Pāṇini and the Non-Head (upasarjana) of Attributive Endocentric Compounds

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Abstract This study aims at contributing to our understanding of Pāṇini’s classification of compounds. In particular, this study investigates the notion upasarjana – roughly translatable as ‘non-head’ – in attributive endocentric (so-called karmadhāraya) compounds like nava-jvāra- ‘new suffering’, by addressing the following questions: do the units that Pāṇini designated as upasarjana in subordinate endocentric (so-called tatpurusa ‘proper’) compounds like aśva-śapha- ‘horse’s hoof’ share any feature with the units that he designated as upasarjana in karmadhārayas? More generally, what is the hallmark of the units designated as upasarjana? To answer these questions, we shall delve into several rules of Pāṇini’s grammar – the Aṣṭādhyāyī – which conceal such powerful grammatical tools as silent case endings and the operation of case-copying.

Keywords Case-copying. Compounding. Derivational levels. Headedness. Sanskrit.

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1 Introduction

The ancient Indian grammarian Pāṇini (ca. fourth century B.C.) came up with a fine-grained classification of compounds, involving such compound-classes as tatpurusa, karmadhāraya, dvandva, bahuvrīhi, avyayībhāva. Some of these terms still survive in contemporary treatments of compounding: see, e.g. Scalise, Bisetto 2009; Bauer 2017. Nevertheless, the criteria on which Pāṇini grounded his classification of compounds are still poorly understood. For instance, Tribulato’s (2015, 53) claim that Pāṇini’s classification is a semantic one is certainly not correct (see also Bauer 2017, 107-12), as revealed by Pontillo’s findings on the so-called upasarjana (Pontillo 2003b).¹

In the present study, I address a puzzle posed by Pāṇini’s analysis of karmadhāraya compounds (i.e. attributive endocentric compounds, in the terms of Bisetto, Scalise 2005; Scalise, Bisetto 2009). The resolution of this puzzle will shed some light on the criteria that a compound must satisfy to count as karmadhāraya, and hence, on the criteria underlying Pāṇini’s classification of compounds more broadly.

The present study is organised as follows. In section § 2, I provide a simplified illustration of the puzzle that this study attempts to solve. In section § 3, I discuss in some detail Pāṇini’s model of compounding with a focus on the notion of upasarjana. This will allow me to rephrase the puzzle informally illustrated in § 2 in more precise terms. In section § 4, I capitalise on the rule governing present participles to advance a solution to the puzzle described in § 2. Finally, in section § 5 I sum up the preceding discussion and draw some conclusions.

2 The Puzzle

Consider aśva-śapha- ‘horse’s hoof’ (ŚB 13.3.4.4), a Sanskrit compound formed from the nouns aśva- ‘horse’ and śapha- ‘hoof’. This compound is equivalent in meaning to both śaphād aśvasya ‘from the horse’s hoof’ (1a) and aśvasya śapham ‘the horse’s hoof’ (1b).²

For inspiring my work in various ways, I would like to express my gratitude to Matteo Greco, John Lowe, Andrea Moro, and Tiziana Pontillo. I would also like to recognise my debt to the two anonymous reviewers for correcting my numerous mistakes and suggesting smart ways to improve the manuscript. Finally, I wish to thank Artemij Keidan for providing me with a lively environment to learn and discuss several aspects of Sanskrit grammar during the Coffee Break Conference panel Vyākaraṇa and Its Many Espouses: Linguistics, Philology, Philosophy (Rome, 10-11 December 2021), and Andrea Drocco for managing my submission with great care and kindness at the same time.

¹ See also Candotti, Pontillo 2019; 2022; Mocci, Pontillo 2019; Pontillo 2021.
² I shall mark accents in textual examples only.
(1a) RV 1.117.6
śaphād aśvasya śatāṃ […] kumbhān asiñcatam mádhūnām.
hoof.abl.sg.m horse.gen.sg.m hundred pot.acc.pl.m pour.ind.impf.2du honey.gen.pl.n
‘You two poured a hundred pots of honey from the horse's hoof’.3

(1b) (Invented example)4
aśvasya śapham paśyāmi.
horse.gen.sg.m hoof.acc.sg.m see.ind.prs.1sg
‘I see a horse's hoof’.

Interestingly, aśva- has one single case ending in (1), in the sense that the case ending of aśva-, unlike that of śapha-, remains unchanged in these sentences: śapha- is inflected in the ablative in (1a), where the noun phrase headed by śapha- (i.e. śaphād aśvasya) fulfills the function of circumstantial complement of place, but is inflected in the accusative in (1b), where the noun phrase headed by śapha- (i.e. aśvasya śapham) fulfills the function of direct object; on the other hand, aśva- remains inflected in the genitive in both (1a) and (1b).

Pāṇini noted this asymmetry between the changeable case ending of śapha- and the unchangeable case ending of aśva- in (1).5 Thus, in his grammar (the Aṣṭādhyāyī or “A” for short), he designates aśva- as the upasarjana of aśva-śapha- (rule A 2.2.8, to be considered in combination with A 1.2.43);6 then, he defines the upasarjana as the unit that, when embedded in a sentence pair like (1a-b), results as being ekavibhakti (rule A 1.2.44). In keeping with work by Tiziana Pontillo and Maria Piera Candotti (see especially Pontillo 2003b; Candotti, Pontillo 2019, 22-4; Pontillo 2021, 505-9), ekavibhakti means ‘having one single case ending’, hence ‘having an unchangeable case ending’. Therefore, the upasarjana is for Pāṇini the compound-member that, when embedded in a sentence pair like (1a-b), results as having (i.e. being inflected in) an unchangeable case-ending. Accordingly,

3 Unless otherwise stated, all translations are by the Author.
4 For a textual example, cf. sō ‘śvasyavāntaraśaphò ‘bhavat ‘this became the intermediate hoof of the horse’ in TS 5.2.6, where śapha- is inflected in the nominative (śaphah, which shows up as śapho in compliance with the euphonic combinatory rules going under the rubric “sandhi”). The comparison of examples like this from TS or (1b) with examples like (1a) shows that the ordering of an inflected form of śapha- with respect to an inflected form of aśva- is not fixed.
5 Note that ‘changeable’ and ‘unchangeable’ are used in this paper merely to refer to the ability or inability of an inflected noun that belongs to a noun phrase (NP) to display different case endings when a NP fulfills different grammatical functions.
6 A 1.2.43 and 2.2.8 will be examined in detail in § 3 below. At this stage of the paper, the discussion will be kept at an informal level.
the asymmetry between the changeable case ending of śapha- and the unchangeable case ending of aśva- in a sentence pair like (1a-b) is brought out, in Pāṇini’s grammar, by the fact that aśva-, as opposed to śapha-, gets the designation upasarjana.

Consider now so-called karmadhāraya compounds – which correspond to attributive endocentric compounds in the classification of Bisetto, Scalise 2005; Scalise, Bisetto 2009 – such as nava-jvāra- ‘new suffering’. In A 2.1.49 (to be considered in combination with A 1.2.43), Pāṇini designates nava- ‘new’ as the upasarjana of nava-jvāra-. Then, by the rule-segment ekavibhakti occurring in A 1.2.44, we expect nava- to be a unit U such that, when U is embedded within an appropriate sentence pair, such as the invented examples (2a-b), the case ending of U results as being unchangeable. And yet, the case ending of nava- changes in (2a-b) just like the case ending of jvāra- ‘suffering’: both nava- and jvāra- are inflected in the nominative in (2a), where the noun phrase headed by jvāra- (i.e. navo jvāraḥ) fulfills the function of subject of the predication; both nava- and jvāra- are inflected in the accusative in (2b), where the noun phrase headed by jvāra- (i.e. navaṃ jvāram) fulfills the function of direct object.

(2a) (Adapted from ṚV 1.42.8ab)

<table>
<thead>
<tr>
<th>nava</th>
<th>jvāro</th>
<th>adhvane.</th>
</tr>
</thead>
<tbody>
<tr>
<td>new.NOM.SG.M</td>
<td>suffering.NOM.SG.M</td>
<td>road.DAT.SG.M</td>
</tr>
</tbody>
</table>

‘New suffering is on the road’.

(2b) (Invented example)

<table>
<thead>
<tr>
<th>navaṃ</th>
<th>jvāram</th>
<th>pāśyāmi.</th>
</tr>
</thead>
<tbody>
<tr>
<td>new.ACC.SG.M</td>
<td>suffering.ACC.SG.M</td>
<td>see.IND.PRS.1SG</td>
</tr>
</tbody>
</table>

‘I see new suffering’.

Therefore, there seems to be no asymmetry between nava- and jvāra- in nava-jvāra- when it comes to case endings: neither of these compounds members, when it is embedded within an appropriate sentence pair, results in having an unchangeable case ending.

We are thus faced with a puzzle. On the one hand, A 2.1.49 teaches that nava- (and not jvāra-) gets the designation upasarjana in nava-jvāra-. On the other hand, A 1.2.44 defines the upasarjana as the ekavibhakti unit, but nava- is not ekavibhakti in nava-jvāra-: nava- does not have an unchangeable case ending when it is embedded in a sentence pair like (2a-b). Thus, A 1.2.44 is in apparent contradiction with A 2.1.49 when it comes to karmadhārayas like nava-jvāra-. Let us, however, note that the contradiction only arises if we read ekavibhakti as ‘having an unchangeable case ending’. In this paper, I
argue for an ambiguous reading of ekavibhakti that eschews the contradiction between A 2.1.49 and 1.2.44.

In the next section (§ 3), I shall provide a more detailed account of how the upasarjana-based model of compounding devised by Pāṇini works. This will make it possible to rephrase the puzzle outlined in this section in more precise terms.

3 Pāṇini’s Model of Compounds

A whole section of Pāṇini’s grammar, namely A 2.1-2.2, is dedicated to specifically to compounding; in addition, other rules from other sections provide ancillary information and definitions regarding compounds and compound-members. In what follows, I will briefly illustrate how the compounding phenomenon is modelled in Pāṇini’s rules, concentrating on the notion of upasarjana.

3.1 The Morphological Status of Compound-Members

In this subsection we shall consider three rules: A 2.1.4, 1.2.46, and 2.4.71. Building on Cardona (1997, 21-3, 186, 207), Kiparsky (2009, 67, 81-2), Candotti and Pontillo (2019, 31; 2022, 10), I will present a reading of these rules whereby they are strictly interconnected.

To start with, the general rule that governs compounding is A 2.1.4:

A 2.1.4: saha supā [sup 2.1.2] [samāsah 2.1.3].
‘a nominal inflected word (sup) combines with another nominal inflected word in order to form a compound’.

In accordance with this rule, compound-members are nominal inflected words. Interestingly, A 1.2.46 teaches that a compound, which is made up of two inflected words, indeed qualifies as a nominal stem (prātipadika).7

A 1.2.46: krṭtaddhitasamāsāś ca [prātipadikam 1.2.45].
‘Nominal deverbal derivatives (krṭ), nominal denominal derivatives (taddhita), and compounds also go under the rubric ‘nominal stem’ (prātipadika).’

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7 prātipadika is also translated as ‘nominal base’. For our purposes, nominal stem and nominal base can be taken to be equivalent notions: both refer to what is left when the case ending of a nominal inflected word is dropped (see, among others, Wackernagel 1905, 10).
At first sight, the information that a compound is a (nominal) stem – as taught by A 1.2.46 – is incompatible with the information that compound-members are (nominal) inflected words (as taught by A 2.1.4). For example, given the compound stem aśva-śapha- ‘horse’s hoof’, it does not seem to be possible to consider the compound-members aśva- and śapha- as inflected words: from a morphological point of view, aśva- and śapha- are stems, not inflected words. The question then arises as to how we can reconcile the information taught by A 1.2.46 with the information taught by A 2.1.4. The answer to this question is suggested by another rule:

**A 2.4.71:** supo dhātuprātipadikayoḥ [luk 2.4.58].

‘A case ending that is part of a verbal or nominal stem (dhātuprātipadikayoḥ) is zero-replaced’.

In accordance with A 2.4.71, any case ending contained within a nominal stem is zero-replaced. But we have just seen that compounds qualify as nominal stems (prātipadikas) in compliance with A 1.2.46. Accordingly, any case ending contained within a compound is zero-replaced. That is, aśva-śapha- (a compound stem) derives from aśvasya śaphaḥ ‘horse’s hoof’ (a combination of run-of-the-mill inflected words) via the zero-replacement of the case endings attached to śaphaḥ and aśvasya. Formally:

\[
\text{(3)} \quad \text{aśva-sya śapha-h} \rightarrow \text{aśva-Ø śapha-Ø} = \text{aśva-śapha-} \\
\text{horse-gen hoof-nom}
\]

‘horse’s hoof’.

Crucially, zero is always an allomorph of an overt morpheme in the Aṣṭādhyāyī (Pontillo 2003a, 139-40; Kiparsky 2009, 80). Thus, the zero attached to aśva- in (3) is a silent allomorph, and the -sya attached to aśva-sya an overt allomorph, of the abstract morpheme SYA that represents the genitive case ending of the thematic declension. Likewise, the zero attached to śapha- in (3) is a silent allomorph, and the -ḥ attached to śapha-ḥ an overt allomorph, of the abstract morpheme S that represents the nominative case ending of the thematic declension. In other words, the zero attached to aśva- in (3) qualifies as a genitive case ending on a par with the -sya attached to aśva-sya,

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8 Contra Sharma (1999-2003, 221), I am taking the case ending of the compound dhātuprātipadikayoḥ to be locative, rather than genitive. In this way, dhātuprātipadikayoḥ informs us that the locus in which the case ending (sUP) to be zero-replaced occurs is a verbal or nominal stem.
whereas the zero attached to śapha- in (3) qualifies as a nominative case ending on a par with the -ḥ attached to śapha-h. Therefore, (3) is best represented as in (4), where $\text{aśva-Ø}^\text{gen} \, śapha-Ø^\text{nom}$ is a combination of nominal inflected words marked with a specific (albeit silent) case ending.

\[
\begin{align*}
\text{(4)} \\
\text{aśva-sya śapha-h} & \rightarrow \text{aśva-Ø}^\text{gen} \, śapha-Ø^\text{nom} = \text{aśva-śapha-} \\
\text{horse-gen hoof-nom} & = \text{aśva-śapha} \\
\text{‘horse’s hoof’}.
\end{align*}
\]

Generalising the results that we have just reached, we may say that, according to Pāṇini, compound-members are nominal inflected words of a special sort: like run-of-the-mill nominal inflected words, they are endowed with a case ending (rule A 2.1.4), but – unlike in run-of-the-mill nominal inflected words – such a case ending is silent (rule A 2.4.71).\(^9\) Owing to the silent character of the case endings attached to compound-members (e.g. $\text{aśva-Ø}^\text{gen} \, śapha-Ø^\text{nom}$), compound-members are – at least at the surface level of language – non-distinct from nominal stems (e.g. $\text{aśva-}$ and $\text{śapha-}$). What is more, the combination of a nominal inflected word whose case ending is silent (e.g. $\text{aśva-Ø}^\text{gen}$) with another nominal inflected word whose case ending is also silent (e.g. $\text{śapha-Ø}^\text{nom}$) is – again at the surface level of language – non-distinct from a new nominal stem (e.g. the nominal stem $\text{aśva-śapha-}$ is superficially non-distinct from the combination of inflected words $\text{aśva-Ø}^\text{gen} \, śapha-Ø^\text{nom}$). This allows Pāṇini to designate a compound like $\text{aśva-śapha-} (= \text{aśva-Ø}^\text{gen} \, śapha-Ø^\text{nom})$ as a nominal stem (rule A 1.2.46). Qua nominal stem, $\text{aśva-śapha-}$ behaves like any non-compound nominal stem taken from the lexicon: $\text{aśva-śapha-} ‘\text{horse’s hoof}’$ has its own accent (on the last syllable, i.e. $\text{aśva-śaphá-}$ – see ŚB 13.3.4.4), its own inherent gender (masculine), and its own inflectional class (thematic declension), just like the non-compound nominal stem $\text{putrá-} ‘\text{son}’$.

Thus, a convenient way of characterising Pāṇini’s model of compounding is involving two levels of representation: a deep level, in which case-endings are represented even when they are silent (e.g.

\[^{9}\] Twenty-four centuries after Pāṇini, Lowe (2015b) also proposed that the members of Sanskrit compounds are words, rather than sub-word units. Note that Pāṇini’s model of compounding is particularly well-suited to account for so-called “$\text{aluk compounds}$” such as $\text{apsu-ṣad-} \text{(lit. water.loc.pl.f-sitting) ‘sitting amid the waters’} \text{(ṚV 3.3.5)}$, where the left-hand member of the compound is endowed with an overt case ending (in this example, locative): in Pāṇini’s model (rules A 6.3.1-6.3.24), $\text{aluk}$ compounds merely differ from ordinary compounds like $\text{aśva-śapha-}$ in that the zero-replacement of the overt case ending attached to the compound’s left-hand member applies to ordinary compounds but not to $\text{aluk}$ compounds (see Cardona 1997, 224-5; Candotti, Pontillo 2019, 31 fn. 41).

I am indebted to one of the anonymous reviewers for drawing my attention to this point.
aśva-Øgen śapha-Ønom), and a surface level, in which case endings are represented only when they are overt. In this two-tiered model, the information that a compound is a nominal stem – as taught by A 1.2.46 – does not conflict with the information that a compound is a combination of nominal inflected words (as taught by A 2.1.4): since the case-endings attached to compound-members are silent in keeping with A 2.4.71, a compound appears as a combination of inflected words (aśva-Øgen śapha-Ønom) only at the deep level of representation, while showing up as a nominal stem (aśva-śapha-) at the surface level of representation, where silent case endings are never represented.

At this point, one may wonder whether the semantic import of suffixing a null case ending to a certain nominal stem is the same as the semantic import of suffixing an overt case ending to that nominal stem. In other words, does the meaning of, e.g. aśva-śapha- (= aśva-Øgen śapha-Ønom) – where aśva- and śapha- are endowed with a silent case ending – differ from the meaning of aśvasya śaphaḥ, where aśva- and śapha- are endowed with an overt case ending? Indeed, Pāṇini directly addressed this question in A 2.1.1:

A 2.1.1: samarthaḥ padavidhiḥ.
‘A provision that depends on nominal inflected words has the same meaning [as the output of the provision].’

The gist of A 2.1.1 can be simplified along the following lines: let C be a compound (e.g. aśva-śapha- = aśva-Øgen śapha-Ønom); let W1 + W2 be the combination of nominal inflected words from which C derives via the zero-replacement of the case endings attached to W1 and W2 (e.g. asvasya sapha); let R be the rule which outputs C and directly or indirectly mentions W1 and W2 (e.g. A 2.2.8, examined in detail in § 3.2 below); then, A 2.1.1 teaches that C is synonymous with W1 + W2 (see Pontillo 2018 for relevant discussion). Therefore, in light of A 2.1.1 interpreted à la Pontillo (2018), I conclude that the meaning of a compound (i.e. the meaning of a combination of inflected words endowed with silent case endings, such as aśva-śapha- = aśva-Øgen śapha-Ønom) does not differ from the meaning of the corresponding combination of inflected words endowed with overt case endings (aśvasya śaphaḥ) in Pāṇini’s model of compounding.

In sum, a distinctive property of Pāṇini’s model of compounding is the idea that silent case endings are suffixed to compound-members. This idea makes it possible to reconcile the information that a compound is a stem (A 1.2.46) with the information that a compound

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10 I am following Pontillo 2018’s interpretation of A 2.1.1, which differs substantially from the traditional interpretation going back to Kātyāyana. On the advantages of her new interpretation over the traditional one, see Pontillo 2018, 132-5.
is a combination of inflected words (A 2.1.4): at the surface level of representation, the combination of two compound-members endowed with silent case endings is non-distinct from a compound-stem; at a deeper level of representation, however, those selfsame compound-members endowed with a silent case ending are in all relevant respects inflected words.

3.2 Upasarjana Inside and Outside Compounding

Let us now examine a crucial notion for Pāṇini’s model of compounding, namely the notion of upasarjana. Pāṇini introduces this notion in A 1.2.43:

A 1.2.43: prathamānirdiṣṭaṃ samāsa upasarjanam.
‘What is mentioned in the nominative in a compound[-rule] goes under the rubric upasarjana’.

This is a meta-rule, in the sense that it provides instructions as to how (segments of) other rules should be properly read. Specifically, A 1.2.43 informs the reader that, whenever Pāṇini mentions a form X in the nominative in a compound-rule, the reader must identify X as an upasarjana. The nominative case in which X is mentioned in a compound-rule is dubbed as ‘metalinguistic nominative’. To illustrate how A 1.2.43 works with a concrete example, let us consider A 2.2.8, which is a compound-rule.

A 2.2.8: ṣaṣṭhī [samāsaḥ 2.1.3] [saha supā 2.1.4] [vā 2.1.18] [tatpuruṣaḥ 2.1.22].
‘a noun inflected in the genitive preferably combines with a nominal inflected word to form a tatpuruṣa compound’.

This rule teaches to form, for example, aśva-śapha- from aśvasya śaphaḥ, i.e. from the combination of the run-of-the-mill inflected forms of śapha- ‘horse’ and aśva- ‘hoof’ (technically, such a combination is an NP). Specifically, ṣaṣṭhī- ‘noun inflected in the genitive’ of A 2.2.8 refers to aśvasya ‘horse.GEN’, because aśvasya is inflected in the genitive. But ṣaṣṭhī- is in turn inflected in the metalinguistic nominative in A 2.2.8, i.e. as ṣaṣṭhī. Thus, while being inflected in the metalinguistic nominative inside a compound-rule, ṣaṣṭhī- refers to

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11 Simplifying somewhat, tatpuruṣa compounds correspond to subordinate endocentric compounds (e.g. English truck-driver) in Scalise and Bisetto’s classification: see Bisetto, Scalise 2005; Scalise, Bisetto 2009. As for the involvement of vā in A 2.2.8, I am following Kiparsky 1979, 3; Radicchi 1988, 56-8; Candotti, Pontillo 2022, 10 fn. 26 in taking vā to continue from A 2.1.18 through 2.2.9 by the so-called mechanism of anuvṛtti.
a form that, outside compound-rules, is inflected in the non-metalinguistic genitive case (aśvasya). At this point, the reader is instructed by A 1.2.43 to identify aśvasya as upasarjana in the NP aśvasya śaphaḥ, insofar as aśvasya is referred to by a noun inflected in the metalinguistic nominative (ṣaṣṭhī) in a compound-rule.

By means of A 1.2.43, one may construct a set of the units that count as upasarjana within the Aṣṭādhyāyī: e.g. all the units that are referred to by the rule-segment ṣaṣṭhī figuring in A 2.2.8 belong to such a set. However, A 1.2.43 does not tell us what linguistic features the elements inserted in that set (call it the ‘upasarjana set’) share; that is, A 1.2.43 does not provide us with a genuinely linguistic criterion that justifies the membership of those units to the upasarjana set (see Pontillo 2003b: 21 and the references quoted therein). Such a criterion is indeed offered by Pāṇini in A 1.2.44: the ekavibhakti unit, i.e. the unit that has an unchangeable case ending (see Pontillo 2003b; Candotti, Pontillo 2019, 22-4; Pontillo 2021, 505-9).

A 1.2.44: ekavibhakti cāpūrvanipāte [upasarjanam 1.2.43].
‘And what has an unchangeable case ending also goes under the rubric upasarjana, even when it does not occupy the left-hand slot [of a compound].’

Now, the ekavibhakti unit may be a compound-member (e.g. aśva- in aśva-śapha-) or an NP-internal inflected word (e.g. aśvasya in aśvasya śaphaḥ). Let us consider how, starting with the case in which the ekavibhakti unit is an NP-internal inflected word.

Indeed, śaphaḥ is not ekavibhakti in the NP aśvasya śaphaḥ, insofar as the case ending displayed by śaphaḥ (i.e. nominative) varies depending on the grammatical function fulfilled by the NP aśvasya

12 It may reasonably be contended that the main purpose of A 1.2.44 is to extend the designation upasarjana to units other than those that satisfy the requirement imposed by A 1.2.43, i.e. to units that, while not being referred to by a form inflected in the metalinguistic nominative in a compound-rule, display an unchangeable case ending (ekavibhakti). However, the contention that A 1.2.44 primarily aims at extending the designation of upasarjana is not by any means incompatible with – and hence does not undermine – the claim that A 1.2.44 also provides a genuinely linguistic criterion for defining the upasarjana (namely, that it displays an unchangeable case ending). What is necessary to undermine the latter claim is a case in which units designated by Pāṇini as upasarjana fail to comply with the genuinely linguistic criterion imposed by A 1.2.44. In what follows I shall argue that attributive endocentric (karmadhāraya) compounds do not provide such a case; see Pontillo 2003b for evidence that other compound types, too, do not provide such a case. I am indebted to one of the anonymous reviewers for drawing my attention to this point.

13 For the sake of simplicity, I shall disregard here the case in which the ekavibhakti unit is a member of taddhītas (i.e. nouns derived from other nouns), which also involve an upasarjana. See Candotti, Pontillo 2019, 25; 2022, 16-17 in this connection.
śaphaḥ in a given pair of sentences. For instance, śaphaḥ is inflected in the ablative in (1a) (repeated below as (5a)), where the NP aśvasya śaphaḥ fulfills the function of circumstantial complement (the so-called apadāna ‘source’ of the Indian grammatical tradition); but śaphaḥ is inflected in the accusative in (1b) (repeated below as (5b)), where the NP aśvasya śaphaḥ fulfills the function of direct object.

(5a) RV 1.117.6
śaphā́d aśvasya śatām [...] kumbhā́n asiñcatam mádhūnām.
hoof. abl.sg.m horse. gen.sg.m hundred pot. acc.pl.m pour. imb. 2du honey. gen.pl.n
‘You two poured a hundred pots of honey from the horse’s hoof’.

(5b) (Invented example)
aśvasya śapham paśyāmi.
horse. gen.sg.m hoof. acc.sg.m see. ind.prs.1sg
‘I see a horse’s hoof’.

On the other hand, aśvasya does qualify as ekavibhakti in the NP aśvasya śaphaḥ, insofar as the different grammatical functions fulfilled by the NP aśvasya śaphaḥ in (5a-b) (i.e. the functions of direct object and circumstantial complement) do not result in aśvasya displaying different case endings: the case ending displayed by aśvasya is the same (i.e. genitive) in (5a) and (5b). Since aśvasya qualifies as ekavibhakti in the NP aśvasya śaphaḥ, aśvasya gets the designation upasarjana in the NP aśvasya śaphaḥ in compliance with A 1.2.44. In this way, A 1.2.43 and 1.2.44 converge in identifying aśvasya as upasarjana in the NP aśvasya śaphaḥ.

Let us now proceed with showing how a compound-member may be the ekavibhakti unit. Recall that both aśva-Ø gen śapha-Ø abl and aśvasya śaphaḥ qualify as NPs made up of nominal inflected words in Pāṇini’s model of compounding. Now, owing to this parallelism between aśva-Ø gen śapha-Ø nom and aśvasya śaphaḥ, (5a-b) may be rewritten as (6a-b), which are abstract grammatical representations not yet belonging to the set of well-formed sentences of Sanskrit. In order for (6a-b) to become well-formed sentences of the Sanskrit language, an overt case ending should attach to the whole NP aśva-Ø gen śapha-Ø nom or to its variants (aśva-Ø gen śapha-Ø abl and aśva-Ø gen śapha-Ø acc), which may all be notated as aśva-Ø gen śapha-Ø x for convenience.14 For example (6c), where an overt accusative case ending attaches to the NP aśva-Ø gen śapha-Ø acc (6b) is a well-formed sentence in Sanskrit.

14 Recall that aśva-Ø gen śapha-Ø is superficially non-distinct from the stem aśva-śapha-. See § 3.1 above.
(6a) (adapted from RV 1.117.6)

\[aśva-Ø \text{ gen } śṣpha-Ø \text{ abl } śatāṃ \text{ kumbhā́n } \text{ asińcatam } \text{ mádhūnām.}\]

horse.\text{GEN.SG.M} hoof.\text{ABL.SG.M} hundred pot.\text{ACC.PL.M} pour.\text{IND.IMPF.2DU} honey.\text{GEN.PL.N}

‘You two poured a hundred pots of honey from the horse’s hoof’.

(6b) (Invented example)

\[aśva-Ø \text{ gen } śṣpha-Ø \text{ acc } \text{ paśyāmi.}\]

horse.\text{GEN.SG.M} hoof.\text{ACC.SG.M} see.\text{IND.PRS.1SG}

‘I see a horse’s hoof’.

(6c) (Invented example)

\[aśva-śṣpha-m \text{ \[= aśva-Ø } \text{ gen } śṣpha-Ø \text{ x } \text{ m]} \text{ paśyāmi.}\]

horse-hoof.\text{ACC.SG.M} see.\text{IND.PRS.1SG}

‘I see a horse’s hoof’.

In (6a-b), \(aśva-Ø\text{ gen}\) – but not \(śṣpha-Ø\text{x}\) – qualifies as \text{ekavibhakti}: regardless of the different grammatical functions fulfilled by the NP \(aśva-Ø\text{ gen } śṣpha-Ø\text{x}\) in these sentences (circumstantial complement in (6a); direct object in (6b)), the silent case ending of \(aśva-Ø\text{ gen}\) remains unchanged (i.e. genitive). Qua \text{ekavibhakti} unit, \(aśva-Ø\text{ gen}\) gets the designation \text{upasarjana} in the NP \(aśva-Ø\text{ gen } śṣpha-Ø\text{x}\) in keeping with A 1.2.44. But such an NP is the representation of compound \(aśva-śṣpha\) in Pāṇini’s model of compounding. Hence, in this model, both a compound-member – e.g. \(aśva= aśva-Ø\text{ gen}\) included in \(aśva-śṣpha\) \(= aśva-Ø\text{ gen } śṣpha-Ø\text{x}\) – and an ordinary inflected word – e.g. \(aśvasya\) included in \(aśvasya śṣphaḥ\) – may be designated as \text{upasarjana} (see Mocci, Pontillo 2019, 5–6 fn. 14).

Thus, A 1.2.44 provides a specific criterion whereby certain elements (e.g. \(aśva= aśva-Ø\text{ gen}\)) and not others (e.g. \(śṣpha= śṣpha-Ø\text{x}\)) are included in the \text{upasarjana} set: all the elements of the \text{upasarjana} set share a specific feature, namely that their case ending remains unchanged regardless of the grammatical function fulfilled by the NP to which they belong. I suggest translating the technical term \text{upasarjana} as ‘non-head’, on the understanding that the NP-internal unit whose case ending remains unchanged when the grammatical function fulfilled by the NP changes typically coincides with the NP-internal unit that does not serve as the head of the NP.

In the present subsection, I confined my attention to an example in which A 1.2.43 and 1.2.44 converge in identifying a certain unit as \text{upasarjana}: \(aśva= aśva-Ø\text{ gen}\) is the \text{upasarjana} of \(aśva-śṣpha\) \(= aśva-Ø\text{ gen } śṣpha-Ø\text{x}\) in keeping with both A 1.2.43 and 1.2.44. In the next subsection (§ 3.3), instead, I shall focus on an example in which
the upasajana, as identified on the basis of A 1.2.44, does not coincide with the upasajana as identified on the basis of A 1.2.43.

### 3.3 On the Segment apūrvanipāte

The wording of A 1.2.44 was given in § 3.2 and is repeated below for convenience.\(^{15}\)

\[
A 1.2.44: \text{ekavibhakti cāpūrvanipāte [upasaranam 1.2.43].}
\]

‘And what has an unchangeable case ending also goes under the rubric upasajana, even when it does not occupy the left-hand slot [of a compound].’

While I spent some time discussing the meaning of ekavibhakti (i.e. ‘having an unchangeable case ending’), I have not yet said anything on the other segment of this rule, namely, apūrvanipāte, which I translated as ‘even when what has an unchangeable case ending (ekavibhakti) does not occupy the left-hand slot of a compound’.\(^{16}\) As pointed out by Candotti and Pontillo (2019, 24), the apūrvanipāte segment acknowledges that there are exceptions to the general rule governing the position of the upasajana inside compounds, i.e. A 2.2.30.

\[
A 2.2.30: \text{upasaranam pūrvam.}
\]

‘A constituent termed upasajana occupies the left-hand slot [in a compound].’

To wit, according to A 2.2.30 the canonical position occupied by the upasajana is the left-hand slot of the compound: for instance, the left-hand slot of asva-śapha- (= asva-Ø gen śapha-Ø) is occupied by asva- (= asva-Ø gen), which we have said is designated as upasajana in this compound (see § 3.2 above). However, there are cases in which the upasajana occupies the right-hand slot of the compound. Thus, KV ad A 1.2.44 gives the following example of a tatpurusa:

\[
(7) \quad \text{nis-kauśāmbi-}
\]

out.of-Kauśāmbi-

‘(One) who is out of the city termed Kauśāmbi’.

---

\(^{15}\) The following discussion will heavily draw on Pontillo’s work on A 1.2.44 and its subsequent elaborations by Candotti and Pontillo (see especially Pontillo 2003b; Candotti, Pontillo 2019; Candotti, Pontillo 2022).

\(^{16}\) Of course, apūrvanipāte results from breaking down cāpūrvanipāte into ca and apūrvanipāte. I am taking apūrvanipāte to be a concessive locative.
This compound is taught by A 2.2.18, which features the segment \textit{prādi} ‘the list beginning with \textit{pra}’:

\begin{enumerate}
\item A 2.2.18: \textit{kugatiprādayaḥ} [samāsaḥ 2.1.3] [saha supā 2.1.4] [sup 2.1.9] [tatpuruṣaḥ 2.1.22] [nityam 2.2.17].
\item ‘The indeclinable word \textit{ku}, the units termed \textit{gati} or included in the list beginning with \textit{pra} mandatorily combine with an inflected word to form a \textit{tatpuruṣa} compound’.
\end{enumerate}

Since the list beginning with \textit{pra} (\textit{prādi}) includes \textit{nis} (namely the left-hand member of \textit{nīś-kauśāṃbi} (7)), \textit{nīś} is referred to by \textit{prādi}, which is mentioned in the nominative in A 2.2.18. Let us now recall that what is referred to by a word that is inflected in the nominative in a compound-rule is designated as \textit{upasarjana} in keeping with A 1.2.43 (see § 3.2 above). Accordingly, \textit{nīś} should be designated as \textit{upasarjana} in \textit{nīś-kauśāṃbi}. Nevertheless, \textit{nīś} does not receive the designation \textit{upasarjana} in \textit{nīś-kauśāṃbi}. Instead, it is \textit{kauśāṃbī} (i.e. the right-hand member of \textit{nīś-kauśāṃbi}) that is designated as \textit{upasarjana}, owing to A 1.2.44. Let us consider how.

In the system of the \textit{Aṣṭādhyāyī}, the compound \textit{nīś-kauśāṃbi} is analysed as \textit{nīś-Ø x kauśāṃbī-Ø abl}, i.e. as an NP made up of inflected words whose case endings are silent.

By specifying \textit{nityam} ‘mandatorily’ in A 2.2.18, Pāṇini informs us that \textit{nīś-kauśāṃbi} (= \textit{nīś-Ø x kauśāṃbī-Ø abl}) has no counterpart in which the case endings attached to both \textit{nīś} (= \textit{nīś-Ø}) and \textit{kauśāṃbī} (= \textit{kauśāṃbī-Ø}) are overt; put another way, \textit{nīś-kauśāṃbī} lacks a non-compounded counterpart (e.g. *\textit{nīś kauśāṃbīyāḥ}). To be noted that indeclinable words such as \textit{nīś} are treated by Pāṇini as nouns on a par with, for example, \textit{aṣvāḥ ‘horse.NOM.5G’}, the only difference between \textit{nīś} and \textit{aṣvāḥ} being that the case ending attached to \textit{nīś} is zero-replaced in compliance with A 2.4.82 (avāyād āpsupaḥ [luk 2.4.58]), while the case ending of \textit{aṣvāḥ} (i.e. -\textit{ḥ}) is not zero-replaced. On A 2.4.82, see Cardona 1997, 212.
In these invented examples, the silent case-ending attached to nis-changes according to the grammatical function fulfilled by the NP nis-Øₙₐₘ kauśāmbi-Øₚₑᵢ in (8a), where the NP nis-Øₙₐₘ kauśāmbi-Øₚₑᵢ fulfills the function of subject, but takes on accusative (nis-Øₐₜₜ) in (8b), where that NP fulfills the function of direct object. By contrast, the silent case-ending attached to kauśāmbi- is unchangeable: despite the different grammatical functions fulfilled by the NP nis-Øₙₐₘ kauśāmbi-Øₚₑᵢ in (8a-b), kauśāmbi- remains inflected in the ablative in these sentences (kauśāmbi-Øₚₑᵢ).

Since by A 1.2.44 the ekavibhakti unit (i.e. the unit whose case ending is unchangeable) is designated as upasarjana, kauśāmbi- (= kauśāmbi-Øₚₑᵢ) – but crucially not nis- (= nis-Øₚₑᵢ) – gets the designation upasarjana in niṣ-kauśāmbi-. The upasarjana status of kauśāmbi- in niṣ-kauśāmbi- is further confirmed by the shortening of the final <ī> of kauśāmbi- in niṣ-kauśāmbi-; as pointed out by Pontillo (2003b, 24) (see also Candotti, Pontillo 2019, 24), A 1.2.48 ensures that this shortening is only possible insofar as kauśāmbi- is designated as upasarjana in the compound niṣ-kauśāmbi-.
A 1.2.48: go-striyor upasarjanasya [hrasvah prātipadikasya 1.2.47]. ‘The final vowel of go- or of nouns ending in a feminine affix, such that go- and the nouns ending in a feminine affix are nominal stems as well as upasarganas, is replaced by a short vowel’.

To sum up, A 2.2.30 provides that the upasargana is canonically allocated to the left-hand slot of a compound. Nevertheless, some compounds exist in which the upasargana is allocated to the right-hand slot; a relevant example in this regard is niṣ-kausāmbi- ‘(one) who is out of a village termed Kauśāmbī’, where kausāmbi- is the upasargana and the right-hand member of the compound at the same time. To license the formation of compounds like niṣ-kausāmbi-, in which the upasargana is allocated to the right-hand member (as opposed to the left-hand member) of a compound, Pāṇini includes the segment apūrvanipāte ‘even when what has an unchangeable case ending (ekavibhakti) does not occupy the left-hand slot of a compound’ in rule A 1.2.44 (ekavibhakti cāpurvanipāte).

In this way, A 1.2.44 serves two purposes. First, it provides a genuine linguistic criterion to decide whether a certain unit belongs to the upasargana set: a unit U belongs to the upasargana set if and only if, when the grammatical function fulfilled by the NP to which U belongs changes, the case ending of U remains unchanged. Second, by providing a specific criterion for the membership of a unit to the upasargana set, A 1.2.44 supersedes (i.e. licenses exceptions to) both A 1.2.43 and 2.2.30: even when the upasargana is not mentioned in the nominative (as an exception to A 1.2.43, which provides for the upasargana to be mentioned in the nominative in a compound-rule) or when the upasargana does not occupy the left-hand slot of a compound (as an exception to A 2.2.30, which provides for the upasargana to be allocated to the left-hand slot of a compound), the upasargana can still be identified as the unit U such that, when the grammatical function fulfilled by the NP to which U belongs changes, the case ending of U remains unchanged (Candotti, Pontillo 2022, 14).

3.4 Rephrasing the Puzzle

In § 2 above, I presented a puzzle posed by karmadhāraya compounds to Pāṇini’s upasargana-based classification of compounds. However, that presentation of the puzzle was a mere sketch, as I had not yet analysed, at that point of the paper, the fundamental rules which underpin Pāṇini’s model of compounding. In this section, I restate the puzzle in more precise terms, capitalising on the discussion in §§ 3.1-3.3 above.
Let us start with the rule that defines karmadhāraya compounds:

A 1.2.42: tatpuruṣaḥ samānādhikaraṇaḥ karmadhārayaḥ.
‘A tatpuruṣa compound whose members are samānādhikaraṇa is called karmadhāraya’.

In accordance with this rule, the tatpuruṣa compound type may be broken down into two subtypes: compounds whose members are samānādhikaraṇa, and compounds whose members are not samānādhikaraṇa. But what does samānādhikaraṇa really mean?

From the morphological point of view, samānādhikaraṇa is a bahuvrīhi compound formed from samāna- ‘same’ and adhikaraṇa- ‘substratum’, and properly means ‘having the same substratum’. Although it is not easy to find a good term to render samānādhikaraṇa in English,21 the phenomenon which this expression is meant to capture is clear enough. Thus, I have deliberately chosen not to translate samānādhikaraṇa in this paper, but I do provide a precise definition of this expression: let W_1 and W_2 be nominal inflected words, which include compound-members such as aśva- (= aśva-Ø-gen) in the compound aśva-śapha- (= aśva-Ø-gen śapha-Ø) ‘horse’s hoof’, as well as run-of-the-mill inflected words such as aśvasya in the NP aśvasya śaphaḥ; if, in a given sentence, W_1 cannot refer to an entity other than the one referred to by W_2, then W_1 is samānādhikaraṇa with W_2. For example, in navo jvāraḥ ‘the new suffering’, navaḥ (lit. new.nom.sg) cannot refer to a new entity that is not simultaneously a form of suffering (i.e. an entity referred to by jvāraḥ ‘suffering.nom.sg’).22 Accordingly, jvāraḥ and navaḥ are samānādhikaraṇa in navo jvāraḥ.23

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21 Some terms suggested in the literature to render samānādhikaraṇa are: ‘coreferential’ (Cardona 1997, 217); ‘homo-denotative’ (Gillon 2008, 2); ‘coindexed’ (Kiparsky 2009, 54); ‘predicated’ (Lowe 2015a, 331). Among these, ‘coreferential’ is possibly the most popular, but it is nonetheless problematic as it interferes with the way this self-same term is used in binding theory (see, e.g. Chomsky 1981). In this theory, coreferrality is technically the relationship that holds between a pronominal category (a pronoun or an anaphor) and its antecedent: e.g. John is said to be coreferential with the anaphor himself in the English sentence John admires himself.

22 It may be worth noting that Pāṇini’s grammar lacks the distinction between adjective and noun: navaḥ and jvāraḥ are both categorised as nominals – more precisely, as the outcome of attaching a case ending to a prātipadika, i.e. to a nominal stem – by Pāṇini (see, e.g. Joshi 2015, 349). Therefore, from the perspective of Pāṇini’s grammar, it comes as no surprise that navaḥ, which in modern linguistics would be categorised as an adjective, is as capable as jvāraḥ of referring to an entity (I am indebted to one of the anonymous reviewers for drawing my attention to this point). See Candotti, Pontillo 2011 on how Pāṇini dealt with grammatical features that, in modern linguistics, would be referred to as adjectival; see also Alfieri 2014 on the birth of the adjectival part of speech in the Western grammatical tradition.

23 Thus, the sāmānādhikaraṇya relation (i.e. the relation holding between two units that are samānādhikaraṇa) does not coincide with the modern linguistic notion of agreement (see Hock 2015, 8, 13; Joshi 2015). The definition of samānādhikaraṇa adopted...
Thus, A 1.2.42 labels a *tatpuruśa* whose members are *samānādhikaraṇa as karmadhāraya. Karmadhārayas correspond to the attribute endocentric compounds (also known as “appositive/attribute endocentric compounds”) of Bisetto, Scalise 2005; Scalise, Bisetto 2009. Let us now consider a concrete example of karmadhāraya: *nava-jvāra- ‘new suffering’. This compound, occurring in RV 1.42.8, is governed by A 2.1.49, which opens up the section of rules given over to karmadhārayas (i.e. A 2.1.49-72):

A 2.1.49: 

\[\text{pūrvakālaikasarvajaratpurāṇanavakevalāḥ samānādhikaraṇena} \] [samāsaḥ 2.1.3] [sahā supā 2.1.4] [sup 2.1.9] [vā 2.1.18] [tatpurusah 2.1.22] 

‘A nominal inflected word X such that X denotes something which precedes in time, or such that X is eka- ‘one’, sarva- ‘all’, jarat- ‘old’, purāna- ‘ancient’, nava- ‘new’, and kevala- ‘alone’, combines with a nominal inflected word Y such that Y is co-referential with X, to form a *tatpuruṣa* karmadhāraya compound.’

This rule, considered in conjunction with A 1.2.43, teaches the following constraints on *nava-jvāra-*: that nava- be *samānādhikaraṇa with jvāra-; and that nava- (which is mentioned in the nominative in A 2.1.49, which is a compound-rule) be the *upasarjana.* We can easily verify that the constraint that nava- be *samānādhikaraṇa with jvāra- is satisfied in *nava-jvāra-. Consider how.

Since compound-members are nominal inflected words with silent case endings in Pāṇini’s model of compounding, *nava-jvāra- should be represented as \(nava-\text{Ø}\text{-jvāra-Ø}\), which therefore behaves exactly like the combination of run-of-the-mill inflected words *navo jvāraḥ – see (9) below.*

Thus, the compound-member nava- (= *nava-Ø*) ‘the new one’ cannot refer to a new entity that is not also a form of suffering (i.e. an entity referred to by *jvāra- = jvāra-Ø* ‘suffering’). Then, in accordance with the definition of *samānādhikaraṇa* adopted here, nava- is *samānādhikaraṇa with jvāra- in *nava-jvāra-.*
Let us consider now the second constraint imposed by A 2.1.49 – in conjunction with A 1.2.43 – on navā-jvāra-, namely that navā- be upasarjana. As discussed in § 3.2 above, the upasarjana is the ekavibhakti unit in accordance with A 1.2.44, i.e. the unit U such that the case ending of U remains unchanged when the noun phrase to which U belongs fulfils different grammatical functions. Therefore, to verify that navā- (= navā-Ø) is indeed the upasarjana in navā-jvāra- (= navā-Ø x jvāra-Ø x), we need to construct a sentence pair in which an NP that contains navā- performs different grammatical functions. A good example of such a sentence pair is (10a-b), which features the NP navā-Ø x jvāra-Ø x, where navā-Ø x and jvāra-Ø x are, as usual, nominal inflected words with a silent case ending. At the surface level of language, where an overt case ending attaches to the whole NP navā-Ø x jvāra-Ø x (i.e. to navā-jvāra-), (10a-b) show up as (10c-d), respectively.

(10a) (Adapted from ṚV 1.42.8ab)

\[
\text{navā-Ø}^{\text{nom}} \text{jvāra-Ø}^{\text{nom}} \text{adhvane.} \\
\text{new.NOM.SG.M suffering.NOM.SG.M road.DAT.SG.M}
\]

‘New suffering is on the road’.

(10b) (Invented example)

\[
\text{navā-Ø}^{\text{acc}} \text{jvāra-Ø}^{\text{acc}} \text{paśyāmi.} \\
\text{new.ACC.SG.M suffering.ACC.SG.M see.IND.PRS.1SG}
\]

‘I see new suffering’.

(10c) (Adapted from ṚV 1.42.8ab)

\[
\text{navā-jvāra-ḥ} \text{adhvane.} \\
\text{new-suffering.NOM.SG.M road.DAT.SG.M}
\]

‘New suffering is on the road’.

(10d) (Invented example)

\[
\text{navā-jvāra-m} \text{paśyāmi.} \\
\text{new-suffering.ACC.SG.M see.IND.PRS.1SG}
\]

‘I see new suffering’.

(9)

\[
\text{navo jvāraḥ} \rightarrow \text{nava-Ø} x \text{jvāra-Ø} x = \text{nava-jvāra-} \\
\text{new.NOM suffering.NOM}
\]

‘new suffering’
When the NP \textit{nava-Ø} \textit{jvāra-Ø} fulfils the grammatical function of subject, as in (10a), a silent nominative ending applies to both \textit{nava-} (\textit{nava-Ø}) and \textit{jvāra-} (\textit{jvāra-Ø}). By contrast, when NP \textit{nava-Ø} \textit{jvāra-Ø} fulfills the grammatical function of direct object, as in (10b), a silent accusative ending applies to \textit{nava-} (\textit{nava-Ø}) as well as to \textit{jvāra-} (\textit{jvāra-Ø}). It appears, then, that neither \textit{nava-} nor \textit{jvāra-} is an \textit{ekavibhakti} unit: when the grammatical function of NP \textit{nava-Ø} \textit{jvāra-Ø} changes, the case ending of both \textit{nava-} and \textit{jvāra-} also changes.

Since A 1.2.44 defines the \textit{upasarjana} as the \textit{ekavibhakti} unit (see § 3.2 above), the fact that \textit{nava-} (\textit{nava-Ø}) and \textit{jvāra-} (\textit{jvāra-Ø}) are not \textit{ekavibhakti} units in \textit{nava-jvāra-} (= \textit{nava-Ø}\textit{jvāra-Ø}) entails that neither \textit{nava-} nor \textit{jvāra-} gets the designation \textit{upasarjana} in \textit{nava-jvāra-}. Therefore, the second constraint imposed by A 2.1.49 (in conjunction with A 1.2.43) on \textit{nava-jvāra-}, i.e. that \textit{nava-} be \textit{upasarjana}, appears to be violated.

We are therefore faced with a puzzle: on the one hand, A 2.1.49, in conjunction with A 1.2.43, teaches that \textit{nava-} is the \textit{upasarjana} in the \textit{karmadhāraya} compound \textit{nava-jvāra-}; on the other hand, the definition of \textit{upasarjana} as an \textit{ekavibhakti} unit (A 1.2.44) leads us to consider \textit{nava-} as non-\textit{upasarjana} in \textit{nava-jvāra-}. In brief, the puzzle arising in connection with \textit{nava-jvāra-} is the fact that rule A 1.2.44 appears to contradict rule A 2.1.49 (considered in conjunction with A 1.2.43). At this point, two possibilities suggest themselves to solve this puzzle, i.e. to avoid the contradiction between the rules at stake.

According to the first possibility, A 1.2.44’s definition of the \textit{upasarjana} as an \textit{ekavibhakti} unit is required to be complied with only in compounds like \textit{nīs-kauśāmbi-}, i.e. in compounds in which the \textit{upasarjana} occupies the right-hand slot of the compound itself (see § 3.3 above). Since there is no clear reason to maintain that the \textit{upasarjana} of \textit{nava-jvāra-} is the right-hand member \textit{jvāra-}, the \textit{upasarjana} of \textit{nava-jvāra-} need not be an \textit{ekavibhakti} unit, i.e. need not satisfy the definition of \textit{upasarjana} provided by A 1.2.44. This, then, makes it possible to designate \textit{nava-} as the \textit{upasarjana} of \textit{nava-jvāra-} without incurring any contradiction between A 2.1.49 and 1.2.44. Among the supporters of this first possibility are Böhtlingk (1887, 17) and Kiparsky (1979, 232).

According to the second possibility, A 1.2.44’s definition of the \textit{upasarjana} as an \textit{ekavibhakti} unit must be satisfied in any compound, including \textit{nava-jvāra-}, regardless of the position occupied by the \textit{upasarjana} inside the compound (left-hand slot versus right-hand slot). Indeed, in accordance with this second possibility, the contradiction between A 2.1.49 and 1.2.44 should be resolved by capitalising

26 The reader can easily verify that this puzzle is not confined to \textit{nava-jvāra-} but indeed extends to any other \textit{karmadhāraya}.
on the ambiguity of *ekavibhakti* in A 1.2.44, in a sense to be made precise below.

The first possibility listed above was already discussed by Pontillo (2003b), who eventually dismissed it on the grounds that A 1.2.44’s definition of the *upasarjana* as an *ekavibhakti* unit is demonstrably satisfied in compound types other than those whose right-hand member is designated as *upasarjana* (see especially Pontillo 2003b, 30). I also reject the first possibility: indeed, if A 1.2.44’s definition of the *upasarjana* as an *ekavibhakti* unit were to be confined to compounds like *niṣ-kauśāmbi*- (as suggested by the first possibility), we would merely have the *upasarjana* set (i.e. the set of units designated as *upasarjana* in compliance with A 1.2.43), but no genuine linguistic feature that is shared by all members of the set and that justifies the membership of a certain unit to that set (see § 3.2 above). I consider the idea that all members of the *upasarjana* set share a specific linguistic feature that justifies their membership to the set – as well as the exclusion of other units from the set – much more interesting and insightful: if confirmed, this idea would return a new picture of Pāṇini’s model of compounding, whereby such a model is much deeper and much more complicated than has been thought before.

For these reasons, in the next section (§ 4) I pursue the second of the two possibilities listed above. Specifically, I shall capitalise on the *Aṣṭādhyāyī* rule governing present participles to argue in favour of a novel understanding of the *ekavibhakti* segment featuring in A 1.2.44.

### 4 The Ambiguity of *ekavibhakti*

In the present section I argue that the notion of *ekavibhakti* is ambiguous between the meaning ‘having an unchangeable case ending’ and the meaning ‘having the same case ending [as another nominal inflected word]’. I specify the latter meaning in terms of the syntactic operation of case-copying: a unit $U_1$ has the same case ending as another unit $U_2$ in the sense that $U_1$ copies the case ending of $U_2$. I provide evidence for case-copying in the *Aṣṭādhyāyī* by capitalising on A 3.2.124, namely the rule teaching the formation of present participles.

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27 Indeed, Pontillo (2003b, 27) explicitly claims that A 1.2.44’s definition of *upasarjana* as an *ekavibhakti* unit is satisfied in *karmadhārayas* like *nava-jvāra*- and *sad-vaidya*- ‘good physician’, too. However, she does not address the puzzle discussed in the present subsection.
In rule A 3.2.124, Pāṇini teaches the formation of present participles. Yet, this rule is of interest for reasons that go beyond present participles. Let us examine its wording:

A 3.2.124: \textit{laṭaḥ śatṛśānacāv aprathamāsamānādhikaraṇe [pratyayah 3.1.1] [paraś ca 3.1.2 dhātoḥ 3.1.91] [varttamāne 3.2.123].}

‘The participial suffix -nt- or -(m)aṇa- is introduced after a verbal base in place of LAṬ when an ongoing verbal action is to be signified and when LAṬ is \textit{samānādhikaraṇa} with a nominal word inflected in a case other than nominative’.

To properly grasp the content of this rule, we need to understand the segment \textit{laṭ-} that here shows up in the genitive (\textit{laṭaḥ}). Following Sharma (1999-2003), I have graphically rendered \textit{laṭ-} in all capitals in my translation of the rule: LAṬ.

LAṬ is, in essence, the placeholder standing for the whole set of finite verbal endings that attach to the present tense-aspect verbal stem: e.g. -\textit{mi}, -\textit{si}, -\textit{ti}, -\textit{mas}, -\textit{tha}, -\textit{nti}, etc. attach to the present tense-aspect verbal stem \textit{naya-} (from the first-class verbal base \textit{nī- ‘to lead’}) to yield the indicative present active forms \textit{nayā-mi}, \textit{naya-si}, \textit{naya-nti}, \textit{nayā-mah}, \textit{naya-tha}, \textit{naya-nti}, etc.\footnote{For the sake of simplicity, I shall not discuss how the present tense-aspect verbal stem \textit{naya-}, which involves the thematic vowel (-\textit{a-}) and the guṇa-grade of \textit{nī-}, is formed from the verbal base \textit{nī-} according to Pāṇini.}

Interestingly, LAṬ is a meaningful unit in the \textit{Aṣṭādhyāyī} – let us consider how. LAṬ is one of the ten abstract affixes, concisely referred to by Pāṇini as LA, which are deputed to convey tense, aspect, and mood (see, e.g. Cardona 1997, 148; Sharma 1999-2003, 646); this means that whatever Pāṇini teaches for LA also holds for LAṬ. Thus, since Pāṇini teaches in A 3.4.69 that LA signifies an agent (\textit{kartṛ}), a patient (\textit{karman}), or an eventuality (\textit{bhāva}),\footnote{A 3.4.69 reads as follows: \textit{laḥ karmani ca bhāve cākarmakebhyaḥ [dhātoḥ 3.1.91] [kartari 3.4.67] ‘Any verbal ending (LA) attaches to a verbal base when: i) an agent or a patient is to be signified; ii. an agent or an eventuality is to be signified, provided an objectless verbal base is used’. On the term ‘eventuality’, which I am using to translate \textit{bhāva-}, see Lowe 2015a, 95 fn. 1.} we automatically understand that LAṬ also signifies an agent, a patient, or an eventuality. In other words, while in accordance with such modern linguistic theories as generative grammar the semantic roles of agent and patient are properties of nominals (more precisely, nominals are ‘assigned’ those roles by the verb), in Pāṇini’s grammar those roles are properties of verbal endings, in the
sense that verbal endings signify the agent or the patient. For instance, given the invented pair of sentences *devadattāḥ senāṁ nayati* ‘Devadatta is leading the army’ (active) and *devadattena senā niyate* ‘The army is led by Devadatta’ (passive), the active verbal ending *-ti* signifies the agent of the action of leading, and the middle-passive verbal ending *-te* signifies the patient of the action of leading from the perspective of the *Aṣṭādhyāyī*; from the perspective of generative grammar, instead, *devadatta*- is assigned the agent role by the active verb *nayati*, and the patient role by the passive verb *niyate*.

Now that we know what LAṬ is, we may proceed with considering the consequences of A 3.2.124, with the help of an invented example:

(11) (Invented example)

<table>
<thead>
<tr>
<th>odanam</th>
<th>pac-LAŢ</th>
<th>devadattam</th>
<th>paśyāmi.</th>
</tr>
</thead>
<tbody>
<tr>
<td>rice.acc.sg.m</td>
<td>cook-LAŢ</td>
<td>Devadatta.acc.sg.m</td>
<td>see.ind.prs.1sg</td>
</tr>
</tbody>
</table>

Intended meaning: ‘I see Devadatta cooking rice’.

In (11), LAŢ signifies the agent of the action of cooking (the action of cooking being signified by *pac*- ‘to cook’). In addition, LAŢ is *samānādhiṇa* with *devadattam* in (11): to wit, LAŢ (more precisely, the verbal endings that LAŢ stands for) cannot refer to a cook (i.e. an agent of the action of cooking) that is not simultaneously the individual whose name is Devadatta (i.e. the entity referred to by *devadattam*) in this sentence.

Now, since LAŢ is *samānādhiṇa* with a nominal word inflected in a case other than nominative (i.e. *devadattam*) in (11), LAŢ cannot be replaced by a finite verbal ending in accordance with A 3.2.124, witness the ill-formedness of (12a). Indeed, A 3.2.124 prescribes that LAŢ of (11) must be replaced by the participial suffix *-nt* or *-(m)āna*-, as in (12b), which is well-formed in Sanskrit (for further details see Cardona 1997, 171-2; Sharma 1999-2003, 427; Lowe 2015a, 331, 334-5).

(12a) (Invented example)

<table>
<thead>
<tr>
<th><em>odanam</em></th>
<th>pacati</th>
<th>devadattam</th>
<th>paśyāmi.</th>
</tr>
</thead>
<tbody>
<tr>
<td>rice.acc.sg.m</td>
<td>cook.ind.prs.3sg</td>
<td>Devadatta.acc.sg.m</td>
<td>see.ind.prs.1sg</td>
</tr>
</tbody>
</table>

For the sake of simplicity, I am disregarding the case in which verbal endings signify an eventuality.

The question then arises as to what the nominative-marked word (e.g. *devadattaḥ* and *senā*) signifies in the system of the *Aṣṭādhyāyī*. The answer to this question is contained in A 2.3.46, for which see Mocci, Pontillo 2020. On the codification of semantic roles in generative grammar, see Hale, Keyser 2002.
To be noted that we cannot know that LAṬ of (11) is to be replaced by -nt- (12b) rather than by -ti (12a), unless we first know that devadatt- is inflected in the accusative (i.e. in a case other than nominative) in (11). But this means – crucially – that the case ending of devadatta- must be determined before and independently of the replacement of LAṬ by -nt-. Moreover, an accusative ending attaches to devadatta- as well as to pacat- in (12b). Crucially, however, pacat- does not yet exist before the replacement of LAṬ by -nt- takes place in pac-LAṬ (11). Therefore, the replacement of LAṬ by -nt- in pac-LAṬ logically precedes the assignment of the accusative ending to pacat.-

4.2 An Instance of Case-Copying in the Aṣṭādhyāyī

Let us now combine the two conclusions reached at the end of the previous subsection, namely: i) that the attachment of an accusative ending to devadatta- precedes the replacement of LAṬ by -nt- in pac-LAṬ; ii) that the replacement of LAṬ by -nt- in pac-LAṬ precedes the assignment of an accusative ending to pacat-. By transitivity, it follows from (i)-(ii) that the assignment of the accusative ending to devadatta- precedes the assignment of the accusative ending to pacat-. The picture emerging from A 3.2.124 and (11)-(12) is then the following: in the derivation that eventually leads to (12b), there is a stage at which devadatta- is inflected in the accusative (devadattam), whereas pacat- lacks a case ending. Put another way, the derivational stage at which devadatta- takes on accusative case (call it S1) does not coincide with the derivational stage at which pacat- takes on accusative case (pacantam) – call it S2 – insofar as S1 necessarily precedes
S₂. For concreteness, we may equate S₁ and S₂ with (13) and (12b), respectively:

(13) (Invented example)

```
odanam pacat-? devadattam paśyāmi.
rice.ACC.SG.M cook.PTCP.PRS.? Devadatta.ACC.SG.M see.IND.PRS.1SG
```

Intended meaning: ‘I see Devadatta cooking rice’.

The question now arises as to how the existence of these two different derivational stages (i.e. S₁ and S₂) interacts with the rules for case assignment. Specifically, I am interested in the following question: does the rule governing the assignment of accusative case to devadatta- at S₁ (see (13)) also govern the assignment of accusative case to pacat- at S₂ (see (12b))? To answer the latter question, let us consider A 2.3.2:

A 2.3.2: karmaṇi dvitīyā [anabhihite 2.3.1].
‘An accusative case ending [attaches to a nominal stem] in order to signify a patient (karman), provided that the patient is not otherwise signified’.

In accordance with this rule, the accusative case ending -m attaches to, e.g., devadatta- in (13) in order to signify that devadatta- ‘Devadatta’ is the patient of the action of seeing (the action of seeing being denoted by the verbal base paś-). This rule also features the segment anabhihite.

anabhihite is in essence a constraint that whatever is signified by a nominal ending be only signified once (Cardona 1997, 155; Kiparisky 2009, 50): in the specific context of A 2.3.2, an accusative ending cannot attach to a nominal stem to signify the patient of a certain action if that patient has already been signified. Thus, if the patient of the action of seeing has already been signified by the accusative ending attached to devadatta- in (13), the accusative ending cannot attach to pacat- ‘the one who cooks’ to signify the patient of the action of seeing, lest the anabhihite constraint be violated. Analogously, if the accusative ending attaches to pacat- in (13) (thereby yielding pacantam) in order to signify the fact that pacat- is the patient of the action of seeing, the accusative ending cannot attach to devadatta- in (13) in order to signify the patient of the action of seeing, lest the anabhihite be violated.

Therefore, when two accusative endings apply to two nominal stems to signify the patient of one and the same action, only the first assignment of the accusative ending can be governed by A 2.3.2; the second assignment of the accusative ending will necessarily violate the anabhihite constraint. But we have already seen that the
assignment of the accusative ending to *devadatta*-, which takes place at derivational stage $S_1$, logically precedes the assignment of the accusative ending to *pacat*-, which instead takes place at derivational stage $S_2$. Accordingly, only the assignment of the accusative ending to *devadatta*-, illustrated in (13) ($= S_1$), can be governed by A 2.3.2: if the assignment of the accusative ending to *pacat*-, illustrated in (12b) ($= S_2$), were governed by A 2.3.2, the *anabhihite* constraint would be violated. How can we account, then, for the assignment of the accusative ending to *pacat*- in (12b)? To the best of my knowledge, there is no rule, in the whole *Aṣṭādhyāyī*, that governs the assignment of the accusative ending to *pacat*- in (12b) (see also Joshi 2015, 350). For this reason, I assume that there must be an implicit mechanism that takes care of the accusative case of *pacat*- in (12b). I suggest that such an implicit mechanism has to do with the *sāmānādhikarana* relation.  

As we know from A 3.2.124, the participial stem *pacat*-, which features in (12b)-(13), is formed by substituting the participial suffix *-nt-* for LAṬ in *pac-LAṬ*. Now, A 1.1.56 provides that the substitutes of a linguistic unit U trigger the same rules as U (provided that the rules in question do not mention sounds); put another way, the substitutes of U are viewed as if they were U by the rules. Thus, the participial suffix *-nt-* which replaces LAṬ is viewed by A 3.2.124 as if it were LAṬ. This means that, when A 3.2.124 enjoins the constraint that LAṬ be *sāmānādhikaranā* with *devadattam* in (11), this constraint is inherited, as it were, by *-nt-* (i.e. the substitute of LAṬ), which is thus also required to be *sāmānādhikarana* with *devadattam*. Therefore, *-nt-* has to be taken as *sāmānādhikarana* with *devadattam* in (12b)-(13), just like LAṬ in (11) (see Sharma 1999-2003, 428). Simplifying somewhat, I shall say in what follows that the present participle *pacat*- of (12b)-(13) is *sāmānādhihikarana* with *devadattam*, although it would be more precise to say that suffix *-nt-* which is involved in *pacat*- signifies the agent of the action of cooking, is *sāmānādhihikarana* with the accusative-marked word *devadattam*, which signifies the patient of the action of seeing.

Building on the systematic correlation between the *sāmānādhihikarana* relation and case-sharing (i.e. the fact that two units share the same case) in Sanskrit, I would like to suggest that

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34 The suggestion is not new, as it was already proposed by Patañjali (2nd century B.C.) in M 1.442.5 ad A 2.3.1 (see Joshi 2015, 349-51 for discussion). *sāmānādhihikarana* is an abstract noun – derived from the adjective *sāmānādhihikarana* – denoting the relation between two units that are *sāmānādhihikarana* with one another.

35 A 1.1.56 reads *sthānivad ādeśo ‘nalvidhau* ‘The substitute is as if it were the placeholder, except in respect to a provision mentioning a sound [of the placeholder]’. For a recent overview of Pāṇini’s substitution framework, see Candotti, Pontillo 2021 and the references cited therein.
the assignment of accusative case to pacat- in (12b) is indeed the result of pacat- copying the accusative case of devadatta- (i.e. of the unit with which pacat- is samānādhikarana). That is, at stage S₁ – i.e. the stage, represented in (13), at which an accusative ending attaches to devadatta- (thereby returning devadattam) to express the patient of the action of seeing in compliance with A 2.3.2 – pacat- lacks a case ending, but is samānādhikarana with devadattam; at stage S₂ – i.e. the stage represented in (12b) – pacat- copies the accusative case attached to devadattam, thereby showing up as pacantam.³⁶

4.3 Case-Copying in karmadhārayas

Let us consider again the problematic sentence pair in (10a-b), repeated below as (14a-b). nava- and jvāra- are endowed with a silent accusative ending in (14b) and are thus represented as nava-Øacc and jvāra-Øacc, respectively.

(14a) (Adapted from ṚV 1.42.8ab)

\[
\begin{array}{ccc}
\text{nava-} & \text{jvāra-} & \text{adhvane.} \\
\text{new.NOM.SG.M} & \text{suffering.NOM.SG.M} & \text{road.DAT.SG.M}
\end{array}
\]

‘New suffering is on the road’.

(14b) (Invented example)

\[
\begin{array}{ccc}
\text{nava-} & \text{jvāra-} & \text{paśyāmi.} \\
\text{new.ACC.SG.M} & \text{suffering.ACC.SG.M} & \text{see.IND.PRS.1SG}
\end{array}
\]

‘I see new suffering’.

Now, if the assignment of accusative case to jvāra- is governed by A 2.3.2 in (14b), the assignment of accusative case to nava- cannot be similarly governed by A 2.3.2 in (14b), lest the anabhihite constraint be violated (see § 4.2 above). In other words, when an overt accusative ending – to be subsequently replaced by a silent accusative ending – attaches to jvāra- in order to signify the fact that suffering (jvāra-) serves as the patient of the action of seeing, the following result is automatically effected: that no accusative ending can attach to nava- in order to signify the fact that some new entity (nava-) serves as the patient of the selfsame action of seeing. Analogously, if the assignment of accusative case to nava- is governed by A 2.3.2

³⁶ The operation of case-copying has been formalised in contemporary linguistics. For example, such an operation is used in the framework of generative grammar to explain the fact that subject and predicate share the same case (Moro 1997, 41-2).
in (14b), the assignment of accusative case to jvāra- cannot be governed by A 2.3.2 in this very same sentence, lest the anabhihite constraint be violated.

In order to avoid violating the anabhihite constraint in (14b), I submit that only the assignment of accusative case to jvāra- is governed by A 2.3.2, the assignment of accusative case to nava- being dealt with via the operation of case-copying. Specifically, I assume that the derivation of (14b) involves two stages - $S_1$ and $S_2$ - much like the derivation of (12b) (see § 4.2 above): at stage $S_1$, represented in (15), an accusative ending attaches to jvāra- (returning jvāra-Ø acc via the zero-replacement of the case ending) to express the patient of the action of seeing in compliance with A 2.3.2, while nava- lacks a case ending, but is samānādhikaraṇa with jvāra-Ø acc. At stage $S_2$, which coincides with (14b), the sāmānādhikaraṇya relation holding between nava- and jvāra-Ø acc allows nava- to copy the accusative ending attached to jvāra-Ø acc, so that nava- becomes nava-Ø acc.

(15) (Invented example)

\[
\begin{array}{ccc}
\text{nava-} & \text{jvāra-Ø acc} & \text{paśyāmi}.\\
\text{new.} & \text{suffering,ACC.SG.M} & \text{see.IND.PRS.1SG}
\end{array}
\]

Intended meaning: ‘I see new suffering’.

Note that the assumption that the derivation of (14a-b) involves a case-copying operation at derivational stage $S_1$ is not ad hoc, insofar as it is independently needed to account for the case-marking of present participles, as discussed in § 4.2 above in connection with A 3.2.124. We shall see in the next subsection that this asymmetry between jvāra- (= jvāra-Ø acc) and nava- (= nava-Ø acc) in (14), whereby nava- copies the case ending of jvāra- but not vice versa, is the key to the problem of the purported contradiction between A 2.1.49, which requires in conjunction with A 1.2.43 that nava- be upasarjana, and A 1.2.44, which defines the upasarjana as the ekavibhakti unit.

4.4 Uncovering the ekavibhakti Unit in karmadhārayas

I would like to entertain the hypothesis that ekavibhakti of A 1.2.44 does not simply mean ‘having one case ending’ in the sense of ‘having an unchangeable case ending’. Rather, ekavibhakti of A 1.2.44 means ‘having one case ending with respect to certain units $Z$’ in the sense of ‘having the same case ending as certain units $Z$’, somewhat like eka-rūpa- (lit. ‘one-colour’) as occurring in āranyāḥ paśava ekarūpāḥ (JB 1.89.16), which translates as ‘the forest animals are of one colour with respect to one another’ (see Bodewitz 1973), but also as ‘the forest animals are of the same colour as one another’. Now,
crucially, this reading of ekavibhakti as ‘having one case ending with respect to (i.e. having the same case ending as) certain units Z’ is ambiguous, insofar as it contains a variable, namely Z. I submit that Z may range: i) over the units that are said to be ekavibhakti; as well as ii) over units other than those that are said to be ekavibhakti. Let us see some examples.

aśva- (= aśva-Øgen) ‘horse’ is ekavibhakti in aśva-śapha- (= aśva-Øgen śapha-Ø) ‘horse’s hoof’ insofar as aśva-, as occurring, e.g., in sentence (6a), has one case ending with respect to (i.e. has the same case ending as) the token of aśva- in another sentence (6b): see § 3.2 above. On the other hand, nava- (= nava-Ø) is ekavibhakti in nava-jvāra- (= nava-Ø jvāra-Ø) not because nava-, as occurring, e.g. in sentence (14b), has one case ending with respect to (i.e. has the same case ending as) the token of nava- in another sentence, say (14a): in fact, the case ending of nava- in (14a) (i.e. nava-Ønom) differs from the case ending of nava- in (14b) (i.e. nava-Øacc). Rather, nava- is ekavibhakti in nava-jvāra- merely because nava- has one case ending with respect to (i.e. has the same case ending as) jvāra- in (14b), precisely in the sense that nava-, which lacks a case ending in (15) (i.e. nava-?), copies its case ending from jvāra- (= jvāra-Øacc) in (14b), thereby showing up as nava-Øacc.

Indeed, the idea that ekavibhakti means ‘having the same case ending as certain units Z’ is compatible with Pāṇini’s usus scribendi. There are only two occurrences of the term ekavibhakti- in the Aṣṭādhyāyī: besides A 1.2.44, ekavibhakti- also recurs in A 1.2.64, the rule introducing the so-called ekaśeṣa device (sarūpāṇām ekaśeṣa ekavibhaktau). Borghero and Pontillo (2020, 69) take ekavibhaktau here as a right-hand-context locative conveying the meaning ‘before a single nominal ending’, and translate the whole rule as follows: “In the place of constituents having the same form (sarūpāṇām), only one remains (ekaśeṣa) before a single nominal ending (ekavibhaktau)” (69). However, following Böhtlingk (1887, 19), we could also read ekavibhaktau as a locative of condition conveying the meaning ‘provided that one case ending with respect to (i.e. the same case ending as) other units is used’: that is, ‘provided that the same case ending attaches to the nominal inflected words which have the same form’. If this alternative reading of ekavibhaktau is adopted, A 1.2.64 translates as follows: ‘In the place of nominal inflected words having the same form, only one remains (ekaśeṣa) before a single nominal ending (ekavibhaktau)’ – to wit, ekavibhaktau would prevent us from deriving such forms as vrkṣau ‘two trees’ from the coordination phrase in (16a), where the two tokens of vrkṣa- have different case endings (nominative and accusative), and would instead force us to derive vrkṣau from the coordination phrase in (16b), where the two tokens of vrkṣa- have the same case ending (nominative). Thus, the occurrence of
ekavibhakti- in A 1.2.64 is perfectly compatible with a reading of ekavibhakti- in A 1.2.44 as ‘having the same case ending’.37

(16a) (Invented example)

\[
\begin{array}{c@{\quad}c}
\text{vṛksaś ca} & \text{vṛksaṃ ca} \\
\text{tree.NOM.SG.M} & \text{tree.ACC.SG.M}
\end{array}
\]

(16b) (Invented example, based on Cardona 1997, 260)

\[
\begin{array}{c@{\quad}c}
\text{vṛksaś ca} & \text{vṛksaś ca} \\
\text{tree.NOM.SG.M} & \text{tree.NOM.SG.M}
\end{array}
\]

‘The tree and the tree’.

Thus, I hypothesise that nava- is an ekavibhakti unit in nava-jvāra- in the sense that nava- ‘has one case ending with respect to’ (ekavibhakti), i.e. has the same case ending as, another nominal inflected word: in the example reported in (14), nava- has the same case ending as jvāra- = jvāra-Øacc. Note that, for this hypothesis to be tenable, the notion of ekavibhakti (in the sense of ‘having the same case ending [as another nominal inflected word]’) has to be relativised to (15), i.e. to a derivational stage at which nava- is non-case-marked whereas jvāra- is case-marked. Indeed, if the condition of being ekavibhakti in the sense of ‘having the same case ending [as another nominal inflected word]’ had to be satisfied at the derivational stage at which both nava- and jvāra- are case-marked (see (14a-b)), it would be impossible to determine which of the following two possibilities is correct: that nava- has the same case as jvāra-; or that jvāra- has the same case as nava- – to wit, it would be impossible to understand which, between nava- and jvāra-, should be considered as ekavibhakti. Indeed, it is only when the condition of being ekavibhakti is relativised to (15) (i.e. is constrained to be satisfied at the derivational level where only jvāra- is case-marked) that it is possible to consider nava- as having the same case as jvāra-, and hence to consider nava- as an ekavibhakti unit: jvāra- could not be said to have the same case ending as nava- in (15), insofar as the case ending of jvāra- (= jvāra-Øacc) is already determined in (15) (by A 2.3.2), while the case

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37 For a detailed analysis of A 1.2.64 and discussion of its interpretation, see Borghero, Pontillo 2020 and the references cited therein. It may be worth noting that there are Vedic occurrences in which eka-, i.e. the left-hand member of ekavibhakti-, conveys the meaning ‘the same (as another thing)’ outside compounding. See for instance RV 9.21.3: \‘vṛthā krīḷanta indavaḥ/ sadhāstham abhī ekam iti/ sindhor ūrmā vi aksaran/’ “Moving playfully at will toward one and the same seat, the drops have flowed in various ways into the swell of the River” (transl. Jamison, Brereton 2014). Here sadhāstham abhī ekam conveys the meaning toward ‘the same seat as the one toward which any drop moves’.
ending of \( \text{nava} \) (\( \text{= nava-?} \)) is not.

The question now arises as to why Pāṇini should have taken \( S_1 \) (i.e. the derivational stage at which only one of the two units between which a \( \text{sāmānādhikaranya} \) relation holds is case-marked) to be (15), where \( \text{jvāra-} \) is assigned accusative case in accordance with A 2.3.2 and \( \text{nava-} \) lacks a case ending, rather than (17), where it is instead \( \text{nava-} \) that is assigned accusative case in accordance with A 2.3.2, \( \text{jvāra-} \) lacking instead a case ending.

\[
(17) \text{(Invented example)} \\
\text{nava-Ø} \quad \text{acc} \quad \text{jvāra-?} \quad \text{paśyāmi}.
\]

\text{Intended meaning: ’I see new suffering’.

I reckon that there is no logical reason as to why (17) should be preferred over (15). I speculate that, for Pāṇini, the case-marking of \( \text{jvāra-} \) (and not of \( \text{nava-} \)) in accordance with A 2.3.2 was merely a grammatical fact, which cannot be traced back to any independent principle of grammar and therefore has merely to be recorded in the grammar.

Thus, \( \text{nava-} \) satisfies the condition of being \( \text{ekavibhakti} \) in \( \text{nava-jvāra-} \) under the hypothesis that \( \text{ekavibhakti} \) conveys the meaning ’having the same case ending as certain units \( Z \)’ in A 1.2.44, where \( Z \) may refer to \( \text{jvāra-} \), i.e. to a unit other than the one that is said to be \( \text{ekavibhakti} \) (i.e. \( \text{nava-} \)).

4.5 Summary

In this section I have advanced a fresh reading of the \( \text{ekavibhakti} \) segment featuring in A 1.2.44, whereby this segment is ambiguous, in the sense that it involves a variable ranging over different kinds of objects. Specifically, \( \text{ekavibhakti} \) conveys the meaning ‘having one case ending with respect to, that is the same case ending as, certain units \( Z \)’, where variable \( Z \) may stand for units that are said to be \( \text{ekavibhakti} \), or for units other than those that are said to be \( \text{ekavibhakti} \). In this way, what counts as \( \text{ekavibhakti} \) is not only the unit (say, \( \text{aśva-} \)) that has the same case ending as the other tokens of that unit (\( \text{aśva-} \)) across different sentences (see (6)), but also the unit (say, \( \text{nava-} \)) that has the same case ending as another unit (\( \text{jvāra-} \)) even in one single sentence (see (14b)). It is the latter possibility that is relevant in determining which compound-member satisfies the condition of being \( \text{ekavibhakti} \) in \( \text{karmadhārayas} \) like \( \text{nava-jvāra-} \). Moreover, I have argued that the condition of being \( \text{ekavibhakti} \) should be relativised to (i.e. should be satisfied at) derivational stage \( S_1 \), namely to
a derivational stage where only one of the two units between which a sāmāndhikaranāya relation holds is case-marked. In the specific context of nava-jvāra-, S₁ corresponds to a sentence in which nava- lacks a case ending whereas jvāra- is assigned case in accordance with a rule of the A 2.3: for instance, in (15), jvāra- is assigned accusative case by A 2.3.2 (i.e. jvāra-Øacc) whereas nava- is non-case-marked.

I have shown that the rule governing present participles (i.e. A 3.2.124) justifies the existence of the case-copying operation – which applies at S₁ – in the Aṣṭādhyāyī. Exploiting this operation, I have then suggested that nava- (= nava-?) copies the case attached to jvāra- (= jvāra-Øacc) in (15). In this way, there is a very precise sense in which nava- satisfies the condition of being ekavibhakti in (15): nava- has the same case as jvāra- (i.e. is ekavibhakti with respect to jvāra-) insofar as nava- (= nava-?) copies the case attached to jvāra- (= jvāra-Øacc) in (15), thereby showing up as nava-Øacc.

Since the upasarjana is defined as the ekavibhakti unit in A 1.2.44, nava- can now be considered as the upasarjana of nava-jvāra- in accordance with A 1.2.44. Thus, the ambiguity of ekavibhakti makes it possible to reconcile A 2.1.49 (considered in conjunction with A 1.2.43), which singles out nava- as the upasarjana of nava-jvāra-, with A 1.2.44, thereby resolving the apparent contradiction between these rules. The definition of upasarjana as the ekavibhakti unit (A 1.2.44) can now be seen to hold in both tatpurusas like aśva-śapha- and karmadhārayas like nava-jvāra-, and possibly in any other compound type: the upasarjana is the ekavibhakti unit, i.e. the unit that has the same case ending as other tokens of that unit across different sentences (as in tatpurusas), or the unit that has the same case ending as another unit even in one single sentence (as in karmadhārayas).

From a contemporary perspective, one way of seeing the upasarjana is as the unit U such that the case ending of U is determined not by the grammatical function that the NP to which U belongs fulfils within the sentence, but by the grammatical function that U fulfils within that NP: e.g. the case ending of aśva- (= aśva-Øgen) in aśva-śapha- is determined by the grammatical function of possessor fulfilled by aśva- within the NP aśva-Øgen śapha-Ø; the case ending of nava- (= nava-Øacc) in nava-jvāra- is determined – via the operation of case-copying – by the sāmāndhikaranāya relation that nava- bears to jvāra- within the NP nava-Øacc jvāra-Ø (see Pontillo 2003b, 27).
5 Conclusion

In this study, I have addressed a puzzle posed by Pāṇini’s analysis of karmadhāraya compounds like nava-jvāra:- while A 2.1.49 – considered in conjunction with A 1.2.43 – provides for nava- to be designated as upasarjana in nava-jvāra-, A 1.2.44 seems to suggest that neither nava- nor jvāra- gets the designation upasarjana in nava-jvāra-. Specifically, A 1.2.44 defines the upasarjana as the ekavibhakti unit, i.e. in the light of work by Candotti and Pontillo (see, among others, Pontillo 2003b; Candotti, Pontillo 2019), as the unit U such that the case ending of U does not change when the grammatical function of the NP which U belongs to changes. And yet, both the case ending of nava- (e.g. nava-Øacc) and the case ending of jvāra- (e.g. jvāra-Øacc) change when the grammatical function of the NP which these units belong to (i.e. nava-Øjvāra-Øx) changes. Therefore, nava- cannot qualify as ekavibhakti in nava-jvāra-, and hence cannot qualify as upasarjana either, in apparent contradiction with 2.1.49.

I have argued that ekavibhakti is ambiguous, in the sense that it conveys the meaning ‘having one (eka-) case ending (vibhakti-) with respect to – i.e. the same case ending as – another unit Z’, where Z is a variable ranging over different kinds of objects. This makes it possible to consider nava- as ekavibhakti in nava-jvāra-, in that nava- has the same case as – i.e. copies the case ending of – jvāra- in the derivation of this compound; I have provided evidence from A 3.2.124 (i.e. the rule governing present participles) in favour of the existence of the operation of case-copying in Pāṇini’s grammar. Insofar as the upasarjana is defined as the ekavibhakti unit by A 1.2.44, nava- gets the designation upasarjana in nava-jvāra- in accordance with A 1.2.44. In this way, the contradiction between A 1.2.44 and 2.1.49 (considered in conjunction with A 1.2.43) dissolves: A 2.1.49 and 1.2.44 can now be seen to converge in designating nava- as the upasarjana of nava-jvāra-.

The sketch of Pāṇini’s classification of compounds presented here is short, partial, and incomplete, focusing in fact on subordinate endocentric compounds (tatpuruṣas proper) and attributive endocentric compounds (karmadhārayas) only. Nonetheless, I hope that this sketch suffices to show that Pāṇini’s classification of compounds cannot be considered as a purely semantic classification, as has instead been claimed by contemporary scholars of compounding (see, e.g., Tribulato 2015, 53 and Bauer 2017, 107-12): one of the defining features of tatpurusas and karmadhārayas is the fact that they contain exactly one upasarjana; since the upasarjana is defined on purely syntactic (or morpho-syntactic) grounds, along the lines suggested in § 4, the classification of a compound as tatpuruṣa or karmadhāraya must be considered, at least in part, as syntactic. This is not to deny the role of semantics in Pāṇini’s classification of compounds: the fundamental
difference between tatpuruṣas (proper) and karmadhārayas is the fact that the sāmānādhikaranya relation – i.e. a semantic relation – holds between the members of a karmadhāraya, but not between the members of a tatpuruṣa.

Thus, Pāṇini’s model of compounding appears to be more complicated than has been thought before, involving both syntactic (= upasarjana-based) and semantic criteria of classification, as well as powerful grammatical tools such as silent case endings, abstract derivational levels, and the case-copying operation.

Abbreviations

1 first person
2 second person
3 third person
AP adjectival phrase
ACC accusative
ABL ablativе
CAUS causative
DAT dative
DU dual
F feminine
GEN genitive
IMPF imperfect
IND indicative
LOC locative
M masculine
N neuter
NOM nominative
NP noun phrase
PL plural
PRS present
PTCP participle
SG singular
Bibliography

Primary Literature


Secondary literature


Davide Mocci

Pāṇini and the Non-Head (upasarjana) of Attributive Endocentric Compounds


