

# Independent Svarita in External Sandhi

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## 1 Introduction

1.1. In Vedic, two vowels of the same quality, either short or long, get contracted in external sandhi:

- $-\check{V}_1\# + \#\check{V}_1- > -\bar{V}_1-$  *tvāgne* (for *tvā agne*) or *ádhihi* (for *ádhi ihi*)

1.2. When one or both vowels have udātta, the accentual outcome is regularly udātta as well:

- $-\acute{V}_1\# + \#\acute{V}_1- > -\acute{V}_1-$  *prāvat* (for *prā āvat*) or *abhīm* (for *abhī īm*)
- $-\check{V}_1\# + \#\check{V}_1- > -\acute{V}_1-$  *śavasāvadhīh* (for *śavasā āvadhīh*)
- $-\acute{V}_1\# + \#\check{V}_1- > -\acute{V}_1-$  *āruhat* (for *ā āruhat*)

1.3. However, if a short accented *ĩ* is followed by a short unaccented *ĩ*, the accentual outcome is independent svarita:

- $-\acute{ĩ}\# + \#\check{ĩ}- > -\acute{ĩ}-$  *abhīmám* (for *abhī imám*)

1.4. There is only one other case in which independent svarita is the regular accentual outcome of external sandhi in the R̥gveda—the so-called *abhinihita* sandhi.

1.5. Word-final *-ah*, *-o*, and *-e*, when followed by a short *a*-, have two possible outcomes: either *-o/e a-* or *-o/e ’* (e.g. *índro aśrāyi* for *índrah aśrāyi* vs. *no ’viṣat* for *naḥ aviṣat*). The latter outcome is called *abhinihita* sandhi in the Indian grammatical tradition.

1.6. Independent svarita is the regular accentual outcome in case of *abhinihita* sandhi, but only if the first vowel is accented and the second is not. Without *abhinihita* sandhi outcome we get the regular udātta.

- $\acute{a}h\# + \#ā > \acute{o}\#a$  *dūtó adyaut* (for *dūtāḥ adyaut*)
- $\acute{a}h\# + \#ā > \acute{o}\#’$  (*abhinihita*) *devò ’nayat* (for *devāḥ anayat*)

1.7. The aim of this paper is to provide a new phonetic description of the independent svarita and to explain its peculiar distribution in external sandhi.

## 2 Proposals in the literature

- 2.1. There are generally three proposals in the literature on how to account for the distribution above.
- 2.2. Whitney (1856, 200) assumes that the accentuation is the result of some sort of “reduction to the general level.”<sup>1</sup> It is not clear what he means by “reduction” and “general level” and the explanation is insufficient.
- 2.3. Bartolomae (1890, 81) assumes that the svarita outcome is an “awkward overprecise imitation of writing” of the ordinary word-internal svarita in  $-y\check{a}-$  or  $-v\check{a}-$  (from  $*-íy\check{a}-$  and  $*-úv\check{a}-$ ). This is a highly implausible assumption.
- 2.4. The only serious approach to the independent svarita in external sandhi goes back to Benfey (1852, 64). He briefly points to the fact that the developments in which the independent svarita is the regular outcome (1.3 and 1.6) are late.
- 2.5. AiG I (292-293) accepts this view and says that the original accentual outcome of the contraction of two vowels in external sandhi was the udātta, originally the only accent. Later, however, a more “desirable” falling tone became preferred, which is why the more recent sandhi outcomes got the independent svarita accentuation (AiG I, 292).
- 2.6. In other words, AiG I (292-293) claims that there was a period when udātta was the regular outcome in external sandhi and a later period when which the falling tone or independent svarita became the default outcome.
- 2.7. The first problem with this account is that it gives no motivation for why the “falling tone” should suddenly have become preferred, replacing the udātta.
- 2.8. The second problem is that it cannot explain why  $-í i-$  gives an independent svarita and  $-á a-$  does not.
- 2.9. To get around this, one could still assume that the contraction of  $-a a-$  occurred earlier than the contraction of  $-i i-$  or  $-u u-$  (on  $u u-$ , see below). If so, the falling tone could have been “disfavored” when two non-high vowels contracted, whereas it might have been “favored” when the high vowels  $i$  and  $u$  contracted.
- 2.10. Such a relative chronology, however, is improbable. First of all, it is unlikely that two non-high vowels would have contracted earlier than two high vowels.
- 2.11. The situation in the Rigveda, moreover, argues against such a chronology.
- 2.12. If the non-high vowels  $-a a-$  had indeed contracted earlier, we would expect a higher rate of contraction (i.e. scansion as one long syllable) for the non-high vowels as opposed to high vowels  $-i i-$  in the metrically restored text.<sup>2</sup>

	contr.	uncontr.	% contr.
$-i i-$	42	15	26.3 %
$-í i-$	19	9	32.1 %
$-i í-$	31	10	24.4 %
$-í í-$	12	2	14.3 %
<b>total</b>	<b>104</b>	<b>36</b>	<b>25.7 %</b>

1. “[T]he vowel is regarded as in some manner absorbed into the preceding diphthong and made a part of it” and the “accentuation is represented in the compound by the reduction of the voice to the general level” (Whitney 1856:200).

2. I avoided counting instances of  $-u u-$ , because we have no direct evidence what the accentual outcome in this case is.

	contr.	uncontr.	% contr.
-a a-	416	117	22.0 %
-á a-	197	43	17.9 %
-a á-	186	102	35.4 %
-á á-	83	40	14.3 %
<b>total</b>	<b>882</b>	<b>302</b>	<b>25.5 %</b>

2.13. There is thus no significant difference in contraction rates between the low vowels *a* and the high vowel *i*.<sup>3</sup>

2.14. A further problem with the AiG chronological explanation is that the independent svarita is the outcome only if both vowels are short.

2.15. According to this explanation a sequence *-i ī-* should have contracted earlier than a sequence *-i i-*. If we compare the frequencies of contraction for *-i i-* and for *-i ī-*, however, we see that contraction rates are not statistically significant.<sup>4,5</sup>

	contr.	uncontr.	% contr.
-i ī-	19	3	13.6 %
-i i-	104	36	25.7 %

### 3 Descriptive facts

3.1. There is general agreement that the independent svarita is the outcome of *-i i-*, but not of *-á a-*.

3.2. What about *-ú u-*? The accentual outcome of two short high vowels *-ú u-* is less clear.

3.3. My survey shows that there are no instances of *-ú u-* in external sandhi in the Rigveda. I have not found any instances of this sandhi in the Atharvaveda either. This means that we do not know what the regular outcome of this sequence was in the earliest *saṃhitās*.

3.4. There is, however, evidence for *-ú u-* giving independent svarita in the data: TS 7.1.8.6 and 7 *sūdgātā* for *sú-udgāṭr-* (MacDonell 1910, 104).<sup>6</sup>

3.5. Other evidence is less reliable, but also points to *-ū-* as the outcome of *-ú u-*. Pāṇini 8.2.6 allows the independent svarita as the accentual outcome of *-ú u-*, the example for this rule in the commentaries being *sūtyitaḥ* for *sú-utyitaḥ* (noted already in Benfey 1852, 64).

→ We can draw the following generalization: independent svarita is the regular accentual outcome of contraction of an accented short high vowel and an unaccented short high vowel. Elsewhere the regular accentual outcome of contraction is udātta.

3. The p-value for this distribution is 0.9575.

4. The p-value for this distribution is 0.2887.

5. There is a significant difference in contraction between *-i i-* and *-ī i-*. There are altogether 42 instances of *-ī i-* in external sandhi, excluding the *pragr̥hya* sandhi, only 3 (6.7 %) of which are uncontracted (p-value = 0.0058). Nevertheless, this result cannot be conclusive, as the vast majority of cases include the particle *iva*, which exhibits highly irregular sandhi behavior. Note that *iva* in this position cannot be distinguished from the 'va variant, and that *iva* contracts (or surfaces as 'va) even in *pragr̥hya* sandhi (cf. Malzahn 2001, 24ff.).

6. I have not found any other instances of *-ū-* in the Taittirīya or Vājasaneyi *saṃhitā*. However, I have not found any instances where *-ú u-* would yield *-ū-* either.

-ī̇ ī- > -ī̇-  
 -ū̇ ū- > -ū̇-

*elsewhere:*

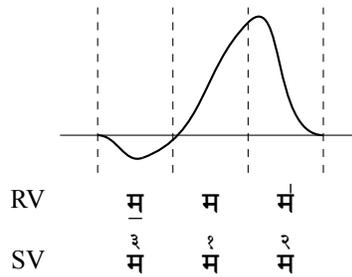
-ā̇ ā- > -ā̇-  
 -ī̇ ī- > -ī̇-  
*etc.*

## 4 The independent svarita

4.1. Before we proceed with our explanation of the distribution, we have to first determine the properties of the independent svarita.

4.2. The literature on the Vedic accent rarely mentions what the independent svarita actually is. It is usually described simply as a “falling tone”.

4.3. The following graph represents the way pitch accent is marked in udātta containing sequences in the Rigveda and Sāmaveda, along with the corresponding hypothetical pitch contour.<sup>7</sup>



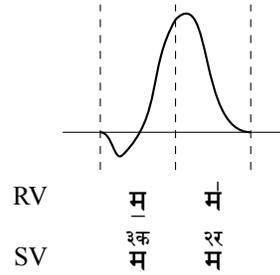
→ I argue that the only difference between the udātta-containing and the independent svarita-containing sequence is in duration and consequently in steepness of the pitch contour. In other words, the udātta-containing sequence is just a shorter version of the independent svarita-containing sequence.

4.4. The first piece of evidence for this proposal comes from the fact that the independent svarita-containing sequence is the regular outcome of the udātta-containing sequence when the udātta syllable is lost.

•  $\underline{V}\acute{V}\grave{V} > \underline{V}\grave{V}$  *nādīyàḥ > nadyàḥ*

4.5. This means that the independent svarita-containing sequence is one syllable shorter than the udātta-containing sequence. Note that in the Rigveda the two are marked identically, but the independent svarita-containing sequence lacks the lost udātta syllable. The following graph represents the hypothetical independent svarita-containing sequence. The pitch contour is the same as on the udātta-containing sequence, but the time span is one syllable shorter.

<sup>7</sup> Note that the graph schematizes the pitch contour as it is reported in the Rigveda, where the svarita syllable reaches the highest pitch. In other traditions udātta has the highest pitch, and this was also probably the original accentuation (cf. MacDonell 1910, 77ff.). However, the difference is of no importance to my proposal and all arguments in this paper apply equally to the system with the udātta having the highest pitch as well.



4.6. How do we know that the pitch contour was the same?

4.7. We can assume that the pitch of the anudāṭṭa (first syllable on the graph) in the independent svarita-containing sequence was the same as in the udāṭṭa-containing sequence, because the marking of the two is always the same. Moreover, we can assume that the pitch of the svarita part is the same, because the pitch contour level has to return to the neutral level and because the two are marked the same in the Rīgveda.

4.8. The crucial evidence comes from the Sāmavedic system of accent marking. In the Sāmaveda the pitch accent is marked by numerals: 1 for the highest pitch (udāṭṭa), 2 for svarita, and 3 for the lowest pitch (anudāṭṭa). In general, the independent svarita-containing sequence in the Sāmaveda is marked by the numeral 3 and a sign for *ka* (३क) and a numeral 2 and the sign for *ra* (२र). The marking most likely represents the “strength” of the pitch articulation or the steepness of the pitch contour, where *ka* probably stands for *karṣaṇa* ‘pulling to and from, dragging’ and *ra* for *rekha* ‘line’ that represents the finger movement in recitation (Haug 1873, 38-42).

4.9. If the independent svarita-containing sequence stands at the beginning of a word and pada, however, it is marked by a numeral 1 and the signs 2 and *ra* above the svarita syllable (Haug 1873, 41).

- <sup>१२र</sup>क्रेयथ for *kvēyatha* or <sup>१२र</sup>न्यस्मिं for *nyāsmiṃ*

→ This shows that the pitch of the independent svarita-containing sequence reaches the highest level, just as in the udāṭṭa accentuation.

## 5 A new proposal

5.1. We can now explain the peculiar distribution of the svarita in external sandhi. We saw that an independent svarita-containing sequence is just a short variant of an udāṭṭa-containing sequence.

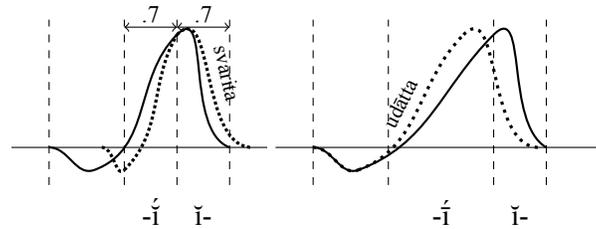
5.2. We also know that high vowels are phonetically shorter than low vowels.<sup>8</sup> This explains why the independent svarita arises only on short high vowels: they were short enough that the pitch contour when they contracted resembled the svarita and not the udāṭṭa accentuation.

5.3. In short, the pitch contour on two short high vowels *-i-* *-ú-* was steep enough to match the steepness of the independent svarita and not the udāṭṭa, or, in other words, the pitch was steep enough that the speakers analyzed it as an independent svarita.

<sup>8</sup> Japanese, for example, confirms that high vowels are phonetically shorter than low vowels. Japanese, like Vedic, distinguishes between short and long vowels. The mean duration of a short accented *i* is 67ms. The mean duration of a short accented *a* is 96 ms (Akaba 2008, 36). The ratio is thus approximately 0.7:1.

5.4. This proposal also explains why the svarita does not arise if either of the vowels is long.

5.5. Schematically and hypothetically, we can represent the development in the following graph. The dotted line represents pitch contour of word-internal independent svarita-containing sequence on the first graph and word-internal udāṭṭa-containing sequence on the second graph. This is compared to the regular accentuation of external sandhi (non-dotted line) if the two vowels are high and therefore phonetically shorter than low vowels on the first graph. The second graph contains the regular accentuation if either of the vowels is long.



5.6. My proposal also explains why the independent svarita is the outcome of  $-ò$  ' and  $-è$  ' (the *abhinihita* sandhi).

5.7. We can assume, on the basis of independent evidence (cf. Allen 1962), that the underlying vowels in *abhinihita* sandhi were in fact the short non-low  $\epsilon$  and  $\varrho$ . Thus,  $-ó$   $a$ - and  $-é$   $a$ - stand for  $-ó$   $\varrho$ - and  $-é$   $\epsilon$ -, which later contracted to  $-ò$  and  $-è$ .

→ This means that the vowels here were also short and, more importantly, non-low, which explains why the accentual outcome is the svarita: they were phonetically short enough that the pitch contour resembled the steep pitch of the svarita and not the udāṭṭa accentuation.

## 6 Conclusion

6.1. In the first part of this paper I argue that existing explanations of the independent svarita accentuation in external sandhi are not sufficient.

6.2. Based on new data, I propose the following generalization: the independent svarita accentuation is the outcome of contraction of two short non-low vowels ( $i$  and  $u$ ) in external sandhi if the first is accented and the second is not. The independent svarita is also the outcome of the *abhinihita* sandhi ( $-o$  '), if the first vowel was accented and the second was not.

6.3. I further propose a new phonetic description for the independent svarita. I argue that the independent svarita-containing sequence is just a shorter variant of the the udāṭṭa-containing sequence, i.e. the difference is only in the steepness of the pitch contour.

6.4. I propose the following explanation for the peculiar distribution of the independent svarita in external sandhi: the svarita accentuation of  $-í$   $i$ -,  $-ú$   $u$ -,  $-ó$   $a$ -, and  $-é$   $a$ - is a consequence of the fact that non-low vowels were short enough and the pitch contour was steep enough to resemble the svarita and not the udāṭṭa accentuation.

## Abbreviations

AiG I *See* Wackernagel, Jakob.

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