṣā-girá-*, *vṛṣā́-kapi-*.

The following cases pose special problems: *sū́-bharva-*, *sū-máya-*, *sū-yavasa-*, *purūtáma-*, *ṛdū-pā́-*, *viśvā-púṣ-*, *kṣetrā-sā́-*, *carṣaṇī-dhṛ́t-*, *kavā-sakhá-*, *ulū-khala-*, *nī-hárá-*, *sadanā-sád-*, *viśvā-bhū-*, *stanā-bhúj-*; *abhī́ navante* (IX, 100, 1a), *abhī́ nū* (II, 33, 7d), *abhī́ d(u)vā́-* (X, 48, 7b).

In group (a), the long vowel originates, as we have attempted to bring out in our article *ə indo-européen*[23], from the contraction of a short vowel with *ə̯*. In group (b), we have (1) cases which might be phonetically determined just as those of group (a), but for which the original existence of an initial cluster *ə̯* + *consonant* cannot be proved; (2) cases where the long vowel can be explained by morphological causes (they will be dealt with elsewhere, together with the instances of word-final lengthening and those of lengthening before the suffixes *-ya-*, *-yā-*, *-yu-*, *-van-*, *-vant-*).

ad 2. a) *ā́nat*, *ās-* (< *as* 'be') in the weak forms, *ārata* (< *ar*; **e-ə̯*$_1$*rṇto*), *ā́vaḥ* (*vas* 'shine'), *ā́var*, *ā́vidhyat*.

b) *ā́vṛṇi*, *ā́vṛṇak*; *ā́yunak*, *ā́yukta*; *ā́riṇak*, *ā́raik*.

In the last two cases (*yuj*, *ric*), the lengthening is probably analogical. In all cases listed under (a), it is phonetically determined (s. our article *ə indoeuropéen*).

[23] This article was written in July 1926 for the Festschrift presented to J. Rozwadowski (*Symbolae Grammaticae*). In his study *La cinquième déclinaison latine*, published in December 1926, Mr. Pedersen mentions, in a footnote on p. 33, a hypothesis which was formulated by a young linguist since deceased, Per Slomann, and which coincides with what I have expounded in the above-mentioned article, p. 97–100. As Mr. Pedersen provides no reference, I am unable to confront the particulars of Slomann's hypothesis with my own deductions.

ad 3. a) The reduplication syllable of the perfect displays a long vowel which arose phonetically and which corresponds to the long vowel of Attic reduplication in Greek (s. *L'origine indo-européenne d. r. a.* and *ə indo-européen*): *vāvr̥ṣ-*, *vāvan-*, *māmr̥j-*, *māmah-*, *vāvas-* (< *vas* 'clothe'), *vāvas-* (< *vas* 'dwell'), *rāran-*, *vāvak-*, *vāvaś-*, *rārah-*; *āse* < *as* 'throw' (*ə̯e-ə̯s*), built like *tatné* etc. The long vowel of *īyúḥ* (**ə̯$_1$iə̯$_1$i̯r*) is also etymological.

b) *vāvr̥t-*, *vāvr̥j-*, *vāvr̥dh-*, *sāsah-*, *nānam-*, *cākan-*, *tātan-*, *jāgar-*, *rāradh-*, *rārabh-*, *dādhr̥-*, *śāśad-*, *cāskambh-*, *tātr̥ṣ-*, *jāhr̥ṣ-*, *tātr̥p-*, *jāgr̥dh-*, *cākl̥p-*, *dādr̥h-*, *māmr̥ś-*, *dādhr̥ṣuḥ* (Atharvaveda).

One third of these cases (group a) is phonetically determined. Part of the cases under (b) could have arisen phonetically (e. g., *vāvr̥t-*, *vāvr̥j-*, *vāvr̥dh-*, *sāsah-*; as we saw above, the corresponding roots caused lengthening of a preceding final short vowel in composition); some other cases might be analogical.

If the quality of the reduplication vowel is *i* or *u*, lengthening is never observed, except for a number of cases where the third radical is *ə̯* (*dī*, *dhī*, *pī*, *jū*, *tū*, *śū*).

ad 4. The only category where lengthening seems to be subject to rules is the reduplication of the 3rd aorist. We should note, first of all, that with respect to its phonetic structure this is a true aorist. Leaving reduplication aside, we obtain, for roots with an internal sonant (including *seṭ* roots), forms of the type **liqᵘé-* (*bū-budhat*, *pū-purat*, *jī-janat*), which, as is well known, are aoristic; the same holds for Greek: πεπιθών, πεπίθοιτο etc. For light roots[24] it is Greek that seems to have preserved the original state of affairs: ἔ-πε-φνον, ἔ-σπε-το, ἐ-κέ-κλε-το, ἔ-τε-τμον. As formations of this type, Indic has only *ávocat* and *ápaptat*. Iranian has *pta-* and a few other examples (Bartholomae's 3rd class). On the other hand, there is, for light roots, a reduplicated athematic aorist (e. g., *ájīgar*, *dīdhar*, *siṣvap* etc. in the Rigveda) of which the only instances in Greek are κέκλυθι, κέκλυτε (Brugmann-Thumb, *Griechische Grammatik*, p. 332, § 332). With its thematic and athematic formations, the reduplicated aorist seems to parallel the non-

[24] I. e., roots in which the fundamental vowel is followed by only one consonantal element (plosive, sonant or *ə̯*).

reduplicated root aorist (1st and 2nd aorist), cf. *áśrot -aśuśravuḥ*, *áśret -áśiśrayuḥ*, and the numerous examples for roots with internal sonants such as *budhát -būbudhat*. Later on (this is the state of affairs we observe in historical Indic) the athematic inflection all but disappeared, and the normal type, for light roots, is the thematic inflection with full grade of the root: *tītapa-*, *nīnama-*, *vīvata-* etc. But formations of this type cannot be old, just as they cannot possibly be old in the case of the non-reduplicated root aorist: for the latter, what we find is either the athematic inflection or the inflection of the type **budhá-*, whereas the type **bhára-* is not represented at all[25].

If we admit, therefore, that the reduplicated aorist originally consisted of *reduplication + non-reduplicated root aorist stem*, we can explain the lengthening of the reduplication vowel, starting out from Hirt's theory concerning the opposition between present and aorist. According to this theory, the ancient opposition between present and aorist can be represented with the aid of formulae like **leiqᵘ- *liqᵘé-*, **segh *sghe*, **pelə *plē*. Now the first of these oppositions is actually more recent than the other two (cf. our article *Le type védique gr̥bhāyáti*, in *Mélanges Benveniste*). The most archaic opposition is **segh *sghe*, **ters *tres*, **pelə̯*$_1$ **pleə̯*$_1$, **ə̯*$_1$*eut *ə̯*$_1$*uet*. Originally, then, the root of the present began with a single consonant whereas that of the aorist contained an initial consonant cluster. It follows that, in the reduplicated aorist, the reduplication vowel was originally always in a closed syllable. At some subsequent stage, there was either a short vowel in closed syllable or a long vowel (if the first consonant of the cluster was *ə̯*, which, in roots like **ə̯*$_2$*neḱ*, merged with the reduplication vowel to yield a long vowel). Whence the rule according to which the reduplication vowel must be lengthened before a single consonant. This rule, henceforth morphological, remained in force even after the type **liqᵘé-* had supplanted part of the ancient aorists. In the type **liqᵘé-*, lengthening is not found in Greek, and it cannot be original. It is, at best, of

[25] The thematic forms of *r̥, tan* found in the Rigveda, and those of *kram, kr̥* found in the Atharvaveda can simply be explained as being secondarily built on the parallel athematic forms, which are also attested. The only forms that cause difficulties are the aorists *sára-* and *sáda-*, for which no athematic counterparts are attested.

Indo-Iranian date. The type **vīvat*[26], unknown to Greek, has been thematicised in Indic: *vīvata-*, *nīnaśa-* (root **ank̂*, **nek̂*, s. Walde, *L. et. W.* s. v. *neco*). In most cases, the reduplicated aorist has abandoned the ancient root form characteristic of the aorist and replaced it with the form that was generalised throughout the verbal system. It is only in the type **liqᵘé-* (roots with internal sonants) that it consistently retains the aoristic form, though in this case the form in question was relatively recent.

Our explanation, it should be repeated, is valid only on the following two assumptions: (1) the reduplicated aorist is a true aorist, i. e., it is built on the non-reduplicated root aorist; (2) the original difference between present and aorist manifests itself in the oppositions **segh* **sghe*, **pelə̯₁* **pleə̯₁*, **ə̯₂enk̂* **ə̯₂nek̂*. What has stood in the way of such an explanation until now is the alleged connection between the quantity of the root syllable and that of the reduplication syllable (Whitney, *Indische Grammatik*, p. 301, § 860; Wackernagel, *Dehnungsgesetz*, p. 18). Actually, the examples with a short reduplication syllable before a single consonant are partly suspect because of the quality of the reduplication vowel: *tatańsa-*, *vavakṣa-*, *dadakṣa-*, *babhakṣa-*, *jajas-*, *dadhāv-*; others are betrayed by the form of the root as being relatively recent formations: *didīkṣa-*, *didīpa-*, *mimīla-*.

§ 8. *General remarks*. Within the theory of consonantal *ə̯*, we are led to posit several kinds of *ə̯*. The fundamental vocalism requires us to postulate three: *ə̯₁*, *ə̯₂*, *ə̯₃*, defined by the formulae: $e + ə̯_1 = \bar{e}$; $e + ə̯_2 = \bar{a}$; $e + ə̯_3 = \bar{o}$ before a consonant; $ə̯_1 e = e$; $ə̯_2 e = a$; $ə̯_3 e = o$ word-initially; *ə₁*, *ə₂*, *ə₃* between consonants, a distinction which survives only in Greek ε, α, ο. Between a consonant and a vowel we must distinguish *ə̯₂*, which causes aspiration of voiceless plosives, from *ə̯₃*, which causes their voicing (*tíṣṭhati* < **ti-stə̯₂e-ti* etc.; *píbati* < **pi-pə̯₃e-ti* etc.). Moreover, Hittite *ḫ* corresponds only to Indo-European *ə̯₂*, whereas the reflex of *ə̯₁* in this language, at least word-initially, is a mere glottal stop. In the present state of Hittite linguistics, it is impossible to decide whether every Indo-European *ə̯₂* corresponds to a Hittite *ḫ*. It might prove

[26] Where lengthening arose phonetically (root *ə̯₁eut-*, *ə̯₁u̯et-*).

necessary to distinguish two kinds of ∂_2, both defined by the formulae $e + \partial_2 = \bar{a}$ and $\partial_2 e = a$, but one of them corresponding to Hittite $\underline{h}$ while the other does not[27], or one of them causing aspiration while the other does not. On the other hand, we cannot affirm with certainty that the equations $e + \partial_3 = \bar{o}$, $\partial_3 e = o$ are correct; we could also be dealing with instances of $o + \partial_1$ or $\partial_2 = \bar{o}$, though morphological reasons (e. g., the parallelism between δίδωμι and τίθημι, ἵστημι) speak in favour of the former assumption. At any rate, it seems certain by now that we must accept at least two kinds of ∂. Yet, a number of three or even four cannot be excluded.

The Vedic sandhi phenomena arranged in tabular form at the end of the present article are in perfect keeping with the assumption of lost consonantal elements. We must assume that between vowels, and word-initially before a vowel, *all these elements, without exception, were initially replaced with a glottal stop* (German *Stimmeinsatz*) rather than being simply dropped. This would provide us with a phonetic explanation for the voicing of word-final voiceless plosives before an initial vowel of any kind.

A highly interesting parallel can be found in Akkadian, which has lost the Common Semitic gutturals (h, $\underline{h}$, $'$, $\dot{g}$). Before a consonant, a short vowel undergoes contraction with a following guttural. Between two vowels and word-initially before a vowel, the guttural survives in the form of a glottal stop. The intervocalic glottal stop being subsequently lost, vowel contraction takes place. Between a consonant and a vowel we observe loss of the guttural, but the original syllabification is sometimes noted with the aid of a glottal stop. If we had Akkadian texts with a quantitative metre, we would be able to observe the oscillation of the syllable boundary of which we have found traces in the Rigveda. If we add to this that in Akkadian the quality of the lost guttural is betrayed by the colouring of the neighbouring vowel, we will have to admit that the parallelism with Indo-European is nearly complete[28].

[27] This distinction is suggested by the Hittite plural neuter ending (*-a*) and by the Hittite root *iš* 'seek' (= Indo-Eur. **ais* 'seek'?), *Ztschr. f. Assyriologie* XXXVII (1926), p. 198.

[28] All that is lacking is a corresponding treatment of the guttural between two consonants and word-initially before a consonant; such combinations can-

On the other hand, the role of the lost gutturals can be compared, from a metrical point of view, with that of σ and F in Ionic-Attic. An original initial cluster σ + *sonant*, for example, is betrayed by the influence it exerts on the metrical value of a preceding short final vowel. Word-internally, before nasals and liquids, we observe a contraction $e + h > \bar{e}$, $o + h > \bar{o}$ etc., exactly parallel to $e + \underset{\frown}{\partial}_1 > \bar{e}$ etc. After ρ, λ, ν a former F, even though subsequently lost, is still betrayed by an archaic syllabification; thus, the first syllable of ξένος is capable of bearing the ictus (ξέν-ος). Former initial clusters *consonant* + F make position, etc.

The sandhi of $\underset{\frown}{\partial}$
Synoptic table of correspondences
between internal and external sandhi

Internal sandhi	External sandhi
long vowel < short vowel + $\underset{\frown}{\partial}$ (De Saussure)	lengthening of a final short vowel in composition (cf. also *abhī*, *apā*, *ū*); lengthening of augment and reduplication syllable (§ 7); Attic reduplication in Greek (s. *Origine indoeur. d. r. a.*)
loss of intervocalic $\underset{\frown}{\partial}$	loss of initial $\underset{\frown}{\partial}$ between preceding final vowel and initial vowel
1. between $\breve{a}$ and any vowel (§ 2)	1. between $\breve{a}$ and any vowel, between $\breve{i}$ and $\bar{i}$, $\breve{u}$ and $\bar{u}$ (§ 1)
2. between $\breve{i}$, $\breve{u}$ and any other vowel (§ 4)	2. between $\breve{i}$, $\breve{u}$ and another vowel (§ 3)

not be original, as clusters of three consonants are impossible in Semitic. But we find a parallel in Hebrew: *tfaḳeđ*, *tfuḳađ*, but *ᵓafaḳeđ*, *ᵓafuḳađ*; *tifḳđī*, *tifḳđū*, but *tišḫᵃtī*, *nišḫᵃtū*; *pḳađtĕm*, *pḳođ*, *pḳođnāh*, but *ʿᵃmađtĕm*, *ᵓechol*, *ᵓecholnāh* (for Indo-European, cf. *Les effets du ə*, § 16).

shortening of original long diphthongs (s. *Les effets du ə*, p. 225, § 12)	*vocalis ante vocalem corripitur*[29] (s. *Les effets du ə*, p. 232, § 14)
short vowel counts as long before consonant + *ə̯* (lost before a vowel; § 6)	short vowel + consonant (including *-y* in *-e*, *-ḥ* in *o*) makes position before an initial vowel (§ 5)
píbati < **pi-pə̯$_3$eti* like **pi-pdeti* > *píbdati*; Greek ὄγδοος < **oktə̯$_3$uos*, Avest. *yūžəm* < **yus* + *ə̯em* s. § 8)	voicing of voiceless consonants before initial vowels (§ 8)
vocalisation of *ə̯* between two consonants (s. *Les effets du ə*, p. 232, § 16; Indo-Iran. *i* = Eur. *ă*)	Greek and Armenian prothesis (s. *Origine indoeur. d. r. a.*), doubtful traces in Indic (?): *irajya-*, *iradha-*.

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[29] Actually, this phenomenon is not strictly parallel to the shortening of a long diphthong. In the latter case, we have loss of an intervocalic *ə̯*, whereas in the former we have loss of two successive instances of *ə̯*: *-a + a-* < *-ā + a* < *-aə̯ + ə̯a-*.