Vedic Sanskrit Vocatives in -an: The Case for Restoring Two Endings

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1 Introduction

This article provides new distributional evidence for a split in Vedic vocatives in -an, such that some (e.g., maghavan) were heavy-final at composition, while others (e.g., somapavan) were not. Our evidence largely agrees with the scheme of Arnold (1905), though we suggest minor revisions, and largely opposes the schemes of Oldenberg (1888, 1908).

Word-final -Vn (where V is a short vowel) is found in three contexts in the Samhitā text of the Rigveda (RV), namely (a) verbs and participles in -an, (b) locatives in -an and -in, and (c) vocatives in -an and -in, to cite the endings as they appear in the Padapatha, which is not necessarily how they are to be restored.1 Examples of these three contexts are given in (1). Other short vowels (i.e., u and r) do not occur in this frame in the RV, except due to the nasal assimilation of a final obstruent (e.g., ún mā for /út mā/).

(1) a. áhan ‘you smashed’, jánáyan ‘begetting’, ágman ‘they have come’
   b. yáman ‘on the course’, tásmín ‘in that’, váríman ‘upon the expanse’
   c. puṣan ‘o Puṣan’, somapavan ‘o soma drinker’, śiprin ‘o (lovely) lipped’

In the Saṁhitāpātha, the nasal in -Vn is always doubled before a vowel, such that the word-final syllable is heavy, often including cases where such doubling is unjustified etymologically.2 In (2), for instance, vajrinn is transmitted as doubled, and yet both its etymology (*-in) and the location of its ultima in a metrical position that is normally light suggest that the doubling is unjustified. Indeed, examining the other prevocalic instances of vajrin (and -in vocatives more generally) makes it clear that vajrinn should be restored to vajrin without doubling in every case. Translations in this article are from Jamison and Brereton 2014 unless otherwise stated; G&R marks our own translations.

(2) ághanma vajrinn āśāsah
   “we have arrived at our hopes, possessor of the mace.” (8.92.13c)

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1 We assume a basic familiarity with Rigvedic philology and metrics, for which see Oldenberg 1888, Arnold 1905, Jamison and Witzel 1992: 2–27, Witzel and Gotō 2007: 427ff., and Jamison and Brereton 2014: 3ff.

2 The velar nasal ñ is also encountered occasionally as part of a VC ending, in which case it is also transmitted as doubled before a vowel (e.g., sudṛin āsti “you are of the same aspect” 8.11.8a) and can unproblematically be restored as such.
In other cases, the doubling is justified, as with the -Vn verb in (3). Both meter and etymology (*ns) agree that áhann is heavy-final. In short, some prevocalic -Vn forms are to be restored as undoubled, being light-final, while others are to remain doubled (or -nC), being heavy-final.\footnote{We put aside the question of whether \emph{nn} was pronounced as such at composition (as opposed to \emph{nt}, \emph{nd}, etc.). This article concerns itself only with whether the word was heavy-final at composition.}

\begin{equation}
(3) \quad t_u^{\text{vám}} \text{ síndhūhr āvāṣrjo} \quad \text{adharāco dhān dhim}
\end{equation}

“You sent the rivers surging downwards; you smashed the serpent.” (10.133.2ab)

The consensus holds that doubling in the Samhitā is unreliable. Furthermore, everyone agrees that doubling applies to at least some -Vn words. The question is then where doubling should and should not be restored. We consider three schemes. All three agree that verbal forms are doubled, locatives are undoubled, and -in vocatives are undoubled. This is consistent with the etymologies of these categories: the verbs and participles reflect *-ant, *-ans, or *-ant(t)s, whereas the -in locatives and -in vocatives reflect *-in.

The schemes differ in their treatment of -an vocatives. On the first scheme, -an vocatives are uniformly undoubled, like -in vocatives, reflecting their etymology in *-an (Oldenberg 1888: 424). The second scheme, after Arnold (1905: 142), maintains that -an vocatives are normally undoubled, but with five lexical exceptions: “the final syllable of maghavann is always long by position, and pūsān, rājān, vṛṣān, and sabasavann usually.” We refer to these five forms as Arnoldi-an vocatives. Finally, Oldenberg (1908: 486–93), responding to Arnold (\emph{ibid.}), suggests that all -an vocatives might behave alike in exhibiting a kind of middle quantity, such that they can scan as variably heavy- or light-final. The three schemes are summarized in Table 1. Checkmarks indicate that the ending is restored as heavy prevocally (i.e., as -Vnn or -VnC). Checkmarks in parentheses indicate that the forms “usually” pattern as doubled (Arnold 1905) or vary (Oldenberg 1908).

<table>
<thead>
<tr>
<th></th>
<th>Scheme I: Oldenberg 1888</th>
<th>Scheme II: Arnold 1905</th>
<th>Scheme III: Oldenberg 1908</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal forms in -an</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Locatives in -an and -in</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocatives in -in</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocatives in -an (Arnoldian)</td>
<td></td>
<td>(√)</td>
<td>(√)</td>
</tr>
<tr>
<td>Vocative in -an (non-Arnoldian)</td>
<td></td>
<td></td>
<td>(√)</td>
</tr>
</tbody>
</table>

In their metrically restored text, van Nooten and Holland (1994) restore -Vn haphazardly. Compare, for instance, 1.80.1c, where \emph{vajrin} starts in the fourth position of the dimeter and is undoubled prevocally, to 8.92.13c, where it remains doubled in...
precisely the same context. The relevant pādas are given in (4) as per van Nooten and Holland (1994).

(4) a. śāviṣṭa vajrin ājasā (1.80.1c)
   b. āgaṇma vajrinā ṣāsaḥ (8.92.13c)

This is not an isolated case. For instance, of 12 prevocalic tokens of vajrin, they leave it doubled in six, whereas most schemes (Table 1) would restore it as uniformly undoubled.

This article presents new distributional arguments in support of Arnold’s position, in that Arnoldian vocatives pattern as heavy-final while non-Arnoldian -an vocatives do not. Moreover, we find no compelling evidence for optionality or middle quantity: Arnoldian vocatives are distributed well within the range of invariably heavy-final words, and non-Arnoldian vocatives are no more variable than other, securely light-final words.

2 Metrical localization

To investigate whether different types of -Vn pattern as heavy (-VnC#) or light (-Vn#), we employ localization vectors specifying the number of times that a word occurs in each metrical position. As an example, consider once again vajrin, and for the sake of illustration in this section, take the REGULAR DIMETER, that is, all eight-syllable pādas except the so-called trochaic gāyatṛī, epic anuṣṭubh, uneven lyric, and any other pada with a marked cadence of other than light-heavy-light-X. Furthermore, we exclude the Vālakhīlya, being late, and all repeated pādas after the first instance.

In this regular dimeter subcorpus of 10,286 pādas, vajrin occurs five times prevocally, always starting in the fourth position, as in 1.80.1c and 8.92.13c above. Its prevocalic localization vector in this meter is therefore <0, 0, 0, 5, 0, 0, NA, NA>. The seventh and eighth positions are NA (not applicable) rather than zero because vajrin, being disyllabic, could not possibly begin in one of these positions and also precede a vowel within the pada. The distinction between zero and NA matters for the statistics: the former is an informative absence, the latter an uninformative absence. The prevocalic distribution is used because it is more informative than the preconsonantal distribution about whether vajrin ends with -nC# or -n#, since this difference manifests in a heavy vs. light distinction only prevocally.

The next step is to consider comparanda. If vajrin is light-final prevocally, it is expected to be distributed metrically like other prevocally light-final words, such as those in -VC, where C is taken here to be any consonant other than n or ni. If vajrin is heavy-final, it is expected to behave more like VVC-final words, where VV includes a long vowel, e, or o. Moreover, we consider only comparanda that have the

5 In assessing cadential filters, we ignore the weight of Vn(n)# V.
6 The originally trimoraic diphthongs ai and au are excluded because the VC ending would then be superheavy prevocally, which might behave distinctly from a heavy ending (Hoenigswald 1990, Kobayashi 2001, Ryan 2021). Furthermore, VCC endings are not considered as comparanda
same metrical shape as the word in question, in this case, a disyllable with a heavy initial syllable, notated HX (H = heavy, L = light, X = either). This ensures that the comparanda are otherwise eligible for the same metrical positions as the critical item, modulo the ending.

Table 2 gives the localization of \textit{vajrin} alongside its comparanda, all words in HX-VC and HX-VVC, that is, HX-shaped words that end in VC or VVC. Counts reflect only prevocalic tokens in the regular dimeter as just defined. While it is obvious that \textit{vajrin} aligns better with its light comparanda, for other, less obvious cases, and for purposes of aggregation, it will be useful to quantify the likelihood that a word such as \textit{vajrin} ends with a heavy vs. light syllable given the comparanda. To do so, we use a Bayesian approach,\textsuperscript{7} taking as priors the two comparand distributions, smoothed slightly by adding 0.01 to all non-NA cells.\textsuperscript{8} The present example illustrates the method.

Table 2: Prevocalic localization vectors for a critical item and two comparand sets.

<table>
<thead>
<tr>
<th>Position</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical item: \textit{vajrin}</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Light comparanda: HX-VC</td>
<td>251</td>
<td>89</td>
<td>200</td>
<td>392</td>
<td>0</td>
<td>26</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Heavy comparanda: HX-VVC</td>
<td>165</td>
<td>26</td>
<td>197</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

First, 0.01 is added to each position of the comparanda, yielding 251.01, 89.01, etc. for lights. Then, each position of the comparanda is divided by the sum of all positions in its row, yielding a probability distribution (0.26, 0.09, etc.). We then compute the likelihood that the critical item, \textit{vajrin}, was derived from each comparand distribution. For lights, position 4 has a probability of 0.41. Drawing five tokens from position 4 thus has a probability of 0.41\textsuperscript{5} = 0.011. This is \(p(\textit{vajrin}|\text{light})\), the probability of observing \textit{vajrin} distributed as such under the assumption that \textit{vajrin} ends with a light. Doing the same for heavies reveals \(p(\textit{vajrin}|\text{heavy})\) to be \(1.0 \times 10^{-8}\). The final step is to compute \(p(\text{heavy}|\textit{vajrin})\), the probability that \textit{vajrin} ends with a heavy, using Bayes’ theorem.\textsuperscript{9} We conclude that \textit{vajrin} has a probability of \(8.8 \times 10^{-7}\), or virtually zero, of ending with a heavy.

Going forward, our metrical corpus includes not just regular dimeter, but also regular trimeter, that is, pādas of 11 or 12 syllables excluding repeated pādas after the first instance, the Vālakhilya, and unusual/irregular meters (viz. bhāravā, gautami, vīrāṭsthānā, uneven lyric, 8+3, 8+4, and any 11 without an HLHX cadence or 12 without an LHLX cadence). After these exclusions, 20,585 pādas of regular

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\textsuperscript{7} While Fisher’s exact test (Gunkel 2010, Sandell 2016) would also work here in principle, in practice, it was intractable (without simulation) for some tables of the size considered below. Moreover, the present method slightly outperformed Fisher’s in benchmark tests.

\textsuperscript{8} This addition obviates zeros, which have the potential to break this method. For example, \(p(\text{item}|\text{heavy})\) and \(p(\text{item}|\text{light})\) could both be zero, resulting in \(p(\text{heavy}|\text{item})\) being undefined.

\textsuperscript{9} Per Bayes’ theorem, \(p(\text{heavy}|\textit{vajrin}) = p(\textit{vajrin}|\text{heavy}) \times p(\text{heavy}) / p(\textit{vajrin})\). We assume the uninformative prior, \(p(\text{heavy}) = 0.5\). (Although heavy endings are more frequent in Sanskrit in general, we do not want to favor either outcome \textit{a priori}.) The denominator, \(p(\textit{vajrin})\), is \(0.5 \times p(\textit{vajrin}|\text{heavy}) + 0.5 \times p(\textit{vajrin}|\text{light})\), or 0.006. Thus, \(p(\text{heavy}|\textit{vajrin})\) is \(8.8 \times 10^{-7}\).
trimeter remain. Added to the regular dimeter, the full regular meter corpus comprises 30,871 padas. Each localization vector now contains 31 positions, that is, 8 for dimeter, 11 for 11-syllable trimeter, and 12 for 12-syllable trimeter. Finally, we split each position into two cells, one pre-heavy and one pre-light (e.g., 8–1–H, 8–1–L). For example, pre-vocalic *vajrin* in regular dimeter always precedes a heavy. Thus, 8–4–H is 5 while 8–4–L is 0. Adding the weight of the following syllable improved classification accuracy under benchmarking.¹⁰

### 3 The weight of final -Vn

We now turn to the question of the weight of vocative ultimas more generally. Aggregate heaviness probabilities of five types of -Vn words are shown in Figure 1, along with light (-VC) and heavy (-VVC) comparanda in the leftmost and rightmost columns, respectively. Each column depicts the distribution of words in its category. Each box (often flat enough to resemble a line) represents the interquartile range (25%–75%). Points are outliers. The total number of words in each category is given in its label. Only frequent words, those with sample frequencies \( n \geq 4 \), are included, as those are classified the most reliably. All five Arnoldian vocatives make the cutoff, but no non-Arnoldian -an vocatives do. We return to the latter below.

Figure 1: Box plot for frequent (sample \( n \geq 4 \)) words, arranged by ending type. The label of each box indicates the number of words in the category.

Recall from Table 1 that several aspects of the treatment of (prevocalic) -Vn are matters of consensus, namely that -Vn verbal forms are heavy-final, that -Vn locatives

¹⁰ Because only pre-vocalic tokens are considered, all items precede a syllable. Splitting counts into pre-heavy and pre-light improves accuracy because some metrical tendencies are syntagmatic. Imagine, for instance, that an HX word occurs once, in 8–1. Ignoring the following position (8–3), HX in 8–1 has a 77% chance of being heavy-final. But taking into account the fact that 8–3 is, say, light, HX in 8–1 has a 90% chance of being heavy-final.
are light-final, and that -in vocatives are light-final. All three conclusions are reinforced by Figure 1. But Figure 1 also reveals that the five Arnoldian vocatives pattern clearly as heavy-final. Thus, one of the positions in Table 1 can be rejected at this point: contra Oldenberg (1888), some -an vocatives—at least the Arnoldians—should be restored as heavy-final. Moreover, certain possible explanations for the heaviness of Arnoldian vocatives can already be ruled out based on Figure 1. First, their heaviness cannot be due to some aspect of the behavior of vocatives in general, given their departure from -in vocatives (and from certain other -an vocatives, as shown below). Second, their heaviness cannot be ascribed to the general phonology of final -an, as -an locatives (and certain other -an vocatives) are squarely light-final.

The heaviness probabilities of all -an vocatives attested prevocally in the regular meter subcorpus are given in Table 3. All five Arnoldian vocatives are classified as heavy-final, to which we add a sixth, viśvakarman. Two forms, satrādāvan and śālāvan (and less likely ahihan), may also be heavy-final, though their single tokens do not occupy positions that are strongly diagnostic one way or the other. Given this split between heavy- and light-final -an vocatives, we turn to consider what, if anything, motivates the membership in each class. Two possible factors can be set aside immediately, namely, word shape and frequency, both shown in the table. As for word shape, the same shapes can be found on both sides of the divide: LLHX, HLHX, LHX, and LLX. As for frequency, it is true that most of the heavy -an vocatives are frequent, while most of the light -an vocatives are infrequent. But there are exceptions in both directions. Note that the Bayesian method employed here is not generally biased towards light-finality for infrequent items.

Table 3: -an vocatives arranged from highest to lowest heaviness probability based on prevocalic tokens in regular meters. Shaded rows are indeterminate. Asterisks indicate the five vocatives singled out by Arnold (1905).

<table>
<thead>
<tr>
<th>Word</th>
<th>Shape</th>
<th>Sample freq.</th>
<th>RV freq.</th>
<th>Heaviness probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>maghavan*</td>
<td>LLX</td>
<td>32</td>
<td>132</td>
<td>1.000</td>
</tr>
<tr>
<td>sahāsāvan*</td>
<td>LLHX</td>
<td>5</td>
<td>13</td>
<td>1.000</td>
</tr>
<tr>
<td>viśvakarman</td>
<td>HLHX</td>
<td>1</td>
<td>2</td>
<td>1.000</td>
</tr>
<tr>
<td>rājan*</td>
<td>HX</td>
<td>10</td>
<td>46</td>
<td>0.996</td>
</tr>
<tr>
<td>viṣan*</td>
<td>LX</td>
<td>8</td>
<td>25</td>
<td>0.990</td>
</tr>
<tr>
<td>piśan*</td>
<td>LX</td>
<td>15</td>
<td>30</td>
<td>0.922</td>
</tr>
<tr>
<td>satrādāvan</td>
<td>HHHX</td>
<td>1</td>
<td>1</td>
<td>0.635</td>
</tr>
<tr>
<td>śātāvan</td>
<td>LHX</td>
<td>1</td>
<td>1</td>
<td>0.632</td>
</tr>
<tr>
<td>ahihan</td>
<td>LLX</td>
<td>1</td>
<td>1</td>
<td>0.173</td>
</tr>
<tr>
<td>aśvadāvan</td>
<td>HLHX</td>
<td>1</td>
<td>1</td>
<td>0.002</td>
</tr>
<tr>
<td>viśvasaman</td>
<td>HLHX</td>
<td>1</td>
<td>1</td>
<td>0.002</td>
</tr>
<tr>
<td>vṛtrahan</td>
<td>HLX</td>
<td>1</td>
<td>39</td>
<td>0.001</td>
</tr>
<tr>
<td>ariṣṭabharman</td>
<td>LHLHX</td>
<td>1</td>
<td>1</td>
<td>0.001</td>
</tr>
<tr>
<td>somapāvan</td>
<td>HLHX</td>
<td>1</td>
<td>1</td>
<td>0.001</td>
</tr>
<tr>
<td>viṣakarman</td>
<td>LLHX</td>
<td>2</td>
<td>2</td>
<td>0.000</td>
</tr>
<tr>
<td>parījman</td>
<td>LHX</td>
<td>1</td>
<td>1</td>
<td>0.000</td>
</tr>
<tr>
<td>puruḥanman</td>
<td>LLHX</td>
<td>1</td>
<td>1</td>
<td>0.000</td>
</tr>
</tbody>
</table>
4 An account of final weight

We now turn to an account of final weight in the -an vocatives. First, we ask whether Brugmann’s Law could be responsible for heavy-final forms. After rejecting that possibility, we consider whether there is evidence for the analogical extension of n-doubling along word-formational lines. We find that it may have been extended to animate -ān-stems of the type rājan, vṛṣan, pūsan, and perhaps also to compounds of the type viśvakarman and satrādavaṇa. We then suggest that -nt-stems are the source of the heavy-final forms. Finally, we identify several source candidates, including /maghavant/ and /rājant/, and suggest how -ann was extended analogically. They include relatively general extensions as well as more local ones, e.g., maghavann indra → vṛṣann indra.

Where relevant, we reference the stratum according to Arnold’s Vedic Meter (1905), on the one hand, and Oldenberg’s Prolegomena (1888) and Noten (1909–1912), on the other. From oldest to youngest, Arnold’s strata are Archaic (A), Strophic (S), Normal (N), Cretic (C), and Popular (P); lower case indicates that Arnold assigned the stratum based on metrical evidence alone. Oldenberg’s six strata follow his reconstruction of the assembly of the Sanshitā text. This is related to but distinct from a linguistic stratification. In what follows, the notation “[P, 5]” shows that Arnold assigned the passage to the Popular stratum, and Oldenberg assigned it to the fifth Sanshitā assembly stratum.

4.1 Brugmann’s Law as a source of weight?

A number of the heavy-final vocatives continue former o-grade *-on. Specifically, viśvakarman and rājan continue *-on and *-on, respectively; it is conceivable (if unlikely) that pūsan continues *-on, and it is likewise possible, at least, that maghavan, sahavaṇa and satavaṇa continue *-on. This obligates us to consider whether some heavy-final vocatives arose via Brugmann’s Law, which lengthened inherited *o in open syllables in Indo-Iranian, e.g., *h3rē.gon.ṃ > rājana[m], and might have originally applied across word boundaries such that *h3rē.gon.n[V > rājan[V (versus *h3rē.gon.[C > rājan[C]). One could imagine the following sort of scenario (which we will eventually reject). By the time of the composition of the Rgveda, the alternation -an[V ~ -an[C was morphologically restricted, as with other reflexes of Brugmann’s Law (e.g., perfect cakāra ~ cakārtha), and perhaps also lexically restricted (see below on ha). The poets knew and produced prevocalic vocatives in -an, i.e., Arnoldian vocatives such as rājan. During the post-compositional transmission of the text, morphologically irregular vocatives (e.g., *rājan) were replaced with mor-

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12 For a rough linguistic stratification, Oldenberg suggests collapsing the strata as follows: 1–4 (books 1–9 minus late additions/Anhänge); 5 (book 10 minus additions); 6 (additions to all books).
13 See the etymological treatments of Oettinger 2000: 393 and Malzahn 2014: 163, which implicitly allow for the possibility that the vocative continues *-on, while the accusative singular and nominative plural were analogically remodeled to pūśaṇam and pūśaṇah, respectively, versus the *pūśaṇam and *pūśaṇah that would regularly continue *puh₂sh₁ónm and *puh₂sh₁ónes.
phonologically regular ones (e.g., rājan).

Like all forms in -Vn, they were subject to the post-compositional n-doubling process, yielding rājann#V and the like.

On closer consideration, however, Brugmann’s Law proves to be an unlikely source of final weight in -an vocatives. The only well-studied Rigvedic reflex of the application of Brugmann’s Law across word boundary, namely the lengthening of *gho#CV > ghā#CV (Hale 1999), is different in at least one crucial respect. Hale provides independent evidence “that monosyllables regularly form a close prosodic unit with the lexical items to which they are adjacent” (p. 148), and concludes that “the same close juncture over which the RUKI rule operates also licenses Brugmann’s Law effects” (p. 150). Hale has treated the close junctures in question in several publications. In addition to the juncture between a monosyllable and an adjacent word, they include junctures between a postposition and a non-branching N complement, genitive and noun, preverb and verb, and host and clitic.

We never find those relationships between the heavy-final vocatives and the following lexical item. Instead, we typically find very loose junctures. To get a sense of this, we can briefly survey the juncture between our five potential *-on vocatives (viśvakarman, rājan, pūsan, sahasavan, satavan) and the following vowel-initial word. In 55 of the 71 instances, the vocative phrase ends after the Arnoldian vocative, such that the juncture is equivalent to an intonational phrase boundary (vel sim.), e.g.,

yé tvāhātye maghavann ávardhan
“Those who strengthened you at the serpent-smashing, bounteous one” (3.47.4a)

māhāṁ rājann anyākṛtena bhojam
“Let me not suffer for what was done by another, o king.” (2.28.9b)

In the remaining 16 instances, the following word does belong to the vocative phrase. We find adjective-noun, adjective-adjective, and noun-adjective junctures, but never any of the close junctures listed above: maghavann indra (girvanah) “bounteous Indra (longing for song)” (10x), maghavann rjīṣin “bounteous possessor of the silvery drink” (3x), pūsan aghr. n. e “glowing Pūsan” (2x), and sahasavann amartya “overpowering immortal.”

Finally, it is worth noting that there is an additional reason why Brugmann’s Law would not have applied to a subset of the junctures in question: a word-initial laryngeal would have closed the syllable at the relevant time, e.g., *-yon. hṛ̥-giene > -vān rjī.20

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14 Cf. replacements such as *yāsmi > yāsmin (Arnold 1905: 144); *krinā-, *drunā-, *prinā-, etc. > krinā-, drunā-, prinā-, etc. (Oldenberg 1898: 477–8 with references, Arnold 1905: 131); *mim- > mimā- (Gunkel 2018).

15 It is unclear whether Brugmann’s Law is ultimately responsible for 1pl. perfect forms in -mā (e.g., cakrāmā). For discussion, see Kümmel 2000: 42, Jasanoff 2003: 32, and Krisch 1996: 262.


20 Since word-initial *h哈尔 is apparently continued by h and x in Southwestern varieties of Iranian (Kümmel 2018: 166), it must have still been present at the time that Brugmann’s Law applied.
4.2 Analogical extension by word-formation type?

By classical Sanskrit, the prevocalic n-doubling sandhi process applied to -Vn regardless of whether it was etymologically justified < *-Vnt, *-Vn(t)s or not < *-Vn. The Arnoldian vocatives show that by the time the Rgveda was composed, prevocalic -ann had already been extended beyond its original bounds. It is thinkable that n-doubling was extended by the sort of analogy that is sensitive to word-formation type. If we had a much larger corpus of Rgvedic Sanskrit that was all composed at roughly the same time by a single poet, that would be easy to recognize. Word-formation types would all be situated on one side of the heaviness divide or the other. Classes as yet unaffected by the extension would be on the light-final side, and classes affected by the extension would be on the heavy-final side, with the exception of lexicalized items (relics). Given the size and nature of the text, the actual picture is less clear.

There is a trio and a duo situated on the heavy side of the divide that could in theory represent morphological classes. Given their size, that is far from certain. The trio rājan, pūsan, and vṛṣan could represent a class of animate -ān-stems.21 The duo sahasāvan and sātāvan could represent the class of possessive adjectives in -vān- ∼ -v(a)n-. The morphological analysis of those two forms is disputed, though, and we argue below that they are more likely possessive adjectives in -vant- ∼ -vat-.

There is one word-formation type that clearly straddles the heaviness divide, namely possessive compounds with second compound members in -mān- ∼ -m(a)n- (< *-mān- ∼ -mn-), which are also used as personal names. On the one hand, we find a heavy-final prevocalic vocative to

\[ \text{viśvā-karman}- \text{‘possessing/accomplishing all that’s made} \]
\[ \rightarrow \text{(god) Viśvakarman’} \]

in an 11-syllable verse in 10.81, a hymn that Arnold assigned to the popular stratum:

\[ \text{yā madhyamā viśvakarmann utēnā} \]
\[ \text{“and these [domains, –G&R] that are your midmost, Viśvakarman”} \]
\[ (10.81.5b [P, 5]) \]

On the other hand, we find light-final prevocalic vocatives to the remaining members of that word-formation type, all of which occur in hymns assigned to earlier strata, i.e.,

\[ \text{viśva-sāman}- \text{‘p/a all songs → (poet) Viśvasāman’} \]
\[ (5.22.1a [A, 1]) \]
\[ \text{arīṣṭa-bharman}- \text{‘p/a an unharmed burden’} \]
\[ (8.18.4b [A, 2]) \]
\[ \text{puru-hanman}- \text{‘p/a many blows → (poet) Puruhanman’} \]
\[ (8.70.2a [A, 3]) \]
\[ \text{vṛṣa-karman}- \text{‘p/a bullish deeds’} \]
\[ (1.63.4b [A, 2], 1.130.10a [s, 2]) \]

21 Their morphological homogeneity is somewhat compromised by differences in synchronic accent and ablaut characteristics. To focus on suffix ablaut, rājan has -ān- ∼ -n- (e.g., sg. acc. rājān, dat. rājye), pūsan has -an- ∼ -n- (e.g., sg. acc. pūṣānam, dat. pūṣe), and vṛṣan exhibits variation that reflects a transfer from the former to the latter (e.g., sg. acc. vṛṣānam and vṛṣān, dat. vṛṣe). On the transfer of vṛṣānam to vṛṣānam, see Peters 1993 and Vine 2005.
There may be a second word-formation type that straddles the heaviness divide, i.e., compound verbal adjectives with a second member in \(-v\text{ān} \sim -v(a)n\) (\(< *-v\text{on} \sim -\text{un}\)). On the one hand, there is a chance that we have a heavy-final vocative to

\[
\text{sakrū-dāvān- ‘giving completely’}
\]

in the following gāyatrī (8-syllable) stanza. Note that \text{vṛṣṇann}, a securely Arnoldian \(n\)-stem vocative, occupies the same metrical position as \(-dāvān\) in the preceding pada, and that \text{vṛṣṇann} and \text{sakrū-dāvān} both refer to Indra.

\[
\begin{align*}
\text{sā no vṛṣṇann amūn carūṃ} \\
\text{sakrū-dāvān} \ \text{āpa vṛṣṇi} \\
\text{asūbhāyam āpratīkataḥ}
\end{align*}
\]

“You bull who give in every way, uncover yonder pot for us, since you are one who cannot be repulsed.”

\(1.7.6\)

On the other hand, we find light-final prevocalic vocatives to the two other members of the type, i.e.,

\[
\begin{align*}
\text{āśvā-dāvān- ‘horse-giving’} \\
\text{soma-pāvān- ‘soma-drinking’}
\end{align*}
\]

In sum, it is possible but far from certain that \(n\)-doubling has been extended to the class of animate \(-ān\)-stems. It is likewise possible that doubling is in the process of being extended to compounds of the type \(vīśvākarman\) and perhaps also compounds of the type \text{sakrū-dāvān-}. But where did the weight originate?

4.3 nt-stems as a source for weight

The surprising feature of Arnoldian vocatives, i.e., a final syllable that is heavy in prevocalic position, would be normal, of course, if they originally ended in \(-\text{ant}\) (rather than \(-\text{an}\)). This turns out to be a plausible source of weight for a number of them.

Before we embark on a discussion of individual forms, we should recall some basic facts about the singular vocative to adjectives in \(-v\text{ā}- \sim -v(a)n\), on the one hand, and \(-v\text{ānt} \sim -v\text{at}\), on the other (cf. Lanman 1880: 519–20, 536). The singular vocative to the \(-v\text{ā}-\)stems is \(-v\text{ān}\), e.g., \text{somapāvān} (\(< \text{somapāvan- ‘soma-drinking’}\)). In the Rgveda, the singular vocative to the \(-v\text{ānt}\)-stems is usually \(-v\text{āh}\), e.g., \text{harivāh} (\(< \text{hārīvant- ‘possessing fallow bays’}\)) from a synchronic standpoint, \(-v\text{āh}\) is suppletive. By the Atharvaveda already, \(-v\text{āh}\) has been replaced with synchronically regular \(-v\text{ān}\), which was doubtless generated on the familiar model of stem plus zero ending. In the Rgveda already, beside \(-v\text{āh}\) there are a number of plausible, if not certain, examples of \(-v\text{ān}\). To judge by Lanman’s list (p. 520), which includes \text{saahasāvan}, they make up 18% by lexeme, 7% by token.

\text{saahasāvan, satāvan}

\text{saahasāvan} is only attested in the singular vocative, and could therefore belong to a stem \text{saahasāvant-} or \text{saahasāvan-}. It is difficult to decide, because we need to consider not only the Rgvedic rarity of vocatives in \(-v\text{ān}\) to stems in \(-v\text{ānt}\), but also
the productivity of -vant- vs. -van- as a formant of possessive adjectives, the likelihood of finding an instrumental case form as a derivational base to -vant- vs. -van- etc. Consequently, sahasavan is variously analyzed in the handbooks. For example, in AiGr2.2 it is once analyzed as -vant- (885), later as -van- (902), and in between as possibly belonging to a -vant-stem (893). In our view, the strong evidence for prevocalic sahasāvann, which could not have been taken into account before Arnold 1905, points decidedly in favor of sahasāvant-. The following two examples are representative: the poets usually locate sahasāvan immediately after the early caesura in trimeter verse; we also find it twice pada-initially in 8-syllable verse. Note that the final heavy syllable realizes the beginning of the cadence ωον.22

```
tu>vāṁ agne vanusyaṭat nī pāhi
	tu>vāṁ u nāḥ sahasāvann avadyāt
"You, Agni—protect (us) from the rapacious one, and you, mighty one—(protect) us from reproach."
(6.15.12ab [A, 1] = 7.4.9ab [S, 1])

ūrjo napāt sahasāvann iti tvā
o, pastutasya vandate vṛṣṇā vāk
"'O child of nourishment, mighty one’—so does the bullish speech of Upastuta extol you."
(10.115.8ab [A, 5])
```

śatāvan is likewise only attested in the singular vocative and could therefore belong to śatāvant- or śatāvan-. It is also treated variously in the handbooks. It is only attested once, however, and its heavy-final status is indeterminate.

```
maghavan
```

The paradigm of maghāvan- ‘bounteous’ is irregular in a number of ways. Consider pl. nom. maghāvāṇ-ah, acc. maghōn-ah, instr. maghāvad-bhih. The strong stem allomorph is regular in -van-stems, and the preconsonantal weak stem allomorph is regular in -vant-stems; the combination of the two in the same paradigm is irregular. The prevocalic weak stem allomorph maghōn- is likewise synchronically irregular. Internal reconstruction and comparison with Avestan *magauvan- ∼ magaon- ∼ magauua-C suggests that the -vant-stem morphology is an Indic innovation. Given the presence of -van- and -vant-stem morphology in the paradigm, the vocative maghavan may be interpreted as /maghavan/ or /maghavant/. The strong evidence for prevocalic maghavann points to the latter. The following examples are typical; the poets usually place maghavan after the early or late caesura in trimeter verse.

```
enā mandānō jahī śūra śātrūn
jāṁśīm ājāmim maghavann amitrān
```

22 On the productivity of -vant-, see Sandell 2015: 184 and 2016: 143 n. 2, 156.
23 See AiGr2.2 885 on sahasāvan and savasāvan as de-instrumental -vant-stems.
24 PW takes it as -vant-, vw as -van-, Grassmann as -van-, Lanman as -vant- (1880: 520).
25 PW and vw as -vant-, Grassmann against the padapātha “aus šata-avat zusammengezogen, hundertfach helfend [śatā Part. von av],” Lanman as -vant-, AiGr3 258 as not -vant-.
26 See Meißner 1993 with references.
27 The ratio of post-early to post-late is ca. 2:1.
"Becoming exhilarated by it, o champion, smash your rivals and your foes, both kin and nonkin, o bounteous one." (6.44.17 [A, 1])

viśvēt tā te sāvaneṣu pravāc, yañā cakārtha maṅkavann īndra sunvatē

“All these (deeds) of yours are to be proclaimed at the pressings, those which you did, bounteous Īndra, for the presser” (8.100.6ab [P, 3])

rājan

The etymologically “correct” prevocalic vocative to rājan- is of course rājan, but there is also a thematic present rājati ‘rules’, whose active participle is rājant- ‘ruling’, whose proper prevocalic vocative would be rājann ← /rājant/. Quirkily, in the sense ‘rule over’, rājati takes a genitive object, e.g., yā ēko vāśvo vārūṇa nā rājati (“Agni,”) who alone rules over the good, like Vārūṇa” (1.143.4d, G&R). Thanks to those facts and the diaskeuasts’ over-application of n-doubling, prevocalic rājann as transmitted in the Śaṅkhyā text is ambiguous between the noun and the participle, at least at first glance. In the following example from the first of the Śūnyaḥ śepa hymns, where rājann refers to Vārūṇa, the participle ks. āyann ‘holding sway’ at the beginning of the preceding pāda invites us to consider taking rājann, which is roughly synonymous with it and occupies the same metrical position, as a participle as well.

ks. āyann asmābhyaṃ asura pracetā
rājann ēnāṃ śī śrathah. kr. tá̄ni

“Holding sway, attentive lord, you will let loose for us, o ruling one, the sins committed.” (1.24.14cd [P, 3], G&R)

It is true that vocatives to participles are relatively rare with the exception of certain lexical items such as didīvah ‘shining’ (6x), cikitvah ‘attentive’ (11x), and above all pavāmaṇa ‘self-purifying’ (64x). Nevertheless, they are attested, and there is a relatively secure example of a singular vocative to an -ant-participle earlier in the same hymn, namely sādāvān, which the Padapāṭha interprets as /sādā avant/ “ever helping” (1.24.3c).

abhī tvā deva savitar
īsānaṃ vār, yānām,
sādāvān bhāgām īmāhe

“We beg you, god Savitar, as the master of desirable things, for a portion, o ever helping one.” (1.24.3, G&R)

If we follow the Padapāṭha, sādā_avan “ever helping” and táva_āvasā “through your help” form a ring that connects the initial and final stanza of the section of 1.24 that is dedicated to Savitar.

28 Despite the different meters, we are dealing with one and the same composition, which has a section to Agni (tris.tubh), Savitar (gāyatrī), and Vārūṇa (tris.tubh); see Oldenberg 1888: 126 and Jamison and Brereton 2014: ad loc.
29 For other possibilities, including voc. to sa-dā-van- (cf. sa-jīt-van-, sa-yūg-van-), and older references, see Oldenberg Noten ad loc. and AiGr2.2 895.
bhágabhaktasya te vayám
úd aśema távávasa
mūrdhánāṃ rayā arābhe

“We would reach upwards to (a portion) of that apportioned by Fortune through your help, in order to take hold of the head of wealth.” (1.24.5)

Returning to rājant-, in non-vocative singular case forms, the participle regularly refers to or describes Agni.

rājantam adhvārānā,ām
“ruling over rites” (1.1.8a = 1.45.4c, G&R)

agnīṃ rājantam div,geṇā śociṣa
“Agni ruling with his heavenly flame” (3.2.4d, G&R)

rājantam agnīṃ yajatām rājīnām
“worship-worthy Agni, ruling over riches” (6.1.8d, G&R)

tigvājanibhāya tāraṇaya rājate
prāgo gajas, y agnīge
“To the sharp-fanged one, the ruler of tender age—to Agni do you sing delight.” (8.19.22ab)

This makes it particularly plausible that prevocalic rājann can be understood as the vocative to rājant- where it refers to or describes Agni.30 For instance, in 1.79.4–6, after Agni is described with another semi-synonymous participle that takes genitive objects, namely īśana- ‘being lord’,

āgne vājasya gōmata
īsānaḥ sahaso yaho
“O Agni, being lord of the bovine prize, o youthful (son) of strength” (4ab, G&R)

it seems perfectly possible to take rājann as a participle, e.g.,

ksapō rājann utā tmānād
āgne vāstār utōsāsah
sā tigvājanambha rakṣāso dāha prāti
“Through the nights, o ruling one, and by yourself at the dawning of dawn, o Agni, burn away the demons, o sharp-fanged one.” (1.79.6 [a, 2], G&R)

In sum, we suggest that prevocalic -ann < *-ant is plausible for a subset of the Arnoldian vocatives, i.e., maghavan, sahasāvan, and śatāvan, as well as some instances of rājan.

30 The participle rājant- is used of other deities as well: rājanti of the World-Halves at 6.70.2, and rājantau of the Aśvins at 8.8.18. This allows for the possibility that prevocalic rājann can be understood as a vocative to rājant- where it refers to or describes deities other than Agni, too.
4.4 Analogical extension

While some examples of prevocalic rājann may actually be vocatives to the participle rājant-, it is unlikely that there were enough to result in a heaviness-probability of 0.996. We may have to do with a type of metrical lengthening involving “the extension of a length alternation from one set of morphological forms to another, related, set for metrical convenience—a type of morphological analogy restricted in this case to the poetic grammar” (Hale 1999: 146). To express it in terms of a four part analogy (which he did not), Hale’s example was

\[
gha \text{ CC} : \text{ghā CV} :: \text{ha CC} : x CV, x = ĥā.
\]

In our case, it would be

\[
\text{participial rājan C} : \text{rājant V} :: \text{substantival rājan C} : x V, x = rājann.
\]

Given the possibility that all animate -ān-stems are Arnoldian, the analogy may have (eventually) been more general than that, i.e.,

\[
\text{participial -an C} : -ann V :: \text{substantival animate -an C} : x V, x = -ann,
\]

and it may not have been restricted to the poetic grammar. In other words, it is possible that the alternation was extended from -ant-stems to -ān-stems at one point in time. That more general analogy would have produced prevocalic rājann, pūsann, and vṛṣann.

\[
\text{maghavann indra, vṛṣann indra, vṛṣann indo}
\]

We now turn to alternative (not mutually exclusive) possibilities involving less general, more local, analogy. maghavan is by far the most frequent Arnoldian vocative, and prevocalic maghavann from /maghavant/ may have been established as early as the earliest Rgvedic compositions, since the introduction of -vant-stem morphology to its paradigm predates the Rigveda. Prevocalic maghavann participates in two recurring vocative phrases. The one is maghavann indra “bounteous Indra” (8x), which is invariably located after an early caesura in trimeter verse, e.g.,

\[
mándantu tvā maghavann indra ēṇdavo
rādhodgaya sunvaté
\]

“Let the drops exhilarate you, bounteous Indra, to give largesse to the presser.”

(8.4.4.ab [S, 2])

The poets sometimes extend the phrase to maghavann indra gīrvaṇaḥ “bounteous Indra longing for songs” (2x),\(^{31}\) where it stretches from the early caesura to the end of the 12-syllable pāda, e.g.,

\[
sā tvām no maghavann indra gīrvaṇo
venó nā śṛṇudhi hávam
\]

\(^{31}\) The extended phrase is also found four times in the Vālakhilya.
“You, o bounteous Indra longing for songs—like a tracker listen to our call.”
(8.3.18cd [S, 2])

The vocative phrase vrśann indra is attested three times. This raises the possibility that maghavann indra inspired vrśann indra in contexts where the god is presented more as the bullish soma drinker than as the bounteous distributor of wealth, e.g.,

\[
\begin{align*}
      vrśann indra & vrśapānasā īndava \\
      inē sutā ādriṣṭūtāśa udbhīdās \\
      tūbhyaṃ sutāśa udbhīdaḥ
\end{align*}
\]

“O bull Indra—these pressed drops, the drink of a bull, pressed by the stones, are bursting out—for you are the pressed (drops) bursting out.”
(1.139.6abc [N, 6?])

\[
\begin{align*}
      ā yāhāy ādriṣṭūḥ sutāṃ \\
      sōman sōmapate pibā \\
      vrśann indra vrśabhīr vṛtrahantama
\end{align*}
\]

“Drive hither. Drink the soma pressed with stones, you lord of soma—bullish Indra, with your bulls, best smasher of obstacles.”
(5.40.1c = 2c = 3c [A, 6?])

It is furthermore thinkable that once established, vrśann indra could have facilitated the creation of vrśann indo “o bull drop,” whose referent is Soma.

\[
\begin{align*}
      punānā īndav ā bhaṃra \\
      sōma dvibārhasāṃ rayīṃ \\
      vrśann indo na ukthiśyām
\end{align*}
\]

“Being purified, o drop, bring hither double-lofty wealth—o Soma, bullish drop—bring us wealth worthy of hymns.”
(9.40.6 [N, 4])

\[maghavann ṛjīṣin, vrśann ṛjīpin\]

The other recurring vocative phrase with prevocalic maghavann is maghavann ṛjīsin (3x), whose referent is likewise Indra, e.g.,

\[
\begin{align*}
      asmē prá yandhi maghavann ṛjīsin\n      īndra rājō viśvārasya bhūreḥ
\end{align*}
\]

“Offer us (a portion) of abundant, all-desirable wealth, o bounteous Indra of the silvery drink.”
(3.36.10ab [c, 1])

It is also thinkable that the existence of maghavann indra, vrśann indra, and especially maghavann ṛjīsin could have facilitated the coinage of a coreferential, phonologically similar vrśann ṛjīpin in the following, very bullish stanza about Indra and Soma.

\[
\begin{align*}
      vrśa sōtā sunotu te \\
      vrśann ṛjīpin\n\end{align*}
\]

\[ā bhaṃra\]

32 Note that in 12-syllable pādas with an early caesura, an opening rhythm \(\beta\lambda\lambda\beta\) is 4.5x as frequent as \(\beta\beta\beta\).

33 The meaning of ṛjīsin- is difficult to establish. See EW Aia s.v. ṛjīsā-.
vṛṣā dadhanve vṛṣanām nādīśa v ā
tūbhyaṁ sthātar hāṁiṁ

“Let the bullish presser press for you; o bull, flying straight—bring (prizes) here. The bull has run to the bull in the waters. It [=soma] is for you, o mounter of the fallow bays.”

(8.33.12 [S, 2])

In this connection, it is worth noting that Werba suggested that ṛjīśīṁ- arose by contamination of ṛjipyā- and ṛjīpīṁ- (p.c. apud EWAia s.v. ṛjīpīṁ-).

pūsan

The only recurring vocative phrase that pūsan participates in is pūsanāūghṛne “o glowing Puṣan” or “o Puṣan, glowing one” (2x). There are no obvious points of contact between that phrase and the others mentioned above. We are left with the fact that pūsāṁ- is an animate -āṁ-stem with a divine referent. In addition to the general extension from participles, extension from a particular lexical item is thinkable, e.g., rājan C : rājann V :: pūsan C : x V, x = pūsān.

5 Conclusion

Arnold (1905) posits a lexically conditioned split in -an vocatives in the RV such that five items are to be restored as heavy-final (-ann) prevocally, namely, maḥavān (always) and pūsan, rājan, vṛṣan, and sahasāvan (usually); all others are to be restored as light-final (-an) prevocally. Oldenberg, by contrast, rejects a lexically conditioned split, favoring uniformly light -an (1888) or free variation across all -an vocatives (1908).

Based on new distributional and poetic evidence, we find strong support for Arnold’s position over Oldenberg’s. Further, we propose two refinements to Arnold’s classification. First, we find no support for his distinction between “always” and “usually.” The Arnoldian tokens, we maintain, can be restored uniformly as heavy. Second, we expand Arnold’s list of heavy-final -an vocatives to eight in total, namely, maḥavān, pūsan, rājan, vṛṣan, sahasāvan, viṣvākarmān, satrādāvan, and (most likely) śatāvan.

The second half of the article considers the historical motivation for the observed split in -an vocatives. We favor an account by which some -an vocatives were in fact vocatives to stems in -ant- originally, explaining their weight. The remaining Arnoldian tokens can be ascribed to analogical extension from the -ant-stem forms, as we support by adducing morphological and poetic parallels between the unextended and extended forms. To be sure, extension is needed under any scenario, as the heavy-final forms are eventually (post-RV) fully generalized. The bifurcation in -an vocatives in the RV demonstrates that the extension of heavy-finality was underway but incomplete at the time when that corpus was composed.
Abbreviations


References


