Contrastive Word Stress in Vedic Endo- and Exocentric Compounds

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The frequent combination of declinable stems with one another to form compounds which then are treated as if simple, in respect to accent, inflection, and construction, is a conspicuous feature of the [Vedic] language, from its earliest period. (Whitney 1889: 480)

0 Introduction

Though there are in Vedic basic rules for stressing endocentric and exocentric compounds, a lot of counterexamples are found. For instance, determinative compounds with a final member in -ta- are stressed on the initial member like bahuvrīhīs; compare the endocentric types ghṛtā-viśd- `enjoying the ghee`, ni-hita- `laid, placed, deposited’ with sahāsra-pad- `thousand-footed’. Hitherto the motive for such differences or correspondences is unknown. Because it seems to be obvious that some rule exists which is higher ranked than the functional distinction between compounds, the analysis of contrastive word stress in Vedic compounds developed here is an optimality theory-approach. It will be shown that markedness of vowels in heads of metrical units and a special rhythmical rule are relevant for stress shift. More important however is, that faithfulness and markedness constraints could be overriden by contrastive stress, whereby stress is shifted not only to differentiate “substantive” and “adjective” as parts of speech, but also within a compound. So in the case of prepositional compounds with governed final member and bahuvrīhīs “compositionell” -ā- denotes a contrast between the substantive value of the final member and the adjective of the whole compound. Further this contrastive function of the suffix -ā- is used in bahuvrīhīs with the negative prefix a(n)- to oppose those bahuvrīhīs to determinative compounds with the corresponding prefix. In stressing endocentric and exocentric compounds with the negative prefix a(n)- differently, a semantically determined contrastive word stress is visible.

1 Preliminaries

Greek and Vedic are languages whose accent-system is neither a stress-accent nor that of a tone language, but something in between. In Vedic, for instance, the Indish grammarians do not talk of strength, but of pitch (udātta `high, prominent’). But pitch seems to be accompanied by some strengthening. Just as in English, where the position of stress can be used as a derivational device to signal the syntactic category of a word (engl. contrást vs. cóntrast with distinctive stress)\(^2\), this kind of stress also fulfils contrastive functions in differentiating parts of speech; compare Vedic éṇa- m. `the act of seeking or going after’ vs. esā- `gliding, running, hastening’. As Wackernagel (1905: 19) states, barytonesis is generally characteristic of nouns in Vedic. But adjectives, too, often have a contrastive word stress. If

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\(^1\) I owe critical remarks to Sergio Neri.

they are compounded, endocentric or determinative compounds (tatpurusas) are in many cases stressed on the final member, while exocentric compounds as bahuvrihis, or certain prepositional or verbal compounds with a governed final member, are stressed on the initial member; compare ghṛṣṭa-vādha- `enjoying the ghee´ vs. sahásra-pad- `thousand-footed´, āty-avi- `passing through the wool´, Trasā-dasyu- male proper name `before whom the enemies tremble´. This distribution of stress is inherited from Proto-Indo-European, as in the Greek θηρο-σκόπος `looking out for wild beasts´, δρό-τόμος `wood-cutter´, μελανό-χροος `black-skinned´, μέτ-ωπον `the space between the eyes´, φερέ-πολις `upholding the city´. Yet there are many counterexamples. For instance, determinative compounds with a final member in –ta- are stressed on the initial member like bahuvrihis; as is RV nī-hita- `laid, placed, deposited´. This stress rule is also a Proto-Indo-European inheritance; compare Greek ἀνδρό-κμητος `wrought by men’s hands´. According to Wackernagel (215), the motive for the stress difference to the endocentric type ghṛṣṭa-vādha- is unknown. But there obviously exists some rule which is higher ranked than the functional distinction between bahuvrihis and determinative compounds. Consequently the analysis of contrastive word stress in Vedic compounds developed here is an optimality theory-approach. Firstly, we account for the initial-element-stress normally occuring in Vedic bahuvrihis, some prepositional, and most verbal compounds with a governed final member as opposed to determinative compounds. Secondly, we consider the counterexamples to the general stress rules in Vedic compounds. After that the OT rankings follow.

2 General stress rules in Vedic and Greek endo- and exocentric compounds and their motivation

In Vedic and Greek, compounds are [stem + stem], [stem + word] or [word + stem] compounds. It has been proposed that [stem + stem] compounds are mapped onto one phonological word whereas [stem + word] compounds vary as to whether they are mapped onto one or two phonological words. According to the Minimal Word Principle “In the mapping of compounds onto phonological words, choose the lowest Xº” (Nespor 1999: 139), stems must be destressed; note also Burzio’s (1994) stress preservation principle, which states that words, as opposed to stems, enter composition with stress since they have already been mapped onto a phonological word. But in Greek and Vedic both principles do not apply as a rule; compare μελάν-υππος `with a black horse´, (ἲππος), φερέ-οἰκος `carry the house´ (οἰκος)

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3 We leave out dvandvas, for they are stressed on both members in older time (Wackernagel 1905: 150).
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vs. ádhi-gartya- ‘being in the driver’s seat’ (ádhi). On the contrary, these languages are lexical stress languages, in which the rule for primary stress location is sensitive to lexical marks. Here, location of stress must be marked lexically per morpheme on some arbitrary syllable (i.e., is free); but when morphemes are strung together to form words, a rule will decide which of the lexically marked syllables will receive the primary (i.e. word) stress. Accordingly, this kind of accentuation is associated with so called dominant or cyclic stresses (Hulst 1999: 17, 21). For Vedic Kiparsky (1982) first drew attention to the fact that from the viewpoint of stress assignment the suffixes must be divided into two classes: recessive and dominant. In words containing dominant suffixes, the last dominant suffix determines the surface stress. In particular, if the last dominant suffix is underlyingly stressed, the surface stress is located on this suffix. Hence, morphemes may or may not be stressed in their underlying representations. In addition, Hulst (50, 52f., 73) mentions another feature of lexical stress systems: They may be unbounded, meaning that the location of primary stress is not foot-based. Whereas in bounded systems the location of primary stress is bound to a three- or two-syllable window (with the extra option of extrametricality) – for instance, in Greek the output stress falls under the rightward “three-syllable window” - 5, in unbounded systems the domain for primary stress is the prosodic word (also with the extrametricality option). Vedic seems to be such a language. As Kiparsky has shown, given the lexical stresses, word stress is located on the leftmost (first) stressed syllable or on the first syllable if there are no stresses. Thus, in this analysis Vedic is a FIRST/FIRST system6.

2.1 bahuvrīhis

Scholars agree in deriving bahuvrīhis like Vedic sahásra-pad- ‘thousand-footed’, Greek μελάν-υπτος ‘with a black horse’ from a nominal sentence μέλας ῥπτος ‘the horse is black’ which - in the sense of ‘his horse is black’ - is used for characterizing a person: ‘person who owns a black horse’; ῶφροδικάκτυλος ‘Eos (like) roses (are) (her) fingers’ (Meier-Brügger 2000: 272). Therefore, to understand the stressing of this compound type one has to consider stress and word order in the Vedic and Greek nominal sentences. In those sentences the predicative noun, being emphatic, precedes the subject; in Vedic márya ha vá ágre devásah `the gods were originally mortals’ (SB). In German, Schwärz sind die Pferde, too, the main stress lies on the initial member, the predicative. When the two words sahásraḥ pādas `thousandfold are (his) feet’ are joined to form a compound or only one phonological word, a

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4 Compare Hock 1993: 200f. note 25 for the genesis of dominant morphemes.
5 Drachman/Malikouti-Drachman 1999: 897ff.
6 Russian and Lithuanian, too, are FIRST/FIRST systems (Hulst/Hendriks/Weijer 1999: 437f.).
greater prominence is given to the main stress than to the stress of the rest; or the following strength hierarchy rule is valid: “The left stress is stronger than the right one” (Haraguchi 1991: 156); compare Engl. *bläckbird* vs. *bláck bírd* (Marchand 1969: 113). In any case, only stress on the initial member survives, whereby the position of the stress in the single word is retained. Greek *bahuvrīhis* like ποικιλό-φωνος `with varied tones’ or ποικιλό-θριξ `with various plumes’, πολω-άνθραξ in contrast to ποικίλος, πολύς are compatible with this rule, for in Greek stress does not recede beyond the penult if the final syllable ends in a consonant cluster (Steriade 1988: 274). Starting from sentences containing the word order “predicative with main stress – subject” this stressing must have been generalized, for it appears in *bahuvrīhis* with quite different semantic relations, too (see Lühr 2003).

According to the suggested analysis, *bahuvrīhi* in Proto-Indo-European was a frequent syntactical juxtaposition7 retaining the main stress of this phrase.

### 2.2 Verbal compounds with a governed final member

In the type *Trasá-dasyu-*, stress is almost always placed on the second syllable of the initial member; note in particular the type in –át/d-: kṣayád-víra- `ruling men’. Since in those compounds a relation with an internal argument is established, the verbal element assigns the case-relational object to the final member. Therefore, it seems obvious that stressed -át/d- is a verbal ending. Besides present stems of the I. class with an unstressed –a-present, stems of the VI. class with a stressed -á- (type *tudáti*) and present stems in –áyati appear as an initial member. Among those compounds with *dhārayáti-* are Indo-Iranian; compare Vedic *dhārayát-kavi-, -kṣiti-* `supporting sages resp. bearing creatures´ with Old Avestian *Dāraiiaś-ratha-* male proper name (literally `supporting carriages’), Old Persian *Dārāya-vausš* (Wackernagel 1905: 318f.). One can assume that at one time a third Singular Injunctive Present of the áya-class constituted the initial verbal member, whereby the Injunctive is used in a general sense (compare Hoffmann 1967: 114 to this function of the Injunctive Present): Old Persian *Dārāya-vausš*, originally `he always maintains the good´. Though in Vedic the subject usually begins the sentence, a stressed verb can move to the beginning if it is strongly emphasized, as it is documented in the prose of the Brāhmanas. But after being joined to a compound, stress must for rhythmical reasons be shifted to the heavy ultimate of the first member (with coda in front of an initial consonant), and this stress then extended to other present stems. According to the above-mentioned strength hierarchy

7 Note “syntactic compounds” like Vedic *ahaṁ-pūrvá- ‘eager to be first’ (from *aháṁ pūrvāḥ ‘I should be first’, *kíṁ-rá ‘asking garrulously’ (from *kíṁ tvám ‘what are you doing?’), *yād-rādhivám ‘as quickly as possible’ (literally ‘in so far as attainable’).
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rule, stress of the original object was deleted. As an aside, the type Trásá-dasyu- may have contained an element –át/d-, too, if one assumes that in a preform *trásád-dasyu- `he always makes frightened the enemies’ the first –d- is dissimilated. Yet in the case of an original Injunctive Present in this type, Greek φερέ-ο-κος `carry the house!’, Mενέ-λαος `one who stops men, abiding-men’ must be separated, whereby Greek shows stressing on the first member, too. There is no objection to the older opinion that an Imperative is the initial member; compare German Fürchtegott, Springinsfeld, Vedic sthā-raśman- (1) `loosen the reins’, Early Avestian barō-zaōθra- ‘sacrifice to god!’, Old Persian Xšayā-šān- male proper name, literally `rule the men’, Vedic śksā-narā- `help the men’, radā-vasu- `dispense wealth’ (with lengthened -ā- because of a former laryngeal) - in Greek φιλό-ξινος `love the guest!’ original –ε- is altered to -o- after the model of the joint vowel –o- elsewhere. Hence, at least verbal compounds with a governed final member and the element –át/d- originally were “syntactic compounds” whose stress reflects the main stressed verb preceding the object.

2.3 Prepositional compounds with governed final member

Prepositional compounds with a governed final member have temporal or local meaning: often they show a formative -a-, -i-, -ya- or -to-, respectively: úpa-māṣya- `occurring every month’, ánau-patha- `following the road’, ántas-patha- `being on the way’, antár-goṣṭha- `being inside the stable’, api-prāṇa- `uttered with every breath’, ápi-vrata- `sharing in the same religious acts’, abhí-dyu- `directed to heaven’, ā-pathi- `travelling hither or near’, ā-deva- `turning towards the gods’, upāri-budhna- `raised above the ground’, āntī-θεος `equal to the gods’, ēγ-κάθωλος `within the head, brain’, ēμ-πλοδος `in the ground, firm-set’, ēν-άλλος `in the sea’, ἐπ-χώριος `native, indigenous’, παρα-θάλαττος `beside the sea’, παρα-ποσάμος `beside or near a river’, παρά-δοξος `contrary to expectation, incredible’ (substantivized μέτ-ωπον `the space between the eyes’). Also, adjectives or adverbs occur as initial member: homer. πάν-νυχτος `all night long’, homer. πατ-ημέριος `the whole day’, gr. μεσο-νύκτιος `at midnight’, Vedic adhas-pad-ā- `placed under the feet’. In Vedic, those compounds show a twofold accentuation. Either the preposition is stressed, and that in the same way as in the single word (compare ádhi-gartya- `being on the driver’s seat’) or the second member (see below). For compounds with stress on the initial member one has to consider the position of adverbs and prepositions in Vedic prose. When used with substantives, genuine prepositions as a rule follow their case, while prepositional adverbs precede it. According to Macdonell (1966: 285) the reason of this is that the former supplement the sense of the case, while the latter modify the sense much more.

emphatically. But prepositions, too, can precede the governed noun: ádhi ráthe `on the carriage´ (Wackernagel 1905: 310). Since this phrase contains two stresses one has to be deleted when the two words are compounded. Stress on the initial member in prepositional compounds can be accounted for by the mentioned strength hierarchy rule.

2.4 Verbal compounds with a governed initial member

Verbal compounds with a governed initial member are stressed on the verbal element and function as agent-nouns: havir-ád- `eating the oblation`, sam-íd- `flaming, burning`, jyotíś-ká- `creating light`, (oxytonic) abhayaṁ-kará- `causing safety`, abhimáti-śáhá- `conquering enemies`, amitra-khádá- `devouring his enemies`, gráva-grábhá- `one who handles the Soma stones`, jana-bhaksá- `devouring men`, tad-vašá- `longing for that`, deva-vandá- `praising the gods`, puraṁ-dará- `destroyer of strongholds`, bhuvana-cyavá- `shaking the world`, iṣu-dhi- `a quiver`, utsa-dhi- `the receptacle of a spring`, uda-dhi- `holding water, the ocean`, garbhadhí- `nest`, séva-dhi- `wealth, treasure` (literally `containing dear things`), uktha-śatimsán- `uttering the Ukthas`, surápa-kaṁná- `able to create beautiful things`, vanar-gú- `moving about in woods`, (paroxytonic) kratu-právan- `granting a desire or power` (with stress on a heavy syllable; see below). In Vedic and Greek, other types of polysyllabic agent-nouns are also often stressed on the final part of the word: Greek ἐφίδιος `lying, false` (ἐφίδιος `falsehood`), Vedic apás- `active` (āpas- `work`), virayú- `heroic`, karaṇá- `skilfull` (substantivized AV káraṇa- `a helper, companion`), kroṣṇá- `crying`, reśúna- `injuring`, dāmán- `giver`, darmápa- `demolisher` (Wackernagel-Debrunner 1954: 181, 231, 760f., 843) and the more nominal type of the two agent-nouns in –tar-, dātā- `giver` (Lühr 2002: 8ff.). Therefore, it is possible that the frequent stress on the suffix reflects an old stress distribution.

9 In some cases in English, too, the prefix shows a growing tendency to receive the main stress while the heavy stress of the basis is shifted to a full middle stress: súbwáy (Marchand 1969: 138f.).

10 Prepositions in prepositional compounds may have become dominant prefixes which are inherently main stressed. According to Halle/Vergnaug (1987: 86 note 6), here the element which loses its stress is the stem.

11 Because of stress of the initial member bahuvrīhīs seem to be ablative-varopa- `dripping or raining from the clouds`, marid-vḌha- `rejoicing in the Maruts`, dhariṇa-hvare- `trembling in its foundations`, ĥi-raṣā- `delighting in devotion`, rátha-kṣaya- `sitting in a chariot`. A locative saté is to be found in saté-kara- `performing (recitation of certain texts) at the preparation of the Soma`, saté-raṣa- `delighting in Soma`.

12 The type cákri- `doing, effecting` is stressed on the reduplicative syllable in accordance with the present stems tisṭha- `stand`, pīha- `drink`. Agent-nouns in –van-, too, (for example Vedic kṝvan- `causing, effecting`) are stressed on the first element (Wackernagel-Debrunner 1954: 291f., 894f.). Some of these compounds as Vedic tākvan- `robber` are substantives.
caused by the the above-mentioned contrast to the stressing of verbal nouns. This pattern then must have spread to determinative compounds in the function of agent-nouns.  

2.5 Determinative compounds

The subtype with a substantive both as initial and final member is either stressed on both members (\textit{gnās-pāti} `husband of a divine wife`), or on one. In the case of one stress, the initial member regularly is stressed: \textit{gṛhā-pati} `householder` (22 compounds in –\textit{pati}-, 10 in –\textit{pati} in the RV), \textit{devā-kṣatra} `domain of the gods`. The same rule applies to determinative compounds with an adjective as initial member: RV I-IX \textit{candrá-mās} `moon`, \textit{bāhu-ōjas} `with strength of arm`, \textit{pūrṇa-māsa} `full moon`, \textit{ūlāka-yāū} `a demon in the shape of an owl`, \textit{pād-bīṣa} `better`, \textit{madhyām-dina} `midday`, \textit{viśvā-māṇasa} `every mortal`, RV X,89,12 \textit{dṛgḥa-mitra} `a mischievous friend`, \textit{nīya-hotar} `a offerer who is always sacrificing`, \textit{vācā-stena} `one who makes mischief by his words`, \textit{viśvā-deva} `all-divine`, \textit{vṛśā-kapi} `man-ape`, \textit{sōma-gopā} `keeper of Soma`. Also, some determinative compounds with a prefix or preposition occur: \textit{sū-hotar} `a good offerer`, \textit{prā-pad-a} `the point of the foot`, \textit{prā-uga} `the forepart of the shafts of a chariot`; note the Greek \textit{πρό-δομος `before the house`, προ-άγων `preliminary contest`. If stress on the initial member is the usual stressing in RV, phrasal stress, too, is imitated, whereby the left stress prevails. But after the RV, more and more the final member gets stressed; compare RV \textit{hiraṇya-piṇḍō} `a lump of gold` (Wackernagel 1905: 265ff.). It can be supposed that this stress shift is due to the effort to distinguish \textit{bahuvrīhis} and determinative compounds.


\footnotesize{13 Stress on a second member in such compounds can be considered as a kind of dominant suffix. For generalization of stress patterns see Drachman/Malikouti-Drachman 1999: 903.}
kindled’, ví-binna- `split’, úd-iti- `ascending’, hásta-cyuti- `quick motion of the hands’, arká-sāti- `poetical inspiration’, dyumná-hūti- `inspired invocation’, náma-ukti- `homage’, nf-pūti- `protection of men’, brāhma-kṛti- `prayer’, vāja-sāti- `the winning of a prize’, havyá-dāti- `conveying oblations’. Like other stressings, this stressing is undoubtedly inherited from Proto-Indo-European: see Greek ἀπό-βλήτως `to be thrown away or aside’, ἀνδρό-κμήτως `wrought by men’s hands’, ἀνέ-βλητος `putting off, delay’ (Wackernagel 1905: 214). Though here phrasal stress may be the starting point, as well, there is a further possibility for explaining stress on the initial member: Since as single words adjectives on Proto-Indo-European *–tó- or *–nó- and verbal nouns on *–tī- are stressed on this suffix, some kind of rhythmical rule could have applied in the compound comparable to the well known example Engl.

\[
\begin{array}{ccccccc}
w & w & s & s & w & s \\
\text{three red shirts} & \rightarrow & \text{three red shirts}
\end{array}
\]

Here, a string of two or more adjacent weak and equally prominent elements forms a lapse which is resolved by strengthening one of these elements, the first (i.e. three) (Visch 1999: 162f.).

\[
\begin{array}{ccccccc}
w & w & s & s & w & s \\
*ni & dʰ ā & tōs & nī & dʰ ā & tōs \text{ (Proto-Indo-European)}
\end{array}
\]

\[
\begin{array}{ccccccc}
w & w & s & s & w & s \\
i & ē & tāḥ & nī & ē & tāḥ \text{ (Vedic)}
\end{array}
\]

In Vedic, compounds with a prefix as the initial member could permanently be referred to the simplicia, for simplex verbal adjectives on stressed -tā-, -nā- and simplex verbal nouns on -tī- were a productive word pattern throughout the whole Vedic period. And bahuvṛtihis show that there is reason to believe that some rhythmical rule is of importance in the case of the determinative compounds: In bahuvṛtihis, the final member cannot regularly be referred to a single word with stress on the last syllable; therefore stress is often shifted from a prosodic weak element in the initial member. If the compared rhythmical pattern is the correct explanation for retaining stress on the first syllable of determinative compounds on -ta-, -na- and -ti-, this stressing must then be generalized by using words other than prepositions as initial members as well: indra-jīta- `promoted by Indra’, dāttasa-īta- `wonderfully quick’, hásta-cyuti- `quick motion of the hand’.

In particular, the fact that stress is mostly retained in determinative compounds with a verbal adjective on –ta- and a negative prefix án- as the initial member can be explained by
this rhythmical rule: á-kṛta- `undone´, á-kṣita- `undecayed´, á-cyuta- `not fallen´, á-jāta- `unborn´, á-jīñāta- `unknown´, á-tūrta- `not outdone, unhurt´, á-dabhda- `not deceived´, á-dughda- `not milked out´, á-dṛpta- `not infatuated´, án-āpta- `unattained´, á-mita- `unmeasured´, á-mṛkta- `unhurt´, á-rṣita- `unhurt´, á-vṛta- `unchecked´, á-stuta- `not praised´; compare further á-kṣiti- `imperishable´. Supposing that Proto-Indo-European *p- `un-´ was originally stressed (Knauer 1885: 67), for it denotes a negation or contrast to something, and that this stressing continued into Vedic and Greek, the compound-type á-kṛta- is almost always stressed on the negative prefix, because it was always possible to refer that compound to the simplex kṛtá- rhythmically.  

Summary: Our analysis of the normal position of stress in Vedic endo- and exocentric compounds has proven that this phenomenon has different motivations: In bahuvrīhis and in determinative compounds with stress on the initial member, this position imitates phrasal accent: In nominal sentences like Schwärz (sind) die Pferde the emphasized predicative precedes the subject and has the main stress. To delete stress on the final member, either stress on the adjective is enforced or the general strength hierarchy rule applies: “The left stress is stronger than the right one”. Verbal compounds with a governed final member, too, come from a phrase, in Vedic primarily a conjunction of a third Singular Present Injunctive of a verb in -áya- and a governed object, whereby the general Injunctive is used. Stress was shifted to the heavy ultimate –á/d- (consonant -) of the first member and then generalized; stress on the final member is deleted according to the aforementioned strength hierarchy rule. Original phrasal stressing also determines the stress of prepositional compounds with a governed final member. On the other hand, verbal compounds with a governed final member are stressed on the final member, possibly in analogy to the mainly suffix-stressed derivational agent-nouns. Determinative compounds with a verbal adjective in –ta-, -na- or verbal noun in –ti- and stress on the initial member can also imitate phrasal stress. Additionally, a rhythmical rule applies here: Stress on the initial member, especially the prefix, is retained, for reference to simplicia with stress on the final syllable always was at hand. Therefore, unlike in bahuvrīhis, stress was rarely shifted from the first member. This rule also relates to the negative prefix á(n)- in determinative compounds, which is supposed to be stressed in Proto-Indo-European.

14 In other adjectives with negative prefix á(n)- stress on this element is not preserved as well; compare á-vihvarant- `undeviating´, á-kṣiyant- `not inhabiting, unsettled´, á-khanant- `not digging´, á-kṛjānt- `not playing´, á-rṣayā- `not failing´ vs. a-codánt- `not driving or impelling´ (Wackernagel 1905: 216ff.).
3 Counterexamples to the general stress rules in Vedic compounds

3.1 bahuvṛihis

Many bahuvṛihis are stressed on the final member, especially on “compositionell” –á-. For this formative, probably an adjectivizing element (see Proto-Indo-European *udr-ó- `watery’) which became productive to some extent in Vedic and Greek, inheritance from Proto-Indo-European is stated; compare Greek νεο-χυ-ός `having new’ and Vedic bhūry-aks-á- `many-eyed’ (ākṣ-), deva-karm-á- `master of sacred work’ (literally `being engaged in sacred work’), ardha-garbhá- `being inside the womb’ (gárba-). As the formative attracts stress, it overrides language specific rules for the stressing of compounds (Wackernagel 1905: 120).

But why is this suffix stressed? Stressed “compositionell” –á- within a bahuvṛhi serves to contrast the adjectival value of the whole compound with the substantive in the final member. Consequently, stress on “compositionell” –á- in Vedic originally was a contrastive stress, whose function was the distinction between substantives and adjectives just as in the mentioned pair éṇa- m. ‘the act of seeking or going after’ vs. eṣá- `gliding, running, hastening’ (Wackernagel & Debrunner 1954: 139).


Cases of stress retraction also occur: puru-víra- `being in possession of many men or male offspring’, su-víra- `being very manly, heroic’ (víra- `man, hero’), tuvi-gráva- `having a powerful neck’ (gráva- `neck’). Add stems in –as-: kṣetra-sádhas- `one, who divides the fields, fixes the landmarks’, abhibhūty-ójas- `having superior power’, nṛ-péśas- `being formed by or consisting of men’, nṛ-váhas- `conveying men’ (váhas- `conveying’), nṛ-mánas- `having the mind of heroes, heroic’) vs. aṃtī-bhrágas- `possessing fiery splendour’, áśva-
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four seas’. Only catur-aksi- ‘four-eyed’ is stressed on the final member, due to “compositionell”–á–.

The final member is stressed, too, if the initial member is šiti-: šiti-pád- ‘white-footed’, šiti-prśhá- ‘white-backed’. Contrary to visvá-, stress does not get shifted to the second syllable, for it contains an i. But hiri- shows vacillation: hiri-śnaśru- ‘golden-bearded’ vs. hiri-śprá- ‘golden-cheeked’ (with originally not oxytonized final member śprá- ‘the cheeks’).

Once is found hari-śrī- ‘beautifully yellow, goldcoloured’ vs. hāri-dhāyas- ‘having or giving yellowish streams’, hāri-yoga- ‘having a yoke of bay horses’, hāri-varpas- ‘having a yellowish or greenish appearance’, hāri-vrata- ‘one who has a yellow sphere or yellow surroundings’, hāri-śpra- ‘having yellow (golden) cheek-guards on one’s helmet’, hāri-śnaśru- ‘having a ruddy or yellow beard’. This member is stressed in other compounds on -śrī-, too, probably because of the heavy syllable. In any case, those compounds are lexicalized.

Other adjectives show vacillation on –ú-: āsū- `fast, quick´: āsiv-āpas- `acting quickly´ (āpas- `work´), āsiv-āśva- `possessing quick horses´ vs. āsū-hēsas- `having quick missiles´, āsū-hēman- `running on quickly´, āsū-pātvan- `flying quickly´;

urú-: urú-gavīti- `having a wide domain or territory´, urú-dhāra- `giving a broad stream, streaming abundantly´, urú-yuga- `having a broad yoke´, urú-loka- `being visible to a distance´ vs. uru-kṣāya- `occupying spacious dwellings´, uru-cakrā- `having wide wheels´, uru-cākṣas- `far-seeing´, uru-ṛāyas- `moving in a wide course´, uru-ṛyācas- `occupying wide space´; and oxytonesis by changing “theme”: urū-ṛas-ā- `broad-nosed´;

tuvī- `much´: tuvī-deṣa- `giving much´, tuvī-brāhmaṇ- `very devoted´ (brāhmaṇ- `swelling of the spirit´), tuvī-magha- `giving much´, tuvī-vāja- `abounding in food´ vs. tuvī-rādhas- `giving much´ etc. (and with stress retraction from the last syllable tuvī-grīva- `powerful-necked´: grīvā- `neck´);

pṛthū- `broad, wide´: pṛthū-pāni- `broad-handed´, pṛthū-pragāna- `having a wide approach or access´, pṛthū-pragāman- `wide-striding´, pṛthū-budhna- `broad-based´ vs. pṛthu-gmāṇ- `broad-pathed´, pṛthu-ṛāya- `widely extended´, pṛthu-pākṣas- `broad-flanked´, pṛthu-ṛårṣa- `armed with large sickles´, pṛthu-pājas- `far-shining´, pṛthu-budhnā- `broad-based´, pṛthu-ṛāvas- `far-famed, of wide renown´;

raghū- `hastening, rapid´: raghū-vartani- `lightly rolling or turning´ vs. raghu-yāman- `going quickly´, raghu-pātman- `flying or moving quickly´, raghu-pātvan- id.;

vibhū- `being everywhere´: vibhū-vasu- `possessing mighty treasures or wealth´ (with stress on the lengthened –ū- caused by a former laryngeal) vs. vibhu-krātu- `strong, heroic´;

vīḍhi- `strong, firm´: vīḍhi-jambha- `strong-jawed´, vīḍhi-pāni- `strong-handed´, vīḍhi-haras- `seizing firmly´, vīḍhi-ṛatga- `strong-limbed, firm in body´ vs. vīḍhu-pāni- `strong-handed´, vīḍhu-dvēṣas- `hating the strong or hating strongly´, vīḍhu-pātman- `flying strongly or incessantly´15.

Substantives as the initial member in –ī can also show stress shift: agni-jīhvā- `having Agni for tongue´, agni-tāpas- `hot as fire´, agni-śrī- `having the brightness of Agni´ vs. agní-dūka- `having Agni for a messenger´, agní-bhrājas- `possessing fiery splendour´, agní-rūpa- `fire-shaped´, agní-hotar- `having Agni for a priest´; maṇi-grīvā- `jewel-necked´ (Garbe 1877: 507).

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15 Hapax legomena are cases like ahiśuṣma-sātvan- `whose attendants (sātvan-) hiss like serpents´.
Stress shift from –i in a disyllabic initial member is also valid for prepositions: *abhī-ṣenā*-‘directing arrows against’ vs. *abhī-vīra*- ‘surrounded by heroes’. But stress from a sequence ā – i in the initial member can be shifted also: *parī-manyū*- ‘being wrathful, angry’ (possibly with adjustment to the derivatives in –yū-). Yet, word initial stress is much more frequent in this type: *āty-urmī*- ‘overflowing’, *prāti-veṣa*- ‘neighbour’, literally ‘living in the neighbourhood’, *prāti-rūpa*- ‘being the counterpart of any realform’, *ānty-āṭi*- ‘being at hand with help’, *ādhi-nirīj*- ‘covered over’, *ādhi-rukma*- ‘wearing gold’, *ādhi-vastra*- ‘clothed’, *ādhy-akṣa*- ‘inspector’ (literally ‘having his eyes above all’) (*akṣ-)*.

Accent shift also occurs if the initial member is trisyllabic and the last syllable is stressed: *darsāta-śri*- ‘being of conspicuous splendour’ (*darsatā*- ‘visible, striking the eye’).

Further stress in the monosyllables *dvī-*, *trī-* as initial members is shifted: *dvi-jānman*- ‘having a double birth’, *dvi-jāni*- ‘having two wives’, *dvi-dhāra*- ‘forming two streams’, *dvi-pād*- ‘two-footed’, *dvi-bāndhu*- proper name (literally ‘having double relationship’), *dvi-bārhas*- ‘doubly close or thick or strong’, *dvi-vartani*- ‘walking on two paths’ (literally ‘having two paths’) vs. *dvi-sāvas*- ‘having or granting twofold strength’; *tri-kakūbh*- ‘three-pointed’, *tri-cakrā*- ‘having three wheels’, *tri-tāntu*- ‘being thrice woven’, *tri-dhātu*- ‘consisting of three parts’, *tri-nābhi*- ‘three-naved (a wheel)’, *tri-pād- ‘three-footed’, *tri-pājasyā*- ‘having three flanks’, *tri-pṛṣṭhā*- ‘having three backs or surfaces’, *tri-māntu*- ‘offering threefold advice’, *tri-vārtāha*- ‘protecting in three ways’ etc. vs. *try-āmbaka*- ‘three-eyed’, *try-āruṣa*- proper name (literally ‘having three brown things’), *try-āruṣa*- ‘marked red in three places’, *try-āsir*- ‘mixed with three products of milk’.

Add some compounds with *sa*- ‘with’ as the initial member, whose final member is a stem: *sa-cānas*- ‘being in harmony with’, *sa-jōgas*- ‘being associated together’, *sa-prāthas*- ‘being extensive, wide’, *sa-bādhas*- ‘being eagerly’ (see above), or a stem on –yū-: *sa-manyū*- ‘having the same mind’ (compare stress in *parī-manyū*- ‘wrathful, angry’); besides *sa-jōṣa*- ‘associated together’, *sa-dīś*- ‘fit, proper’, *sa-dīśa*- ‘like, resembling’ vs. *sā-keta*- ‘having the same intention’, *sā-ratha*- ‘together with the chariot’, *sā-gaṇa*- ‘having troops or flocks’, *sā-cana*- ‘being in harmony with’, *sā-nābhi*- ‘having the same navel; connected by the same navel or womb’, *sā-nāman*- ‘having the same name’, *sā-nīka*- ‘having the same nest’, *sā-nemi*- ‘having a felly’, *sā-manyu*- ‘having the same mind’, *sā-rūpa*- ‘having the same shape’.

Among the compounds with a negative prefix *a(n)-* only a few are stressed on the prefix: *ā-kaniṣṭha*- ‘of whom none is the youngest’, *ā-kravihasta*- ‘not having bloody hands’, *ā-jōṣa*- ‘being not gratified’, *ā-pūrva*- ‘unprecedented, first’ (literally ‘one who has no first person’), *ā-
Rosemarie Lühr

fruit, a-bandhaná- ‘without fetters’ (bándhanā- ‘binding, fettering’), a-bandhú- ‘without kindred’ (bándhu- ‘connection’), a-balá- ‘having no power’ (bála- ‘power, strength’), a-bhrāṭṛvyā- ‘having no rival’ (bhrāṭṛvyā- ‘a father’s brother’s son’), a-mantú- ‘being silly, ignorant’ (mántu- ‘advice, counsel’), a-marmán- ‘having no vital part’ (márman- ‘mortal spot’), a-mená- ‘having no wife’ (ménā- ‘woman’), a-yakṣmá- ‘being not consumptive’ (yákṣma- ‘sickness’), a-rakṣás- ‘being harmless, honest’ (rákṣas- ‘guarding’), a-rajjú- ‘not having or consisting of cords’ (ráju- ‘rope, cord’), a-rathá- ‘having no car’ (rátha- ‘chariot, car’), a-rápas- ‘not hurting, beneficial’ (rápas- ‘defect, injury’), a-rasá- ‘being without taste’ (rása- ‘sap, juice’), a-repás- ‘being spotless’ (répas- ‘spot, stain’), a-vayuná- ‘being indistinguishable’ (vayuna- ‘moving, active’), a-vátrá- ‘being without wind’ (váta- ‘wind’), a-sástrú- ‘having no adversary’ (sátru- ‘enemy, rival’), a-simídá- ‘being not destructive like a Śimidā’ (śimidā- name of a female demon), a-śramá- ‘being indefatigable’ (śrama- ‘fatigue, weariness’), a-sapatná- ‘being without a rival’ (sapána- ‘rival, adversary’, sapáti- ‘female rival’), a-samaná- ‘not remaining united’ (sámana- ‘meeting’), a-súryá- ‘being sunless’ (súrya- ‘sun’), a-hastá- ‘being handless’ (hásta- ‘hand’). Therefore, the rule is: Combine destressed prefix a(n)- with oxytonesis. The only exception is a-śeṣas- ‘without descendants’ vs. séṣas- ‘offspring’ (Wackernagel 1905: 120).

To explain why the negative prefix a(n)- is mostly unstressed in bahuvrīhis, though its preform *-́ḥ- was stressed in Proto-Indo-European (see above) and destressed a(n)- deviates from the usual stress of this composition type, one has to consider, on the one hand, that á in the outcome á(n)- is the most unmarked vowel in stressed syllables; much more marked is i/u:

Markedness of vowels in heads of metrical units:

NOHEAD/ə >> NOHEAD/i,u >> NOHEAD/a

(Kenstowicz 1994; Löhken 1997; 38).

On the other hand, determinative compounds show expected stress on this prefix, apart from a few exceptions like the paroxytones a-kṣéra- ‘imperishable’, a-jára- ‘ever young’, a-dábha- ‘not injuring’ and the oxytones a-tcá- ‘not satisfied’, a-vadhá- ‘not hurting’, a-výdhá- ‘not rendering prosperous’ (Wackernagel 1905: 215). It is apparent that stress in bahuvrīhis and determinative compounds like a-kalpá- ‘not subject to rules’ or á-kta- ‘undone’ respectively has a contrastive function. For the hearer, the last member in Vedic bahuvrīhis with a(n)- is stressed in order to distinguish this type of compound from determinative compounds with the
Contrastive Word Stress in Vedic Endo- and Exocentric Compounds

corresponding prefix: Stress in the oxytone a-kalpá- is exactly opposed to the type á-kṣṭa-
with stress on the initial syllable. But why is stress shifted in bahuvrīhis and not in
determinative compounds with a(n)-? Firstly, in determinative compounds, the
aforementioned rhythmical rule applies which prevents stress from getting shifted, so that
stress in these compounds is fixed on the negative prefix a(n)-. Secondly, stressed
“compositionell” –á- within a bahuvrīhi is a contrastive stress opposing the “adjective” of the
whole compound to the substantive in the final member, whereas in bahuvrīhis with a(n)- the
stressed suffix contrasts with the unstressed prefix both containing the same vowel -a-.
Therefore, in bahuvrīhis with a(n)-, a fixed stress pattern arose, and from “compositionell”
–á- oxytonesis generalized to other stems.

In bahuvrīhis with duṣ-, stress is shifted, too, whereby original stress on the final member
is retained: dur-ādhí- `meditating evil’, dur-éva- `being ill-disposed’, dur-dřška- `looking
bad’, dur-dhúr- `badly yoked or harnessed’, dur-máda- `being drunken, mad’, dur-mánman-
clad, naked’ (literally `having bad clothes’), dur-vidátra- `ill-disposed’ (only one exception:
dür-āśr- `badly mixed’). This points less at a contrastive stressing like in bahuvrīhis with
a(n)- than at a stress shift caused by the avoidance of stressed ú.

The same is true of most compounds with su-, though more oxytones are documented: su-

kárman- `performing good works’, su-kiṃšukā- `well made of Kiṃśuka wood’, su-kṛtī-

`having a good praise’, su-ketú- `being very bright’, su-krátu- `being skilful’, su-kṣatrā-

`having a good dominion’, su-kṣétra- `having an excellent field’, su-khaḍī- `wearing beautiful
bracelets or rings’, su-gándhī- `sweet-smelling, fragrant’, su-gábhatasi- `having skilful hands’,
su-gāḍhā- `easily fordable’, su-gú- `having fine cows’, su-gopā- `being well protected’, su-
cakrā- `having beatiful wheels’, su-cākṣas- `having good eyes’, su-cétas- `having great
intelligence’, su-ecchardis- `affording good shelter’, su-jániman- `producing or creating fair
things’, su-jānman- `of noble birth’, su-jámha- `having good jaws or strong teeth’, su-jihvā-
`being bright-tongued, sweet-voiced’, su-jūrni- `blazing or glowing brightly’, su-jyódis-
`shining very brightly’, su-trātrā- `guarding or protecting well’, su-dámsas- `accomplishing
mighty or splendid actions’, su-dákṣa- `being very capable or clever’, su-dákṣina- `having an
excellent right hand’, su-dátra- `granting good gifts’, su-dātu- `easily divisible’, su-dánu-
`pouring out or bestowing abundantly’, su-dīna `being clear, bright’, su-dītī- `flaming,
shining’, su-děliti- `flaming brightly’, su-dřška- `looking beautiful’, su-devā- `having well-
meaning gods’, su-dyummā- `shining beautifully’, su-dhána- `being very rich’, su-dhánvan-

17
‘having an excellent bow’, su-dhātu- ‘being well-founded, secure’, su-dhī- ‘having a good understanding’ etc. But add some compounds with paroxytonesis: su-gáva- ‘having fine cows’ (gó- ‘cow’), su-víra- ‘having good heroes’ (vírá- ‘man, hero’), su-dhūr-a- ‘going well under the yoke’ (dhūr- ‘yoke’), su-pátha- ‘well passable’. Also, secondary oxytones exist: su-gáva- ‘having fine cows’ (gó- ‘cow’), su-víra- ‘having good heroes’ (vírá- ‘man, hero’), su-dhúr-a- ‘going well under the yoke’ (dhúr- ‘yoke’), su-pátha- ‘well passable’. Also, secondary oxytones exist: su-gáva- ‘having fine cows’ (gó- ‘cow’), su-víra- ‘having good heroes’ (vírá- ‘man, hero’), su-dhúr-a- ‘going well under the yoke’ (dhúr- ‘yoke’), su-pátha- ‘well passable’. Also, secondary oxytones exist: su-gáva- ‘having fine cows’ (gó- ‘cow’), su-víra- ‘having good heroes’ (vírá- ‘man, hero’), su-dhúr-a- ‘going well under the yoke’ (dhúr- ‘yoke’), su-pátha- ‘well passable’. Also, secondary oxytones exist: su-gáva- ‘having fine cows’ (gó- ‘cow’), su-víra- ‘having good heroes’ (vírá- ‘man, hero’), su-dhúr-a- ‘going well under the yoke’ (dhúr- ‘yoke’), su-pátha- ‘well passable’. Also, secondary oxytones exist: su-gáva- ‘having fine cows’ (gó- ‘cow’), su-víra- ‘having good heroes’ (vírá- ‘man, hero’), su-dhúr-a- ‘going well under the yoke’ (dhúr- ‘yoke’), su-pátha- ‘well passable’. Also, secondary oxytones exist: su-gáva- ‘having fine cows’ (gó- ‘cow’), su-víra- ‘having good heroes’ (vírá- ‘man, hero’), su-dhúr-a- ‘going well under the yoke’ (dhúr- ‘yoke’), su-pátha- ‘well passable’. Also, secondary oxytones exist: su-gáva- ‘having fine cows’ (gó- ‘cow’), su-víra- ‘having good heroes’ (vírá- ‘man, hero’), su-dhúr-a- ‘going well under the yoke’ (dhúr- ‘yoke’), su-pátha- ‘well passable’. Also, secondary oxytones exist: su-gáva- ‘having fine cows’ (gó- ‘cow’), su-víra- ‘having good heroes’ (vírá- ‘man, hero’), su-dhúr-a- ‘going well under the yoke’ (dhúr- ‘yoke’), su-pátha- ‘well passable’. Also, secondary oxytones exist: su-gáva- ‘having fine cows’ (gó- ‘cow’), su-víra- ‘having good heroes’ (vírá- ‘man, hero’), su-dhúr-a- ‘going well under the yoke’ (dhúr- ‘yoke’), su-pátha- ‘well passable'. Finally, as mentioned above, a distinction of parts of speech can be observed by stress shift. If bahuvrīhis are substantivized, a stressed “compositionell” suffix –ā- is added or the stem vowel –a- of the final member is stressed; note the so called Dvīgas AV sahasrāhn-yā- ‘a thousand day’s journey’, tri-yugā- ‘three generations’. Exceptions are seldom; see RV á-bhaya- ‘unfearful, secure’ (Wackernagel 1905: 304ff.).
assumed, which usually is equally ranked with LEX. \([\text{MAX}(\hat{a})]\) forces selection of the candidates generated by a \(\hat{a}\)-suffix. In \textit{bahuvrīhis} with a negative prefix oxytonesis is obligatory. This obligation is enforced by constraint \([\text{CONTR(AST)}]\) (see (vi)). Further choice of \([-\hat{a}\-]\) automatically violates both \([\text{MAX}(w)_{\text{in}}]\) and \([\text{MAX}(w_{\text{f}})]\) if the compound is inherently stressed on the initial member.

(iv) Paroxytonesis \([\text{PAR}]\) seldom occurs apart from \([\text{WSP}_{\text{Fin}}]\) (viii) and \([\text{MAX}(w)_{\text{Fin}}]\) (ii). This stressing is lexically marked, too.

(v) The constraint \([\text{UNIQ(UNESS)}]\) serves to avoid ambiguity (Wunderlich 2001: 8). If stress is shifted to distinguish substantives from adjectives, this kind of contrastive stress shift applies. Here, too, obligation of \(-\hat{a}\-\) is enforced.

(vi) If stress is shifted from the negative prefix \(\hat{a}(n)\-\) in \textit{bahuvrīhis} to the last syllable so that an oxytone results, a constraint \([\text{CONT(RAST)}]\) is valid, which distinguishes these compounds from determinative compounds with stress on \(\hat{a}(n)\)-\(^{16}\).

(vii) Constraint *[+F] is a markedness constraint: Avoid [F] in the output. Generally, this phenomenon concerns the exclusion of stressed \(i\) or \(u\) in initial members of compounds.

(viii) The relation between syllable weight and prominence is expressed by the quantity-sensitivity enforcing constraint “Weight-to-Stress-Principle” \([\text{WSP}_{\text{Fin}}]\) (Kager 1999: 157). While there is a tendency towards this stressing, it does not occur regularly.

Often two rankings and two corresponding "winners" seem to be documented, as pairs like the \textit{bahuvrīhis su-gābhasti-\-, su-nūtī-\-, su-gabhasti-\-, sū-nūtī-\-} and the determinative compounds \textit{a-prāśastā-\-} vs. \textit{ā-prāśasta-\-} (see below) demonstrate. In this case two or more constraints could be tied, i.e. equally ranked, in one speech level (Müller 2000a: 152). Indeed, the optimality theory allows more than one optimal candidate (Löhken 1997: 76ff.; Müller 2000b: 26ff.; 2001).

<table>
<thead>
<tr>
<th>candidate A</th>
<th>constraint 1</th>
<th>constraint 2</th>
<th>constraint 3</th>
<th>constraint 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>→ candidate B</td>
<td>*†</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>→ candidate C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

But in Vedic one stress pattern occurs much more frequently than its counterpart. Therefore, a constraint \([\text{LEX}]\) is assumed; a default ranking is overridden by a feature value

\(^{16}\) Since in \textit{bahuvrīhis} with a negative prefix \(a(n-)\) oxytonesis is almost always attested, whereas in other types of compounds this stress pattern is not regular, some kind of positional faithfulness occurs (see Kager’s 1999: 407ff.): Positional faithfulness constraints cannot be violated if the output segment fails to occupy the relevant position. If one replaces the notion “position” by “context”, since oxytonesis has to occur in the “context” unstressed \(a(n)\-\), a constraint \([\text{C(ontext)}-\text{MAX(ox)}]\) could result. But the above given solution seems simpler.
assigned lexically (see Wunderlich’s 2001: 7f. definition of MAX(lexF)). Only in the case of real doublets like su-nṛti- and sū-nṛti-, for the variant, which is from a synchronic view irregularly stressed, is strict lexicalisation assumed. This form then is excluded from competition (here sū-nṛti-).

Now the rankings found in bahuvrīhis are given – in the input the initial and final member as single words and the usual stress type of the compound are listed:

The initial member is disyllabic:
(a) In a sequence stressed í – unstressed a in an initial member stress moves to a. The constraint [*í – a] is higher ranked than [MAX(w)In]. But MAX(wf) is observed just as in the normal type sahásra-pad- (√ is only used in the case of the top constraints):

<table>
<thead>
<tr>
<th>Input: víśva-, sahāsra-, bhānu-, pād-; STRESSIn</th>
<th>*í – a</th>
<th>MAX(w)In</th>
<th>MAX(wf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>→ víśvā-bhānu-</td>
<td>√</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>víśva-bhānu-</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ sahāsra-pad-</td>
<td>*</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>sahasra-pād-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(b) In a sequence unstressed a – stressed ú- in an initial member stress moves to a: [*a – ú]In. In one compound with “compositionell” –á- oxytonesis occurs, wherefore lexicalisation is assumed. With the exception of the bahuvrīhis with a(n)- (see above) constraints which refer to stress on the final member generally are not relevant for the evaluation of the candidates. For if the initial member is stressed, MAX(w)Fin is violated in every case. But if the final member is stressed, either original stress can be retained or it deviates from the stressing as single word. For instance, stress can be shifted from the ultimate to the penultimate in order to observe the constraint [WSPFin].

<table>
<thead>
<tr>
<th>Input: catúr-; (āśri-)17, kākṣa-; STRESSIn</th>
<th>LEX</th>
<th>*a – ú</th>
<th>-á-</th>
<th>MAX(w)In</th>
<th>MAX(wf)</th>
<th>MAX(w)Fin</th>
<th>WSPFin</th>
</tr>
</thead>
<tbody>
<tr>
<td>→ cátur-āśri-</td>
<td>√</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cátur-āśri-</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ catur-kakṣā-</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>*</td>
<td>*</td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>

(c) In a sequence stressed í- unstressed i- in an initial member, stress can move to the final member either to the place where stress is located as single word [MAX(w)Fin] or the

17 Round brackets mean that this word is not documented in the RV.
A compound becomes an oxytone [-á-]. Whereas compounds with śīti- are always stressed on the final member:

<table>
<thead>
<tr>
<th>Input: śīti-; pṛṣṭhā-; STRESS\textsubscript{ln}</th>
<th>*í - i</th>
<th>-á-</th>
<th>MAX(w)\textsubscript{ln}</th>
<th>MAX(wf)</th>
<th>MAX(w)\textsubscript{Fin}</th>
<th>WSP\textsubscript{Fin}</th>
</tr>
</thead>
<tbody>
<tr>
<td>→ śīti-pṛṣṭhā-</td>
<td>✓</td>
<td>✓</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>śīti-pṛṣṭhā-</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Compounds with híri- have vacillating stress. Once híri- is documented:

<table>
<thead>
<tr>
<th>Input: híri-, sīti-; śíprā-, śnāṣru-, pṛṣṭhā-; STRESS\textsubscript{ln}</th>
<th>LEX</th>
<th>*í - i</th>
<th>-á-</th>
<th>MAX(w)\textsubscript{ln}</th>
<th>MAX(wf)</th>
<th>MAX(w)\textsubscript{Fin}</th>
<th>WSP\textsubscript{Fin}</th>
</tr>
</thead>
<tbody>
<tr>
<td>→ híri-śíprā-</td>
<td>✓</td>
<td>✓</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>→ híri-śnāṣru-</td>
<td>✓</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ śīti-pṛṣṭhā-</td>
<td>✓</td>
<td>✓</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>śīti-pṛṣṭhā-</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(d) In a sequence stressed á- unstressed i- in an initial member, stress is usually retained and [MAX(wf)] regularly observed. The compounds with a sequence a – i are lexicalized. *[a – í] is excluded.

<table>
<thead>
<tr>
<th>Input: hári-, pári-, práái-; śrī-, yāga-, manyū-, veśā-; STRESS\textsubscript{ln}</th>
<th>LEX</th>
<th>*a - i</th>
<th>MAX(w)\textsubscript{ln}</th>
<th>MAX(wf)</th>
<th>MAX(w)\textsubscript{Fin}</th>
<th>WSP\textsubscript{Fin}</th>
</tr>
</thead>
<tbody>
<tr>
<td>→ hari-śrī-</td>
<td>✓</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ hári-yoga-</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>hari-yoga-</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>→ pari-manyū-</td>
<td>✓</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ práái-veśā-</td>
<td>✓</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(e) If the initial member ends in stressed -í or -á, stress is usually shifted to the final member - either to the place where stress is located as single word or the compound becomes an oxytone. Besides, in a final member, stress can be retracted to a heavy syllable [WSP\textsubscript{Fin}]:

<table>
<thead>
<tr>
<th>Input: kṛdhu-, bahú-, urá-, tuví-, agní-, abhi-; kārṇa-, ánna-, loká-, vāja-, bráhmaṇa-, griva-, jhihá-, dātá-, sēnā-, vīrā-; STRESS\textsubscript{ln}</th>
<th>LEX</th>
<th>*- í/á-</th>
<th>-á-</th>
<th>MAX(w)\textsubscript{ln}</th>
<th>MAX(wf)</th>
<th>MAX(w)\textsubscript{Fin}</th>
<th>WSP\textsubscript{Fin}</th>
</tr>
</thead>
<tbody>
<tr>
<td>→ kṛdhu-kārṇa-</td>
<td>✓</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ bahv-anná-</td>
<td>✓</td>
<td>✓</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bahv-ānna\textsuperscript{18}</td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\textsuperscript{18} The svarita is preceded by a y or v representing an originally stressed i- or u-vowel.
→ urú-loka- √ * * * *
→ puru-vija- √ * * *
→ puru-víra- √ * * * *
→ tuvi-brahman- √ * * *
→ tuvi-gríka- √ * * * *
→ agni-jihvá- √ * * *
→ agní-dāra- √ * * *
→ abhi-sená- √ :√ * * *
→ abhí-vírā- √ * * *

(ii) The initial member is trisyllabic:

Stress is shifted from a final syllable on -á of an initial member to the final member -śřī-.

As mentioned above, compounds with stress on -śřī- are lexicalized:

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{Input: } & \text{LEX} & \text{MAX(w)ₜₐₙ} & \text{MAX(w)ₕ} & \text{MAX(w)ₚᵣₑₚₐₙ} \\
\text{darśatā-} & \sqrt{ } & * & * & * \\
\text{śřī-; STRESS}_{ₙ} & & & & \\
\rightarrow \text{darśata-śṛṅ} & & & & \\
\hline
\end{array}
\]

(iii) The initial member is a monosyllable, a prefix:

(a) dvi- and tri- are almost always unstressed: But sá- has priority:

\[
\begin{array}{|c|c|c|c|c|c|c|}
\hline
\text{Input: } & \text{LEX} & \text{*dvi-} & \text{*trí-} & \text{MAX(w)ₜₐₙ} & \text{MAX(w)ₕ} & \text{MAX(w)ₚᵣₑₚₐₚₜ} \\
(dvī-, trī-, sá-); & & & & & & \\
\text{jánman-, } & \sqrt{ } & * & * & * & * & * \\
\text{śivas-, } & & & & & & \\
\text{kakābh-, } & & & & & & \\
\text{(ambaka-), } & & & & & & \\
\text{cánas-, } & & & & & & \\
\text{ṛūpā-; } & & & & & & \\
\text{STRESS}_{ₙ} & & & & & & \\
\rightarrow \text{dvī-jánman-} & & & & & & \\
\text{dvī-janman-} & *! & * & * & * & * & * \\
\rightarrow \text{dvī-śivas-} & \sqrt{ } & * & * & * & * & * \\
\rightarrow \text{tri-kakābh-} & \sqrt{ } & * & * & * & * & * \\
\rightarrow \text{try-āmbaka-}^{19} & \sqrt{ } & * & * & * & * & * \\
\rightarrow \text{sa-cánas-} & \sqrt{ } & * & * & * & * & * \\
(see below) & & & & & & \\
\rightarrow \text{sā-ṛūpā-} & & & & & & \\
\hline
\end{array}
\]

Therefore, compounds with sá- do not violate constraint [MAX(wf)].

(b) As mentioned above, contrary to the supposed stressing of the negative prefix *p- in Proto-Indo-European, in Vedic bahuvrīhis stress is usually shifted to the final member; all but one compound are oxytones. Here the supposed constraint [CONTR] applies, enforcing stress shift to the final syllable:

\[
\begin{array}{|c|c|c|c|c|c|}
\hline
\text{Input: } & \text{LEX} & \text{CONTR} & \text{-ā-} & \text{MAX(w)ₜₐₙ} & \text{MAX(w)ₕ} & \text{MAX(w)ₚᵣₑₚₐₚₜ} \\
\text{dhenú-,} & & & & & & \\
\text{cakrā-,} & & & & & & \\
\text{kālpa-,} & & & & & & \\
\rightarrow \text{ā-} & & & & & & \\
\hline
\end{array}
\]

\[^{19}\text{Compare note 18.}\]
Contrastive Word Stress in Vedic Endo- and Exocentric Compounds

| Input: (dāṣ), (sū-); évā-, āṣir-, (nī-,) dhāra-, vīrā-, gō-; STRESS\textsubscript{In} | LEX | *sū-| \textsuperscript{*}dāṣ| PAR | MAX(w)\textsubscript{In} | MAX(wf) | MAX(w)\textsubscript{Fin} | WSP\textsubscript{Fin} |
|-------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| → dūr-éva- | \(\sqrt{\}) | * | | * | * | * | | |
| dūr-evā- | *! | * | * | * | * | * | | |
| → su-nī- | \(\sqrt{\}) | * | | * | * | * | | |
| → su-dhārā- | \(\sqrt{\}) | \(\sqrt{\}) | * | * | * | * | | |
| → su-vīrā- | \(\sqrt{\}) | * | \(\sqrt{\}) | * | * | * | | |
| → su-gāva- | \(\sqrt{\}) | * | \(\sqrt{\}) | * | * | * | | |

(iv) If the final member is stressed and if this element is an \textit{s}-stem, the root syllable is stressed. But stress on the initial member is also documented. The heavy syllable of \textit{p\textsubscript{ā}na-} is always stressed. In all of these cases lexicalisation has to be assumed:

<table>
<thead>
<tr>
<th>Input: kṣētra-, (sā-), agnī-, tuvī-, índra-, sādha-, cánas-, bhrājās-, rādhas-, (pāna-); STRESS\textsubscript{In}</th>
<th>LEX</th>
<th>MAX(w)\textsubscript{In}</th>
<th>MAX(wf)</th>
<th>MAX(w)\textsubscript{Fin}</th>
<th>WSP\textsubscript{Fin}</th>
</tr>
</thead>
<tbody>
<tr>
<td>→ kṣētra-sādha-</td>
<td>(\sqrt{})</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>kṣētra-sādhās-</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>→ sa-cānas-</td>
<td>(\sqrt{})</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ agnī-bhrājās-</td>
<td>(\sqrt{})</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ tuvī-rādhas-</td>
<td>(\sqrt{})</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ indra-pāna-</td>
<td>(\sqrt{})</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(v) Dvigus regularly show stress shift to the final \(-\textit{ā}-. Here, the assumed constraint [UNIQUENESS] requiring a stressed suffix \(-\textit{ā}- is valid:
3.2 Prepositional compounds with a governed final member

Prepositional compounds with a governed final member which are normally stressed on the initial member become oxytone only in the case of a stem vowel –a- or “compositionell” –á-. Like in bahuvrīhis, this suffix has a contrastive function: The substantive in the final member is opposed to the adjectival value of the compound: adho-aks ō- ‘being below the axle’ (ákṣa- `axle’), upa-kakṣa- `reaching to the shoulder’ (kákṣa- `armpit’), adhas-pad-á- ‘placed under the feet’ (pád- `foot’), up-ānas-á- ‘being on a carriage’ (ānas- `cart’), ati-rār-á- `performed over-night’ (rārī- `night’), áty-avi- `passing over or through the strainer’ (literally ‘passing over sheep’s wool’) (āvī- `sheep’), ádhi-ratha- `being upon or over a car’, ádhi-gartya- `being on the driver’s seat’ (gārta- `driver’s seat’), upāri-budhana- `raised above the ground’ (budhná- `ground, bottom’), upāri-martya- `being more than human’ (márya- `human being’) (Wackernagel 1905: 308f.). Consequently, in this type [-á-] and [MAX(wf)] are equally ranked. But since in every case where constraint [-á-] is dominant, [MAX(wf)] and [MAX(w)]=] have identical values, the order [MAX(w)=] > [MAX(wf)] can be kept:

3.3 Determinative compounds

(i) In determinative compounds with suffix –ta- or –ti-, stress is retained on the initial member, especially on á(n)-, because of the above mentioned rhythmical rule [RHYTHM]. As (ii) shows, this rule particularly concerns monosyllables as initial members.
(ii) The rhythmical rule prevents stress from getting shifted in monosyllabic sū-, dūṣ-; note sū-dhitā `well placed`. Only in su-baddhā- `bound fast`, su-jāṭā- vs. sū-jāṭā- both `well born, nobly born` the final member is stressed (Wackernagel 1095: 226). Therefore, the variants with unstressed su- are considered as lexicalized, and [RHYTHM] is equally ranked with [*sū-, *dūṣ-].

(iii) But in the initial member viśva-, stress is shifted from i to a like in bahuvrīhis: viśvā-gūrta- `approved by everybody`, viśvā-dṛṣṭa- `seen by all`.

(iv) Just as in bahuvrīhis stress is shifted from a(n) to the final member, too: agni-taptā- `fire-heated, glowing`, agni-dagdhā- `burnt on a funeral pile`, agni-śvāttā- `tasted by the funeral fire` vs. agni-mūḍha- `made insane by Agni`, puru-jāṭā- `variously manifested or appearing`, puru-gūrta- `welcome to many`, puru-ṣṭutā- `praised by many`, puru-hūrā- `invoked by many`; compare further kavi-ṣastā- `pronounced by wise men`, kavi-praṣastā- `praised by sages`.

(v) Sometimes stress is shifted, if another prefix follows the negative prefix a(n)-, and oxytones arise: an-āṃṛpā- `having no enemy that can injure`, an-āṣastā- `not praised`, a-praṣastā- `not praised, fameless` vs. án-apacyuta- `not falling off, holding fast (a yoke)`, án-abhiṣasta- `blameless, faultless`, án-ādhṛṣṭa- `unchecked`, án-ānata- `unbent, not humbled`, án-upakṣita- `uninjured, undecaying`, án-nibaddhā- `not tied down, not bound`, án-nibhrṣṭa- `unabated`, án-nivṛṭa- `unchecked`, án-niṣṭṛa- `unfinished, not settled`, án-niṣṭṣṭa- `unhurt, unchecked`, á-parivṛṭa- `not covered`, á-parājita- `unconquered`, á-prayuta- `attentive`, á-pratiṣkṛta- `not to be kept off`; compare further the pair a-praṣastā- `not praised, fameless` vs. á-praṣasta- `not praised, blamable`. Stress on the first án- prevails.

(vi) Compounds like puru-prajāṭā- `variously propagated`, puru-praṣastā- `praised by many` follow constraint (iv) and (v).

(vii) Compounds with another formative than –ta- show much more vacillating stress: gerundives on –ya- like á-gohya- `not to be concealed or covered` vs. a-paṣyā- `not seeing`, a-dayā- `merciless, unkind`, an-ādhṛṣya- `not to be meddled with` (Wackernagel 1905: 216ff.). But oxytones are compounds with a root noun as a final member: a-jūr- `not subject to old age`, a-cīt- `foolish`, a-drūḥ- `not harming`, a-bhúj- `one who has not experienced or

20 Possibly r was a „NOHEAD“-vowel in compounds, too; compare pitṛ-vitā- `acquired by ancestors`.
21 Just as in án-avahvara- `not crooked, straightforward`, án-apasphura-, án-apasphur- `not withdrawing`, án-abhidrūḥ- `not malicious`, án-ābhū- `disobliging, neglectful`, á-prabhu- `unable, incompetent`, á-prahan- `not hurting` vs. an-āvṛ- `not returning`.
enjoyed’, a-rúk- `lightless’, a-sú- `not bringing forth’ vs. á-kharva- `not shortened or mutilated’, á-kra- `inactive’.

(viii) Among the determinative compounds on –ta there also are paroxytones. Since they have a special meaning, they are lexicalisations: a-mťa- `immortal’; Pl. `the immortals’ (mťa- `dead’), a-túrta- `not outrun, unhurt’, `illimited space’ (vs. á-túrta- `one who does not anticipate someone’), a-yúta- `a myriad’, literally `unbounded’, a-dphṣa- `unseen’, a-súrta- `unilluminated, enveloped in darkness’ with stress on the heavy syllable (súrta- `bright, illuminated’); but compare further a-cítta- `unnoticed, unexpected’ (cítta- `noticed’) and some lexicalized compounds with formative –a- like a-kṣára- `imperishable’ (see above).

(ix) Contrastive word stress to distinguish parts of speech, i.e. the constraint [UNIQUENESS], caused stress shift in dur-itá- `difficulty, danger, evil’, dur-uktá- `bad or harsh word’, duṣ-kṛta- `misdeed, sin’; or in the pair sú-kṛta- `well done, well arranged’ vs. su-kṛta- `good deed, moral merit’; just as in indro-tá- `promoted by Indra’; this word is used as a male proper name; sometimes stress shift is documented both in the substantive and in the adjective: sú-kṛta- `good recitation, wise saying, song of praise’ and `well or properly said’.

By adding the constraint [RHYTHM] the following ranking results:

<table>
<thead>
<tr>
<th>Input: (sú-), visvá-, agní-, purú-, (á-); jáá-, gúrá-, taptá-, (prájáta-), (níśṭta-), (gohyá-), paśyá-, mťá-, kṛtá-; STRESS_IN</th>
<th>LEX</th>
<th>RHYTHM</th>
<th>UNIQ</th>
<th>*sú-</th>
<th>*i-a</th>
<th>*-á</th>
<th>PAR</th>
<th>MAX(W)</th>
<th>MAX(wf)</th>
<th>MAX(W)Fw</th>
<th>WPS_Fw</th>
</tr>
</thead>
<tbody>
<tr>
<td>→ sú jááa -</td>
<td>√</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ visvá-gúrá-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ agní-taptá-</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>agní-taptá-</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ purú-jáá-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ purú-prájáta-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ á-níśṭta-</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ á-gohyá-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

22 Compare further compounds like á-kava- `not contemptible’, á-kavi- `unwise’, á-kumára- `not a boy’ (kumára- `child, boy, youth’) and more complex compounds like á-kśetrvid- `not finding out the way’, á-kámakarśana- `not disappointing desires’.

23 Lexicalisations seem to be á-daṅghá- `reaching up to the mouth (áś-)’, ari-ṣṭutá- (for Indra) ‘praised with zeal’ with an unclear first element.

24 Compare further drupidá- `wooden pillar’.
→ a-paśyā- √ * * * √ * *
→ a-mṝta- √ * * √ * *
→ sú-kṛṭa- √ * * √ *
→ su-kṛṭa- * √ * √ *

3.4 Verbal compounds with a governed final member

Verbal compounds with governed final member of the type dhārayāt-kavi-, -kṣīti- `supporting sages resp. bearing creatures` retain their stress on the last syllable of the first member. The constraint is \[\text{STRESS}_{\text{InFinal}}\]. The only exception is sīkṣā-narā- `help the men`.

<table>
<thead>
<tr>
<th>Input: dhārayat, sīkṣā, trása; kavī-, kṣīti-, nár-, dáisyu-</th>
<th>LEX</th>
<th>-ā-</th>
<th>[\text{STRESS}_{\text{InFinal}}]</th>
<th>MAX(w)_In</th>
<th>MAX(wf)</th>
<th>MAX(w)_Fin</th>
</tr>
</thead>
<tbody>
<tr>
<td>→ dhārayāt-kavi-</td>
<td>√</td>
<td>*</td>
<td>√</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ dhārayāt-kṣīti-</td>
<td>√</td>
<td>*</td>
<td>√</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ sīkṣā-narā-</td>
<td>√</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ Trása-dáisyu-</td>
<td>*</td>
<td>!</td>
<td>√</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trása-dáisyu-</td>
<td>*</td>
<td>!</td>
<td>√</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.5 Verbal compounds with a governed initial member

The stressed final member of verbal compounds with a governed initial member consists mainly of root nouns, which are eventually enlarged by the formative –t- (Vedic ab-jīt- `conquering waters`, deva-stāt- `praising the gods`, vṛtra-hān- `killing Vṛtra`), or of oxytonic verbal stems like in aśva-hāyā- `driving horses`, ratha-kārā- `chariot-maker`, madhu-doghā- `milking sweetness`, ap-savā- `giving water`, and with the accusative as the initial member abhayaṁ-karā- `causing safety`, agnim-indhā- `kindling the fire`, viśvam-ejāyā- `all-exciting`; to the contrary, compounds with suffixes occurring otherwise in abstract nouns are lexicalized; note havir-ādvan- `eating the oblation`, soma-pāvan- (besides soma-pā-) `drinking Soma`, māṁs-pácana- `used for cooking meat`, puṣṭī-várdhana- `increasing prosperity or welfare`, abhiśasti-cātha- `keeping off imprecation`, indra-mādana- `delighting Indra`.

The ranking differs from that of the compounds with regular stress on the initial member. MAX(w)_Fin is higher ranked than MAX(w)_In:

<table>
<thead>
<tr>
<th>Input: devā-; vṛtra-, rátha-, havīs-, puṣṭī-, stūt-, hān-, (kārā-), (ādvan-), várdhana-; STRESS_Fin</th>
<th>LEX</th>
<th>-ā-</th>
<th>MAX(w)_Fin</th>
<th>MAX(wf)</th>
<th>MAX(w)_In</th>
</tr>
</thead>
<tbody>
<tr>
<td>→ deva-stūt-</td>
<td>√</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>deva-stūt-</td>
<td>* !</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>→ vṛtra-hān-</td>
<td>√</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4 General ranking

By comparing the rankings for the different kinds of composition types:

a) bahuvrīhis and determinative compounds

<table>
<thead>
<tr>
<th>LEX</th>
<th>CONTR</th>
<th>RHYTHM</th>
<th>UNIQ</th>
<th>*sū-,</th>
<th>*dūš-</th>
<th>*i – a</th>
<th>*a – ū</th>
<th>*i – i</th>
<th>*- ū/ū</th>
<th>*dvī-,</th>
<th>*trī-</th>
<th>PAR</th>
<th>MAX(w)(_{\text{ln}})</th>
<th>MAX(wf)</th>
<th>MAX(w)(_{\text{Fin}})</th>
<th>WSP(_{\text{Fin}})</th>
</tr>
</thead>
<tbody>
<tr>
<td>ratha-kārā-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>havir-advan-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>puṣṭi-vārdhana-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

b) verbal compounds with governed final member

<table>
<thead>
<tr>
<th>LEX</th>
<th>-d-</th>
<th>✓</th>
<th>[STRESS(_{\text{InFinal}})]</th>
<th>MAX(w)(_{\text{ln}})</th>
<th>MAX(wf)</th>
<th>MAX(w)(_{\text{Fin}})</th>
<th>WSP(_{\text{Fin}})</th>
</tr>
</thead>
</table>

c) prepositional compounds with governed final member

<table>
<thead>
<tr>
<th>LEX</th>
<th>-d-</th>
<th>✓</th>
<th>MAX(w)(_{\text{Fin}})</th>
<th>MAX(wf)</th>
<th>MAX(w)(_{\text{ln}})</th>
<th>WSP(_{\text{Fin}})</th>
</tr>
</thead>
</table>

d) verbal compounds with governed initial member

<table>
<thead>
<tr>
<th>LEX</th>
<th>-d-</th>
<th>✓</th>
<th>MAX(w)(_{\text{Fin}})</th>
<th>MAX(wf)</th>
<th>MAX(w)(_{\text{ln}})</th>
<th>WSP(_{\text{Fin}})</th>
</tr>
</thead>
</table>

It can be stated that compounds, which normally have stress on the initial member, the exocentric type “bahuvrīhi, the verbal compound with a governed final member, the prepositional compound with a governed final member” and the endocentric type “determinative compound”, show the same ranking, if one adds the constraint [STRESS\(_{\text{InFinal}}\)] and if one considers that constraint [-d-] automatically enforces violation both of [MAX(w)\(_{\text{ln}}\)] and [MAX(wf)]. Consequently, as concerns stress there is no clear distinction between endocentric and exocentric compounds so far.

Only verbal compounds with a governed initial member, a subtype of the endocentric type, are different in ranking: According to stress on the final member, constraint [MAX(w)\(_{\text{Fin}}\)] is dominating [MAX(w)\(_{\text{ln}}\)]. Depending on the Input [STRESS\(_{\text{In}}\)] or [STRESS\(_{\text{Fin}}\)], the constraint order alternates - the markedness constraints *sū-, *dūš-, *i – a, *a – ū, *i – i, *- ū/ū, *dvī-, *trī- could function under a cover constraint NOHEAD/i,u, for [RHYTHM] concerns stress shift only from monosyllables:

Input: STRESS\(_{\text{Initial member}}\)
### 5 Summary

Since there is nearly one ranking for all the Vedic composition types in spite of different underlying stress patterns, it is not surprising that previous scholars attempted a uniform explanation for Vedic compositionell stress:

> Die Lage des Accents wird ohne Rücksicht auf das Vorderglied nur durch die Gestaltung des Schlussgliedes bedingt und der Accent ruht bei den Bildungen auf –ta –ti –tu und den Comparative und Superlativa auf dem Vorderglied, bei sämtlichen übrigen Bildungen aber auf der Tonsilbe des Schlussgliedes (Reuter 1882: 612f.).

But the combination of prosodic constraints with faithfulness constraints concerning the underlying stress of the compound as a whole [MAX(wf)] and of the members as single words [MAX(w)\textsubscript{fin}; MAX( w)\textsubscript{fin}] was not recognized. Nor was the importance of prosodic constraints understood. Admittedly, there are a lot of lexicalisations, but the following constraint is absolutely clear: The more a vowel which functions as the nucleus is unmarked, the more unmarked it is as the nucleus in stressed syllables, too (Löhken 1997: 38). As demonstrated, in compounds this constraint concerns the avoidance of stressed ī and ā. Yet, there are further prosodic constraints: The constraint [RHYTHM] for determinative compounds with suffix –ta-, -na-, -ti- prevents stress from getting shifted, for the rhythm w w s → s w s

\[ nī hi tāḥ \quad nī hi tāḥ \]

could permanently be referred to the corresponding simplex hitāḥ. In particular, this constraint is valid for determinative compounds with the negative prefix ā(n)- ‘un-’, the outcome of Proto-Indo-European stressed *ǵ-, and suffix –ta-. Here, stress on the prefix is
almost without exception preserved. But more importantly, prosodic determinated stressing and those stresses which fulfil faithfulness constraints could be overridden by contrastive stress. Firstly, the well known stress shift to differentiate parts of speech must be mentioned; compare the adjective su-kṛta- vs. the substantive su-kṛtā-. But contrastive word stress appears within a compound as well. In the case of prepositional compounds with a governed final member and bahuvrīhis, “compositionell” –á- denotes a contrast between the substantive value of the final member of the compound and the “adjective” of the whole. Further, this contrastive function of the suffix –á- is used in bahuvrīhis with the negative prefix a(n)- to oppose those bahuvrīhis to determinative compounds with the corresponding prefix. But whereas in determinative compounds the inherited stress of the prefix is retained by reason of the rhythmical rule “w w s → s w s”, in bahuvrīhis, stress is shifted to the apparently “stronger” (or dominant) suffix –á-; so bahuvrīhis of this type are regularly oxytones. In stressing endocentric and exocentric compounds with the negative prefix a(n)- differently, a semantically determined contrastive word stress is visible.

6 References

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