

When grammaticalization does NOT occur

Prosody-syntax mismatches in Indo-Aryan

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Recent decades have seen a surge of interest in grammaticalization. In this paper, however, we are not concerned with reaching a better understanding of the nature of grammaticalization phenomena or their triggering factors, but we ask under what circumstances grammaticalization does not take place, even if it would have seemed likely to – a topic that has scarcely been addressed in the literature. Based on a comparative investigation of the historical development of a class of Indo-European spatial adverbs, we argue that mismatches between layers of linguistic structure present one type of situation in which grammaticalization may be blocked. For grammaticalization to occur, the outer semantic-syntactic boundaries of the potentially grammaticalizing construction must be matched by prosodic boundaries. If prosodic chunking is shifted in relation to semantic-syntactic chunking, grammaticalization may be prevented.

Keywords: grammaticalization, prosodic phrasing, Indo-Aryan, Indo-European, local particles, adverbs, adpositions

1. Introduction

Grammaticalization has been the focus of intense research in the last few decades. Instead of adding to the number of studies devoted to the empirical and theoretical exploration of grammaticalization, however, we would like to draw attention in this paper to circumstances where grammaticalization does NOT occur, even if it would have seemed likely to, given comparative evidence from related languages. Specifically, we argue that the outer boundaries of a syntactic (or, more precisely, semantic-syntactic) construction must align with prosodic boundaries for that construction to enter into a grammaticalization process. If these levels of linguistic structure do not align, grammaticalization will not occur.

In this paper, we investigate historical changes undergone by the so-called local particles, a sub-class of spatial adverbs, which are found in all branches of the Indo-European family (henceforth IE). In the majority of the branches (e.g., Celtic, Germanic, Romance, Greek, Iranian), local particles developed into adpositions and/or preverbs (e.g., Modern German *auf* “on” in *auf dem Pferd* “on the horse” and in *aufsteigen* “to climb up/mount”).¹ In one branch, by contrast, namely in Indo-Aryan, they did not survive as adpositions at all. Instead, local particles gradually disappear in the course of Old Indo-Aryan in functions foreshadowing adpositional usage, and only survive as preverbs. This paper tests the hypothesis tentatively put forward in Reinöhl (2016a: 80–83) that the non-grammaticalization of the IE local particles into adpositions in Indo-Aryan may be linked to a mismatch between the syntactic and prosodic boundaries of certain constructions in which local particles were used during the early Old Indic period. This mismatch is not found in other IE branches in this way, where local particles were accordingly not impeded from grammaticalizing into adpositions.

How are we to investigate the non-occurrence of a linguistic change, such as the non-grammaticalization of the Indo-Aryan local particles? Historical data sometimes provides us with the information that a particular change took place in one variety (or varieties), but not in another, albeit closely related, variety. If we find differences between the two (or more) varieties with regard to the linguistic domain in question, we may explore whether these differences might plausibly have played a role in the occurrence vs. non-occurrence of the change. Given that languages are multi-dimensional and open systems, it is of course impossible to prove that a particular variable is the cause for the occurrence or non-occurrence of a particular change. However, it is possible to show that a certain variable creates a situation favourable or disfavourable for a change. What we mean by ‘favourable’ and ‘disfavourable’ is whether a language at a certain stage does or does not possess the necessary preconditions to develop a certain new structure at that point in time.²

In this study, we have the rare opportunity of dealing with historical data that allows for an examination along the lines just sketched. The languages in question, the ancient varieties of IE, are very similar with respect to semantic, positional and other characteristics of the class of local particles. Moreover, several of the languages are richly enough attested to allow for a close and detailed analysis, an empirical

1. On the process in general cf. Baldi (1979), Hewson & Bubenik (2006) and Reinöhl (2016a, 2016b).

2. For instance, a language which only or almost only has verbal pro-clitics and no or hardly any post-clitics would be disfavourable towards the development of suffixed inflections. This does not mean that such a scenario is unthinkable. However, only strong additional factors such as, e.g., heavy language contact would be likely to bring it about.

situation that exceeds by far the attestation of the vast majority of language families, for many of which we have no historical data whatsoever. This empirical situation provides the foundation for our argument that a variable of Vedic Sanskrit, namely a rule of sentence intonation, was a key factor in the non-grammaticalization of the local particles into adpositions, in contrast to other branches of IE where this variable was absent, and the change did occur.

This paper is structured as follows. We begin in §2 by highlighting the important role of the external boundaries of constructions in grammaticalization processes, not only on the levels of semantics and syntax, but also on the prosodic level. In §3, we turn to the local particles and trace their development through the history of Indo-Aryan from the oldest attested text, the Rigveda, to slightly later Vedic prose, and on to Classical Sanskrit and Pali. Only in early Vedic Sanskrit do we see a productive employment of these forms in their various usages, and then a rapid decline in their functional spectrum. By Classical Sanskrit and Pali, local particles almost never occur any more in usages that could have led to adpositional status. We sketch how New Indo-Aryan languages instead developed a new postpositional category which has no connections to the local particles. We complete this section by taking a comparative look at the other IE branches, where local particles did develop into adpositions. In order to understand the non-grammaticalization of local particles into adpositions in Indo-Aryan, we turn to the domain of prosody in §4. After a brief introduction to Vedic word and sentential prosody, we focus on the frequent coalescence of the local particles with finite verbs into prosodic words as governed by rules of sentence intonation. Due to this prosodic coalescence with verbs, we argue that local particles could in many cases not form an integral construction with local case forms, which would have been the necessary pre-condition for grammaticalization into adpositions. We complete our discussion in §5 by exploring the importance of prosodic phrasing for grammaticalization in more general terms, discussing another frequently found phenomenon where prosody-syntax mismatches prevent (the continuation of) grammaticalization.

2. The importance of being a single processing unit

The role of the construction has been highlighted in many studies on grammaticalization in recent decades. Whereas the early literature on grammaticalization focused on the grammaticalizing element (short: ‘gram’), most authors now apply construction-based approaches where, for instance, it is not *go* that grammaticalized into a future marker in English, but *go* embedded in the construction *be _ing to VP* (e.g., Bybee 2003; Himmelmann 1997, 2005; Noël 2007; Traugott & Trousdale 2013).

While construction-based approaches have become the default in the literature, we would like to draw attention to two points that are not usually focused on. The first point relates to how ‘constructions’ are commonly viewed in the literature, being understood as consisting both of a form element and a meaning element. It has been acknowledged that morphology, syntax and phonology (at least) constitute the level of form (cf. Traugott 2015: 53 within a construction grammar framework). When it comes to grammaticalization taking place or not, however, we would like to argue that it is prosody, rather than phonology at large, which is particularly relevant. More particularly, we highlight the importance of an alignment of prosodic structure, on the one hand, and semantic as well as syntactic structure, on the other hand.

The domain in which prosody assumes a key role in allowing or blocking grammaticalization processes together with semantics and morphosyntax – and this is the second point we highlight – are the external constructional boundaries. Grammaticalization processes are typically studied with regard to changes internal to the construction in question. For instance, the majority of the literature on phonological changes focuses on the erosion of phonological substance and the coalescence of segments (e.g., Schiering 2006; Bybee 2006; Wichmann 2011; Haspelmath 2011). Such internal changes presuppose that the construction in question is packaged as a single phonological unit, delimited by specific external boundaries. However, the latter are rarely the focus of attention.

The fact that constructions are demarcated units is highlighted in work by Haiman (1994) and Bybee (2003), who argue that a sequence of words may, through repetition, become packaged as a “single processing unit”:

I will argue for a new definition of grammaticization, one which recognizes the crucial role of repetition in grammaticization, and characterizes it as the process by which a frequently used sequence of words or morphemes becomes automated as a single processing unit. (Bybee 2003: 603)

Such single processing units may then undergo the various internal changes that have so often been described in grammaticalization studies. The present paper seeks to make a contribution to what it takes to constitute a construction or ‘single processing unit’ that actually or potentially undergoes grammaticalization. We argue that semantic, syntactic and prosodic boundaries must align for grammaticalization to occur.

The claim that a construction must form a unit not only semantically and syntactically but also on the level of prosodic structure in order to undergo grammaticalization has previously been made with regard to the development of affixes: “The grammaticization of a function word into an affix presupposes that the function word and its lexical host regularly form a prosodic unit (a prosodic word or

phrase)” (Himmelmann 2014: 933). Here, we are not concerned with such more advanced stages of development, where already grammaticalized elements become affixes, but with the initial change of a content word into a function word. At the end of this paper, however, we briefly look at the phenomenon of ditropic clitics discussed in Himmelmann (2014) and argue that mismatches between prosodic and semantic-syntactic boundaries may impede grammaticalization at various stages of development, both earlier and later.

3. Local particles in Indo-Aryan

Only in Vedic Sanskrit do the local particles (henceforth: LPs) frequently occur as prosodically free morphemes, and not only as bound morphemes as in later stages. When nominally oriented (i.e., modifying local case forms; more on this below), these usages could in principle have led to a development into adpositions. Over the next few sections, we give an overview of the syntax, semantics and frequency of LPs in Indo-Aryan. After an introduction in §3.1, where we define our usages of the terms ‘local particle’, ‘nominal orientation’ and ‘adposition’, we take a detailed look at the history of the Indo-Aryan LPs in §3.2. In §3.3, we give a short overview of the development of LPs in other IE branches, focusing on some crucial differences from the situation in Indo-Aryan.

3.1 Local particles and adpositions

In order to express spatial relations, early IE languages employ a number of different word classes, e.g., verbs of movement or location, deictic pronouns, spatial adjectives, local case forms and spatial adverbs. As already mentioned, LPs form a subgroup of the latter, and in many modern IE languages they survive as adpositions or preverbs or both. In contrast to other spatial adverbs, which are often derived from pronominal or nominal stems, LPs are – at least synchronically – mostly opaque.³ More importantly, while LPs may function as clause-level adverbs, more frequently they are either verbally or nominally ‘oriented’ (following the terminology of Reinöhl 2016a) in that they semantically modify, and syntactically combine with,⁴ a verb or a local case form. On the semantic level, verbal orientation ranges

3. On phonological and morphological properties of LPs in general, cf. Dunkel (1992, 2014) and Casaretto & Schneider (2017).

4. Since we are dealing with a ‘free’ word order language, this relation is to be conceptualized in dependency-syntactic terms. We recognize that the evidence for dependency relations discussed

from compositional meanings (e.g., where the LP specifies the goal-orientation of a movement) to lexicalized LP-verb-combinations with non-compositional meaning. When LPs are nominally oriented, they add a – typically, but not exclusively – spatial meaning to the nominal form, which normally cannot be expressed by case alone (e.g., spatial extension, vertical movement, front-back axis).

The following examples from Homeric Greek show LPs of all three types: clause-level modification, verbal orientation and nominal orientation (more on Greek LPs in §3.3). In (1), Gk. *en* “in(side)” modifies the whole clause:

- (1) clause-level modification:

(*ópseai ...*) *nêas emás, en d'ándras eressémenai*
 see.FUT.2SG ship.ACC.PL.F POSS in(side) PART man.ACC.PL.M row.INF
memaôtas
 think.PTCP.ACC.PL.M
 “(you shall see ...) my ships, and **inside**, men eager to row”
 (Il. 9.361) (example taken from Bortone 2010: 134)

In (2), the combination of LP and verb has undergone lexicalization, clear evidence for verbal orientation (Gk. *apo-dídōmi* “give back” [*lit.* “give away”]):

- (2) verbal orientation:

apò patri philōi dōmenai helikōpida
 from father.DAT.SG.M dear.DAT.SG.M give.INF shining-eyed.ACC.SG.F
koúrēn
 girl.ACC.SG.F
 “**give** the shining-eyed girl **back** to the dear father”
 (Il. 1.98) (example taken from Bortone 2010: 134)

Example (3) shows nominal orientation with *diá* “through” + the genitive *Helládos* “Greece”: without LP, *Helládos* would be a source expression, i.e., “away from Greece”, cf.

- (3) nominal orientation:

pheûgon épeit' apáneuthe di' Helládos
 flee.IMPF.1SG then far through Greece.GEN.SG.F
 “then I fled far away **through Greece**”
 (Il. 9.478) (example taken from Luraghi 2003: 78)

in this paper is primarily semantic (i.e., relating to modification) rather than syntactic. However, other evidence – which is not the focus here – underscores that this semantic evidence is matched by syntactic evidence. For instance, consider cases where local case forms and local particles together share the syntactic role of an adjunct (or even argument).

In (3), since the LP is clearly not optional and the case form of the noun is used outside its normal function (marking possession), *diá* seems to have completed the transition from adverb to adposition. This immediately leads to the question: what is it precisely that distinguishes adpositions from adverbs? The central difference is that adpositions, but not adverbs, require a dependent, juxtaposed nominal expression, the semantic and/or grammatical role of which they mark. The nominal expression often (but not necessarily) cannot occur on its own in the same slot, at least not with the same morphological marking, or in a comparable role. If the noun is case-marked, its case is typically determined by the adposition (while more than one case may be possible). The case form of the noun is often desemantized, and the primary or only semantic contribution is typically provided by the adposition. Homeric Greek *diá* in the example above meets all these criteria.

3.2 The history of the local particles in Indo-Aryan

We now follow the local particles through the periods before they vanish in nominally oriented usages, and then we take a brief look at the New Indo-Aryan state of affairs.

3.2.1 *Rigveda*

In the oldest stage of Indo-Aryan as attested in the *Rigveda*,⁵ LPs cover a broad functional range, comparable to the situation in Homeric Greek outlined above: they function as clause-level modifiers or they modify nouns or verbs.⁶ Another close parallel between both languages is the fact that the orientation of an LP often, but not necessarily, combines with a ‘fitting’ syntactic position. In principle, in the earliest attested IE languages, LPs occur in various positions in the sentence, i.e., they are not fixed to the position next to the modified word. Word order, and especially the question of whether it corresponds to orientation or not, will play an important role in our argument for why the local particles did not grammaticalize into adpositions in Indo-Aryan.

First, a caveat is in order. There are many cases where either word order or orientation – or both – are ambiguous, which we categorize accordingly. By ‘ambiguous’ we mean cases where an LP is in a syntactic position that is connected to

5. The *Rigveda* contains a collection of 1,028 religious hymns ascribed to different families of poets. Due to centuries of oral transmission its precise age remains unknown. According to scholarly *communis opinio*, it was completed around 1,000 BCE.

6. A general overview of LP functions in the *Rigveda* is given in Hettrich et al. (2010 [2004]) and Casaretto & Schneider (2015).

both a local case form and a verb (i.e., typically through adjacency; see below), or ‘ambiguous’ with regard to the question of orientation, i.e., where both nominal and verbal orientation are plausible interpretations. Example (4) shows both positional ambiguity and orientation ambiguity (which may also occur separately). In terms of position, *úpa* stands adjacent to the noun as well as the verb. With regard to orientation, it can be analyzed as modifying either the noun *índram* or the verb *yanti*.⁷ The underlying situation is largely identical, no matter which analysis is chosen (= movement towards a goal; cf. on this in more detail Hettrich et al. 2010 [2004]: 20–21). In the Rigveda, most instances must be analyzed as showing ambiguous orientation, especially regarding LPs denoting a directional meaning (on similarly ambiguous cases in Homeric Greek, cf. Bortone 2010: 134).

- (4) *gíro* *ma* *índram* *úpa* *yanti*
 praise.NOM.PL.M PERS Indra.ACC.SG.M towards go.PRS.3PL
 “My praises go to Indra.” (RV 3,51,2)

We return in §4 to examples such as (4) that defy a straightforward classification on the level of word order and/or on the level of orientation. Focusing now on word order classification, we follow the approach in Hettrich et al. (2010 [2004]: 45); cf. Table 1.

Table 1. Word order types

1a	pre-nominal position
1b	post-nominal position
2a	pre-verbal position
2b	post-verbal position
3	clause-initial position (<i>tmesis</i>) (neither adjacent to noun nor to verb)
4	other position in the sentence (neither adjacent to noun nor to verb)
5a	ambiguous: noun – LP – verb
5b	ambiguous: LP – noun ... verb (LP in clause-initial position)
5c	ambiguous: verb – LP – noun ⁸

7. In this example, *yanti* is unaccented (vs. *yánti*) and cliticized to the preceding LP. We follow the common Sanskritist practice of writing prosodically coalesced combinations of LP and verb as separate words if the verb is enclitic but as a single word if the LP is pro-clitic (as in (7)). In §4 we say more about the distribution of accented and unaccented finite verb forms. In the glosses, we write the translations of LP and verb as separate words in any case.

8. The sub-type 5c was added in later publications of the Würzburg project (e.g., Casaretto 2012 [2011]: 156). It occurs only rarely and plays no relevant role for this paper.

Types 1a and 1b involve LPs standing next to a noun⁹ with which they stand in some kind of direct or indirect semantic relation.¹⁰ Types 2 and 3 are cases where the LP stands next to the verb it modifies, or in clause-initial position.¹¹ Type 4 subsumes cases where the LP is neither adjacent to the noun or to the verb, nor does it stand in clause-initial position. Type 5, finally, involves positionally ambiguous cases in the sense that the LP stands in a position associated both with the respective local case form and the verb (as in (4) above). The following table gives the numbers for the Rigvedic LPs:

Table 2. Word order types of LPs in the Rigveda¹²

	sum	1a	1b	2a	2b	3	4	5a	5b	5c	sum of 1a/b
<i>áčhā</i> “to”	174	25	57	17	16	26	13	11	9	0	50% (82)
<i>áti</i> “over”	199	50	17	49	2	7	15	32	8	19	34% (67)
<i>ádhi</i> “on”	290	93	83	37	0	42 ¹³	22	13	0	0	61% (176)
<i>ánu</i> “after”	507	165	83	99	9	34	29	66	22	0	49% (248)
<i>antár</i> “between”	120	28	44	10	1	4	28	5	0	0	60% (72)
<i>ápa</i> “away”	235	2	1	107	2	80	35	3	4	1	1% (3)
<i>ápi</i> “at, in”	107	14	10	39	4	6	8	17	9	0	22% (24)
<i>abhí</i> “to”	801	165	70	260	11	70	52	99	74	0	29% (235)
<i>áva</i> “down”	243	8	10	133	4	47	12	22	7	0	7% (18)
<i>á</i> “towards”	705	34	27	323	5	126	37	97	56	0	9% (61)
(book II-V)											
<i>úd</i> “up”	312	0	1	162	2	125	3	15	4	0	< 1% (1)
<i>úpa</i> “towards”	425	98	34	126	11	17	13	81	45	0	31% (132)
<i>tiráś</i> “across”	59	33	5	3	2	2	4	0	4	6	64% (38)
<i>ní</i> “down”	665	23	3	468	11	100	9	31	20	0	4% (26)

9. We speak here of ‘noun’ in the singular because of the possibility of discontinuous placement of a multi-word nominal expression. Cases where the LP is adjacent only to one nominal element are also counted as adjacent.

10. ‘Direct’ denotes nominal orientation of the LP, while ‘indirect’ refers to cases where the LP is verbally oriented and as part of the verb complex shows a semantic-syntactic, but indirect, connection with the noun in question. Note that this category automatically excludes clause-level modification.

11. The clause-initial position (*tmesis*) has a special status due to its frequent association with verbal orientation (cf. the Homeric Greek Example (2)), and it is therefore considered by the authors as associated with the verb in the same way as are positions directly adjacent to the verb.

12. Preliminary versions of this table summarizing the results of the Würzburg project on LPs can be found in Reinöhl (2016a, 2016b). In the meantime, the remaining LPs have been analyzed by the Würzburg researchers. The figures stem from the publications listed here: www.phil.uni-wuerzburg.de/fileadmin/04080400/Publikationsliste_Projekt_Lokalpartikeln.pdf

13. Here, 3 and 5b are counted together.

Table 2. (continued)

	sum	1a	1b	2a	2b	3	4	5a	5b	5c	sum of 1a/b
<i>nís</i> “out”	128	6	3	62	3	31	6	13	4	0	7% (9)
<i>parás</i> “away”	42	17	8	5	0	6	6	0	0	0	59% (25)
<i>párá</i> “away”	94	0	1?	62	0	23	1	7	0	0	? (1?)
<i>pári</i> “around”	421	54	58	150	1	44	30	84 ¹⁴	?	0	27% (112)
<i>purás</i> “before”	52	6	3	12	8	1	21	1	0	0	17% (9)
<i>purá</i> “formerly”	59	12	1	0	0	0	46	0	0	0	22% (13)
<i>prá</i> “forwards”	1372	54	14	579	0	466	156	34	69	0	5% (68)
<i>práti</i> “against”	264	52	9	91	2	32	32	25	21	0	23% (61)
<i>ví</i> “apart”	1049	15	5	624	41	179	94	73	13	5	2% (20)
<i>sácā</i> “with”	82	11	32 ¹⁵	6	7	4	15	4	3	0	52% (43)
<i>sám</i> “together”	689	8	3	390	19	161	19	41	42	6	2% (11)
<i>sahá</i> “with”	55	13	22 ¹⁶	3	3	2	6	2	1	3	64% (35)
<i>sākām</i> “with”	56	7 ¹⁷	1	15	6	15	9	0	3	0	14% (8)
<i>s(u)mát</i> “with”	18	4	1	0	4	5	1	0	3	0	28% (5)

In addition to the five word order types and their sub-categories given in Table 1, we added a column for the percentages of adjacency with a noun (i.e., 1a and 1b). The percentages range mostly from 1% to 30%, and only with 7 LPs reach or exceed half of the cases, showing that we are far away from a typical ‘adpositional syntax’. Instead, these numbers illustrate the great range of syntagmatic positions we find. If anything, there is a preference for the position adjacent to the verb, in particular pre-verbal position (type 2a).

Turning to how position relates to orientation, we see that clause-level modification shows great positional variation, while nominal and verbal orientation both co-occur predominantly with adjacency (or clause-initial position in the case of verbal orientation). This expected correlation of orientation and position is illustrated below with two examples. In (5), nominal orientation correlates with word order type 1a. If the LP *ví* were omitted in this sentence, the meaning would be “run to the fleecy filter” (accusative of goal). Instead, the LP modifies the case meaning insofar as the movement now extends over or through the area, without specified

14. Here, 5a and 5b are counted together.

15. Included are two ambiguous instances which might be counted as either 1a or 1b, an ambiguity that arises because we are dealing with complex, ‘discontinuous’ nominal expressions.

16. Cf. the preceding footnote.

17. Cf. the preceding footnote.

goal (accusative of extension).¹⁸ Example (6) shows verbal orientation correlating with word order type 2a: here, the LP *áva* and the verb *sā* show a lexicalized usage, roughly reversing the meaning of the simplex verb, “bind”, i.e., *áva sā* “loosen, release” [*lit.* “bind down”].¹⁹

- (5) nominal orientation – word order type 1a

*sá na ūrjé vy ávyáyaṃ*²⁰
 PART PERS nourishment.DAT.SG.F through of_sheep.ACC.SG.N
pavitraṃ dhāva
 filter.ACC.SG.N run.IMP.2SG
 “for our nourishment run through the fleecy filter”

(Jamison & Brereton 2014) (RV 9,49,4)

- (6) verbal orientation – word order type 2a

áva syataṃ muñcātaṃ ... kṛtām
 down bind.IMP.2DU release.IMP.2DU do.PTCP.ACC.SG.N
éno asmát
 sin.ACC.SG.N PERS

“Relieve, release from us the sin committed!”

(RV 6,74,3)

This kind of correlation of semantic orientation and word order type occurs very often in the Rigveda; for fully lexicalized LP-verb combinations, types 2a and 3 (clause-initial position) are attested almost exclusively. However, there are a number of exceptions, mostly with nominal orientation, which show that orientation does not necessarily correspond to position. In (7), the LP *ánu* modifies the case semantics of *prthvīm* “earth” by specifying the accusative as an accusative of extension, although the LP immediately precedes the verb. Example (8), on the other hand,

18. The unmarked meaning of the Vedic accusative, especially after verbs of motion, is that of goal. Only in very rare instances and almost exclusively after verbs of motion, depending on the context and the semantics of the noun, an accusative of extension is expressed by case alone. Apart from that, the combination with an LP (e.g., *ánu* “along, behind”, *vī* “asunder, through”) is necessary in order to mark the case form as an accusative of extension (cf. Hettrich 1991: 50–52; Casaretto & Schneider 2015: 234–237). Note that it is conceivable that the verb meaning also undergoes some modification. Whether or not this is the case in some or all examples of this type – and it seems likely that this issue cannot be decided with certainty – the crucial point for our argument is that the local case form is modified, e.g., from an accusative of goal to an accusative of extension (as opposed to cases such as (4) above, where the local case meaning of goal is not modified).

19. In some cases, the LP-verb-combination occurs in the literal as well as the lexicalized meaning (cf. the examples in Hettrich et al. (2010 [2004]: 32).

20. Sandhi accent for *vī avyáyaṃ*.

shows verbal orientation: *pári vṛj* “avoid someone” [*lit.* “move around someone”], but here, LP and verb are non-adjacent.

- (7) nominal orientation – word order type 2a
yát ... anuyáti pṛthvím
 when along go.PRS.3SG earth.ACC.SG.F
 “when ... he goes **along the earth**.” (RV 6,12,5)
- (8) verbal orientation – word order type 1b
mā naḥ sétuḥ siṣed ayám
 NEG PERS fetter.NOM.SG.M bind.PRS.INJ.3SG DEM.NOM.SG.M
mahé vṛṇaktu nas²¹ pári
 big.DAT.SG.M turn.IMP.3SG PERS around
 “Let this fetter here not bind us; **let it avoid** us for our great (good fortune?)”
 (Jamison & Brereton 2014) (RV 8,67,8)

Apart from such exceptions, LPs which are unambiguously nominally or verbally oriented clearly prefer the position adjacent to the modified element. As such, one would have thought that Vedic LPs could have quite easily developed into adpositions. In order to shed more light on the non-grammaticalization of the LPs, we now take a closer look at such cases where it seems that individual LPs have progressed at least somewhat closer towards adpositional status.

How may an adverb develop into an adposition? The starting point is semantic and can be seen in the typical behaviour of LPs of disambiguating case meanings as in (5) and (7) above. The following two examples are among the rare instances in the Rigveda where the LP does not only modify the semantics of the local case form, but desemanticizes the original meaning of the case in a non-compositional manner.

- (9) *ví* + instrumental
ná ma indreṇa sakhyám ví
 NEG PERS Indra.INS.SG.M friendship.ACC.SG.N apart
yoṣat
 keep_away.AOR.SUBJ.3SG
 “No one will keep my companionship **away from Indra**.”
 (Jamison & Brereton 2014) (RV 2,18,8)

21. Ved. *nas* “us” is an enclitic pronoun, a pronominal category whose members may also appear in the Wackernagel position. Because of this certain degree of positional freedom, we consider this form to be syntactically independent rather than a bound morpheme.

(10) *parás* + instrumental

kásya *svit* *putrá* *ihá* *váktvāni* *paró*
 REL.GEN.SG.M PART SON.NOM.SG.M here word.ACC.PL.N beyond
vadāty *ávareṇa* *pitrá*
 speak.PRS.SUBJ.3SG being_below.INS.SG.M father.INS.SG.M

“Whose son could utter words here, (as someone) **beyond** (his) **father** [i.e., higher than his father] (who is) below?” (RV 6,9,2)

Normally, the instrumental case retains its original function (instrumental, sociative) in Vedic Sanskrit and may appear with or without an LP (Hettrich 2002). However, in the two examples just seen, the combination with the LP results in desemanticization, encoding separation or distance, which are spatial configurations otherwise associated with the ablative.²² If the LPs were omitted, this would change the semantics of the sentences quite dramatically. Morphologically, the case form is determined by the LPs, not by the verbal valency. Still, the LPs do not govern the nouns in a strict sense. Like other LPs, *ví* and *parás* show a spectrum of semantic flexibility without one-to-one mappings. Thus, the transition to adpositional status is not completed. Accordingly, it is no surprise that we do not find adjacency between LP and noun (both showing the very common word order type 2a, preceding the verb; cf. also Casaretto & Schneider 2015: 239–241).

Summarizing, while the transition from adverb to preverb is already advanced in a certain number of cases, with fully lexicalized usages attested and a strong correlation of orientation with position, the transition from adverb to adposition remains incomplete. Only in rare cases do we find pre-stages of such a process, semantically and formally. Crucially, the Rigvedic LPs do not obligatorily require a dependent nominal expression. Instead, local case forms are still able to express general spatial concepts like goal, source and location autonomously in almost all cases in Rigvedic Sanskrit (cf. the overview in Hettrich 2007). When LPs combine with nouns, they act as modifying adverbs. This sets Indo-Aryan apart from most other early IE languages such as Homeric Greek, where the development towards adpositional status is further progressed (see our discussion of (3) above; more on this in §3.3 below).

3.2.2 *Vedic prose*

Only slightly later attested than the metrical text of the Rigveda is a large corpus of Vedic prose texts (from around 900 BCE onward). One of the oldest is the *Maitrāyaṇī Samhitā*, which contains ritualistic and exegetic commentaries on the

22. The separative usages of the instrumental are assumed to have developed by analogy to their antonymic sociative usages (see Bichlmeier 2011: 263 fn. 813 with references).

Vedic sacrificial ritual.²³ The LPs show significant differences concerning their syntactic and semantic properties in comparison to the Rigveda. The most interesting difference regarding the topic of this paper concerns word order (see Table 3).

Table 3. Word order of LPs in the Maitrāyaṇī Saṁhitā

1a	(pre-nominal position)	7
1b	(post-nominal position)	3
2a	(pre-verbal position)	155
2b	(post-verbal position)	1
3	(clause-initial)	8
4	(other position in the sentence)	5
5a	(ambiguous: noun – LP – verb)	38

As these figures show, there is a very strong tendency towards pre-verbal position of the LP. Adjacency to the noun, on the other hand, is quite rare.²⁴ Out of the ten instances with unambiguous pre-nominal or post-nominal position, five occur in Mantra quotations (i.e., short ritual formulas) stemming from older texts,²⁵ and some others occur in clauses with elided copula.²⁶ The general tendencies for the mapping of nominal and verbal orientation, as found in the Rigveda, hold for this corpus even more clearly insofar as position and orientation almost always match.

The following examples illustrate the expected combinations of word order and orientation. Example (11) shows pre-nominal position and nominal orientation,

23. Like other Vedic prose texts, the Maitrāyaṇī Saṁhitā is actually a mixture of prose and metrical passages. Our corpus consists of 217 sentences containing LPs, taken from the prose portions of the first of its four books. The translation is our own, closely taking into account Amano's (2009) recent translation into German. These sentences have been extracted from a larger corpus of about 900 sentences (see fn. 1). For specific research purposes, this prose corpus contains a large number of clauses without a finite verb. Therefore, the comparatively small number of sentences with LPs is misleading; the majority of clauses with finite verbs in the Maitrāyaṇī Saṁhitā contain LPs.

24. This is corroborated by Cuny's (1907) figures for another very long prose text, the Śatapatha Brāhmaṇa. Against an overall attestation of about 1,500 verbs that are accompanied by one or more LPs, Cuny (1907) counts only about 60 instances of pre- or post-nominal position. Cf. on this text also the examples cited in Delbrück (1878: 46), which show a clear preference for the post-nominal position (especially when the case form is not modified semantically by the LP).

25. Pre-nominal (1a): I 5,5(1):73,1 (*ānu*, = I 5,5(2):73,19 and I 5,6(1):74,6); I 5,8(1):76,1 (*sām*). Post-nominal (1b): I 4,5(3):52,17 (*ūpa*); I 6,7(3):97,15 (*ādhi*).

26. Additionally to *ānu* and *sām* in the preceding footnote, cf. I 4,8(3):56,5 (*antarā*). In I 6,11(2):103,11 (*purā*) and I 5,12(3):81,13 (*purāstāt*), LP and noun are to be classified as an adjunct with temporal meaning.

with *áti* marking the case form as an accusative of extension. Example (12) shows pre-verbal position and verbal orientation (with lexicalization).

- (11) word order type 1a – nominal orientation
áti gāyatrām krámet
 beyond_of_the_Gāyatrī.ACC.SG.N go.PRS.OPT.3SG
 “he would walk **past the hymn in Gāyatrī[-metre].**” (MS I 6,8(1):99,3)
- (12) word order type 2a – verbal orientation
āśiṣo vā etās tā
 request.NOM.PL.F PART DEM.NOM.PL.F DEM.ACC.PL.F
evāvarunddhe
 PART down hinder.PRS.MED.3SG
 “These are the requests; he **wins them for himself**” (MS I 4,7(1):54,10)²⁷

When a position connected to the verb does not co-occur with verbal orientation, it co-occurs with ambiguous orientation as in (13). Ambiguous orientation remains most frequent as in the Rigveda.

- (13) word order type 2a – ambiguous orientation
tām tād iṣṭám ágachati
 DEM.ACC.SG.M DEM.ACC.SG.N sacrifice.PTCP.NOM.SG.N towards go.PRS.3SG
 “Because of that the sacrifice **goes to him.**” (MS I 4,11(3):60,8)

The data collected clearly shows that the tendency towards pre-verbal position, already discernible in the Rigveda (cf. Table 2), has become much stronger. Ambiguous cases of word order type 5a therefore would probably have been analyzed by the speaker as being pre-verbal, too, such as the following example with *dháma* (noun) *úpa* (LP) *eti* (verb) (drawn together into *dhámópaiti* through Sandhi):

- (14) word order type 5a – ambiguous orientation
agnér eváitáyā priyám
 Agni.GEN.SG.M PART DEM.INS.SG.F dear.ACC.SG.N
dhámópaiti
 seat.ACC.SG.N towards go.PRS.3SG
 “With this (stanza) he **goes to Agni’s dear seat.**” (MS I 5,6(2):74,9f.)

27. Cf. Ved. *rodh* “hinder, prevent” vs. *áva rodh* “win” [*lit.* “hinder down”].

3.2.3 Classical Sanskrit and Pali

By the stage of Classical Sanskrit, the pattern visible in Vedic prose has solidified even more.²⁸ LPs almost exclusively occur in pre-verbal position, being bound morphemes and showing verbal or ambiguous orientation. Whitney (1983 [1879]: 367) notes that only *anu*, *ā* and *prati* occur as free morphemes with any frequency at all. The following example cited by Whitney is a rare occurrence of post-nominal position (1b), combining here with ambiguous orientation.

- (15) Classical Sanskrit: word order type 1b – ambiguous orientation

gacched kadācit svajanam prati
 go.PRS.OPT.3SG sometime own_people.ACC.SG.M towards

“(she) might go sometime to (her) own people”

(MBh; cf. Whitney 1983 [1897]: 368)

The only unbound LPs that are still found very occasionally in Pali are the same ones as in Classical Sanskrit, i.e., *anu*, *ā* and *paṭi* (< *prati*), as well as, peripherally, *tiro* (< *tiras*) (Fahs 1989: 105–106). The attestations are too few for us to be sure about word order preferences. Compare the following example:

- (16) Pali: word order type 5a – ambiguous orientation

nagaraṃ mithilaṃ paṭi gataṃ
 city.ACC.SG.N Mithila.ACC.SG.N against go.PTCP.NOM.SG.N

“(s.o.) reached the city Mithila [*lit.* the city Mithila was gone to]”

(Therīgāthā, Vāseṭṭhitherīgāthā)

We further discuss the behaviour of these ‘late survivors’ *anu*, *ā* and *prati* in §4.2 and §4.3. After Pali, LPs completely vanish as free morphemes apart from rare archaic uses; instead, nouns, adverbs and participles grammaticalize into the postpositions that modern Indo-Aryan languages are known for.

3.2.4 New Indo-Aryan

The postpositions of modern Indo-Aryan languages go back to relational nouns, spatial adverbs (other than the LPs) and participles (Reinöhl 2016a). For example, Hindi *mē* “in” derives from Old Indo-Aryan *madhye* (middle.LOC.SG.N) “in the middle”, and the dative/accusative marker *ko* has in all probability also a nominal

28. ‘Classical Sanskrit’ is in all likelihood not a form of Old Indo-Aryan that was ever spoken, but it presents a heavily standardized and stylized variety dating back to around the 5th century BCE, a handful of features of which cannot be connected with Vedic Sanskrit. Pali, an early variety of Middle Indic from around the same period, shows signs of standardization, too. However, as they stand in a relative temporal order in terms of the advancing loss of nominally oriented LPs, we refer to the varieties as standing in a rough lineage for the sake of simplicity.

origin (from *kakṣe* “at the flank/side/armpit”). The postposition *par* “on” is of adverbial origin, from Ved. *upári* “above”,²⁹ and *kā/-e/-ī*, marking possession, derives from a participial form of the Old Indo-Aryan root *kṛ* “to do”. Importantly for the purposes of this paper, not only is there no etymological connection between the modern postpositions of Indo-Aryan languages and the old LPs (nor is there cognacy with simple adpositions in other modern IE languages for that matter) but there is also no connection between the modern postpositions and the old LPs on a categorial level. Modern Indo-Aryan postpositions do not share the syntactic properties of the LPs and accordingly do not continue the LPs in any way (Reinöhl 2016a, 2016b). The Indo-Aryan trajectory thus sharply contrasts with other IE branches, where the LPs developed into adpositions, many of which survive to this day (Reinöhl 2016b).³⁰

3.3 Local particles in other Indo-European branches

The languages whose earliest stages most closely resemble the Vedic situation and which are therefore of interest for this paper are Iranian, Greek and Hittite. For the sake of brevity we restrict ourselves to some remarks on the most important differences from Indo-Aryan in the attested stages of these languages.

The Old Iranian languages Avestan (Gathic Avestan and the slightly later attested Young Avestan) and Old Persian are closely related genetically to Old Indo-Aryan, all belonging to the Indo-Iranian subfamily. Although the Old Iranian corpus is much smaller than the Vedic one, we can conclude that LPs were used with the same functional spectrum, as illustrated below. The first two examples are from the Gathic Avestan corpus showing nominal orientation with the accusative

29. *Par* “on” is the only modern Hindi postposition that may have a link to an LP, as its etymological source *upári* may be an extension of the LP *úpa* “towards”. Note, however, that the link refers only to the morphological identity of this sub-string, not the full word form. Moreover, there is the possibility that *upári* is a locative derivation of a hypothetical stem **upár-*, suggested by cognates such as Lat. *super* and Gk. *hypér* “over, above”, a stem which may be independent of *úpa*. In any case, *upári* has neither the semantic nor the syntactic characteristics of an LP, nor does it appear especially similar to *úpa*. It means “above” whereas *úpa* means “towards”, and it cannot combine with verbs in the way LPs do.

30. While LPs could occur in all sorts of positions, the modern postpositions show a clear preference for the post-nominal slot from early on in their development. While LPs co-occurred with local case forms, the majority of modern Indo-Aryan adpositional phrases go back to constructions involving adnominal genitives (for a comprehensive study on the development of the modern postpositions and postpositional phrases in Indo-Aryan, see Reinöhl 2016a).

of extension (17) and verbal orientation with lexicalization (18). The third example is Old Persian and shows ambiguous semantic orientation.

- (17) Gathic Avestan: nominal orientation – word order type 1a
θrīšciṭ tarō pərətūmciṭ
 three_times_PART across bridge.ACC.SG.M_PART
 “even three times **across the bridge**” (Y 19,6)
- (18) Gathic Avestan: verbal orientation – word order type 2a
 ... *yōi īm +tarā.mainiiantā*
 REL.NOM.PL.M PERS.ACC.SG.M across think.PRS.INJ.MED.3PL
 “(Whosoever so follows us in scorning the daevas and mortals) who **scorn** [*lit.*
 think across] Him” (West 2010: 119) (Y 45,11)
- (19) Old Persian: ambiguous orientation – word order type 5a
hauv Āçina ... anayatā abiy mām
 DEM.NOM.SG.M Āçina.NOM.SG.M lead.IMPF.MED.3SG towards PERS.ACC.SG
 “That Āçina ... **was led to me**” (DB 1,82)

In comparison to Vedic Sanskrit (see Table 2), if the LP stands juxtaposed to the noun, there is a much stronger tendency towards the pre-nominal position in both Avestan and Old Persian (cf. the lists in Reichelt 1978:266 for Avestan and Kent 1953:86 for Old Persian).³¹

While Avestan lacks modern successors, Middle Iranian and Modern Iranian originate from varieties related to the one attested in the Old Persian inscriptions. During the Middle Iranian period, almost all case distinctions were lost and adpositional phrases were used for expressing spatial relations, strongly favouring prepositions over postpositions. In Modern Persian, prepositions are used. Etymologically, most of these forms can be traced back to the Old Iranian LPs. In other words, in contrast to Indo-Aryan, we find a clear line of continuity between the Old Iranian LPs and the Modern Iranian prepositions. The fact that already the Old Iranian evidence clearly points towards a preference for the pre-nominal position will be relevant for our argument in §4.

Turning to Ancient Greek, the three-fold functional spectrum of LPs in Homeric Greek (the oldest stage apart from the Mycenaean inscriptions) was already outlined at the beginning of §3. Similarly to Vedic, spatial concepts like source and goal could still be expressed by case alone (genitive and accusative, cf. Bortone 2010: 124–126), and LPs were often used to disambiguate case meanings. Non-adjacency of LP and modified word (noun or verb) occurs frequently. Still,

31. For Young Avestan cf. Bichlmeier (2011, *passim*). A different account is given in Hewson & Bubenik (2006: 136, 158) who claim that Old Persian tends to be “postpositional”. The data they present, however, do not support that claim.

as (3) above with *diá* “through” combining with a genitive shows, LPs may already be obligatory. In other words, Homeric Greek represents a more advanced stage towards the development of LPs into adpositions and preverbs. Although the exact status of some Homeric LPs is controversially discussed (Horrocks 1981; Luraghi 2003; Fritz 2005; Hewson & Bubenik 2006; Bortone 2010), it is clear that this process continued in Classical Greek, where we find three different classes (including a retained adverbial usage) and where adjacency is obligatory between adposition and noun as well as between preverb and verb. The following two examples (from Bortone 2010: 135) illustrate this change from non-adjacent position in Homeric Greek (20) to both preverbal and prepositional usage in Classical Greek (21). As in the case of Iranian, the crucial difference from Indo-Aryan for the purposes of this paper lies in the grammaticalization of the LPs into adpositions.

- (20) Homeric Greek: sentence-initial position (*tnesis*)
ek dè Khryseïs nēòs bê
 out PART Chryseis.NOM.SG.F ship.GEN.SG.F go.AOR.3SG
 “Chryseis came out of the ship” (Il. 1.439)
- (21) Classical Greek: adjacency to verb and noun
ekbênai ek tês neós
 out go.INF out DEM.GEN.SG.F ship.GEN.SG.F
 “to come out of the ship” (Th. 1.137)

Lastly, we turn to Hittite, which is attested even earlier than the languages discussed so far, the oldest texts dating from the middle of the 2nd millennium BCE. Although one would expect a similar picture to the one in Vedic Sanskrit, there are several differences which set Hittite apart from the other IE languages. Two different word classes used for the expression of spatial relations in Old Hittite are relevant here (Starke 1977; Boley 1989; Tjerkstra 1999; Luraghi 2001; Brosch 2014). There are, first, so-called local particles (or sentence particles), which are not to be confused with the LPs discussed in this paper and which are as a word class unique to Anatolian.³² After Old Hittite, they become subject to extensive semantic bleaching and gradually disappear, being replaced by the other relevant class, which consists of local adverbs (or place words)³³ and which are functionally clearly related (and partially cognate) to the Indo-Iranian and Greek LPs inasmuch as these forms

32. They consist of a set of five clitics (Hitt. =*an*, =*apa*, =*asta*, =*ssan*, =*kkān*) and are mostly attested in the last slot of the Wackernagel position. Their meaning (spatial, aspectual or anaphoric) is still under discussion (Luraghi 2001: 41–45; Brosch 2014: 99–138).

33. On the process in detail, see Luraghi (2001: 51–53).

may be used to modify nouns and verbs.³⁴ Their syntactic behaviour depends on whether they have dynamic or static meaning. In Old Hittite, those with a dynamic meaning are mostly combined with nouns in the directive case in a similar way to the Vedic examples with accusative. Those with a stative meaning occur with nouns in the dative/locative case, but they may also function as the head of a phrase with a noun in the genitive; cf. the following Old Hittite examples with *peran* “before” and *āppan* “behind” (taken from Brosch 2014: 81, 172):

- (22) Old Hittite
dTelipinuwas *peran* *GIŠeya<n>* *arta*
 Telibinu.GEN.SG in_front yew(?).NOM.SG stand.PRS.MED.3SG
 “In front of Telibinu there is a yew(?)” (KUB 17.10 IV 27–28 (aH/mS))
- (23) Old Hittite
kuis *ammel* *āppan* *LUGAL-us* *kīsar[i]*
 REL.NOM.SG.C PERS.GEN.SG back king.NOM.SG become.PRS.MED.3SG
 “who becomes king after me” (KBo 3.22, 49 (aS))

Whether the construction of LP + dependent genitive is an archaism or an innovation in Old Hittite is controversial (cf. the discussion in Brosch 2014: 404–407). In any case, there is no trace of it in Vedic Sanskrit, where the genitive only very rarely occurs alongside LPs.³⁵ Although there are structural parallels to the origins of the modern Indo-Aryan postpositional constructions (see §3.2.4) – and of course also to similar constructions in many other languages (e.g., Lat. *causā* + genitive) – the later Indo-Aryan developments are clearly independent, with the relevant processes not starting before late Old Indic and early Middle Indic. Therefore, the Hittite data with dependent genitive does not bear on the question of the destiny of the LPs in Indo-Aryan.

At the end of the Old Hittite period, the dichotomy of dynamic vs. static becomes blurred due to case syncretism and the gradual loss of the directive case. In

34. While some of the Hittite local adverbs correspond to forms attested in Vedic Sanskrit, Greek and Latin, others go back to nominal formations referring to spatial concepts (Brosch 2014: 359–385).

35. For constructions like the Hittite examples above, Vedic Sanskrit would use the LP *purás* “in front of, before” + ablative and *ánu* or *paścá* “behind, after” + accusative (Casaretto 2012, 2017). Beside LPs, we find the genitive in some instances instead of the accusative with verbs of movement if the goal is not reached completely (Hettrich 2007, 2014). The origin of these constructions can be seen in the partitive function of the genitive. While they remain rare in Vedic, the Greek genitive is frequently attested with LPs and ablatival or locational and directional (perlative) meanings, the latter probably an innovative feature of Greek also originating in the partitive function of the genitive (Conti & Luraghi 2014: 468–471).

Late Hittite, we find a system of fully developed postpositions – the originally rare post-nominal position has become the norm – and preverbs. Thus, as in the other branches sketched above, where we have attestations of later developments, the LPs grammaticalize into adpositions.

Given the evidence from the various archaic varieties of IE just outlined, we take the following scenario as the point of comparison for the remainder of this paper, which Indo-Aryan deviates from: the IE LPs were characterized by considerable semantic and syntactic flexibility, without rigid one-to-one mappings between meaning and form.³⁶ Over time, frequent associations between orientation and position result in the grammaticalization into adpositions, on the one hand, as well as in the development into preverbs, on the other hand. LPs modifying a noun and occurring adjacent to local case forms became reanalyzed as adpositions governing the respective noun, while verbally oriented LPs became restricted to mostly pre-verbal position, resulting in unverbated forms. Indo-Aryan is the exception to this scenario, only displaying the latter development into preverbs but not the former into adpositions, a topic which we now approach from another angle, taking into account prosodic structure.

4. Prosody and the non-grammaticalization of the local particles

Considering the age of Vedic Sanskrit, we know a surprising amount about its word prosody and sentence intonation. This is due to the historical practice found in several Vedic texts of marking the three-way lexical pitch-accent system by means of diacritics. While not fully transparent in all texts or all cases, this information, along with phonological analyses both in the ancient grammarians' comments as well as by modern linguists, offers comparatively detailed insights into the suprasegmentals of a language in use three millennia ago. In the following, we first give a brief introduction to Vedic prosody in §4.1 and then turn to the LPs in §4.2, focusing in particular on prosodic interactions with finite verbs in main and subordinate clauses. In §4.3, we flesh out our argument that the frequent prosodic unification of LPs with finite verbs was an important factor in their non-grammaticalization into adpositions in Indo-Aryan.

36. The question of whether Proto-Indo-European already had a set of preverbs and adpositions or whether only adverbs and local case forms were used for the expression of spatial relations (cf. the discussions in Luraghi 2001 or Fritz 2005:22–35) remains outside the scope of this paper.

4.1 Vedic Sanskrit prosody

Vedic Sanskrit is a pitch-accent language with three pitch types: high, low and falling (classical descriptions include, e.g., Whitney 1869–1870, 1983 [1879]: 27–32). A word is considered accented when it has either a high pitch or a particular type of falling pitch (i.e., the result of a historical merger of a high and low pitch). Content words and certain function words typically have one lexically determined accent (with shifts of accentuation in certain inflectional paradigms) whereas some types of discourse particles and pronominals have no accent. This lexically based system may be partially overridden by sentence intonation. For instance, vocatives (as an exception among nominal case forms) are generally unaccented, unless they appear in clause-initial position. The accentuation of finite verbs is of particular importance for the present paper (cf. Klein 1992). Finite verbs are accented typically only in subordinate clauses, as shown in the next example (the accentuation can be gleaned from the acute sign on one of the vowels of the verb):

(24) Vedic Sanskrit (subordinate clause)

ghṛtápr̥ṣṭhā *manoyújo* *yé* *tvā*
 ghee_backed.NOM.PL.M mind_yoked.NOM.PL.M REL.NOM.PL.M PERS
váhanti *váhnayah*
 draw.PRS.3PL draft horse.NOM.PL.M

“Ghee-backed, yoked with mind are the draft horses that **draw** you”

(RV 1,14,6) (Jamison & Brereton 2014)

By contrast, verbs are unaccented in main clauses (unless clause-initial), as shown in (25). Such unaccented finite verbs lean enclitically to whichever (accented) element of whichever word class happens to stand to their left, in this case, the nominal form *agním*:

(25) Vedic Sanskrit (main clause)

agním *īle* *puróhitam* *yajñásya ...*
 Agni.ACC.SG.M praise.PRS.MED.1SG principal.ACC.SG.M sacrifice.GEN.SG.M
 “(I) **praise Agni**, the one in charge of the sacrifice ...” (RV 1,1,1)

The non-accentuation of finite verbs in main clauses may be surprising given the central role played by finite verbs in structuring the clause semantically and syntactically. The difference in accentuation between main clauses and subordinate clauses has been explained by some authors (e.g., Hettrich 1988; Klein 1992; following Delbrück 1878: 76–78) as resulting from the typical order of subordinate clause before main clause in Vedic Sanskrit (on possible reflexes of this sentence intonation in other IE languages, see below in §4.3). Combinations of subordinate and main clauses are highly frequent in Vedic Sanskrit, due among other things to the

relativization strategy of relative-correlative constructions. The order of subordinate and main clause resulted in a situation where the finite verb of the main clause was often the very final element, given the basic SOV order. Since pitch contours tend to fall over the stretch of clauses, the main clause finite verb would have the lowest pitch. This low pitch is argued to have become over time a fixed feature of the main clause finite verb and thus started to occur in any position (except in the very clause-initial one, which always requires accentuation).

Coming back to the synchronic interaction of finite verbs with elements to their left, we saw in (25) how the verb encliticizes to a nominal form. In many other cases, the finite verb encliticizes to an LP, as in the following example:

- (26) Vedic Sanskrit (main clause)
īndrasya nū vīryāṇi prá vocaṃ
 Indra.GEN.SG.M now power.ACC.PL.N forward proclaim.AOR.INJ.1SG
 “I now proclaim Indra’s strengths” (RV 1,32,1)

In subordinate clauses, by contrast, where the finite verb is accented, it is the LP which loses its accent and pro-cliticizes to the finite verb, as shown in the next example:

- (27) Vedic Sanskrit (subordinate clause)
yó árvantaṃ prathamó adhyátiṣṭhat
 REL.NOM.SG.M horse.ACC.SG.M first.NOM.SG.M on stand.IMPF.3SG
 “(he) who **climbed** the horse as the first” (RV 1,163,9)

Note that – and this is a central point for our subsequent argument – these cliticization effects in combinations between finite verb and LP, whether en-clisis of the verb or pro-clisis of the LP, occur irrespective of the orientation of the LP involved.³⁷ When we find an LP directly preceding a finite verb, they form a prosodic word, irrespective of orientation (cf. also Hettrich et al. 2010 [2004]:22–23).³⁸ Often, this prosodic unification is matched by orientation, i.e., when the LP modifies the verb.

37. There are cases where the LP bears the accent and not the verb in other branches, as for instance in Celtic. However, these cases are restricted to combinations of LP and verb, and they are not a general property of verbs in main clauses.

38. If two LPs are combined with the verb, both are accented in main clauses (e.g., *úpa prá yāhi* “come forth” (RV 1,82,6)). In subordinate clauses, either both LPs are unaccented or the first one is detached and accented while the second is a pro-clitic. In the Maitrāyaṇī Saṃhitā, where this phenomenon occurs more often than in the Rigveda, the accent mostly falls on the LP immediately preceding the verb in main clauses; cf. *upasámakrāmat* “went together towards” (MS 5,8(2):76,7) with *úpa* “towards” + *sám* “together” + *ákrāmat* (IMP.F.SG of the root *kram* “go”), but accentuation of both LPs is also possible.

In other cases, however, prosodic structure is at odds with orientation, namely when the LP shows nominal orientation (or functions as a clause-level adverb).

4.2 Prosody-syntax mismatches

We concentrate in this section on cases of word order type 5a, where the LP stands between modified noun and verb. If we are dealing with a main clause, the LP is tied prosodically to material to its right, i.e., hosting the unaccented verb, but it may be connected semantically and syntactically to material to its left, if it is nominally oriented. In such cases, the adjacency with the noun would in principle present a sequence or ‘single processing unit’ that would allow for a reanalysis of the LP as an adposition – if only the LP were not captured by the verb prosodically.

Before we show examples, note that we concentrate in this section on *ánu*, *práti* and *á*, the LPs which survive the longest as free morphemes, i.e., with the theoretical potential of developing into adpositions. As shown below, however, even these three LPs show mismatches between prosodic chunking and semantic-syntactic chunking.

Compare the following main clause examples from the Rigveda with *ánu* and *á* and accusatives of extension:

- (28) Vedic Sanskrit: word order type 5a: main clause (accent on LP)

apsv *ágne* *sádhiṣ* *táva*

water.LOC.PL.F Agni.VOC.SG.M seat.NOM.SG.M PERS

sáušadhīr *ánu* *rudhyase*

DEM.NOM.SG.M plant.ACC.PL.F through grow.PRS.MED.2SG

“In the waters is your seat, Agni. You grow **through the plants.**”

(Jamison & Brereton 2014) (RV 8,43,9)

- (29) Vedic Sanskrit: word order type 5a: main clause (accent on LP)

... *hárīto* *vṛṣā* *vísvam* *á* *bhāti*

golden.NOM.SG.M bull.NOM.SG.M whole.ACC.SG.N to shine.PRS.3SG

*rocanám*³⁹

light.ACC.SG.N

“... the golden bull radiates **through the whole** luminous realm.”

(Jamison & Brereton 2014) (RV 3,44,4)

Nominal orientation is also attested combining with word order type 5a in subordinate clauses, even though one might think that the LP is even more strongly bound to the verb when it loses its accent. In (30), *práti* is bound prosodically to

39. See fn. 12 and Reinöhl (in preparation) on the word order of nominal expressions in Vedic.

the following verb (*áhan* IMPF.3SG of the root *han* “struck”) while modifying the preceding accusative pronoun *tvā* “you”.

- (30) Vedic Sanskrit: word order type 5a: subordinate clause (accented verb)
sṛké yát tvā pratyáhan
 missile.ACC.DU.M when PERS against struck.IMPF.3SG
 “when he [i.e., Vṛtra] struck his two missiles [i.e., fangs] **against you**”
 (RV 1,32,12)

Similarly, in the next example, the LP *ánu* (in the sandhi form *anv*) “along” modifies the accusative *uttānām* “(the) up-stretching (one)”, marking it as an accusative of extension. While clearly nominally oriented, the LP prosodically forms a unit with the following verb, *éṣi* (PRS.2SG of the root *ay* “go”).

- (31) Vedic Sanskrit: word order type 5a: subordinate clause (accented verb)
yád agne ... uttānām anvéṣi
 CONJ Agni.VOC.SG.M up_stretching.ACC.SG.F along go.PRS.2SG
*bhúmim*⁴⁰
 earth.ACC.SG.F
 “when, o Agni, ... you go **along** (the) **up-stretching** (one), the earth.”
 (Jamison & Brereton 2014) (RV 10,142,5)

We refrain here from giving absolute numbers of how frequent exactly the misalignments between prosodic and semantic-syntactic chunking are per LP. We choose not to do so for several methodological reasons that have to do with the linguistic study of historical texts. Firstly, we have to take into account the skewing of numbers on the basis of repetitions of ritual formulas. Secondly, we must bear in mind genre effects. Thirdly, there is no way of disambiguating the many syntactically and/or semantically ambiguous cases. Fourthly, we are dealing with a chance selection of examples given that only a very specific collection of texts has survived the ages. Fifthly, the numbers of attestation in 2a and 5a position are too small to provide a sufficiently large data base in any case to smooth out at least some of these skewing effects.⁴¹ The crucial point here is the very possibility and attestation of mismatches as sketched.

40. See the preceding footnote.

41. The figures for word order 5a divided into main clause and subordinate clause usages are as follows (including participles in order to widen the otherwise very small data base). First, *ánu* is attested overall 507 times: 66 in type 5a, 58 in main clause usages, 8 in subordinate clauses. Second, *á* is attested 705 times (books II–V): 97 in type 5a, 74 in main clauses, 23 in subordinate clauses. Third, *práti* is attested 264 times: 25 in type 5a, 18 in main clause usages, 7 in subordinate clauses.

Besides cases of 5a word order, note also the high number of 2a word order, i.e., pre-verbal position without a preceding noun, which can be gleaned from Table 2. For the late survivors, we find this type 99 times for *ánu*, 323 times for *á* and 91 times for *práti*. Here, too, cases of nominal orientation are attested. While these cases do not show a surface string that would have been the locus of a syntactic reanalysis into adpositions – as such a reanalysis would require an integral, adjacent sequence (see also Reinöhl 2016a: 166–167) – these cases also illustrate how nominally oriented LPs may be prosodically tied to the verb; cf. the following example:

- (32) Vedic Sanskrit: *ánu*: type 2a with nominal orientation (= (7))
yát ... anuyáti prthvím
 CONJ along go.PRS.3SG earth.ACC.SG.F
 “when ... he goes **along the earth**.” (RV 6,12,5)

Apart from clear prosody-syntax mismatches, there are also the many cases where we find 5a or 2a order in combination with ambiguous semantic orientation. While we cannot be sure that we are dealing with a mismatch in these cases, they also illustrate prosodic coalescence of LP and verb, even though there is no, or no direct, semantic-syntactic connection between them. Examples with *á* “towards” illustrate this type particularly often; see the following two examples.

- (33) Vedic Sanskrit: ambiguous semantic orientation: subordinate clause (type 5a)
*yát sūryam divy āroháyanti*⁴²
 CONJ sun.ACC.SG.M heaven.LOC.SG.M towards rise.PRS.CAUS.3PL
 “when they cause the Sun to mount **into** heaven”
 (Jamison & Brereton 2014) (RV 4,13,2)

- (34) Vedic Sanskrit: ambiguous semantic orientation: main clause (type 2a)
sūryam á dhattho divi
 sun.ACC.SG.M towards place.PRS.2DU heaven.LOC.SG.M
cítryaṁ rátham
 shining.ACC.SG.M chariot.ACC.SG.M
 “You place the sun **into** the sky as your shining chariot” (RV 5,63,7)

In the Maitrāyaṇī Saṁhitā, as shown in §3.2.2, adnominal position is already in the process of disappearing, which reduces the number of 5a sentences dramatically. The figures in Table 4 below show this decline. In order to increase our survey to compensate for the low number of attestations, we include not only the late survivors here but also *úpa* “towards, near” and *abhí* “to, towards”, i.e., LPs which often combine with a modified noun, not only in main clauses but also in the rarer

42. Sandhi accent for *divi āroháyanti*, i.e., with pro-clitic LP.

subordinate clause examples. In order to give an impression of relative frequency within this comparatively small corpus, Table 4 includes all word order types attested with these LPs.

Table 4. Word order types in the Maitrāyaṇī Saṁhitā

LP (all attestations)	1a	1b	2a	5a: main clause	5a: subordinate clause
<i>ānu</i> (14)	3 ⁴³	0	9 ⁴⁴	2 (I 6,6(4)) ⁴⁵	0
<i>abhi</i> (17)	0	0	9 ⁴⁶	7	1 (I 4,12(1):60,16f.)
<i>ā</i> (77)	0	0	70 ⁴⁷	7	0
<i>ūpa</i> (30)	0	1 ⁴⁸	22 ⁴⁹	6	1 (I 5,9(2):77,10)
<i>prāti</i> (4)	0	0	4 ⁵⁰	0	0

Nominal orientation is rare. However, it is illustrated in the next example, where *ānu* and *vī* together modify the accusative *lokān* “worlds” (accusative of extension):

(35) Vedic Sanskrit: type 5a (main clause)

tā *andhé* *tāmasimāml*
 DEM.NOM.PL.F blind.LOC.SG.N darkness.LOC.SG.N DEM.ACC.SG.F
lokān *anuvyānaśyan*⁵¹
 world.ACC.SG.F along apart disappear.IMP.3PL

“They disappeared in the blind darkness **through**⁵² **these worlds**.”

(MS I 6,6(4):96,2)⁵³

43. Cf. I 5,5(1):73,1; I 5,5(2):73,19; I 5,6(1):74,6, all of them the same Mantra citation.

44. Only 2 with a modified noun (I 6,3(3):90,4f.; I 6,11(1):103,5f.).

45. The other example, I 5,12(2):81f., contains ‘irregularly’ unstressed *anu* in a main clause due to antithetic accent; cf. Amano (2009:203 fn. 368).

46. 6 cases with a modified noun.

47. Only 6 cases with a modified noun, 4 with a participle and unaccented LP.

48. Cf. I 4,5(3):52,17, a Mantra citation.

49. Only 7 cases with a modified noun, but in most of the other cases the accusative *agnim* “fire” has been elided; 6 cases with a participle and unaccented LP.

50. Only 1 case with a modified noun (I 6,7(4):97,16ff.).

51. Sandhi accent for *anu vī anaśyan*.

52. Already in the Rigveda, the LPs *ānu* and *vī* may have the meaning “through” in certain contexts (Casaretto 2011:9, 2012 [2011]:135–136).

53. In addition, type 5a occurs also with the following LPs: *ādhi* “on” (I 6,10(3):102,6), *antār* “between” (I 4,13(3):63,1.3), *āpa* “away” (I 6,5(3)), *āpi* “at, in” (I 6,9(2):100,11), *ūd* “up” (I 6,

Besides some cases of verbal orientation, most of the 5a cases in the Maitrāyaṇī Saṃhitā show ambiguous semantic orientation as in (36), where *úpa* could be analyzed as modifying either *ítaram* “another” or *namati* “bows”.

- (36) Vedic Sanskrit: type 5a (main clause)
tám *tád* *iṣṭám* *ágacchati*
 DEM.ACC.SG.M DEM.ACC.SG.N sacrifice.PTCP.NOM.SG.N towards go.PRS.3SG
nétaram *úpanamati*
 NEG other.ACC.SG.M towards bow.PRS.3SG
 “Because of that the sacrifice goes to him, it does not **turn towards another one.**”
 (MS I 4,11(3):60,8)

As for cases of 2a patterns, we also find mostly semantically ambiguous cases; cf. in the example above *tám ... ágacchati* “goes to him”.

Summarizing, we find mismatches between prosody and syntax in cases of type 5a order when the LP is nominally oriented and thus combining semantically and syntactically with the noun. These mismatches occur in a number of cases both in the Rigveda and more rarely in the Maitrāyaṇī Saṃhitā. Such mismatches occur in both main and subordinate clauses, with the corresponding difference in accentuation of LP or finite verb. The main clause pattern is specific to Indo-Aryan, due to its rules of sentence intonation where the finite verb is unaccented. As for the subordinate-clause pattern, pro-cliticization of LPs is found in other branches also as mentioned above, but normally as a result of the univerbation of verbally oriented LP and verb. We are not aware of mismatches of the type outlined here for Vedic. Besides mismatches with the type 5a pattern, we also find mismatches in the case of 2a patterns, even though the lack of adjacency with the noun would not have been a possible input string for grammaticalization. Finally, both 5a and 2a word order patterns often combine with ambiguous orientation. In such cases, we also find prosodic unification with the verb even though there is no unambiguous semantic-syntactic connection with it.

4.3 The non-grammaticalization of the Old Indo-Aryan local particles

The outlined mismatches between prosodic and semantic-syntactic structure subtracted from cases that would have allowed for a reanalysis of the LPs as adpositions. Given the notion of grammaticalization as hinging on the automatization of single

3(4):90,12f.; I 6,10(3):102,6), *pārā* “away” (I 6,7(1):96,19ff.), *pári* “around” (I 6,8(6):99,16), *prá* “forwards” (I 5,12(2):81,9; I 6,3(7):91,7f.), *ví* “apart” (I 4,7(2):54,17), and *sám* “together” (I 5, 11(2):79,18), all in main clauses, i.e., with accented LP and unaccented verb.

processing units or constructions, it does not come as a surprise that grammaticalization into adpositions did not eventuate in Indo-Aryan. We are not aware of any reported case where an element grammaticalized in a situation where it formed a semantic-syntactic unit with elements to its one side while forming a prosodic unit with element(s) to its other side, i.e., where we find a mismatch between prosodic chunking and semantic-syntactic chunking.

Besides the clear mismatches, we would also like to propose that the cases of ambiguous orientation combining with 5a or 2a order present a crucial piece in the puzzle of why the LPs did not grammaticalize into adpositions in Indo-Aryan (cf. (4) and (33)–(34) above). Semantically, these examples could plausibly have allowed for the LP to either develop into a postposition (e.g., “to/towards X”) or into a preverb (e.g., “to approach”). However, the prosodic coalescence with the verb would only in fact allow for the latter. Thus, while ambiguous synchronically, the prosodic structure creates a skewing regarding possible pathways of change.

Having outlined the Indo-Aryan situation, let us turn once more to Iranian, the direct sister branch of Indo-Aryan, and raise the question of why LPs developed into adpositions in this closely related sub-branch, when they did not in Indo-Aryan. In other words: what may be the factors that put the Iranian languages onto a different path? We think that two different parameters may have been responsible for this.

Firstly, it is not clear whether the early Iranian varieties had the same sentence intonational rule as early Old Indo-Aryan regarding the de-accentuation of finite verbs. In contrast to the situation in Vedic Sanskrit, neither the Avestan script nor the Old Persian cuneiform writing indicates word stress.⁵⁴ Besides, as already mentioned, Avestan and Old Persian show a clear preference for the pre-nominal position of the LP according to the sources cited in §3.3. Thus, word order type 5a, while not impossible, is likely to have been less frequent than in early Old Indo-Aryan. Thus, even if early Iranian varieties did have the same prosodic structure as Vedic, the latter would not have had the same effect given the lower frequency of 5a cases.⁵⁵

Secondly, it is conceivable that language contact may have played a role in the non-grammaticalization of the Indo-Aryan local particles into adpositions. Since Emeneau (1956), several features of Indo-Aryan languages, both ancient and modern, from phonology to syntax and semantics, have been hypothesized to be connected to Dravidian influence. One of the domains in which influence has been contemplated is word order (e.g., Masica 1976). It is conceivable that the Dravidian

54. Reichelt (1978: 266) assumes that Avestan, which was not continued by (a) daughter language(s) but died out, had the same prosody as Vedic.

55. As Reinöhl (2016a: 76–80) suggests, it is thus perhaps not a coincidence that the LPs to survive the longest in Indo-Aryan with nominal orientation (cf. §3.2.3) are among the ones with the clearest preference for pre-nominal position in the Rigveda (cf. Table 2).

preference of having case markers follow the nominal stem may explain why Vedic Sanskrit, especially in earlier stages, had a stronger preference for the post-nominal position than Iranian.

As mentioned, Vedic Sanskrit is the only language that supplies direct evidence for a rule of sentence intonation de-accentuating the finite verb in main clauses. Whether this was an inherited feature or the result of an innovation in Indo-Aryan remains unclear (e.g., due to the properties of the Iranian writing systems just mentioned). Still, some authors take certain pieces of evidence in Ancient Greek and Germanic as indication that the sentence intonation of Vedic Sanskrit was inherited. The clearly secondary recessive accentuation of finite verbs in Ancient Greek has since Wackernagel (1877) been taken as evidence that finite verbs used to be enclitic in pre-historic times (cf. the account in Probert 2006: 86–87), which would fit to the main clause pattern of Vedic Sanskrit. In Germanic, on the other hand, the reflexes of Verner's Law in the verbal endings of e.g., Goth. PRS.2PL *-id(-uh)*, 3PL *-and*, Old High German *-et*, *-ant* (i.e., accent on the verbal root) vs. OE PRS. PL *-að* (i.e., accent on the thematic suffix) point to a generally accented finite verb, reminiscent of the subordinate clause pattern of Vedic Sanskrit. It is therefore not inconceivable – if somewhat speculative due to the assumed generalization of the less frequent subordinate pattern in Germanic – that the Proto Indo-European verb was subject to the same intonation rules as the verb in Vedic Sanskrit.

If in Proto Indo-European the verbal accent was indeed dependent on sentential rules, why did LPs in other languages not fall under the same restrictions as in Indo-Aryan? We think that this may have been due to different relative chronologies of the relevant processes. Only in Vedic Sanskrit was the verbal accent still dependent on the syntactic position of the finite verb at the time when the LPs began to grammaticalize, while in the other IE languages the verbal accent had already become unified when the LPs grammaticalized into adpositions. Therefore, the question of whether the sentence intonation rule is inherited or not does not directly bear on our argument.

5. How prosodic chunking may prevent (further) grammaticalization

We complete our discussion showing more broadly how prosodic chunking is essential for grammaticalization processes not only at their outset but also during later stages. An interesting case study for such later stages comes from ditropic clitics. Ditropic clitics are clitics which semantic-syntactically belong to material on their right but which lean prosodically as enclitics to hosts on their left, e.g., English *I've done that*, *They've seen that*. Himmelmann (2014: 945–949) describes this phenomenon for a range of languages, arguing that the phenomenon of ditropic clitics

is a major factor in the cross-linguistic preference for suffixation over prefixation. Since ditropic clitics form a prosodic unit with material on their left, they may never develop into prefixes of their semantic-syntactic host. Himmelmann (2014) concludes that a function word must form a prosodic unit with its semantic-syntactic host in order to develop into an affix (see Bybee's 2003 quote in §2).

Both the Indo-Aryan local particles and ditropic clitics illustrate how prosodic boundaries that do not match semantic-syntactic boundaries prevent grammaticalization, whether from the very beginning or in later stages. In both cases, prosodic chunking and semantic-syntactic chunking are misaligned even though both domains include the element in question, an element which would be likely to grammaticalize if boundaries were aligned. In other words, we are lacking the type of construction which would allow for grammaticalization to occur, namely a construction where semantic-syntactic boundaries match prosodic boundaries.

While competition for the grammaticalizing element or potential grammaticalizing element unites the two phenomena, they are also quite different in nature both with regard to their structural characteristics and with regard to the triggering factors that bring these structural characteristics about. These differences illustrate how very generally prosodic chunking is crucial for grammaticalization to occur.

We have already mentioned one structural difference, namely that the grammaticalization of local particles into adpositions is prevented from the start (or in very early stages, depending on where one draws the line). By contrast, in the case of ditropic clitics, we are dealing with already grammaticalized function words which are prevented from developing further into affixes. In fact, that the latter are prevented from affixation is directly tied to their preceding grammaticalizational change. Otherwise, they would not have developed into function words and clitics in the first place.

The second structural difference is that the association of left and right with prosody and syntax are reversed, as shown in the schema in Figure 1.

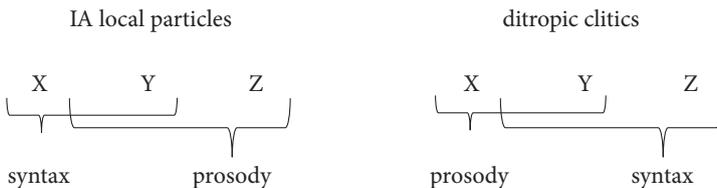


Figure 1. Structural differences in the association of left and right with prosody and syntax (left, IA local particles; right, ditropic grams)

The third structural difference is that, while the local particles may be the prosodic host or the clitic (depending on main or subordinate clause usage), ditropic clitics are, as their name suggests, always the prosodically weak form.⁵⁶

Turning to triggering factors, Himmelmann (2014) argues that general mechanisms of turn-taking and speech production give rise to ditropic clitics. As high-frequency forms, function words are quicker to go into production than lexical forms, and they serve to hold the floor:

Function words tend to be high-frequency forms that are often also highly predictable in a given context. They are thus always highly activated and ready to go into production ... This, in turn, provides the possibility of uttering a function word even when the speaker is not yet fully done with computing the next unit in the overall utterance plan.

That preposed function words are in fact uttered prematurely ... is due to the fact that ... speakers may achieve interactional goals. Most importantly, they signal their intention of continuing and thus defending their right to hold the floor as the current speakers. (Himmelmann 2014: 955)

The frequent pauses after preposed function words prevent pro-cliticization and prefixation. Instead, the function word, being produced rapidly and thus with ever decreasing phonological substance, may encliticize to material to its left.

In contrast to these general mechanisms of speech production and turn-taking that account for the phenomenon of ditropic clitics, no link to general cognitive mechanisms is discernible in the case of the Indo-Aryan local particles. Instead, the prosodic unification with verbs has to do with the particulars of Vedic sentence intonation, a contingent, language-specific structural characteristic. Nonetheless, whether triggered by such more general mechanisms or not, prosodic chunking is just as essential in the case of the Vedic local particles as in the case of the cross-linguistically attested phenomenon of ditropic clitics.

A question for future research is whether there are cross-linguistic differences regarding the role of prosodic phrasing depending on what type of a prosodic system we are dealing with. It has been argued that, construction-internally, differences between prosodic systems entail differences in the phonological reduction effects that are often observed in grammaticalization phenomena. For instance, Schiering (2006) outlines how cliticization and affixation are not in fact universally occurring effects of grammaticalization but are mostly restricted to stress-based phonologies.

56. With regard to this difference, note that at least the combination of LPs and verbs in subordinate clauses disproves a claim of Himmelmann's (2014: 948) that the reverse phenomenon to ditropic clitics – postposed function words pro-cliticizing to material on their right – does not seem to occur. While a counterexample, this type of prosody-syntax mismatch is not, however, a dominating case among the various usages of the Indo-Aryan LPs.

High-frequency function words come to lean to the strong prosodic attractor to their left. By contrast, syllable- and mora-based prosodic systems are much less prone to cliticization, as argued also by Bisang (2011) with regard to Southeast Asian languages. If cliticization is not a prominent phenomenon in a language, then mismatches between prosodic boundaries and semantic-syntactic boundaries of the kind reviewed in this paper may be relevant only in stress-based languages. A follow-up question concerns the topic of how fine-grained our variables need to be in order to uncover differences in the impact of prosodic boundaries. For instance, ‘stress’ may involve differences in intensity, duration and/or pitch (e.g., Schiering 2006: 129 with references). Depending on what the exact correlates of stress are in a language, prosodic chunking may affect morphosyntactic change in different ways.

In this context, it would also be important to explore in detail how the prosodic and semantic-syntactic domains in question are built up. That is, what is it exactly that organizes the prosodic domain in question, and what is it exactly that organizes the semantic-syntactic domain in question? And how do the domains on these different levels interact, if at all? In recent literature, ‘prominence’ has been explored as a concept that may apply to all three levels of prosody, syntax and semantics, aiming to shed light on how ‘prominent’ elements in their role as structural attractors build up and organize domains around themselves (Himmelmann & Primus 2015). For instance, an accent-bearing syllable may constitute a prosodic structural attractor, creating a domain around itself, in which other elements (i.e., other syllables) are subordinate, being un-accented or phonologically reduced (e.g., as clitics). Similarly, semantically and syntactically prominent elements build up domains around themselves, in which other elements are subordinate, such as the local particles with respect to the nouns or verbs they modify. In the cases we have seen in this paper, prosodic and semantic-syntactic domains as being organized around prominent elements misalign with regard to their external boundaries.⁵⁷

6. Conclusion

We have argued in this paper that prosody-syntax mismatches may prevent grammaticalization if the (potential) grammaticalizing element forms a prosodic unit with linguistic material other than the element(s) with which it forms a semantic-syntactic unit. Thus, prosody-syntax mismatches not only may affect

57. The topic of domain boundaries in Vedic Sanskrit as linked to prominent elements on various levels of linguistic structure is currently being investigated by the authors of this paper in the project “Agent prominence and the diachrony of predication in Indo-Aryan” within the Collaborative Research Centre (SFB 1252) on “Prominence in language” (Universität zu Köln).

late stages of grammaticalization as has been shown for ditropic clitics, but may prevent grammaticalization from the very start.

We have built our argument on the basis of a comparative case study of the non-grammaticalization of local particles, a sub-class of spatial adverbs in Indo-Aryan. In the majority of the IE family, these LPs grammaticalized into adpositions (and also developed into preverbs) and survive to this day as central and productive members of the grammars of many modern IE languages. In Indo-Aryan, however, even though LPs are attested in Vedic Sanskrit just as in other archaic IE varieties, these elements vanish at a very early stage in usages that would have allowed for a grammaticalization into adpositions. We have proposed that the non-grammaticalization of these LPs is due to particularities of Vedic sentential prosody. The LPs frequently form prosodic units with finite verbs due to sentence-level effects on verbal accentuation. This prosodic unification takes place irrespective of the specific usage of the LPs, which could not only modify verbs, but also function as clause-level adverbs or modify local case forms. We argue that the coalescence with verbs, irrespective of function, created a situation disfavoured for a grammaticalization into adpositions, since potential grammaticalizing elements need to form not only semantic-syntactic, but also prosodic units with the material in the constructional context of which they grammaticalize. This links up with the ritualization of chunks of linguistic units which, through frequency of use, turns constructions into “single processing units” (Bybee 2003), setting off the internal formal and semantic restructuring processes so amply described in grammaticalization literature. If the necessary prosodic chunking is lacking, grammaticalization may be blocked.

This study adds to our understanding of the ways in which prosodic structure may be implicated in grammaticalization processes. Not only has it been suggested that the typological prosodic characteristics of a language constrain grammaticalization phenomena, and that the prosodic structure of an individual grammaticalizing construction changes in the course of grammaticalization, but an alignment of prosodic structure with semantic-syntactic structure may enable or disable grammaticalization in the first place.

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perspective – The syntax and semantics of referents and events” (Universität zu Köln, Uta Reinöhl, UoC Postdoc Grant, Excellency Initiative (DFG), 2014–2016). Many thanks are due to Kyoko Amano for letting us use her transliteration of the *Maitrāyaṇī Saṃhitā*. We would like to thank T. Mark Ellison, Heinrich Hettrich, Eugen Hill, Nikolaus Himmelmann, Executive Editor Joe Salmons, and two anonymous reviewers for their very helpful comments and suggestions. We would also like to thank Robert Tegethoff, Simon Fries, and Anke Grutschus for their help with preparing the manuscript for publication. Uta Reinöhl would like to thank the Alexander von Humboldt Foundation, Nick Evans, and the ARC Centre of Excellence for the Dynamics of Language (CoEDL) for sponsoring an extended research visit in 2015–2017 at the Australian National University (ANU) in Canberra, during which research for this paper was conducted. Furthermore, both authors would like to thank the German Research Foundation (DFG) for funding research on this paper as part of the SFB 1252 “Prominence in Language” in the project B03 “Agent prominence and the diachrony of predication in Indo-Aryan” at the University of Cologne.

Abbreviations in glosses

ACC	accusative case	LOC	locative case
AOR	aorist tense	M	masculine
C	genus commune	MED	medium
CAUS	causative	N	neuter
CONJ	conjunction	NEG	negation particle
DAT	dative case	NOM	nominative case
DEM	demonstrative pronoun	OPT	optative mode
DU	dual	PART	discourse particle
F	feminine	PERS	personal pronoun
FUT	future tense	PL	plural
GEN	genitive case	POSS	possessive pronoun
IMP	imperative mode	PRS	present tense
IMPF	imperfect tense	PTCP	participle
INF	infinitive	REL	relative pronoun
INJ	injunctive mode	SG	singular
INS	instrumental case	SUBJ	subjunctive mode
		VOC	vocative case

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Résumé

Au cours des dernières décennies, on a pu observer un intérêt croissant pour le phénomène de la grammaticalisation. La présente étude ne vise pas une meilleure compréhension de la nature de certains phénomènes de grammaticalisation ni de leurs facteurs déclenchants, mais elle se propose plutôt d'analyser un aspect peu étudié jusqu'ici, à savoir les circonstances dans lesquelles la grammaticalisation ne se produit pas, même si toutes les conditions en seraient réunies. En nous basant sur une analyse contrastive de l'évolution historique d'une classe d'adverbes spatiaux, nous postulons qu'un décalage entre différents niveaux structurels de la langue peut constituer un premier facteur bloquant la grammaticalisation. Pour qu'une grammaticalisation puisse avoir lieu, les frontières sémantico-syntaxiques d'une construction grammaticalisante potentielle doivent s'aligner sur ses frontières prosodiques. Si les unités prosodiques sont décalées par rapport aux unités sémantico-syntaxiques, la grammaticalisation ne se produira probablement pas.

Zusammenfassung

In den letzten Jahrzehnten ist das Interesse an Grammatikalisierung in der Forschung stark gewachsen. Das Anliegen dieses Aufsatzes ist jedoch nicht ein besseres Verständnis von Grammatikalisierungsphänomenen oder den ihnen zugrundeliegenden Auslösern. Vielmehr geht es um die Frage, unter welchen Bedingungen Grammatikalisierung unterbleibt, obwohl deren Auftreten eigentlich zu erwarten wäre – ein Thema, das bisher in der Forschungsliteratur kaum Erwähnung gefunden hat. Auf der Basis einer vergleichenden Untersuchung der diachronen Entwicklung einer Klasse von Indo-Europäischen Lokaladverbien schlagen wir vor, dass Diskrepanzen zwischen verschiedenen Ebenen einer linguistischen Struktur eine Situation hervorrufen kann, in der Grammatikalisierung blockiert wird. Damit Grammatikalisierung eintritt, müssen nämlich die äußeren semantisch-syntaktischen Grenzen der entsprechenden Konstruktion mit den jeweiligen prosodischen Grenzen übereinstimmen. Ist jedoch prosodische Segmentierung in Relation zu semantisch-syntaktischer Segmentierung verschoben, kann Grammatikalisierung unterbleiben.

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