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Sound change and analogy, again: Brugmann’s Law and the hunt for *o*-grades in Indo-Iranian*

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Abstract

This article revisits the interaction between regular “Neogrammarian” sound change (defined as a purely phonological process) and subsequent morphological change (especially changes subsumed under the term “analogy”) in the development of the outcomes of Brugmann’s Law (BL) in Indo-Iranian. The traditional formulation of BL posits that Proto-Indo-European **o* became Indo-Iranian /ā/ in open syllables and /a/ elsewhere, positing a purely phonological context of application. Alternatively, Kiparsky (2010) has argued for a revised version of BL in which the accent and ablaut properties of the affected forms play a role, hence essentially for a synchronic morphophonological rule. I argue that this revised version fails both from the perspective of comparative reconstruction and as a synchronic rule based on a detailed study of the forms cited as evidence for the revised rule. Rather, in order to identify inherited **o* in Indo-Iranian the effects of the “blind” Neogrammarian rule must be separated from the synchronic morphological rules of the attested languages. This paper thus makes a methodological contribution in defense of the Neogrammarian approach to sound change, but also an empirical contribution by showing that this approach, in combination with a strictly lexical definition of analogy, can account for some conspicuous exceptions to traditional BL.

1 Introduction: Revisiting the Neogrammarian hypothesis

The Neogrammarian hypothesis — the idea that sound change “suffers no exceptions” — is undoubtedly foundational to the entire enterprise of historical-comparative linguistics and linguistic reconstruction. It is worth quoting the original formulation in full:

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“Aller lautwandel, soweit er mechanisch vor sich geht, vollzieht sich nach ausnahmslosen gesetzen, d.h. die richtung der lautbewegung ist bei allen angehörigen einer sprachgenossenschaft, ausser dem fall, dass dialektspaltung eintritt, stets dieselbe, und alle wörter, in denen der der lautbewegung unterworfenen laut unter gleichen verhältnissen erscheint, werden ohne ausnahme von der änderung ergriffen.”¹ (Osthoff and Brugman 1878: xiii)

The Neogrammarians moreover recognized that the “mechanical” application of sound change is due to its phonetic conditioning:

“Wenn wir daher von konsequenter Wirkung der Lautgesetze reden, so kann das nur heissen, dass bei dem Lautwandel innerhalb des selben Dialektes alle einzelnen Fälle, in denen die gleichen lautlichen Bedingungen vorliegen, gleichmässig behandelt werden. Entweder muss also, wo früher einmal der gleiche Laut bestand, auch auf den späteren Entwicklungsstufen immer der gleiche Laut bleiben, oder, wo eine Spaltung in verschiedene Laute eingetreten ist, da muss eine bestimmte Ursache und zwar eine Ursache *rein lautlicher Natur* [emphasis mine, L. G.] wie Einwirkung umgebener Laute, Accent, Silbenstellung, u. dgl. anzugeben sein, warum in dem einen Falle dieser, in dem anderen jener Laut entstanden ist.”² (Paul 1888: 62)

These insights have enabled us to reconstruct proto-languages for a variety of vastly different language families, from Proto-Algonquian to Proto-Sino-Tibetan. Moreover, as Hale (2007: 124f.) has emphasized and as was already apparent to the Neogrammarians, the fact that sound change is regular *because* it is phonetically conditioned naturally restricts its application to the (diachronic) *phonology* of a language. That is, *per definitionem*, sound change in the Neogrammarian sense cannot make reference to the lexicon, the morphology, or the syntax of a particular speaker’s grammar and is therefore expected to be regular in its domain. “Exceptions” caused by, e.g., taboo deformation, morphologically conditioned analogy (such as the restoration of a tense marker in a category where it would have been lost by a previous sound change) or lexical borrowing do not belong to the domain of sound change and need to be explained by other mechanisms. Honeybone (2016) formalizes these two types of changes as “N-changes” and “A-changes”, (1).

- (1) N-changes vs. A-changes (Honeybone 2016: 324–5)
 - a. N-changes = those which the *neogrammarians* called ‘sound change’; that is, those which are often seen as ‘*natural*’ changes, with exceptionless patterning

¹“... every sound change, inasmuch as it occurs mechanically, takes place according to laws that admit no exception. That is, the direction of the sound shift is always the same for all the members of a linguistic community except where a split into dialects occurs; and all words in which the sound subjected to the change appears in the same relationship are affected by the change without exception.” (Lehmann 1967: 203).

²“Accordingly, in referring to the consistent operation of sound laws we can only mean that in phonetic change within a dialect every single case in which the same phonetic conditions exist is treated uniformly. Therefore, there are just two possibilities: (1) where the same sound occurred at an earlier time, the same sound remains at later stages of development; or (2) the sound splits into different sounds, in which case there must be a specific cause that explains why different sounds have developed in different environments. These causes must always be *of a purely phonetic nature*; for example, the influence of neighboring sounds, accent, and syllable position.” (Murray 2015: 78; emphasis mine, L. G.).

- b. A-changes = those which are due to *analogy* or to a (re)*analysis* involving underlying forms, which have lexically specific patterning

This distinction is well-established at least since the Neogrammarians, standardly taught in introductory historical linguistics classes, and seems almost too mundane to repeat. So why bother revisiting it? Because even though these assumptions are more or less universally accepted, and despite the staggering success of the comparative method in reconstructing unattested language stages, the interaction of sound change with factors outside of the phonological domain, in particular analogy, remains an all-time classic problem of comparative reconstruction. This is partially due to the fact that the interaction between sound change and analogical change (between N-change and A-change) can be difficult to untangle thousands of years after the fact, especially if the transmitted material is insufficient, and partially because it requires an independent understanding of what possible *synchronic* phonological and “morphological” (or analogical) processes are and how these interact over time. These are, of course, not insurmountable obstacles, and one can understand the exasperation of Hill (2014: 2014), who laments “that the views of the Neogrammarians, despite lying for more than a century in thousands of pages of careful research in libraries around the world, are subject to grotesque caricature and require defense again and again.”³ (see also Fellner and Hill 2019 for just such a defense).

The aim of this paper is to use one of the classic Neogrammarian sound laws, Brugmann’s Law⁴ and a more recent reformulation of it (Kiparsky 2010), as a case study of how the definition of the “Neogrammarian” environment of a given sound change can be separated from its morphological environment, and that this crucially depends on a prior understanding of historical phonology in the N-change sense and the synchronic morphophonological rules of the language stage under discussion (which lead to A-changes). That phonology and morphology interact synchronically and diachronically is not at issue here — rather, I will make a case for the heuristic necessity of separating these domains in the formulation of sound laws in order to distinguish Neogrammarian N-change from subsequent A-change. This requires an understanding of how both of them work separately.

This paper is structured as follows. Section 2 introduces the traditional version(s) of Brugmann’s Law (BL) in Indo-Iranian and the different morphological categories that have

³Hill’s words echo the frustration of some of the leading Neogrammarians with their own contemporaries’ lack of methodological rigor: “Wer dagegen ohne not, nur um gewisse gelüste befriedigen zu können, ausnahmen von den einen dialekt beherrschenden lautgesetzen zulässt, wer entweder einzelne wörter oder wortkategorien von einer lautneuerung nicht betroffen sein lässt, die alle anderen formen nachweisbar betroffen hat, oder aber sporadisch, nur bei vereinzelt formen, eine lautbewegung aufgekommen sein lässt, von der alle anderen gleichgearteten formen nichts wissen, (...) der verfällt ganz notweniger weise dem subjectivismus und der willkür, der kann in solchen Fällen zwar immerhin recht geistreiche combinationen zu markte bringen, aber keine, die glauben verdienen, und darf sich also nicht beklagen, wenn man ihm die kalte negation entgegengesetzt.” (Osthoff and Brugman 1878: xiv-xv); transl. Lehmann (1967: 204): “There are, on the one hand, those who needlessly, only to be able to satisfy certain desires, admit of exceptions to the sound laws governing a dialect, who except either individual words or classes of words from a sound change which has demonstrably affected all other forms of the same type, or who postulate a sporadic sound change which has taken place only in isolated forms and which has not affected all other forms of the same kind; [He who does this] (...) necessarily falls victim to subjectivism and arbitrariness. In such instances he can indeed put out quite ingenious conjectures, but none that merit belief, and he must not then complain when he is faced with cold rejection.” It seems that every generation is doomed to repeat this cycle.

⁴Karl Brugmann (1849–1919) used the Dutch spelling of his last name, “Brugman”, until 1882, so the law is sometimes spelled “Brugman’s Law”, cf. Hajnal (1994: 194, fn. 1).

been discussed in the context of its application, as well as the reformulation of Kiparsky (2009, 2010). Section 3 contains a detailed reevaluation of Kiparsky’s version of the rule based on the examples that are adduced as evidence for his reformulation and a discussion of the methodological issues that arise from it. Specifically, I argue that the reformulation fails both as a synchronic description of BL-conditioned alternations and (on the diachronic side) as a sound change in the N-change sense. Section 4 discusses the role of analogy in determining the exact context of the application of BL and different theoretical approaches to analogy (in particular Albright 2005, 2008, 2010; Reiss 2006). This section then illustrates how analogy, understood as a type of lexical change, interacts with Neogrammarian sound change to erase and extend BL variants at the synchronic level, using the ablaut of nominal *i*-stems in Indo-Iranian as a further case study. Section 5 contains the conclusion.

2 Brugmann’s Law in Indo-Iranian

2.1 Indo-Iranian phonology and “traditional” Brugmann’s Law

One of the most conspicuous changes that set the older Indo-Iranian (IIr.) languages apart from other ancient Indo-European (IE) languages is the merger of the Proto-Indo-European (PIE) non-high short vowels **e*, **o*, and **a* as **a* and the non-high long vowels **ē*, **ō*, and **ā* as **ā* in Proto-Indo-Iranian (PIIr.), cf. (2) and Table 1. For reasons of space, most examples in the following discussion are from Vedic Sanskrit (Old Indic, in particular R̥gvedic Sanskrit, ca. 1400–1100 BCE), supplemented with Avestan as the oldest representative of the Iranian branch.

- (2) The Indo-Iranian vowel merger
 PIE **a*, **e*, **o* > PIIr. **a*
 PIE **ā*, **ē*, **ō* > PIIr. **ā*

Table 1: Examples of the Indo-Iranian vowel merger

PIE	Meaning	Vedic	Other IE languages
<i>*pénk^we</i>	‘5’	<i>páñca</i>	Gk. <i>pénte</i> , Lith. <i>penki</i>
<i>*oktō(u)</i>	‘8’	<i>aṣṭā</i>	Lat. <i>octō</i> , Gk. <i>októ</i>
<i>*h₁ésti</i>	‘is’ (3sg.pres.act)	<i>ásti</i>	Lat. <i>est</i> , Gk. <i>estí</i> , Hitt. <i>ēšzi</i>
<i>*sal-</i>	‘salt’	<i>sal(ila)-</i>	Lat. <i>sal-</i> , Gk. <i>hál-</i>

Because **ē* and **ō* participated in the system of qualitative and quantitative ablaut that was used in PIE to distinguish between morphological categories and grammatical functions, this vowel merger had widespread consequences for Indo-Iranian morphophonology that led to a restructuring of the inherited ablaut system.⁵ This system is briefly illustrated below for the reconstructed Indo-European nominal system; for a more detailed discussion see Fortson (2010: ch. 6); Widmer (2004: 49–62); Neri (2003: 12–43, 2017).

⁵The extent to which **ā* participated in the PIE ablaut system is contested, but will not be relevant in the following. Note that I follow the standard assumption of, e.g., the Freiburg, Harvard, and Vienna “schools” of Indo-European reconstruction in reconstructing PIE **ā* (cf. handbooks such as Mayrhofer 1986, Fortson 2010, LIV², etc.), unlike, e.g., the Leiden school which assumes that PIE did not have **ā*.

PIE mainly used suffixation for word formation (derivation) and inflection. The basic structure of a PIE noun is *R - S - E*, root - suffix - ending, and all three parts can theoretically *ablaut* and show lengthened grade (\bar{e} or \bar{o} , also referred to as “ \bar{e} -grade” and “ \bar{o} -grade”), full grade (*e* or *o*, also referred to as “*e*-grade” and “*o*-grade”) and zero grade, in which the vocalic nucleus of the root, suffix, or ending is deleted. Thematic suffixes moreover contain an invariant theme vowel -*o*- that normally does not undergo ablaut.⁶ Ex. (3) illustrates the basic noun structure for a thematic noun. The citation form of roots is with *e*-grade, or R(*e*).

(3) Structure of a thematic noun in PIE (root $*b^her$ ‘carry, bear’)

$*b^h\acute{o}r$ -*o* -*s* ‘load’ (nom.sg.)
R -S -E

While thematic nouns do not display ablaut and accent alternations within their paradigm, athematic nouns lack a theme vowel and can in principle have accent and ablaut alternations in the root, the suffix, and the endings within one and the same paradigm. However, not all logically possible combinations of root, suffix, and ending ablaut are reconstructed for the proto-language. The four core classes of athematic nouns that are standardly reconstructed are summarized in Table 2 with examples. “Strong stem” (SS) refers to the nominative (+ vocative) and accusative, “weak stem” (WS) to the other case forms, i.e., the “oblique” cases (PIE instrumental, dative, ablative, genitive).⁷

Table 2: PIE nominal accent-ablaut classes, Fortson (2010: 119–22)

	Acrostatic	Proterokinetic	Hysterokinetic	Amphikinetic
SS	R(\acute{o})-S(\emptyset)-E(\emptyset)	R(\acute{e})-S(\emptyset)-E(\emptyset)	R(\emptyset)-S(\acute{e})-E(\emptyset)	R(\acute{e})-S(o)-E(\emptyset)
WS	R(\acute{e})-S(\emptyset)-E(\emptyset)	R(\emptyset)-S(\acute{e})-E(\emptyset)	R(\emptyset)-S(\emptyset)-E(\acute{e})	R(\emptyset)-S(\emptyset)-E(\acute{e})
SS (nom.)	$*n\acute{o}k^u-t-s$	$*m\acute{e}n-ti-s$	$*ph_2-t\acute{e}r-s$ (> $*-t\acute{e}r$)	$*d\acute{e}h_3-tor-s$ (> $*-t\acute{o}r$)
WS (gen.)	$*n\acute{e}k^u-t-s$	$*m\grave{n}-t\acute{e}i-s$	$*ph_2-tr-\acute{e}s$	$*dh_3-tr-\acute{e}s$
Meaning	‘night’	‘thought’	‘father’	‘giver’

In acrostatic nouns (Gk. *ákrōs* ‘at the front, frontmost’, *stásis* ‘standing’), the accent always stays on the root, which alternates between *o*-grade in the strong stem and *e*-grade in the weak stem. In proterokinetic nouns (Gk. *próteros* ‘before, in front’, *kínēsis* ‘motion, movement’) the accent is on the root in the strong stem and on the suffix in the weak stem. The morpheme that bears the accent always has *e*-grade. In hysterokinetic nouns (Gk. *hústeros* ‘latter’, *kínēsis* ‘motion, movement’), the accent is on the suffix in the strong stem, but on the endings in the weak stem. The morpheme that bears the accent always has *e*-grade. Finally, in amphikinetic nouns (Gk. *amphí* ‘on both sides’, *kínēsis* ‘motion, movement’), the accent is

⁶Remnants of an ablaut variant -*e*- of the nominal theme vowel are found in the vocative and locative singular and “secondary derivatives” formed to thematic nouns, such as denominal nouns and verbs, and maybe in some nominal compounds.

⁷The accusative plural is often treated as belonging to the weak rather than the strong stem based on the Indo-Iranian evidence, cf. Fortson (2010: 114); but Neri (2017: 121–2) argues that this could actually represent an innovation. The locative displays some ablaut peculiarities that set it apart from both the strong and the weak stem. These issues will not be relevant in the following discussion.

on the root in the strong stem, but on the endings in the weak stem. The accented morpheme always has *e*-grade. In addition, the suffix has *o*-grade in the strong stem.

It must be emphasized again that this system is *reconstructed* based on the oldest attested stages of the Indo-European languages, using archaic and synchronically isolated forms to determine older stages of a given synchronic system. Thus none of the Indo-European branches preserve the system outlined above in its entirety: Some have given it up completely, while others have modified it. The timeline and extent of the changes these paradigms underwent on the way to the daughter languages require further study and are still up for debate, and alternative versions of the noun classes in Table 2 and additions to them have been proposed in the literature, for example in Tremblay 1996; Neri 2003, 2017; Keydana 2005, 2013; Kiparsky 2010; Kloekhorst 2018, to name but a few. For reasons of space, and because the main point of this article is a methodological one, these cannot be discussed here in the detail they deserve.

What is important for our purposes is that due to the merger of the PIE non-high short vowels as **a* (and non-high long vowels as **ā*) and the widespread generalization of either the strong or the weak stem throughout the paradigm, the four classes in Table 2 are not always straightforwardly recoverable in Indo-Iranian. In particular, the reconstruction of *o/e/ō/ē*-grades in Indo-Iranian is closely linked to independently motivated properties of morphological categories through comparative reconstruction, in combination with phonological factors such as palatalization of preceding consonants (suggesting former **ě*-grade) or the synchronic placement of the accent (which can help distinguish between hystero- and amphikinetic nouns, for example). However, these criteria do not always help, as in cases in which original *e*- and *o*-grades have been obscured due to pre-Indo-Iranian coloring of *e* by an adjacent laryngeal (“laryngeal coloring”, **h₁e* > *h₁e*, **h₂e* > **h₂a*, **h₃e* > **h₃o*; cf. Fortson 2010: 62–4, Mayrhofer 1986: 121ff. for the basic descriptive facts), as in the reflexes of the roots **h₁er* ‘arrive, get somewhere’ (LIV²: 238) vs. **h₃er* ‘(begin to) move’, which both become *ar* in Indo-Iranian, or **h₁ep* ‘seize’ (LIV²: 237) vs. **h₃ep* ‘work, produce’ (LIV²: 298), both IIr. *ap*, etc., or in cases in which both R(*o*) and R(*ē*) are morphologically plausible, e.g., Ved. *ājī-* m./f. ‘race’ < **h₂oġ-i-* or *h₂ēġ-i-*, see section 4.2 below.

But there is an additional time-honored way of identifying **o*-grades in Indo-Iranian, namely *Brugmann’s Law* (BL), which states that PIE **o* goes to IIr. **ā* in open syllables (= syllables without a coda, i.e., *o.CV* and *o#*) and to **a* elsewhere (cf. Collinge 1985: 13–21). Brugmann’s original formulation is given in (4) (emphasis mine, L. G.).

- (4) Brugmann’s Law (BL), Brugman (1879: 2–3) $a_1 = \text{PIE } *a/*e$, $a_2 = \text{PIE } *o$
 “Als gesetz lässt sich aufstellen: bei ungestörter weiterentwicklung wird a_1 in den europ. sprachen so wie im armenischen zu a , e , im arischen zu a ; a_2 dagegen im armenischen, griechischen, italischen und slavischen zu o , im keltischen, germanischen und baltischen zu a , **im arischen in allen offenen silben zu \bar{a}** (z.b. *bhár-ā-masi* = φέρ-ο-μεν, *dár-u* = δόρ-υ, *pád-am* = πόδ-α), **hingegen in allen geschlossenen silben zu a** (z.b. *dadárça* = δέδορχα, *ábharam* = ἔφερρον).”⁸

The history of research on BL and the modified contexts of its application that have been

⁸“We may consider it a law that, all else being equal, a_1 turns into a , e in the European languages and in Armenian, and into a in Aryan; a_2 on the other hand turns into o in Armenian, Greek, Italic and Slavic, and into a in Celtic, Germanic and Baltic, **whereas in Aryan it turns into \bar{a} in all open syllables** (e.g., *bhár-ā-masi* = φέρ-ο-μεν, *dár-u* = δόρ-υ, *pád-am* = πόδ-α), **but into a in all closed syllables** (e.g., *dadárça* = δέδορχα, *ábharam* = ἔφερρον).” (transl. & emphasis mine, L. G.).

proposed are discussed extensively in Collinge 1985: loc.cit., Mayrhofer 1986: 146ff., 2004: 7ff., Hajnal 1994, and Volkart 1994; on the phonetics of the change see Keydana 2012 and Kümmel 2012. Table 3 gives some examples for the “classical” context (= “in open syllables”) formulated by Brugmann himself from the verbal, nominal, and indeclinable/numeral system (numerals 1–4 decline, higher numerals are indeclinable).

Table 3: **o*-grades and Brugmann’s Law

	Open syllable			Closed syllable		
	Vedic	Greek	Meaning	Vedic	Greek	Meaning
verb	<i>bhárāmāsi</i>	<i>phéromen</i>	‘we carry’ (act.)	<i>ábharam</i>	<i>épheron</i>	‘I carried’
	<i>bhárāmāhe</i>	<i>pherómetha</i>	‘we carry’ (mid.)	<i>bháranti</i>	<i>phérousi</i> ⁹	‘they carry’ (act.)
	<i>jāgāra</i>	<i>egrégore</i>	‘has woken up’	<i>dadárśa</i>	<i>dédorke</i>	‘has seen’
noun	<i>dāru</i>	<i>dóru</i>	‘wood’	<i>adántas</i>	<i>édontes</i>	‘eating’ (nom.pl.)
	<i>pādāma</i>	<i>póda</i>	‘foot’ (acc.sg.)	<i>náktam</i>	<i>núkta</i> ¹⁰	‘night’ (acc.sg.)
	<i>bhārās</i>	<i>phóros</i>	‘load’	<i>añkás</i>	<i>ónkos</i>	‘hook’
	<i>ásmānam</i>	<i>ákmona</i>	‘rock’ (acc.sg.)	<i>vācas</i>	<i>épos</i>	‘word’
other	<i>ghā</i> ¹¹	(PIE * <i>g^ho</i>)	emph. ptcl.	<i>aṣṭá</i>	<i>októ</i>	‘8’

These examples show that BL operated “blindly” (in the Neogrammarian sense) across morphological categories. However, there are also apparent exceptions to BL which are restricted to specific morphological or morphosyntactic environments. These are discussed in the next section.

2.2 “Regular” exceptions

A number of “regular” exceptions to BL have been explained by the laryngeal theory ever since Kuryłowicz (1927), that is, by reconstructing a laryngeal at the stage at which BL operated that originally turned the preceding syllable into a closed syllable and was subsequently lost. Thus some word forms of morphosyntactic categories that are reconstructed with *o*-grade, such as the third singular passive aorist *ájani* (RV), appear to be synchronic exceptions to BL for so-called “*seṭ*-roots” like Vedic *janⁱ* ‘be born’, which go back to roots ending in a laryngeal. The superscript *i* indicates the regular reflex of the laryngeal before a following consonant; “*seṭ*” is the term of the Sanskrit grammarians for these and means “with *i*”. Roots that did not end in a laryngeal and hence do not surface with final *i* before a following consonant are called *aniṭ*-roots (“without *i*”). Table 4 illustrates this behavior by comparing the BL to the non-BL forms of the passive aorist.

⁹ < **phéronsi* < **phéronti*.

¹⁰ < **nók^w-t-m*, cf. Latin *noctem*.

¹¹ See Hale (1999).

Table 4: Unaugmented 3sg. passive aorist forms

BL	PIE	no BL	PIE
<i>kā.ri</i> ‘was made’	< * <i>k^wo.rV</i> ¹²	<i>ja.ni</i> ‘was born’	< * <i>ǵon.h₁V</i>
<i>vā.ci</i> ‘was said’	< * <i>uo.k^wV</i>	<i>ro.ci</i> ‘shone’	< * <i>lou.kV</i>
<i>sā.dī</i> ‘sat’	< * <i>so.dV</i>	<i>dar.śī</i> ‘appeared’	< * <i>dor.k̂V</i>

The 3sg. form *ájani* is an archaism; the *synchronically* productive rule for forming passive aorists from roots of the shape *CaR* (where C = any consonant, R = any resonant) is (augmented) *(a-)Cār-i*, even if the root is synchronically a *set*-root, e.g., Ved. *átāri* ‘was brought across’ (not **átari*) to *tarⁱ* < **terh₂* and Ved. *śāri* ‘broke’ (not **śari*) to **śarⁱ* < **kerh₂*. In effect, R(*ā*) by BL was “morphologized” in this context, as it was in certain other contexts, independent of whether the root historically contained a laryngeal or not. The same “morphologization” affected the third singular forms of the perfect active, whose ending is *-a* (< **-e*). This ending, too, created a BL context with roots of the type *CVC*, as illustrated in Table 5, whereas the endings of the first and second person active, which began with a consonant at the time BL operated, did not. Note especially the contrast between the first and third person singular — both endings are synchronically vowels, but the ending of the first person is reconstructed with a laryngeal, hence no BL context and no lengthening of the root vowel, while the third person ending was always vocalic.

Table 5: Perfect singular active

	Vedic <i>kar</i>	PIE * <i>k^wer</i>	Vedic <i>darś</i>	PIE * <i>derk̂</i>
1sg.	<i>cakāra</i>	< * <i>k^we.k^wor.h₂e</i>	<i>dadārśa</i>	< * <i>de.dork̂.h₂e</i>
2sg.	<i>cakārtha</i>	< * <i>k^we.k^wor.th₂e</i>	<i>dadārś[i]tha</i>	< * <i>de.dork̂.th₂e</i>
3sg.	<i>cakāra</i>	< * <i>k^we.k^wo.re</i>	<i>dadārśa</i>	< * <i>de.dor.k̂e</i>

As in the case of the passive aorist, the lengthening of the root vowel was extended to all roots in the third person singular of the perfect, including to *set*-roots where the third person was originally not a BL environment, e.g., 3sg. act. *jajāna* ‘has created’ for expected **jajāna* < **ǵe-ǵon.h₁-e* (Gk. *gégone*) and 3sg. act. *jagāra* ‘has devoured’ for expected **jagāra* < **ǵ^we-ǵ^wor.h₃-e* (cf. Kümmel 2000).

A further environment where “analogical extension” of BL is said to have played a role is that of the *-aya*-causative. Like the third singular forms of the passive aorist and the perfect active, the suffix *-aya-* (< **eje/o-*) causes lengthening of the root vowel with (*anit*) roots of the shape *CVC*, as illustrated in Table 6 (see further Jamison 1983 and Bozzone 2020 on these stems).

¹²I remain agnostic on what the inherited 3sg. ending was, but it is clear that it began with/was a vowel, cf. Jasanoff’s reconstruction of a 3sg. aorist middle ending **-o* or **-e* (Jasanoff 2003: 207ff., 2019: 59) which was replaced by **i* via analogy in Proto-Indo-Iranian. Another popular explanation is that the 3sg. reflects old nominal **i*-stems of the type Gk. *tróphis* ‘fat, nourished’ (favorably Kümmel 1996).

Table 6: Vedic *áya*-causatives

a. Vedic <i>seṭ</i> : no BL	PIE	b. Vedic <i>aniṭ</i> : BL	PIE
<i>janáya</i> - ‘beget’	< * $\hat{g}on.h_1\acute{e}.\acute{i}e/o-$	<i>dhāráyā</i> - ‘holds, supports’	< * $\hat{d}^ho.r\acute{e}.\acute{i}e/o-$
<i>dhanáyā</i> - ‘let go, run’	< * $\hat{d}^hon.h_2\acute{e}.\acute{i}e/o-$	<i>gāmáyā</i> - ‘bring’	< * $\hat{g}^wo.m\acute{e}.\acute{i}e/o-$
<i>jaráyā</i> - ‘make old’	< * $\hat{g}or.h_2\acute{e}.\acute{i}e/o-$	<i>sādáyā</i> - ‘seat, make sit’	< * $\hat{s}o.d\acute{e}.\acute{i}e/o-$

Roots ending in more than one consonant behave like the *seṭ* roots in Table 6 and do not show BL, e.g., *darśaya*- (AV) ‘show’ < * $\hat{d}ork\acute{e}.\acute{i}e/o-$, *bodháya*- ‘wake someone up’ < * $\hat{b}^ho\acute{u}d^h\acute{e}.\acute{i}e/o-$, *rocáyā*- ‘let shine’ < * $\hat{l}ouk\acute{e}.\acute{i}e/o-$, etc. Moreover, like in the third singular perfect and passive aorist, *seṭ*-roots of the shape CaR^i , CaT^i *synchronously* take R(\bar{a}), e.g., *tāráyā*- ‘bring across’ < * $\hat{t}orh_2\acute{e}.\acute{i}e/o-$, so the *seṭ* forms in Table 6 should once again be classified as archaisms. At the same time, *aniṭ*-roots that end in nasals begin to generalize *guṇa* (full grade) instead of the expected lengthened grade (*vṛddhi*), e.g., *gamáyati* ‘makes go, brings’ for older *gāmáyati* (both attested in the RV); *ramáyati* for *rāmáyati* ‘cause to be still’ (both RV), etc. Jamison (1983: 204) in fact argues against the “laryngeal explanation” of the *seṭ*-forms in Table 6 because it does not account for “short vowel forms” like *namáyati* ‘makes bow’ and *gamáyati* ‘makes go’ (that is, *guṇa*-forms to *aniṭ*-roots), nor for “long vowel forms” like *tāráyati* ‘makes cross’ and *pārā bhāvayati* ‘makes perish’ (that is, *vṛddhi*-forms to *seṭ*-roots). However, there is no reason to believe that the “laryngeal explanation” must cover *all* Indo-Iranian exceptions, as we have already seen that the “morphologization” (or “analogical extension” of BL) also took place in the passive aorist and the perfect where it also gave rise to diachronically unexpected *vṛddhi*-forms. Moreover, Jamison herself provides plausible inner-Indic explanations for the extension of *guṇa* to *aniṭ*-roots. Finally, the *seṭ*-forms in Table 6 have cognates outside of Indo-Iranian (Ved. *janáyati* = OE *cennan* ‘beget’; Ved. *dhanáyati* = (possibly) Celt-Ib. *uer-ḍoniti* ‘leads across’, LIV²: 144; Ved. *jaráyati* = OCS *sъ-zoriti* ‘causes to ripen’, LIV²: 165), making it more likely that they are indeed inherited forms in which BL should in principle have applied (had they had the right root shape), rather than synchronically deverbal to full grade thematic presents, which is Jamison’s alternative explanation for the lack of *vṛddhi*.

To summarize, while there is no doubt that BL originally operated “blindly” in the Neogrammarian sense, it was turned into a morphophonological rule by the time of attestation of the oldest Indic and Iranian languages and operated in contexts that were not necessarily BL contexts from a diachronic point of view, as is most clearly seen with *seṭ* roots of the shape CaR^i , CaT^i , etc. The examples discussed here all come from the verbal system; we will turn to the nominal system in the next section. Crucially, nothing we have seen so far is in any way surprising from the perspective of how sound change diachronically interacts with morphophonology: The morphologization of phonological rules such as umlaut and other non-automatic alternations is a much-discussed phenomenon in historical linguistics, although the formal implementations do of course vary (cf., e.g., Kiparsky 1982b, Joseph and Janda 1988, Garrett and Blevins 2008, Ringe and Eska 2013: ch. 6). The problem lies in deciding which forms are the result of the original, i.e., ‘blind’ operation of the sound law, and which ones are due to the synchronic morphophonological rule. This can only be decided once the original context in which the sound law operated has been defined, and this is where things get tricky. We now turn to Kiparsky’s reformulation of BL in the next section.

2.3 Brugmann’s Law revisited: Kiparsky (2010)

Kiparsky (2009, 2010; and earlier in Kiparsky 1973b, Kiparsky and Halle 1977) proposes a “compositional” approach to nominal accent-ablaut classes in PIE and Sanskrit based on some fairly simple rules that govern the distribution of accent and ictus in morphologically complex word forms. In this context, Kiparsky (2010: 148–149) also briefly discusses BL (a longer discussion can be found in Kiparsky 2009: 11–15, which is available on the author’s website), which according to him is also partially conditioned by the accent. His definition of BL is given in (5).

- (5) BRUGMANN’S LAW (Kiparsky 2010: 148)
Fleeting *-o-* is lengthened in an open syllable when not followed by an accented morpheme.

“Fleeting” refers to vowels that can undergo ablaut synchronically, that is, the synchronic alternation between zero, *guṇa* (full grade with underlying root vowel *a*) and *vṛddhi* (root vowel *ā*), as opposed to roots that are synchronically invariant and do not undergo zero grade or *vṛddhi* (e.g., *vyath* ‘tremble, waver’).

Before discussing the relevant evidence for the definition in (5), let’s pause and remind ourselves what the goal of this enterprise is. Kiparsky argues that the “compositional approach” is better suited to achieve a comprehensive, descriptively accurate and natural (in the sense of “typologically plausible”) account of the attested Indo-European and the reconstructed Proto-Indo-European nominal accent-ablaut classes summarized in Table 2 than the “paradigmatic” approach, which he attributes to Schindler (1972, 1975a, 1975b), based on previous scholarship by, e.g., Pedersen (1926) and Kuiper (1942), on whose work the reconstruction of these nominal classes largely rests together with that of other scholars of the “Hoffmann school” (e.g., Eichner 1973, 1974; Hoffmann 1976; Rix 1976).

However, this comparison implicitly depends upon a strawman argument right from the start, since there is no such thing as a “paradigmatic approach” to PIE accent-ablaut classes: The goal of the works Kiparsky refers to is to *reconstruct* the surface accent and ablaut properties of different nominal classes based on attested forms in the older IE languages, with special attention given to synchronically isolated and archaic forms, since these were (correctly, from the point of view of the comparative method) assumed to preserve an older state of affairs. It was not intended to provide a theoretical framework that derives the synchronic rules of the accentual systems of the attested older IE languages themselves (or the PIE system, for that matter), whether “paradigmatic” (paradigm-based?) or not. The “compositional approach”, on the other hand, does precisely that, and hence (also correctly) focuses on the synchronically productive system and productively generated (rather than archaic) word forms. Therefore these are not competing theories (or “approaches”) that attempt to explain one and the same phenomenon, but separate enterprises: One of comparative reconstruction that attempts primarily to determine the accent and ablaut of the surface forms of the older system (with potential consequences for various theoretical accounts of how to derive these surface forms) and one of morphophonological theory that attempts to derive the synchronic surface forms by formulating more general morphophonological rules (with potential consequences for the reconstruction of the older system). Kiparsky (2010: 141) actually explicitly acknowledges this. But then why proceed as if these *are* actually competing approaches? In the following, we will see that this is the result of failing to distinguish between these separate domains and

not taking the comparative method seriously. As a consequence the lines between synchronic morphophonological rules and their diachronic development are constantly blurred. That is, throughout the discussion, it is not always clear which reconstructed or attested stage of Proto-Indo-European, Proto-Indo-Iranian or Indic the proposed accent rules are supposed to capture, and this is especially evident in Kiparsky’s discussion of Brugmann’s Law. Kiparsky states “With Kuryłowicz, I believe it [BL; L. G.] is not a sound change, but a morphophonological process that has been added to the inherited ablaut system within Indo-Iranian.” (Kiparsky 2010: 148). But unless BL was a synchronic morphophonological rule already at the PIE stage (which nobody has ever claimed as far as I know), it *must* have been based on a sound change at some point, for example, a reanalysis of tense **o* as a long vowel in certain environments, as suggested by Keydana (2012). Therefore this statement must refer to the fact that some of the *outcomes* of BL were “morphologized” so that roots of a particular structure take *vrddhi* in certain grammatical categories (e.g., *aya*-stems, the 3sg. perfect active, the passive aorist, certain *a*-stem nouns), independent of whether or not they originally ended in a laryngeal or had an etymological **o*.¹³ The conclusion then seems to be that some BL forms in Indo-Iranian are the result of a diachronic process (“sound change”), while others are due to a synchronic (Old Indic or Proto-Indo-Iranian) process (a synchronic morphophonological rule), and that Kiparsky is interested in the latter. In that case the reference to *-o-* must then be intentionally anachronistic.

On the other hand, if his version of BL is “not a sound change”, but a synchronic rule that has been added to the “inherited ablaut system within Indo-Iranian”, why *does* the definition of BL make reference to *o* rather than *a* at all? This is a vowel of PIE, not of Proto-Indo-Iranian. The definition in (5) suggests that BL did in fact apply when the “pre-Indo-Iranian” vowels **o*, **e*, **a* were still distinct. But again, if (5) is supposed to be a synchronic rule of Vedic (or Proto-Indo-Iranian?), then it should make reference to *any* Indo-Iranian (**)a*, whether from PIE **e*, **a*, or **o*, or possibly to different /a/-phonemes that were still distinguished by Proto-Indo-Iranian or Old Indic speakers, e.g., ablauting vs. non-ablauting *a*. But the latter version is difficult to implement without referring to morphological category or root structure, and even then it is evidently not going to work, as there is no lengthening of (Proto-Indo-Iranian/Vedic) fleeting (**)a* in categories that historically had **e*-grade and were not followed by an accented morpheme, e.g., no **bhāрати* ‘carries’ instead of attested *bhāрати* (< **b^héreti*), etc. So the version of BL in (5) seems to say that ablauting *o* (a PIE sound) is sensitive to the position of the accent *in Indo-Iranian*, given that (5) “has been added to the inherited ablaut system within Indo-Iranian” and all of Kiparsky’s examples (to be discussed below) make reference to the position of the accent in Vedic.

The same problem extends to the definition of “fleeting *o*” — is it “fleeting” at the Proto-Indo-European, Proto-Indo-Iranian, or Indic stage? The fact that the definition refers to *o* and not *a* suggests that it’s PIE or (pre-)Proto-Indo-Iranian, but what’s relevant for the rule to work as a synchronic extension of the ablaut system is root ablaut in Old Indic, obviously. Moreover, whether or not a root (or suffix) ablauts in Indic (or even Indo-Iranian) is not necessarily going to tell us whether it could ablaut in PIE: the changes in ablaut properties of various roots and stem classes are precisely what is at issue here. For example, the Vedic root *bhav* ‘be(come)’, which does ablaut in Indo-Iranian (Ved. 3sg. pres. *bhāvati*, 3sg. aor. *ābhūt*,

¹³Unless we assume that the vowel system of Proto-Indo-Iranian was the same as that of Proto-Indo-European, which has been out of favour at least since the 1880s; cf. Mayrhofer (1983); Collinge (1985: 133ff.); though see Kümmel (2012) for an interesting twist on this idea.

2sg.ipv. *bodhi*) was probably “apophonically invariant in late Proto-Indo-European, at least as far as the verbal system was concerned” (Jasanoff 1997: 176), as Indo-Iranian is in fact the only branch in which this root ablauts (cf. Greek *phúō*, aorist 3sg. *phū* ‘grow’, Lat. *fūit*, etc., all suggesting an invariant root **b^huh₂*). Root and suffix ablaut in the daughter languages therefore cannot straightforwardly be equated with root and suffix ablaut in PIE.

Finally, assuming for a moment that (5) *is* actually the definition of a “Neogrammarian” sound change does not help us either, because then we would not expect it to be sensitive to lexical/morphological information such as whether or not a vowel **o* can ablaut. Kiparsky has of course criticized the notion that “sound change operates blindly” elsewhere (e.g., Kiparsky 1995), but certainly not to the extent that, e.g., “**o > a* except in feminine verbal abstracts” can be a possible sound change. By the same token, “**o > ā* if **o* can ablaut” should likewise be excluded from the set of possible N-changes.

In the following sections, we will look more closely at the evidence adduced in favor of (5) itself, which is summarized in (6).

(6) Evidence for the definition of BL in (5); Kiparsky (2010: 148–9)

a. Fleeting *-o-* lengthens¹⁴

acc. **pód-m̄ > pádam* ‘foot’ (*upa-bd-á-* ‘stepping’, Av. *frabda* ‘front foot’); acc. **suésor-m̄ > svásāram* ‘sister’ (gen.pl. *svásr̄nām*); acc. **néptor-m̄ > náptāram* ‘nephew’ (vs. **-erm̄* in *pitāram* ‘father’, *mātāram* ‘mother’); **h₂óp-es > óp-es > āpas* ‘waters’ (**duih₂p-á- > dvīpá-* ‘island’); **sók^w-h₂oi-m̄ (sic) > sákhāyam* ‘companion’ (dat.sg. *sákhye*); **h₃rég-on-m̄ > rájānam* ‘king’ (instr.sg. *rājñā*; **h₂ói-u- > āyu* ‘life(span)’ (Av. *yaoš, yawuā, yawue*); **dór-u- > dāru* ‘wood’ (instr.sg. *drú-ñā*; *dru-šád(-van-)* ‘perched on a tree’); 3sg.perf.act. **k^we-k^wór-e > cakāra* ‘do’ (mid. *cakré*).

b. Fixed *-o-* does not lengthen

póti- > páti- ‘lord’; **h₃eui- (sic) > *óui- > *ávi-* ‘sheep’; **k^wóti > káti* ‘how many?’; **pró, próti > prá, práti* ‘against’; both vowels in *h₃óp-os- > āpas-* ‘work’ (Lat. *opus*), *apás-* ‘working’ (gen.sg. *āpasas, apásas*; **tómos- > támas-* ‘darkness’ (Lith. *tamsà*; (**h₃ónos- >)* *ānas-* ‘(heavy) cart’ (Lat. *onus* ‘burden’).

c. Variably fleeting *-o-* lengthens variably

h₂us-os- > nom/acc.du. ušás-ā ~ ušās-ā, gen.sg. *ušás ~ ušásas* ‘dawn’; **h₂uksen-m̄ > ukšānam ~ ukšānam* (acc.pl. *ukšānas ~ ukšñás* ‘bull’.

The examples of BL lengthening in (6a) (and footnote 14) are uncontroversial and both formulations (“traditional” BL and Kiparsky’s version) predict *-ā-* in these examples. They differ for (6b–c), however: Traditional BL predicts lengthening in (6b) and in the original *o*-grade examples in (6c), whereas Kiparsky’s version expects no lengthening in (6b) and “variable” lengthening in (6c), depending on whether or not the relevant vowel is *synchronically*

¹⁴Kiparsky (2009: 12) further adduces acc. **h₂ek̄-mon-m̄ > ásmānam* ‘rock’, acc. **tétk̄-on-m̄ > táksānam* ‘carpenter’, nom.pl. **g^wóu-es > gāvas* ‘bulls’, nom.pl. **duór-es > dvāras* ‘doors’, acc.sg. **uóġ^h-m̄ > vāham* ‘puller’, nom.-acc. **ġón-u > jānu* ‘knee’, nom.-acc. **són-u > sānu* ‘back, ridge’, and **k^wetúóres > catvāras* ‘four’ for this context. Two further examples should be discarded: *vāhas-* n. ‘offer’ in all likelihood goes back to a Narten *s*-stem **uég^h-(o/e)s-* (Schindler 1975b, Höfler 2012) and *nāman-* n. ‘name’ which must be reconstructed with a root-final laryngeal (**h₁neh₃-m̄-*, see Neri 2005). Note, moreover, that I assume that **o* from **h₃e* normally undergoes BL, unlike, for example, scholars of the Leiden school (cf. Lubotsky 1990). If one accepts the Leiden modification of BL, all cases with initial **h₃* in this list would also have to be excluded.

a “fleeting vowel”, as is clear from his use of the *ukṣáṇam* ~ *ukṣāṇam* example, which is not usually reconstructed with an *o*-grade of the suffix (though see section 3.2.2). Note again the problem with the chronology — (6a–b) refer to an early or even pre-Indo-Iranian **o*-grade, whereas (6c) can only be understood as referring to the *synchronic* ablaut of Old Indic.

The following section takes a closer look at the examples in (6b–c). Kiparsky (2009: 12) moreover lists a fourth context, “No lengthening before accented morphemes”, which follows from (5) and will be addressed throughout the following discussion, especially in sections 3.2.1 and 4.2.

3 Exceptions to “traditional” BL and the hunt for *o*-grades

3.1 “Fixed -*o*- does not lengthen”

3.1.1 Preliminaries

Recall that we are dealing with a chronological problem: On the one hand, the context for Kiparsky’s version of BL in (5) refers to **-o-*, a PIE or pre-PIIr. vowel, *not* Proto-Indo-Iranian or Proto-Indic **a* (or **o*). On the other hand, whether or not a root or suffix has a “fleeting” vowel or not is evidently a synchronic property of Old Indic. However, if the words in (6b) *did* have PIE **-o-* in open syllables, they would be genuine counterexamples to the traditional formulation of BL. In order to confirm this, we need to show that these examples 1) cannot securely be reconstructed with preserved root/suffix ablaut at the stage at which BL operated (presumably early or “pre-”Proto-Indo-Iranian, in line with Kiparsky’s formulation of BL) and 2) did not contain non-BL contexts in their paradigm to an extent that would suggest that generalization of the non-BL variant to all forms (“analogy” or “paradigmatic leveling”) was at least a possibility.¹⁵ Kiparsky does not discuss the latter problem, interestingly, though his discussion of the open vs. closed inflection of *i-* and *u-*stems suggests that he must be aware of it, and of course “paradigmatic leveling” is a staple explanatory device in historical morphology (though not without problems, cf. Kiparsky 1973a, 1982a: 199–236; Schindler 1974). We will sharpen the definitions of “analogy” and “leveling” in section 4, after the discussion of the relevant forms.

A brief note on the inflectional endings is in order before proceeding: Indo-Iranian athematic stems with suffix ablaut developed two distinct variants, called “open” and “closed” inflection (the terms go back at least to Pedersen 1926). The difference is most clearly seen in the genitive singular: nouns with open inflection have suffixes in the zero grade and the full grade of the genitive singular ending, while nouns with closed inflection have full grade suffixes and the zero grade variant of the genitive singular. The difference is illustrated in Table 7 for the *i-* and *u-*stems in Vedic, but is also evident in other stem types. Note that Vedic <*e*> and <*o*> are long vowels and underlyingly diphthongs (/ai/, /au/), with which they alternate in certain contexts.

¹⁵I use “paradigm” and “analogy” in a pre-theoretical sense (see section 4 for a more elaborate discussion of the latter). “Paradigms”, in particular, have no special ontological or explanatory status in what follows; the term is merely a convenient label for “sum of inflected word forms associated with a particular stem”. The following observations are therefore not intended to (and are not useful for) distinguishing between approaches that assume that word formation happens in the lexicon and non-lexicalist approaches in which word formation can be reduced to the interaction of other domains.

Table 7: Open vs. closed inflection in Vedic *i*- and *u*-stems

		open	closed
<i>i</i> -stems	gen.sg.	<i>-y-as</i> (/i-as/)	<i>-e-s</i> (/ai-s/)
	dat.sg.	<i>-y-e</i> (/i-ai/)	<i>-ay-e</i> (/ai-ai/)
<i>u</i> -stems	gen.sg.	<i>-v-as</i> (/u-as/)	<i>-o-s</i> (/au-s/)
	dat.sg.	<i>-v-e</i> (/u-ai/)	<i>-av-e</i> (/au-ai/)

The difference is basically that between the full grade and the zero grade of the suffix. It is relevant for us, however, because the open inflection versions of these suffixes begin with a consonant and thus create closed syllables when added to *CaC* (**CeC*) roots, whereas the closed inflection variants (historically from proterokinetic paradigms) create open syllables in these contexts (see Kümmel 2014 for a discussion of the synchronic distribution of these variants). For words with inherited *R(o)*, this difference therefore potentially has consequences for the distribution of BL and non-BL contexts within the paradigm, as we will see in the following.

3.1.2 **poti-* ‘lord, master’

This word is usually reconstructed as an acrostatic **i*-stem **pót-i-/*pét-i-*, but there is no unambiguous evidence for *R(e)*, nor for the reconstruction of an internally derived closed-inflection (\approx proterokinetic) paradigm with the “relational” meaning ‘master over’ as opposed to acrostatic ‘master’, as proposed by Tremblay (1998, 2003). Pinault (2017b), discarding both the evidence for an *e*-grade allomorph **pet(i)-* (see also Pinault 2015/2016) and for the putative proterokinetic paradigm, argues that the lack of root ablaut is in fact due to the etymology of this word, which he takes to be derived from the non-ablauting particle **-pot* ‘exclusively, specifically’ (Hitt. *-pat*, Lith. *-pàt*), an “emphatic and particularizing morpheme” (p. 348; cf. Benveniste 1966: ‘self’; though see Dunkel 2014: 631–2 for criticism of this etymology), e.g., in “intensive/superlative” constructions like Ved. *viśāṃ viś-pátis* ‘clan-lord of clans’, Av. *zantūuš zantu-patāe* ‘to the tribe-lord of the tribe’, etc. Semantically, this development could be compared to that of Lat. *ipse* ‘(he him)self’ > ‘master’. The idea is that if the nominal *i*-stem was derived from this invariant particle, it could explain the apparent lack of root ablaut.

For our purposes it is important to emphasize that the question of whether or not this particular word is attested with *R(e)* must be separated from the question of whether (late) PIE acrostatic **i*-stems should be reconstructed with *R(o/e)*-ablaut. The answer to the latter is undoubtedly yes, whereas the answer to the former depends on the attestation record of a particular lexical item, and thus to some extent on chance and the historical record. In other words, if we reconstruct *R(o/e)*-ablauting **i*-stems and we assume that **póti-* was treated as such an **i*-stem at the relevant stage (independent of its actual derivational history, that is, particle-derived or not), then we expect that it would have had root ablaut at that stage as well. This is an important conceptual argument because it allows us to *predict* what types of forms we expect to find in the daughter languages, essentially the morphological equivalent to the Saussure-Cuny prediction concerning the position of laryngeals before the discovery of Anatolian.¹⁶ For the sake of the argument, though, let us assume that Proto-Indo-Iranian only

¹⁶See Mayrhofer (2004: 17ff.) for a discussion of the importance of the conceptual arguments in Saussure’s

inherited the R(o)-variant of the stem. What would the late PIE/inner IE have looked like in that case? Judging from the available evidence, this noun originally had “open inflection”; the closed inflection forms of Indo-Iranian seem to have been later innovations (closed inflection being synchronically productive for Indo-Iranian *i*-stems). The reconstructable paradigm is thus given in Table 8. Material in square brackets is due to analogy/leveling rather than sound change. Note that the dual paradigm (especially the “weak” case forms) is particularly difficult to reconstruct with certainty because the evidence is essentially restricted to Indo-Iranian and Greek.

Table 8: Pre-Graeco-Aryan **pót-i*- ‘master’

Singular		
nom.	* <i>pótis</i>	Ved. <i>pátis</i> , Av. <i>paitiš</i> , Gk. <i>pósis</i> , Lat. <i>potis</i> , Go. <i>-faþs</i> , OLith. <i>patīs</i>
acc.	* <i>pótim</i>	Ved. <i>pátim</i> , OAv. <i>paitīm</i> , Gk. <i>pósin</i>
voc.	* <i>póti</i> (* <i>pótei</i> ¹⁷)	Gk. <i>pósi</i>
instr.	* <i>póti_h1</i> (* <i>pótiē_h1</i> ¹⁸)	Yav. <i>paiti</i> (Yt.10.80) (Ved. <i>pátyā</i>)
dat.	* <i>pótiēi</i>	Ved. <i>pátye</i> , OAv. <i>paithiaē-</i> , Gk. <i>pósei</i>
abl.	* <i>pótiē/os</i>	
gen.	* <i>pótiē/os</i>	Ved. <i>páty[ur]</i> ¹⁹ , Gk. <i>pó[si]os</i> ²⁰
loc.	* <i>pótiē(i)</i> ²¹	Ved. <i>pátyau</i> , Gk. dat. <i>pó[s]ei</i> , <i>pó[s]ei</i>
Dual		
nom.	* <i>póti_h1</i>	Ved. <i>pátī</i> , YAv. <i>-paiti</i>
acc.	* <i>póti_h1</i>	Ved. <i>pátī</i> , YAv. <i>-paiti</i>
voc.	* <i>póti_h1</i>	Ved. <i>pátī</i>
instr.	(* <i>póti^h_iV-</i> ?)	
dat.	(* <i>póti^h_iV-</i> ?)	
abl.	(* <i>póti^h_iV-</i> ?)	
gen.	(* <i>póti_ous</i> ?)	
loc.	(* <i>póti_ous</i> ?)	

and Cuny’s works. I am grateful to Alan Nussbaum for the discussion of this important point.

¹⁷To be reconstructed based on Gk. *Potei-*, *Posei-* (with analogical *-s-*) in *Posei-dōn* ‘Poseidon’, originally a vocative ‘Oh lord of the water(s)!’ (or: ‘of the earth’; Oettinger 2020); cf. GEW; DELG; Nikolaev (2019); and thus probably to be equated with Ved. *pate*, Yav. *-paitē* which show the synchronically regular *i*-stem vocative ending *-e* < **-ai*. Whether these vocatives point to original closed (proterokinetic) inflection is debatable; but they at least suggest that the suffixal vowel originally had full grade in the vocative of *i*- and *u*-stems, cf. Neri (2017: 74) and Oettinger (2020: 105, fn. 22).

¹⁸The expected instrumental in a proterokinetic/“closed class” paradigm, which tends to have a descriptively hysterokinetic structure instead of expected **-ei-h₁* (cf. Widmer 2004: 52; Neri 2017: 108; see Kümmel 2014 for evidence for the expected closed inflection instrumental singular ending); but recall that the closed class forms in this paradigm (and therefore also their associated open class instrumental form) are in all likelihood an Indo-Iranian innovation.

¹⁹This ending was synchronically remodelled based on that of other kinship nouns, e.g., *pitúr*, gen.sg. of *pitár-* ‘father’, etc. (though it was not the original ending there, either). The Old Avestan genitive singular *patōiš* and its Vedic equivalent *pátēs* show the synchronically productive closed inflection.

²⁰< **póti_oos*, for expected **póti_oos*.

²¹On the ablaut grade of the locative singular cf. Schmidt (1885); Schindler (1994); Tremblay (2004); Grestenberger (2009: 17-8, 24); Neri (2017: 101).

Plural		
nom.	* <i>pót(e)ies</i> ²²	Ved. <i>pátayas</i> , Yav. <i>pataiiō</i> , Gk. <i>póseis</i>
acc.	* <i>pótins</i>	Ved. <i>pátin</i> , Yav. <i>paitiš</i> , Gk. <i>pósias</i> ²³
voc.	* <i>pót(e)ies</i>	
instr.	* <i>pótib^hi(-)</i>	
dat.	* <i>pótib^h(i)os</i>	Ved. <i>pátibhyas</i>
abl.	* <i>pótib^h(i)os</i>	Ved. <i>pátibhyas</i>
gen.	* <i>pótioHom</i>	
loc.	* <i>pótisu</i>	

Given these forms, BL would be expected everywhere except for the dative, ablative, genitive (and maybe instrumental, though see footnote 18) singular, the genitive plural, and probably the genitive and locative dual under the traditional formulation of the law, that is, in the majority of case forms (17/20 BL vs. 7/4 non-BL slots, depending on how one evaluates the instrumental singular and the genitive-locative dual forms). Would that be enough to suggest that the non-BL variant was actually generalized for this stem? I argue in section 4 that this cannot be evaluated based on this single stem alone, but that the entire stem class (in this case, *i*-stems) must be considered, specifically the *i*-stems with the older open inflection, none of which show lengthening. Moreover, there is at least tentative evidence for a metrical remnant of the expected BL lengthening in the strong case forms: RV 9.89.3b appears to have an instance of a heavy first syllable in a triṣṭubh cadence (a four-syllable sequence HLHx; that is, the penultimate syllable is usually metrically heavy): *hárīm aruṣám divó asyá pátim* (cadence, metrically HLHH) “(They [=waters or cows] draw near the unbridled lion of honey,) the tawny, ruddy master of this heaven.” (Jamison and Brereton 2014). There is no reason to assume that the root ended in a laryngeal (Pinault 2017b’s reconstruction as **pot-(h₁)i-* notwithstanding), so this cadence may preserve a remnant reading of the expected but otherwise “analogically” eliminated BL form **pátim*.²⁴

To conclude, even under the assumption that **póti-* did not have root ablaut at the relevant Graeco-Aryan stage any more, it did have non-BL contexts early on in the weak stem of its paradigm that could have been generalized to the entire stem, and there is metrical evidence that suggests that there originally was a variant **páti-* with the expected BL-lengthening in the strong stem.

²²The expected open inflection plural forms of acrostatic **i-* and **u-*stems, **-i-es* and **-u-es* with S(Ø), were replaced with full grade allomorphs early on, but there are a few remnants, e.g., nom.pl. *mádhvas* (*mádhv-* m. ‘sweet’) in RV 1.180.4, maybe 9.89.3 (Oldenberg 1912: 183), nom.pl. *aryás* (*arí-* m. ‘comrade’) in RV 6.45.33.

²³< **pótii(ṅs)*, maybe due to analogy with the expected but unattested open inflection nominative plural **pót(i)ies*? The ending could reflect old, resyllabified *-ṅs* or synchronic athematic *-as* (ultimately from the same source).

²⁴Alternatively, this form could have arisen through the modification of a related triṣṭubh-final formulaic sequence such as *amṛtasya pátinīh* ‘the wives of the immortal one’ (RV 4.5.13c, of the Dawns) or *bhúvanasya pátinī* ‘the mistress of the world’ (RV 7.75.4d, of the daughter of Heaven); see Gunkel and Ryan (2022: 130–2) for parallels of this kind of formulaic modification, including in cadences. I am grateful to one of the reviewers for pointing out this possibility.

3.1.3 * h_2 oui- ‘sheep’

This stem, too, is usually reconstructed as an acrostatic * i -stem * $h_2\acute{o}u-i-$ /* $h_2\acute{e}u-i-$, and the majority view is that this noun requires reconstruction with initial * h_2 rather than Kiparsky’s * h_3 , resulting in a Pre-Indo-Iranian ablaut *(H)oui-/(H)aui- (Pinault 1997, NIL: 335). Direct evidence for * h_2 comes from Anatolian, where this sound is preserved as a consonant in most environments, e.g., Hittite *ḥawiyašši-* ‘sheep-like’, Cuneiform Luvian *ḥāwī-* ‘sheep’, Lycian *χawa-* ‘sheep’.²⁵ Direct evidence for e -grade (= a -grade due to laryngeal coloring; note that * o never undergoes laryngeal coloring) should in principle be available in languages which keep the reflexes of * a and * o distinct, and this is the case in Tocharian (Toch. B *ā_uw* f. ‘sheep’ < **áwä* < **áuis*; pl. *awí* < **āwīyā* < **āwāyā* < **h₂éuīes*, Pinault 1997) and in Lycian (Lyc. *χawa-*, Yoshida 2013). The reconstructable paradigm of this word at the relevant stage is given in Table 9.

Table 9: Pre-Graeco-Aryan * $h_2\acute{o}u-i-$ /* $h_2\acute{e}u-i-$ ‘sheep’

		Singular
nom.	* $h_2\acute{o}u\acute{i}s$	Ved. <i>ávis</i> , CLuv. <i>ḥāwīš</i> , Gk. <i>óis</i> , Lat. <i>ovis</i> , OIr. <i>oí</i> , Go. <i>awi-</i> , Lith. <i>avis</i> , Arm. <i>hovi-</i> (Toch. B <i>ā_uw</i>)
acc.	* $h_2\acute{o}uim$	Ved. <i>-avim</i> , Gk. <i>óin</i> , Lat. <i>ovim</i> (1x, Plaut.)
instr.	* $h_2\acute{a}u\acute{i}h_1$ (* $h_2\acute{a}u\acute{i}eh_1$) ²⁶	
dat.	* $h_2\acute{a}u\acute{i}e\acute{i}$	
abl.	* $h_2\acute{a}u\acute{i}e/os$	
gen.	* $h_2\acute{a}u\acute{i}e/os$ ²⁷	Ved. <i>ávyas</i> , Gk. <i>oiós</i>
loc.	* $h_2\acute{a}u\acute{i}e\acute{i}(i)$	
		Dual
nom.	* $h_2\acute{o}u\acute{i}h_1$	
acc.	* $h_2\acute{o}u\acute{i}h_1$	
instr.	(* $h_2\acute{a}u\acute{i}b^{h_i}V-?$)	
dat.	(* $h_2\acute{a}u\acute{i}b^{h_i}V-?$)	
abl.	(* $h_2\acute{a}u\acute{i}b^{h_i}V-?$)	
gen.	(* $h_2\acute{a}u\acute{i}ous$?)	
loc.	(* $h_2\acute{a}u\acute{i}ous$?)	

²⁵* h_3 was probably lost in Lycian (Melchert 1994, but skeptical Kloekhorst 2006). The evidence of Armenian *hovi-* (in *hovi-w* ‘shepherd’ is even more contested as it is unclear whether initial aspiration in Armenian ever reflects an old laryngeal, and if so, which one (see Olsen 1999: 47, fn. 95 and NIL: 337, fn. 6).

²⁶See fn. 18.

²⁷Ablauting acrostatic stems seem to have had an even older genitive/ablative singular form that differed from the nominative only in terms of root ablaut, taking the zero grade of the genitive singular ending *-(e/o)s, hence * $h_2\acute{a}uis$, but there is no indication that this archaic form played a role in the paradigm at this late stage. See Neri (2017: 77–8; 102–3; on the distribution of the zero grade form of the genitive singular ending.

Plural		
nom.	* $h_2\acute{o}u\acute{i}es$	Gk. <i>óies</i> (Ved. <i>-aváyas</i> ; Toch. B <i>awí</i>)
acc.	* $h_2\acute{o}u\acute{i}ns$	Gk. <i>óīs</i>
instr.	* $h_2\acute{a}u\acute{i}b^h i(-)$	Ved. <i>ávibhis</i>
dat.	* $h_2\acute{a}u\acute{i}b^h (i)os$	
abl.	* $h_2\acute{a}u\acute{i}b^h (i)os$	
gen.	* $h_2\acute{a}u\acute{i}oHom$	Gk. <i>oión</i> (<i>oión</i>); (Ved. <i>ávī[n]ām</i>)
loc.	* $h_2\acute{a}u\acute{i}su$	

It should be clear from this discussion and the paradigm above that this noun did not have “fixed *-o-*” in PIE: The entire weak stem (15 slots; 16 if the accusative plural originally belonged to the weak stem) originally had $R(a) < *h_2e$ and therefore no BL context. But even assuming that Vedic *ávi-* goes back to $*h_2ou\acute{i}-$ with generalized *o*-grade (as in Greek and Latin), the inherited open inflection, which can be securely reconstructed based on the Vedic and Greek genitive/ablative singular and nominative and genitive plural forms, would provide synchronic non-BL contexts at the stage at which the law operated (cf. also the parallel open inflection endings of **póti-* in Table 8).

3.1.4 $*k^w\acute{o}ti$ ‘how many’; $*pr\acute{o}$, $*pr\acute{o}ti$ ‘against’

These forms are discussed together since both the interrogative (/indefinite) stem $*k^w\acute{o}-$ and the local adverb/preposition $*pr\acute{o}$, $*pr\acute{o}ti$ share the properties of not forming part of a “lexical class” (i.e., nominal) paradigm, but are rather part of the functional vocabulary of PIE, hence their accent-ablaut properties are notably different from those of $*p\acute{o}ti-$ and $*h_2\acute{o}/\acute{e}u\acute{i}-$. For precisely this reason, they could also be considered the strongest evidence for the claim that “fixed *-o-* does not lengthen”, since they may be assumed to be apophonically invariant (as claimed for the particle $*-pot$ in section 3.1.2) and to provide few (if any) contexts in which “paradigmatic leveling” in the direction of non-BL variants could take place. But a closer look at these forms shows that neither assumption actually holds. To start with the interrogative stem, this did not have “fixed *-o-*” either in Proto-Indo-European or even at the stage at which BL presumably operated: All three reconstructable stem variants $*k^w\acute{o}-$, $*k^we-$ and $*k^wi-$ are found in Indo-Iranian and throughout the other IE languages:

PIE $*k^wid$ indef.	Ved. <i>-cit</i> , OAv. <i>-cī̄t</i>
PIE $*k^wis$ ‘who?’ (nom.sg.)	Lat. <i>quis</i> , OAv. <i>ciš</i>
(late) PIE $*k^wos$ ‘who?’ (nom.sg.)	Ved. <i>kás</i> , OAv. <i>kā̄</i> , <i>kas-</i>
PIE $*k^wes(i)o$ ‘whose?’ (gen.sg.)	OAv. <i>cahiīā</i> (Hom. <i>téō</i> , OCS <i>česo</i> < $*k^wesō$), etc.

Furthermore, the reflexes of $*k^w\acute{o}ti$ itself show variation in Indo-Iranian, with the initial palatal of Young Avestan *caiti* pointing to the generalization of the *e*-grade stem allomorph ($*k^we-ti$). This suggests that the inherited interrogative stem had both palatalized non-lengthened, non-palatalized non-lengthened (= non-BL) and non-palatalized lengthened (= BL) stem variants, and that the non-BL forms were generalized, with or without palatalization. While there is thus good evidence that this stem did not have “fixed *-o-*” at the relevant

stage at which BL operated, there is, however, no strong evidence for BL remnants.²⁸ But given the stem variation within Indo-Iranian and the transparent morphological relationship between interrogative *ka-* and the derived adverbial *káti* ‘how many’, at least the lack of BL lengthening in the latter is not surprising.

In the case of the preposition/local particle **pró(ti)*, evidence for Indo-Iranian reflexes of inherited *e*-grade are more difficult to come by because labials and liquids did not undergo palatalization. However, the comparison with other IE languages again shows evidence for both *o-* and *e*-grade (as well as zero grade *pr-*; see Dunkel 2014: 633–49; 655–60 on these adverbs in IE):

- *pró* Hitt. *parā* /*prā*/, Gk. *pró*, Lat. *pro-*, OIr. *ro-*, *ru-*, Go. *fra-*, etc.
- *pró-ti* Gk. *próti*, *prós*, OCS *protivъ*
- *pré-ti* Pamphyl. Gk. *pert’*; Cret. Gk. *preis-gus*, *prei-gus*²⁹ ‘president, presider’; Lat. *pretium* ‘price, value’ (< **préti-o-*); Pol. *przeciw* ‘against’ < **pretivъ*

Granted, we still do not know if Indo-Iranian actually inherited any of the *e*-grade forms associated with these adverbs, but note that Avestan only has *paiti̯* < **poti*, but no *ti*-adverbial built to *frā* < **pro*, so even though **pró/éti* and **póti* are semantically exact equivalents (cf. Dunkel 2014: 659–60) this suggests that the development of the distribution of the **prV-* vs. **po-* variants and their extension with “adverbializing” *-ti* continued well into Indo-Iranian.

In addition to these forms other derivatives and compounds based on **pró* could be relevant as potential BL contexts, among them **pró-tero-* ‘first’, ‘front-most’ and **pro-b^hu(h₂)-* ‘outstanding’. The former is reflected in YAv. *fratarā-* and the Vedic adverbial *pratarám* ‘advanced, foremost’ (also *pratamám* ‘especially’) and seems to have an exact cognate in Gk. *próteros* ‘first, in front’. If this is an inherited superlative or intensive, it would be a counterexample to the traditional formulation of BL. However, it is more likely an independent Indo-Iranian creation, given that the older variant of the adjective that means ‘first’ is Ved. *prathamá-* < **pro-th₂o-* (hence no BL context; cf. EWA II: 179; Dunkel 2014: 644, fn. 85 & 86). The latter, **pro-b^hu(h₂)-* ‘outstanding’ could be reflected in Ved. *prabhú-* and in a thematized form in Lat. *probus* < **pro-b^hu-o-*, but here, too it is also possible that these represent independent formations,³⁰ as suggested by the diachronically unexpected “hyper-zero grade”

²⁸A possible BL remnant of the interrogative stem may be preserved in the pejorative use of the prefixes built on these stem, such as *kim-*, *kat-*, *ka-*, and (ominously lengthened) *kā-*, e.g., RV *kat-payá-* ‘swelling badly’, Up. *ka-pūya-* ‘smelling badly’ (cf. YAv. *ka-mərəða-* ‘Daēuua-head’), etc. Pejorative *kā-* is attested late (Pāṇini, *Pañcatantra*, *Hitopadeśa*), e.g., *kā-puruṣa-* ‘bad man’ (*Rāmāyaṇa*, *Pañcatantra*), *kā-patha-* ‘bad road’ (*Rāmāyaṇa*, *Mahābhārata*), cf. Pāṇini, *Aṣṭādhyāyī* 6.3.104–106 (Pāṇini also discusses the qualifying use of *kā-* ‘slightly; -ish’, e.g., *koṣṇa-* ‘warm-ish’ besides *kad-uṣṇa-*). Thus *kā-* could be the expected BL reflex of the stem **k^wo-* used as a pejorative prefix, hence the BL counterpart of non-BL *ka-* in *ka-pūya-*, etc. This may not be the strongest evidence, but there are limited options as to what else this prefix *kā-* could be. If it were an old case form (like accusative *kim-* and *kat-*), it could be an archaic instrumental singular *kā* < **k^woh₁* (cf. OAv. *kā*), but Vedic has otherwise only the innovative instrumental singular *kéna*, and the functional motivation for using an instrumental as first compound member is unclear. A nominative-accusative neuter plural (parallel to singular *kim*, *kat*) as first compound member is also possible, cf. *kā-cit-karā-* ‘achieving everything’, where the neuter plural is functionally justified.

²⁹If from **preti-g^wh₂-u-*, see Dunkel (2014: 657, fn. 15) with refs.

³⁰Though note that if it is an inherited compound, the expected weak stem allomorph **pro-b^hu-* from **pro-b^huh₂-V* via the *neognós*-rule (Weiss 2020: 123) would be a non-BL context, so “paradigmatic leveling” could also have applied. See Pinault (2017a, 2022) for a discussion of further instances of the *neognós*-variant of this neo-suffix.

second compound member *-bhu-* instead of *-bhū-* (as in *vi-bhū-* ‘excellent’, *abhi-bhū-* ‘superior’; note also AV *pra-bhū-*). In that case, this compound would be based on the synchronic preverb *prá* rather than an inherited form. Of course, *prá* itself is still a potential BL exception - we would have to assume that the non-BL shape **pra* was generalized very early to the exclusion of Brugmannized **prā*. But there are some possible remnants of **prā* in Indo-Iranian adverbs and compounds, e.g., the Vedic (AV) adverb *prā-dūr* ‘outdoors, in sight, in view’, to be compared with Gk. *pró-thuron* and Old Icelandic *fordyri* ‘front hall, vestibule’ (on the phonological development see Dunkel 2014: 178, fn. 5; 646) or *prātár* ‘early in the morning’, which again would suggest that the BL variant escaped this generalization in contexts that were not transparently related to the derivational base any more, while transparent derivatives were based on the *prá*-form.³¹ An additional confound, however, is the possibility that some of these long vowel-forms reflect not **pro*, but the variant **prō* seen in, e.g., Gk. *prōi* ‘early’, *prōen*, Lat. *prō* ‘in front, before, instead of’, OHG *fruo* ‘early, in the morning’, etc. (Dunkel 2014: 639; cf. EWA II: 188 on *prātár*). On the other hand, there are also some inherited syntagms of **pro* in non-BL environments, e.g., YAv. *frašnu-* ‘knees first, with one’s knees in front’ (Skt. *prājñu-*) = Gk. *prókhnū* (adv.) ‘kneeling; utterly’ < **pro-ǵnu-* ‘with knees in front’ (Dunkel 2014: 646) or Ved. *práp̄ra* ‘on and on’ < intensifying **pró pro* (cf. Hitt. *parā parā*, Gk. *propro-*, Lat. *prope* < **propre*, Dunkel 2014: 641), which could have contributed to the generalization of the non-lengthened variant.³²

To conclude, the forms discussed in this section constitute what is probably the strongest evidence for Kiparsky’s formulation of BL because of their paradigmatic isolation, but even so we have seen evidence against assuming “fixed *-o-*” at the relevant stage for interrogative **k^w ó-ti* and (less certain) for adverbial **pró(ti)*. Crucially, in both cases the analogical influence of their (synchronically transparent) derivational bases (the stem *ka-* and the local particle *prá*) and the environments in which these occurred must be taken into account as well.

3.1.5 **h₃óp-os-* ‘work’

If Vedic *ápas-* ‘work’ (nom.sg. *ápas*, gen.sg. *ápasas*; besides *apás-* ‘working’, nom.sg. *apás*, gen.sg. *apásas*) is indeed cognate with Latin *opus* ‘work’, gen. *operis* (as generally accepted, cf. EWA I: 84–5; De Vaan 2008: 432), its root vowel would be a counterexample to the traditional formulation of BL (we will return to the suffix vowel in a moment). Both continue neuter *s*-stems, which are reconstructed with *o*-grade of the suffix in the strong stem and *S(e)* in the weak stem at the late PIE/pre-Graeco-Aryan stage (cf. Gk. *génos*, gen. *géneos* ‘race, kind’ < **-os*, gen. *-es-os*; see Schindler 1975a on the prehistory of this class).

However, the root ablaut grade of this class is usually generalized *R(e)*, hence the only way this word could have had “fixed *o*” is if its root began with **h₃*. The problem is that there are up to four different roots of the shape **Hep* that would have become homophonous in Indo-Iranian that could be at play here, and given the somewhat flexible semantic reconstruction of these it is not easy to decide which ones actually underly the Vedic and Latin words. The first

³¹Zehnder (1994: 178–9) formulates this as a rule “BL did not operate at strong morpheme boundaries” and discusses further examples. This could be formulated as an A-change rule that selected the non-BL variant as basis of compounding and secondary derivation.

³²The synchronic syntagms, especially those in which *prá* acts as an adverbial particle, are less helpful because they are for the most part synchronically transparent and hence show the productive and compositional use of the already generalized shape /*prǎ*/, i.e., they cannot help us decide between the traditional formulation of BL and Kiparsky’s alternative. See Casaretto (2012) on the synchronic uses of Rigvedic *prá*.

one, **h₁ep* ‘seize’ (LIV²: 237) is found in Hitt. *ēpzi*, *appanzi* ‘seize’, OLat. *apiō* ‘bind’, Ved. *āpa* ‘has reached’ (desid. *apsanta* ‘they wish to reach’) and has also been claimed to underly Latin *opus*, which Balles (1997) takes from **h₁ep-es-*, with R(*o*) analogical to the root vowel of *ops* ‘power, wealth’ (where it may be justifiable given that this is a root noun). The latter itself is reconstructed as **h₂op-s* by Stüber (2002) and compared to Hitt. *happinant-* ‘rich’ (also Ved. *āpnas*, Av. *afnah-* ‘property, riches’); note that this seems to be a different root **h₂ep* than the one reconstructed in LIV²: 269 with the meaning ‘fit’ on the basis of OHitt. *happaru* ‘shall fit’. Stüber (2002: 108–11) argues that the root underlying both Lat. *opus* and Ved. *āpas* is **h₃ep* ‘produce’ (LIV²: 298–9), as in Osc. *upsed* ‘produced’ < **ōp-s-e-t* and tentatively suggests that the lack of a BL reflex in the root vowel could be due to analogical influence by the semantically related *āpnas* ‘wealth’.³³ However, Weiss (2010: 95–6) argues convincingly that the Italic verbal forms (Umbrian *upetu*, Oscan *upsed*, Old Latin *opet* ‘chooses’, later *optāre* ‘to choose’) actually go back to an iterative to the root **h₁ep* ‘take, seize’ (which means that the root **h₃ep* ‘wish, choose’ tentatively reconstructed in LIV²: 299 for these forms is therefore spurious). Given the close semantic match between Latin *opus* and Vedic *āpas* (Stüber 2002: 109–10; though not necessarily with a religious connotation, Weiss 2010: 328–9) and Weiss’ strong arguments that the root underlying this complex of forms in Italic is **h₁ep*, it is therefore likely that the generalized *o*-grade of the Italic forms is an innovation. As a parallel for generalized R(*o*) in Italic verbal forms Weiss (2010: 96, fn. 243) adduces the root of *doceō* ‘teach’, and there are also a number of *s*-stems with innovative R(*o*) in Italic, e.g., e.g., *pondus* ‘weight’, *foedus* ‘agreement, treaty’ (besides *f̄dus*), *modus* ‘measure’ (Leumann 1977: 378–9; cf. also section 3.1.7). Taken together, it is therefore very likely that the *o*-grade of the Latin *s*-stem is an innovation and that Vedic actually continues the expected *e*-grade.

3.1.6 **tóm-os-* ‘darkness’

Another *s*-stem, though somewhat simpler to discard than the previous one: Vedic *támas-* n. and its Young Avestan equivalent *təmah-* ‘darkness’ are generally thought to go back to a pre-form **temH-os-* (EWA I: 626; Stüber 2002: 158–9; Höfler 2012) from a *seṭ*-root **temH* (cf. Ved. *támisrā-* ‘night’ < **temH-s-ro/eh₂-*, OHG *demar* n. ‘dusk’ < **temH-s-ó-*, Lat. adv. *temere* ‘unintentionally, coincidentally’ < **temH-es-i*; Stüber 2002: 158–9), possibly the same root as **temH* ‘become faint’ (LIV²: 624), and as we have seen in the previous section, R(*o*) is morphologically unexpected in **s*-stems anyway. Lith. *tėmti* (*tėmsta*) is denominal to this **s*-stem and moreover confirms the *seṭ*-character of this root. Admittedly, the apparent *o*-grade of Lith. *tamsà* ‘darkness’ is a problem, but Lithuanian also has other apophonically deviant forms that may or may not belong to this root and that are diachronically unexpected, e.g., *tiñsras* ‘(some kind of) red’, *tumsà* ‘darkness’, and there is no evidence for the *o*-grade in the corresponding Latvian forms (Fraenkel 1962: 1055, 1080; ALEW: 1235–7). There is therefore no reason to prefer the unexpected R(*o*) of the Lithuanian form to the much better attested R(*e*) when it comes to selecting comparanda for the Vedic form, in addition to the fact that we are dealing with a *seṭ*-root anyway. Therefore this form, too, did most likely not contain a BL context.

³³Alternatively, it could be evidence in favor of the “Kleinhans version” of BL (Kleinhans apud Pedersen 1900: 87f), which states that lengthening of **o* in open syllables does not apply before voiceless stops (or rather, that it applies only before liquids, nasals, glides, and *s*; cf. Mayrhofer 1986: 147 for further discussion), but Stüber herself points out that this formulation is not generally accepted.

3.1.7 **h₃ón-os-* > ‘(heavy) cart’ < *‘burden, heaviness’

Yet another *s*-stem, Ved. *ánas-* n. ‘heavy cart’ is usually equated with Lat. *onus, -eris* n. ‘burden’, but LIV² lists neither **h₁en* nor **h₃en*, and **h₂en* ‘to scoop, draw water’ is semantically unlikely to be relevant. Janda (1999) and Stüber (2002: 88–90) reconstruct **h₁enh₃* ‘move sth. heavy’, connecting these forms to the root of the first compound member of Gk. *Enosí-khthōn* ‘earth-shaker’ (epithet of Poseidon) < **h₁enh₃ti-* and Hitt. *aniya-* ‘work’ < **h₁onh₃-e(-)ie-*. Ved. *ánas-* and Lat. *onus* would then go back to a regular *s*-stem **enos* < **h₁enh₃-os-*; the Latin *o*-grade would be an Italic innovation also seen in other members of this class (cf. section 3.1.5).

3.1.8 Summary

As the previous discussion hopefully made clear, the three *s*-stem examples for the “fixed *-o-* does not lengthen” context in (6b) do not stand up to scrutiny because they are either formed to *seṭ*-roots and/or are unlikely to reflect inherited R(*o*) in (Proto-)Indo-Iranian. The remaining forms either did not have fixed “fixed *-o-*” (**h₂óui-* and possibly **k^wó-ti*, if one accepts the alternation with *-i-* and the palatalization in Iranian as evidence) and/or had non-BL alternants in their nominal paradigm (**póti-/pótī-*, **h₂óui-/h₂ouī-*). In the case of *káti* and *práti*, the diverging Iranian forms (YAv. *caiti* and OAv. *paitī*) suggest that these forms were transparently related to their derivational basis at least until the proto-Indic and -Iranian stages and hence susceptible to remodelling based on the shape that these bases generalized (though Ved. *prá* remains the strongest possible case of “fixed *o*”).

Before turning to the context (6c) (“variably fleeting *-o-* lengthens variably”), I will discuss a few other potentially relevant contexts for (6b) which are discussed in Kiparsky (2009) as relevant for this context.

3.2 “Fixed *-o-* does not lengthen”: further cases

3.2.1 Thematic nouns of the “*tómos/tomós*-type”

PIE action nouns of the shape R(*ó*)-*o-* (“*tómos*-type”, Gk. *tómos* ‘piece, slice’ < *(result of) cutting’, root **temh₁* ‘cut’) and agentive and patientive nouns of the shape R(*o*)-*ó-* (“*tomós*-type”, Gk. *tomós* ‘cutting, sharp; -cutter’; see Nussbaum 2017 for the most up-to-date survey of these two types) are a prime testing ground for the two different formulations of BL that are at stake here because of their varying accent. Under the traditional formulation, we expect the root vowel of both types to undergo BL when formed to (*anit-*) **CeC* roots, hence Vedic barytone (root-accented) *CáC-a-* for action nouns and oxytone (suffix-accented) *CāC-á-* for the agentive/patientive type. According to Kiparsky’s rule (5), on the other hand, we expect “*CáCa-* in action/result nouns as opposed to retained *CaCá-* in agent nouns” (Kiparsky 2009: 13), but *only* for roots that are synchronically ablauting (that is, contain a “fleeting vowel”). For synchronically isolated forms or forms from non-ablauting roots, we do not expect lengthening at all, cf. (6b).

What we actually get is much more complicated than either account predicts, as the lengthy discussions in AiG II,2: 59ff., Lubotsky 1990, Hajnal 1994, Kim 2010 and Tucker 2012 attest. One problem, as in other nominal and verbal classes that regularly had BL contexts for *CeC* roots (such as the causative and the perfect), is the possibility that *seṭ*-roots, especially of the

CaRH* type, could have contributed to generalizing non-BL variants to *aniṭ*-roots, especially of the **CaR*-type (CaC*-roots with a final non-resonant consonant tend to show the expected BL outcomes more than **CaR*-roots do, Hajnal 1994). Moreover, Hajnal argues that the variation of $R(\bar{a}) \sim R(a)$ forms encountered in second compound members is at least partially metrically conditioned, with roots taking the shape *CaR/CaC* if the first compound member ends in a heavy syllable and the shape *CāR/CāC* if the first compound member ends in a light syllable, e.g., *janam-sahá-* ‘conquering the people’ vs. *abhimāti-ṣāhá-* ‘conquering opponents’, though there are (unsurprisingly) many exceptions, e.g., *su-kára-* ‘easy to do’ vs. *su-pārá-* ‘helping across easily’, where the “*su-kára*-type” seems to have generalized *a* to *aniṭ*-roots (AiG II,2: 63). Further complicating the picture is the potential influence of such compound variants on the related simplex forms and *vice versa*.

Moreover, there is good evidence not only for inherited thematic nouns with $R(o)$, but also with $R(e)$, specifically oxytone agentive/patientive nouns and adjectives (a “**temós*-type”), cf. Nussbaum 2017 for a detailed discussion. Examples cited by Nussbaum include **b^herǵ^h-ó-* ‘risen, high’ in ON *bjarg* ‘rock’, OHG *berg* (OCS *brěǵb?*); **leub^h-o-* ‘pleasing, dear’ in Go. *liufs*, OE *lēof*, OHG *liub*, OCS *ljubъ* and indirectly in Osc. *loufi[r]* ‘*one wants’ > ‘or’; **(-)*ǵen₁-o- ‘born’ in OLat. *-genus* and OIr. *-gen* in personal names, and (substantivized neuter) **uérǵom* ‘what is made; piece of work’ in Gk. *érgon*, Av. *varəzəm* and OHG *werc*, as well as large number of forms that are only attested in a single branch or language, but show synchronic $R(e)$ and are functionally equivalent to *tomós*-type adjectives, e.g., Gk. *leukós* ‘bright, white’ (**leuk*), Gmc. **-werda-* ‘turned, turning’ (**uert*) in, e.g., OHG *in-wert* ‘inwards’, and Lat. *fīdus* ‘trusted, trustworthy’ (**b^heid^h*). The three-way equation between Gk. *érgon*, Av. *varəzəm* and OHG *werc* suggests that some forms with $R(e)$ were inherited by the Indo-Iranian languages as well, and may well underlie some of the $R(a)$ -*á-* forms found there, though this is of course difficult to show. However, in that case it could be the *diachronic* explanation for why certain oxytone patientive forms from *aniṭ*-roots do not show BL lengthening. Of course, this is not a problem once we commit ourselves to the strictly synchronic version of Kiparsky’s rule (5), which is then immediately at odds with his treatment of the *s*-stems in sections 3.1.5–3.1.7, where the diachrony did seem to matter since this category otherwise had generalized $R(a) < *R(e)$.

And finally, there is the problem of “wrong” accents, i.e., unexpectedly oxytone action nouns and unexpectedly barytone agentive/patientive nouns.

Despite all these issues, some generalizations are possible. A core class of barytone action nouns shows the expected *seṭ/aniṭ*-distinction, (7).

- (7) Barytone action nouns (*tómos*)
- a. *seṭ* (no BL): *jána-* ‘peopl’ (secondary also n. *jána-*; Gk. *gónos*, **ǵen₁*), *grábha-* ‘grasping, reaching’ (*gráha-* ‘cup, container’, **greb^h₂*), *jára-* ‘wear, age’ (**ǵerh₂*, besides *jára-* ‘aging’)
 - b. *aniṭ* (BL): *vāja-* ‘speed, race’ (**ueǵ*), *-svāpa-* ‘sleep’ (**suep*), *śáka-* ‘strength, might’ (**kēk^w*); with secondary oxytonesis (but see below): *bhārá-* ‘burden’ (Gk. *phorós*, **b^her*), *vāká-* ‘song, speech’ (**uek^w*), *sādá-* ‘sitting, riding’ (Gk. *hodós* f., **sed*)

These are usually (and correctly) treated as archaisms. For the most part, however, *aniṭ*-roots as in (7b) have (non-BL) *a* in simplex nouns, e.g., *bhára-* ‘takings, plunder’ (**b^her*), *tána-* n. ‘descendants’ (**ten*), *kṣáya-* ‘dwelling’ (**tkei*), etc., which Hajnal argues is the result of the

generalization of the *set*-outcome to *aniṭ*-roots, first to *CaR* roots and then to *CaC* roots more generally. It is worth stressing here that Hajnal does not envisage this process as an “item-by-item” type of analogical change in which each stem needs a concrete model that triggers this analogy (*pace* Kiparsky), but rather as a generalization of the root ablaut grade of the whole productive *class* of barytone *a*-stem action nouns. Tucker (2012) concurs that $R(a)$ was the productive variant for this class already at the Indo-Iranian stage, but also provides important corrections to Hajnal’s conclusions. She argues against the proposal that metrical considerations played a role in the distribution of $R(a)$ and $R(\bar{a})$ in second compound members and instead proposes that the most direct reflexes of BL in thematic nouns are found in 1) (originally barytone) action nouns in second compound members, where only *aniṭ*-roots show lengthening, but vary in analogy to the simplex action nouns where $R(a)$ was generalized, (8), and 2) simplex oxytone (often intransitive or passive) agentive/patientive nouns, as in (9), whose core forms also preserve the expected *set/aniṭ*-distinction.

- (8) Barytone action nouns in compounds
- a. *set* (no BL): *ā-havá-* ‘challenge’, *pra-savá-* ‘impulse’, *ā-dhāvá-*
 - b. *aniṭ* (BL): *vi-bhāgá-* ‘distribution’, *adhi-vāká-* ‘advocacy’, *saṃ-vādá-* ‘conversation’, *ā-hāvá-* ‘bucket, container’ vs. *ud-ayá-* ‘rising’, *saṃ-gamá-* ‘coming together’, etc.
- (9) Oxytone agent/patient nouns (*tomós*)
- a. *set* (no BL): *-staná-* ‘resounding, noise’ ($*steh_2$), *bhayá-* ‘fear’ ($*b^heih_2$), *vadhá-* ‘killing, killer’ ($*ued^h h_1$), *javá-* ‘speed’, *savá-* ‘impelling’
 - b. *aniṭ* (BL): *vāhá-* ‘draft animal’ (Av. *vāza-*, $*uegh$), *kārá-* ‘decisive act, battle’/*kārá-* ‘making, performing’ ($*k^w er$), *-sāhá-* ‘conquering’ ($*segh$), *pārá-* ‘crossing’ ($*per$), *bhārá-* ‘burden’ ($*b^h er$), *sādá-* ‘seat’ ($*sed$).

Recall that all instances of BL lengthening in the latter context, (9b), are exceptions to Kiparsky’s formulation of BL in (5). Forms like *bhārá-* ‘burden’ are also exceptions to the generalizations that action nouns are barytone. To get around this problem, both Hajnal and Kiparsky consequently treat these as action nouns with secondary oxytonesis, and therefore not exceptions after all. Tucker (2012: 257–8), however, points out the parallelism to the passive reading of Gk. *tomós*-adjectives such as *loipós* ‘what is left over, remaining’ and *holkós* ‘what is drawn; furrow’, which act as result nouns when substantivized (see Nussbaum 2017: 241f. for further examples). Such originally oxytone result nouns would then be counterexamples to (5). Interestingly, there are a few doublets in Vedic in which an “active” barytone action noun with $R(a)$ contrasts with a “passive” oxytone result noun with $R(\bar{a})$, illustrated in Table 12.

Table 12: Action vs. result nouns (Tucker 2012: 239)

<i>grábha-</i>	‘action of seizing’	<i>grābhá-</i>	‘what is seized, handful, grasp’
<i>bhára-</i>	‘action of bearing’	<i>bhārá-</i>	‘what is borne; burden, load’
<i>bhāga-</i>	‘action of sharing’, allotting’	<i>bhāgá-</i>	‘what is shared/allotted’

Note that the first root is *set*, the other two are *aniṭ*, so both traditional BL and Kiparsky’s version will need to assume some rule generalization (“analogical adjustment”). For (*aniṭ*) action nouns neither account predicts $R(a)$, but recall that Tucker has argued convincingly

that this class had generalized R(*a*) for productively formed verbal nouns already at the common Indo-Iranian stage.³⁴ Assuming that the result nouns continue patientive *tomós*-nouns, Kiparsky predicts no lengthening whereas traditional BL predicts lengthening. Note, moreover, that agentive (non-result noun) members of this class actually generalized R(*a*) for *anīt*-roots as well (though less consistently than the barytone action nouns), as in *ghaná*- ‘slayer, destroyer’ (**g^{wh}en*, Gk. *phonós*), *plavá*- ‘boat’ (**pley*), *dravá*- ‘running’ (**drey*), etc. By Kiparsky’s rule (5), these are also not exceptions because “fleeting *o*” is followed by an accented morpheme, hence no lengthening is expected. But in the context of patientive/result nouns like in (9) and Table 12, it is more likely that the R(*ā*)-forms are archaisms with the expected BL outcomes, while *ghaná*-, etc., show the more recent, synchronically productive type.

To summarize, Kiparsky’s version of BL predicts the generalization of R(*a*) in *tomós*-nouns, but not the fact that the same generalization took place much more consistently in *tómos*-nouns, and it does not predict the passive/result nouns of the type *bhārā*-. Let’s now turn to the prediction that “fixed *-o-* does not lengthen”. This predicts a difference between barytone nouns from synchronically ablauting roots, which should have R(*ā*), and barytone nouns that are synchronically isolated or formed to non-ablauting roots, which should have R(*a*). This is awkward for cases like *kṣáya*- ‘abode’, *bhága*- ‘share, portion’, *bhára*- ‘booty, spoils of battle’, *tána*- ‘progeny’, some of the examples in Kiparsky (2010) for the “fixed *-o-*” context, since these have synchronically ablauting roots besides them. One could argue that the rule still holds because these are not semantically compositional action nouns to their respective roots, but that is really stretching it in cases like *kṣáya*- ‘abode’ to *kṣay* ‘abide, dwell’ or *bhága*- ‘share, portion’ to *bhaj* ‘allot, share’. Moreover, as Tucker shows, several of the forms in this class have Iranian cognates, namely (*seṭ*) Ved. *gáya*- ‘homestead’, OAv. *gaiia*- ‘life’ (root *gayⁱ/jī* ‘live’); Ved. *háva*-, OAv. *zauua*- ‘invocation’ (*havⁱ/hū*, Av. *zū* ‘invoke’); (*anīt*) Ved. *bhága*-, OAv. *baga*-/*baṅa*- ‘share, portion’ (*bhaj* ‘share, allot’); Ved. *máda*-, OAv. *mada*-/*maḍa*- ‘exhilaration, intoxication’ (*mad* ‘be exhilarated’). This makes it more likely that these were part of the common Indo-Iranian layer of verbal nouns that generalized R(*a*), as suggested by Tucker.

Genuinely isolated and potentially inherited forms with “fixed *-o-*” are Vedic *náma*- ‘pasture’, *dáma*- ‘house’, and *rása*- ‘juice’. Ved. *náma*-, a hapax in the locative in RV 3.39.6, could be compared to Gk. *nomós* (Hom.) ‘pasture’ but for the accent (note that Post-Homeric *nómos* means ‘practice, custom; law’), and hence as related to **nem* ‘assign (to)’, which forms a simplex thematic verb with R(*e*) in Gk. *némō*, *némomai* ‘assign to, share’, Go. *niman* ‘take’ and Latv. *ņemu* ‘take’, but has no verbal forms in Indo-Iranian, so this is at least a plausible instance of “fixed *-o-*”. However, the equation between Ved. *námas*- n. ‘reverence’, Av. *nəmah*- n. ‘reverence; loan’, Gk. *nēmos* n. ‘pasture’ (Hom.), and Lat. *nemus* n. ‘wood, pasture, grove’ suggests that there was an old *s*-stem with R(*e*) to this root that was inherited into Indo-Iranian and that could have served as the model for the root ablaut grade of the thematic noun. An alternative interpretation is that *náma*- doesn’t belong to this root at all, but to the homophonous (maybe ultimately related) root *nam* ‘bend’, which forms a simple the-

³⁴Neither Hajnal nor Tucker are very explicit about why this generalization affected the barytone nouns to a greater degree than the oxytone nouns (though see the discussion of *ghaná*- etc. in the main text), but it is possible that the correlation with root-accented full grade thematic presents like *bhārati* ‘carried’, *bhājati* ‘dispenses, allots’, *kṣáyati* ‘dwells’, etc., contributed to the generalization of synchronic R(*á*) to the equally root-accented action nouns, but exerted less influence on the oxytone nouns (thus Nussbaum 2008 & p.c.).

matic verb in Indo-Iranian. This is actually the preferred translation of this noun in Jamison and Brereton (2014), who translate *náme gós* in 3.39.6b as “bend of the cow” (“some sort of homely spatial metaphor drawn from knowledge of cow anatomy indicating a hidden or protected place”, Jamison 2021: 42; cf. also Kim 2010: 101), hence a synchronically transparent barytone action noun of the *bhára-*, *kṣáya-*, etc., type and *not* an instance of (inherited) “fixed -o-” at all.

Vedic *dáma-* m., Greek *dómos* m. and Latin *domus* (also *-ūs*) f. all ‘house’, also point to an inherited barytone action noun, and although Nikolaev (2010) adduces strong arguments in favor of an original *aniṭ-*root **dem*, some forms seem to support the reconstruction **demh₂* (LIV²: 114ff.). If this root *is* ultimately *aniṭ*, one could also posit a secondary derivative **dóm-h₂-o-* based on an (albeit unattested) **-eh₂-*stem to explain apparent *set-*forms such as Gk. *démas* ‘bodily frame’ and the lack of BL in Vedic (a possibility pointed out to me by Michael Weiss). Further pointing to an *aniṭ-*root is the inherited root noun **dóm-/dem-* seen in Ved. *dám-* (RV 10.46.), *dámpati-/páti- dán* ‘master of the house’, OAv. *dāng paiti-*; with R(e) in Gk. *des-pót[ēs]* ‘ruler’ and zero grade in some derived forms, e.g., Gk. *dmōs* ‘slave’ < **d(ṃ)m-ōu-*. It is usually accepted that the root noun is the older form of the word for ‘house’, and Mayrhofer (EWA I: 697) suggests that Ved. *dáma-* might actually be a thematization of the Vedic root noun based on its accusative, *dámam* (so also Volkart 1994: 2, Lubotsky 1997: 57, and Kim 2010: 98), though that would separate it from the thematic stem in Greek and Latin. However, Greek *dómos* could also just be the productively formed verbal noun of *démō* ‘built’, and the feminine gender of the Latin form is unexpected and difficult to motivate: De Vaan (2008: 178) takes it from the underlying root noun, but that would in turn be difficult to reconcile with the Indo-Iranian comparanda. Taken together, it is thus reasonably plausible that *dáma-* is an Indo-Iranian remodelling of inherited *dám-*.

Finally, Vedic *rása-* ‘juice, liquid’ and the related feminine *ā-*stem *rasā-* ‘moisture; stream’ (Young Avestan *raṅhā-*) are usually taken to be related to the root of Hitt. *ārašzi*, *aršanzi* ‘flow’, Ved. *árṣati* ‘flows’, **h₁ers* ‘flow’ (LIV²: 241) via “Schwebeablaut” (**h₁ers* ~ **h₁res*). The Indo-Iranian feminine *ā-*stem has an exact equivalent in Lith. *rasà* ‘dew, drop’ and OCS *rosa* ‘dew, rain’ and thus seems to be inherited. The age of the barytone noun (< **róso-*?) is less clear since here, too, there is evidence for an older root noun, Lat. *rōs* m. ‘dew’, that could have given rise to a thematized variant in Old Indic, as has also been suggested for *dáma-* ‘house’ (see above). The inherited *ā-*stem would still be a counterexample to “traditional BL”, though.

3.2.2 Others

A few other nouns and adjectives with possible “fixed -o-” should be mentioned, though these are for the most part less convincing. Vedic *samá-* ‘same’ (OAv. *hama-*, Gk. *homós*, Go. *sama-*) could go back to **somó-* or **somH-ó-*; independent evidence for a root-final laryngeal (apart from the lack of BL in Indo-Iranian) comes from Greek *háma* adv. ‘at the same time’, as if < **smh₂* (though adverbial *-a* and adjectival *-alos* as in, e.g., Gk. *homalós* ‘equal, level’ are productive in Greek) and maybe also Vedic, namely from Ved. *simá-* ‘self’ if this is to be taken from a pre-form **smh₂-ó-* with metathesis to **sHmó-*.³⁵ Moreover, the non-BL contexts of the etymologically related Ved. *sám* ‘at the same time, with’ and pronominal *sama-* ‘(which)ever’

³⁵A sporadic metathesis, that is, which is not the most dignified solution but marginally better than Mayrhofer’s tentatively proposed “Laryngal-Umlaut” (EWA II: 730).

(< **sṃm-ó-*, cf. Gk. *hamó-*, Go. *sums*) could also have played a role at the relevant (pre-PIIr.) stage.

That the heteroclitic *r/n*-stem reflected in Vedic nom.acc.sg. *śákrt* ‘excrement’, weak stem *śakn-* (instr.sg. *śaknā́*, gen.sg. *śaknás*) had R(*o*) at least in the strong stem is suggested by its heteroclitic equivalents in Hittite (nom.acc. *šakkar*, *zakkar*, gen. *šaknaš*) and R(*o*) in thematic derivatives based on this stem, such as Gk. *kópros* f. ‘dung’, though there are other forms that imply zero grade (Greek *skôr*, *skátós* ‘dung’) or *e*-grade of the root (OIr. *cechar*, *cechar* f. ‘dirt’),³⁶ so it is possible that Indo-Iranian inherited an ablauting paradigm. But generalized/“fixed -*o*” in the root would not have consistently been in a BL context anyway because of the shape of the weak stem, which as the Hittite comparandum shows must be old, so this is a rather unlikely example.

The *i*-stem *áhi-* ‘snake’ (YAv. *aži-*) only takes closed inflection in Vedic, so the weak stem would have been consistently a BL context as well as the strong stem. If this word is indeed to be compared to Gk. *óphis*, *-eōs/-ios* ‘snake’, this could imply inherited “fixed -*o*”, especially if one accepts the reconstruction *h₃ég^{wh}i-*. In that case, these words must be separated from Greek *ékhis* ‘viper’, *ekhînos* ‘hedgehog’ (Myc. *e-ki-no*), etc., which require a preform with R(*e*), i.e., *h₁ég^{wh}i-* with delabialization of the labiovelar before **-i-* (Neri 2003: 27, fn. 56; cf. Jasanoff and Nussbaum 1996: 198) and probably also from Classical Armenian *iž* ‘snake’ with apparent R(*e*). But even then it cannot be excluded that the Indo-Iranian word instead corresponds to Lat. *anguis* m./f., Lith. *angis* ‘snake’ < **h₂eng^{w(h)}i-* or (with Rix’s Law) **h₂ng^{wh}i-*, the latter of which would have given PIIr. **aǰ^hi-* > Ved. *áhi-*, YAv. *aži-*. Given that PIE had two different words for (probably venomous vs. non-venomous) ‘snake’³⁷ we cannot be sure that Ved. *áhi-* corresponds to Gk. *óphis* or its R(*e*) variant rather than to Lat. *anguis*, so this example should be discarded as well.

3.3 Summary

In this section, we have seen how difficult it is to pin down “fixed -*o*” at the relevant stage at which BL operated, presumably in (pre-)Proto-Indo-Iranian. Forms which in all likelihood inherited “fixed -*o*” are the reflexes of **pro(ti)-*, **póti-*, and **roseh₂-*; these are probably the most difficult counterexamples to traditional BL. Other forms such as Vedic *ánas-*, *támas-*, and *sáma-* require or admit a reconstruction with a root-final laryngeal and are therefore not BL contexts under the traditional formulation of the law; moreover, we have good reason to assume that neuter *s*-stems (*ápas-*, *ánas-*, *támas-*) generalized R(*e*) in Indo-Iranian. Paradigms in which the weak stem provided a non-BL context that could have been generalized (*ávi-*, *páti-*, *śákar-*) make up a fourth group. In the case of Vedic *áhi-*, there are two competing etymologies between which it is difficult to decide.

We have also seen that the infamous barytone and oxytone *a*-stem verbal nouns (the “*tómos-*” vs. “*tomós*-types”) do not provide strong evidence for Kiparsky’s version of BL over “traditional BL”, as shown by systematic exceptions to the condition that “fleeting -*o*” does not lengthen before an accented morpheme (*vāhā-*, *bhārā-*, *kārā-* etc.) and the problems with

³⁶The reconstruction of the root is rather difficult and it is possible that there were two different heteroclitic stems at play, **kók^w-r/n-* (reflected in Vedic, Celtic, and Gk. *kópros*) and **sók/*k̂*-r/n-* reflected in Hittite and Gk. *skôr*, *skátós*. See EWA II: 602 and Kloekhorst (2008: 699f.) for discussion.

³⁷See Neri (2016: 238–9) for an illuminating discussion; he reconstructs **h₂éng^{wh}-i-*/**h₂ng^{wh}-éi-* on the one hand and **h₁óǵ^h-i-*/**h₁éǵ^h-i-* on the other; the Indo-Iranian forms would then belong to the former.

the examples that are meant to show that (accented) “fixed *-o-*” does not lengthen, of which only *rása-*, or rather, its feminine variant *rasā́*, is likely to preserve inherited “fixed *-o-*”.

3.4 “Variably fleeting *-o-* lengthens variably”

This is condition (6) c., illustrated with the stems *uṣás-* ‘dawn’ and *ukṣán-* ‘bull’, which differ in terms of their inflection in whether or not they have suffix ablaut. The idea is that lack of suffix ablaut (= lack of zero grade in the suffix) corresponds to lack of BL in the suffix, hence demonstrating that BL is *synchronically* dependent on whether the suffix vowel is fleeting or fixed. The attested forms of *uṣás-* ‘dawn’ are summarized in Table 13.

Table 13: Attested forms of *uṣás-* ‘dawn’ in the RV

	Sg	Dual	Pl
Nom	<i>uṣás</i>	<i>uṣásā́, uṣásā́, uṣásau</i>	<i>uṣásas, uṣásas</i>
Acc	<i>uṣásam, uṣásam</i>	<i>uṣásā́, uṣásā́, uṣásau</i>	<i>uṣás, uṣásas</i>
Voc	<i>uṣas</i>		<i>uṣásas, uṣasas</i>
Instr	<i>uṣásā́</i>		<i>uṣádbhis</i>
Dat	<i>uṣáse</i>		
Abl	<i>uṣásas</i>		
Gen	<i>uṣás, uṣásas</i>		<i>uṣásām</i>
Loc.	<i>uṣási</i>		

As this table shows, the accent is always on the suffix, and there is variation in the accusative singular, the nominative-accusative dual and the nominative and vocative plural in whether the suffix is lengthened or not. The lengthened version is explained as due to BL both under the traditional formulation and under Kiparsky’s formulation, since this word is usually reconstructed with S(*o*) in the strong stem, namely as an amphikinetic *s*-stem **h₂éus-os-/*h₂us-(e)s-*´, with Vedic having generalized R(\emptyset) throughout the paradigm. Unambiguous evidence for the full grade of the root comes from Lat. *aurōra* and Lith. *aušrà*, ‘both ‘dawn’ (though both are secondary derivatives; see Stüber 2002: 103–4 and Steer 2015: 63–82 for more details on the root shape), and S(\emptyset) is assured by the synchronically isolated and archaic Vedic gen.sg. *uṣás* < **h₂us-s-és* and acc.pl. *uṣás* < **h₂us-s-ṛs* (Schindler 1972; Stüber 2002: 103–4; NIL: 357–67; Pinault 2019: 488–91). The *o*-grade of the suffix is also confirmed by Latin and Greek, e.g., Ionic *ēós*, Att. *héōs*, Dor. *aFós* < **aṽsōs*.

Note that this *s*-stem is unique in being the only securely reconstructable animate *s*-stem. Synchronically, Vedic simplex *s*-stems are for the most part neuter verbal nouns with accented full grade of the root and full grade of the suffix throughout the paradigm, e.g., nom.acc.sg. *jánas* ‘race, kind’, gen. *jánasas*, dat. *jánase*, etc. Animate *s*-stems like *apás-* ‘working, at work’ are mostly found as second compound members and are accented on the suffix, which has likewise generalized the full grade (diachronically, the animate *s*-stems go back to hysterokinetic *s*-stems, so the weak stem should have had R(\emptyset) originally, see below). Thus the accented S(*a*) variants of the weak stem in the paradigm of *uṣás-* must reflect precisely this synchronically regular pattern. In the accusative singular, the S(*ā́*)-variant reflects the inherited *o*-grade of the strong stem with BL, whereas the S(*a*) variant represents the synchronically regular *s*-stem inflection. Note that *uṣás-* is the only Vedic *s*-stem with suffixal ablaut variation in the accusative singular.

Complicating this picture somewhat is the fact that at least the nom.sg. must have had descriptive lengthened grade already in PIE, $*h_2éus-ōs$, probably generalized from old collectives in liquids and nasals where the lengthening was originally conditioned by Szemerényi’s Law ($*VRs/H\# > *\bar{V}R\#$; see Byrd 2015: 110ff.). The synchronic $S(\bar{a})$ is thus compatible both with the inherited $S(\bar{o})$ and with the synchronically productive nom.sg. of the animate s -stems, $-\bar{a}s$.

Now, Kiparsky’s argument here (though he doesn’t explicitly say so, so this rests on the interpretation of the order in which the variants are given) seems to be that the genitive singular variant $uṣás$ goes with the “fixed” strong stem variant $uṣás-$ in, e.g., the nom.acc.dual. But the comparative evidence suggests that the genitive singular variant $uṣás$, which is synchronically isolated and clearly the archaic variant, actually goes with the BL forms in the strong stem, where $R(o)$ is assured in the accusative singular (Av. $uṣāṅhəm$, Ion. Gk. $\bar{e}ō < *\bar{e}ōa$; the nom.acc. dual and nom.pl. forms in Vedic could arguably also continue the suffix shape $S(\bar{o})$ taken over from the nom.sg.). The non-BL forms in the acc.sg. and maybe the nom./acc. dual and nom.pl. in Table 13 are then a fairly straightforward innovation under the influence of the synchronically productive pattern of the animate, originally hysterokinetic s -stems (type $(-)apás-$ ‘working’), which never had o -grade of the suffix and hence no lengthening in the accusative singular (e.g., $apásam$). In other words, in order to form the accusative singular $uṣásam$, speakers of Vedic must have acquired this lexeme as an exceptional/irregular s -stem, whereas in order to form $uṣásam$ they needed to have failed to do so and subsequently categorized it as a regular animate s -stem (of the $apás$ -type). Knowledge of whether the suffix vowel is “fleeting” or not doesn’t enter into consideration at all. This is not a trivial point because the claim is precisely that the “fleeting” quality of the suffixal vowel is a synchronic property of particular accent-ablaut paradigms. But the choice here is not between two competing, synchronically productive patterns (as in the case of, e.g., German nominal plural formation, cf. Yang 2016: 121ff.), but between an inherited, synchronically isolated pattern and its synchronically productive replacement.

This is different in the case of Kiparsky’s second example, the word for ‘bull’, whose forms in the Rigveda are given in Table 14.

Table 14: Attested forms of $ukṣán-$ ‘bull’ in the RV

	Sg	Pl
Nom	$ukṣá$	$ukṣánaṣ$
Acc	$ukṣáṅam, ukṣánaṅam$	$ukṣnáṣ, ukṣán[t]as$
Voc		
Instr		$ukṣábhīṣ$
Dat		
Abl		
Gen	$ukṣnáṣ$	
Loc.		

In this case, the reconstruction varies between hysterokinetic $*h_2uks-én-/*h_2uks-n-$ and amphikinetic $*h_2éuks-on-/*h_2uks-n-$; cf. NIL: 368–70 and Höfler 2015. The latter argues for an originally amphikinetic nominative (singular) based on the Iranian comparanda, in which only the BL variant of the suffix is attested for the nom.pl. (OAv. $uxsāno$) and the acc.sg.

(YAv. *uxšānəm*), as well as evidence from its Germanic, Celtic, and Tocharian cognates which also reflect S(*o*).³⁸ In this case, the hysterokinetic forms in Vedic must be innovative, possibly based on its quasi-synonym, the originally hysterokinetic *vṛṣan-* ‘bull’ (Gk. *βους*, which is also attested with BL- vs. non-BL variation in its strong stem (acc.sg. *-āṇ-am* vs. *-an-am*; cf. Peters 1993: 393–4).

The inflection of the weak stem is generally reconstructed as originally identical for both amphikinetic and hysterokinetic paradigms (Widmer 2004: 53–4, Fortson 2010: 120, Pinault 2012, Neri 2017: 111–3), so the undoubtedly old genitive singular *ukṣṇás* (= YAv. *uxšnō*) is not decisive. The hysterokinetic variant did not have S(*o*) and hence no BL context in the suffix, so if this reconstruction is preferred, the form *ukṣṇam* must be younger in this case and was presumably formed on the model of the inherited class of *-an-*stems that were originally amphikinetic, with S(*o*) in the strong stem (e.g., *rājānam* < **h₃rēg-on-m̄*), as suggested by Kiparsky himself (p. 149, fn. 18).

Kiparsky’s rendering of the forms suggests that the “fixed” form *ukṣṇam* goes with the acc.pl. *ukṣṇas*, while the “fleeting” form *ukṣṇam* goes with gen.sg. (= acc.pl.) *ukṣṇás* and this is indeed expected for the continuants of an older hysterokinetic vs. an old amphikinetic paradigm, respectively. In that case, the development of *ukṣṇ-* would be the mirror image of the previous case study: While the amphikinetic pattern of *uśás-* is an archaism and the S(*a*) in the accusative is younger, in the case of nouns in *-an-* (and even more so for the similarly inflecting stems in *-man-* and *-van-*), the synchronically productive pattern was based on the originally amphikinetic inflection, hence acc.sg. *-(m/v)ān-am*. Again, language acquirers needed to know which noun class this word belonged to (and apparently weren’t sure, hence the variants), rather than whether or not the suffix vowel was “fixed” - especially since there never was an S(*o*) in hysterokinetic nouns in the first place.

In other words, if this were a truly *synchronic* theory of ablaut and accent in Vedic, whether or not *uśás-*, *ukṣṇ-* and *vṛṣan-* originally had (“fleeting”) S(*o*) or not should not enter into consideration.

3.5 Summary

The point of the preceding discussion was to show that Kiparsky’s modification of BL and its “regular exceptions” in the contexts (6b–c) does not adequately account for the data once comparative evidence regarding the reconstruction of **o*-grades, root-final laryngeals, root ablaut, and suffixal ablaut is taken into account, assuming that this version of BL actually applied at a stage at which (pre-)Proto-Indo-Iranian still distinguished the reflexes of **o* from those of other short non-high vowels. This interpretation was based on the fact that not all “fleeting” non-high vowels in Indo-Iranian lengthen unless followed by an accent, and by Kiparsky’s citation of the relevant reconstructed forms with **o*.

The alternative, treating (5) as a strictly synchronic rule (with the added modification that it only applied to certain stem classes) gives the opposite of the expected results for the thematic action nouns discussed in section 3.2.1 and for the “fleeting *o*” examples in section 3.4.

However, once the comparative evidence is systematically taken into account, “traditional BL” can account for most of the forms discussed here assuming that it was originally

³⁸With the exception of Welsh *ychen* (nom.pl.) which reflects **-en-es*; see Höfler (2015: 232–5) for further discussion of variation between **-on-/*-en-*stem alternants in denominal **n-*stems.

a Neogrammarian (“blind”) sound change and the role of analogy both within and across paradigms is sufficiently elucidated. It is true that “traditional BL” crucially relies on intra- and inter-paradigmatic analogy, and we have already seen some of the difficulties with this (maybe a little too) powerful tool in section 3.4. Therefore the next and final section discusses some ways of constraining it.

4 Analogy and Brugmann’s Law

4.1 “Domain regularity”: analogy as lexical change

Analogy is usually defined as “the extension of existing rules to new forms” or as “rule generalization” (Kuryłowicz 1949; Anderson 2015: 15; Arndt-Lappe 2015), cf. (10a). Special attention is given to proportional analogy which involves the generalization of a formal relationship from one set of conditions to another set of conditions based on some perceived similarity, (10b). Finally, paradigm leveling describes the extension of a particular alternant/allomorph to a particular slot (or slots) of the paradigm in which it was not originally found, (10c).

- (10) Types of analogical changes in inflectional morphology
- a. Rule extension: E.g., OE *cū*, pl. *cȳ* → *cow*, pl. *cows*
 - b. Four-part proportional analogy: E.g., *sing* : *sang* = *bring* : *x*, *x* = *brang*;
drive : *drove* = *dive* : *x*, *x* = *dove*, etc.
 - c. Paradigm leveling: E.g., *reach* : *raught* → *reach* : *reached*, *melt* : *molt* : *molten*
→ *melt* : *meltd* : *meltded*, etc.

These processes are often treated as instances of language change rather than the operation of synchronic grammatical rules. However, it is not always clear what exactly is supposed to have changed in these cases — “the morphology” of a language, the lexicon, or the generative rule system? It should be obvious from these examples that the rules of plural formation or the formation of the past tense in English have not necessarily changed due to the changes in (10) — the productive plural and past tense formation rules are still intact. So the changes happened in the lexicon — how?

In an approach that extends the “language change as misanalysis” framework to the lexicon, Reiss (2003, 2006) argues that “analogy” can be reduced to the “misacquisition” of properties of lexical items during language acquisition, using a framework in which language change is defined as a relationship between “grammars” (mental knowledge states) at different points in time (see, e.g., Hale 1998, 2007). Extending this framework to the lexicon, “analogies reflect the process of lexicon building during language acquisition. Retaining the notion that language change refers to a relationship between various grammars, we can ascribe the analogies to a difference in the lexicons at two stages of a ‘language,’ that is, two grammars, the output of one serving as the PLD [Primary Linguistic Data, L. G.] for the construction of the other. The example referred to as paradigm leveling is particularly easy to account for under these assumptions. The change from stage 1 *reach/raught* to stage 2 *reach/reached* merely reflects a failure by the stage 2 speaker to internalize the form *raught*. In the absence of a stored past tense form for this verb, the speaker applies the productive, default past tense formation rules, learned on the basis of numerous other data points, and generates the regular form *reached*. If *raught* had been acquired, it would block the formation of *reached*.” (Reiss 2006: 277; cf.

also Garrett 2008).

Cases of proportional analogy in which an apparently *unproductive* pattern is extended are more difficult to account for. Reiss refers to “accidental priming” by morphophonologically similar forms, which depends on recency rather than frequency of forms. In other words, children don’t overgeneralize or “extend” patterns because regular forms are more frequent, but because they failed to store/retrieve the irregular form.³⁹ Albright (2002, 2005, 2008, 2010), too, cautions against reducing analogical change, particularly paradigm leveling, uniformly to frequency (within a paradigm), a preference for short forms, or general markedness considerations. In Albright (2010), he argues that the generalization of different root allomorphs as “base forms” in the Yiddish vs. the German verb follows from differences in the language-specific informativeness of the respective bases: “leveling favors the most informative form” (Albright 2010: 533), namely the form from which all other inflectional properties of the paradigm can be derived.

For the BL case, two different contexts of analogy are relevant. The first concerns the extension of a rule to stems/roots with “similar relations”, comparable to “irregular generalization” examples like Engl. *brang*, in which an originally lexically restricted pattern is extended beyond its original scope. This happened with the extension of “synchronic BL” to CaR, CaT roots that were historically *seṭ* in categories like the passive aorist (e.g., *ájani* vs. later *ájāni*), and in turn marked the creation of “regular” morphophonological alternations in certain categories in which BL originally operated “blindly” because they contained *o*-grades (the passive aorist, the causative, the perfect active, etc.). The formalization of these rules will likely be similar to Kiparsky’s “synchronic BL” rule, but crucially sensitive to morphological category (stem type, etc.), namely those in which BL is historically justified. It was not extended to categories in which there were no *o*-grades historically.

The second context concerns the extension of a productive pattern (or rather, the failure to acquire an unproductive or irregular pattern) that happened to erase BL variants. The latter case is relevant for the “exceptions” to BL to be discussed in the following.

4.2 The hunt for *o*-grades continues: *i*-stems

Considering the BL counterexamples in section 3.1, two groups stand out in addition to the thematic *a*-stems discussed in section 3.2.1:

- Neuter *s*-stems like *ápas*- ‘work’, *támas*- ‘darkness’, *ánas*- ‘cart’.
- *i*-stems: *páti*- m. ‘master, lord’, *ávi*- m./f. ‘sheep’, maybe *áhi*- m. ‘snake’.

In the first class there is no diachronic justification for BL since the root ablaut grade was originally R(*e*), hence this is not a category where we expect BL variants to survive should they arise, for example, through a sequence **h₃e*. We will now take a closer look at the second group, leaving aside *áhi*- since it is not clear that this noun reflects inherited R(*o*)

³⁹Marcus et al. (1992) found some correlation between frequency of English irregular past tense forms in parental speech and children’s ability to produce these forms, and frequency effects for irregular verbs were also found by Clahsen et al. (2002). However, overgeneralization does *not* correlate with the frequency of regular vs. irregular forms: “The distribution of regular and irregular (stem/root) types does not show any particular increase, when children start to overregularize or shortly before that point, suggesting that the development of overregularizations is not directly linked to the frequency distribution in the child’s vocabulary” (Clahsen et al. 2002: 618).

(cf. section 3.2.2). Recall that *pāti-* and *ávi-* have open inflection forms in the weak stem, so assuming that these stems came into Indo-Iranian with R(*o*), the expected paradigms would end up with *synchronic* root ablaut caused by the application of BL in the strong stem, i.e., nom.sg. **pāt-i-s*, dat.sg. *pát-y-e* and nom.sg. **áv-i-s*, dat.sg. *áv-y-e*. Preserving root ablaut was apparently not an option for this stem class (unlike for *u*-stems and root nouns, for example),⁴⁰ so in order to understand how these words ended up with a root allomorph with R(*a*), we need to consider the ablaut properties of the relevant class of *i*-stems as a whole.

Specifically, to answer the question of which ablaut grade the *i*-stems were likely to generalize, we need to take a closer look at primary Vedic *i*-stems, i.e., those that are plausibly synchronically root-derived (including cases in which the root is no longer synchronically transparent), like *pāti-* and *ávi-*. These are summarized in Table 15 based on the discussion in AiG II,2: 291–301 and Grestenberger 2009, 2014.

Table 15: Root ablaut grade in primary Rigvedic *i*-stems

a. R(<i>ā</i>)	b. R(<i>a</i>)/ <i>guṇa</i>	c. R(<i>Ø</i>)
<i>ājí-</i> m. & f. ‘race, contest’	<i>arí-</i> m. ‘stranger’	<i>iśí-</i> (inf.) ‘send out, release’
<i>āpí-</i> m. ‘ally, friend’	<i>añjí-</i> a./m. ‘anointing, ointment’	<i>ṛṣí-</i> m. ‘poet’
<i>kāśí-</i> m. ‘closed hand, fist’	<i>arcí-</i> m. ‘flame’	<i>kṛí-</i> m. ‘singer’
<i>khādí-</i> m. ‘clasp’	<i>-ardhi-</i> ‘half’	<i>kṛtí-</i> (m. or f.) ‘knife’
<i>grāhi-</i> f. ‘grabber’ (?)	<i>así-</i> f. ‘sword’	<i>kṛṣí-</i> f. ‘ploughing; field’
<i>ghāsí-</i> m. ‘food’	<i>kapí-</i> m. ‘monkey’	<i>kṛd́í-</i> a. ‘playing’
<i>-jāni-</i> ‘-woman’	<i>kaví-</i> m. ‘seer’	<i>gírí-</i> m. ‘mountain’
<i>-jāni-</i> f. ‘birth, descentance’	<i>-gandhi-</i> a. ‘smelling of sth.’	<i>-gṛbhi-</i> a. ‘seizing’
<i>drāpí-</i> m. ‘coat’	<i>granthí-</i> m. ‘knot’	<i>tují-</i> f. ‘progeny’
<i>dhāsí-</i> m. ‘nourishment’	<i>jáni-</i> f. ‘wife, woman’	<i>-tují-</i> a. ‘hurling’
<i>dhāsí-</i> f. ‘dwelling’	<i>jálpi-</i> f. ‘whispering’	<i>tvíṣi-</i> f. ‘impetuosity’
<i>dhráji-</i> f. ‘gust of wind’	<i>-táni-</i> ‘stretching out’	<i>dúdhi-</i> a. ‘stubborn’
<i>nābhi-</i> f. ‘navel’	<i>(sam-)taní-</i> f. ‘resounding’	<i>-duri-</i> a. ‘attentive’
<i>nāri-</i> f. ‘wife’	<i>-dari-</i> ‘splitting, breaking’	<i>drṣí-</i> ‘seeing’ (inf.)
<i>plāśí-</i> m. ‘intestines’ (?)	<i>draví-</i> m. ‘cutter’	<i>dhúni-</i> a. ‘thundering’
<i>rāśí-</i> f. ‘group, heap’	<i>nemí-</i> f. ‘wheel rim’	<i>ṇṛtí-</i> f. ‘dance’
	<i>paví-</i> m. ‘wheel band; point’	<i>plúṣi-</i> m. ‘flea’
	<i>balí-</i> m. ‘contribution; levy’	<i>bhují-</i> f. ‘enjoyment’ (inf.)
	<i>-bhári-</i> a. ‘bearing’	<i>-bhují-</i> a. ‘bending’
	<i>-bhogí-</i> f. ‘enjoyment’ (inf.)	<i>-mathí-</i> ⁴¹ a. ‘-robbing’
	<i>mañí-</i> m. ‘necklace’	<i>múni-</i> m. ‘seer’
	<i>mandí-</i> a. ‘enjoyable, intoxicating’	<i>-múri-</i> m. ‘obstacle’
	<i>med́í-</i> a. ‘rustling, crackling’	<i>súci-</i> a. ‘bright’
	<i>mení-</i> f. ‘anger, revenge’	

⁴⁰The only example of synchronic root ablaut in an *i*-stem is *rayí-* ‘wealth’, gen. *rāyás* from **ro/eh₁-i-s*, gen. **ro/eh₁-i-e/os*, but in this case the R(*ā*) is found in the weak stem and historically due to compensatory lengthening after the loss of the root-final laryngeal. Note that the weak stem is treated synchronically as suppletive root noun to the *i*-stem in some handbooks and grammars.

⁴¹Synchronically the zero grade of *manthí* ‘tear off, destroy, rob’ and hence included here rather than in column b.

	- <i>yají-</i> a. ‘sacrificing’ <i>rámhi-</i> f. ‘speed’ <i>rakṣi-</i> a. ‘protecting’ <i>ráji-</i> f. ‘line’ <i>rándhi-</i> f. ‘submission’ <i>rábhi-</i> f. ‘chariot-piece; support’ - <i>váni-</i> ‘gaining, winning’ <i>védi-</i> f. ‘place of sacrifice’ <i>vyathí-</i> a. ‘staggering’ <i>saní-</i> m. ‘reward’ - <i>sváni-</i> ‘resounding’ <i>svarí-</i> a. ‘sounding’ <i>hári-</i> ‘yellowish’ <i>hárṣi-</i> (f.?) ‘joy’
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Column c., with synchronic R(\emptyset), is not relevant to the problem at hand and will not be discussed in the following. The broad generalization is that action nouns/verbal abstracts are feminines, whereas agentive/patientive *i*-stems are adjectives or masculine nouns; the latter group corresponds to the “concrete” nouns in Solmsen (1909: 157–65), who observed the same distinction in the Greek *i*-stems but also notes that this distinction cross-cuts that between different root ablaut grades across the Indo-European languages, as is also the case in Vedic. This means that the abstract vs. concrete (or fem./masc.) distinction is not going to help us decide which root ablaut grade would have been generalized by PIIr. **pát-i-*, **pát-y-* and **áv-i-*, **áv-y-*. Note, however, that the absolute majority of primary *i*-stems in column (b.) has synchronic R(*a*) or *guṇa*, which means that in *CaRC/CaCC*-roots (*añj*, *arc*, *gandh*, *granth*, *jalp*, *mand*, *ramh*, *rakṣ*, *randh*, *harṣ*) and **CaRH*-roots (*dravⁱ*, *svanⁱ*, *tanⁱ*, *sanⁱ*) we cannot distinguish between original R(*o*) and R(*e*), and the same goes for roots with internal high vowels (*nemí-*, *-bhogí-*, *-mení-*, etc.), though these tend to conveniently take zero grade (column c.).

We could of course argue that R(*o*) wasn’t “native” to inherited *i*-stems in the first place, but there is good evidence for at least late IE/pre-Proto-Indo-Iranian *i*-stems with *o*-grade of the root, especially in Greek, e.g., *tróphis* ‘well-fed; stout; large’ (*tréphō* ‘to nourish’), *trókhis* ‘runner; messenger’ (*trékhō* ‘to run’), *trópis* f. ‘ship’s keel’ < *‘turner’ (*trépō* ‘to turn sth.’; Solmsen 1909: loc.cit., Schwyzler 1939: 462). While at least some of these may be treated as synchronically deverbal, historically they are most likely substantivizations of *tomós*-type agentive/patientive adjectives (on “*i*-substantivizations” cf., e.g., Nussbaum 2014: 304; Weiss 2006, 2013; Grestenberger 2017), and there is some evidence that suggests that they were originally acrostatic, with R(*o/e*) ablaut⁴² and open inflection. It is therefore plausible that some of the forms in column b. actually continue the “*trókhis*-type” in Indo-Iranian, and therefore a potential BL environment. In that case, *set*-derived forms like *-táni-* from *tan*

⁴²The example usually cited as evidence for this is **h₂ó/ék-ri-* ‘height; high one’ (a substantivization of **h₂ék-ro-* ‘high, sharp’, Gk. *ákros*) the *o*-grade of which is reflected in Lat. *ocris* m. ‘mountain’ and the *e*-grade with laryngeal coloring in Gk. *ákris* f. ‘peak’. Further evidence for acrostatic ablaut in *secondary i*-stems (for primary *i*-stems cf. **h₂ó/éyi-* ‘sheep’, section 3.1) could come from the Hittite form ^{A.SA}*tere/ippi-* n. ‘plowed (“turned”) field’, which looks like an *e*-grade variant of *trópis* ‘ship’s keel’ (< *‘turner; turning’; **trep* ‘turn’; cf. Kloekhorst 2008: 871–2).

‘stretch’ (**ten*) and *-bhári-* from *bhar* ‘bear’ (*b^her*) could suggest that as in the barytone thematic action nouns, the causative, and the passive aorist, synchronic R(*a*) in *i*-stems is no longer dependent on the *set-* vs. *aniṭ-*character of the root, but rather the generalized root ablaut grade of a specific class of *i*-stems, specifically animate adjectival/masculine agentive ones.

R(*ā*) in column a., on the other hand, is mostly found with oxytone nouns, some of which are synchronic or plausible diachronic verbal abstracts. There is a possible confound with inherited feminine verbal abstracts in R(*ē*) here (compare Gk. *dêris*, *-ios* f. ‘fight, contest’; OCS *rěčb* f. ‘speech’⁴³), and *-jāni-* ‘woman’, *nābhi-* ‘nave (of a wheel); navel; center; origin’ and *nāri-* ‘wife’ are likely to continue genitival *vṛddhi*-formations with R(*ē*).⁴⁴ As for *āpī-* ‘friend’, this is usually compared to Gk. *ēpios* ‘gentle, kind’ and therefore to be reconstructed with R(*ē*); see Pinault 1988 for the prehistory and motivation of the lengthened grade. If *plāsī-* ‘intestines’ (EWA II: 196) or ‘rectum’ (Jamison and Brereton 2014) is indeed to be compared to Gk. *prōktós* ‘anus’ as suggested by Jasanoff & Schindler *apud* Jamison (1987: 79, fn. 12) and Arm. *erastan-k* ‘buttocks’ (Martirosyan 2009: 259), it suggests underlying R(*ō*) < **eh₃-*.

Excluding these forms, this leaves us with some possible old *o*-grades in the following words from column a.:

- *ājī-* m./f. ‘race, contest’, YAv. *āzi-* m. ‘greed’ < **h₂oĝ-i-*, root *aj* (< **h₂eĝ*) ‘drive’.
- *khādī-* m. ‘clasp’, probably from the (non-ablauting) root *khād* ‘bite, chew’; no cognates outside of Indo-Iranian.
- *grāhi-* f. name of a demon - usually treated as belonging to *grabhī* (< **g^hrebh₂*) ‘seize, grab’, so maybe ‘grabber’ or ‘grabbing’ (EWA I: 506).
- *ghāsī-* m. ‘food’, Hapax in RV 1.162.14, *ghāsá-* m. ‘food’ (AV+), root *ghas* (< **g^{(u)h}es*) ‘eat’.
- *drāpī-* m. ‘coat’ could be from the root **drep* (e.g., Gk. *drépō* ‘pluck, cut off’); maybe related to late Lat. *drap(p)us* ‘(piece of) cloth’ (itself maybe a Celtic loanword in Latin, LEW: 373) and Lithuanian *drāpanos* f. (pl.) ‘clothes’.
- *dhāsī-* m. ‘nourishment’ & f. ‘place (of origin); dwelling’, YAv. *dāhi-* f. ‘creation’, no synchronic root(s).
- *dhrāji-* f. ‘gust of wind’, root *dhraj* ‘to gust, blow past’.
- *rāsī-* f. ‘group, heap, herd’ is usually compared with the root of *raśmī-* m. ‘rein’ (Ir. **rać* ‘bind’? EWA II: 441), but Nussbaum (2016) has argued for a connection with Lat. *locu-* in *locuplēs* ‘wealthy’. Both Ved. *rāsī-* and Lat. *locu-* would then continue a feminine *i*-abstract **(H)lók-i-* ‘abundance’ with R(*o*).

At least two of these forms (*ājī-* and *rāsī-*) could thus be reasonably classified as continuants of Solmsen’s animate **i*-stem type with R(*o*). Overall, the *i*-stems are thus in many

⁴³This word could also continue an older root noun, but in that case R(*ē*) would be somewhat unexpected.

⁴⁴For *-jāni-*, YAv. *jāni-* ‘woman’ Nussbaum (2009) proposes an equation with Gmc. **k^wēni-* (Go. *gens*, OE *cwēn*, etc.), both from a genitival/diminutive *vṛddhi*-derivative **g^wēnh₂-i-* to **g^wēnh₂-* ‘woman’; the restriction to second compound members would then be secondary, but at any rate is not easily explained as metrically conditioned. For *nābhi-* ‘nave; navel’, YAv. *nāfa-* m. ‘navel’, R(*o*) is attested in Baltic (OPruss. *nabis* ‘nave, navel’) and Germanic (OHG *naba* ‘nave’) < **h₃nob^h-o/i-* and could also be continued in the Indo-Iranian forms, but a *vṛddhi*-derivative **h₃nēb^h-i-*, maybe originally ‘nave(1)-like’, cannot completely be excluded. For *nāri-*, the more common *-ī^d*-inflection in the RV is synchronically easier to motivate than the *i*-inflection, but either way a *vṛddhi*-derivative with R(*ē*) makes the most sense semantically.

ways parallel to the thematic stems discussed in section 3.2.1, in that the original distinction between the different root ablaut grades were obliterated by the Indo-Iranian merger of the non-high vowels. This class is therefore an ideal testing ground for the *synchronic* application of Kiparsky’s version of BL. The relevant conditions are repeated in (11)–(12).

- (11) Fleeting *-o-* is lengthened in an open syllable when not followed by an accented morpheme
- (12) Fixed *-o-* does not lengthen

Under a strictly synchronic interpretation, *ājí-* and *ghāsí-* in column a. of Table 15 are exceptions to (11), as well as *-táni-*, *-bhári-*, and *ráji-* in column b. As for (12), *āpí-*, *kāśí-*, *drāpí-*, *dhāsí-* (m- & f.), *plāśí-* and *rāśí-* in column a. would be exceptions — remember that under this interpretation it does not matter that, e.g., *āpí-* historically continues R(*e*), since acquirers presumably had no access to this information (any more). This rule does a bit better for the R(*a*)-stems, where it covers “fixed” *arí-*, *así-*, *kapí-*, *kaví-*, *balí-*, *mañí-*, *rábhi-*, *vyathí-* and *hári-* (*draví-* falls under (11)), though it “overgenerates” from a diachronic point of view since it also covers original R(*e*)- (*hári-*) and R(\emptyset)-grade nouns (*así-*), as well as nouns to *seṭ*-roots (*draví-*), which is not what is intended judging from the examples cited by Kiparsky for (11)–(12), cf. ex. (6).

“Traditional BL”, on the other hand, only needs to worry about the apparent *anít*-root exceptions in column b., namely *-táni-* ‘stretching out’, *-bhári-* ‘bearing’, *-yají-* ‘sacrificing’, *ráji-* ‘line’, *rábhi-* ‘chariot-piece’, *-váni-* ‘winning’, *svarí-* ‘sounding’ and *-dari-*⁴⁵ ‘splitting, breaking’.⁴⁶ But most of these are transparently deverbal adjectives, precisely the class which is likely to have generalized synchronic R(*a*) parallel to the thematic stems with the same function (cf. Tucker 2012 and section 3.2.1), from which they are also diachronically derived.⁴⁷

So what are speakers, from a diachronic point of view, to do with inherited PIr. **pát-i-*, **pát-y-* and **áv-i-*, **áv-y-*? Note that all the items in Table 15 have closed inflection, the predominant and productive type of *i*-stem inflection (presumably based on that of the *ti*-stems, which make up the largest group among the *i*-stems; 160 of the 410 stems in Grestenberger 2009 are classified as synchronic *-ti*-stems), whereas the stems at issue had inherited the open inflection. The equivalent of the *u*-stem pattern *dár-u* ‘wood’ (nom.sg.), gen.sg. *dr-ó-s* with root ablaut and closed inflection was apparently not an option for *i*-stems⁴⁸ and would have led to serious phonotactic problems at least for **pātí-*, besides requiring giving up the open inflection. So assuming that acquirers decided that **pat-y-* and **av-y-* were the “most informative” stem allomorphs in the sense of Albright (2010) and given that there were no synchronic *i*-stems with root ablaut, we expect to end up with the strong stems *pát-i-* and *áv-i-* based on

⁴⁵See Praust (2000) on the original *anít*-character of this root in Indo-Iranian.

⁴⁶Etymologically unclear *kapí-*, *paví-*, and *balí-* are excluded here.

⁴⁷Note that the deverbal type is practically absent in Avestan, the only possible instances (besides probably inherited *āzi-* ‘greed’ = ved. *ājí-* ‘contest’) being *jarəzi-* ‘lamenting’ (*gəraz-* ‘lament’) < **jarj-i-*, *darši-* ‘brave’ (*darš* ‘be brave, eager’; cf. Ved. *dādhr̥ṣi-* ‘brave’), *frauu-* ‘prosperity’ < **fra-uu-i-* (Ved. *pra aví-* ‘encourage, incite’) and *°vairi-* in compounds/PN, ‘protection, armor’ (*var* ‘protect’), e.g., *Zairi-vairi-* ‘who has a golden armor’. The first two would be instances of the agentive/patientive type, while the latter two could continue the action noun type.

⁴⁸Probably because this had its origin in ablauting *neuter u*-stems, and the *i*-inflection was originally restricted to animates and is famously found only very rarely with (often secondary) neuter stems in the attested IE languages, cf. Beekes (1987); Grestenberger (2014).

the way the inherited archaic inflection was integrated into the synchronic distribution of root ablaut in animate *i*-stems.

To conclude, once the full picture of root ablaut grades and inflection in the Vedic primary *i*-stems is taken into account, Kiparsky’s version of BL turns out to be inadequate both for describing the synchronic distribution of $R(\bar{a})$ vs. $R(a)$ in this class and for predicting the expected generalized root allomorphs of $*p\check{a}ti-$ and $*\check{a}vi-$.

5 Conclusion

It may come as a surprise after the preceding discussion, but the point of this article was *not* to argue that a synchronic account of accent and ablaut in the Old Indic nominal system is pointless and/or doomed to fail. While I hope to have shown that Kiparsky’s revised version of BL does not cover the facts any better than traditional BL once the evidence from comparative reconstruction is systematically taken into account, the revised version does make testable predictions that can and hopefully will lead to a better understanding of the relevant factors at play. However, this cannot be accomplished without tackling the tension between comparative reconstruction and synchronic analysis that is evident in Kiparsky’s proposal: As it stands, his revised version of BL works neither as a “blind” sound change nor as a strictly synchronic rule. Like the traditional version of BL, it captures the core cases in which inherited *o*-grades became “morphologized” as a property of a particular morphological category (causatives, passive aorist, etc.) at least descriptively, but to count as a genuine synchronic morphophonological rule it either needs to be specified for morphosyntactic environment or, more radically, be assumed to be blind to the pre-Indo-Iranian distinction between $R(e)$ and $R(o)$, which is evidently not the case and not intended by Kiparsky.

But if inherited *o*-grades do play such a crucial role in the formulation of the rule (as accepted by all parties involved), then there is no way around the comparative method, both in terms of the reconstruction of *classes* of words and their development (e.g., the thematic nouns, the *i*-stems) and for individual cases such as the problematic *pāti-* and *ávi-*, which, when seen from this perspective, suddenly appear a lot less “exceptional” for traditional BL. In other words, we need to understand how “blind” sound change (N-change) interacts with analogy-as-lexical change (A-change, cf. section 4.1) *before* we formulate our synchronic morphophonological rules. As the discussion of the thematic stems and the *i*-stems has hopefully shown, “rule extension” or “extension of a productive pattern” can both erase BL-effects (in barytone thematic action nouns and deverbal *i*-stems) and extend them (in $C\bar{a}C-\acute{a}$ -nouns and the 3sg. active perfect), depending on the specific stem class or inflectional form. Crucially, to explain the resulting “exceptions” there is no need to find a specific lexical item that would have “exerted analogical pressure” (whatever that is): They follow from the application of the synchronically regular rule for any given class, i.e., “deverbal *i*-stems take *guṇā*” and so on in combination with acquirers failing to learn the irregular form (cf. also section 3.4).

The exact formalization of the resulting morphophonological rules is of course a desideratum that has not been addressed in this paper (though Kiparsky’s work is a first step in that direction), but it hopefully provides some much-needed methodological clarifications that will advance this project further.

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