

# Origin and development of Sanskrit *yy*\*

MASATO KOBAYASHI

## 1 Introduction

In Aṣṭ. 6.1.81 to 83, Pāṇini teaches exceptional *-ya-* gerundive forms of roots ending in *-ī*. The root vowel *-ī*, which is in the guṇa grade (*-e*) by Aṣṭ. 7.3.84 *sārvadhātukārdhadhātukayoḥ* (82 *guṇaḥ*), is replaced with *-ay* before the *y-* of an affix only in the words listed there.

Aṣṭ. 6.1.81 *kṣayya-jayyau śakyārt<sup>he</sup>* ‘In *kṣayya* und *jayya* findet die Substitution von *ay* für *e* statt in der Bedeutung „zu — möglich“ (Böhtlingk 1887: 293). Ex. *kṣayya-* ‘destructible’: TB 3.11.7.4 *kṣayyá-*,<sup>1</sup> JB 1.241 *kṣayya-*, MS 1.8.6:124.4, KS 31.15:18.8, ŚB, TB, JB etc. *a-kṣayyá-*. *jayya-* ‘conquerable’: ŚB 1.6.2.3, 11.2.7.9, 13–20, 28, 29,31, 14.4.3.24 (K 2.5.4.2, 3.2.8.2) *jayya-* /*jáyya-*/, MS 3.2.1:15.8, 10, TS 1.7.5.4, 5.2.1.1 *an-apa-jayyá-* :: JB 1.326<sub>2</sub> *jeya-*.

Aṣṭ. 6.1.82 *krayyas tadart<sup>he</sup>* ‘In *krayya-* in der Bedeutung „zum Kauf ausgestellt, verkäuflich“ (Böhtlingk). Ex. *krayya-* ‘for sale, available for purchasing’: MS 3.7.4:78.14 *ékahāyanyā kráyyā* (Mss. *ékahāyavyā-*),<sup>2</sup> 3.7.4:79.1 *apsú kráyyā [-aḥ]* *óśadhayo vái sómā [-aḥ]* (Mss *krayyā*), MS 3.7.7:85.10 *vatsataréṇa sáṇḍena kráyyasyéndram áhaḥ krīṇāti*, ŚB 3.3.3.1<sub>2</sub> (K 4.3.3.1<sub>2</sub>) *somavikrayin krayyas te somo rájā3 iti krayya ity āha*.

Aṣṭ. 6.1.83 *bhayya-pravayye ca cchandasi* (Vārttika + *hradayyā*) ‘Hierher gehören auch die vedischen *bhayya* und *pravayyā* (Böhtlingk). Ex. *bhayya-* ‘that which is feared’: KS 33.4:30.7, PB 10.5.16, 23.6.6. *pra-vayyā-* ‘to be impregnated’ or ‘to

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<sup>1</sup> The oxytone of TB *kṣayyá-* instead of expected <sup>x</sup>*kṣáyya-* is probably based on that of *a-kṣayyá-* which follows it in the same section (Knobl, p.c.).

<sup>2</sup> Since *kráyyā* here is not followed by an udātta vowel, it should be emended to *kráyyo* (Knobl, p.c.).

be driven': Not attested.

These forms are of special interest for the phonology of Sanskrit, firstly because Pāṇini teaches them in Aṣṭādhyāyī 6.1, which is a section mainly on phonology (exceptional alternation, sandhi and word accent), and not in 3.1, a section on verbal morphology where exceptional gerundive forms in *-āyya-* such as *ā-nāyya-* (a name of the ritual fire Anvāhāryapacana) are taught (Aṣṭ. 3.1.127 to 131); and secondly, because the alternation *-i-* : *-ay-* is taught here as special compared to the regular pattern *-i-* : *-e-* as in  $\sqrt{jay/ji}$  'win, conquer' : *jeya-* 'to be conquered', etc. In other words, the forms *jayya-*, *krayya-*, *b<sup>h</sup>ayya-* etc. with /yy/ stand in contrast with regular *jeya-*, *kreya-* 'to be bought', *b<sup>h</sup>eya-* 'to be feared', forming minimal pairs<sup>3</sup> belonging to the same grammatical category.

From a diachronic point of view, the forms in *-ayya-* are actually no mystery. Whitney (1889: 345 §963a) already mentions rightly that '[t]he original value of the suffix is *īa*, and as such it has to be read in the very great majority of its Vedic occurrences.' Based on the metrical scansion of *-ya-* gerundives in the Ṛgveda, Seebold (1972: 221) demonstrates that the suffix is actually *-īya-* in simplex forms even after a light syllable, while monosyllabic *-ya-* is found in its place when compounded. Since Sievers's Law is not evoked after a light syllable, it can safely be argued that gerundive forms like *jayya-* were originally formed with the suffix *-īya-*. This suffix is attached to the full-grade roots ending in *-ay*, and *-y-īya-* is then shortened to *-yya-* in a syncope process  $i > \emptyset / \check{V}C\_i$  (Edgerton 1943: 87 'the converse of Sievers's Law').<sup>4</sup> Verbal adjectives in *\*-i̯o-* or traces of them are found in other branches of Indo-European languages, for example in Avestan (YAv. *zaoiia-*, OAv. *zəuuīm* acc.sg. 'to be called'), Latin (*eximius* 'distinguished', *genius* 'tutelary deity') and Greek (*hágios* 'holy'). This suffix is reconstructed either as *\*-iHo-* or *\*-i-īo-*, as the origin of the *\*i̯* in it cannot be uniquely determined (Schindler 1977: 58, Lubotsky 1997: 142).<sup>5</sup>

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<sup>3</sup> Provided that *e* is phonemically represented /ai/.

<sup>4</sup> In the Ṛgveda, I could not find any doubtless example where what is written *iy* should actually be read /y/ (cf. Edgerton 1943: 89), but there are cases where *y*, whose underlying form is /iy/, is metrically to be read /y/, as we will see in §2.

<sup>5</sup> According to Mayrhofer (1986: 165f.), the sequences *\*-i̯o-* and *\*-i(i)o-* are reconstructed as distinct morphemes already in PIE, for example in the delocative suffix.

An important fact to be noted in this connection is that a geminate *-yy-* is in theory impossible in Sanskrit, for, if there is a Proto-Indo-Iranian sequence like *\*-aiia-* (the nucleus status of *\*i* is left unspecified), the first *\*i* is annexed to the *\*a* to its left and forms a diphthong *\*/ai/* while the second *\*i* becomes an onset of the following syllable (*\*/i̯a/*), creating the final output *-eya-*. However, *-yy-* is an acceptable and not uncommon sequence in Pāṇini's grammar. Firstly, Pāṇini teaches forms which contain */yy/* both by derivational rules and by direct listing (*nipātana*). For example, causative stems form compounded absolutes in *-ayya* according to Aṣṭ. 6.4.56 *lyapi lag<sup>h</sup>u-pūrvasya* (51 *per*, 55 *ay*), and */yy/* here seems to make position because this suffix occurs only when preceded by a light syllable (*lag<sup>h</sup>u-pūrvasya*) and is apparently conditioned by some rhythmic factor as in the case of the reduplicated aorist; forms with the sequence *yy* are explicitly given in many sūtras, such as Aṣṭ. 6.1.81 *kṣayya-jayyau śakyārt<sup>he</sup>*, etc. mentioned above. Secondly, *-ayy-* and *-aiy-* must have been distinct, as vṛddhi forms like *vaiyākaṛaṇa-* 'grammarian' from *vyākaṛaṇa-* 'grammar' are provided for by Aṣṭ. 7.3.3 *na yvāb<sup>h</sup>yām padāntāb<sup>h</sup>yām pūrvau tu tāb<sup>h</sup>yām aic.*<sup>6</sup> Finally, the optional doubling of consonants including semivowels after */r/* or */h/* and before a vowel, taught in Aṣṭ. 8.4.46 *aco rahāb<sup>h</sup>yān dve* (45 *yaraḥ, vā*), e.g. *aryyá-* for *aryá-* m. 'lord', shows that the gemination of */y/* is a synchronically active phonological process. Based on these grounds, Pāṇini must have conceived of *yy* as a genuine geminate, and there was a change in the phonological status of */y/* between Proto-Indo-Iranian and Pāṇini.

This paper addresses the question, how */yy/* emerged and how it was incorporated into Sanskrit phonology as an acceptable geminate, from the viewpoint of historical and synchronic phonology.

## 2 Occurrences of *yy* in Vedic

We will first take a brief overview of the forms containing *yy*, their first occurrence, and which of them are not */yiy/* but real */yy/* on metrical or etymological grounds.

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<sup>6</sup> The Ṛgveda already has one form with *-aiy-*, i.e. the patronymic *vaiyaśva-* from the proper name *vyāśva-*, but as there are only a few cases of *-ayy-* there (see §2), *-aiy-* hardly makes a phonemic contrast with *-ayy-*.

- a. [Ṛgveda]: Gerundives in *-āyya-* (Bartholomae 1907: 321ff., *AiGr.* II-2, 285 §173). Metrically *-āyīya-* except ṚV 1.129.2b *dakṣāyīya-* ‘who has to be pleased’ (*-āyīya-* in the other five occurrences of the word), 6.18.6d *vitantasāyīya-* ‘to be contended for’ (*-āyīya-* in the other three occurrences), 10.122.7c *mahayāyīya-* ‘aggrandizement’.
- b. [Ṛgveda] Gerundives of roots ending in *-ā-*. PB 9.1.21, 22 *a-saṃ-hāyīya-* ‘not to be collected [again]’ vs. JB, JUB *a-saṃ-heya-* from  $\sqrt{hā}$  : *jīhīte* ‘start up’. TS 2.2.10.2 *d<sup>h</sup>āyīyā-* (Aṣṭ. 3.1.129) ‘supplementary verse’. ṚV 4.29.5d *ā-kāyīyā-* ‘to be wished for’.
- c. [Ṛgveda+]: *-ya-* derivatives in *-āyya-* (*AiGr.* II-2, 794 §642ef, 795 §643bα, 286 §173c). While *-ya-* forms of roots in *-ā* usually end in *-eya-*, there are also forms in *-āyīya-* (*-āyīya-* /*-āyīya-*/ or *-āyīyā-* /*-āyīyā-*/). ṚV *nṛ-pāyīya-* ‘protecting men’, ṚV 5.66.6c and 8.27.22b *bahu-pāyīya-* ‘protecting many’. ṚV 8.34.5b *pūrva-pāyīya-* ‘first drink’ (vs. ṚV 1.135.4e, 7.92.1d *pūrva-pēya-*), ṚV 8.17.13c *kuṇḍa-pāyīya-* name of a ritual (Aṣṭ. 3.1.130).
- d. [Atharvaveda+]: *-āyīya-* gerundives of roots ending in *-ī* or derivatives thereof (*AiGr.* II-2 793 §642d, 796 §643bβ). AVŚ 15.3.10 *pra-hāyīyā-* ‘messenger’ from  $\sqrt{hay/hi}$  ‘drive, impel’ (vs. AVŚ, ŚB *pra-hēya-* ‘to be dispatched’ in e below), AVŚ 6.105.1d *pra-vāyīyā-* ‘forth-driving’ (Whitney). Pāṇini teaches such forms in Aṣṭ. 3.1.123 and 127-131, i.e. Aṣṭ. 3.1.123 *upa-cāyīya-* ‘to be piled’ (?) (*c<sup>h</sup>andasī*), Aṣṭ. 3.1.127 *ā-nāyīya-* a name of the ritual fire Anvāhāryapacana, Aṣṭ. 3.1.128 *pra-ṇāyīya-* ‘thief’ (?) (Cf. ChU 3.11.5 *prāṇāyīya-* ‘trustworthy’, a variant for *praṇāyīya-*), Aṣṭ. 3.1.129 *sāmnāyīya-* a kind of dairy offering (TS 2.5.3.3 *sāmnāyīyā-*), Aṣṭ. 3.1.130 *saṃ-cāyīyā-* a kind of Soma ritual, Aṣṭ. 3.1.131 *pari-cāyīya-* ‘sacrificial fire piled in circle’ (TS 5.4.11.3 *pari-cāyīyā-*, KS 21.4:42.7 *pari-cāyīya-*), *upa-cāyīya-* a kind of ritual fire (cf. Agrawala 1953: 370ff.).
- e. [Yajurveda+]: Above-mentioned *-āyīya-* gerundives of roots ending in *-ī* (Aṣṭ. 6.1.81- 83, *AiGr.* II.2 791 §642cα, 796 §643bβ). *krāyīya-* (for MS *ā-krāyīya-*, see §1, footnote 2), *b<sup>h</sup>āyīya-*, *jāyīya-*, *a-kṣayīyā-* (see §1 for reference). Of the types *jāyīya-* ‘conquerable’ and *jeya-* ‘to be conquered’, the former is generally older, for it is attested in the Brāhmaṇas and the Brāhmaṇa portions of the Black Yajurveda Saṃhitās. But there is also an old *-eya-* form from a root ending in *-i*, i.e. AVŚ 5.17.3c, ŚB 5.3.1.11 (ŚBK 7.1.4.12) *pra-hēya-* ‘to be dispatched’ (Bartholomae 1907: 322) vs. AVŚ 15.3.10 *pra-hāyīyā-*

in d above.

- f. [Ṛgveda, Atharvaveda]: Derivatives in *-éyya-* (Bartholomae 1907:320, *AiGr.* II-2, 512 §344). ṚV 10.10.7b *saha-śéyya-* ‘lying together’ (=AVŚ 18.1.8b), *stuśéyya-* ‘worthy of praise’ in ṚV 10.120.6a *stuśéyyam puruvárpasam íb<sup>h</sup>vam* (Triṣṭubh), and AVŚ 5.31.12b *śapat<sup>h</sup>eyyà-* /-yíya-/ ‘worthy of cursing’ (Whitney).
- g. [Ṛgveda+]: When taddhita *-ya-* is attached to a stem ending in *-ya*, *-yya-* is the outcome in older texts (*AiGr.* II-2 807 §651a). RV 10.151.4c *hṛdayyà-* ‘cordial’ (3σ) from *hṛdaya-* n. ‘heart’. TS 4.5.9.1g *niveśyà-* ‘belonging to the whirlpool’ from *niveśyá-* m. ‘whirlpool’, and possibly TS 4.5.9.1g *hradayyà-* ‘belonging to the lake’ as if from an unattested (and unlikely) <sup>x</sup>*hradaya-* n. ‘lake’.
- h. [Ṛgveda+]: Compounded absolutive of causative and other stems (*AiGr.* II-2, 781 §635a). ṚV 1.105.18c, 3.26.1a *ni-cáyyā*. Cf. ŚB *paly-áyya*, *ā-kramáyya*, *paláyya*, *anu-gamáyya*, *pra-janáyya*, *uj-jvaláyya* (*AiGr.* II-2 785 §638a).
- i. [Brāhmaṇa+]: *śayyā-* f. ‘bed’ (Aṣṭ. 3.3.99 *saṃjñāyāṃ ... śīñ-b<sup>h</sup>ṛñīṇaḥ*, *AiGr.* II-2 247 §142b), (-)*śayya-* absolutive, etc. (Aṣṭ. 7.4.22 *ayañ yi kñiti* [21 *śīñah*], *AiGr.* II-2 785 §638a), from √*śay<sup>(i)</sup>*/śi(śi) ‘be lying’.
- j. [Ṛgveda]: Patronymics of unclear etymology. *vayyà-*, always (6x) occurring after caesura and to be read *vayyà-* /vayíya-/ (another form in *-ayyà-* is g. *hṛdayyà-*). ṚV 8.68.10d *puru-máyya-*.
- k. [Ṛgveda+]: Irregular inflectional forms of *rayí-* m. ‘wealth’ (*AiGr.* III, 215 §120aβ, Lubotsky 1995). ṚV 10.19.7d (2σ), AVŚ<sub>2</sub>, MS, TS *rayyá* inst.sg., TS *rayyám* loc.sg., ŚB *rayyái* dat.sg. These forms were created secondarily from nom.sg. *rayíḥ* after the model of feminine *-i-* stems like *matí-* : inst.sg. *matyá* and *puṣṭí-* : dat.sg. *puṣṭyái*.
- l. [Ṛgveda+]: Inflectional forms of *vṛkí-* stems in *-yī*. ṚV 2.37.5a *yayyám* /-yíyam/ acc. of *yayí-* ‘running’, ṚV 10.155.2c *arāyyám* acc.sg. of *arāyí-* ‘blackguard woman’. Cf. ṚV 10.78.7c *yayí[ah]* nom.pl.
- m. [Ṛgveda+]: *-yy* resulting from external sandhi. Always to be read /-yi V-/ in the Ṛgveda and the Atharvaveda except in ṚV 10.128.3b *máyy āśír astu máyi deváhūtiḥ* and AVŚ 1.1.2d, 1.1.3d *máyy evástu máyi śrutám* and 4.25.3b *tváyy údite prérate citrabhāno*.

In most cases of *yy* in the Ṛgveda, it is metrically /yiy/, but real /yy/ also occurs at least four times in the tenth book of the Ṛgveda, (namely 10.19.7d *rayyá*, 10.122.7c *mahayáyyāya*, 10.128.3b *máyy āśír astu* and 10.151.4c *hṛdayyàṅā*), once in the first book (namely 1.129.2b *dakṣáyyaḥ*), and also once in the sixth book (6.18.6d *vitantasáyyaḥ*). Since books 10, and partly also book 1, belong to newer layers of the Ṛgveda text corpus, we can argue that there was no real *yy* in the oldest stage of the Vedic language, except in *vitantasáyya-* of the sixth book, which, however, is likely to be one of the younger family books. Although real *yy* started to occur only in newer layers of the Ṛgveda, Śākalya's redaction generalized *yy* to the older books and changed all /yiy/ to *yy*.

In the Śaunaka Saṃhitā of the Atharvaveda, *yy* is usually to be read /yiy/, except in a few forms such as *mayy V-*, *tvayy V-* or *rayyá*, and the geminate status of /yy/ does not seem to be established yet. In the Black Yajurveda Saṃhitās and the Brāhmaṇas, which do not contain many metrical mantras, it is difficult to judge whether /yy/ is a geminate or not.

### 3 Development of \*-aji- and relative chronology

In order to understand how the gemination of /y/, which cannot be of Proto-Indo-Iranian origin, arose in Sanskrit phonology, it will be useful to review the origins of Sanskrit intervocalic /y/. Here I list a few examples of /y/ of laryngeal or glide origin in a postvocalic context, especially before \*i.

i. Non-laryngeal offglide (\*Ø > y/i\_V):

\*ia > *iya*?: \*i-á-d<sup>h</sup>jaḯ > ṚV 6.20.8d *iyá-d<sup>h</sup>yai* dat.inf. of √*ay/i* 'go'. This form probably does not serve as an example, for \*a of the suffix \*-á<sup>h</sup>yai is later than Proto-Indo-Iranian, and also, something irregular seems to have taken place in the reflection of the initial \*i as a syllable nucleus.

The non-laryngeal *y* in *īyiváṃs-* (ṚV 3.9.4a *īyiváṃsam*, 10.14.1a *pareyiváṃsam*), pf.ppl. of the same root, is not usable either, for connective *-i-* just seems to be added to the weak stem *īy-*.

- ii. Laryngeal offglide before \*i (\*H > y/V\_i):  
 \*iHi > iyi: nil.  
 \*iHi > ī: \*Hi-Hiḡ-áj > ṚV *ijé* pf.1, 3sg.mid. of √*yaj/ij* ‘offer, worship’.
- iii. Laryngeal offglide before vowels other than \*i (\*H > y/i\_V\_-i):  
 \*iHa > *iya*: \*Hí-Har-ti > *iyarti* pres.ind.3sg.act. of √*ar/r* ‘start moving’. \*Hi-Háy-a > *iyāya* pf.3sg.act. of √*ay/i* ‘go’. PIIr. \*priH-á- > *priyá-* ‘dear’.

Aside from \*ī, a laryngeal offglide as in iii. *iyarti* is a source of Sanskrit intervocalic *y*.

- iv. Laryngeal onglide between a vowel other than \*i and \*i (\*H > y/V\_-i\_i):  
 Lubotsky (1995: 214ff.) discusses the development of \*aHi in great detail. According to him, the laryngeal in this context is usually lost and contraction of \*a and \*i to *e* takes place subsequently, unless morphological pressure causes the laryngeal to be restored.
- \*aHi > *ai*?: In augmented forms like \*á-Hiś-a-s > ṚV *áicc<sup>h</sup>ah* ipf.2sg.act. of √*eṣ/iṣ* ‘seek’ (trissyllabic in ṚV 10.108.5a), the augment is restored according to Lubotsky (1995: 223).
- \*aHi > *ayi*: \*raHí-s > *rayíḥ* nom.sg. of *rayí-* m. ‘wealth’. Restitution of \*H by analogy is unlikely according to Lubotsky (1995: 222), and so this is probably the only example of uncontracted \*aHí.
- \*āHi > *āyi*: \*á-d<sup>h</sup>āH-i > *ád<sup>h</sup>āyi* aor.pass.3sg. of √*d<sup>h</sup>ā* ‘put’. It is possible that *y* was inserted as a result of analogy to other aorist passive forms, like *ákāri* from √*kar/kr* ‘do’ (Lubotsky 1995: 220).
- v. PIIr. \*ī before \*i (\*ī > y/V\_-i):  
 \*á-crāi-i > *ásrāyi* aor.pass.3sg. of √*śray/śri* ‘lean’. Here also, \*ī might have been restored by analogy to other aorist passive forms.
- \*āi > *ayi*: This is the usual outcome when a suffix beginning with \*i is attached to a causative stem, e.g. ṚV 7.81.6c *codayitrí* f. ‘inciter’, 9.101.1b *mādayitnú-* ‘intoxicating’, 10.162.6b *mohayitvá* absol. ‘having befuddled’, etc. Contraction no longer applies to productive formation patterns like these (Lubotsky 1995: 219).

- vi. PIIr. \*i̯H after \*ǎ:
- \*ai̯Ha > *aya*: \* ai̯H-as- > *váyas*-n. ‘vigor’.
- \*ai̯Ha > *eya*?: them.pres.opt.1sg.mid. such as \*sač-ai̯H-a > ṚV *saceya* of √*sac* ‘accompany’. Optative forms of a thematic stem have *e* throughout the paradigm, and *e* in the first singular might be a result of leveling.
- \*ai̯Hi > *e* /ai̯/: \*ćra̯i̯H-išt<sup>h</sup>a- > \*ćra̯i̯Ø-išt<sup>h</sup>a- > *śréṣṭha*- ‘most splendid’ (3σ in 8 out of 31 simplex occurrences in the Ṛgveda according to Lubotsky 1995: 217. Cf. *śréyas*-2σ).
- \*ai̯Hi > *e* /ai̯/? : \*a-na̯i̯H-iš<sup>h</sup>-ta > *aneṣata* aor.3pl.mid. (ṚV 10.155.5a, 4σ). As we have only one occurrence of this form in the tenth book of the Ṛgveda, the possibility to scan *e* in this form as disyllabic remains open.
- \*ai̯Hi > *ayi*?: \*kra̯i̯H-ija- > \*kra̯i̯Øija- > MS+ *kráyya*-; \*ná̯i̯H-išt<sup>h</sup>a- > ṚV 10.126.3c *náyīṣṭha*-. *ayi* in the latter form might be due to analogy to other superlative forms like *jáviṣṭha*- ‘quickest’ from √*jav*/*jū* ‘be quick’.
- \*ai̯Hi > *ey*: \*ćra̯i̯H-ias- > \*ćra̯i̯Ø-ias- > *śréyas*- ‘more splendid’ (2σ. See below).
- \*ai̯HC > *eC* /ai̯C/: \*ná̯i̯H-tar- > *nétar*- ‘leader’ (possibly 3σ in 4 out of 18 occurrences in the Ṛgveda), \*pra̯i̯H-tár- > *pretár*- ‘friend, lover’ (possibly 3σ in ṚV 1.148.5d, 2σ in ṚV 4.41.5b). It is not clear whether the disyllabic scansion of *e* reflects vocalization of the \*H (Lubotsky 1995: 218, Tichy 1995: 36).
- \*ai̯HC > *ayi*?: \*ná̯i̯H-tum > AB, TB *-náyitum* inf. of √*nay*/*nī* ‘lead’ (Werba 1997: 300). This is a late form and may not represent the original development of the sequence \*ai̯HC.
- \*ai̯HC > *ai̯C*: \*(a-)ná̯i̯H-s-ta > *naiṣṭa* iṣ-aorist of √*nay*/*nī* (ṚV 8.30.3d, 2σ. Narten 1964: 169. Cf. Narten 1964: 52 ‘ist die Gruppe *-āī-ṣ-* vielleicht schon vorindisch zu *-āiṣ-* kontrahiert worden’).

What happened to \*i̯ (< PIIr. \*i̯ or \*H) between \*ǎ and \*i in pre-Vedic Indo-Aryan is not an easy question, for we need to understand the relative chronology of the developments of laryngeals and intervocalic \*i̯ at the same time. Although we could not find any good example of non-laryngeal \*ǎi̯ free from morphological pressure, regular developments of \*aHi and \*ai̯Hi (and possibly \*ǎi̯HC as well) seem to be *e* /ai̯/ and *e* /ai̯/, as we see in \*daH-iHa- > *-déya*- ‘giving’ as in *vasudéya*-n. ‘treasure-giving’



(Lubotsky 1995: 215), and \* $\acute{c}r\acute{a}iH-i\check{s}t^h_a-$  > \* $\acute{c}r\acute{a}i\emptyset-i\check{s}t^h_a-$  >  $\acute{s}r\acute{e}\check{s}t^h_a-$  (3 $\sigma$ ), respectively. Only  $ray\acute{i}h < *raH\acute{i}-s$ , for which no form seems to serve as a model of analogy<sup>7</sup>, shows  $ay\acute{i}$  instead of expected  $e$ .

The chronological order of the sound changes involving Proto-Indo-Iranian non-nucleus \* $\acute{i}$  can be summarized as follows. In pre-Vedic Indo-Aryan, non-nucleus \* $\acute{i}$  was lost between \* $a$  and \* $i$ , including \* $i$  of laryngeal origin (if a laryngeal ever becomes \* $i$  between \* $\acute{i}$  and a consonant, cf. Lubotsky 1995: 218f.). Since diaeresis is strongly disfavored, resulting / $a\acute{i}$ / was then contracted to  $e$ . This change was still going on at the time of the  $\acute{R}$ gveda poets, and we have cases of disyllabic scansion of  $e$  as in  $\acute{s}r\acute{e}\check{s}t^h_a-$  or  $pr\acute{e}\check{s}t^h_a-$ . On the other hand, gerundive forms like  $kr\acute{a}y\acute{y}a-$  came into the derivational cycle rather late, when the loss of non-nucleus \* $\acute{i}$  between vowels and subsequent contraction was already complete. So it was subject only to  $\acute{i}$ -syncope, and resulted in  $kr\acute{a}y\acute{y}a-$ .

|                    |                                      |  |
|--------------------|--------------------------------------|--|
| PIIr.              |                                      | * $\acute{c}r\acute{a}iH-i\check{s}t^h_a-$         |
| post-PIIr.         | dissolution of * $H$                 | * $\acute{c}r\acute{a}i\emptyset-i\check{s}t^h_a-$ |
| post-PIIr.         | * $\acute{i}$ -loss before * $i$     | * $\acute{c}r\acute{a}\emptyset i\check{s}t^h_a-$  |
| up to $\acute{R}V$ | contraction of * $a\acute{i}$ to $e$ | > $\acute{s}r\acute{e}\check{s}t^h_a-$             |
|                    |                                      | * $kr\acute{a}y(H)-iya-$                           |
| post- $\acute{R}V$ | $i/u$ -syncope                       | > $kr\acute{a}y\acute{y}a-$                        |

Other forms with underlying or surface / $y\acute{y}$ / are explainable within, or at least are not in conflict with, the framework of this relative chronology:

- $\acute{s}r\acute{e}y\acute{a}s-$ , comparative of  $\acute{s}r\acute{é}$  f. ‘splendor’, was discussed by Pinault (1982: 268), who proposes a rule of laryngeal loss before \* $\acute{i}$ . If \* $-a\acute{i}H-$  becomes disyllabic  $e/a\acute{i}$  before a consonant as the  $e$  in  $n\acute{e}tar- < *n\acute{a}iH-tar-$  possibly did, we would expect to see a disyllabic scansion of the  $e$  in  $\acute{s}r\acute{e}y\acute{a}s-$  too. However, the first syllable  $\acute{s}r\acute{e}$ - of this word is monosyllabic in all of its four occurrences in the  $\acute{R}$ gveda (3.8.4b, 5.60.4c, 6.41.4b, 10.31.2d). This fact is more naturally explained by assuming a loss of the laryngeal that would otherwise become a vowel \* $i$ .

<sup>7</sup> Analogy with the oblique cases ( $r\acute{a}y\acute{a}$ , etc.) does not provide an explanation for the short  $-a\acute{}$  of  $ray\acute{i}h$ , and so it is possible that  $ray\acute{i}h$  is a result of regular sound change.

- *pra-héya-* (AVŚ+) in §2e might be a form old enough to undergo \**i̇*-loss and crasis, but it is also possible that it was formed with \**-i̇a-* instead of \**-i̇ja-* (Seebold 1972: 222).
- *-páyya-* and *dhāyyā-* in §2b: We do not know what exactly these forms are, but if they come from \**-āH-i̇ja-* and if \**āHi* > *āyi* is a regular sound change, they can be explained by *i*-syncope.
- *-nāyya-* and *-cāyya-* in §2d: These formations are not clear either, and if they come from \**-āi̇H-i̇ja-*, we are not sure what would be the regular outcome. As they are not attested in old literature, they might also have been formed after \**i̇*-loss and contraction were complete.
- Productive gerundive forms such as *kreya-* in §1 are formed in a new, remodeled derivational pattern with the suffix *-ya-*.

#### 4 Change in the pronunciation of \**i̇*~*y*

\**i̇* is a conditioned allophone of \**i* in Proto-Indo-Iranian, and it was probably not distinct from \**i* except in the nucleus status. The fact that *y* appears after \**i* as a Hiatusstilger in the place of a disappeared laryngeal, as in Sanskrit *priyá-* or Avestan *friia-* < PIIr. \**priH-á-*, supports the view that \**i̇* was originally a glide equivalent of \**i*.

The current text of the R̥gveda, which was orthoepically normalized by the redactor Śākalya, does not give any direct evidence for the change in the pronunciation of /y/ (\**i̇*), except that it is reported to have been weak at the end of a word: According to Pāṇini, Aṣṭ. 8.3.19 *lopaḥ śākalyasya* (17 *apūrvasya así*, 18 *vyoḥ*), word-final /y/ and /v/ are lost before a word beginning with a vowel in Śākalya's view ( $\{y, v\} > \emptyset / -\{a, ā\} \_ ]_{wd} X_{[voiced]-/}$ ), e.g. */yásmāy arkám/* → *yásmā∅ arkám*.<sup>8</sup> While no other major phonetic change is visible, the phonemic status of /y/ (\**i̇*) might have started changing by Śākalya's time. Medial *-yi-* is already common in productive formations such as *māday-itnú-* (§3v) or *patay-iṣṇú-* 'flying', and *yy* has multiplied in his edition of the R̥gveda by syncope and sandhi (§2m), suggesting that /y/ can stand on its own independent of and unaffected by adjacent /i/ or /y/. Phonemicization of /y/ seems to be complete by the time when minimal pair morphemes of *i-* vs. *yi-*, as the

<sup>8</sup> Also in TPr. 10.19 *lupyete tv avarṇapūrvau yavakārau*, VPr. 4.127 *yavayoḥ padāntayoḥ svaramad<sup>h</sup>ye lopaḥ*.

reduplicants of *iyāya* pf.3sg.act. of  $\sqrt{ay/i}$  ‘go’ (RV+) vs. *a-yīyaṁśaṁś* desid.impf.3pl. of  $\sqrt{yam}$  ‘hold’ (KS 23.5:80.16), start to appear in later Vedic texts.

As to Pāṇini, we saw in §1 that *yy* occurs in forms taught in his grammar and that consonants including /y/ are optionally geminated after /r/ and /h/ according to Aṣṭ. 8.4.46, whereas /y/ after other consonants is not (Aṣṭ. 8.4.47). We argued that his *yy* should be taken at face value, namely as a real geminate with no epenthetic vowel in between. According to Vennemann and Murray (1983: 520f.), a similar gemination found in West Germanic, such as Old Saxon *settian* vs. Gothic *satjan* ‘to set’ or Old Saxon *kunnies* vs. Gothic *kunjis* ‘race’ (gen.sg.), occurred as a repair process when the segment on the left of a syllable boundary has lower sonority than the one on the right of the boundary (*sat.jan* and *kun.jis* in this case), the sonority scale being glides >> liquids >> nasals >> voiced fricatives >> voiceless fricatives and voiced stops >> voiceless stops. If the same argument can be applied to our case of /-ry-, -hy-/ > -ryy-, -hyy-, the sonority of Sanskrit /y/ would be placed between /r, h/ and /l, nasals, obstruents/. It suggests that some speakers contemporary with Pāṇini pronounced /y/ with considerably stronger constriction than that of a glide, possibly something close to the IPA palatal approximant [j] or palatal voiced fricative [j̥].

In the Prātiśākhya, ŚCĀ 3.2.8 *rep<sup>h</sup>ahakārau paraṁ tāb<sup>h</sup>yām* and VPr. 4.102 *paraṁ tu rep<sup>h</sup>ahakārāb<sup>h</sup>yām* provide gemination of consonants including /y/ in the same context as in Aṣṭ. 8.4.46. Mention in the Vājasaneyi-Prātiśākhya is especially interesting from a dialectal point of view, because the Pratiññā-Sūtra, a text associated with it, teaches that word-initial /y/ and /v/ and those in the context of gemination are pronounced with occlusion.<sup>9</sup> It might be a precursor of the fortition of Old Indo-Aryan initial /y/ to /j/ in later Indo-Aryan (cf. Varma 1929: 127f.). Furthermore, the Prātiśākhya describe semivowels as *īṣat-spr̥ṣṭa-* ‘slightly contacted’ (ŚCĀ 1.1.30) or *duḥ-spr̥ṣṭa-* ‘poorly contacted’ (RPr. 13.10), whereas ŚCĀ 1.1.31 *ūṣmāṇām vivṛtaṁ ca*, although interpreted in various ways (cf. Deshpande 1997: 148f.), refers to fricatives

<sup>9</sup> Pratiññā-Sūtra 9–10. *at<sup>h</sup>ānta(h)st<sup>h</sup>ānām ādyasya padādist<sup>h</sup>asyānyahalaśaṁyuktasya, śaṁyuktasyāpi rep<sup>h</sup>oṣmāntyaḥb<sup>h</sup>yām, ṛkāreṇa cāvīṣeṣeṇādimaḍhyavasāneṣūccāraṇe jakāroccāraṇam/ dvirb<sup>h</sup>āve ‘py evam/* ‘Der erste der Halbvokale, d.i. y, ist in folgenden Fällen als j zu sprechen: a. initiales y, welches nicht mit einem andern Consonanten verbunden ist (...); b. jegliches y, das mit r, h oder ṛi direkt verbunden ist (...) c. wenn es doppelt steht’ (Weber 1872: 78f.).

as open. If those terms are to be taken literally, occlusion of /y/ might have already been under way when those texts were composed.

## 5 Discussion

### 5.1 Asymmetrical developments of \*i and \*u in Indo-Aryan

In Sanskrit, /y/ and /v/ are grouped as semivowels (*antaḥst<sup>h</sup>ā-*) together with /r/ and /l/, and it has been argued that Sanskrit /v/ was originally a bilabial glide just as /y/ was a palatal glide.<sup>10</sup> On the other hand, the Taittirīya-Prātiśākhya and the Vājasaneyi-Prātiśākhya describe that the teeth are involved in the articulation of /v/,<sup>11</sup> so Sanskrit /v/ has become a labiodental fricative by the late Vedic period, at least for some speakers. Furthermore, there is significant asymmetry between the phonological alternations of /y/ and /v/ even in earliest Sanskrit, and it makes us suspect that Proto-Indo-Iranian non-nucleus \*u was strengthened from very early times on:

- a. Phonotactically, *vy* is a common sequence, while there is no *yv* in early Vedic texts.
- b. /y/ can be geminated in Sanskrit while /v/ cannot, except in the postlexical gemination (§5.2).
- c. There is no *v* originating from a laryngeal onglide (\*V<sub>-u</sub>Hu) while *y* in *rayīḥ* might be a phonological development of \*raHí-s (§3iv).
- d. The first \*h<sub>2</sub> in PIE \*p<sub>1</sub>th<sub>2</sub>uih<sub>2</sub> develops into Sanskrit *i* in *pṛthivī-* f. ‘earth’ as a laryngeal trapped between two consonants normally does, whereas \*h<sub>2</sub> between a consonant and \*i is lost as in PIE \*-dh<sub>2</sub>ǵé-ti > (*ava-*)*dyāti* pres.3sg.act. of √*dā* ‘divide’ (Pinault 1982: 266ff.).
- e. We discussed in §3 above that PIr. \*i between \*ǎ and \*H(i) is lost and contraction takes place subsequently,<sup>12</sup> while \*u is retained as *v* in the same environment.

\*uǎiH-ti > *véti* ‘seeks for’

vs. \*mlauH-ti > *bráviṭi* ‘says’

\*naiH-tar- > *nétar-*

vs. \*taṃH-s-iH > *táviṣṭ-* f. ‘power’

\*(a-)nāiH-iṣṭa > *naiṣṭa*

vs. \*á-pāuH-iṣṭ-ṛs > *apāviṣur* (Narten 1964:

169, 52)

<sup>10</sup> Whitney (1868: 75) ‘its original sound was that of our *w*, Allen (1953: 57) ‘its earlier pronunciation was doubtless as a bilabial [w]’.

<sup>11</sup> TPr. 2.43 *oṣṭhāntābhāyāṃ dantair vakāre*, VPr. 1.81 *vo dantāgraiḥ*.

<sup>12</sup> In the case of \*aiH, it might be the laryngeal that is lost (see §3 vi).

\*b<sup>h</sup>áũH-uka- > b<sup>h</sup>ávuka- ‘becoming’ (YV)

a) and b) might be cases of accidental gap, and there are only single examples (*rayíḥ* and *pr̥t<sup>h</sup>iv̥í*) each for c) and d); but the asymmetry in the development of a laryngeal after a glide in e) is hard to understand unless we consider that \*ũ had stronger constriction than \*ĩ already in pre-Vedic Indo-Aryan.

Another fact possibly relevant to the asymmetrical fortition of \*ĩ and \*ũ is the complete absence of voiced coronal (including palatal) fricative phonemes such as [z] [z(z)] [ʒ] [z] or [j] in Sanskrit phonology. Even where voiced coronal fricatives are posited in intermediate forms in words like *rīḍ<sup>h</sup>á*- vbl.adj. of  $\sqrt{reh/rih}$  ‘lick’ < \*riḷ<sup>h</sup>-ḍ<sup>h</sup>á- < PIIr. \*lij<sup>h</sup>-tá- or *mīḍ<sup>h</sup>á*- n. ‘prize’ < \*miḷḍ<sup>h</sup>á- < PIIr. \*misd<sup>h</sup>á-, or in the sandhi /s/ → [z] → r / -V<sub>-a</sub> X<sub>{[voiced],-r}</sub>-, they are systematically eliminated in the surface representation, while there is no known restriction against the spirantization of /v/. In Middle Indo-Aryan, /j/ starts appearing in the place of Old Indo-Aryan /y/ as in Ardha-Māgadhī *jakk<sup>h</sup>a*- corresponding to Skt. *yakṣa*- (Pischel, *Gr.* §252), but we do not see any gradual fortition of /y/ going on in Sanskrit, let alone an explicit indication of occlusion as in Holtzmann’s Law in Germanic (§5.3), according to which intervocalic \*ĩ is doubled and then strengthened to a palatal stop in Gothic and Old Norse. Just as *rīḍ<sup>h</sup>á*- or *mīḍ<sup>h</sup>á*- can be explained by positing voiced coronal fricatives in intermediate stages, the development of /y/ to /j/ would also be better understood if we consider that Sanskrit /y/ was actually undergoing fortition, but due to the gap in the phonemic system of Sanskrit, it remained subphonemic until it has completely become the stop /j/.

## 5.2 Change in preferred syllable structure

Syllabification is a term covering both assignment of nucleus status to an underlying string and adjustment processes; however, these processes are motivated by different principles sometimes contradicting each other, for example Sievers’ Law which eliminates overlength vs. postlexical gemination like *-ry-* > *-ryy-* which creates clusters at the coda. In our understanding, syllabification of Sanskrit involves the following three processes. They partly correspond to chronological layers, but can also be viewed as a synchronic set of rules whose priority may vary in different periods (cf. Kobayashi 2004: 27).

- Process 1. Nucleus placement (Kobayashi 2004: 21ff.): In Indo-European languages, high vowels and sonorants (and sometimes even laryngeals) can equally become a syllable nucleus. When there are one or more such segments in a row unsyllabified, the nucleus is assigned iteratively from right to left, e.g. \*im-tá- ‘reined’ > \*iṃ-tá- > *yatá-*, \*HiuHn-ás gen.sg. of m. ‘youth’ > \*HjuHn-ás > *yūnáḥ*, \*HiuHn-tí- f. > \*HjuHṇ-tí- > *yuvatí-* (Meillet 1934: 134–136, Schindler 1977: 56). This process, by which the rightmost segment becomes nucleus first, reflects a preference that the coda of the syllable should be as small as possible. This rule applied cyclically in Proto-Indo-Iranian, as *súnaḥ* < \*cún-as gen.sg. vs. *śvab<sup>h</sup>iḥ* (*śváb<sup>h</sup>iḥ* in Ṛgveda Khila 5.15.7b) < \*cūṇ-b<sup>h</sup>is inst.pl. of *śván-* m. ‘dog’ shows, but it is grammaticalized and is no longer an active phonological process in Sanskrit.
- Process 2. Prosodic well-formedness and repair rules: When strings, including the output of Process 1, are prosodically parsed, ill-formed syllables or sequences of syllables are dissolved. Process 2a: According to the metrical scansion of the Ṛgveda, superheavy syllable rhymes are avoided and dissolved by Sievers’ Law, e.g. *súrya-* /*súriya-*/. Process 2b: Also in the Ṛgveda, light syllables with /i/ or /u/ followed by /y/ or /v/ respectively are sometimes dissolved by syncope (Seebold 1972: 218ff.). E.g. *hávya-* /*háviya-* ‘to be called’ in ṚV 3.49.3c *b<sup>h</sup>ágo ná kārē hávyo matīnām* vs. 5.33.5d *b<sup>h</sup>ágo ná hávyaḥ prab<sup>h</sup>ṛt<sup>h</sup>éṣu cáruḥ*, or *anu-mádyā-* /*anu-mádiya-* ‘to be acclaimed’ in ṚV 9.24.4c *sásnir yó anumádyāḥ* vs 9.107.11c *anumádyāḥ pávamāno manīśib<sup>h</sup>iḥ*. Such syncope is contradictory to Process 2a, for superheavy syllables, like /mád/ in the latter case, are created. In Śākalya’s orthoepic normalization of the Ṛgveda, Process 2b is generalized. Note that Germanic also shows syncope of \*-iji-/-ija- to \*-ji-/-ja- after light syllables in Class I weak presents such as Gothic *satjan*, Old Saxon *settian* ‘set’ from PIE \*sed-éje- (Jasanoff 1994: 275).
- Process 3. Syllable boundary rule: In Indo-Aryan geminates or clusters of consonants of the same aperture are preferred across a syllable boundary. An example from an old period is the verbal adjective *vittá-* ‘found’ vs. Avestan *vista-* < \*uid-s-tá-, where interconsonantal \*s is deleted (Mayrhofer 1986: 111, Kobayashi 2004: 37). In the times of Pāṇini and the Prātiśākhya, postlexical gemination occurs in consonant clusters, e.g. *mád<sup>h</sup>ya-*, *márta-* → *mádd<sup>h</sup>ya-*,

*mártta-*. This is the newest of the rules mentioned here, for Pāṇini reports in Aṣṭ. 8.4.51 *sarvatra śākalyasya* that Śākalya does not accept such gemination in any context, and it is only optional for Pāṇini himself (Aṣṭ. 8.4.46, 47).

If we take *hávya-* /háviya-/ as an example, the Proto-Indo-Iranian string \*j<sup>h</sup>áuH-*ia-* is syllabified as \*j<sup>h</sup>á.ú.i.ia- by Process 1. Although it passes the check for superheavy rhymes, the sequence /iy/ is not favored in Śākalya's language and partly in the Ṛgveda itself, so it becomes /háv.ya-/ by Process 2b. Finally, the /v/ in the cluster is geminated as /háv.vya-/ according to some grammarians by Process 3.

Of these processes, syncope takes place in 2b, and that is where the geminate *yy* is created. Since 2b was already active in Śākalya's days when the pronunciation of /y/ was presumably still not so different from a glide (§4), fortition of /y/ started only after the syncope of /i/ and /u/ before /y/ and /v/ had taken place.

### 5.3 Polarized developments of \*-i- outside Sanskrit

In Avestan, Proto-Indo-Iranian glide \**ɥ* remained as such longer than in Indo-Aryan (§5.1), at least medially, e.g. Av. *gaoiia-* vs. Skt. *gávya-* (Meillet 1950: 71ff.), and there was no need for resyllabification as in Sanskrit, where \**ɥ* did not form a diphthong with the preceding \**a* (<sup>×</sup>*góya-*) but made a cluster with the following \**ɨ*.<sup>13</sup>

It is difficult to identify double glide \**ɨɨ* in Avestan, mainly because both single and double glides are written *ii* or *uu* in the 'Sasanian archetype' spelling (Hoffmann and Narten 1989: 43ff.). And even where double glide \**ɨ* is expected, Avestan simplifies almost all gemination, and there seems to be no doubtless case of geminated glide \**ɨ* there. So for example, *sraiiāh-* < \**śrájH-ias-* might represent double glide \**ɨ*, but it might also have undergone degemination in Iranian (Hoffmann 1976: 615).<sup>14</sup>

<sup>13</sup> In other words, sonority ranking was different: Indo-Aryan *y* > {*v*, *r*} vs. Avestan {*y*, *v*} > *r*. Note that a semivowel sequence is also dissolved by anaptyxis as in *daēuuaiiā* for \**daēuuiiā* (Reichert 1909: 72, Skjærvø 1997: 117f., de Vaan 2003: 541).

<sup>14</sup> Pinault (1982) considers that PIIr. \**śrájH-ias-*, after loss of the laryngeal, was degeminated already in PIIr., and became <sup>×</sup>*śráyas-* in Indo-Aryan, and that *e* was then reintroduced into the first syllable from other forms like *śrés<sup>h</sup>a-*. Positing degemination in PIIr. would be unnecessary if <sup>×</sup>*śráyas-*, which must

Outside Indo-Iranian, single intervocalic \* $\underset{\cdot}{i}$  is lost (as it is when the following vowel was \* $i$  in pre-Vedic Indo-Aryan) while \* $i$  that ended up between vowels is pronounced as ambisyllabic / $yy$ / in Attic Greek, e.g. *treís* ‘three’, *āeí* ‘always’, *pleíston* ‘most’ vs. *At<sup>h</sup>ēnaíos* ‘Athenian’ (Allen 1987: 81f.), and Latin, e.g. *trēs* < \**tréjes* vs. *Pompeianus* / $\tilde{e}yy$ / < \*-*aijā*- (Sommer and Pfister 1977: 87, Allen 1978: 38f.). However, there is a cross-linguistic tendency that geminates are more resistant to changes (Kenstowicz and Pyle 1973), and ambisyllabic development of / $i$ / to / $yy$ / between vowels might not be limited to Indo-European languages. In Germanic, intervocalic \* $\underset{\cdot}{i}$  is often lost as in Greek or Latin, but \* $\underset{\cdot}{i}$  after a short vowel is geminated in several words by Holtzmann’s Law, and further undergoes fortition in Gothic and Old Norse, e.g. Gothic *twaddjē* gen.pl. ‘two’, Old High German *zweiio* (Krahe 1948: 87f.). Although the principle behind the gemination is not clear, it can be compared to Indo-Aryan developments such as OIA *-aya-* > MIA *-e-* vs. OIA *-īya-* > MIA *-ijja-* (Pischel *Gr.* §153, §91).

## 6. Summary

In this paper, we have discussed the origin of the sequence *yy* in Sanskrit, viewing problems such as intervocalic loss of \* $\underset{\cdot}{i}$  and subsequent contraction, syllable-related alternations of semivowels, and pronunciation of \* $\underset{\cdot}{i}$ ~/ $y$ /. We have argued that \* $\underset{\cdot}{i}$  was originally a glide, which was at first lost between \* $a$  and \* $i$ ; but it was gradually phonemicized, underwent fortition, and became an approximant or possibly a voiced fricative in its development in Indo-Aryan.

It is not fortition or phonemicization of / $y$ / but syncope that is directly responsible for the creation of Sanskrit / $yy$ /. When syncope of / $i$ / before / $y$ / first occurred in the Ṛgveda, Sanskrit / $y$ / was in the process of acquiring phonemic status, and / $yy$ / resulting from syncope survived without being resyllabified and dissolved. The syncope of / $i$ / in turn resulted from a change in prosodic preference that started in the Ṛgveda period and was complete by the time of Śākalya’s redaction. Originally, superheavy syllables tended to be avoided as Sievers’ Law indicates; but when  $\bar{o}\sigma_{(y-v)}$

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have served as the basis of the vṛddhi form *śrāyasa-* taught by Pāṇini in Aṣṭ. 7.3.1 (Wackernagel *KISchr.* 504) could be explained otherwise, for example as a neuter *-as-* stem from the root *śrī* (Knobl, p.c.).



came to be preferred to  $\check{\sigma}_{(i/u)\sigma_{(y-/v-)}}$ , and  $\bar{\sigma}_{(y-/v-)}$  to  $\bar{\sigma}_{(i/u)\sigma_{(y-/v-)}}$  even if the first syllable would end up superheavy, syncope of the medial /i/ and /u/ occurred and created many new clusters with semivowels, including /yy/. /yy/ was initially a concomitant of syncope, but it became a real geminate as /y/ underwent fortition and became first an approximant, and possibly a more constrictive consonant such as a voiced fricative. In that sense, Sanskrit yy is a co-product of change in prosodic preference and fortition of /y/. Śākalya's time is when word-final /y/ was lost between vowels while syncope created yy; a comparable situation is found in Germanic, where loss of intervocalic \*i, syncope of \*i before \*i and (spontaneous) gemination of intervocalic \*i took place.

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### Abbreviations and Notation

\*: Reconstructed form (Proto-Indo-Iranian unless otherwise specified); ×: Not attested; >>: higher than; AB: Aitareya-Brāhmaṇa; Aṣṭ.: Aṣṭādhyāyī; AVŚ: Atharvaveda, Śaunaka recension; Br.: Brāhmaṇa; JB: Jaiminīya-Brāhmaṇa; KS: Kaṭha-Saṃhitā; MIA: Middle Indo-Aryan; MS: Maitrāyaṇī Saṃhitā; PIE: Proto-Indo-European; PIr.: Proto-Indo-Iranian; ṚV: Ṛgveda; ṚPr.: Ṛk-Prātiśākhya; σ: syllable(s); ŚB: Śatapatha-Brāhmaṇa; ŚCĀ: Śaunakīyā Caturādhyāyikā; Skt: Sanskrit; TB: Taittirīya-Brāhmaṇa; TPr.: Taittirīya-Prātiśākhya; TS: Taittirīya-Saṃhitā; VPr.: Vājasaneyi-Prātiśākhya; VS: Vājasaneyi-Saṃhitā; YV: Yajurveda (comprising KS, MS, TS and VS); *y̐y̐* etc.: Spelled *yy* but pronounced *y̐y̐* according to metrical scansion.