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Linguistica Brunensia. 2025, vol. 73, iss. 1, pp. 40-70

ISSN 2336-4440 (online)

Stable URL (DOI): <https://doi.org/10.5817/LB2025-38575>

Stable URL (handle): <https://hdl.handle.net/11222.digilib/digilib.82569>

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Access Date: 15. 10. 2025

Version: 20250711

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CHRISTOS CHRISTOPOULOS

A suppletion-pattern gap in ‘tripartite’ tense-aspect systems



ABSTRACT

The present paper identifies a new gap in tense-aspect suppletion patterns in Indo-European ‘tripartite’ tense-aspect systems: For any triple of present-imperfect-aorist forms, the present and aorist forms never share the same base to the exclusion of the imperfect form. I explore the analysability of the relevant gap as a ‘containment-and-competition’ gap, i.e. in terms of Bobaljik’s (2012) *ABA, or, alternatively, as a ‘structure-and-locality’ gap, i.e. in terms of Bobaljik’s *AAB. I argue that, though the present-imperfect-aorist triple does not plausibly meet the morphosyntactic eligibility criteria for the former type of analysis, it does for the latter, once we allow for a specific kind of structural variation across tripartite tense-aspect systems. These conclusions suggest that there are domains in which ‘structure-and-locality’ gaps arise in the absence of ‘containment-and-competition’ gaps.

KEYWORDS

suppletion; gaps; tense; aspect; morphosyntax

1. Introduction

(1) The Comparative-Superlative Generalization (Bobaljik 2012: 2)

Part 1 (CSG1)

If the comparative degree of an adjective is suppletive, then the superlative is also suppletive (i.e., with respect to the positive).

Part 2 (CSG2)

If the superlative degree of an adjective is suppletive, then the comparative is also suppletive (i.e., with respect to the positive).

Bobaljik’s (2012) study reports on two gaps in the attested patterns of suppletion in the domain of adjectival-degree morphology across languages. Out of the four logically possible patterns of root suppletion for any positive-comparative-superlative form triple, only two are attested: The positive, the comparative and the superlative may each involve a distinct base as in the Latin *bonus-melior-optimus* (ABC), or the comparative and the superlative may share a base to the exclusion of the positive as in the English *good-better-best* (ABB); the positive and the superlative never share a base to the exclusion of the comparative (*ABA), nor do the positive and the comparative ever share a base to the exclusion of the superlative (*AAB). The two gaps are formulated as the two-part Comparative-Superlative Generalization (CSG) in (1). According to Bobaljik, both CSG1 and CSG2 arise due to how specific, independently motivated morphosyntactic representations of the positive, the comparative and the superlative contexts interact with the (Vocabulary) Insertion mechanism assumed by realizational frameworks like Distributed Morphology (Halle – Marantz 1993, et seq.; see Gouskova – Bobaljik to appear, for an overview). Importantly, however, Bobaljik attributes the two gaps to different aspects of the morphosyntax-Insertion interface: His CSG1 arises purely from the interaction of morphosyntactic containment with specificity-based or ‘elsewhere’ competition (see Section 3), while his CSG2 is a result of the interaction between layered, syntactic structure and locality restrictions that Insertion rules are subject to (see Section 4).¹

1 De Clerq et al. (2017) offer an alternative analysis of Bobaljik’s generalizations, couched in the framework of Nanosyntax instead. Despite technical differences, these authors agree with Bobaljik that CSG1 and CSG2 have distinct sources. In the present paper, discussion is restricted to assumptions consistent with Bobaljik’s framework.

Bobaljik’s differential treatment of CSG1 and CSG2 suggests that the two gap types may not always necessarily co-occur. Indeed, subsequent work has argued that only a single gap in suppletion patterns arises for certain form triples in domains other than adjectival-degree morphology. For example, Moskal (2018) and Smith et al. (2019) argue that in the domain of clusivity, case and number suppletion in pronouns ‘containment-and-competition’ (CaC) gaps arise in the absence of ‘structure-and-locality’ (SaL) gaps, while domains in which SaL gaps arise in the absence of CaC gaps instead, are yet to be identified.² In the present paper, I report on a survey of suppletion patterns in the so-called ‘tripartite’ tense-aspect systems of Indo-European (IE) languages, arguing that this may well be a domain in which suppletion exhibits only a single, SaL gap.

2. The Imperfect-Aorist Generalization (IAG)

This section introduces Indo-European (IE) tense-aspect systems sometimes termed ‘tripartite’ and argues that a gap in the attested suppletion patterns can also be found in this domain.

2.1 Tripartite tense-aspect systems

Comrie (1976) points out that many languages have a formal aspectual distinction in the past tense of the indicative but lack a corresponding nonpast distinction. For example, Spanish forms *hablaba* and *hablé* (Tab. 1), describe an imperfective past event and a perfective past event, respectively (both first singular). The form *hablo* describes an imperfective, nonpast event, i.e. it is semantically the nonpast counterpart of *hablaba*. The form *hablé*, however, appears to lack a nonpast counterpart. Following Comrie and others, I refer to forms like *hablo*, *hablaba* and *hablé* as ‘present’, ‘imperfect’ and ‘aorist’ forms, respectively. The term ‘tripartite’, which is also used in the present paper, was coined by Dahl (1985) to describe systems like Spanish. Note that the term is not meant to imply that the three forms exhaust the inflectional system; Spanish verbal paradigms, for example, also involve

2 See Pertsova (2022) and Ganenkov (2018) for potential counterexamples to the *ABA generalizations proposed in Moskal (2018) and Smith et al (2019), respectively.

other formal categories, e.g. ‘future’, ‘progressive’, ‘perfect’, ‘subjunctive’ ‘imperative’, and so on; the present, imperfect and aorist are merely seen as constituting the ‘core’ of the relevant tense-aspect systems (Dahl 1985, Bybee – Dahl 1989). Nor is the term reserved for systems in which the present, imperfect and aorist are necessarily all expressed synthetically, like in Spanish. As shown in Tab. 1, Eastern Armenian exhibits a tripartite tense-aspect system, but only the aorist forms are synthetic, while the present and the imperfect are expressed periphrastically.

Tab. 1. Tripartite systems lacking finite indicative perfective nonpast forms

	Spanish ‘speak’		Armenian (E) ‘write’	
	Imperfective	Perfective	Imperfective	Perfective
Nonpast	hablo (<i>present</i>)	?	grum em (<i>present</i>)	?
Past	hablaba (<i>imperfect</i>)	hablé (<i>aorist</i>)	grum ēi (<i>imperfect</i>)	grec’i (<i>aorist</i>)

The term ‘tripartite’ is not even meant to imply that the relevant languages necessarily altogether lack ‘perfective nonpast forms’. Dahl (1985: 169), for example, describes Persian as a tripartite system, but as shown in Tab. 2, this language does exhibit what look like finite perfective nonpast forms, often referred to as ‘present-future subjunctive’ or ‘aorist subjunctive’ forms (Windfuhr – Perry 2009). Thieroff (2000) also groups Modern Greek along with other tripartite systems (albeit with reservations), but, again, Greek does exhibit finite perfective nonpast forms (Holton et al. 2012). Importantly, unlike present, imperfect and aorist forms, perfective nonpast forms in Persian/Greek are only used in non-indicative contexts. Thus, I take the term ‘tripartite’ to refer to any tense-aspect system in which cross-categorization of the core aspect and tense categories yields three—and not four—indicative forms.³

3 Tense-aspect systems found in Slavic languages like Russian, have typically been classified separately from tripartite systems (see Dahl 1985, 2000, Bybee – Dahl 1989). For one thing, aspectual and tense categories in these languages cross-categorize to yield four indicative forms. Second, the aspectual categories found in these languages (which are also commonly referred to as ‘imperfective’ and ‘perfective’) interact with ‘inner’ aspect in special ways. Third, the relevant aspectual categories are not mutually exclusive with those found tripartite systems, e.g. in Bulgarian the two types of (im)perfectivity co-exist. Interestingly, even in Slavic-style systems, indicative perfective nonpast forms

Tab. 2. Tripartite systems with finite but non-indicative perfective nonpast forms

	Persian ‘go’		Greek (M) ‘tie’	
	Imperfective	Perfective	Imperfective	Perfective
Nonpast	miravam (<i>present</i>)	((be)ravam)	dhenó (<i>present</i>)	(dheso)
Past	miraftam (<i>imperfect</i>)	raftam (<i>aorist</i>)	edhena (<i>imperfect</i>)	edhesa (<i>aorist</i>)

The identification of a tense-aspect system as ‘tripartite’ is clearest when the present, imperfect and aorist forms are formally distinct both from other categories in the broader paradigm, as well as from each other, as in the languages in Tab. 1 and Tab. 2. Systems that don’t meet this criterion could also in principle be described in tripartite terms, though in such cases, additional assumptions concerning syncretism would have to be made. For example, Comrie (1976: 71) discusses Latin in similar terms as he discusses Spanish, because Latin also formally distinguishes between imperfective and perfective events in past but not in nonpast contexts. In Latin, however, the putative aorist form would not be unique to perfective past contexts, as it is formally identical to (present) perfect forms. As such, motivating an aorist for Latin, as in Tab. 3, would require additional assumptions that account for the formal identity between the present perfect and the putative aorist forms. One could also potentially describe English (or other Germanic languages) in terms of tripartite tense-aspect systems, even though these languages appear to formally distinguish only between past and nonpast forms. This would amount to saying that English has imperfects and aorists which are always formally identical to each other, e.g. as in Tab. 3, and therefore, one should be willing to make additional assumptions that account for the syncretism between these putative imperfect and aorist forms. To avoid making such assumptions, I will be focusing solely on clearly identifiable tripartite systems like those in Tab. 1 and Tab. 2, setting Latin-like and English-like systems aside.

are not semantically associated with the expected ‘perfective present’ meanings. For discussion and analysis of the general absence of perfective presents across languages, see Malchukov (2009, 2011), De Wit (2016) and references therein.

Tab. 3. Latin and English represented as tripartite systems

	Christopoulos		English 'walk'	
	Imperfective	Perfective	Imperfective	Perfective
Nonpast	amō (<i>present</i>)	?	walk (<i>present</i>)	?
Past	amābam (<i>imperfect</i>)	amāvī (= <i>perfect</i>)	walked (= <i>aorist</i>)	walked (= <i>aorist</i>)

2.2 Suppletion in IE tripartite tense-aspect systems

In addition to being hosts to tripartite tense-aspect systems, IE languages have also been shown to be relatively rich in tense-aspect suppletion (Veselinova 2006). This opens the door to a search for gaps in tense-aspect suppletion patterns for the triple present-imperfect-aorist in IE languages, which is the main empirical goal of this study. Since the potential for suppletion may be negatively affected by periphrasis (see Bobaljik 2012), the sample of languages investigated here only includes ones in which the relevant form triple is expressed synthetically. Tab. 4 presents a sample of 16 IE languages that span nine genera, and which fulfil these criteria, along with examples of the synthetic realization of the form triple in each.⁴ Following Bobaljik's study, descriptions of the languages in the sample were scanned for instances of 'strong' suppletion only, i.e. cases where the alternating bases are too phonologically distant from each other for there to be a plausible derivational relation between them; instances of 'weak' suppletion e.g. minor differences in the shape of the base caused by apophony, metaphony, etc., which can be treated in terms of (morpho)phonological rules, were set aside.

4 Key: C=Classical, E=European, K=Kurmanji, M=Modern, S=Standard; OCS=Old Church Slavonic.

Tab. 4. 16 IE tripartite systems with synthetic expression of the present-imperfect-aorist triple

Language	Present	Imperfect	Aorist	Verb	Source
Albanian (S)	jetoj	jetoja	jetova	‘live’	Camaj (1984: 173–176)
Armenian (C)	berem	berei	beri	‘bear’	Klein (2007: 1072–1074)
Bulgarian	četa	četjax	četox	‘read’	Scatton (1993: 219)
Domari	banami	banama	bandom	‘shut’	Matras (2012: 277)
French	donne	donnais	donnai	‘give’	Price (2008: 263–264)
Greek (M)	dhenō	edhena	edhesa	‘tie’	Holton et al. 2012: 141
Italian	canto	cantavo	cantai	‘sing’	Maiden – Robustelli (2007: 228–229)
Konkani	rigtā	rigtalō/ī /ē	riglō/ī /ē	‘enter’	Almeida (1985: 176)
Kurdish (K)	dikevim	diketim	ketim	‘fall’	Blau – Barak (1999: 48, 67, 70)
OCS	nesq	nesěaxъ	nesoxъ	‘carry’	Huntley (1993: 157)
Pashto	tskəm	tskələm	wətskələm	‘drink’	Robson – Tegey (2009: 739)
Persian	miravam	miraftam	raftam	‘go’	Windfuhr – Perry (2009: 453)
Portuguese (E)	canto	cantava	cantei	‘sing’	Hutchinson – Lloyd (2003: 70–75)
Spanish	hablo	hablaba	hablé	‘speak’	Bradley – Mackenzie (2004: 99–116)
Tocharian B	weskau	wεṣṣim	w(e)ñawa	‘say’	Malzahn (2010: 909)
Waigali	wřösam	wřösem	wřöm	‘cry’	Degener (1998: 569)

Overall, 48 verbal paradigms were identified as involving ‘strong’ suppletion, across the languages of the sample. While the ABC, AAB and ABB suppletion patterns were all represented in the data, the ABA pattern, though logically possible, is not attested. This gap is formulated in (2), in similar descriptive terms to Bobaljik’s CSG1. For the sake of parallelism with Bobaljik’s CSG1, (2) will be referred to as the ‘Imperfect-Aorist Generalization (IAG)’. Tab. 5, Tab. 6 and Tab. 7 provide exhaustive lists of the paradigms

in the sample identified as featuring the ABC, AAB and ABB suppletion patterns, respectively.

(2) **The Imperfect-Aorist Generalization (IAG)**

If the imperfect form of a verb is suppletive, then the aorist is also suppletive (i.e. with respect to the present)

Tab. 5. Paradigms exhibiting ABC

Genus	Language	Paradigm	Bases	Source
Albanian	Albanian (S)	'be'	âsht ~ i ~ qa	Camaj (1985: 130–131)
Iranian	Pashto	'be(come)'	y/d ~ w ~ sw	Robson – Tegey (2009: 738–741)
		'go'	dz ~ tl ~ lâr	
Romance	French	'be'	s ~ et ~ fu	Price (2008: 262)
	Italian	'be'	s ~ er ~ fu	Maiden – Robustelli (2007: 228–229)
	Portuguese (E)	'be'	s ~ er ~ fu	Hutchinson – Lloyd (2003: 71–75)
		'go'	va ~ i ~ fu	
	Spanish	'be'	s ~ er ~ fu	Bradley – Mackenzie (2004: 113–118)
		'go'	va ~ i ~ fu	
Tocharian	Tocharian B	'be'	nes ~ şa ~ tāk	Malzahn (2010: 253, 639–640, 691)

Tab. 6. Paradigms exhibiting AAB

Genus	Language	Verb	Bases	Source
Albanian	Albanian (S)	'be'	i ~ qa	Camaj (1985: 130–131, 229–231)
		'bring'	bie ~ pru	
		'come'	vi ~ erdh	
		'eat'	ha ~ hëngr	
		'give'	ap ~ dha	
		'have'	ka ~ pat	
		'see'	shih ~ pa	
		'sit'	rri ~ ndenj	

Genus	Language	Verb	Bases	Source
Armenian	Armenian (C)	'be(come)'	lin ~ eł	Klein (2007: 1079)
		'come'	ga ~ ek	
		'drink'	əmp ~ arb	
		'eat'	ut ~ ker	
		'go'	ert ~ č'og	
		'have'	un ~ kal	
Hellenic	Greek (M)	'eat'	tro ~ fa	Holton et al. (2012: 198, 205)
		'say'	le ~ p	
		'see'	vlep ~ dh	
Indic	Domari	'come'	aw ~ e	Matras (2012: 262–263)
		'go'	dža ~ gar	
	Konkani	'go'	ve ~ ge	Almeida (1985: 202)
Nuristani	Waigali	'go'	di ~ g	Degener (1998: 69, 416–417, 567, 573)
		'eat'	yü ~ wřō	
		'see'	wřē ~ ont	
Romance	French	'be'	e(t) ~ fu	Price (2008: 262)
	Italian	'be'	e(r) ~ fu	Maiden – Robustelli (2007: 228–229)
	Portuguese (E)	'be'	er ~ fu	Hutchinson – Lloyd (2003: 71–75)
		'go'	i(d) ~ fu	
	Spanish	'be'	er ~ fu	Bradley – Mackenzie (2004: 113–118)
Tocharian	Tocharian B	'carry'	pär ~ kām	Malzahn (2010: 536, 543, 554, 558, 592–593, 607–608, 716, 764, 836, 843, 898, 926–927, 959)
		'give'	ai ~ wä(s)	
		'go'	i ~ mä(s)	
		'see'	läk ~ pälk	
		'sit'	şam ~ läm	
		'stand'	käly ~ stäm	

Tab. 7. Paradigms exhibiting ABB

Genus	Language	Verb	Bases	Source
Iranian	Kurdish (K)	‘come’	ê ~ ha	Blau – Barak (1999: 120–121)
		‘go’	her ~ ç	
		‘say’	bêj ~ go	
		‘see’	bin ~ dî	
	Pashto	‘see’	gor ~ kat	Robson – Tegey (2009: 739)
	Persian	‘come’	ā ~ āma	Windfuhr – Perry (2009: 447)
‘see’		bin ~ di	Mace (2003: 90)	
Romance	French	‘go’	va ~ all	Price (2008: 286–287)
	Italian	‘go’	va ~ and	Maiden – Robustelli (2007: 222)
Slavic	Bulgarian	‘be’	s/e ~ be	Scatton (1993: 220)
	OCS	‘be’	s/jes ~ by	Migdalski (2006: 33–34)

Most (40/48) of the suppletive paradigms in the sample exhibit the same suppletion pattern across all Person/Number (P/N) contexts. Consequently, each of these ‘neat’ paradigms only features in one of the above tables. The remaining eight paradigms exhibit different suppletion patterns in different P/N contexts. Because of this, such ‘messy’ paradigms have been listed in more than one of the tables. Messy paradigms are of two types in the sample, the first exemplified by the Italian ‘go’ and the second by the Italian ‘be’, both in Tab. 8. In the first type, ABB is found in some P/N contexts while in other P/N contexts we find no suppletion, i.e. AAA (or rather, BBB). This first type of messy suppletion is also found in the paradigm of French ‘go’. In the second, ABC suppletion is found in some P/N contexts and AAB (or rather, BBC) in others. This second type of messy suppletion is also found in Portuguese ‘go’ and Albanian, French, Portuguese and Spanish ‘be’.⁵ Accounting for messy suppletion patterns like those in Tab. 8 has typically required appeal to rules with at least some non-morphosyntactic conditioning (Burzio 1988, Maiden 2018, Calabrese 2019, Pomino – Remberger 2022, *pace* Embick 2016). To avoid a potential confound, in the rest of the paper, I will be discussing

5 ‘Messy’ suppletion overlaps with but is not identical to ‘non-categorical’ suppletion,

the IAG only as it pertains to neat suppletion.⁶ Tab. 9 provides a summary of the overall results.

Tab. 8. ‘Messy’ suppletive paradigms in Italian
(Maiden – Robustelli 2007: 222)

P/N	‘go’				‘be’			
	Present	Imperfect	Aorist	Pattern	Present	Imperfect	Aorist	Pattern
1s	vado	andavo	andai	ABB	sono	ero	fui	ABC
2s	vai	andavi	andasti	ABB	sei	eri	fosti	ABC
3s	va	andava	andó	ABB	é	era	fu	BBC
1p	andiamo	andavamo	andammo	BBB	siamo	eravamo	fummo	ABC
2p	andate	andavate	andaste	BBB	siete	eravate	foste	ABC
3p	vanno	andavano	andarono	ABB	sono	erano	furono	ABC

which refers to any paradigm featuring different bases for different P/N contexts, within a given tense-aspect context (Veselinova 2006, Pomino – Remberger 2019; 2022). Since the paradigms in Tab. 8 involve different bases for different P/N contexts in the present, they involve non-categorical suppletion. However, not all paradigms with non-categorical suppletion are messy. Pashto ‘be(come)’ and Bulgarian/OCS ‘be’ in Tab. 5 and Tab. 7 respectively, involve non-categorical suppletion, as they exhibit different bases for different P/N contexts in the present. But, in these paradigms, the same suppletion pattern (ABC in Pashto and AAB in Bulgarian/OCS) is found across all P/N contexts, albeit with different present bases. Thus, messy paradigms are a proper subset of those involving non-categorical suppletion.

- 6 It is possible that ABA for strong suppletion is attested, after all, in messy paradigms, outside the present sample. Maiden (2018: 53–54) discusses a potential candidate. In some Galician dialects, the paradigm of *coller* (originally ‘catch, gather’) apparently ‘obtrudes suppletively into the paradigm of *caber* (fit into)’. In some cases, the forms of *coller* seem to supply the aorist forms of the paradigm of *caber* (i.e. AAB). In other localities, the first singular present form is additionally supplied by *coller*. In these latter dialects, then, we seem to find messy suppletion, where the first-person singular exhibits an ABA pattern (*collo*, *cabia*, *collin*), whereas the rest of the P/N contexts exhibit AAB (*cabes*, *cabias*, *colliches*, etc.). Maiden (2018: 116) points out that ‘the distributional patterns of suppletion [...] for *caber* should not be taken too literally, since it is clear that the coexistence of the two verbs is variable and fluid’. Pérez Bouza’s (1996) Galician grammar presents each of these verbs as having full paradigms. Note also that neat ABA patterns are unattested even for weak suppletion, in the present sample, but messy ABA patterns of weak suppletion, are not hard to come by. For example, in some P/N contexts we find weak ABA suppletion in Spanish (e.g. the third singular forms of present-imperfect-aorist of ‘ask’ are *pide-pedía-pidió*; Embick 2012: 32) and Albanian (e.g. the first singular forms of ‘strike’ are *rrah-rrihja-rraha*; Duchet 1995: 255).

Tab. 9. Summary of the results

Pattern	Including ‘messy’ paradigms			Excluding ‘messy’ paradigms		
	Verbs	Languages	Genera	Verbs	Languages	Genera
ABC	10/48	7/16	4/9	4/40	4/13	3/9
AAB	34/48	12/16	7/9	28/40	7/13	6/9
ABB	11/48	7/16	3/9	9/40	5/13	2/9
ABA	0/48	0/16	0/9	0/40	0/13	0/9

3. The IAG, containment and competition

In this section, I entertain the hypothesis that the IAG is amenable to a CaC analysis like the one Bobaljik applies to his CSG1. I show that such an analysis cannot be applied to our *ABA, because, unlike the positive-comparative-superlative triple, the present-imperfect-aorist triple cannot be shown to involve the necessary containment relations.

3.1 Bobaljik’s CSG1

Bobaljik’s analysis of his CSG1 involves two main ingredients. The first is the assumption that the morphosyntactic representation of the comparative is properly contained within that of the superlative, as in (3).⁷ Independent motivation for this comes from i) the fact that a comparative form may be ‘surface-contained’ in the corresponding superlative form, while the reverse is unattested, and ii) the fact that a comparative form may be synthetic at the same time as the corresponding superlative form is periphrastic, while the reverse is unattested (see Bobaljik 2012: 3.2–3.4). The second is

7 As shown in (3), Bobaljik also assumes that the positive is properly contained in the comparative, but this is not crucial for deriving *ABA; generally, to derive *ABA for any triple of contexts C1, C2 and C3 purely in terms of CaC, it suffices that C2 be properly contained in either C1 or C3 (see Moskal 2018, Vanden Wyngaerd et al. 2020, Christopoulos – Zompi 2023). Bobaljik also assumes that the containment relations are not just featurally but also structurally represented. Again, this is not crucial for capturing his CSG1, though it is for capturing his CSG2.

the assumption that Insertion rules are subject to specificity-based (aka ‘elsewhere’) competition, as in (4) (Bobaljik 2012: 9, based on Kiparsky 1973).

(3) **Featural decomposition of the positive-comparative-superlative triple:**

Positive = {√}

Comparative = {√, COMP}

Superlative = {√, COMP, SPRL}

(4) **Competition principle:**

If two (incompatible) rules R1, R2 may apply to a given structure, and the context for application of R2 is contained in that of R1, then R1 applies and R2 does not.

Tab. 10 shows that the combination of (3) and (4) is sufficient for deriving Bobaljik’s *ABA in root suppletion as a CaC gap.⁸ AAA is derived by a rule A that refers only to the root feature √; since √ is present in all three contexts, in the absence of other, more specific rules it will apply in all three. ABB is derivable by a rule A that refers only to √ and a rule B that refers to both √ and COMP. In the positive context, only A is eligible to apply; in the comparative and superlative contexts, the two rules will compete, but the B will end up applying, because it is more specific. AAB is derivable by a rule A that refers only to √ and a rule B that refers to both √ and SPRL (and potentially also COMP). In the positive and comparative only A can apply, while in the superlative the two rules compete, with B coming out victorious.⁹ Finally, ABC is derived by three rules: a rule A that refers only to √, a rule B that refers to both √ and COMP, and a rule C that refers to √, COMP and SPRL. In the positive context, only A is applicable; in the comparative, A and B compete, with B coming out as the winner; in the superlative, C wins over both A and B due to it being the most specific. Importantly, given (3) and (4), there is no way of deriving ABA: Any rule B that can compete and win over a rule A in comparative contexts can also compete and win over A in superlative contexts.

8 Key: W= rule competes and wins; L= rule competes and loses; DQ= rule is disqualified from competition.

9 Note that, since AAB patterns are unattested in Bobaljik’s sample, to derive *AAB (i.e. his CSG2), he has to make additional assumptions (see Section 4.1).

Tab. 10. Possible base-choice derivations assuming (3) and (4)

Rule inventory	Rule competition in each morphosyntactic context			Pattern
	{√}	{√, COMP}	{√, COMP, SPRL}	
A ↔ {√}	W	W	W	AAA
A ↔ {√}	W	L	L	ABB
B ↔ {√, COMP}	DQ	W	W	
A ↔ {√}	W	W	L	AAB
B ↔ {√, COMP, SPRL}	DQ	DQ	W	
A ↔ {√}	W	L	L	ABC
B ↔ {√, COMP}	DQ	W	L	
C ↔ {√, COMP, SPRL}	DQ	DQ	W	

3.2 The IAG and the problem of imperfect containment

To capture the IAG as a CaC gap, i.e. in a way parallel to Bobaljik’s CSG1, we would need the morphosyntactic representation of the imperfect to be properly contained within that of either the aorist or the present. However, applying Bobaljik’s diagnostics to the present-imperfect- aorist triple does not yield results that warrant any such conclusion. As shown in Tab. 11, there are at least some cases where an imperfect form surface-contains the corresponding present form, at least some where an imperfect form surface-contains the corresponding aorist form, and even some where an imperfect form surface-contains both the corresponding present and the corresponding aorist forms simultaneously. Moreover, though I have not encountered languages with synthetic presents but periphrastic imperfects, languages with periphrastic imperfects (and presents) but synthetic aorists do exist, as shown in Tab. 12.¹⁰ Overall, then, both of Bobaljik’s diagnostics yield results that point away from the conclusion that the imperfect is properly contained in the aorist, while one of them also yields results that speak against the imperfect being properly contained in the present.

¹⁰ See Viti (2020: 114) for a similar observation about the asymmetric distribution of synthesis and periphrasis regarding the imperfective-perfective distinction.

Tab. 11. Examples of imperfect forms surface-containing present and/or aorist forms

Verb	Present	Imperfect	Aorist
Italian 'sing' (Maiden – Robustelli 2007: 220)	cant-o	cant-av-o	(cant-ai)
Konkani 'enter' (Almeida 1985: 176)	(rigtā)	rig-ta-l-ō/ī / ē	rig-l-ō/ī / ē
Persian 'go' (Windfuhr – Perry 2009: 453)	mi-rav-am	mi-raf-t-am	raf-t-am

Tab. 12. Examples of periphrastic imperfects with corresponding synthetic aorists

Verb	Present	Imperfect	Aorist
Armenian 'write' (Dum-Tragut 2009: 187)	(grum em)	grum ēi	grec'i
Tsakonian 'fold' (Riga 2019: 291)	(eni cilix-u/a/uda)	ema cilix-u/a/uda	ekilia

The failure to establish proper containment of the imperfect in either the present or the aorist is not that surprising, given the featural decompositions of the present, imperfect and aorist that have been proposed for tripartite systems, where these have been discussed. Comrie (1976: 71) for example, states that “the difference between the Aorist and the Imperfect exists only in the Past Tense, and there is no corresponding distinction in other tenses”, which suggests a decomposition where the imperfect and the aorist share a common tense feature and distinct aspect features, while the present involves only a tense feature that is distinct from that of the imperfect and the aorist (see also Boland 2006). Dahl (1985: 82) criticizes Comrie’s decomposition for failing to include an aspect feature shared by the present and the imperfect. This is necessary, he argues, if we are to account for rules that apply in present and imperfect forms but not in aorist forms (see e.g. the markers *mi-* from Persian or *-ta* from Konkani in Tab. 11). Dahl’s decomposition also differs from Comrie’s in allowing tripartite systems to vary with regards to whether the imperfect and the aorist share a common tense feature (see Dahl 1985: 83). His reasoning is that, though there do seem to exist markers shared by the imperfect and the aorist, like the Greek prefix *e-*, these are apparently not as common. In the present sample, such markers have not been uncommon. Examples outside of Greek include the marker *-x*

in Bulgarian/OCS, the marker *-t* in Persian/Kurdish as well as the marker *-əl* in Pashto (see also Boland 2006). For the sake of maintaining a single decomposition for all tripartite systems, I will be assuming (5) (see e.g. Johanson 2000). Tab. 13 provides an exhaustive list of the base-choice derivations that become possible, once we assume (5) alongside the principle of competition in (4). As can be seen in Tab. 13, these two assumptions taken together lead to the possibility of deriving all logically possible suppletive patterns, including ABA.¹¹ In other words, if (5) is on the right track, the IAG cannot be captured purely in terms of containment and competition, i.e. it cannot be a CaC gap.

(5) **Featural decomposition of the present-imperfect-aorist triple:**

Present = {√, -PFV, -PST}

Imperfect = {√, -PFV, +PST}

Aorist = {√, +PFV, +PST}

Tab. 13. Possible base-choice derivations assuming (4) and (5)

Rule inventory	Rule competition in each morphosyntactic context			Pattern
	{√, -PFV, -PST}	{√, -PFV, +PST}	{√, +PFV, +PST}	
A ↔ {√}	W	W	W	AAA
A ↔ {√}	W	L	L	ABC
B ↔ {√, +PST}	DQ	W	L	
C ↔ {√, +PFV, +PST}	DQ	DQ	W	
A ↔ {√}	W	L	L	ABC
B ↔ {√, -PFV, +PST}	DQ	W	DQ	
C ↔ {√, +PFV, +PST}	DQ	DQ	W	
A ↔ {√, -PFV}	W	L	DQ	ABC
B ↔ {√, -PFV, +PST}	DQ	W	DQ	
C ↔ {√, +PFV, +PST}	DQ	DQ	W	
A ↔ {√(, -PFV), -PST}	W	DQ	DQ	ABC
B ↔ {√}	L	W	L	
C ↔ {√, +PFV, +PST}	DQ	DQ	W	

11 Substituting for the more restrictive decompositions of either Comrie or Dahl leads to a decrease in the number of possible base-choice derivations overall, but no decrease in the number of derivable patterns. Crucially, the unattested ABA suppletion pattern is still derivable.

Rule inventory	Rule competition in each morphosyntactic context			Pattern
	{√, -PFV, -PST}	{√, -PFV, +PST}	{√, +PFV, +PST}	
A ↔ {√, -PFV, -PST} B ↔ {√, -PFV} C ↔ {√}	W L L	DQ W DQ	DQ DQ W	ABC
A ↔ {√, -PFV, -PST} B ↔ {√, -PFV, +PST} C ↔ {√}	W DQ L	DQ W DQ	DQ DQ W	ABC
A ↔ {√, -PFV, -PST} B ↔ {√, -PFV} C ↔ {√, +PFV}	W L DQ	DQ W DQ	DQ DQ W	ABC
A ↔ {√, -PFV} B ↔ {√, -PFV, +PST} C ↔ {√, +PST}	W DQ DQ	L W DQ	DQ DQ W	ABC
A ↔ {√(, -PFV), -PST} B ↔ {√, -PFV, +PST} C ↔ {√, +PFV (, +PST)}	W DQ DQ	DQ W DQ	DQ DQ W	ABC
A ↔ {√} B ↔ {√, +PST}	W DQ	L W	L W	ABB
A ↔ {√(, -PFV), -PST} B ↔ {√}	W L	DQ W	DQ W	ABB
A ↔ {√(, -PFV), -PST} B ↔ {√, +PST}	W DQ	DQ W	DQ W	ABB
A ↔ {√} B ↔ {√, +PFV (, +PST)}	W DQ	W DQ	L W	AAB
A ↔ {√, -PFV} B ↔ {√}	W L	W L	DQ W	AAB
A ↔ {√, -PFV} B ↔ {√, +PFV (, +PST)}	W DQ	W DQ	DQ W	AAB
A ↔ {√} B ↔ {√, -PFV, +PST}	W DQ	L W	W DQ	ABA

A reviewer suggests that a CaC account of the IAG may still be possible even if (5) is correct, if we make an additional assumption about the interaction between Insertion and 'markedness'. Specifically, if we assume that

Insertion rules can refer to roots and 'marked' feature values but not to 'unmarked' feature values as in (6), and with the understanding that the + values in (5) are marked and the – values are unmarked, we arrive at a system that derives all the suppletion patterns except ABA, i.e. it appears to successfully derive the IAG, as shown in Tab. 14.¹²

(6) **Markedness principle:**

Insertion rules cannot refer to unmarked feature values

Tab. 14. Possible base-choice derivations assuming (4), (5) and (6)

Rule inventory	Rule competition in each morphosyntactic context			Pattern
	{√, -PFV, -PST}	{√, -PFV, +PST}	{√, +PFV, +PST}	
A ↔ {√}	W	W	W	AAA
A ↔ {√}	W	L	L	ABC
B ↔ {√, +PST}	DQ	W	L	
C ↔ {√, +PFV, +PST}	DQ	DQ	W	
A ↔ {√}	W	L	L	ABB
B ↔ {√, +PST}	DQ	W	W	
A ↔ {√}	W	W	L	AAB
B ↔ {√, +PFV (, +PST)}	DQ	DQ	W	

The same reviewer, however, also correctly notes that this analysis of the IAG would lead to a problem for accounting for overt markers showing up in present and imperfect forms but not the corresponding aorist forms, like the Persian *mi-* or the Konkani *-ta* (see Tab. 11), which seem to require appeal to Insertion rules that refer to –PFV, thereby violating (6). The reviewer suggests that such cases may not be unresolvable, since one could, technically, treat these markers as elsewhere aspect markers, inserted by rules specified for the presence of the feature PFV, with +PFV realized as \emptyset . However, allowing for such a move undermines the general diagnosability of morphosyntactic containment via surface-containment. In particular, if we accepted that \emptyset could realize a superset of a feature set

12 Under this analysis, what Insertion rules have to work with is effectively equivalent to featural containment: present = {√}, imperfect = {√, +PST} and aorist = {√, +PST, +PFV}, hence it is classified here as a CaC analysis.

that received overt realization, there would no longer be a reason to not expect e.g. a comparative form to surface-contain a superlative form, even if comparatives were featural subsets of superlatives. As Christopoulos and Zompì (2023: fn 35) point out, to maintain surface-containment as a sound diagnostic for morphosyntactic containment, any theory that allows for \emptyset exponents must be supplemented with the assumption that the realization of a feature set F as \emptyset be impossible, in case any subset of F is realized by an overt marker. But under this assumption, taking \emptyset to be the realization of $+P_{FV}$ and *mi-/ta* the realization of P_{FV} in Persian/Konkani becomes impossible, and as a consequence, an analysis of the IAG along the lines of Tab. 14 becomes untenable.¹³

4. The IAG: a structure-and-locality gap?

Given the implausibility of a CaC account of the IAG, this section explores the potential of analyzing the IAG as a SaL gap, like Bobaljik's analysis of his CSG2. I argue that this analytical route is more promising, but only if we also allow for specific structural variation across tripartite tense-aspect systems regarding the hierarchical ordering between tense and aspect.

13 As the reviewer points out, a condition similar to (6) is assumed by Smith et al (2019) in their treatment of Number-driven suppletion patterns for the triple singular-plural-dual, where singular = {+SG, -AUG}, plural = {-SG, +AUG} and dual = {-SG, -AUG}. Smith et al. propose that languages vary as to which value of AUG is 'marked' (understood as 'overtly realized') in the context of -SG, which explains the observed cross-linguistic variation in surface-containment between plurals and duals: In languages with marked +AUG, plurals can surface-contain duals, but not vice-versa, while in those with marked -AUG, it is duals that can surface-contain plurals, but not vice-versa. Given (6), it is predicted that ABA suppletion patterns can only arise in languages in which +AUG is marked, i.e. in which duals cannot surface-contain plurals and that AAB patterns can only arise in languages in which -AUG is marked, i.e. in which plurals cannot surface-contain the corresponding duals. According to the authors' report, these predictions are, indeed, in line with what is found across languages. As far as I can see, however, for these predictions to fall out of Smith et al's theory, it must also be assumed that \emptyset cannot be the realization of a marked feature (+/-AUG) at the same time as AUG (regardless of its value) is realized by an overt marker; if this were possible, the door would be open for languages with plurals surface-containing duals and AAB suppletion, as well as languages with duals surface-containing plurals and ABA suppletion.

4.1 Bobaljik’s CSG2

As was shown in Tab. 10, containment and competition alone are insufficient for deriving Bobaljik’s CSG2 (i.e. AAB is not ruled out), which ends up requiring two further assumptions. The first is a refinement of what it means for the comparative to be properly contained in the superlative. Bobaljik assumes that containment relations for his triple are not merely instantiated in terms features, but also in terms of structural layering, as in (7). Independent, empirical motivation for this assumption comes from morph order: In most cases where comparative and superlative morphs are on the same side of the base, the comparative morph is closer to the base than the superlative morph is.¹⁴ The second assumption is that Insertion rules are subject to structural-locality conditions that amount to (8).¹⁵ Once (3) is replaced by (7), and combined with the competition principle in (4) and the locality principle in (8), the system derives AAA, ABB and ABC, but not AAB (or ABA), as shown in Tab. 15.

(7) Structural decomposition of the positive-comparative-superlative triple:

Positive = [\checkmark]

Comparative = [[\checkmark] COMP]

Superlative = [[[\checkmark] COMP] SPRL]

14 Though in at least some languages, superlative morphs are closer to the base than co-occurring comparative ones. See Bobaljik (2012: 3.2.2) for how such cases can be accommodated in terms of ‘branching affixation’.

15 Though (8) is effectively equivalent to Bobaljik’s locality proposal, he does not actually formulate things this way. He starts from the more standard assumption that, in the general case, an Insertion rule can be sensitive to a set of features from two structurally adjacent nodes, but not to a set of features spanning non-adjacent nodes. As was shown in Tab. 10, ABB requires one rule that is sensitive only to \checkmark , and one that is sensitive to both \checkmark and COMP, but since the latter set comprises of features in adjacent nodes, ABB is derivable without locality issues. However, both his AAB and his ABC require rules that are sensitive to both \checkmark and SPRL, i.e. a feature set that spans non-adjacent nodes. An absolute ban of rules sensitive to feature sets spanning non-adjacent nodes would therefore make the system too strict, inadvertently also rendering ABC underivable. The principle in (8) achieves the right results, ruling out AAB without also ruling out ABC. See Bobaljik (2012) and Bobaljik – Wurmbrand (2013) for two technically different theories of (8).

(8) **Locality principle:**

For any Insertion rule that refers to the features X and Z (and potentially Y) in a syntactic structure [[[X] Y] Z], there must be another one that refers only to X and Y

Tab. 15. Possible base-choice derivations assuming (4), (7) and (8)

Rule inventory	Rule competition in each context			Pattern
	[√]	[[√] COMP]	[[[√] COMP] SPRL]	
A ↔ {√}	W	W	W	AAA
A ↔ {√}	W	L	L	ABB
B ↔ {√, COMP}	DQ	W	W	
A ↔ {√}	W	L	L	ABC
B ↔ {√, COMP}	DQ	W	L	
C ↔ {√, COMP, SPRL}	DQ	DQ	W	

4.2 The IAG, structure and locality

In Bobaljik's analysis of CSG2, the featural containment between positive, comparative and superlative is straightforwardly translated into structural containment. But since the present-imperfect-aorist triple is not readily amenable even to a featural containment analysis (as was shown in Section 3.2), Bobaljik's treatment of his CSG2 cannot be extended trivially to our IAG. The question that arises then is the following: How can we translate our featural decomposition of the present, imperfect and aorist in (5) into a structural decomposition that, in combination with (4) and (8), would allow us to capture the IAG as a SaL gap?

The literature has repeatedly reported a tendency for aspectual markers to be expressed closer to the base than tense markers are (Bybee 1985; Cinque 1999; 2014; Julien 2002; Boland 2006). The languages of the present sample can be seen as being consistent with this generalization. In some of the languages, the ordering between aspect markers and tense markers relative to the base is ambiguous, either because aspect and tense markers are positioned on opposite sides of the base, as in Persian ('go'=pres. *mi-rav-am*, imperf. *mi-raf-t-am*, aor. *raf-t-am*), or because they are positioned on the same side of the base, but their expression is too fusional to distinguish, as in Tocharian B ('say'=pres. *we-sk-au*, imperf. *we-şş-i-m*, aor.: *w(e)ñ-ā-wa*). In

other languages, like in Konkani, where aspect markers and tense markers are easily segmentable and positioned on the same side of the base, aspect markers are clearly positioned closer to the base than tense markers are (‘enter’=pres. *rig-tã*, imperf. *rig-ta-l-õ/ĩ/ě*, aor. *rig-l-õ/ĩ/ě*). None of the sample languages involves easily segmentable aspect and tense markers positioned on the same side of the base with tense markers clearly ordered closer to the base than the aspect markers. Following much of the literature, we may consider this asymmetry as evidence that tense (+/-P_{ST}) is universally hierarchically higher than aspect (+/-P_{FV}) and revise our featural decomposition of the triple in (5) to the structural one in (9) (e.g. Cinque 1999; 2014; Julien 2002; Moskal 2015; Rizzi – Cinque 2016; i.a.). I will henceforth refer to languages represented by (5) as involving a Tense-over-Aspect (ToA) structure. As shown in Tab. 16, combining (9) with (4) and (8) successfully rules out ABA, but it also inadvertently rules out all derivations of ABB. In other words, the overall system becomes too restrictive.

(9) **Structural decomposition of present, imperfect and aorist; Tense-over-Aspect (ToA):**

Present = [[[√] -P_{FV}] -P_{ST}]

Imperfect = [[[√] -P_{FV}] +P_{ST}]

Aorist = [[[√] +P_{FV}] +P_{ST}]

Tab. 16. Possible base-choice derivations assuming (4), (8) and (9)

Rule inventory	Rule competition in each context			Pattern
	[[[√]-P _{FV}] -P _{ST}]	[[[√]-P _{FV}] +P _{ST}]	[[[√] +P _{FV}] +P _{ST}]	
A ↔ {√}	W	W	W	AAA
A ↔ {√, -P _{FV} }	W	L	DQ	ABC
B ↔ {√, -P _{FV} , +P _{ST} }	DQ	W	DQ	
C ↔ {√, +P _{FV} }	DQ	DQ	W	
A ↔ {√, -P _{FV} , -P _{ST} }	W	DQ	DQ	ABC
B ↔ {√, -P _{FV} }	L	W	DQ	
C ↔ {√}	L	DQ	W	
A ↔ {√, -P _{FV} , -P _{ST} }	W	DQ	DQ	ABC
B ↔ {√, -P _{FV} }	L	W	DQ	
C ↔ {√, +P _{FV} }	DQ	DQ	W	

Rule inventory	Rule competition in each context			Pattern
	[[[√]-PFV] -PST]	[[[√]-PFV] +PST]	[[[√] +PFV] +PST]	
A ↔ {√}	W	W	L	AAB
B ↔ {√, +PFV}	DQ	DQ	W	
A ↔ {√, -PFV}	W	W	DQ	AAB
B ↔ {√}	L	L	W	
A ↔ {√, -PFV}	W	W	DQ	AAB
B ↔ {√, +PFV}	DQ	DQ	W	

How could we restore the generability of ABB, while at the same time maintaining the ungenerability of ABA? While the tendency for tense markers to be positioned further from the base than aspect markers are is robust, it does not seem to be absolute. Outside of the present sample, languages in which tense and aspect markers are positioned on the same side of the base and in which the tense markers are closer to the base than the aspect markers are apparently attested (see, e.g., Cinque 2014; Boland 2006). Moreover, it has been suggested that prefixes may generally be structurally higher than suffixes (e.g., Julien 2002), which would mean that cases of tense markers being positioned closer to the base than aspect markers can even be found in the present sample.¹⁶ In particular, Iranian languages like Kurdish, Pashto and Persian, where aspect is expressed by prefixes and tense by suffixes, would provide further evidence against the universality of (9). Let us then entertain the possibility that some languages, including some in our sample, do not have the ToA structure in (9), but an Aspect-over-Tense (AoT) structure, as in (10). As shown in Tab. 17, combining (10) with (4) and (8) yields a system that generates all suppletion patterns except ABA and AAB. Now, this means that, if we allow for cross-linguistic variation between ToA and AoT tripartite systems, i.e. if we combine the generative potential of ToA (Tab. 16) and AoT (Tab. 17), we arrive at the overall possibility of deriving all suppletive patterns except ABA, i.e. we successfully derive the IAG.¹⁷

16 Thanks to an anonymous reviewer for pointing this out.

17 Nothing here predicts the apparent overall preference for aspect markers to be positioned closer to the base than tense markers are (or, according to this analysis, the preference for ToA systems over AoT systems), which must therefore have its source outside of the morphosyntactic structure per se.

(10) **Structural decomposition of present, imperfect and aorist; Aspect-over-Tense (AoT):**

Present = [[[√] -P_{ST}] -P_{FV}]

Imperfect = [[[√] +P_{ST}] -P_{FV}]

Aorist = [[[√] +P_{ST}] +P_{FV}]

Tab. 17. Possible base-choice derivations assuming (4), (8) and (10)

Rule inventory	Rule competition in each context			Pattern
	[[[√]-P _{ST}] -P _{FV}]	[[[√] +P _{ST}] -P _{FV}]	[[[√] +P _{ST}] +P _{FV}]	
A ↔ {√}	W	W	W	AAA
A ↔ {√}	W	L	L	ABC
B ↔ {√, +P _{ST} }	DQ	W	L	
C ↔ {√, +P _{FV} , +P _{ST} }	DQ	DQ	W	
A ↔ {√, -P _{ST} }	W	DQ	DQ	ABC
B ↔ {√, +P _{ST} }	DQ	W	L	
C ↔ {√, +P _{FV} , +P _{ST} }	DQ	DQ	W	
A ↔ {√, -P _{ST} }	W	DQ	DQ	ABC
B ↔ {√, -P _{FV} , +P _{ST} }	DQ	W	DQ	
C ↔ {√, +P _{ST} }	DQ	L	W	
A ↔ {√}	W	L	L	ABB
B ↔ {√, +P _{ST} }	DQ	W	W	
A ↔ {√, -P _{ST} }	W	DQ	DQ	ABB
B ↔ {√}	L	W	W	
A ↔ {√, -P _{ST} }	W	DQ	DQ	ABB
B ↔ {√, +P _{ST} }	DQ	W	W	

A first clear prediction of this analysis is that no language will exhibit both AAB and ABB suppletion patterns. This prediction is indeed borne out by the languages of our sample. As shown in Tab. 18, the distribution of AAB and ABB across languages is complementary, as expected under the proposed analysis.¹⁸ Note that ABC can be generated either in a ToA or an AoT system, which means that it may coexist with either AAB or ABB, but the latter two never show up in the same language.

18 Recall that the analysis here (as well as its predictions) only holds for ‘neat’ suppletive paradigms and not for ‘messy’ ones. Since neither neat AAB nor neat ABB paradigms have been found in Romance languages, these are altogether excluded from Tab. 18.

Tab. 18. The distributions of AAB, ABB and ABC across languages

Genus	Language	AAB	ABB	ABC
Albanian	Albanian (S)	yes	no	no
Armenian	Armenian (C)	yes	no	no
Hellenic	Greek (M)	yes	no	no
Indic	Domari	yes	no	no
	Konkani	yes	no	no
Nuristani	Waigali	yes	no	no
Tocharian	Tocharian B	yes	no	yes
Iranian	Kurdish (K)	no	yes	no
	Pashto	no	yes	yes
	Persian	no	yes	no
Slavic	Bulgarian	no	yes	no
	OCS	no	yes	no

A second prediction is a correlation between suppletion patterns and morph order: In languages exhibiting AAB suppletion, we expect morph order to provide evidence for ToA in the best case and no clear evidence in the worst; conversely, in languages exhibiting ABB suppletion, we expect morph order to provide evidence for AoT in the best case and no clear evidence in the worst. What is ruled out are languages exhibiting AAB suppletion and clear morph-order evidence for AoT, as well as languages exhibiting ABB suppletion and unambiguous evidence for ToA. For the most part, this prediction is straightforwardly borne out. Among the languages of the sample exhibiting AAB, none provide clear morph-order evidence for AoT. These languages either provide ambiguous morph-order evidence, or unambiguous evidence for ToA.¹⁹ ABB suppletion is restricted to Iranian and Slavic (see Tab. 18). In Kurdish, Pashto, and Persian, as in most other Iranian languages, aspect and tense markers are positioned on opposite sides of the base, which can either be taken as ambiguous morph-order evidence or, if

19 The only language exhibiting AAB in which tense markers and aspect markers are positioned on opposite sides of the base is Greek. Since it is the tense marker that is prefixal, morph order in this language would provide evidence for ToA, under the assumption that prefixes are structurally higher than suffixes.

prefixes are generally higher than suffixes, as evidence for AoT, i.e. they are perfectly consistent with the present predictions.²⁰ OCS and Bulgarian are the only two languages that appear to be problematic with regards to the above predictions: They seem to exhibit ABB suppletion, as shown in Tab. 19, but, as seen in Tab. 20, they also seem to provide morph-order evidence for a ToA structure, with the tense suffix *-x* positioned further from the base than the vocalic suffixes that distinguish between aspects.

Tab. 19. The suppletive verb ‘be’ in OCS and Bulgarian (to be revised)

	OCS ‘be’ (Migdalski 2006: 33-34)			Bulgarian ‘be’ (Scatton 1993: 220)		
	Present	Imperfect	Aorist	Present	Imperfect	Aorist
1s	jes-мъ	bě-xъ	by-xъ	s-ãm	bja-x	bja-x

Tab. 20. Non-suppletive verbs in OCS and Bulgarian

	OCS ‘carry’ (Huntley 1993: 157)			Bulgarian ‘read’ (Scatton 1993: 219)		
	Present	Imperfect	Aorist	Present	Imperfect	Aorist
1s	nes-ǫ	nes-ěa-xъ	nes-o-xъ	čet-a	čet-ja-x	čet-o-x

Upon closer inspection, OCS and Bulgarian may actually not be as incompatible with the present predictions as they seem to be. The verb ‘be,’ which is the only suppletive paradigm found in these languages, is special in a way that is potentially relevant. For OSC, it has often been pointed out that it is doubtful that the forms reported as the OCS imperfect and aorist forms of ‘be’ were semantically distinguishable in the way that the imper-

20 There are some Iranian languages, outside of the present sample, which seem to provide further support that the prefixal aspect markers are more peripheral than the suffixal tense markers. For example, both Balochi and Ormuri have imperfective markers positioned to the left of the base and tense markers positioned to the right of the base, like in Kurdish and Persian. In Balochi and Ormuri, the imperfective markers are described as a ‘clitic’ and a ‘mobile particle’, respectively. In Balochi, =a attaches to a word preceding the verb (Jahani 2019: 135–192), while in Ormuri *bu* can be separated from the verb by multiple words (Efimov 2011: 191–203). The tense markers, on the other hand, are described in both these languages as typical suffixes. I am aware of only one Iranian language that, unlike the rest, has prefixal tense markers and suffixal aspect markers, namely Yaghnobi (Khromov 1972: 31–32). The prediction is that this language would also be different from other Iranian languages in not exhibiting ABB suppletion and that it could exhibit AAB suppletion instead. As far as I am aware, this language does not exhibit suppletion at all, in the relevant sense (but see Novák 2019 for participial suppletion in Yaghnobi).

fect and aorist forms of other verbs were (see Eckhoff et al. 2014). In other words, *běxъ* and *byxъ* from Tab. 19 may be better seen as alternative ways of expressing the same past meaning of ‘be’, rather than distinct aspects of the verb in the past. In Bulgarian, as seen in Tab. 19, the putative imperfect and aorist forms of ‘be’ are formally identical, which, again, is not the case with other verbs in the language (cf. Tab. 20). The indistinguishability of imperfect and aorist in the paradigm of ‘be’ in these languages opens the door to an analysis of the forms of ‘be’ that does away with the aspect (+/-P_{FV}) distinction altogether, along the lines of Tab. 21.²¹ If we take this to mean that the verb ‘be’ exceptionally involves a smaller syntactic structure than the rest of the verbs, i.e. [[√] +/-P_{ST}], we have what is necessary to make sense of the Slavic facts as consistent with the present proposal: OCS and Bulgarian are actually ToA languages, as suggested by the evidence in Tab. 20, but their ‘be’ is special in involving a structure where (+/-)P_{ST} merges with the root directly, without mediation by (+/-)P_{FV}. Since the root and tense features span adjacent nodes in the structure of ‘be’, tense-conditioned suppletion becomes possible in an otherwise ToA system, without violation of the locality condition in (8).²²

Tab. 21. The suppletive verb ‘be’ in OCS and Bulgarian (revised)

	OCS ‘be’		Bulgarian ‘be’	
	Nonpast	Past	Nonpast	Past
1s	jes-мъ	bě-xъ/ by-xъ	s-ãm	b-ja-x

5. Conclusion

I have presented the results of a survey on suppletion patterns in tripartite tense-aspect systems in IE languages and argued for the following generalization: If the imperfect form is suppletive relative to the present form, the aorist form also is, i.e. *ABA for the triple present-imperfect-aorist. I have

21 Under the analysis proposed in Tab. 21, OCS and Bulgarian don’t really exhibit ABB suppletion, they merely exhibit AB suppletion and so, Tab. 18 should be revised appropriately. Therefore, only the Iranian languages exhibit true ABB suppletion.

22 See Moskal (2015) for a similar suggestion regarding the possibility of tense-conditioned root suppletion in the absence of an aspect layer.

argued that this gap cannot be captured simply as a containment-and-competition gap, as in Bobaljik's (2012) *ABA, but that it can be accounted for as a structure-and-locality gap, like Bobaljik's *AAB, if we recognize the existence of two types of tripartite systems that differ in the hierarchical relation between aspect and tense features. This conclusion also means that SaL gaps need not always be accompanied by CaC gaps. The generalizability of these empirical and theoretical results beyond IE is pending further investigation into suppletion in tripartite systems, using larger and more diverse language samples.

Acknowledgements

I wish to thank two anonymous reviewers, as well as the audience members at SinFonIJA 16, for their useful feedback that helped improve the presentation and analysis of the materials in the present paper.

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