

# Contrastive Word Stress in Vedic Endo- and Exocentric Compounds<sup>1</sup>

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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 *bahuṛihiṣ*; compare the endocentric types *ghṛtā-vydh-* ‘enjoying the ghee’, *ní-hita-* ‘laid, placed, deposited’ with *sahásra-paḍ-* ‘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 overridden 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 *bahuṛihiṣ* “compositionell” *-á-* 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 *-á-* is used in *bahuṛihiṣ* with the negative prefix *a(n)-* to oppose those *bahuṛihiṣ* 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)<sup>2</sup>, this kind of stress also fulfils contrastive functions in differentiating parts of speech; compare Vedic *éṛa-* m. ‘the act of seeking or going after’ vs. *eśá-* ‘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

<sup>1</sup> I owe critical remarks to Sergio Neri.

<sup>2</sup> Spencer 1991: 16; van Coetsem 1996: 62.

they are compounded, endocentric or determinative compounds (*tatpuruṣas*) are in many cases stressed on the final member, while exocentric compounds as *bahuvrīhis*, or certain prepositional or verbal compounds with a governed final member, are stressed on the initial member; compare *ghṛtā-vydh-* ‘enjoying the ghee’ vs. *sahásra-pa-* ‘thousand-footed’, *áty-avi-* ‘passing through the wool’, *Trasá-dasyu-* male proper name ‘before whom the enemies tremble’<sup>3</sup>. This distribution of stress is inherited from Proto-Indo-European, as in the Greek θηρο-σκόπος ‘looking out for wild beasts’, δρυ-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 *bahuvrīhis*; as is RV *ní-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 *ghṛtā-vydh-* is unknown. But there obviously exists some rule which is higher ranked than the functional distinction between *bahuvrīhis* 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 occurring in Vedic *bahuvrīhis*, 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 X” (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-ιππος ‘with a black horse’, (ἴππος), φερέ-οικος ‘carry the house’ (οῖκος)

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<sup>3</sup> We leave out *dvandvas*, for they are stressed on both members in older time (Wackernagel 1905: 150).

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)<sup>4</sup>. 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” –<sup>5</sup>, 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 system<sup>6</sup>.

## 2.1 bahuvrīhis

Scholars agree in deriving *bahuvrīhis* like Vedic *sahásra-pad-* ‘thousand-footed’, Greek μελάν-ιππος ‘with a black horse’ from a nominal sentence μέλας ἵππος ‘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’; ροδο-δάκτυλος ’Εώς ‘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 *mártya ha vā ágre deváśah* ‘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

<sup>4</sup> Compare Hock 1993: 200f. note 25 for the genesis of dominant morphemes.

<sup>5</sup> Drachman/Malikouti-Drachman 1999: 897ff.

<sup>6</sup> 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. *blackbird* vs. *black bird* (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 juxtaposition<sup>7</sup> 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-vīra-* ‘ruling men’. Since in those compounds a relation with an internal argument is established, the verbal element assigns the case-relation 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 *dhārayát-* are Indo-Iranian; compare Vedic *dhārayát-kavi-*, *-kṣiti-* ‘supporting sages resp. bearing creatures’ with Old Avestian *Dāraiač-ratha-* male proper name (literally ‘supporting carriages’), Old Persian *Dāraya-vauš* (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 *Dāraya-vauš*, 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 Brāhmaṇas. 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

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<sup>7</sup> Note “syntactic compounds” like Vedic *ahām-pūrvá-* ‘eager to be first’ (from *aháṃ pūrváḥ* ‘I should be first’, *kim-tvá* ‘asking garrulously’ (from *kíṃ tvám* ‘what are you doing?’), *yād-rādhyām* ‘as quickly as possible’ (literally ‘in so far as attainable’).

rule, stress of the original object was deleted. As an aside, the type *Trasá-dasyu-* may have contained an element *-át/d-*, too<sup>8</sup>, if one assumes that in a preform \**trasád-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-οικος ‘carry the house!’, Μενέ-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-zaoθra-* ‘sacrifice to god!’, Old Persian *Xšayā-əršan-* male proper name, literally ‘rule the men’, Vedic *sīksā-narā-* ‘help the men’, *radā-vasu-* ‘dispense wealth’ (with lengthened *-ā-* because of a former laryngeal) - in Greek φιλό-ξεινος ‘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 *-io-*, respectively: *úpa-māsya-* ‘occurring every month’, *ánu-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’, *á-pathi-* ‘travelling hither or near’, *á-deva-* ‘turning towards the gods’, *upári-budhna-* ‘raised above the ground’, ἀντί-θεος ‘equal to the gods’, ἐγ-κέφαλος ‘within the head, brain’, ἐμ-πεδος ‘in the ground, firm-set’, ἐν-άλιος ‘in the sea’, ἐπι-χώριος ‘native, indigenous’, παρα-θαλάττιος ‘beside the sea’, παρα-ποτάμιος ‘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-νυχιος ‘all night long’, homer. παν-ημέριος ‘the whole day’, gr. μεσο-νύκτιος ‘at midnight’, Vedic *adhas-pad-á-* ‘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 *ádhī-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

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<sup>8</sup> But see Gotō 1987: 234 note 508: imperative.

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<sup>9</sup> can be accounted for by the mentioned strength hierarchy rule<sup>10</sup>.

## 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-ídh-* ‘flaming, burning’, *jyotiṣ-kft-* ‘creating light’, (oxytonic) *abhayaṁ-kará-* ‘causing safety’, *abhimāti-śāhá-* ‘conquering enemies’, *amitra-khādá-* ‘devouring his enemies’, *grāva-grābhá-* ‘one who handles the Soma stones’, *jana-bhaksá-* ‘devouring men’, *tad-vaśá-* ‘longing for that’, *deva-vandá-* ‘praising the gods’, *puram-dará-* ‘destroyer of strongholds’, *bhuvana-cyavá-* ‘shaking the world’<sup>11</sup>, *iṣu-dhí-* ‘a quiver’, *utsa-dhí-* ‘the receptacle of a spring’, *uda-dhí-* ‘holding water, the ocean’, *garbhadhí-* ‘nest’, *śeva-dhí-* ‘wealth, treasure’ (literally ‘containing dear things’), *ukthaśāṁśin-* ‘uttering the Ukthas’, *surīpa-kṛtní-* ‘able to create beautiful things’, *vanar-gú-* ‘moving about in woods’, (paroxytonic) *kratu-prāvan-* ‘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 ψευδής ‘lying, false’ (ψεῦδος ‘falsehood’), Vedic *apás-* ‘active’ (*ápas-* ‘work’), *vīrayú-* ‘heroic’, *karaṇá-* ‘skilfull’ (substantivized AV *káraṇa-* ‘a helper, companion’), *krośaná-* ‘crying’, *reśaná-* ‘injuring’, *dāmán-* ‘giver’, *darmáṇ-* ‘demolisher’ (Wackernagel-Debrunner 1954: 181, 231, 760f., 843<sup>12</sup>) and the more nominal type of the two agent-nouns in *-tar-*, *dātār-* ‘giver’ (Lühr 2002: 8ff.).

Therefore, it is possible that the frequent stress on the suffix reflects an old stress distribution

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<sup>9</sup> 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: *sübway* (Marchand 1969: 138f.).

<sup>10</sup> 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.

<sup>11</sup> Because of stress of the initial member *bahuvrīhis* seem to be *abhrá-varṣa-* ‘dripping or raining from the clouds’, *marūd-vṛḍha-* ‘rejoicing in the Maruts’, *dharūṇa-hvara-* ‘trembling in its foundations’, *dhī-raṇa-* ‘delighting in devotion’, *rātha-kṣaya-* ‘sitting in a chariot’. A locative *suté* is to be found in *suté-kara-* ‘performing (recitation of certain texts) at the preparation of the Soma’, *suté-raṇa-* ‘delighting in Soma’.

<sup>12</sup> The type *cákri-* ‘doing, effecting’ is stressed on the reduplicative syllable in accordance with the present stems *tíṣṭha-* ‘stand’, *píba-* ‘drink’. Agent-nouns in *-van-*, too, (for example Vedic *kftvan-* ‘causing, effecting’) are stressed on the first element (Wackernagel/Debrunner 1954: 291f., 894f.). Some of these compounds as Vedic *tákvan-* ‘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.<sup>13</sup>

## 2.5 Determinative compounds

The subtype with a substantive both as initial and final member is either stressed on both members (*gnāś-páti-* ‘husband of a divine wife’), or on one. In the case of one stress, the initial member regularly is stressed: *gṛhá-pati-* ‘householder’ (22 compounds in *-pati-*, 10 in *-patnī* in the RV), *devá-kṣatra-* ‘domain of the gods’. The same rule applies to determinative compounds with an adjective as initial member: RV I-IX *candrá-māś-* ‘moon’, *bāhv-òjasā* ‘with strength of arm’, *pūrṇá-māsa-* ‘full moon’, *úlūka-yātu-* ‘a demon in the shape of an owl’, *pád-bīśa-* ‘fetter’, *madhyám-dina-* ‘midday’, *viśvá-mānuṣa-* ‘every mortal’, RV X,89,12 *drógha-mitra-* ‘a mischievous friend’, *nitya-hotar-* ‘a offerer who is always sacrificing’, *vācā-stena-* ‘one who makes mischief by his words’, *viśvá-deva-* ‘all-divine’, *vṛṣṭi-kapi-* ‘man-ape’, *sóma-gopā-* ‘keeper of Soma’. Also, some determinative compounds with a prefix or preposition occur: *sú-hotar-* ‘a good offerer’, *prá-pad-a-* ‘the point of the foot’, *prá-uga-* ‘the forepart of the shafts of a chariot’; note the Greek 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 *hiranya-piṇḍá-* ‘a lump of gold’ (Wackernagel 1905: 265ff.). It can be supposed that this stress shift is due to the effort to distinguish *bahuvrīhis* and determinative compounds.

Another type of determinative compound normally stressed on the initial member are compounds with a verbal adjective on *-ta-* or *-na-* or verbal nouns on *-ti-*: Vedic *agní-mūḍha-* ‘made insane by Agni’, *ádri-ṣuta-* ‘prepared with stones’, *índra-prasūta-* ‘caused by Indra’, *índra-jūta-* ‘promoted by Indra’, *tvá-datta-* ‘given by thee’, *devá-kṛta-* ‘made by the gods’, *devá-hita-* ‘arranged by the gods’, *devé-ṣita-* ‘sent by the gods’, *bāhú-cyuta-* ‘fallen from the arm’, *bháge-vita-* ‘satisfied with good fortune’, *yajñá-vyddha-* ‘exalted with sacrifice’, *sóma-śita-* ‘sharpened by Soma’, *dáṁsu-jūta-* ‘wonderfully quick’, *náva-jāta-* ‘fresh, new’, *puró-hita-* ‘placed in front, appointed’, *canó-hita-* ‘made favourable’, *sána-śruta-* ‘famous of old’, *ní-hita-* ‘placed’, *dúr-dhita-* ‘badly arranged’, *sú-kṛta-* ‘well done’, *sú-jāta-* ‘well born’, *sú-dhita-* ‘well placed’, *sú-śruta-* ‘very famous’, *sú-samiddha-* ‘well

<sup>13</sup> 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', *ný-pñti-* 'protection of men', *bráhma-kṛti-* 'prayer', *vája-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-βλητος 'to be thrown away or aside', ἀνδρό-κμητος 'wrought by men's hands', ἀνά-βλησις '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 \*-tí- are stressed on this suffix, some kind of rhythmical rule could have applied in the compound comparable to the well known example Engl.

w	w	s		s	w	s
three	red	shirts	→	three	red	shirts

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.).

w	w	s	→	s	w	s
*ni	<i>d<sup>h</sup>ə</i>	<i>tós</i>		*ní	<i>d<sup>h</sup>ə</i>	<i>tòs</i>
ni	hi	<i>táḥ</i>		ní	hi	<i>tàḥ</i>
w	w	s	→	s	w	s
*u.d	i	<i>tís</i>		*ú.d	i	<i>tìs</i>

In Vedic, compounds with a prefix as the initial member could permanently be referred to the simplicia, for simplex verbal adjectives on stressed -tá-, -ná- and simplex verbal nouns on -tí- were a productive word pattern throughout the whole Vedic period. And *bahuvrīhis* show that there is reason to believe that some rhythmical rule is of importance in the case of the determinative compounds: In *bahuvrīhis*, 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: *índra-jūta-* 'promoted by Indra', *dáṁsu-jūta-* '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 á(n)- as the initial member can be explained by

this rhythmical rule: *á-kṛta-* ‘undone’, *á-ksīta-* ‘undecayed’, *á-cyuta-* ‘not fallen’, *á-jāta-* ‘unborn’, *á-jñāta-* ‘unknown’, *á-tūrta-* ‘not outdone, unhurt’, *á-dabha-* ‘not deceived’, *á-dughda-* ‘not milked out’, *á-dṛpta-* ‘not infatuated’, *á-dhṛṣṭa-* ‘not bold’, *án-āpta-* ‘unattained’, *á-mīta-* ‘unmeasured’, *á-mṛkta-* ‘unhurt’, *á-riṣṭa-* ‘unhurt’, *á-vṛta-* ‘unchecked’, *á-stuta-* ‘not praised’; compare further *á-kṣīti-* ‘imperishable’. Supposing that Proto-Indo-European \*ǵ- ‘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 *kṛtā-* rhythmically<sup>14</sup>.

**Summary:** Our analysis of the normal position of stress in Vedic endo- and exocentric compounds has proven that this phenomenon has different motivations: In *bahuṛīhis* 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 -át/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 *bahuṛīhis*, 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.

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<sup>14</sup> In other adjectives with negative prefix *á(n)-* stress on this element is not preserved as well; compare *á-vihvarant-* ‘undeviating’, *á-ksiyant-* ‘not inhabiting, unsettled’, *á-khanant-* ‘not digging’, *á-krīdant-* ‘not playing’, *á-riṣṇya-* ‘not failing’ vs. *a-codānt-* ‘not driving or impelling’ (Wackernagel 1905: 216ff.).

### 3 Counterexamples to the general stress rules in Vedic compounds

#### 3.1 bahuvrīhis

Many *bahuvrīhis* 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 *veo-χμ-ός* ‘having new’ and Vedic *bhūry-akṣ-á-* ‘many-eyed’ (*akṣ-*), *deva-karm-á-* ‘master of sacred work’ (literally ‘being engaged in sacred work’), *ardha-garbhá-* ‘being inside the womb’ (*gárbha-*). 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 *bahuvrīhi* 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 *éñā-* m. ‘the act of seeking or going after’ vs. *eśā-* ‘gliding, running, hastening’ (Wackernagel & Debrunner 1954: 139).

The final member can also be stressed, if it contains a heavy syllable: *-pána-*: *indra-pána-* ‘being worthy to be Indra’s drink’, *jana-pána-* ‘being a beverage for men’, *deva-pána-* ‘serving the gods for a beverage’, *nṛ-pána-* ‘giving drink to men’, *vṛṣa-pána-* ‘being drunk by men’. Further cases of paroxytonized final members are to be mentioned: *puru-vája-* ‘having power’, *puru-vára-* ‘being rich in gifts’, *puru-sáka-* ‘being helpful’, *dvi-dhára-* ‘forming two streams (from water)’, *dvi-jáni-* ‘having two wives’, *tri-nábhi-* ‘having three naves (a wheel)’, *su-dánu-* ‘pouring out’, *dur-ñáman-* name of a disease demon (literally ‘having bad names’), *raghu-yáman-* ‘going quickly’, *tri-dhátu-* ‘consisting of three parts’, *su-dátu-* ‘being easy to divide’, *su-dídit-* ‘flaming brightly’, *puru-rúpa-* ‘having a multiformity’, *dur-éva-* ‘being ill-disposed’, *su-kṣétra-* ‘having an excellent field’, *puru-péśa-* ‘having multiformed shapes’, *puru-médha-* ‘being endowed with wisdom’, *āśu-héman-* ‘running on quickly’ (literally ‘having a quick drive’), *sa-jóśa-* ‘being associated together’, *su-jyótis-* ‘shining very brightly’. Cases of stress retraction also occur: *puru-víra-* ‘being in possession of many men or male offspring’, *su-víra-* ‘being very manly, heroic’ (*vírá-* ‘man, hero’), *tivi-grívá-* ‘having a powerful neck’ (*grívá-* ‘neck’). Add stems in –as-: *kṣetra-sádhas-* ‘one, who divides the fields, fixes the landmarks’, *abhibhúty-ójas-* ‘having superior power’, *nṛ-péśas-* ‘being formed by or consisting of men’, *nṛ-váhas-* ‘conveying men’ (*váhas-* ‘conveying’), *nṛ-máñas-* ‘having the mind of heroes, heroic’) vs. *agní-bhrájas-* ‘possessing fiery splendour’, *ásva-*

*peśas-* ‘being decorated with horses’, *ukthá-vāhas-* ‘offering verses’; compare also the below mentioned compounds *tuvi-rádhas-* ‘giving much’, *sa-bádhas-* ‘being urgent’, *dur-vásas-* ‘being poorly clad’, *puru-péśas-* ‘being multiformed’, *puru-bhójas-* ‘containing many means of enjoyments’, *āśu-héśas-* ‘having quick missiles’, *vīḍu-dvēśas-* ‘hating the strong or hating strongly’, *a-séśas-* ‘having no descendants’, *su-cétas-* ‘having great intelligence’ (Garbe 1877: 504). But note that stress on the first syllable of an *s*-stem in the final member does not occur in the case of negative prefix *a(n)-*: *a-cetás-* ‘being imprudent’ (\**cétas-*), *a-codás-* ‘being free from compulsion’ (\**códas-*), *a-javás-* ‘being not quick, inactive’ (*jávas-* ‘quickness’), *an-enás-* ‘being blameless, sinless’ (*énas-* ‘mischief, crime’), *an-ehás-* ‘having no rival’ (*éhas-* ‘rivalry’), *a-peśás-* ‘being without a shape’ (*péśas-* ‘shape’), *a-repás-* ‘having no spot’ (*répas-* ‘spot’).

The just given deviations from the normal stressing concern the prosodic structure of the final member: “compositionell” –á-, and often heavy syllables, attract stress. Far more differences are caused by the prosody of the initial member. So, contrary to the above given rule, that the initial member retains stress in the same way as in the single word, an initial disyllabic member becomes an oxytone if the first vowel is an originally stressed í: Vedic *viśá-karma-* ‘accomplishing everything’, *viśá-bhānu-* ‘all illumining’, *viśá-kṛṣṭi-* ‘dwelling among all men’, *viśá-sarṣani-* ‘having reference to the whole of mankind’, *viśá-janya-* ‘containing all men, existing everywhere’, *viśá-tūrti-* ‘being all-surpassing’, *viśá-deva-* ‘(being supported) by all gods’, *svá-dhāyas-* ‘all-sustaining’, *viśá-dhena-* ‘being all-feeding’, *viśá-peśas-* ‘containing all adornment’, *viśá-psu-* ‘having all forms’, *viśá-bharas-* ‘all-supporting’, *viśá-bheśaja-* ‘containing all remedies’, *viśá-bhojas-* ‘all-nourishing’, *viśá-manas-* ‘perceiving everything’, *viśá-manus-* ‘dwelling among all men’, *viśá-mahas-* ‘being all-powerful or all-pleasant’, *viśá-rūpa-* ‘being many-coloured’, *viśá-vāra-* ‘containing all good things’, *viśá-vedas-* ‘all-possessing’, *viśá-vyacas-* ‘embracing or absorbing all things’, *viśá-śambhū-* ‘being beneficial to all’, *viśá-sárdhas-* ‘being in a complete troop’, *viśá-scandra-* ‘being all-glittering’, *viśá-śruṣṭi-* ‘being compliant to all’, *viśá-saubhaga-* ‘bringing all prosperity’, *viśá-nara-* ‘relating to or existing among’, *viśá-mitra-* ‘being friend of all’, *viśá-vasu-* ‘being beneficent to all’.

But stress is retracted in *catúr-*: *cátur-añiga-* ‘having four limbs’, *cátur-anīka-* ‘having four faces (Varuṇa)’, *cátur-aśri-* ‘quadrangular’, *cátur-bhṛṣti-* ‘four-cornered, quadrangular’, *cátur-yuga-* ‘drawn by four (horses)’, *cátur-vaya-* ‘fourfold’, *cátuḥ-sṛīga-* ‘four-horned’, *cátuḥ-kaparda-* ‘having four tufts’, *cátuḥ-pad-* ‘having four feet’, *cátuḥ-samudra-* ‘having

four seas'. Only *catur-aks-á-* 'four-eyed' is stressed on the final member, due to "compositionell"-á-.

The final member is stressed, too, if the initial member is *síti-*: *síti-pád-* 'white-footed', *síti-pṛṣṭhá-* 'white-backed'. Contrary to *visvá-*, stress does not get shifted to the second syllable, for it contains an *i*. But *híri-* shows vacillation: *híri-śmaśru-* 'golden-bearded' vs. *hiri-śíprá-* 'golden-cheeked' (with originally not oxytonized final member *śíprā-* 'the cheeks').

Once is found *hari-śrī-* 'beautifully yellow, goldcoloured' vs. *hári-dhāyas-* 'having or giving yellowish streams', *hári-yoga-* 'having a yoke of bay horses', *hári-varpas-* 'having a yellowish or greenish appearance', *hári-vrata-* 'one who has a yellow sphere or yellow surroundings', *hári-śípra-* 'having yellow (golden) cheek-guards on one's helmet', *hári-śmaśru-* '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.

Further examples for stress shifting are the *bahuvrīhis* with the initial member in *tṛṣú-* 'greedy', *kṛdhú-* 'mutilated', *svādú-* 'sweet', *bahú-* 'much', *purú-* 'many': *tṛṣu-cyávas-* 'moving greedily' (literally 'having greedy movement'), *kṛdhū-kárṇa-* 'having short ears', *svādu-śamsád-* 'sitting round dainties', *bahú-prajā-* 'being blessed with a large offspring'; and oxytonized *bahv-anná-* 'having rich food' (*ánna-* 'food'); *puru-kṣú-* 'being rich in cattle', *puru-tmán-* 'existing variously', *puru-dáṇṣa-* 'abounding in mighty or wonderful deeds', *puru-dáṇṣas-* id., *puru-drapsá-* 'abounding in drops of water', *puru-nṛṣmá-* 'displaying great valour', *puru-pánthā-* proper name (literally 'having many paths'), *puru-pésa(s)-* 'having many forms', *puru-bhójas-* 'containing many means of enjoyments', *puru-mántu-* 'being full of wisdom', *puru-māyá-* 'possessing various arts or virtues', *puru-mīḍhá-* proper name (literally 'having many prizes'), *puru-médha-* 'endowed with wisdom', *puru-rátha-* 'having many chariots', *puru-rūpa-* 'having many shapes', *puru-várpas-* id., *puru-vája-* 'being powerful', *puru-vára-* 'having an ample tail or mane; being rich in gifts', *puru-vratá-* 'having many ordinances', *puru-śāka-* 'being helpful' (one times vocative *purú-nāman* 'having many names'); with stress retraction *puru-víra-* 'having a lot of men or male offspring' (*víra-* 'man, hero'). Note that if *purú-* is enlarged by a suffix, stress on the initial member is retained: *purudhá-pratīka-* 'appearing variously'.

Other adjectives show vacillation on *-ú-*: *āśú-* ‘fast, quick’: *āśv-āpas-* ‘acting quickly’ (*āpas-* ‘work’), *āśv-āśva-* ‘possessing quick horses’ vs. *āśu-héśas-* ‘having quick missiles’, *āśu-héman-* ‘running on quickly’, *āśu-pátvan-* ‘flying quickly’;

*urú-*: *urú-gavyūti-* ‘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-kṣaya-* ‘occupying spacious dwellings’, *uru-cakrá-* ‘having wide wheels’, *uru-cákṣas-* ‘far-seeing’, *uru-jráyas-* ‘moving in a wide course’, *uru-vyácas-* ‘occupying wide space’; and oxytonesis by changing “theme”: *urū-nas-á-* ‘broad-nosed’;

*tuví-* ‘much’: *tuví-deṣṇa-* ‘giving much’, *tuví-brahman-* ‘very devoted’ (*bráhman-* ‘swelling of the spirit’), *tuví-magha-* ‘giving much’, *tuví-vāja-* ‘abounding in food’ vs. *tuvi-rādhas-* ‘giving much’ etc. (and with stress retraction from the last syllable *tuvi-grīva-* ‘powerful-necked’: *grīvá-* ‘neck’);

*pṛthú-* ‘broad, wide’: *pṛthú-pāni-* ‘broad-handed’, *pṛthú-pragāna-* ‘having a wide approach or access’, *pṛthú-pragāman-* ‘wide-striding’, *pṛthú-budhna-* ‘broad-based’ vs. *pṛthu-gmán-* ‘broad-pathed’, *pṛthu-jráya-* ‘widely extended’, *pṛthu-pákṣas-* ‘broad-flanked’, *pṛthu-párśu-* ‘armed with large sickles’, *pṛthu-pājjas-* ‘far-shining’, *pṛthu-budhná-* ‘broad-based’, *pṛthu-srávas-* ‘far-famed, of wide renown’;

*raghú-* ‘hastening, rapid’: *raghú-vartani-* ‘lightly rolling or turning’ vs. *raghu-yáman-* ‘going quickly’, *raghu-pátman-* ‘flying or moving quickly’, *raghu-pátvan-* id.;

*vibhú-* ‘being everywhere’: *vibhū-vasu-* ‘possessing mighty treasures or wealth’ (with stress on the lengthened *-ú-* caused by a former laryngeal) vs. *vibhu-krátu-* ‘strong, heroic’;

*vīḍú-* ‘strong, firm’: *vīḍú-jambha-* ‘strong-jawed’, *vīḍú-pāni-* ‘strong-handed’, *vīḍú-haras-* ‘seizing firmly’, *vīḍv-āṅga-* ‘strong-limbed, firm in body’ vs. *vīḍu-pānī-* ‘strong-handed’, *vīḍu-dvēśas-* ‘hating the strong or hating strongly’, *vīḍu-pátman-* ‘flying strongly or incessantly’<sup>15</sup>.

Substantives as the initial member in *-í* can also show stress shift: *agni-jihvā-* ‘having Agni for tongue’, *agni-tápas-* ‘hot as fire’, *agni-śrī-* ‘having the brightness of Agni’ vs. *agní-dūta-* ‘having Agni for a messenger’, *agní-bhrājas-* ‘possessing fiery splendour’, *agní-rūpa-* ‘fire-shaped’, *agní-hotar-* ‘having Agni for a priest’; *māṇi-grīvá-* ‘jewel-necked’ (Garbe 1877: 507).

<sup>15</sup> Hapax legomena are cases like *ahiśuṣma-sátvan-* ‘whose attendants (*sátvan-*) hiss like serpents’.

Stress shift from *-í* in a disyllabic initial member is also valid for prepositions: *abhi-sená-* ‘directing arrows against’ vs. *abhí-vīra-* ‘surrounded by heroes’. But stress from a sequence *á – i* in the initial member can be shifted also: *pari-manyú-* ‘being wrathful, angry’ (possibly with adjustment to the derivatives in *-yú-*). Yet, word initial stress is much more frequent in this type: *áty-urmi-* ‘overflowing’, *práti-veśa-* ‘neighbour’, literally ‘living in the neighbourhood’, *práti-rūpa-* ‘being the counterpart of any realform’, *ánty-ūti-* ‘being at hand with help’, *ádhi-nirpij-* ‘covered over’, *ádhi-rukma-* ‘wearing gold’, *ádhi-vastra-* ‘clothed’, *ádhy-akṣa-* ‘inspector’ (literally ‘having his eyes above all’) (*ákṣ-*).

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

Further stress in the monosyllables *dví-*, *trí-* as initial members is shifted: *dvi-jánman-* ‘having a double birth’, *dvi-jáni-* ‘having two wives’, *dvi-dhárā-* ‘forming two streams’, *dvi-pád-* ‘two-footed’, *dvi-bándhu-* proper name (literally ‘having double relationship’), *dvi-bárhás-* ‘doubly close or thick or strong’, *dvi-vartaní-* ‘walking on two paths’ (literally ‘having two paths’) vs. *dvi-śavas-* ‘having or granting twofold strength’; *tri-kakúbh-* ‘three-pointed’, *tri-cakrá-* ‘having three wheels’, *tri-tántu-* ‘being thrice woven’, *tri-dhátu-* ‘consisting of three parts’, *tri-nābhi-* ‘three-naved (a wheel)’, *tri-pád-* ‘three-footed’, *tri-pājasyá-* ‘having three flanks’, *tri-pṛṣṭhá-* ‘having three backs or surfaces’, *tri-mántu-* ‘offering threefold advice’, *tri-várūtha-* ‘protecting in three ways’ etc. vs. *try-àmbaka-* ‘three-eyed’, *try-àruṇa-* proper name (literally ‘having three brown things’), *try-àruṣa-* ‘marked red in three places’, *try-āśir-* ‘mixed with three products of milk’.

Add some compounds with *sa-* ‘with’ as the initial member, whose final member is a *s-* stem: *sa-cána-* ‘being in harmony with’, *sa-jóṣas-* ‘being associated together’, *sa-práthas-* ‘being extensive, wide’, *sa-bádhás-* ‘being eagerly’ (see above), or a stem on *-yú-:* *sa-manyú-* ‘having the same mind’ (compare stress in *pari-manyú-* ‘wrathful, angry’); besides *sa-jóṣa-* ‘associated together’, *sa-díś-* ‘fit, proper’, *sa-díśa-* ‘like, resembling’ vs. *sá-keta-* ‘having the same intention’, *sá-ratha-* ‘together with the chariot’, *sá-gaṇa-* ‘having troops or flocks’, *sá-canas-* ‘being in harmony with’, *sá-nābhi-* ‘having the same navel; connected by the same navel or womb’, *sá-nāman-* ‘having the same name’, *sá-nīda-* ‘having the same nest’, *sá-nemi-* ‘having a belly’, *sá-manyu-* ‘having the same mind’, *sá-rūpa-* ‘having the same shape’.

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

*bhaya-* ‘being not dangerous’, *á-śrama-* ‘being indefatigable’, *á-sama-* ‘being unequalled’ with underlying *a*-stem, *á-kūpāra-* ‘being unbounded’, *á-praja-* ‘without progeny, childless’ (*prajá* ‘children, descendants’) with underlying *ā*-stem, *á-kṣiti-* ‘being imperishable’, *á-gu-* ‘having no cows’, *á-gopā-* ‘without a cowherd’, *á-tathā-* ‘not saying *tathā* (yes)’, *á-diti-* ‘not tied’, *á-dyu-* ‘not burning’, *á-dhenu-* ‘yielding no milk’, *án-āgas-* ‘sinless, blameless’, *án-āpi-* ‘having no friends’, *án-ūrmi-* ‘not waving or fluctuating’, *á-psu-* ‘without food’, *á-brahman-* ‘without devotion’, *á-mṛtyu-* ‘non-death’, *á-sīśu-* ‘childless’, *á-samāti-* ‘having no equal’, *á-havis-* ‘not offering oblations’, *á-giraukas-* ‘not to be kept back by hymns’ (*ókas-* ‘house, home’) with underlying not *a*-, *ā*-stem, *á-rāya-* ‘not liberal, stingy’ with suffix. On the contrary, stress on the final member shows: *a-ketú-* ‘shapeless, unrecognizable’, *a-gadá-* ‘having no disease, healthy’ (classical *gada-* ‘sickness’), *a-cakrá-* ‘having no wheels’, *an-akṣá-* ‘being blind’, *an-avadyá-* ‘irreproachable’, *an-āśú-* ‘not quick, slow’, *an-idhmá-* ‘having or requiring no fuel’, *an-ukthá-* ‘hymnless’, *an-īc-* ‘not containing a verse from the R̥gveda’, *a-pád-* ‘footless’, *a-bhāgá-* ‘having no share’, *a-budhná-* ‘bottomless’, *a-yajñiyá-* ‘not fit for sacrifice’, *a-reṇú-* ‘not dusty’, *a-viṣá-* ‘not poisonous’, *a-vratá-* ‘lawless’, *a-śipadá-* ‘not causing, i.e. averting the sickness called Śipada’, *a-śīrṣán-* ‘headless’. Whereas oxytonesis also appears in the simplex in the cases with a disyllabic basis, in the following compounds the final member is not originally oxytonized: *a-kalpá-* ‘not subject to rules’ (*kálpa-* ‘sacred ordinance’), *a-kratú-* ‘destitute of energy or power’ (*krátu-* ‘plan’), *a-gavyūtti-* ‘without good pasturage for cattle’ (*gávyūtti-* ‘a pasture, piece of pasture land’), *a-cetás-* ‘being imprudent’ (\**cétas-*), *a-codás-* ‘being free from compulsion or external stimulus’ (\**códas-*), *a-javás-* ‘being not quick, inactive’ (*jávas-* ‘quickness’), *a-dakṣiná-* ‘being not dexterous’ (*dákṣiṇa-* ‘right’), *a-dāmán-* ‘unbounded; not liberal’ (*dāman-* ‘string, cord; gift’), *a-ducchuná-* ‘being free from evil’ (*ducchúnā-* ‘misfortune’), *an-antá-* ‘endless, boundless’ (*ánta-* ‘end, boundary’), *an-apnás-* ‘destitute of means’ (*ápna-* ‘possession, property’), *an-abhíśu-* ‘without bridles’ (*abhíśu-* ‘rein, bridle’), *an-amīvá-* ‘free from disease’ (*ámīvā-* ‘distress’), *an-aśrú-* ‘tearless’ (*áśru-* ‘tear’), *an-aśvá-* ‘having no horse’ (*áśva-* ‘horse’), *an-āyudhá-* ‘weaponless’ (*āyudha-* ‘weapon’), *an-indrá-* ‘dispensing with or disregarding Indra’ (*índra-*), *an-ūdhás-* ‘beingudderless’ (*údhas-* ‘breast, bosom’), *an-ená-* ‘having no stags’ (*énī-* ‘rushing’), *an-enás-* ‘blameless’ (*énas-* ‘mischief’), *an-ehás-* ‘having no rival’ (*éhas-* ‘rivalry’), *a-pūrusá-* ‘being lifeless’ (*púruṣa-* ‘human being’), *a-peśás-* ‘shapeless’ (*péśas-* ‘shape, form’), *a-pratí-* ‘being without opponents’ (*práti-* ‘in opposition to’), *a-pratimāná-* ‘incomparable’ (*pratimána-* ‘well-matched opponent’), *a-phalá-* ‘having no fruit’ (*phála-*

‘fruit’), *a-bandhaná-* ‘without fetters’ (*bándhana-* ‘binding, fettering’), *a-bandhú-* ‘without kindred’ (*bándhu-* ‘connection’), *a-balá-* ‘having no power’ (*bála-* ‘power, strength’), *a-bhrātṛvyá-* ‘having no rival’ (*bhrātṛvya-* ‘a father’s brother’s son’), *a-mantú-* ‘being silly, ignorant’ (*mántu-* ‘advice, counsel’), *a-marmán-* ‘having no vital part’ (*mármman-* ‘mortal spot’), *a-mená-* ‘having no wife’ (*ménā-* ‘woman’), *a-yakṣmá-* ‘being not consumptive’ (*yáksma-* ‘sickness’), *a-rakṣás-* ‘being harmless, honest’ (*rákṣas-* ‘guarding’), *a-rajjú-* ‘not having or consisting of cords’ (*rájju-* ‘rope, cord’), *a-rathá-* ‘having no car’ (*rátha-* ‘chariot, car’), *a-rapás-* ‘not hurting, beneficial’ (*rápas-* ‘defect, injury’), *a-rasá-* ‘being without taste’ (*rásá-* ‘sap, juice’), *a-repás-* ‘being spotless’ (*répas-* ‘spot, stain’), *a-vayuná-* ‘being indistinguishable’ (*vayúna-* ‘moving, active’), *a-vātá-* ‘being without wind’ (*vāta-* ‘wind’), *a-satrú-* ‘having no adversary’ (*sátru-* ‘enemy, rival’), *a-śimidá-* ‘being not destructive like a Śimidā’ (*śimidā-* name of a female demon), *a-śramá-* ‘being indefatigable’ (*śráma-* ‘fatigue, weariness’), *a-sapatná-* ‘being without a rival’ (*sapátna-* ‘rival, adversary’, *sapátnī-* ‘female rival’), *a-samaná-* ‘not remaining united’ (*sámana-* ‘meeting’), *a-sūryá-* ‘being sunless’ (*sūrya-* ‘sun’), *a-hastá-* ‘being handless’ (*hástā-* ‘hand’). Therefore, the rule is: Combine destressed prefix *a(n)-* with oxytonesis. The only exception is *a-séṣas-* ‘without descendants’ vs. *śéṣas-* ‘offspring’ (Wackernagel 1905: 120).

To explain why the negative prefix *a(n)-* is mostly unstressed in *bahuvrīhis*, though its preform \**ḱ-* 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-kṣára-* ‘imperishable’, *a-jára-* ‘ever young’, *a-dábha-* ‘not injuring’ and the oxytones *a-t্পá-* ‘not satisfied’, *a-vadhá-* ‘not hurting’, *a-vṛdhá-* ‘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-kṛta-* ‘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

corresponding prefix: Stress in the oxytone *a-kalpá-* is exactly opposed to the type *á-kṛta-* with stress on the initial syllable. But why is stress shifted in *bahuvrīhis* and not in determinative compounds with *á(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 *á(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-ādhī-* ‘meditating evil’, *dur-éva-* ‘being ill-disposed’, *dur-dṛśika-* ‘looking bad’, *dur-dhūr-* ‘badly yoked or harnessed’, *dur-máda-* ‘being drunken, mad’, *dur-mánman-* ‘evil-minded’, *dur-māyú-* ‘using bad arts’, *dur-mitrá-* ‘being unfriendly’, *dur-vāsas-* ‘badly clad, naked’ (literally ‘having bad clothes’), *dur-vidátra-* ‘ill-disposed’ (only one exception: *dúr-āśir-* ‘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-kiṁśuká-* ‘well made of Kimśuka wood’, *su-kīrtí-* ‘having a good praise’, *su-ketú-* ‘being very bright’, *su-krátu-* ‘being skilful’, *su-kṣatrá-* ‘having a good dominion’, *su-kṣétra-* ‘having an excellent field’, *su-khādī-* ‘wearing beautiful bracelets or rings’, *su-gándhi-* ‘sweet-smelling, fragrant’, *su-gábhasti-* ‘having skilful hands’, *su-gādhá-* ‘easily fordable’, *su-gú-* ‘having fine cows’, *su-gopā-* ‘being well protected’, *su-cakrá-* ‘having beatiful wheels’, *su-cákṣas-* ‘having good eyes’, *su-cétas-* ‘having great intelligence’, *su-cchardís-* ‘affording good shelter’, *su-jániman-* ‘producing or creating fair things’, *su-jánman-* ‘of noble birth’, *su-jámbha-* ‘having good jaws or strong teeth’, *su-jihvá-* ‘being bright-tongued, sweet-voiced’, *su-jūrní-* ‘blazing or glowing brightly’, *su-jyótis-* ‘shining very brightly’, *su-trātrá-* ‘guarding or protecting well’, *su-dáṃsas-* ‘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-dátu-* ‘easily divisible’, *su-dánu-* ‘pouring out or bestowing abundantly’, *su-dína-* ‘being clear, bright’, *su-dītí-* ‘flaming, shining’, *su-díditि-* ‘flaming brightly’, *su-dṛśika-* ‘looking beautiful’, *su-devá-* ‘having well-meaning gods’, *su-dyumná-* ‘shining beautifully’, *su-dhána-* ‘being very rich’, *su-dhánvan-*

‘having an excellent bow’, *su-dhātu-* ‘being well-founded, secure’, *su-dhí-* ‘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-dhúr-a-* ‘going well under the yoke’ (*dhúr-* ‘yoke’), *su-pátha-* ‘well passable’. Also, secondary oxytones exist: *su-dhárá-* ‘streaming beautifully’ (*dhárā-* ‘flood, gush’), *su-pñás-* ‘very fat’ (literally ‘having much fat’) (*pñas-* ‘fat’), *su-prayás-* ‘well regaled’ (*práyas-* ‘pleasure, enjoyment’), *su-medhá-* ‘very nourishing’ (*médha-* ‘nourishment’), *su-síprá-* ‘having beautiful cheeks or jaws’ (*síprā-* ‘the cheeks’), *su-sámpkáśá-* ‘of beautiful appearance’ (*sámpkáśa-* ‘look, appearance’), *su-hírapñyá-* ‘having beautiful gold’ (*hírapñya-* ‘gold’), *sū-pasthá-* ‘forming a good place of rest’ (*upástha-* ‘secure place’), *su-añgurí-* ‘handsome-fingered’ (*añgúri-* ‘a finger’), *su-apatyá-* ‘having good offspring’ (*ápatya-* ‘offspring’), *su-gáṛhapatyá-* ‘having a wealthy household’ (*gáṛhapatya-* ‘household’), *su-abhiṣṭi-* ‘being helpful, favourable’ (*abhiṣṭi-* ‘assistant, protector’), *su-abhiśú-* ‘wellbridled’ (*abhiśu-* ‘rein, bridle’), *su-aritrá-* ‘having good oars’ (*arítra-* ‘propelling, driving’), *su-āyudhá-* ‘having good weapons’ (*āyudha-* ‘a weapon’), *su-iśú-* ‘having good or swift arrows’ (*iśu-* ‘arrow’). And two times *su-* is stressed: *sú-gabhasti-* ‘having skilful hands’, *sú-nīti-* ‘guiding well’ (besides *su-gábhasti-* id., *su-nīti-* id.).

Finally, as mentioned above, a distinction of parts of speech can be observed by stress shift. If *bahuvrīhis* are substantivized, a stressed “compositionell” suffix *-á-* is added or the stem vowel *-a-* of the final member is stressed; note the so called Dvigus AV *sahasrāhn-yá-* ‘a thousand day’s journey’, *tri-yugá-* ‘three generations’. Exceptions are seldom; see RV *á-bhaya-* ‘unfearful, secure’ (Wackernagel 1905: 304ff.).

Summary: Vedic *bahuvrīhis* inherited distribution of stress from Proto-Indo-European. Usually they are stressed on the initial member: [STRESS<sub>In</sub>].

- (i) If stress is retained on this member, a faithfulness constraint [MAX(word formation F)] applies: This means that every stress which is assigned by word formation type in the input has a correspondent in the output.
- (ii) If stress distribution corresponds to the stress of the single word either as the initial or as the final member, a further faithfulness constraint [MAX(word F)] applies: [MAX(w)<sub>In</sub>] and [MAX(w)<sub>Fin</sub>]. The stressed negative prefix *á(n)-* belongs to this faithfulness constraint, as well, namely to [MAX(w)<sub>In</sub>].
- (iii) Since a lexically marked suffix *-á-*, “compositionell” *-á-* (this can be an additional suffix or a secondary stressed stem vowel *-a-*), attracts stress, a constraint [MAX(á)] has to be

assumed, which usually is equally ranked with LEX. [MAX(*á*)] forces selection of the candidates generated by a *á*-suffix. In *bahuvrīhis* with a negative prefix oxytonesis is obligatory. This obligation is enforced by constraint [CONTR(AST)] (see (vi)). Further choice of [-*á*-] automatically violates both [MAX(w)<sub>In</sub>] and [MAX(wf)] if the compound is inherently stressed on the initial member.

(iv) Paroxytonesis [PAR] seldom occurs apart from [WSP<sub>Fin</sub>](viii) and [MAX(w)<sub>Fin</sub>] (ii). This stressing is lexically marked, too.

(v) The constraint [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 -*á*- is enforced.

(vi) If stress is shifted from the negative prefix *á(n)-* in *bahuvrīhis* to the last syllable so that an oxytone results, a constraint [CONT(RAST)] is valid, which distinguishes these compounds from determinative compounds with stress on *á(n)-*<sup>16</sup>.

(vii) Constraint \*[+F] is a markedness constraint: Avoid [F] in the output. Generally, this phenomenon concerns the exclusion of stressed *i* or *ú* 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” [WSP<sub>Fin</sub>] (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 *bahuvrīhis* *su-gábhasti-*, *su-n̄ī-* vs. *sú-gab hasti-*, *sú-n̄ī-* and the determinative compounds *a-praśastá-* vs. *á-praśasta-* (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: 26f.; 2001).

	constraint 1	constraint 2	constraint 3	constraint 4
candidate A	*!			
→ candidate B		*		
→ candidate C			*	

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

<sup>16</sup> Since in *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 [C(ontext)-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-n̄tí-* and *sú-n̄tí-*, for the variant, which is from a synchronic view unregularly stressed, is strict lexicalisation assumed. This form then is excluded from competition (here *sú-n̄tí-*).

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)<sub>In</sub>]. But MAX(wf) is observed just as in the normal type *sahásra-pad-* ( $\checkmark$  is only used in the case of the top constraints):

Input: <i>vísva-</i> , <i>sahásra-</i> ; <i>bhānū-</i> , <i>pád-</i> ; STRESS <sub>In</sub>	<i>*í – a</i>	MAX(w) <sub>In</sub>	MAX(wf)
→ <i>viśvá-bhānū-</i>	$\checkmark$	*	
<i>vísva-bhānū-</i>	*!		
→ <i>sahásra-pad-</i>			
<i>sahasra-pád-</i>		*	*!

- (b) In a sequence unstressed *a* – stressed *ú*- in an initial member stress moves to *a*: [*\*a – ú*]<sub>In</sub>. 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)<sub>Fin</sub> 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 [WSP<sub>Fin</sub>].

Input: <i>catúr-</i> ; ( <i>ásri-</i> ) <sup>17</sup> , <i>kákṣa-</i> ; STRESS <sub>In</sub>	LEX	<i>*a – ú</i>	<i>-á-</i>	MAX(w) <sub>In</sub>	MAX(wf)	MAX(w) <sub>Fin</sub>	WSP <sub>Fin</sub>
→ <i>cátur-asrí-</i>		$\checkmark$		*		*	
<i>catúr-asrí-</i>		*!				*	
→ <i>catur-kákṣá-</i>	$\checkmark$	$\checkmark$	$\checkmark$	*	*	*	

- (c) In a sequence stressed *i*- 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)<sub>Fin</sub>] or the

<sup>17</sup> Round brackets mean that this word is not documented in the RV.

compound becomes an oxytone [-á-]. Whereas compounds with *síti-* are always stressed on the final member:

Input: <i>síti-</i> ; <i>pṛṣṭhá-</i> ; STRESS <sub>In</sub>	*í – i	-á-	MAX(w) <sub>In</sub>	MAX(wf)	MAX(w) <sub>Fin</sub>	WSP <sub>Fin</sub>
→ <i>síti-pṛṣṭhá-</i>	✓	✓	*	*		
<i>síti-pṛṣṭha-</i>	*!	*			*	

compounds with *híri-* have vacillating stress. Once *híri-* is documented:

Input: <i>híri-</i> , <i>síti-</i> ; <i>śíprā-</i> , <i>śmáśru-</i> , STRESS <sub>In</sub>	LEX	*í – i	-á-	MAX(w) <sub>In</sub>	MAX(wf)	MAX(w) <sub>Fin</sub>	WSP <sub>Fin</sub>
→ <i>híri-śíprá-</i>		✓	✓	*	*	*	
→ <i>híri-śmáśru-</i>	✓	*				*	
→ <i>síti-pṛṣṭhá-</i>		✓	✓	*	*		
<i>síti-pṛṣṭha-</i>	*!	*	*			*	

(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 – i*] is excluded.

Input: <i>hári-</i> , <i>pári-</i> , <i>práti-</i> ; <i>śrí-</i> , <i>yóga-</i> , <i>manyú-</i> , <i>veśá-</i> ; STRESS <sub>In</sub>	LEX	*a - í	MAX(w) <sub>In</sub>	MAX(wf)	MAX(w) <sub>Fin</sub>	WSP <sub>Fin</sub>
→ <i>hari-śrī-</i>	✓		*	*		
→ <i>hári-yoga-</i>					*	*
<i>harí-yoga-</i>	*!	*	*		*	*
→ <i>pári-manyú-</i>	✓		*	*		
→ <i>práti-veśá-</i>					*	*

(e) If the initial member ends in stressed -í or -ú, 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<sub>Fin</sub>]:

Input: <i>kṛdhú-</i> , <i>bahú-</i> , <i>urú-</i> , <i>tuví-</i> , <i>agní-</i> , <i>abhí-</i> ; <i>kárpa-</i> , <i>ánna-</i> , <i>loká-</i> , <i>vája-</i> , <i>bráhman-</i> , <i>grívá-</i> , <i>jihvá-</i> , - <i>dūtá-</i> , <i>sénā-</i> , <i>vīrá-</i> ; STRESS <sub>In</sub>	LEX	*- í/ú	-á-	Max(w) <sub>In</sub>	MAX(wf)	MAX(w) <sub>Fin</sub>	WSP <sub>Fin</sub>
→ <i>kṛdhú-kárpa-</i>		✓	*	*	*		
→ <i>bahv-anná-</i>		✓	✓	*	*	*	
<i>bahv-ànná-</i> <sup>18</sup>	*!	*	*			*	

<sup>18</sup> The svarita is preceded by a *y* or *v* representing an originally stressed *i*- or *u*-vowel.

→ <i>urú-loka-</i>	✓	*	*			*	*
→ <i>puru-vája-</i>		✓	*	*	*		
→ <i>puru-víra-</i>		✓	*	*	*	*	
→ <i>tuví-brahman-</i>	✓	*				*	
→ <i>tuvi-gríva-</i>		✓	*	*	*	*	
→ <i>agni-jihvá-</i>		✓		*	*		
→ <i>agní-dúta-</i>	✓	*	*			*	*
→ <i>abhi-sená-</i>		✓	✓	*	*	*	*
→ <i>abhí-víra-</i>	✓	*	*			*	*

(ii) The initial member is trisyllabic:

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

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

Input: <i>darśatá-; śrí-; STRESS<sub>In</sub></i>	LEX	MAX(w) <sub>In</sub>	MAX(wf)	MAX(w) <sub>Fin</sub>	WSP <sub>Fin</sub>
→ <i>darśata-śrí-</i>	✓	*	*		

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

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

Input: ( <i>dví-, tri-, sá-</i> ); jánman-,                   śávas-; kakúbh-,               (ambaka-), cánas-,                   rūpá-; STRESS <sub>In</sub>	LEX	* <i>dví-</i> , * <i>tri-</i>	-á-	MAX(w) <sub>In</sub>	MAX(wf)	MAX(w) <sub>Fin</sub>	WSP <sub>Fin</sub>
→ <i>dvi-jánman-</i>		✓		*	*		
<i>dví-janman-</i>	*!	*				*	
→ <i>dví-śávas-</i>	✓	*				*	
→ <i>tri-kakúbh-</i>		✓		*	*		
→ <i>try-àmbaka-</i> <sup>19</sup>	✓	*	*			*	
→ <i>sa-cánas-</i> (see below)	✓			*	*		
→ <i>sá-rūpa-</i>			*			*	*

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

(b) As mentioned above, contrary to the supposed stressing of the negative prefix \**ṇ-* 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:

Input: ( <i>á-</i> ); <i>dhenú-, cakrá-,</i>	LEX	CONTR	-á-	MAX(w) <sub>In</sub>	MAX(wf)	MAX(w) <sub>Fin</sub>	WSP <sub>Fin</sub>

<sup>19</sup> Compare note 18.

<i>śéṣas-</i> ; STRESS <sub>In</sub>							
→ <i>á-dhenu-</i>	✓	*				*	*
→ <i>a-cakrá-</i>		✓	✓	*	*		
<i>a-cákra-</i>	*!	*	*	*	*	*	
→ <i>a-kalpá-</i>		✓	✓	*	*	*	
→ <i>a-śéṣas-</i>	✓	*		*	*		

Stress on the penultimate in *a-śéṣas-* is due to the heavy syllable.

c) Stress in compounds with *su-* or *duṣ-* as an initial member is shifted almost always, as well. But the final member is mostly stressed on the same syllable as the corresponding single word:

Input: ( <i>dúṣ-</i> ), ( <i>sú-</i> ); LEX * <i>sú-</i> , * <i>dúṣ-</i> -á- PAR MAX(w) <sub>In</sub> MAX(wf) MAX(w) <sub>Fin</sub> WSP <sub>Fin</sub>							
éva-, <i>āśír-</i> , ( <i>nītī-</i> ), <i>dhára-</i> , <i>vīrá-</i> , <i>gó-</i> ;							
STRESS <sub>In</sub>							
→ <i>dur-éva-</i>		✓	*	✓	*	*	
<i>dúr-eva-</i>	*!	*	*			*	*
→ <i>dúr-āśír-</i>	✓	*				*	*
→ <i>su-nītī-</i>		✓			*	*	
→ <i>su-dhárá-</i>		✓	✓	*	*	*	
→ <i>su-vīrá-</i>		✓	*	✓	*	*	
→ <i>su-gáva-</i>		✓	*	✓	*	*	

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

Input: <i>kṣétra-</i> , ( <i>sá-</i> ), <i>agní-</i> , <i>tuví-</i> , LEX MAX(w) <sub>In</sub> MAX(wf) MAX(w) <sub>Fin</sub> WSP <sub>Fin</sub>				
índra-; <i>sádha-</i> , <i>cáñas-</i> , <i>bhrájás-</i> , <i>rádhas-</i> , ( <i>pána-</i> ); STRESS <sub>In</sub>				
→ <i>kṣetra-sádhas-</i>	✓	*	*	
<i>kṣetra-sádhás-</i>	*!	*	*	*
→ <i>sa-cáñas-</i>	✓	*	*	
→ <i>agní-bhrájás-</i>	✓			*
→ <i>tuví-rádhas-</i>	✓	*	*	
→ <i>indra-pána-</i>	✓	*	*	

(v) Dviges regularly show stress shift to the final *-á-*. Here, the assumed constraint [UNIQUENESS] requiring a stressed suffix *-á-* is valid:

Input: ( <i>trí-</i> , ( <i>á-</i> ); <i>yugá-</i> , <i>bhayá-</i> ; STRESS <sub>In</sub>	LEX	UNIQ	MAX(w) <sub>In</sub>	MAX(wf)	MAX(w) <sub>Fin</sub>	WSP <sub>Fin</sub>
→ <i>tri-yugá-</i>		✓	*	*		
<i>trí-yuga-</i>	*!	*			*	
→ <i>á-bhaya-</i>	✓	*			*	

### 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 oxytonese 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-akṣá-* ‘being below the axle’ (*ákṣa-* ‘axle’), *upa-kaksá-* ‘reaching to the shoulder’ (*káksa-* ‘armpit’), *adhas-pad-á-* ‘placed under the feet’ (*pád-* ‘foot’), *up-ānas-á-* ‘being on a carriage’ (*ánas-* ‘cart’), *ati-rātr-á-* ‘performed over-night’ (*rātrI-* ‘night’), *áty-avi-* ‘passing over or through the strainer’ (literally ‘passing over sheep’s wool’) (*ávi-* ‘sheep’), *ádhī-ratha-* ‘being upon or over a car’, *ádhī-gartya-* ‘being on the driver’s seat’ (*gárta-* ‘driver’s seat’), *upári-budhna-* ‘raised above the ground’ (*budhná-* ‘ground, bottom’), *upári-martya-* ‘being more than human’ (*máryta-* ‘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)<sub>In</sub>] have identical values, the order [MAX(w)<sub>In</sub>] > [MAX(wf)] can be kept:

Input: <i>adhás</i> , <i>purás</i> , <i>úpa-</i> , <i>áti</i> , <i>ádhī</i> , <i>upári</i> ; <i>ákṣá-</i> , <i>kákṣa-</i> , <i>pád-</i> , <i>ánas-</i> , <i>rātrI-</i> , <i>vāsas-</i> , <i>ávi-</i> , <i>máryta-</i> , <i>budhná-</i> ; STRESS <sub>In</sub>	-á-	MAX(w) <sub>In</sub>	MAX(wf)	MAX(w) <sub>Fin</sub>	WSP <sub>Fin</sub>
→ <i>adho-akṣá-</i>	✓	*	*		
→ <i>upa-kaksá-</i>	✓	*	*	*	
→ <i>adhas-pad-á-</i>	✓	*	*	*	
<i>adhas-pád-a-</i>	*!	*	*		
→ <i>up-ānas-á-</i>	✓	*	*	*	*
→ <i>ati-rātr-á-</i>	✓	*	*	*	*
→ <i>adhī-vās-á-</i>	✓	*	*	*	*
→ <i>áti-avi-</i>		✓	✓	*	
→ <i>upári-martya-</i>	*	✓	✓	*	
→ <i>upári-budhna-</i>	*	✓	✓	*	

### 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 *sú-*, *dúś-*; note *sú-dhita-* ‘well placed’. Only in *su-baddhá-* ‘bound fast’, *su-jātā-* vs. *sú-jāta-* 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 [\**sú-*, \**dúś-*].
- (iii) But in the initial member *víśva-*, stress is shifted from *i* to *a* like in *bahuvrīhis*: *viśvá-gūrtā-* ‘approved by everybody’, *viśvá-dṛṣṭa-* ‘seen by all’.
- (iv) Just as in *bahuvrīhis* stress is shifted from *agní-* or *purú-* to the final member, too: *agni-tapta-* ‘fire-heated, glowing’, *agni-dagdhá-* ‘burnt on a funeral pile’, *agni-svāttá-* ‘tasted by the funeral fire’ vs. *agní-mūḍha-* ‘made insane by Agni’, *puru-jātā-* ‘variously manifested or appearing’, *puru-gūrtā-* ‘welcome to many’, *puru-stutá-* ‘praised by many’, *puru-hūtā-* ‘invoked by many’; compare further *kavi-śastá-* ‘pronounced by wise men’, *kavi-praśastá-* ‘praised by sages’<sup>20</sup>.
- (v) Sometimes stress is shifted, if another prefix follows the negative prefix *a(n)-*, and oxytones arise: *an-āñjñá-* ‘having no enemy that can injure’, *an-āśastá-* ‘not praised’, *a-praśastá-* ‘not praised, fameless’ vs. *án-apacyuta-* ‘not falling off, holding fast (a yoke)’, *án-abhiśasta-* ‘blameless, faultless’, *án-ādhṛṣṭa-* ‘unchecked’, *án-ānata-* ‘unbent, not humbled’, *án-upakṣita-* ‘uninjured, undecaying’, *á-nibaddha-* ‘not tied down, not bound’, *á-nibhṛṣṭa-* ‘unabated’, *á-nivṛṣṭa-* ‘unchecked’, *á-niśkṛta-* ‘unfinished, not settled’, *á-niṣṭṛta-* ‘unhurt, unchecked’, *á-parivīta-* ‘not covered’, *á-parājita-* ‘unconquered’, *á-prayuta-* ‘attentive’, *á-pratiśkuta-* ‘not to be kept off’; compare further the pair *a-praśastá-* ‘not praised, fameless’ vs. *á-praśasta-* ‘not praised, blamable’. Stress on the first *á(n)-* prevails<sup>21</sup>.
- (vi) Compounds like *puru-prajātā-* ‘variously propagated’, *puru-praśastá-* ‘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-paśyá-* ‘not seeing’, *a-dayá-* ‘merciless, unkind’, *an-ādhṛṣyá-* ‘not to be meddled with’ (Wackernagel 1905: 216ff.). But oxytones are compounds with a root noun as a final member: *a-júr-* ‘not subject to old age’, *a-cít-* ‘foolish’, *a-drúh-* ‘not harming’, *a-bhúj-* ‘one who has not experienced or

<sup>20</sup> Possibly *r̥* was a „NOHEAD“-vowel in compounds, too; compare *pitr-vittá-* ‘acquired by ancestors’.

<sup>21</sup> Just as in *án-avahvara-* ‘not crooked, straightforward’, *án-apasphura-*, *án-apasphur-* ‘not withdrawing’, *án-abhidruh-* ‘not malicious’, *án-ābhū-* ‘disobliging, neglectful’, *á-prabhu-* ‘unable, incompetent’, *á-prahan-* ‘not hurting’ vs. *an-āvṛt-* ‘not returning’.

enjoyed', *a-rúk-* 'lightless', *a-sū-* 'not bringing forth' vs. *á-kharva-* 'not shortened or mutilated', *á-kra-* 'inactive'<sup>22</sup>.

(viii) Among the determinative compounds on *-ta-* there also are paroxytones. Since they have a special meaning, they are lexicalisations: *a-mítā-* 'immortal', Pl. 'the immortals' (*mítá-* 'dead'), *a-túrtā-* 'not outrun, unhurt', 'illimited space' (vs. *á-túrtā-* 'one who does not anticipate someone'), *a-yúta-* 'a myriad', literally 'unbounded', *a-díṣṭa-* 'unseen', *a-súrtā-* 'unilluminated, enveloped in darkness' with stress on the heavy syllable (*súrtā-* 'bright, illuminated'); but compare further *a-cítta-* 'unnoticed, unexpected' (*cittá-* '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-kṛtá-* 'misdeed, sin'; or in the pair *sú-kṛta-* 'well done, well arranged' vs. *sukṛtá-* 'good deed, moral merit'; just as in *indro-tá-* 'promoted by Indra'; this word is used as a male proper name<sup>23</sup>; sometimes stress shift is documented both in the substantive and in the adjective: *sū-ktá-* 'good recitation, wise saying, song of praise' and 'well or properly said'<sup>24</sup>.

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

Input: (sú-), viśvá-, agní-, purú-, (á-); jātá-, gūrtá-, taptá-, (prájātā-), (níṣṭ̥ta-), (gohyá-), paśyá-, mítá-, kṛtá-; STRESS <sub>In</sub>	LEX	RHYTHM	UNIQ	*sú-	*í - a *- i/ú	-á-	PAR	MAX(w) <sub>In</sub>	MAX(wf)	MAX(w) <sub>Fin</sub>	WPS <sub>Fin</sub>
→ sú-jāta -		√		*	*					*	*
→ viśvá-gūrtá-					√	*		*		*	*
→ agni-taptá-					√	√		*	*		
agní-tapta-	*!			*	*					*	
→ puru-jātá-					√	√		*	*		*
→ puru-prajātá-					√	√		*	*	*	*
→ á-níṣṭ̥ta-		√				*				*	
→ á-gohya-		√				*				*	*

<sup>22</sup> Compare further compounds like *á-kava-* 'not contemptible', *á-kavi-* 'unwise', *á-kumāra-* 'not a boy' (*kumārá-* 'child, boy, youth') and more complex compounds like *á-kṣetravid-* 'not finding out the way', *á-kānakarśana-* 'not disappointing desires'.

<sup>23</sup> Lexicalisations seem to be *á-dagná-* 'reaching up to the mouth (áṣ-)', *ari-śutá-* (for Indra) 'praised with zeal' with an unclear first element.

<sup>24</sup> Compare further *drupadá-* 'wooden pillar'.

$\rightarrow a\text{-}paśyā-$	✓	*				✓		*	*		
$\rightarrow a\text{-}mīta-$	✓	*				*	✓	*	*	*	
$\rightarrow sū\text{-}kṛta-$		✓		*		*				*	
$\rightarrow su\text{-}kṛtā-$		*	✓	✓		✓		*	*		

### 3.4 Verbal compounds with a governed final member

Verbal compounds with governed final member of the type *dhārayát-kavi-*, *-kṣiti-* `supporting sages resp. bearing creatures' retain their stress on the last syllable of the first member. The constraint is [STRESS<sub>InFinal</sub>]. The only exception is *sikṣā-narā-* `help the men'.

Input: <i>dhārayat</i> , <i>sikṣka</i> , LEX	-á-	[STRESS <sub>InFinal</sub> ]	MAX(w) <sub>In</sub>	MAX(wf)	MAX(w) <sub>Fin</sub>
$\rightarrow dhārayát-kavi-$		✓	*	✓	*
$\rightarrow dhārayát-kṣiti-$		✓	*	✓	*
$\rightarrow sikṣā-narā-$	✓	✓ *	*	*	*
$\rightarrow Trasá-dasyu-$		✓	*	✓	*
<i>Trásá-dasyu-</i>		* !	✓	*	*

### 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-jít-* `conquering waters', *deva-stút-* `praising the gods', *vṛtra-hán-* `killing Vṛtra'), or of oxytonic verbal stems like in *aśva-hayá-* `driving horses', *ratha-kārā-* `chariot-maker', *madhu-doghá-* `milking sweetness', *ap-savá-* `giving water', and with the accusative as the initial member *abhayaṁ-kará-* `causing safety', *agnim-indhá-* `kindling the fire', *viśvam-ejayá-* `all-exciting'; to the contrary, compounds with suffixes occurring otherwise in abstract nouns are lexicalized; note *havir-ádván-* `eating the oblation', *soma-pávan-* (besides *soma-páś-*) `drinking Soma', *māṇs-pácanā-* `used for cooking meat', *puṣṭi-várdhana-* `increasing prosperity or welfare', *abhiśasti-cáttana-* `keeping off imprecation', *indra-mádana-* `delighting Indra'.

The ranking differs from that of the compounds with regular stress on the initial member. MAX(w)<sub>Fin</sub> is higher ranked than MAX(w)<sub>In</sub>:

Input: <i>devá-</i> ; <i>vṛtrá-</i> , <i>rátha-</i> , <i>havís-</i> , <i>puṣṭi-</i> ; LEX	-á-	MAX(w) <sub>Fin</sub>	MAX(wf)	MAX(w) <sub>In</sub>
$\rightarrow deva\text{-}stút-$		✓		*
<i>devá-stut-</i>		*!	*	
$\rightarrow vṛtra\text{-}hán-$		✓		*

→ <i>ratha-kārā-</i>		√	√		*
→ <i>havir-ádvan-</i>	√		√		*
→ <i>puṣṭi-várdhana-</i>	√		√		*

## 4 General ranking

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

a) *bahuvrīhis* and determinative compounds

LEX	CONTR	RHYTHM	UNIQ	* <i>sú-</i> , * <i>dúṣ-</i>	*í – a *a – ú *í – i *- í/ú *dví-, *trí-	-á-	PAR	MAX(w) <sub>In</sub>	MAX(wf)	MAX(w) <sub>Fin</sub>	WSP <sub>Fin</sub>

b) verbal compounds with governed final member

LEX	-á-	[STRESS <sub>InFinal</sub> ]	MAX(w) <sub>In</sub>	MAX(wf)	MAX(w) <sub>Fin</sub>
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c) prepositional compounds with governed final member

-á-	MAX(w) <sub>In</sub>	MAX(wf)	MAX(w) <sub>Fin</sub>
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d) verbal compounds with governed initial member

LEX	-á-	MAX(w) <sub>Fin</sub>	MAX(wf)	MAX(w) <sub>In</sub>
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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<sub>InFinal</sub>] and if one considers that constraint [-á-] automatically enforces violation both of [MAX(w)<sub>In</sub>] 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)<sub>Fin</sub>] is dominating [MAX(w)<sub>In</sub>]. Depending on the Input [STRESS<sub>In</sub>] or [STRESS<sub>Fin</sub>], the constraint order alternates - the markedness constraints \**sú-*, \**dúṣ-*, \*í – a, \*a – ú, \*í – i, \*- í/ú, \*dví-, \*trí- could function under a cover constraint NOHEAD/*i,u*, for [RHYTHM] concerns stress shift only from monosyllables:

Input: STRESS<sub>Initial member</sub>

LEX	CONTR	RHYTHM	UNIQ	*sú-, *dús-	*í -   -á-   PAR	STRESS <sub>InFinal</sub>	MAX(w) <sub>In</sub>	MAX(wf)	MAX(w) <sub>Fin</sub>	WSP <sub>Fin</sub>

Input: STRESS<sub>Final member</sub>

LEX	CONTR	RHYTHM	UNIQ	*sú-, *dús-	*í -   -á-   PAR	STRESS <sub>InFinal</sub>	MAX(w) <sub>Fin</sub>	MAX(wf)	MAX(w) <sub>In</sub>	WSP <sub>Fin</sub>

## 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 Comparativen und Superlativen 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)<sub>In</sub>; MAX(w)<sub>Fin</sub>] 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 í and ú. 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

ni hi táḥ      ní hi tàḥ

could permanently be referred to the corresponding simplex hitáḥ. In particular, this constraint is valid for determinative compounds with the negative prefix á(n)- `un-`, the outcome of Proto-Indo-European stressed \*y̑-, 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 overriden by contrastive stress. Firstly, the well known stress shift to differentiate parts of speech must be mentioned; compare the adjective *sú-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<sup>25</sup>.

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<sup>25</sup> See Ladd 1996: 160 to the meaning of contrastive stress.

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