The effects of ə in Indo-Iranian

§ 1. The purpose of the present article is to show how a relatively simple solution can be found for a whole series of problems of Indo-Iranian linguistics if one starts out from the assumption that the original long vowels of Indo-European arose from the contraction of a short vowel with a consonantal element. This assumption is not new, as de Saussure (*Mém.*, p. 134 = *Recueil des publ. scientifiques*, p. 127ff.) and after him Mr. Meillet (in several editions of his *Introduction*) had already recognised that, from the viewpoint of the theory of apophony, ə functioned as a sonant. Mr. H. Möller (*Englische Studien*, III, p. 150ff.; *PBrSB*. VII, p. 492, note 2; *ZfdPh*., XXV, p. 383ff.) regards ə as a guttural sound, or rather as the reflex of several guttural sounds. Cf. also the view of Mr. Pedersen (*Vgl. Gramm. d. kelt. Spr*. I, p. 177ff.), who shares Mr. Möller's opinion, and especially Mr. Cuny's article in the *Revue de phonétique*, II (1912), p. 101ff.

Apart from this theory, which could be called the French-Danish one after its main advocates, there is also another point of view recognised and defended principally by German scholars (cf., e. g., Streitberg in his obituary for de Saussure, *Indogermanisches Jahrbuch*, II; Hirt, *Indogermanische Grammatik*, II, p. 22 and 100; I, p. 46; Brugmann, *Kurze vgl. Grammatik*, p. 80; Persson, *Beiträge zur idg. Wf*., II, p. 631, n. 1, etc.), who regard ə as a reduced vowel (i. e., as the reduction of a long vowel). It is well known that the theory of Streitberg and Mr. Hirt has all but smothered the germ of the new conception springing from the *Mémoire*. The latter, however, has been regaining ground lately, and the future seems to belong to it. This can be seen, first of all, from the fact that it helps us further even where Streitberg and Hirt's theory falls short.

To make clear that wherever ə is not in interconsonantal position we regard it as a purely consonantal element, we will henceforth use

the symbol $\underset{\frown}{\text{ə}}$. Where $\underset{\frown}{\text{ə}}$ comes to stand between two consonants, it is vocalised (in which way, we will see in § 16) and yields *ə*[1]. True to the principle that in case of doubt it is better to distinguish than to confuse, we will avail ourselves of the symbols $\underset{\frown}{\text{ə}}_1$, $\underset{\frown}{\text{ə}}_2$, $\underset{\frown}{\text{ə}}_3$, defined on the basis of the equations $e + \underset{\frown}{\text{ə}}_1 = \bar{e}$; $e + \underset{\frown}{\text{ə}}_2 = \bar{a}$; $e + \underset{\frown}{\text{ə}}_3 = \bar{o}$ (cf. Gr. τίθημι, ἵστημι, δίδωμι)[2].

§ 2. In 1891, de Saussure advanced an hypothesis according to which Indic *th* arose, in part, from the loss of *ə* (i. e., $\underset{\frown}{\text{ə}}$) between *t* and a vowel: *ə* ($\underset{\frown}{\text{ə}}$) survived in the aspiration of the preceding unvoiced stop. Thus we have Ind. *pṛthúḥ* < **pl̥t$\underset{\frown}{\text{ə}}$-ús*; in a similar way, the *th* of the root *sthā* 'stand' originated, in his view, in forms like *tíṣṭhati*, where $\underset{\frown}{\text{ə}}$ came to stand before the thematic vowel. According to de Saussure, the aspiration was analogical (1) in full grade forms ($e + \underset{\frown}{\text{ə}}$), and (2) in zero grade forms when followed by a consonant; it arose phonetically only in zero grade forms when followed by a vowel. Unlike *tíṣṭhati*, the forms *ásthāt* and *sthitá-* would therefore owe their *th* to the action of analogy. Actually, as will be seen in § 16, the aspiration arose phonetically in the case of (2) as well.

Both examples cited by de Saussure involve $\underset{\frown}{\text{ə}}_2$ (cf. Gr. ἵστᾱμι and πίτνημι, **pet$\underset{\frown}{\text{ə}}_2$* being parallel to **plet$\underset{\frown}{\text{ə}}$*).

Let us cite some further important examples supporting this theory, which has not received the recognition it deserves:

The Indic 9th class verbs in *-th* (*math*, *grath*, *śrath*; we should add Avestan *maēϑ*) have roots ending in $\underset{\frown}{\text{ə}}_2$ as shown by their presents in *nā* (= Gk. νη/να; cf. Meillet, *Mélanges Vendryes*, p. 284). The quality of the $\underset{\frown}{\text{ə}}$ involved in some other verbs in *-th* cannot be established:

śnath : *śnáthihi*, *śnathiṣṭam*, *śnathitá-*, *śnáthitṛ-*

vyath: *vyathiṣi* (aor. *A.-Veda*), *vyathitá-* (*A. V.*), *vyáthiḥn.*

mith: *mithita-*

We are thus dealing with roots in **tā-* (full grade), **-th* (zero grade before vowel) < **-te$\underset{\frown}{\text{ə}}_2$*, **-t$\underset{\frown}{\text{ə}}_2$*. **-tā* might be a suffix (determinative), but this question will not interest us here.

[1] Here the symbol *ə* will do, even though it is not quite correct. – De Saussure used an apostrophe (cf. *Recueil d. p. s.*, p. 587) to emphasise that a consonantal *ə* ($\underset{\frown}{\text{ə}}$) was lost before a vowel (e. g., *pl̥t'ús*).

[2] The symbols $\underset{\frown}{\text{ə}}_1$, $\underset{\frown}{\text{ə}}_2$, $\underset{\frown}{\text{ə}}_3$ stand for Cuny's $ə_1$, $ə_2$, $ə_3$ (*l. c.*, p. 120, 123, 125).

In Indic, we find two traces of the suffix *-tā* denoting the agent (the Greek type ἀρότης, ἐρέτης etc., Balto-Slavonic **artājas*, Lith. *artójis*, OChSl. *ratajь*). This suffix was added directly to the root. The examples are Ind. *áti-thi-* 'guest' (properly 'voyager', from *átati*) and Ind. *me-thí* 'pole' from *minóti* 'fastens, props up'.

Avest. *astay-* does not prove that the Indo-Iranian inflection was originally that of an *i*-stem. Indeed, while the loss of *ə* in internal syllables is well attested, no certain instance has been found for final syllables. Yet there is such an instance. The inflection OIr. nom. sg. *ben*, gen. sg. *mná*, Goth. *qino*, OPruss. *genno*, OChSl. *žena* on the one hand, and Greek γυνή (Boeotian βανα) on the other, proves that the Indic stems *jáni-* and *gnā* as well as the corresponding Avestan stems (*janay* and *gənā*, *γnā*) were originally part of one single paradigm: nom. sg. **jánis*, acc. sg. **jánim*, gen. sg. **gnā́s*. This means that *i*, here representing $ə_2$, appears as *i* in Iranian. Nothing, then, speaks against an original **átə-tā* (the first *i* of *átithi-* is either $ə_1$ or $ə_3$; in Iranian, an interior *ə* is lost). *átithi-* has become a stem in *-i*, just as *jáni-* has. As for *methí-*, Latin *mēta* still reveals its original inflection.

The suffix *-tha-* of the superlative (*-iṣṭha-*), identical to the suffix *-tha-* of the ordinal numerals (OInd *caturthá-*, *pañcathá-*, *ṣaṣṭhá-*, *saptátha-*, Avest. *puxδō*, *haptaϑō*), identical also to the suffix *-thá-* in OInd. *katithá-*, *tatithá-*, *itithá-*, has probably sprung from the thematicisation of a suffix $*\text{-}te\underset{\frown}{ə}_2/\text{-}t\underset{\frown}{ə}_2$, cf. Greek -τα-τος, which has never been satisfactorily explained until now and which can be interpreted as $*\text{-}tə_2\text{-}tos$.

As regards the suffix *-thā* of the adverbs (cf. Ved. *ūrdváthā*, *viśváthā*, *pūrváthā*, *pratnáthā*, *ṛtuthā́*, derived from nouns; *íthā*, *tathā́*, *imáthā*, *eváthā*, *kathā́*, *yáthā*, *anyáthā*, derived from pronouns[3]), it is difficult not to connect it with the suffix *-tā* that serves to derive denominal abstracts. Phonetically, *-thā-* ($< *t\underset{\frown}{ə}_2\bar{e}/\bar{o}$) is the regular instrumental of *-tā* ($te\underset{\frown}{ə}_2$). *-thā* is to *-tā* as *-trā* is to *-tar*. This interpretation is borne out by the concurrence with regard to the characteristic place of the tone, which regularly falls on the element preceding *-tā* and *-thā*.

[3] Later we also find *amúthā*, *itaráthā*, *ubhayáthā*, *kataráthā*. Cf. also Avest. *aϑă*, *anyaϑā*, *aēvaϑa*, *kaϑă*, *yaϑă*, *hamaϑa*, *avaϑa*, *iϑă*, *kuϑa*.

The verbal nouns in *-atha* (masculines and neuters): *tveṣátha-*, *prothátha-*, *ravátha-*, *rakṣátha-*, *śamatha-*, *śapátha-*, *śvayátha-*, *śvaśátha-*, *sacátha-*, *stanátha-*, *stavátha-*, *carátha-*, *yajátha-*, *śayátha-*, *sravátha-*, *ayátha-*, *ucátha-*, *vidátha-*, *pravasathá-*[4]. The fixed stress (*-átha-*; *pravasathá-* is due to composition) and the aspiration point to a connection between *-átha-* and the suffix *-tā* of denominal abstracts. It is the same suffix in a thematic shape (*tā* : *-tha-* = *-tar-* : *-tra-* = *-tav-* : *-tva-*). It is true that the nouns in *-tā* are all denominal, whereas the derivatives in *-atha-* are all deverbal. But cf. *ráva-*, *śáma-*, *stáva-*, *cara-*, *śaya-*, *srava-*, *áya-*, action and agent nouns in *-a-*, which were certainly the point of departure for this formation (a form like **ayátā* could be derived from *áya-* just as *navátā*, *devátā* etc. were derived from *náva-*, *devá-* etc.). As, alongside these action and agent nouns, there were always verbal roots, a resegmentation **ay-átā* was the almost inevitable outcome (considering that a verbal stem **aya-* did not exist). In this way, the link between the denominal suffix *-tā* and the new deverbal suffix **-atā* was severed; the latter underwent thematicisation without the former being affected by it[5].

The explanation of unvoiced aspirates as clusters composed of an unvoiced consonant + $\underset{\sim}{a}_2$ (for in all clear instances it is only $\underset{\sim}{a}_2$, defined on the basis of $e + \underset{\sim}{a}_2 = \bar{a}$, that is involved) also provides us with a simple explanation for the passage of *ph*, *th*, *kh* to *f*, *ϑ*, *x* in Iranian. While the Iranian treatment of *bh*, *dh*, *gh* does not differ from that of *b*, *d*, *g*[6], aspirated and simple unvoiced stops yield different results in Iranian, both in intervocalic position and before a vowel (word-initially or after a liquid). Before consonants, simple stops become spirants (e. g., *-gt-* > *-kt-* > *-xt-* etc.). Now the change of *ph*, *th*, *kh* to *f*, *ϑ*, *x* does not differ from the change of *-pt-*, *-kt-*, *-tk-* etc. to *-ft-*, *-xt-*, *-ϑk-* etc. This proves that *ph*, *th*, *kh* behaved as clusters even after the breakup

[4] The *Avesta* has *mahrkaϑa-* (alongside *mahrka-*), (*xvāet-*) *vadaϑa-*, *varədaϑa-*, *zbaraϑa-*, *vasaϑa-*, *vaxšaϑa-*, *vindaϑa-*.

[5] The deverbal derivatives in *-athu-* are also built on **-átā* (*ejáthu-*, *kṣavathu-*, *nadáthu-*, *vepathu-*, *śvayathu-*, *stanáthu-*, *sphūrjáthu-*, all masculines). There are no Avestan formations in *-aϑu*.

[6] Except in those cases where Bartholomae's Law operates, but this process is pre-Iranian.

of Indo-Iranian unity ($p\underset{\frown}{ə}_2$, $t\underset{\frown}{ə}_2$, $k\underset{\frown}{ə}_2$). This also proves that, for all aspirated unvoiced stops, we must posit an origin analogous to that which linguistic analysis entitles us to ascribe to some of them[7].

§ 3. According to Mr. Cuny (*l. c.*, pp. 118–120), the rise of the Indian voiced aspirates in *máhi-*, *duhitár-*, *hánu-*, *ahám* (as opposed to the unaspirated voiced stops in European, cf. Gr. μέγας, θυγάτηρ, γένυς, ἐγώ) is analogous to that of the Indo-Iranian unvoiced aspirates, i. e., $\hat{g}h < \hat{g}\underset{\frown}{ə}$ (any $\underset{\frown}{ə}$ according to Cuny). Now *máhi-* and *duhitár-* contain, in all probability, an $\underset{\frown}{ə}_2$ (cf. the Greek α), but the *e* in γένυς and the *e/o* in ἐγώ (Ind. *ahám* goes back to *eĝh* + *em*, cf. *mām* < *me* + *em*; *idám* = Lat. *id-em*; OChSl. *azъ* < *ēĝh* + *om*) exclude the presence of a preceding $\underset{\frown}{ə}_2$[8]. One could as well regard the Indic aspirates as primary and the European unaspirated voiced stops as secondary (loss of aspiration before the consonants $\underset{\frown}{ə}_1$, $\underset{\frown}{ə}_2$). The data are too slender to provide a solution to this problem.

It appears, then, that the voiced aspirates are much older than the unvoiced aspirates.

§ 4. There is even more important evidence pointing to the existence of an antevocalic $\underset{\frown}{ə}$ in Indo-Iranian. In *I. F.* XXXII (p. 247ff.), Mr. Hirt has undertaken to prove that the Indic causatives have *ā* in open root syllables only in the case of *aniṭ* roots, whereas the causatives of *seṭ* roots always have *ă*. The examples below are those that can be found in the *Rigveda*; they certainly have a greater conclusive force than the material contained in the indices of Whitney's *Roots*, which is more complete but of various origin and date[9].

Aniṭ roots: *cātáya-* (5 occurrences), *cyāváya-* (17 occ.), *chādáya-*, *dhāráya-* (83 occ.), *nāśáya-* (7 occ.; *naś* 'perish'), *pādáya-*, *spāśáya-*, *pāráya-* (17 occ.), *yātáya-*(8 occ.), *yāmáya-* (2 occ.; the *Pada* has *ă*), *yāváya-* (7 occ.; 5 occ. *yaváya-*; in the post-Rigvedic period we find only *yaváya-*), *vāsáya-* (5 occ.; *vas* 'shine'), *vāráya-* (4 occ.; *vṛ*

[7] The spirantisation of voiced stops is not restricted to the aspirates *bh*, *dh*, *gh*; *b*, *d*, *g* are also subject to it. But this spirantisation, which operates in intervocalic position (as well as between a sonant and a vowel) is of a completely different nature.

[8] Which would have changed *e* to *a*.

[9] Instances where the long vowel is original are not cited.

'protect, cover'), *sādáya-* (17 occ.), *bhrāśáya-*, *bhājáya-*; cf. *cattá-*, *cyutá-*, *dhṛtá-*, *naṣṭá-*, *páttave*, *spaṣṭá-*, *partár-*, *yattá-*, *yatá-*, *yutá-*, *uṣṭá-*, *vṛtá-*, *sattá-*, *bhṛṣṭá-*, *bhaktá-*.

Seṭ roots: *janáya-* (96 occ.), *jaráya-* (6 occ.; once *jāráya-*; here as well, the *Pada* has *jaráya-*[10]), *damáya-* (2 occ.), *daráya-* (4 occ.), *panáya-* (9 occ.), *maháya-* (19 occ.), *raṇáya-* (10 occ.), *stanáya-* (20 occ.), *svanáya-*; cf. *jātá-*, *jarimán-*, *damitár-*, *dárīman-*, *panitár-*, *máhi-*, *ráṇitar-*, *stanihi*, *ásvanīt*. – As for *patáya-* (23 occ.; only 2 instances of *pātáya-*), we know, thanks to the evidence of Greek, that it is a *seṭ* root (πέπτωκα etc.). We also saw above that the roots of the causatives *pratháya-* (12 occ.), *śnatháya-* (4 occ.) and *vyatháya-* were *seṭ* roots.

Exceptions are few: we find, on the one hand, *āmáya-* (cf. also *pṛṣṭyāmayín-* and *anāmayítnú-*), *śvāsáya-*, *svāpáya-* (6 occ.), cf. *amīṣi*, *śvásiti*, *svápiti*[11], and, on the other hand, *namáya-* 92 occ.; cf. *náṁse*, *náṁsante*) and *haráya-* (*hṛtá-*, *áhārṣam*). But *svápiti* is probably an *i*-stem rather than a *seṭ* root, cf. OChSl. *sъpitъ* alongside *sъpati*, Lat. *sōpio* (4th conj.) as opposed to *moneo*, *doceo* etc. (cf. Persson, *Beiträge z. idg. Wf.* II, p. 747). The *Upaniṣads* and the *Sūtras* regularly present *nāmáya-*, and in the *Brahmaṇas* we find *hāraya-*; these forms are older than the corresponding forms of the *Rigveda*. Indeed, from the *Rigveda* onwards, the distribution we have just outlined survives only as a relic and is gradually blurred. This leads not only to such exceptions as *āmáya-* (*śvāsáya-*), *namáya-* and *haráya-*, but also to oscillations between *ā* and *ă*: *gāmáya-* (1 occ.), *gamáya-* (2 occ.); *śrāváya-* (4 occ.), *śraváya-* (3 occ.); *sāráya-* (1 occ.), *saráya-* (1 occ.). In the post-Rigvedic period we find only *gāmáya-*, *śrāváya-*, *sāráya-*. Similarly, *rāmáya-* (4 occ.) alongside *ramáya-* (4 occ.), which is probably due to the floating character of the root itself (cf. *ramṇắti* alongside an aorist in *-s*). Other instances are *draváya-* (1 occ.), *drāváya-* (3 occ.), where the *Pada* al-

[10] It is true that, in those cases where the metre allows us to choose between the orthography of the *Saṁhita* and that of the *Pada*, it is usually the former that proves correct.

[11] The causative of *av* 'help' being attested only in the imperfect, no inference can be drawn from *āvaya-*, which can be segmented either as *a* + *avaya* or as *a* + *āvaya-*.

ways has *ă*. We have *adhvānayat* in the *Saṁhita* and *adhvanayat* in the *Pada* (cf. the aorist *adhvanayiṣ-*).

In the *Atharvaveda* and the *Brahmaṇas* we find, moreover: *kṣārāya-*, *kṣāláya-*, *tānáya-*, *tāpáya-*, *trāsáya-*, *pācaya-*, *plāváya-*, *mānáya-*, *māráya-*, *yājáya-*, *vācáya-*, *vāpáya-*, *vādáya-*; *kramáya-*, *tamáya-*, *paváya-*. All these forms are regular, but a tendency to lengthen *ă* in open syllables is already manifest. We thus have *āśáya-*, *ānáya-*, *krāmáya-*, *grāháya-*, *grāsáya-*, *cāráya-*, *tāráya-*, *dāsáya-*, *dāráya-* (*RV dasáya-*, *daráya-*), *pāváya-*, *bhāváya-*, *vānáya-*, where one would expect *ă*; whereas we find only *yamáya-*, *rajáya-*, *madáya-* (*RV yāmáya-*, *mādáya-*) with *ă* instead of *ā*[12].

The classical language has, on the contrary, a certain predilection for *ă*: cf. *vasaya-*, *sthagaya-*, *sravaya-*, *stavaya-* (1 occ. according to Whitney). While the epics, whose language system is older than that of the classical language, have *cālaya-*, *māthaya-*, *dālaya-*, *smāraya-*, *plāvaya-*, the latter has *calaya-*, *mathaya-*, *dalaya-*, *smaraya-*, *plavaya-* (1 occ. according to Whitney). The grammarians offer *trāpaya-*, *skhālaya* as opposed to the classical *trapaya-*, *skhalaya-*. Finally, *dāraya-* and *bhrāmaya-* always have *ā* in the epics: the classical language oscillates between *ā* and *ă*. Wherever, then, the epics diverge from the classical language, the former have *ā* whereas the latter has *ă*. The only exception is the classical form *tvāraya-*, for which the epics have *tvaraya*.

It seems to us, therefore, that the principle of distribution posited by Mr. Hirt is correct, and we follow Brugmann (though the theory is not yet reflected in his Grundriss[2] II 3, p. 247–8) in assuming that the semantic difference (if there is any) between the forms with a long vowel and those with a short vowel (as contended by Delbrück and Mr. Meillet, *MSL* IX, p. 142ff.) rests on a late and exclusively Indic morphological utilisation of an originally purely phonetic fact.

Now this distribution attests to the existence of *ə̯* in the Indo-Iranian causatives; *seṭ* roots are treated in the same way as *aniṭ* roots with a closed syllable pattern. We have **ĝonéi̯e-* > *janáya-* just like

[12] As for the Avesta, it always has *ā* in open syllables. The sole exception is *pataya-*. Out of 49 examples, 25 have a causative value and 24 have an iterative value (Reichelt: *Aw. El.*, p. 118, note 2).

**u̯ortéi̯e-* > *vartáya-*. At the time when the radical vowel in *pādáya-* etc. was lengthened, *ə̯* still had the effect of closing the radical syllable and thus prevented lengthening. However one may choose to explain the length of the radical vowel in the Indo-Iranian causatives (Brugmann's Law, long grade, rhythmic lengthening), it is, at any rate, a purely Arian process which has nothing in common with the *ō* of certain Slavonic and Germanic causatives. Now as the loss of *ə̯* between a consonant and a vowel was necessarily subsequent to this process, it could not be prior to the Indo-Iranian period. As we saw above (at the close of § 2), it actually followed this period.

As for the passive aorist in *-i̯*, the only vestige of the original distribution is retained in the form *ajani* (8 occ., as opposed to one instance of *ajāni*). The generalisation of *ā* occurred prior to the *Rigveda*. One regularly finds *agāmi*, *atāpi*, *bhāri*, *ayāmi*, (*a*)*vāci*, *avāri* (*vṛ* 'cover'), *aśrāyi*, (*a*)*sādi*, *asāvi*, *astāvi*, *ahāvi* (*hu*), *akāri*, *pādi*, *śrāvi*, but also *tāri*, *śāri*, *atāri*.

Another category displaying a regular alternation *ā/ă* in the root syllable is the gerund in *-iya-*[13]. The *Rigveda* has few reliable instances. Still, one finds *-dhābhiya-* (29 occurrences as against 2 instances of *dábhiya-*), *anu-mā́diya-* (6 occ.), *vā́ciya-* (15 occ.), *sāciya-* for *aniṭ* roots and *bhaviya-* (2 occ. as against one instance of *bhā́viya-*), *háviya-* (30 occ.; *hū*), *ávyathiya-*, possibly *gadhiya-* (3 occ.; cf. the past participle *gadhita-*) for *seṭ* roots. *grāhíya-* is not a counterexample: the position of the tone points to its denominal origin (< *grābhá-*).

As for the difference between the 1st and the 3rd person of the perfect, we will discuss it elsewhere.

§ 5. In the second part of Indic *tatpuruṣa* compounds of the type *joṣa-vāká-*, the distribution of *ā* and *ă* is the same as in causatives. Suffice it to compare the data of the *Rigveda*:

Aniṭ roots[14]:

pṛ:	*su-pārá-* (8 occ.)
su:	*prātah-sāvá-* (3 occ.),
	sahasra-sāva- (2 occ.)

[13] Here we could also be dealing with a long grade vowel, cf. the Germanic facts (e. g., *hélia-* etc.).

[14] The roots are listed in the forms cited in Grassmann's dictionary.

	ā-sāvá-
	mayu-ṣāvín-
tan:	*ut-tānáˊ-* ('who stretches'; 7 occ.)
ram:	*ni-rāmín-*
vraj:	*pra-vrājá-*
dabh:	*nakṣad-dābhá-*
yam:	*su-yāmá-*
i:	*tryud-āyá-*
	aty-ā́ya-
	(but *ud-ayá-*)
ar:	*ud-ārá-*
	(but *sam-ara-* (3 occ.) and *sādhvaryá-* presupposing
	**sādhu-ará-*)
hu:	*ā-hāvá-* (4 occ.)
pak:	*ksīra-pāká-*
	śr̥ta-pā́ka-[15]
	vi-pā́ ka-[15]
yaj:	*pra-yājá-* (3 occ.)
	jīva-yājá-
	ati-yājá-
	anu-yājá-
sr̥:	*vi-sārá-*
	(but *punaḥ-sara-*)
svap:	*anu-ṣvā́pam-*[16]
tsar:	*ava-tsārá-*
kr̥:	*brahma-kārá-*
	medha-kārá-
	yut-kārá-
	has-kārá-
	vār-kāriyá-
	(but) *sū-karáˊ-* (2 occ.)
	kācit-karáˊ-[17]

[15] As for the accent cf. Wackernagel, *Altind. Gramm.*, II, p. 220 and 222ff.

[16] *svap* is an *aniṭ* root, as noted above in connection with *svāpáya-*.

[17] As for *suté-kara-*, cf. Wackernagel, *o. c.*, p. 210.

vac:	*sūkta-vāká-* (2 occ.)
	ṛta-vāká-
	upa-vāká-
	dhāra-vāká-
	cakra-vāká-
	joṣa-vāká-
	adhi-vāká-
	namo-vāká-
vad:	*saṁ-vādá-*
	bhadra-vādín-
	(but *evā-vadá-*)
śak:	*upa-śāká-*
bhaj:	*vi bhāgá-* (5 occ.)
vas (vestire):	*adhī-vāsá-* (3 occ.)
vas ('dwell'):	*pra-vāsá-*
vah:	*uda-vāhá-* (2 occ.)
	yūpa-vāhá-
	ripra-vāhá-
dṛ:	*ā-dārá-*
	ā-dārín-
sah:	*abhimāti-ṣāhá-* (2 occ.)
	vrāta-sāhá-
	sabhā-sāhá-
	satrā-sāhá-[18]
dhṛ:	*vidhắra-*[15]
śru:	*abhi-śrāvá-* (2 occ.)
pad:	*ni-pādá-*
man:	**abhi-mānā-* in *bahulắbhimāna-*
mad:	*upa-mắda-*
	pra-mắda-
	sadha-mắda- (14 occ.)[15]

[18] The Pada has *ă* everywhere. Note that compounds in *-sāhá-* might be mere thematicised varieties of *-sắh-*, Cf. *abhimāti-ṣāh-* (6 occ.), *satrā-sāh-* (6 occ.).

	Seṭ roots:
sū:	*pra-savá-* (15 occ.)
	ut-savá- (2 occ.)
	ap-savá-[19]
bhī:	*anābhayin-* (perhaps a root in long diphthong)
vṛ ('prefer, like'):	*dhārā-varán-*
svar:	*ni-svará-* (2 occ.)
	abhi-svará-
	ṛṣi-svará-
śvas:	*abhi-śvása-*
	(but *ucchvāsá-*)[20]
jū:	*mano-javá-*
	pra-javá-
hū:	*ā-havá-* (4 occ.)
	vi-havá- (3 occ.)
	indra-havá-
	pṛtanā-háva-[15]
stan:	*abhi-ṣṭaná-*
ji:	*vi-jayá-*
	saṁ-jayá-
nī:	*vi-nayá-*
	saṁ-nayá-
	(but *upānāyá-*)
pī:	*kat-payá-*
mur:	(*mṛṇáti*): *pra-maráṇ-*
	nār-maráṇ-
car:	*ku-caráṇ-* (2 occ.)
	dhanva-caráṇ-
	(but *vrata-cārín-*
	brahma-cārín-
	vi-cārín-)

[19] Other forms belonging here are *pra-savá-* (*RV* IX, 50, 2), which has nothing to do with the root *su*; *brahma-savá-* (IX, 67, 24; *brahmasaváiḥ punīhi naḥ* just as IX, 67, 25 *savitar ... pavítrena savéna ca punīhi mām*); perhaps also *vṛṣa-savá-*.

[20] The *Atharva-Veda* has *-śvasa-*.

star:	*pra-starā-*
	(the meaning of *viṣṭārā-* is uncertain)
kir:	*ā-karā-* (3 occ.)[21]
dhū:	*ā-dhavā-* (2 occ.)
dru:	*hāri-dravā-* (2 occ.)
hvṛ, *hru* (*hruṇā́ti*):	*upa-hvarā-* (5 occ.)
	prati-hvarā-
	cf. also *án-avahvara-*
śar:	*parā-śarā-* (2 occ.)
ran:	*á-viraṇa-* (which presupposes **vi-raṇā-*)
brū:	*anavabravā*
	(presupposing **ava-bravā-*)
bhū:	*pra bhavā-*
san:	*ahaṁ-sanā-*

The oppositions *ā-sāvā-* (< *su*) and *pra-savā-* (< *sū*), *ā-hāvā-* (< *hu*) and *ā-havā-* (< *hū*), *yut-kārā-* (< *kṛ*) and *ā-karā-* (< *kir*) are quite instructive.

It is interesting to note that the root *bhṛ* behaves like a *seṭ* root (cf. *bhárīman-*, *bharítra-*): *vṛṣa-bharā-*, *antarā-bharā-*, *saṁ-bharā-*. The fact that this root could be either *aniṭ* or *seṭ* was put to use for the purpose of differentiating *-bhāra-* and *-bhara-*: the former means 'weight', the latter is an action or agent noun. The same is observed in Iranian (s. below).

Counterexamples: *aniṭ* roots: *hi*: *aśva-hayā-* (2 occ.); *vṛ* ('cover'): *ni-varā-*, *vi-varā*; *tap*: *ā-tapā-*; *gam*: *saṁgamā-* (5 occ.), *araṁ-gamā-* (2 occ.), *maksuṁ-gamā-*; *cyu*: *apa-cyavā-*, *upa-cyavā-*, *bhuvana-cyavā-*; *sru*: *saṁ-sravā-*. *Seṭ* roots: *grabh-*: *hasta-grābhā-*, *uda-grābhā-*, *tuvi-grābhā-*; *pū*: *hiraṇya-pāvā-*; *tar*: *á-vitārin*[22].

[21] Cf. *ākāró vásvaḥ* and *ākāré vásoḥ* alongside *ā naḥ ... kira vásu*.

[22] Surprisingly, roots in long diphthongs have *ă*: *ru* (< **rē* + *u*), *ráuti*, aor. *rāviṣ-* (5 occ.): *vi-ravā-*; *yu* (< **yō* + *u*), aor. *yāviṣṭam*: *ni-yavā-*; *śī*: *proṣṭhe-śayā-*, *vahye-śayā*. Such cases call, of course, for a separate explanation. In the *Atharvaveda* and the *Brahmaṇas* we also find *-nava-*, from *náuti*, and *-hnava-*, from *hnáuti*.

In the *Atharvaveda* and the *Brahmaṇas* we find moreover: *-āja-*, *-āsa-* (from *as* 'be'), *-āsa-* (from *as* 'throw'), *-cāya-* (from *cinoti*), *-chāda-*, *-dāgha-*, *-yāsa-*, *-stāva-*, *-srāva-*, *-vāsa-* (*vas* 'glitter'); *-gara-*, *-dhama-*, *vlaya-*, *-maya-*, *-skava-*, all conforming to the rule. Yet there is a similar tendency to lengthen the vowel in open syllable as we noted for the causatives: *-krāma-*, *-dāla-* (= *-dāra-*), *-dhāva-*, *-vāya-*, *-vyātha-*, *-hāva-* (*hū*; *RV*: *-hava-*). In two instances we find *a* instead of *ā*: *-ada-*, *-śraya-*.

In the *Avesta*, the original state of affairs has become even more obscured than in the *Rigveda*, which is hardly surprising if we consider that Iranian has abandoned the distinction between *aniṭ* and *seṭ* roots in many instances where Indic has retained it. Only some two thirds of the examples follow the rule. But in view of (i) the uncertainty of the orthography, (ii) the huge chronological gaps between the different parts of the texts, and (iii) the unequal linguistic value of these text parts, the material seems to call for a detailed examination.

	Aniṭ roots[23]:
az:	*nav-āza-*
	gav-āza (Persian *gavāz*)
par:	OPers. *vayas-pāra-* (proper name)
pak:	*uruzdi-pāka-*
	nasu-pāka-
fras:	*pairi-frāsa-*
	(but *nasko-frasa-*
	maṯ.paiti-frasa-
vaz:	*upa-vāza-*
	fra-vāza
	xšviwi-vāza-
	upairi-vāza
tan:	*ustāna* (*zasta-*)
nas:	*aša-nāsa-*
	vahišta-nāsa-
	ahu-nāsa-

[23] The roots are cited in their full grade forms (following Bartholomae's dictionary).

vak:	*fra-vāka-*
	mąϑra-vāka- (proper name)
vap:	*vī-vāpa*
	Seṭ roots:
van:	*haϑra-vana-*
	(*druǰim-vana-*)
kan:	*fra-kana-*
tar:	*ţbaēšō-tara-*
	(but *čarətu-tāra-*,
	vī-tāra-)
gar:	*aspō-gara-*
kar (*caraiti*):	*pairi-kara-*
	fra-čara-
	aipi-čara-
xvan:	*paitišxvana-*
pat:	*kusrō-pata-*

The root *bar-* 'bear' has always *ă*, as in Indic: *gaδa-vara-*, *gaošā-vara-*, *nəmō-bara-*, *zaoϑrō-bara-*, *srvara-*, OPers. *aršti-bara-*.

Counterexamples: *aniṭ* roots: *vah* (vestire): *mašyō-vaŋha-*, *paiti-vaŋha-*; *tak*: *dərəzi-taka-*; *dab*: *haši-daba-*; *kay*: *vī-kaya-*; *ay*: *aipy-aya-*, *apairi-aya-*; *kar*: *raϑa-kara-*, *xvandra-kara-*, *maēγō-kara-*, *maoδanō-kara-*, *viδaēvō-kara-*, *fašō-kara-*, *raeϑwiš-kara-*, OPers. *ciya^h-kara-*, *zūra^h-kara-*, *pati-kara-* (Pers. *paikar*). – *Seṭ* roots: *zar*: *hv-āzāra-* (Pers. *āzār*; but *seṭ* in Indic *hṛṇīté*). As for the compounds with *vāra-* (*var* 'cover'), it is possible that they are derived from the *aniṭ* root attested in Ind. *vṛtá-*, *vāráya-* etc. rather than from the *seṭ* root contained in *vərənāiti*.

In many cases the quantity of the root vowel is uncertain, for if *ă* may be just a "short writing" for *ā*, the latter may be, in its turn, a substitute for *ă* after *y* or *v*, used to ensure the consonantal pronunciation of these semivowels (as in *-vāza-*, *-vāka-*, *-vāpa-*). In certain cases Modern Persian sheds more light on the matter: Persian *parvāz* guarantees the correctness of **pari-vāza-*. But before (final) *-r* there has been a secondary lengthening of short vowels in certain cases in Pehlevi, e. g., in *kadār* (Ind. *katará-*). Thus the Persian forms *-dār*, *-yār* do not

warrant the conclusion that Iranian once had a form *-*dāra*- corresponding to Ind. -*dhāra*-. Similarly, *pargār* (but Avest. *pairi-kara*-), *guδār* (root *tar*), *zār* (*caraiti*) have no conclusive force. -*vār* (*baraiti*) is certainly secondary: both Indic and Avestan have only -*b*(*h*)*ará*- in action and agent nouns. -*gār* alongside -*kār* might be old. Cf. Horn, *Grundriss d. ir. Phil.*, I, 2, p. 191f.

§ 6. Overall, in both categories, causatives and compounds, nearly 80% of the examples in the *Rigveda* follow the rule (*ā* in *aniṭ* roots, *ă* in *seṭ* roots), whereas only 20% run counter to it. The quantity of the root vowel is, in principle, phonetically determined. Yet it is possible and even probable that rhythmic factors have influenced the history of this distribution. The final vowel of the first component being short in the great majority of cases, there was a chance, in the case of a *seṭ* root, that the rule would result in a sequence of three short vowels, considering the variable quantity of the final syllable and of the root syllable of the first member. Now there was a means of countering this eventuality by putting the first member in the nasalised accusative form. But it is not this nasalised form that causes the shortness of the vowel in the second member (Wackernagel, *Altind. Gramm.* II, p. 204, § 87). On the contrary, it is the short vowel of *seṭ* roots that calls, in such cases, for the use of the accusative in the first term. Such forms as *rathaṁ-tará*-, *druhaṁ-tará*-, *dhanaṁ-jayá*- (6 occ.), *puraṁ-dará*- (11 occ.), *vājaṁ-bhará*- (3 occ.), *sutaṁ-bhará*- (2 occ.), *sahasraṁ-bhará*-, *pustiṁ-bhará*-, *hariṁ-bhará*-[24] are therefore legitimate. On the other hand, such forms like *janaṁ-sahá*-, *khajaṁ-kará*-, *abhayaṁ-kará*-, *yataṁ-kará*- are just imitations of this type, because the regular forms would be **janasāhá*-, **khaja-kārá*-, **yata-kārá*-, just as we have *vrāta-sāhá*- or *brahma-kārá*-, and with the exception of *abhayaṁ-kará* they would not contain sequences of three short vowels. As the rhythm required, the poets chose either –∪ or ∪– in the case of *aniṭ* roots. For *seṭ* roots, they had the choice of ∪∪ or –∪.

As for the lengthening of the final vowel of the first member, we propose to deal with it elsewhere. Here as well, the point of departure is purely phonetic.

[24] The same could perhaps be said of forms like *ṛṇaṁ-cayá*-, *vṛtaṁ-cayá*-, which belong to roots in long diphthongs. Cf. the note on p. 28 above.

§ 7. By establishing that both in causatives and in the second member of *tatpuruṣa* compounds of the type *joṣa-vāká-* an Indo-European *ŏ* appears as *ă* in *seṭ* roots, we gain not only an argument in favour of the theory of (consonantal) *ə*, but also two new categories of examples confirming Brugmann's Law[25] (in addition to the isolated forms which have hitherto been regarded as counterexamples to this law, and which are actually easily explained as *seṭ* roots: γόνος = *jánaḥ* and δόμος = *dámaḥ*). In the case of *rota* : *rathaḥ* and *socius* : *sakhā*, *th* and *kh* make position, as we saw above (§ 2). We agree with de Saussure (*Mémoire*, p. 95) in regarding thematic *ŏ* (*katará-*, *katamá-*) as constituting the only category of exceptions. It seems that in the case of ὁμός = *samáḥ* we are also dealing with a thematic *ŏ* because **somó-* allows of an analysis **so-* + *-mó-*: *so* is a demonstrative pronoun and *-mo* is the superlative suffix. Cf. French *même*, Italian *medesimo* etc. < **met-ipsissimus*, German *selbst* < *selbisto*. Etymologically, Indo-European **sem* 'one' (Gr. εἷς; Goth. *sums*; Ind. enclitic *samaḥ*) has nothing to do with **somó-*. Still, it is likely that the suffix *-mo-* contained in *somo-* ceased to be recognised as such at an early date (**so-mo-* > **som-o-*), so that a semantic connection between the two groups was inevitably established[26]. This new interpretation of *samáḥ* is far from certain. But the upshot is that we are not entitled to regard *samáḥ* as an obvious exception to Brugmann's Law; in fact, the only exception to it is the category of the thematic vowel. Such Greek doublets as ὄπατρος = ὁμόπατρος; ὄζυγες = ὁμόζυγες (Hesychius), where we find **so* and

[25] Brugmann's Law runs as follows: In Arian, an Indo-European *ŏ* alternating with *e* yields *ā* in open syllables and *a* in closed syllables. It is clear, a priori, that the scope of the *ŏ* of Greek, Latin etc. does not necessarily coincide with that of Indo-Iranian *ā*, because there is every chance of their having been extended or restricted in the course of the history of the individual languages.

[26] It is conceivable that the pronominal forms *imám*, *imắm*, *imáu*, *imé*, *imắni*, *imắḥ* (and the corresponding Iranian forms), rather than being, as hitherto assumed, built exclusively on a form like *im-ám*, reinterpreted as *imá-m*, go back in part to a stem **i-ma-* (expanded variety of **ei/i*), parallel to *sa-ma-*. Cf. the adverb *imáthā*. Finally, there is also a stem *a-má-* (expanded variety of **e*, which is found in Ind. *asya*, *asmai* etc., Lat. *em*, OHG genitive *es*), underlying *amắ* and *amắd* (Uhlenbeck: *Altind. Wb.*, *s. v.*).

**somo-* side by side, add strength to our interpretation. This cannot be said of OPers. *hamātar-*, which could be a shortening by haplology of **hamamātar-* (s. Bartholomae's Dictionary *s. v.*).

What remains to be clarified is why thematic *ŏ* should constitute an exception. Without endeavouring to offer a definitive solution, we think it possible to assert that the reason should be sought in the final position of the thematic vowel. Before suffixal elements and before the second member of a compound, this vowel could appear either as *ā* (before single consonants) or as *a* (before consonant clusters). This alternation was eliminated and *ă* was generalised. There were several reasons for this: (i) an *ĕ* alternating with *ŏ* always appeared as *ă*; (ii) *ă* could be introduced before single consonants, whereas *ā* could not be introduced before clusters. If, in historical times, Indic shows a tendency to introduce *ā* in open syllables (cf. what was said above with regard to causatives, passive aorists and compounds), it is never introduced in closed syllables. In principle, *ā* could occur before clusters only if it went back to an Indo-European long vowel; (iii) as the final vowel of the first member of a compound, *-ā* was reserved for feminines in *-ā*[27].

On closer examination, the apparent counterexamples to Brugmann's Law listed by Mr. Hirt on the basis of materials provided by J. Schmidt and Pedersen (*I. F.* XXXII, p. 237–241) can be divided into several groups:

(1) forms for which the fundamental vocalism *e* is not attested: Ind. *ápaḥ* : Lat. *opus*; Ind. *áruḥ* : ON *örr*; Ind. *aratníḥ* : Lat. *ulna*, Goth. *aleina*; Ind. *avá-* : OChSl. *ovъ*; Ind. *áviḥ* : Greek οἶς, Lat. *ovis* etc. Ind. *pátiḥ* : Gk. πόσις, Lat. *potis*; Ind. *gávā*, *gáve* : Gk. βοός, βοΐ; Ind. *ánaḥ* : Lat. *onus*; Ind. *bhágaḥ* : OChSl. *nebogъ*.

(2) forms with *seṭ* roots (and therefore with closed syllables): Ind. *dámaḥ* : Gk. δόμος, OChSl. *domъ*, Lat. *domī* = Ind. *dáme*; Ind. *gáyaḥ* : Serb. *gôj*; Ind. *bháraḥ* (s. above, in connection with the type *joṣa-*

[27] Let us note in this connection that *katamá-* is not a derivative based on *ka-*, but a compound having *ka-* as its first member. As is known, Vedic superlatives in *-tama-* are treated as compounds: a caesura may intervene between the stem and *-tama*.

vāká-) : Gk. φόρος; Ind. *abhi-ṣṭanáḥ* : Gk. στόνος; Ind. *táraḥ*, *taráḥ* : Gk. τορός; Ind. *svaráḥ* : OE *andswaru*; Ind. *pra-daráḥ* : Gk. δορός, Lith. *nuõdaras*; Ind. *pra-staráḥ* : OChSl. *prostorъ*; Ind. *bhayám* : OChSl. *bojaznь*; Ind. *grábhaḥ*, *grahaḥ* : Latv. *grabas*; Ind. *ramaḥ* : Lith. *rãmas*; Ind. *stabhāy-*[28] : Latv. *stabs*; Ind. *abhi-caraḥ* : Gk. ἀμφίπολος, Lat. *anculus*.

(3) forms where the syllable is closed by an unvoiced aspirate: Ind. *ráthaḥ* : Lat. *rota*, OHG *rad*; Ind. *sákhā* : Lat. *socius*; Ind. *nakhám* : OHD *nagal*; Ind. *śapháḥ* : OChSl. *kopyto*.

(4) forms of the type *vaha-* (*aniṭ* roots), which Hirt compares to the Slavonic and Greek forms of the type *vozъ*, φορός: No. 36: Ind. *ghanáḥ* : Gk. φονός; No. 38: Avest. *taka-* : OChSl. *tokъ*; No. 42: Ind. *spaśáḥ* : Gk. σκοπός; No. 43: Ind. *sravaḥ* : Gk. ῥόος; No. 46: Ind. *váhaḥ* : OChSl. *vozъ*, Gk. ὄχος; No. 47: Ind. *havaḥ* : Gk. χοή; No. 48: Ind. *saváḥ* : OHG. *sou*; No. 50: Ind. *vi-kṣaráḥ* : Gk. φθόρος; No. 51: Ind. *apacyaváḥ* : Gk. -σόος; No. 55: Ind. *saráḥ* : Gk. ὀρός; No. 57: Ind. *páraḥ* : Gk. -πορος; No. 59: Ind. *-gamaḥ* : Lith. *ãpgamas*; No. 60: Ind. *maraḥ* : Lith. *mãras*; No. 61: Ind. *-naśaḥ* : Lith. *sąnašai*; No. 63: Ind. *sáhaḥ*, *-saháḥ* : Lith. *sãgas*, *sagà*; No. 64: Ind. *-sacaḥ* : Lith. *pėdsakas*.

Without proffering any judgement on the well-foundedness of these comparisons, which involve morphologically dissimilar formations, we want to say that none of these cases actually contradicts the law. Thus, as 36, 42, 50, 60, 61 and 64 are nowhere attested as parts of *tatpuruṣa* compounds of the type *joṣa-vāká-* in the *Rigveda* (or in the Avesta, in the case of 38), it cannot be asserted that in compounds they would not have the *ā*-vocalism that corresponds to the *ŏ*-vocalism of the second members of compounds in Greek. This should be noted as we have reason to believe that the Greek type φορο- and the Slavonic type *-borъ* were abstracted from compounds (Hirt, *l. c.*, p. 304; *Idg. Gr.*, II, p. 179)[29].

Nos. 46–48, 55, 57 and 63, which show *ă*, appear with *ā* in compounds in the *Rigveda*.

[28] The palatal sound may be due to analogy.

[29] *ghanáḥ* may represent *$*g^{\mu}h_{e}nó$-.

Nos. 43, 51 and 59, which appear with *ă* in compounds, have already been mentioned among the exceptions while discussing compounds of the type *joṣa-vāká-* (§ 5)[30].

(5) a thematic or final vowel is involved: Ind. *bharamānaḥ* : Gk. φερόμενος; Ind. *aná-* : OChSl. *onъ*, Lith. *anàs* (*e/o* + *no-*); Ind. *práti* : Gk. πρότι (*pro-ti*); Ind. *samáḥ* : Grk. ὁμός, Goth. *sama* (*so* + *mo-*); Ind. *kadā́* : Lith. *kadà*; Ind. *kataráḥ* : Gk. πότερος; Ind. *káti* : Lat. *quot*, Gk. πόσος; Ind. *táti* : Lat. *tot*, Gk. τόσος; Ind. *táyoḥ* : OChSl. *toju*; Ind. *prá* : Gk. πρό; Ind. *prabhúḥ* : Lat. *probus*; Ind. *sarvátāt* : Gk. ὁλότης, OChSl. *dlъgota*; Ind. *vratám* : OChSl. *rota*.

(6) the following comparisons are uncertain or fallacious: Ind. *maṇiḥ* : Lat. *monile*, OE. *mene*; Ind. *prapitvám* : Lat. *prope*; Ind. *dábhaḥ* : Gk. τόφος; Ind. *tánam* : Lith. *tãnas*.

Thus, out of Hirt's 67 comparisons, the only ones that stand up as running counter to Brugmann's Law are: No. 9: Ind. *dvayáḥ* : Gk. δοιός, OChSl. *dvoji*; Nr, 14: Ind. *rásaḥ*, *rasā́*: Lith. *rasà*, OChSl. *rosa*; No. 17: Av. *staman* : Gk. στόμα; No. 19: Ind. *śákr̥t* : Gk. κόπρος.

§ 8. If *ə̯* was lost between a consonant and a vowel after the period of Indo-Iranian unity, it is *a priori* likely that in this period it still existed in intervocalic position. Such Rigvedic forms, postulated on the basis of the metre, as *r̥ta-jñáaḥ* (nom. pl.), *gopáaḥ* (nom. pl.), *tanū-páam* (acc. sg.), *ratha-práam* (acc. sg.), *gopáā* (dual), *kakṣiya-práā* (dual)[31] cannot be explained as instances of secondary metrical licence, because the decomposition of the forms *-jñāḥ*, *-pāḥ*, *-pām*, *-prām*, *-pā*, *-prā* etc. in the strong cases (and only the strong cases are involved here)[32] could only have yielded **jñā-aḥ*, **pā-aḥ*, **pā-am*, **prā-am*, **pā-ā*, **prā-ā*, with the strong shape of the root. The facts of the *Rigveda* are easily explained on the assumption that they contain **ĝnéə̯$_1$es* (*ĝnē* < *ĝneə̯$_1$*), **péə̯$_3$es* (*pō* < *peə̯$_3$*), **peə̯$_3$m̥*, **pleə̯$_1$m̥* (*plē* < *pleə̯$_1$*), **peə̯$_3$ō*, **pleə̯$_1$ō*.

[30] It must be added that in some of the Indic forms listed in groups 2–4, *ă* may go back to Indo-European *e*.

[31] Other examples in Arnold, *o. c.*, p. 90.

[32] Cf. Arnold, *l. c.*: "This restitution is frequently required in the *nom. acc. m. f. of all numbers* in the declension of radical stems in *ā*, *a*."

The same can be said of such verbal forms as *bhắsi* (to be read *bháasi*) < **bheə̯$_1$esi*, *yāsi* (to be read *yaasi*) < **yeə̯$_2$esi*, *yāti* (*yaati*), *yắnti* (*yáanti*), *yắ ntam* (*yáantam*), *yātáḥ* (*yaataḥ*; the accent follows the pattern of the athematic inflection). In all instances, forms of the thematic conjugation are involved. Cf. also the forms of *gā*, *dā*, *dhā*, *pā* ('keep'), *pā* ('drink'), *prā*, *sthā* (Arnold, *o. c.*, p. 91).

After the loss of *ə̯*, the uncontracted forms continued to exist for a certain time, and poetic usage adopted them and handed them down to an epoch in which the spoken language had lost all traces of the original state of affairs. This is confirmed by the fact that these forms occur only in the older parts of the *Rigveda*[33]. With regard to their phonetic structure, they behave like the acc. of the 1st person singular pronoun *mām*, which is to be read *ma-am* in ten places (Arnold, *o. c.*, p. 100), as its etymology requires (**me* + particle *em*).

§ 9. The acc. sg. *pánthaam* (4 occ.) and the nom. pl. *pánthaaḥ* show that this explanation of *aa* and the explanation of the unvoiced aspirate (*tə̯*) lend each other mutual support. *th* is regular in the weak cases: *pathắ*, *pathí*, *patháḥ*, *pathé*, *pathắm*, and also, as we will see in § 16, in *pathíbhyām*, *pathíbhyaḥ*, *pathíbhiḥ*, *pathíṣu*. *aa*, on the other hand, is regular in the strong cases *pánthaam*, *pánthaaḥ*, *-aə̯am*, *-aə̯as* being parallel to *-ắnam*, *-ắram*, *-ắnaḥ*, *-ắraḥ* in the inflection of stems in *-n*, *-r*. We are therefore dealing with a stem in *-eə̯/-ə̯* rather than with a stem in *ĕi*, as Hirt (*Indogerm. Gramm.* II, p. 209) proposes. In *pathíbhyām*, *pathíbhyaḥ*, *pathíbhiḥ*, *pathíṣu* we are dealing with a vocalic *ə* rather than with *i*. The gen. pl. *pāthīnắm* (ἅπαξ, as against 4 instances of *pathắm*) is obviously built on these forms[34].

The quality of the *ə̯* in *pánthāḥ* is unknown. Until the contrary is proved, we must posit *ə̯$_2$*, which is involved in all clear cases of aspiration. This applies also to this word's twin *sákhā*, Avest. *haxa*, OPers. *haxā*(*maniš*), which can thus be connected with the root **seqᵘ* (*sácate*, ἕπομαι, *sequor*), because its aspiration does not belong to the root but

[33] Cf. Arnold, *o. c.*, p. 103: "In the *earliest parts of the Rigveda*."

[34] A correct analysis of the inflection of *pánthā* (except for the aspiration and the *-aa-* of the strong cases) can already be found in Pedersen *K.Z.* 32, p. 269. *-i* < *ə* was reinterpreted as an original *i*. A similar development is observed in compounds in *-sani*, *-dari* etc.

originates from *k* (*q*^{u}) + *ə*$_2$. In order to account for Greek ἀοσσέω and Latin *socius*, we must recognise the *i* of *sákhibhiḥ* etc. as an Indo-European *i*. The inflection is then easily explained: *sákhye* etc. < **sakəiai* etc.; *sákhibhiḥ* etc. < **sakəibhis* etc.; the aspiration of the strong cases is borrowed by the weak cases.

mánthām is exactly parallel to *pánthām*.

But *sákhā* has its counterpart as well. Avest. *kavay-* (cf. Bartholomae, *Grundriss d. ir. Phil.* I, 1, 108; *Altir. Wörterbuch,* column 442) has a nom. sg. *kavā* (*Y* 44,20; 46,14; 51,16; 53,2 and several instances in the newer *Avesta*). The acc. sg. *kavaēm* (*Yt* 19,71; 3 occ.) could therefore go back to **kavāyam* rather than being a misspelling of **kavim*. Indic *kavi-* reflects a shift to the *i*-stems.

The acc. sg. *máhām*, the gen. sg. *maháḥ* and the nom. sg. neuter *máhi* stand in a mutual relationship exactly parallel to that of acc. sg. *pánthām*, gen. sg. *patháḥ* and instr. pl. *pathíṣu*.

In a similar way, it is likely that the **ā* of Lat. *rota* corresponds to Ind. *ā* in *pánthāḥ*, whereas the *i* of *pathíṣu* etc. has its pendant in the *i* of *udā-rathí-*, *sárathi* (*suṣārathi-*, *índra-sārathi-*). This would provide us with an explanation for the aspirate of *ráthaḥ*, which results from thematicisation (**rotə*$_2$*o-*) of an original **roteə*$_2$.

It is not excluded that alongside stems in -*ə*$_2$ there were also stems in -*ə*$_1$, of which Latin *sedēs*, *segēs* etc. would be palpable vestiges. In *sedĭs*, *sedī*, *sedĕ*, *sedum* (Cicero, *Sest.* 45) we have archaic forms whose *ə*$_1$ was lost before a vowel. These stems in -*eə*$_1$/*ə*$_1$ correspond exactly to the stems in *-er/-r*: *fratrĭs*, *fratrī*, *fratrĕ*, *fratrum*. If we compare this morphological type to the type *agricola*, discussed by de Saussure in *Mélanges Havet* (*Recueil d. p. s.*, p. 585), we see that they differ with regard to two details: (i) in *agricola* the *ə* belongs to the root, whereas in *sedēs* it belongs to the suffix; (ii) in the strong cases of the type *agricola* the *ə* was vocalised (> *ə* > *ă*), whereas in the strong cases of *sedēs* the suffix was in the full grade (-*eə* > *ē*), whence the divergent development of the two paradigms[35].

[35] As for the Greek type πειθώ, it allows of a threefold explanation: (i) suffix *e* + *ə*$_3$ = *ō*; (ii) *o* + *ə*$_1$ = *ō* (which is to *e* + *ə* = *ē* as *-er-* is to *-or-*); (iii) *o* + *ə*$_2$ = *ō* (with *o*-grade of the suffix *-ā*, cf. φᾱμί, φωνή; ἔβᾱ, βωμός). The first of these hypotheses is rather unlikely, as it would involve an *e*-grade in two successive syllables.

§ 10. Among the other forms cited by Arnold, the following deserve special attention:

(i) *bhāḥ* (to be read *bháaḥ*), which is a regular neuter of the type γένος (**bheH$_1$os*; **bheH$_1$* > **bhē* 'glitter'). Thrice we find an instrumental *bhāsā́ bhaasā́* (with desinential stress, which is not astonishing if we consider that in the contracted form *bhāsā́* (6 occ.) the accent behaves as in a radical noun: a contracted stem like *bhās* is no longer analysable[36]. It should be added that Grassman's accentuation (*dáasvat-*, *bháasvat-*, *bháaḥ*) is more correct than Arnold's (*o. c.*, p. 92; *daásvat-*, *bhaásvat-*, *bhaás-*).

(ii) *vā́ta-* (to be read *váata-*) < **veH$_1$n̥to* < **veH$_1$ont-*, thematic form of the participle of **veH$_1$* = **vē* 'blow'. The trisyllabic value of this word is still attested in Avestan (*Y.* 44,4). **vaata-* is important for the relative chronology of the loss of intervocalic *H*: it can have occurred only after the change of *n̥* to *a*, and cannot therefore have been prior to the Indo-Iranian period. Cf. also the inflection of the present participle of roots in (Indic) *-ā*: *bhān*, *bhātáḥ*. This inflection is not analogical, as Bartholomae believed (*Grundriss d. ir. Phil.* I, p. 98; by analogy with *sán*, *saták etc.*), but purely phonetic: **bheH$_1$onts*, **bheH$_1$n̥tos*[37]. Cf. also the type *jāta* < **ǧ$_e$naH$_1$to-* or **ǧn̥H$_1$to-*[38], where *a* (< *n̥*) + *H$_1$* > *ā*. The acc. pl. of *-ā*-stems is regularly **-aH$_2$n̥s*, which yields *-aHas* > *-ās* in Indo-Iranian. What is involved here is obviously not the loss of *n* before *s* in an original **-āns* that has never existed.

In all these cases, the European languages (even Greek, where *n̥* > α) regularly have nasals. Cf. Lat. *vĕntus*, Greek ἀϝεντ-; the group -ανα-, corresponding to Indic *ā*; -ανς in the acc. pl. of *-ā*-stems, also attested in Italic and in the nasal of Lith. *gerą́sias*, Slavonic *dušę*. However one may choose to explain the Gothic form *gibos* (acc. pl.), it is completely powerless to prove the alleged loss of a nasal in the face of the unanimous evidence of Indo-Iranian, the classical languages and

[36] The same is observed in certain verbal forms, s. above in connection with *yātáḥ*.

[37] In the *Rigveda* we find, moreover, present participles of *sthā*, *snā*, *pā* ('keep'), *pā* ('drink') and *yā*.

[38] The difference is purely graphic and corresponds to that between **tn̥to-* and **t$_e$nto-*, since *H* is a consonant.

Balto-Slavonic. The phonetically regular reflex would be **gibans* (just as the regular reflex of **veə̯$_1$n̥tos* is *winds)*. One could, of course, assume a differentiation of the masculine (*dagans*) and the feminine forms (**gibans*). The coincidence of the nom. and acc. sg. (*giba – giba*) could have been the starting point for this process (*gibos – *gibans > gibos – gibos* by analogy with *giba – giba*)[39].

This last series of facts proves (i) that the loss of intervocalic *ə̯* was subsequent to the breakup of Indo-European linguistic unity, but prior to the change of *n̥* to α in Greek; (ii) that the Greek change of *n̥* to α was unconnected with the analogous process observed in Indo-Iranian, where the loss of *ə̯* occurred after the change *n̥ > a*[40]; (iii) that the alleged shortening of *-āns* to *-ăns* and the alleged loss of *n* in *-āns* (> *-ās*) can simply be explained as a consequence of the loss of intervocalic *ə̯*.

§ 11. The contraction resulting from the loss of *ə̯* in Indo-Iranian may yield not only a long vowel but also a diphthong, either rising (a) or descending (b).

(a) from the morphological point of view, the root nouns in *-ī*, *-ū* differ in no respect from the root nouns with internal sonants (type *mud- or vṛt-*).

dhī = dh-i-ə̯;	instr. sg. **dhiə̯á́* (like *vṛtá́*)	*> *dhi-á́ > dhiyá́*
bhū = bh-u-ə̯;	instr. sg. **bhuə̯á́*	*> *bhu-á́ > bhuvá́*
gīr = g-ṛ-ə̯;	instr. sg. **gṛə̯á́*	*> *gṛ-á́ > girá́*

The question arises how much reality there is behind the stages **dhi-á́* and **bhu-á́*. Could one not regard *v* and *y* as phonetic reflexes of *ə̯*?[41]This question is difficult to decide; just as it is impossible to decide whether *v* in Old French *rueve* (< Lat. *rŏgat*) etc. goes back to Latin *g* or whether it is just a glide.

[39] The same is observed in Scandinavian: masc. pl. *-ar*, *-a*; fem. pl. *-ar*, *-ar*. West Germanic has gone even further: nom. pl. masc. = acc. pl. masc.; OHG *taga*, *blinte*.

[40] To the examples already cited we should add the plural of neuters in *-n*: *n̥ə̯$_2$ > ā* just like *a + ə̯$_2$ > ā* in the case of neuters in *a* (*e/o*).

[41] Cf. also the difference between *svāná-* (middle participle of the root *su*) and *suvāná-* (< *suə̯āná-*), middle participle of the root *sū*, *RV.* VII, 38, 2d.

The same can be said of disyllabic and polysyllabic stems in *-ī* and *-ū*. The inflection of *nadī́* - and *tanū́*- is, in principle, analogous to that of *harít-* and *marút-*. This results in a series of exceptions to Sievers' Law[42]: the instrumentals *áśvavatiyā* (1 occ.), *tmániyā* (1 occ.), *dávidyutatiyā* (1 occ.), *návyasiyā* (1 occ.), *brahmaṇiyā́* (1 occ.), *róhiṇiyā* (1 occ.), *sṛ́ṇiyā* (2 occ.), *háriṇiyā* (1 occ.), *śámiyā* (2 occ.), *śímiyā* (2 occ.), *śáciyā* (13 occ.); the locatives sing. *śáciyām* (1 occ.) and *śámiyām* (1 occ.); the locative dual *aráṇiyoḥ* (1 occ.).

These forms are fossilised relics of a development stage of the language in which, after the loss of intervocalic *ə̯*, there was still a hiatus rather than a diphthong. Contraction is even rare in the *Rigveda*.

When *i* and *u* bear stress, the younger language offers a rising diphthong with *svarita* (except after a consonant cluster). But two thirds of the contracted forms attested in the *Rigveda* occur in the more recent parts of the text (Arnold, *o. c.*, p. 83)[43].

(b) *deṣṇá-* (5 occ.; trisyllabic) < **deə̯$_3$isno-*
déṣṭha- (1 occ.; trisyllabic) < **déə̯$_3$istho-*

Also trisyllabic are *dhéṣṭha-* (3 occ.), *yéṣṭha-* (3 occ.); *jyéṣṭha-* (18 occ.). Altogether different is the structure of such forms as *préṣṭha-* (13 occ.; trisyllabic < **préi̯ə̯istho-*), *śréṣṭha-* (9 occ.; < **kr̂ei̯ə̯istho-*), *pretā́raḥ* (1 occ.; for **prayitā́raḥ*); *ne-* (10 occ.; for **nayi-*, from the root *nī* 'lead').

gómān (3 occ.)
gójāta- (2 occ.) } disyllabic *go* < **g$^{\text{u}}$eə̯$_3$u-*
gopīthā́ya (1 occ.)
náuḥ (to be read *nauḥ*) < **neə̯$_2$us.*
maghónaḥ (2 occ.)
maghonoḥ (1 occ.) }
maghonīḥ (1 occ.)

[42] *-iy-*, *-uv-* after long syllables, *-y-*, *-v-* after short syllables.

[43] The *-iy-* of *rájiyā*, *sumatiyā́*, *suṣṭutiyā́* has no historical foundation, for these are *ĭ*-stems. In this case, the licence extends beyond its rightful limits. As for *tvíṣiyā* (*RV.* X, 89, 2d.), it seems to belong to a stem **tviṣī-* existing alongside *tviṣi-* and attested in the form *tvíṣīmat-*.

o is disyllabic in all these cases, which is the regular development. The suffix *-van-* actually goes back to *-ə̯u̯en-* (cf. the consistent lengthening of the preceding vowel). The weak form of *m̥gh$^{e}/_{o}$-ə̯u̯en-* (*maghāvan*; $^{e}/_{o}$ + ə̯ yields a long vowel before consonantal *u̯*) is thus *m̥gh$^{e}/_{o}$-ə̯un-*, whence, after the loss of intervocalic ə̯, Indo-Iranian **magha-un*, with a diphthong consisting of heterosyllabic components[44].

As regards the ə̯$_3$ of *gáuḥ* and the ə̯$_2$ of *náuḥ* s. § 13. Arnold introduces orthographic corrections everywhere (*gava-*, *maghāva-*, *nāva-*), which seems inadmissible to us.

The divergent results of contraction (*au* in *náuḥ*, *o* in other cases) can be explained, in our opinion, by a chronological difference. The late contractions of Indic yielded *ai* < *a* + *i*, *au* < *a* + *u* (cf. the imperfects *áicchat*, *áucchat* from *iccháti*, *ucchátī*) because the original **ai*, **au* had already become monophthongs (*e*, *o*), whereas the original **āi*, *āu* had already shortened their first component and had become *ă* + *i*, *ă* + *u*. It is easy to understand why contraction occurred earlier in polysyllables than in disyllables (**ne*ə̯$_2$*us*). Cf. the opposition between *go-* (< **g*^{u}*e*ə̯$_3$*u-*) in compounds and *góbhyām* on the one hand and *gau-* in *gáuḥ* (< **g*^{u}*e*ə̯$_3$*us*) on the other.

§ 12. For the hotly discussed question of long diphthongs, a ready solution can be provided within the theory of consonantal ə̯. There are two kinds of long diphthongs: those in which the first component arose from contraction or represents the long grade of a short vowel (e. g., *-ōi* < *o* +*ei*, *ai* in the dat. sg. of *o*-stems; long diphthongs arising in *vr̥ddhi*-formations), and those containing an original long vowel. Now as in the latter group the long vowel is equivalent to *e*/*o* + ə̯, the root takes, in the full grade, the following shape: **pe*ə̯$_3$*í-* ('keep'; the *i* is syllabic), **ste*ə̯$_2$*u-* (in Lat. *instaurare* etc.). The alleged long diphthong is thus actually a *disyllabic complex*[45].

[44] *kṣoṇí* (trisyllabic) is probably also the feminine of a stem in *-van-*.

[45] Roots in long diphthongs, such as **pe*ə̯$_3$*i-*, are the only ones deserving the name of disyllabic roots. As is known, Mr. Hirt uses this term for *seṭ* roots (*ĝenə̯*$_1$, *gnē*) and for roots of the type *perk̂*, *prek̂*. The legitimacy of the use of this term rests, in his opinion, on the "bases" **ĝenē*, **perek̂*. But the only historically attested forms of these roots are monosyllabic (*ĝenə̯*, on the vocalisa-

As Mr. Persson has proved (*Beiträge z. idg. Wf.* II, p. 705 ff.), roots in long diphthongs are usually but expanded varieties of roots in long vowels (i. e., in $\underset{\frown}{ə}$). Alongside *$p\bar{o}\underset{\frown}{i}$ (= *$pe\underset{\frown}{ə}_3i$) and its alternating forms we find *$p\bar{o}$ (= *$pe\underset{\frown}{ə}_3$) with its zero grade *$p\underset{\frown}{ə}_3$. Therefore we cannot speak of the loss of $\underset{\frown}{i}$, $\underset{\frown}{u}$ before suffixal consonants (*$p\bar{o}tum$ < *$pe\underset{\frown}{ə}_3tum$ rather than *$pe\underset{\frown}{ə}_3itum$). An alternation $\bar{o}$: $\underset{\frown}{ə}_3$ in the non-expanded root corresponds to the alternation $\bar{o}\underset{\frown}{i}$: $\bar{i}$ of the expanded root.

The form *-$\bar{e}\underset{\frown}{i}$[46] can exist only before a vowel, because it is in this position that -$e\underset{\frown}{ə}\underset{\frown}{i}e/o$- regularly yields -$\bar{e}\underset{\frown}{i}e/o$-. If, on the contrary, the same group comes to stand before a consonant, $\underset{\frown}{i}$ must acquire the value of a vowel (with a degree of aperture greater than that of $\underset{\frown}{ə}$, v. § 16), and the result will be -$e\underset{\frown}{ə}i$- or, after the loss of intervocalic $\underset{\frown}{ə}$, a heterosyllabic complex *e-i* (*ei*) opposed, as such, to the original tautosyllabic $e\underset{\frown}{i}$. This heterosyllabic complex underwent contraction in all Indo-European languages, thus coinciding with $e\underset{\frown}{i}$ (except in Balto-Slavonic, where the opposition $e\underset{\frown}{i}$: *eï* survives in a difference of pitch), whence the well-known rule according to which a long diphthong is shortened before a consonant.

However, as we saw above, the long diphthong $\bar{e}\underset{\frown}{i}$ (with $\bar{e}$ arising from contraction or lengthening) should be distinguished from the "long diphthong" $e\underset{\frown}{ə}i$. Thus, Greek preserves diphthongs of the former type and "shortens" those of the latter. In *K.Z.* XXXVIII, p. 2ff., J. Schmidt argued against Brugmann[47] that long diphthongs were retained in Greek. According to Schmidt, the dative plural ending -οισι cannot go back to an instrumental ending *-*ois*: rather, it must be the reflex of a locative in -*oisi/u*, because in the dative sg. neither -$\bar{o}i$ (*o* + *ei* or *ai*) nor -$\bar{a}i$ (*a* + *ei* or *ai*) is shortened. This argument seems to be correct, because in all three cases we are dealing with diphthongs whose first element results from contraction (*-$\bar{o}is$ or *-$\bar{a}is$ < *o*, *e* + *eis* or *ais*? – in any case, the thematic vowel contributes to the length of the first element). Schmidt is also partly right in asserting (*l. c.*, p. 49), against Brugmann, that πλεῖστος did not arise by shortening from *πλήιστος. This is obvious

tion of $\underset{\frown}{ə}$ cf. § 16; *ĝnē*; *perk̂*; *prek̂*), whereas *$pe\underset{\frown}{ə}_3i$-, *$ste\underset{\frown}{ə}_2u$*- etc., which have the same grade as *ĝen$\underset{\frown}{ə}$*, *perk̂*, are disyllabic.

[46] Here, -$\bar{e}\underset{\frown}{i}$ stands for any long diphthong.

[47] Who allowed for cases of shortening, s. *Griechische Grammatik*, p. 71.

because, as we saw above, a form like *πλήιστος (with original *ē*) can never have existed. Indo-European had **pleə̯$_1$istho-*, attested in Vedic **pra-iṣṭha-* (written *preṣṭha-*, but trisyllabic). Avestan *fraēšta-* and Greek πλεῖστος derive from **pléïstho-* < **pléə̯$_1$istho-*)[48] rather than from **plaistos*, as Schmidt would have it.

Schmidt is wrong in contesting the antiquity of athematic optatives like γνοῖμεν, δραῖμεν, μιγεῖμεν. We are here dealing with regular reflexes of *-e̯ə̯$_3$i-*, *-e̯ə̯$_2$i-*, *-e̯ə̯$_1$i-*. From the identity of Vedic *jñeyā́ḥ* (*RV*. II, 10, 6) and Greek γνοί(*j*)ης it does not follow that a form like **ĝnoi̯ī̯ēs* should date back to Indo-European. In Indic as well, a form like **ĝne̯ə̯$_3$i̯ī̯ēs* could not have yielded anything else but *jñeyā́ḥ*[49]. As for the alleged shortening of the radical diphthong in sigmatic aorists, Schmidt rightly observes that we cannot speak of ηί > ει in ἔτεισα, ἔδειξα without having previously proved that the ε of ἔσσα, ἔλεξα, ἔπλεξα results from shortening of η; here we have, according to Schmidt, the full grade characteristic of the subjunctive, the future and, sometimes, the present.

As soon as one introduces a distinction between two groups of diphthongs (long diphthongs due to contraction or *vr̥ddhi*, e. g., in the sigmatic aorist, on the one hand, and diphthongs whose first element goes back to an original long vowel on the other), the answer will be the following. As for the former group, Schmidt was right: the length of the first element is preserved in Greek. As for the latter group, both adversaries were missing the point, because Greek ει does not, as Schmidt would have it, go back exclusively to Indo-European *e̯i̯*, nor does it, as Brugmann would have it, go back to either *e̯i̯* or *ē̯i̯*: it is the reflex of an *ei* that may be either tautosyllabic (*e̯i̯*) or heterosyllabic (*e-i*, *ei*)[50].

As early as 1889[51], Mr. Wackernagel assumed that the Indo-European contraction of a long vowel with *i*, *u* led to shortening of the

[48] Lat. *ploisumos*, OIsl. *flestr* go back to the *o*-grade. – The alternation *prāyaḥ*, *preṣṭha-* is also found in other examples, such as *(s)tāyuḥ*, *stāyáti* alongside *stenáḥ* etc.

[49] Cf. also Ved. *deyām* (to be read *da-i-yām*, *RV.* VIII, 1, 5) = Gk. δοίην; *dheyām* (*dha-i-yām*, V, 64, 4b) = Gk. θείην; *yāyām* (*ya-i-yām*, V, 64, 3b).

[50] I. e., it may go back either to *e̯i̯* or to *e̯ə̯i*.

[51] *Das Dehnungsgesetz der griechischen Komposita*, final part.

vowel. This is exactly what we have just stated with regard to long diphthongs: (initial) *-ā*^{x} + (initial) *i-* does not differ in any respect from a "diphthong *-ā*^{x}*i*" because in both cases we must posit *-a*^{x}*ə̯i-*. Cf. also OInd. *asau* < *so* + *u*, *sā* + *u* (*seə̯*$_2$*u*); the result is necessarily identical for both types[52]. Similarly, OPers. *h(a)uv* (m., f.), Avestan *hāu* (m., f.), and Greek οὗτος, αὕτη, where only a difference in vowel quality is left. In Indo-Iranian, the dual of nouns in *-ā* (**e$_2$*) shows an ending *-ai* (Ind. *-e*) going back to **-e$_2$ī* > *-aï*. Cf. Greek *ăi* in τιμαί (the pitch follows that of *-oî*), if this form really goes back to an old dual. The Indic gerunds in *-iya-* end in *-eya-* in the case of roots in *-ā*. As in this case the radical element normally appears with full grade, such forms as *déya-*, *khyéya-*, *méya-* must go back to **de$_3$-iy^{e}/$_{o}$-* (> **doi̯yo-*) etc.[53] And, finally, cf. Ind. *revant-*, which can only be explained as **re$_1$i-u̯ent-* (Ind. *rā́ḥ*, Lat. *rēs*).

There is no difference between the "shortening" established by Mr. Wackernagel and the "shortening of long diphthongs". Actually, the same phenomenon is involved in both cases, viz., the loss of intervocalic *ə̯*.

§ 13. We can now assess the diphthongs of *náuḥ* and *gáuḥ*. They belong to the latter of the above-mentioned groups because they are "shortened" in Greek (ναῦς, βοῦς). As for *náuḥ*, it has long been recognised that it is an instance of a "long diphthong" (cf. the gen. sg. νηός, Ind. *nāváḥ*[54]). The Indo-European form is **ne$_2$us* (disyllabic), and the old etymology connecting this word with **ne$_2$* = **nā* ('swim') is quite tempting, *pace* Boisacq (*Dict. ét. s. v.* ναῦς), who considers it obsolete (but cf. Ind. *plavá-* 'canoe', properly 'swimmer'). – *gáuḥ* has

[52] The diphthong resulting from contraction is *au* because the forms involved are disyllabic (**so-u*); cf. above in connection with *náuḥ* (= *ná-uḥ*).

[53] Alongside **pā́yiya-* (written *pā́yya-*) in *nṛ-pā́yya-*, *bahu-pā́yya-* (*pā* 'protect); *pūrva-pā́yya-*, *kuṇḍa-pā́yya-* (*pā* 'drink'), derived from the expanded root *pāy-* by means of the suffix *-iya-*, we find *-peya-* (*pā* 'drink'), based on the non-expanded root.

[54] In case forms with consonantal endings (*-bhyām*, *-bhiḥ*, *-bhyaḥ*, *-su*), Indic has *au*, which is due to the influence of *-āv-* appearing in other cases. It is the same analogical process that has given rise to Ionic νηυσί (as opposed to the regular ναυσί).

the inflection proper to *u*-stems: *góḥ*, *gáve*, *gávi* similar to *manyóḥ*, *manyáve*, *sūnávi* (Ved.). This also explains the accentuation, which is irregular if one regards this word as a root noun. In the forms mentioned here, the accent is on the suffix (*-eu̯*, full grade), whereas in the strong cases it falls on the root: *gā-uḥ*, *gā́-v-am* (here the root has the full grade while the suffix has zero grade). If we add Latvian *gùovs*, probably built on the accusative of a consonantal stem (Proto-Baltic **gōvin* = *gā́vam*), then we see that in the Indic paradigm the forms *gā́vam*, *gā́vau*, *gā́vaḥ* represent original long vowels. The long vowels found in Germanic (OHG *chuo*, OS *kô,* OE *cú*, OIsl. *kýr*) speak in favour of this assumption. Greek, Latin and Armenian (*kov*) have generalised the suffixal vowel of the oblique cases[55]. The Indo-European situation was thus as follows: nom. sg. **g$^{\mu}$éə̯$_3$us* (full grade of the root, zero grade of the suffix), gen. sg. **g$^{\mu}$ə̯$_3$éu-$^{e}/_{o}$s*[55] (zero grade of the root, full grade of the suffix)[56]. Boisacq's etymology (v. *s. v.*, < **g$^{\mu}$ō-* 'pasture') is therefore possible both phonetically and semantically (**g$^{\mu}$eə̯$_3$us* would be an agent noun like **neə̯$_2$us*). On the other hand, the connection between **g$^{\mu}$éə̯$_3$us* and Sumerian *gu* suggested by Gunther Ipsen (*I.F.* XLI, p. 175 ff.) is, in our view, unacceptable on phonetic grounds: the second element of the Indo-European root (*ə̯$_3$*) has no counterpart in Sumerian. Now the actual existence of this element must be recognised not only for the reasons expounded above (long root vowel, disyllabic value of *go* in certain compounds), but also for the purpose of explaining the *o*-colouring of the root vowel. As the Indo-European reflex of a Sumerian *gu*, one could hardly imagine anything else than **ĝeus* or **gaus*.

Between the inflection of **g$^{\mu}$eə̯$_3$us* and that of **neə̯$_2$us*, there is a twofold difference. First, in the oblique cases, the former has the full grade of the suffix, whereas the latter has zero grade. The opposition is similar to that between *śátroḥ* and *krátvā*, *śátrave* and *krátve*. It is just that in the case of **g$^{\mu}$eə̯$_3$us* and **neə̯$_2$us* we can still see the accentual difference accompanying the alternating grades of the suffix: in **g$^{\mu}$eə̯$_3$us*, the stress is on the suffix, in **neə̯$_2$us* it is on the endings. Secondly, in

[55] The *e* of the suffix *eu* changes to *o* after *ə̯$_3$*.

[56] Cf. the similar alternation in *jániḥ*, *gnā́ḥ*.

the same cases, the zero grade of the former word is g^{u}- (< *$g^{u}e_{2}$- before a vowel), whereas that of *$ne_{2}us$ is *nā*- (< *ne_{2}- before consonantal *u*). As we will see below (§ 18), *$n_{e}e$ is the regular weak grade of ne_{2}-[57].

The problem of *dyauḥ* (= Ζεύς) is more intricate. What we should try to establish here is whether we are dealing with an *u*-stem derived from the root **di* or with a root **diē*, an expanded variety of **di*. In other words, what should be found out is whether *dyauḥ* has the long grade or the zero grade of the suffix *u*. In Indic, *dyauḥ* shows two different declensions: one is concordant with that of *gáuḥ* (gen. sg. *dyóḥ*, nom. pl. *dyávaḥ* etc.), the other corresponds to that of root nouns of the type *mud*, *vṛt* (gen. sg. *diváḥ*, nom. pl. *dívaḥ* etc.). Neither of these paradigms is fully attested (Whitney, *Altind. Gramm.*, p. 126). Latin has inherited only the first paradigm (gen. *Iŏvis* etc.), whereas Greek has not only Ζεύς, Ζήν, Ζεῦ, but also Διός, Διί. The stem *d-i-u* which is at the basis of the latter declension is furthermore attested in **deiuo*- (Ind. *deváḥ*, Lith. *diẽvas* etc.). On the other hand, there is also a root **d-i-e* 'shine' (zero grade *dī*, s. Whitney, *Roots* 2 *dī*; full grades **deie*$_{1}$ in δέελος and **diē* < **die*$e_{2}$$_{1}$ in ἀρίζηλος). The form **diē*, expanded with the suffix *u*, would offer an explanation for the first declension of *dyauḥ*, i. e., the declension identical to that of *gáuḥ* (**diée*$_{2}$$_{1}$*us* parallel to **g^{u}e$e_{2}$$_{3}$us*; cf. also **dyaam* similar to **gaam*, both postulated on the basis of the metre of the *Rigveda*). The Greek paradigm would then be heteroclitic (**diē* + *u* and **di* + *u*). But the problem of the twofold paradigm of *dyauḥ* cannot be solved without a preliminary semantic investigation that would clarify the original relationship between both stems.

§ 14. Between consonants, the zero grade of the sequence -*e$_{2}$i*- will be -$_{e}$*$_{2}$i*-, which, after the loss of *e*, develops into (heterosyllabic) $_{e}ï$; this, in its turn, yields either $_{e}i$[58] or *ïï* (through assimilation; whence, through contraction, *ī*). The zero grade of a long diphthong will therefore normally be a long sonant, which has long been established by

[57] *rāḥ*, *rāyáḥ* is an *i*-stem exactly parallel to the *u*-stem *nauḥ*. Here as well, *rā*- attested in the weak cases goes back to *$r_{e}e_{2}$$_{1}$-, whereas the strong cases have *rā*- < *$re_{2}$$_{1}$-.

[58] European *ai* = Indic *ai*, hitherto erroneously interpreted as *ei*.

Mr. Schulze (*K.Z.* XXVII). But the current explanation of this long sonant ($\bar{\imath} < əi̯$, where *ə* would represent the zero grade of the long vowel) offers insurmountable difficulties, because $ai̯$ is also posited as a reflex of $əi̯$. According to our theory, a sequence $əi̯$[59] would be impossible because, of the two consonants involved, $ə̯$ and $i̯$, the one we would expect to vocalise is $i̯$. Our explanation of $\bar{\imath}$, on the other hand, presents no difficulty at all: (heterosyllabic) $_e ï$ yields *ii* exactly as the weak grade of heterosyllabic $ei̯$ (before a vowel) yields $ii̯$. In the sequence *-eə̯i-*, $_e$ may be lost in the same conditions in which $_e$ is lost between two consonants generally (in our case, between consonant and $ə̯$), i. e., in compounds and in sandhi after a final short vowel (the type Ind. *upabda*, Gk. ἐπίβδαι). In most instances, the two consonants would produce an unpronounceable initial cluster, so that we have only a small number of examples enabling us to posit a regular alternation $_e$ – zero. In our case, however (initial consonant + $_e$ + $ə̯i$-), $ə̯$ being lost before *i*, the form without $_e$ became phonetically possible in any position, and it could be generalised because there was no initial cluster. Indeed, it is known that $ĭ$, $ŭ$ as zero grades of long diphthongs are not rare.

The zero grade $\bar{\imath}$, $\bar{u}$ characteristic of *seṭ* roots originally differed from $\bar{\imath}$, $\bar{u}$ occurring as the zero grade of long diphthongs in that the former was monosyllabic ($\bar{\imath}$, $\bar{u} = ĭ$, $ŭ + ə̯$)[60] whereas the latter was disyllabic ($\bar{\imath}$, $\bar{u} = i + i$, $u + u$). Our theoretical deduction is confirmed by the trisyllabic value of the word *sū́ra-* (*su-u-ra-*) in six passages of the *Rigveda* (I, 71, 9b; 122, 15d; 149, 3c; VI, 48, 17c; 51, 2d; IX, 111, 1c). The long diphthong is attested in Greek *ἀϝέλιος and the acute pitch of Lith. *sáulė*.

§ 15. From what has been said until now, four important conclusions should be retained:

(1) The process of shortening of long diphthongs can be explained by the loss of intervocalic $ə̯$.

(2) The same explanation applies to the disyllabic value of certain *e*'s and *o*'s in the metrical text of the *Rigveda*.

[59] Actually, we are dealing with $_e i$.

[60] Hirt's notation (*pr$_e$i̯ətó-*, *mr$_e$u̯ətó-* > *prītá-*, *mrūtá-* but *dik̂tó-* > *diṣṭá-*) has no rational foundation, for it should be kept in mind that $ə̯$ is a consonant (*priə̯tó-* is parallel to *dik̂tó-*).

(3) This explanation also holds for the metrical rule *vocalis ante vocalem corripitur*. This metrical rule is of Indo-European date. Just as a final diphthong occurring before an initial vowel counted as a short vowel because the sonant belonged to the following syllable, a final long vowel, i. e., a short vowel + *ə̯*, became short before an initial vowel by the loss of *ə̯* which had become intervocalic.

(4) The only type of roots that can rightly be called disyllabic is that ending in a long diphthong. **bheu̯ə̯* is monosyllabic just as **vert* is, but *pe̯ə̯$_3$i-* is disyllabic. In a similar way, **bhu̯ə̯to-* is disyllabic just as **vr̥tto-* is, but **pə̯$_3$-ito-* is trisyllabic.

§ 16. Leaving aside the roots in long diphthongs (which are disyllabic), we obtain, for the structure of all other types of Indo-European roots, one single phonetic formula: the consonantal elements of the initial cluster are characterised by a rising degree of aperture, whereas those of the final cluster present a descending degree of aperture. This allows for initial clusters consisting of stops + sonants and for final clusters consisting of sonants + stops.

But there are also final clusters consisting of a sonant + *ə̯* (*seṭ* roots)[61] and of *ə̯* + stop (of the type *sēd*, *rēdh*). This suggests that, with regard to their degree of aperture, *ə̯* occupied an intermediate position between sonants and stops: their degree of aperture was smaller than that of the former, but greater than that of the latter[62]. Theoretically, initial clusters of the type *ə̯* + sonant and stop + *ə̯* would therefore have been possible as well. As will be seen further on, such clusters have actually existed.

On the assumption that *ə̯* had a lesser degree of aperture than the sonants, it is obviously difficult to explain *ə* (Indo-Iranian *i* = European *a*) as the result of the vocalisation of *ə̯*. Moreover, even the vocalisation of *r*, *l*, *m*, *n* almost never leads, in the Indo-European languages, to the complete loss of the consonant (except in the case of the Indo-Iranian and Greek vocalisation of *m̥*, *n̥* > *a*). In the case of *ə̯*, the consonantal character of which is more pronounced than that of *r*, *l*, *m*, *n*, we can be

[61] Final clusters of the type "stop + *ə̯*" are exceptional (e. g., **pete̯ə̯$_1$*, **pte̯ə̯$_1$* = *ptē*).

[62] The structure of a root like **vert* is therefore not exactly the same as that of **pelə̯$_1$*, as Cuny, *l. c.*, p. 107–108 contends.

dealing only with an anaptyctic vowel developing when three consonants (ə̯ and two neighbouring consonants) come together. This anaptyctic vowel developed after ə̯, which was subsequently lost as it was lost before any vowel. If the anaptyctic vowel had developed before ə̯, the latter could not have been lost without lengthening it, and the result would have been a long vowel. E. g., *savitár-* < **seu̯ə̯tér-* (> **sau̯ə̯ᵊtár-* > **sau̯ətár-*), *sthitá-* < **stə̯ᵊtó-* > **sthətá-*. *The aspiration is therefore legitimate even in the case of an alleged vocalic ə.*

The accentuation of *tatpuruṣa* compounds in *-sáni*, *-váni* etc. proves that *i* < ə is not treated in the same way as an original *i*[63].

The Hebrew term used to refer to ə (Indo-Iranian *i* = European *a*) is quite appropriate, since, just as in Hebrew, what is involved is an *anaptyctic vowel*, inserted between ə̯ and a following consonant (in Hebrew: between a guttural and a following consonant). Vocalic ə (Indo-Iranian *i*, European *a*) is an element of secondary origin, not belonging to the root; it presupposes consonantal ə̯, which is an essential element of the root.

§ 17. ə̯ being a consonant, a sequence consisting of *consonant + long vowel* yields, in the reduced grade before a consonant, consonant + e̯ + ə̯ + consonant, i. e., the reduced grade of a root containing a long vowel will also contain a long vowel. Now the alternation *zero grade – reduced grade* is determined by sandhi: the former occurs after a final short vowel, the latter in all other cases. According to the rules of sandhi, we will therefore have either ə or a long vowel (i. e., zero grade or reduced grade), and ə will be to the long vowel as *ĭ*, *ŭ* are to *ī*, *ū* in roots with long diphthongs, or *zero* to e̯ in roots of the type **ped* (Ind. *padáḥ* but *upa-bda-*). The zero grade (with ə) could also be used beyond its original limits if the initial consonant was a stop, for a cluster consisting of a stop + ə̯ was possible word-initially. If, on the other hand, the initial consonant was a sonant, the result would have been a cluster that was unpronounceable in word-initial position (sonant + ə̯)[64]. In this case, forms with reduced grade were generalised. It is clear,

[63] Root nouns of the type *mud*, *vṛt* have generalised the zero grade. The full grade is retained, however, in *-sani*, *-vani*, *-svani*, *-dari* (< *-senə̯-*, *-u̯enə̯-* etc.), which have become *i*-stems. The zero grade is found in *-sā*.

[64] The degree of aperture of ə̯ was less than that of the sonant.

however, that certain zero grade forms (cf. Ind. *mitá-*, Lat. *rătis* etc.) have survived; they can be explained either as second members of compounds (abstracts in *-ti-*, participles in *-to* and *-no*), or as analogical formations (the alternation *long vowel – ə* becoming generalised after any initial element).

Hardly any traces of this alternation $_e$ – *zero* survive in Indo-Iranian. Yet Avestan *dāta-*, *stāta-*, *māta-* and Indic *hitá-*, *ditá-* (only in compounds according to Whitney; *datta-* is based on the present), *sthitá-*, *mitá-* reflect its different aspects, each preserved in a different language branch. Within Indic, we find *tvādāta-* (*RV.*), where *dāta-* is the regular outcome after a long vowel.

Similarly, we have, in Indic, *śitá-*, *sitá-*, *diná-* ('shared'), *ditá-* ('bound') but *rātá-* (as in the *Avesta*). In post-Vedic writings we find *hāná-* (in the *Brahmaṇas*; from *hā* 'cede'), *dātá-* (*Taittiriya-Araṇyaka*; from *dā* 'cleanse'), *vāta-* (*Sūtras*; from *vā* 'blow'); *chitá-* (*Śatapatha-brahmaṇas*) alongside *chāta-* (*Sūtras*). The same applies to abstracts in *-ti*[65].

The fact that the forms with zero grade, rather than with reduced grade, were generalised in Indic is hardly surprising, considering the categories involved: participles in *-to*, *-no* and abstracts in *-ti*. As Mr. Meillet has shown (*BSL.* XXV, 1925, p. 123 ff.), following Mr. Schulze (*K.Z.* LII, p. 322 ff.) and Mr. Wackernagel (*SPA.*, 1918, p. 380 ff.), abstracts in *-ti* existed only in composition in Indo-European. But participles in *-to*, *-no* usually appear in composition as well[66]. In the Rigveda, *dita-*, *mita-*, *sthita-* and *sita-* occur only in compounds; *śita-* occurs in compounds 3 times out of 5, and *hita-* 98 times out of 158[67].

In Greek as well, the forms that have been generalised are those with zero grade (θετός, θέσις etc.). It would be interesting to examine how these forms were gradually abstracted from composition to become independent formations.

[65] The *Rigveda* has *rāti-*. *-rāti-* and *māti-* (in *úpamāti-*) as against *-tti-* in *bhágatti-*, *maghátti-* etc., but *dāti-* survives in *dā́ti-vāra-* and *havyádāti-* (cf. Avest. *dātay-*).

[66] It is striking that, in composition, participles in *-to*, *-no* behave, with respect to the place of the accent, exactly like the abstracts in *-ti*.

[67] As for *dina-*, it occurs but once in the text (not in composition).

§ 18. In Greek, Latin and Celtic, a twofold treatment of Indo-European $\bar{r}, \bar{l}, \bar{m}, \bar{n}$ is observed. One of them is identical with that observed in Indo-Iranian, Germanic and Balto-Slavonic (its graphical representation is $r̥ə$, $l̥ə$, $m̥ə$, $n̥ə$ or, in Hirt's notation, $_{e}rə$, $_{e}lə$, $_{e}mə$, $_{e}nə$). The other is generally assumed to be restricted to the three above-mentioned groups: *rā, lā, mā, nā*. It is impossible to explain it by metathesis of reflexes of the first type (as Hirt, *Idg. Gramm.* II, p. 132 proposes). There is only one possible mode of explanation, which consists in assuming that, alongside the weak grade of $*ĝenə̯_1$ ($*ĝ_{e}nətó$-) there was also a weak grade of $*ĝneə̯_1$, the regular realisation of which was $*ĝn_{e}ə̯_1tó$-. The reduced vowel $_{e}$, which could not be dropped even under favourable conditions of sandhi, i. e., after a final short vowel (as it followed a consonant cluster), became *ă* in Greek, Latin and Celtic (cf. Güntert, *Ablautsprobleme*), whence $*ĝnāto$- ($a + ə̯_1 > ā$). This deduction shows that the second type of treatment ($r_{e}ə̯$, $l_{e}ə̯$, $m_{e}ə̯$, $n_{e}ə̯$) is also of Indo-European date. Indeed, roots of the type *jñā* 'know' (i. e., *seṭ* roots with generalised full grade of the second syllable) have no other zero grade than *rā, lā, mā, nā* in Indo-Iranian (*jñātá*- etc.). They have been called "rigid roots" ("starre Wurzeln", cf. the list in Hübschmann, *Vokalismus*); actually, Indo-European did have certain differences of vowel quality here (*ĝnē/ō* alongside *ĝnā*), but they were lost in Indo-Iranian. As we saw above, the sequences *nā* in *nāváḥ, nāvé* etc. and *rā* in *rāyáḥ, rāyé*[68] etc. represent the weak grade. Compared to the full grade in *svásar*- and the zero grade in *pitár*- and *duhitár*-, *mā*- in *mātár*- represents the weak grade (i. e., it has undergone the process of quantitative apophony), which is additionally confirmed by the *ā*-colouring preserved in the classical languages as well as in Baltic and Armenian, and by the well-established fact that *yā*- in *yātár*- is the weak grade of $*i̯enə̯$- (Lith. *jéntė*, Greek ἐνάτηρ).

Thus, the opposition $*ĝenə̯_1/*ĝneə̯_1 = ĝnē$ has a counterpart in the opposition of weak grade forms $*ĝ_{e}nə̯to$-/$*ĝn_{e}ə̯to$-. This applies to

[68] *nā, rā* in *nāváḥ, rāyáḥ* stand in the same relationship to *nā, rā* in *nắvaḥ, rắyaḥ* as *nā* in *jñātá*- to *nā*- in *jñắtum*. The distinction between $-_{e}rə$- and *-rā-* is also preserved in Baltic (cf. our article *Indoeuropejskie ā, ō w językach bałtyckich*, in *Sprawozdania Towarzystwa Naukowego we Lwowie* 1926, No. 3).

other types of Indo-European roots as well. A root of the type *consonant + sonant + consonant* (e. g., **ters-*, **tres-*) has two weak grades as well: **tr̥s-* (= *t$_e$rs*) and **tr$_e$s-* (cf. Avest. *tarštō* = **tr̥što-* as against Ved. *trastá-* < **tr$_e$sto-*). It is clear that in the series **tr̥s* = **t$_e$rs*, **ters*, **tres*, **tr$_e$s* a direct association could arise between **tres* and ** tr̥s* or between **ters* and **tr$_e$s*. Especially the first of these possibilities is often realised, cf. the Indic *saṁprasāraṇa* (s. the examples in Wackernagel, *Altind. Gramm.* p. 69 ff.). But if the the form **ters* is not inherited alongside **tres*, the usual weak grade will be **tr$_e$stó-* (Ved. *trastá-*, but Avest. *tarštō* < **tr̥stós* because Avestan has retained **tr̥s* in *tərəsaite*)[69]. The same applies to roots with initial sonants: in the weak grade, we have sonant + $_e$ rather than a vocalic sonant, and the instances of *saṁprasāraṇa* can be explained, as will be argued elsewhere, by the fact that these roots once had an initial vowel, so that the sonant was root-internal. So, for instance, the *saṁprasāraṇa*: *vas* 'shine' – *uṣáḥ* finds an explanation in Lat. *aurōra* etc. (**aus*, **u̯es*; *uccháti* belongs to the former variant). On the other hand, we have *yastá-* from *yas*, *tyaktá-* from *tyag* etc., where *a* goes back to $_e$. In a similar way, the full grades **petə̯$_1$* and **pteə̯$_1$* = *ptē* have their counterparts in two different weak grades *patitá-* < *p$_e$tətó-* and **pt$_e$ətó-* > *tāta-* (Avest.). Roots of the type **sēd* have two full grades, **seə̯$_1$d* (> *sēd*) and **sə̯$_1$ed* (> *sĕd*). The corresponding weak grades are **s$_e$ə̯$_1$d* (or **səd*) and **sə̯$_e$d* (**s$_e$d*): thus, we have Ind. *sī́dati*, Avest. *hiδaiti* on the one hand, and Ind. *sattá-* on the other.

§ 19. Thus, two different weak grades correspond to these two shapes of the root (**ĝenə̯$_1$* : **ĝn̥ə̯tó-*; **ĝneə̯$_1$* : **ĝn$_e$ə̯$_1$tó-* – **ters* : **tr̥stó-*; **tres* : **tr$_e$stó-* – **petə̯* : **p$_e$tətó-*; **pteə̯$_1$* : **pt$_e$ə̯$_1$tó-* – **seə̯$_1$d* : **s$_{(e)}$ə̯$_1$d*; **sə̯$_1$ed* – **sə̯$_{1e}$ttó-*). One could explain the alternation **ĝ$_e$nə̯$_1$tó-*/**ĝn$_e$ətó-* (from a base **ĝeneə̯$_1$*) by positing a weak grade **ĝ$_e$n$_e$ə̯$_1$tó-*, where, in unclear circumstances, the first or the second $_e$ would have been lost. But it is infinitely more probably that we are here dealing with two successive layers of apophonic phenomena. Mr. Hirt was the first to place the alternations **ĝenə̯$_1$* – **ĝneə̯$_1$* and **ĝenə̯$_1$* – **ĝn̥ətó-* on one chronological level. Until then, scholarship had offered various explanations for

[69] This invalidates the only argument that could be adduced in favour of the *Sonantentheorie*, viz. the identity of the weak grades of *en-* and *-ne-*.

the alternation *$\hat{g}en\underset{\cdot}{ə}_1$ – *$\hat{g}ne\underset{\cdot}{ə}_1$, but it had always been treated as a phenomenon transcending any explanation that could be offered for the alternation *$\hat{g}en\underset{\cdot}{ə}_1$ – *$\hat{g}\underset{\cdot}{n}\underset{\cdot}{ə}tó$-. Now Mr. Hirt was obviously right in explaining *$\hat{g}en\underset{\cdot}{ə}_1$ – *$\hat{g}ne\underset{\cdot}{ə}_1$ as two different aspects of one base, but there is absolutely nothing to commend the assumption of the synchronism of *$\hat{g}en\underset{\cdot}{ə}_1$ – *$\hat{g}ne\underset{\cdot}{ə}_1$ and *$\hat{g}en\underset{\cdot}{ə}_1$ – *$\hat{g}\underset{\cdot}{n}\underset{\cdot}{ə}tó$-. On the contrary, there are circumstances speaking in favour of the traditional view:

(1) If the opposition *$\hat{g}en\underset{\cdot}{ə}_1$ – *$\hat{g}ne\underset{\cdot}{ə}_1$ is at all alive, then it is only in word (or stem) formation, whereas the opposition *$\hat{g}en\underset{\cdot}{ə}_1$ – *$\hat{g}\underset{\cdot}{n}\underset{\cdot}{ə}tó$- is alive throughout inflection. Word formation contains fossilised traces of ancient inflectional means and, more generally, preserves archaisms that have long been eliminated from inflection.

(2) The opposition *$\hat{g}en\underset{\cdot}{ə}_1$ – *$\hat{g}ne\underset{\cdot}{ə}_1$ manifests itself in an alternation *e – zero*, whereas the opposition *$\hat{g}en\underset{\cdot}{ə}_1$ – *$\hat{g}\underset{\cdot}{n}\underset{\cdot}{ə}tó$- is one between *e* and $\underset{e}{\cdot}$.

(3) According to the current doctrine, clusters of stops resulting from the loss of *e* were simplified in Indo-European or in the individual Indo-European languages; so, for instance, Ind. *tū́riya-* (**ktū́riya-*), Avest. *tā-* < **ptā-*, perhaps Indo-European *$\hat{k}\underset{\cdot}{m}tó$- < *$d\hat{k}\underset{\cdot}{m}tó$-[70]. But another tenet of this doctrine is that, between stops, *e* is reduced to $\underset{e}{\cdot}$ rather than dropped. This contradiction can be resolved by assuming two chronologically separate stages. In the first stage, the loss of *e* is absolute, consonant clusters are simplified and this gives rise to oppositions as illustrated above. This is the moment at which roots acquire a double shape, conditioned by shifts of accent (*$\hat{g}en\underset{\cdot}{ə}_1$ – *$\hat{g}ne\underset{\cdot}{ə}_1$); forms like *$\hat{g}en_{\underset{\cdot}{e}}\underset{\cdot}{ə}_1$ – *$\hat{g}_{\underset{\cdot}{e}}ne\underset{\cdot}{ə}_1$ are impossible. In the second stage, which presupposes the previous existence of the opposition *$\hat{g}en\underset{\cdot}{ə}_1$ – *$\hat{g}ne\underset{\cdot}{ə}_1$, there was another weakening of vowels that had become atonic: *e* > $\underset{e}{\cdot}$, which could be dropped under favourable conditions, i. e., if its loss did not create unpronounceable clusters.

The notion that we could be dealing with two chronological layers appears in Güntert (*Ablautsprobleme*, p. 118: *Dann eine zweite Schwächung e*> $\underset{e}{\cdot}$)[71]. But Güntert is unable to formulate the conclusions that

[70] A complete list of these instances would be highly desirable.

[71] Cf. also H. Möller, *K.Z.* XLII, p. 182 f.

are necessary in order to explain **ĝn̥ₑətó-* alongside **ĝn̥ətó-*, because he shares Streitberg's and Hirt's point of view regarding *ə*.

§ 20. Appendix: Notes on the clausulae of the *Rigveda*.

The phenomena which we have just noted in connection with causatives and compounds of the type *joṣa-vāká-* have also left certain traces in the clausulae of the *Rigveda*. The normal clausula of the octosyllable and the dodecasyllable is dactylic: – ∪ ⏑, whereas that of the hendecasyllable is trochaic: – ∪ – ⏑. Exceptions are quite rare. Thus, out of 15000 octosyllabic verses (Arnold's *dimeter verse*) only 406 have the final rhythm ∪ ∪ ⏑ instead of – ∪ ⏑ (i. e., 2,71%, cf. Arnold, *o. c.*, p. 149 and p. 159–160). Out of 24000 hendeca- and dodecasyllabic verses (Arnold's *trimeter verse*) only 252 show a final rhythm – ∪ ∪ ⏑ (– ∪ ∪ ∪ ⏑) instead of – ∪ – ⏑ (– ∪ – ∪ ⏑) (1,05%, cf. Arnold, *o. c.*, p. 175 and p. 204). These exceptions are the more interesting as the clausula of the Rigvedic verse is its most stable part, and alongside the normal clausulae – ∪ ⏑ and – ∪ – ⏑ there are no "subnormal" forms (Arnold), as is the case with other parts of the verse.

If we draw up a list of the words containing such metrically irregular short syllables, we see that certain syllables occur rarely, others more frequently, but generally this irregular shortness involves particular syllables of particular words. Thus, out of 406 irregular octosyllable clausulae there are only 80 syllables occurring one single time in 6th position. As for the other syllables, we find:

1 syllable used 32 times in 6th position,

1 20

1 16

2 syllables each used 13 times in 6th position,

5 7

6 6

4 5

5 4

8 3

20 2

The 80 isolated clausulae cannot be taken into account, as it would be difficult if not impossible to determine whether we are dealing with an ancient tradition or with individual mistakes or deviations (corresponding to the use of long syllables in 5th or 7th position in the

octosyllable, or in 9th position in the hendeca- and dodecasyllable). The more often a particular syllable is treated as long, the greater is the likelihood that we are dealing with a tradition or with an archaism, and the greater is the likelihood that this syllable, rather than being used accidentally, possesses or has possessed a certain quality which rendered it apt to figure as long.

Here is the list of short syllables used more than one time in 6th position in an octosyllable (the relevant syllable is underlined):

A. consonant + *ə̯*[72] making position.

a̱v^{i}/$_{a}$-: 32 occ.; *śa̱v*^{i}/$_{a}$-: 20 occ.; *a̱jara-*: 13 occ. (**n̥ĝə̯$_1$ero-*, the root being **ĝēr*; cf. Greek γῆρας, Ind. *jāra-*, morphologically similar to *náva-*, *sána-* etc., *jā́riṣam*); *ma̱h*^{i}/$_{a}$-: 7 occ.; *ra̱tha-*: 7 occ.; *sa̱v*^{i}/$_{a}$-: 7 occ.; *da̱dh*^{i}/$_{a}$-: 7 occ.; *ya̱va-* (cf. the zero grade *yūti* in *góyūti-*): 6 occ.; *na̱y*^{i}/$_{a}$-: 6 occ.; *a̱tithi-*: 6 occ.[73]; *a̱diti-*: 6 occ.; *pati-* (the preceding final vowel is long by position; *pŏt-* < **pə̯$_3$et-*): 5 occ.; *ha̱viya* : 5 occ.; *sa̱n*^{i}/$_{a}$-: 5 occ.; *ta̱v*^{i}/$_{a}$-: 4 occ.; *sa̱kh*^{i}/$_{ā}$-: 4 occ.; *ára̱ruṣaḥ*: 4 occ.; *pa̱thi-*: 3 occ.; *pa̱v*^{i}/$_{a}$-: 3 occ.; *vidhataḥ* (*vi* + *dhā*): 3 occ.[74]; *pr̥̱thivi-*: 2 occ.; *ta̱r*^{i}/$_{a}$-: 2 occ.; *du̱hitar-*: 2 occ.; *va̱n*^{i}/$_{a}$-: 2 occ.; *ta̱rutar-*: 2 occ. (< **terə̯u-*; cf. *tūrva-* < *tr̥ə̯u̯*^{e}/$_{o}$-).

An explanation is also available for the following irregular clausulae:

35 instances where a sequence "short vowel + consonant" is treated as a long syllable before an initial vowel of the following word. Here, as in the preceding cases, the action of the original syllable boundary (e. g., **jan-a-* < **ĝen-ə̯e-*) is still felt even though *ə̯* does no longer exist, and the segmentation we observe here (*-ad a-*) is older than the one required by historical sandhi (*-a da-*). It is presupposed by the voicing of final consonants before an initial glottal stop (*-ada-* < *-at a-* presupposes *-ad a-*). In this case as well, the metre preserves, as a poetic licence, the traces of an extremely archaic language system.

[72] Consonantal (*ə̯*) or vocalic (*ə̯*^{ə}).

[73] *i* < *ə*, cf. Iranian *astay-*.

[74] Cf., e. g., *RV.* VII 17, 7 *mahó no rátnā ví dadha iyānaḥ*; III, 3, 1 *vaiśvānarā́ya pr̥thupā́jase vípa // rátnā vidhanta dharúṇesu gā́tave*; s. Grassmann *s. v. dhā* + *vi* (2) and *vidh* (6).

13 instances where *-e*, *-o*, *-aḥ* count as long before an initial vowel can be explained along similar lines as the preceding cases (*-ai a-* prior to *-aia-*).

In 8 instances, we have an initial cluster "*ə* + consonant", which lengthens the final vowel of the preceding word (short vowel + *ə* > long vowel). We propose to address the question of initial *ə* elsewhere.

Finally, in 24 instances short syllables followed by the sequences *-iya-* (14 instances) and *-uva-* (10 instances) are treated as long. A cluster consisting of a consonant + *ə* originally required *-iya-* and *-uva-* instead of *-ya-*, *-va-* according to Sievers' Law. This means that, after the loss of *ə*, certain vowels were short but nevertheless (1) made position in a verse, and (2) were followed by *-iya-*, *-uva-*. The regular connection between these two phenomena made it possible to use a short syllable with the value of a long one if *-iya-* or *-uva-* followed (e. g., *mádhuvaḥ* – ∪ ⏑ instead of *madhvaḥ* – ⏑).

B. Counterexamples: *manas-*: 6 occ.; *aruṣa-*: 5 occ.; *yaśas-*: 4 occ.; *amṛ́ta-*: 3 occ.; *vavṛmahe*: 3 occ.; *abhítaḥ-*: 3 occ.; full grade vowel in the subjunctive: 3 occ. (*kṛṇavase*, *vanavase*, *ayate*), *dadṛśé*: 2 occ.; *ahan-*: 2 occ.; *bṛhat-*: 2 occ.; *ṛta-*: 2 occ.; *ṛṣi-*: 2 occ.; *piṭṛ-*: 2 occ.; *udan-*: 2 occ.; *śas-* (final vowel of the preceding word is short): 2 occ.; *sad-*: 2 occ.; *saraṇa-*: 2 occ.[75]

In all, we have 47 instances of group B, as against 219 instances of group A.

The regular cases (i. e., those of group A), which can be explained by archaic syllabication, thus make up 80% of the clear and non-isolated instances (i. e., those attested by at least two instances). If we take into account only those words for which 5 and more examples are attested, then 14 words will be left in group A and only 2 in group B (s. above). While group B contains no words for which 7 or more examples are attested, there are 7 of them in group A.

C. Uncertain cases, where the occurrence of *ə* is possible but cannot be proved: *varuṇa*: 16 occ.[76]; *hari*: 7 occ.; *marut-*: 6 occ.; *apām*: 3 occ.

[75] As for *udára-* (4 occ.), the possibility of a segmentation *ud-ara-* is not excluded as Grassmann's etymology (<*ar*) is highly tempting: cf. *vakṣáṇā* 'belly' and *vákṣaḥ* 'breast' (< *vakṣ*).

[76] This word could go back to **varəuna-*, cf. *varivaḥn* and *ūrṇóti*.

For the 10th syllable of hendeca- and dodecasyllables, the situation is similar:

A. *jan$^{i}/_{a}$-*: 13 occ.; *ratha-*: 12 occ.; *av$^{i}/_{a}$-*: 9 occ.; *ajara-*: 8 occ.; *śav$^{i}/_{a}$-*: 7 occ.; *sakh$^{i}/_{ā}$-*: 5 occ.; *dadh$^{i}/_{a}$-*: 5 occ.; *van$^{i}/_{a}$-*: 4 occ.; *haviya-*: 3 occ.; *mah$^{i}/_{a}$-*: 3 occ.; *iṣe-*: 3 occ. (*iṣṇáti*); *tav$^{i}/_{a}$-*: 2 occ.; *aditi-*: 2 occ.; *vay$^{i}/_{a}$-*: 2 occ.; *taruṣa-*: 2 occ.

3 instances with "short vowel + consonant" before initial vowel.

9 instances with *-e*, *-o*, *-aḥ* before initial vowel.

8 instances of lengthening of a final short vowel before an initial cluster of *ə́* and consonant.

6 instances of a short vowel used with the value of a long one before *-iya-*, *-uva-*.

B. Counterexamples: *iṣira-*: 5 occ.; full grade in the subjunctive: 5 occ.[77]; *naraḥ*: 4 occ.; *ahan-*: 3 occ.

In all we have 17 examples of group B, as against 100 of group A. Group A has six cases with 5 or more examples, group B has only two.

C. Cases defying analysis: 20 superlatives in *-tama-* and 2 instances of *parama-*; *apām*: 9 occ.; *marut-*: 9 occ.; *taturi-*: 2 occ.; *śaru-*: 2 occ.

D. 91 isolated instances which, because of their isolation, could not be taken into account.

The facts adduced here show that the loss of word-internal *ə́* has left traces in the metre of the Rigveda. In clusters of the type "consonant + *ə́*", the first element once belonged to the preceding syllable, which was therefore long by position. But at the epoch of the Rigveda, this archaic pattern had become a mere metrical licence. It survived, of course, not by virtue of its association with *seṭ* roots, but as a result of the imitation of archaic clausulae.

There is a difference between the metrical role of *ə́* in the Rigveda and that of F in Homer. Though the effect of F is similar to that of *ə́* (F makes position together with a preceding consonant and prevents contraction), F is quite alive when compared to *ə́*, and its effects cannot be treated as mere metrical licences. There is, however, an important similarity between both phenomena in that a vowel followed by a consonant + F or a consonant + *ə́* is treated as long only if it bears the ictus

[77] Three times *áya-*, once *ása-*, once *yunája-*.

(e. g., as the clausula of an octosyllable *avathaḥ* has the value – ∪ ⏑ rather than – – ⏑ even though *th* makes position; as the clausula of a hendecasyllable, *avathaḥ* would have the value ∪ – ⏑ even though it goes back to **auə̯e-*.

Fortunately, this Vedic licence has only been sparingly used beyond its proper scope, so that the underlying principle remains clear to us: what is involved is a prehistoric pattern of syllabication[78].

Note added in proof (§ 10 and § 19). The case of **mēs*, **mēn*, **mēns* 'moon, month', which seems to run counter to our conclusions, actually provides a striking confirmation of it.

**mēs* is attested in Indo-Iranian and in Slavonic (Ved. *mā́ḥ*, Gath. *må̊*, OChSl. *měsęcь*). There is no reason to believe that here **mēs* goes back to **mēns*. One could as well assume that Indo-Iranian **mās* comes from **meə̯$_1$es*, just as **bhās* = **bheə̯$_1$es*. *må̊* is disyllabic in the same *gāthā* that has trisyllabic *vāta-* (*Y* 44). The etymology connecting this root with *mē* 'measure' therefore gains verisimilitude.

**mēn* is attested in Germanic, Baltic and Albanian (Goth. *mena*, Lith. *mė́nuo*, Alb. *muai*).

**mēns* is found in Greek (μήν, μηνός), Italic (Lat. *mēns*), Celtic (Ir. *mí*, gen. *mís*) and Armenian (*amis*). Here **mēns* could not be shortened (even though $\bar{e} = e + \text{ə̯}_1$) because in *mēns* < **mēnes* (weak grade of the suffix *-(n)es*) *n* could never be vocalised. This is because *n̥* never comes from *ne* (the weak grade of which is *n$_e$*) but always from *en*. (In this respect, the notation *$_e$n* presents a remarkable advantage compared with *n̥*.)

Lwów, January 1927.

[78] Wherever reference is made, in the present article, to the existence of a consonantal *ə̯*, it is not the actual existence of a sound that matters (except in the case of the aspiration of unvoiced stops), but the syllable boundary that results from it.