

## UG determinism and *phi*-feature interpretability in the direction of language change

KRZYSZTOF MIGDALSKI

*University of Wrocław*

ABSTRACT

This paper explores the issue of the directionality in language change, analyzing functional elements in Slavic as the empirical basis. Specifically, it examines the diachronic morphophonological weakening of auxiliary verbs and the strengthening of pronominal clitics in Slavic, showing that they instantiate modifications that occurred in opposite directions and which therefore may pose a challenge for the hypothesis of the directionality of language change. The changes are attributed in the paper to a uniform formal condition, the weakening of the T-feature, while their directionality is argued to be contingent on the (un)interpretability of *phi*-features carried by the elements undergoing the change.

**KEYWORDS** auxiliaries · clitics · language change · tense

### 1 INTRODUCTION

This paper examines two types of language change attested in Slavic, which have led to opposite outcomes: the morphophonological weakening of auxiliaries and the strengthening of pronouns. In the literature, both changes have been attributed to the same factor, the weakening of tense distinctions. This paper shows that the observed changes may give insight into the nature of language change, especially the issue of its directionality. Specifically, it is argued that the directionality of change may be contingent on the (un)interpretability of *phi*-features carried by the elements affected by the diachronic modification. This paper is organized as follows. §2 outlines the general theoretical assumptions concerning language change. §3 and §4 respectively discuss empirical facts related to auxiliary weakening and pronoun strengthening. §5 presents a theoretical analysis of the data.

### 2 ASSUMPTIONS ABOUT THE DIRECTIONALITY OF LANGUAGE CHANGE

An important issue in diachronic studies is the uniformity of language change; in other words, the existence of universals in language change attested in all languages. On the one hand, there undoubtedly exist patterns of language change that are very common and as such may be viewed as universal. For example, it was observed already in the 19th century (Bopp 1816) that diachronically functional elements such as articles, conjunctions, auxiliaries, and inflections often derive from lexical elements such as nouns and verbs. This process was later referred to as grammaticalization, and it was understood as a functional reanalysis of a lexical element as a grammatical marker, frequently accompanied by its phonological weakening and semantic bleaching. It has been observed that grammaticalization may follow a series of stages, referred to as a grammaticalization cline, and in the case of the development of agreement markers, the cline is as given in (1) (see Hopper & Traugott 1993).

(1) independent pronoun → weak pronoun → clitic pronoun → affixal (agglutinative) agreement marker → fused agreement marker →  $\emptyset$  [null form]

Importantly, in many grammaticalization studies, the process is considered unidirectional (see, for example Haspelmath 2004), with no reversals possible, despite empirical evidence showing the opposite scenario (see Jung & Migdalski 2021 for Slavic and §4). It seems that in a sense the claim about the unidirectionality of grammaticalization reflects the traditional deterministic approach to the study of language that dates back to the 19th century, and the hypothesis of language drift, originally developed by Sapir (1921), which presupposes that languages develop in a certain predestined direction (see Anderson & Lightfoot 2002, ch. 5 for a detailed discussion). Thus, languages were assumed to change following a fixed developmental path, such as the so-called morphological cycle, involving the switch from isolating to agglutinating and then to inflectional types (Schleicher 1848), which arguably implied that they gradually become more complex; or conversely, languages were hypothesized to gradually become simpler in other analyses (Rask 1818). These traditional hypotheses face serious challenges (see Lightfoot 1999 and Madariaga 2017). Namely, on the empirical side, the idea that languages become simpler or more economical is problematic irrespective of how we understand the notion of simplicity. For example, the loss of yers in Old Polish led to the emergence of consonant clusters and a considerable complication of the phonological system. Moreover, there are many diachronic studies that address processes of language change that were not completed and became reverted, which indicates that language change does not follow a predestined path in a particular direction. For example, Breitbarth (2005) provides a detailed analysis of finite auxiliary ellipsis in Early Modern German, which spread rapidly after it emerged around 1450, only to disappear in older Modern German in the 18th century. Likewise, Igartua (2015) analyzes diachronic data demonstrating agglutinative developments inside fusional systems in the nominal and verbal inflection of many unrelated languages, which challenge the traditional postulate of the unidirectional morphological cycle referred to above. Within Slavic, Pancheva (2005) shows that in Old Bulgarian verb-adjacent clitics temporarily adopted second position distribution, but then they became verb-adjacent again in later stages of history. Correspondingly, Willis (2007) and Willis (2017) discuss theoretically unexpected shifts from pronoun to noun, and from preposition to verb in Bulgarian and Welsh, respectively, which he analyzes as cases of degrammaticalization.

On the theoretical side, Lightfoot (1979: 392, 473) points out that the hypothesis of language drift is challenged by properties of first language acquisition. When faced with Primary Linguistic Data (PLD), the child is oblivious of any potential hierarchies of language change or the fact that a language is changing from one type to another (for example, from SOV to SVO) rather than in the opposite direction. Since the child does not have any “racial memory” while acquiring the first language, the new grammar is developed completely from scratch on the basis of the data the child is exposed to, which indicates that language transmission is discontinuous. Given these properties of first language acquisition, and in view of the cases of reverted or incomplete language change, it has been hypothesized that language change could be a random process that occurs within the range of limits imposed by Universal Grammar (Roberts 2007: 348). It has been assumed to arise when the learner is exposed to PLD which, due to morphological or phonological erosion, shifts in frequencies, or stylistic factors, becomes interpreted in a different way by the learner than by other speakers. In such a scenario, the learner constructs a new grammar, with potentially different parameter settings. Factors reported in the literature that may have triggered language change include the loss of verbal morphology, which has been argued to have impacted verb movement in English (Roberts 1993) and in Scandinavian languages (Holmberg & Platzack 1995) and pro-drop in French (Roberts 1993); the loss of morphological case in English, which has led to the emergence of Exceptional Case-Marking structures

and changes in word order (Lightfoot 1979, Biberauer & Roberts 2008), and the decline of Force-related clausal particles in Gothic (Ferraresi 2005) and in Old High German (Axel 2007), which arguably led to the expansion of V2 clauses (see also Fuß 2017: 470).

The idea that language change consists in a switch in parameter setting may give the impression that language change is largely a random phenomenon. However, this view is challenged by empirical observations. First, although §4 in this paper addresses the case of strengthening of pronominal clitics in Slavic, analyzed by Jung & Migdalski (2021) as degrammaticalization, grammaticalization is still a considerably more frequent phenomenon. Second, in phonology some types of potential sound changes are never attested and are deemed impossible (Blevins 2004). In syntax, some diachronic changes are strikingly more frequent than others; for instance, OV-to-VO order change is historically common, but the opposite change is very rare (Faarlund 1990: 50) and is exclusively attributed to language contact (see also Fuß 2017: 473 for more discussion). Finally, it has been noted that creole languages have similar syntax regardless of the grammatical properties of the languages from which they originate; for example, they lack referential null subjects, V-to-T movement, and only have VO orders. These restrictions and strong tendencies have been explained in different ways. For example, the directionality of change with respect to word order has been motivated by the properties of phrase structure. Biberauer et al. (2009) argue (see also Fuß 2017: 473) that the shift from VO to OV is disfavored due to Holmberg's (2000: 124) Final-Over-Final Constraint, which precludes head-initial projections under head-final projections. Moreover, Roberts & Roussou (2003: 3ff) postulate that when confronted with ambiguous PLD data during acquisition, the learner will favor unmarked grammatical options and parameter values. The unmarked values are understood as those that involve less complex derivations, thus the ones that contain fewer formal features, with a lower number of movement operations (Roberts 2007, Longobardi 2001, Fuß 2017: 473–474). Hence, the ambiguous status of the PLD is a necessary condition for a language change to occur, but the instantiation of the change is dependent on other factors, such as acquisition strategies that favor the most economic analysis of the input and the simplest derivation. These aspects are currently often referred to as “third factors,” that is the ones that are not necessarily specific to the language faculty (van Gelderen 2022). In the remainder of this paper, I present the diachronic outcomes of the decline of tense morphology in Slavic, with the weakening of auxiliaries discussed in §3, and the strengthening of pronominal clitics in §4.

### 3 THE WEAKENING OF THE AUXILIARY VERB

This section analyses the morphosyntactic properties of the auxiliary verbs in Slavic, showing the way they became weaker in their diachrony. §3.1 addresses the weakening in Old Slavic, Czech, and dialectal Slovenian, while §3.2 discusses the partial decline of the auxiliary in the history of Polish. §3.3 motivates the change.

#### 3.1 AUXILIARY WEAKENING IN OLD SLAVIC, CZECH, AND DIALECTAL SLOVENIAN

The chart in (2) shows that in Old Church Slavonic the auxiliary ‘be’ occurred predominantly in the strong, orthotonic forms. The reduced, unaccented forms were attested only in the 3rd person (*je* and *sq*) and were rather infrequent, as their occurrence is limited to some texts. The reduced forms were later extended to the whole paradigm in the history of Slavic (Vaillant 1966: 441–442).

(2) The paradigm of *byti* 'be' in the present tense in OCS (Schmalstieg 1983: 138)

	Singular	Dual	Plural
1	jesmъ	jesvě	jesmъ
2	jesi	jestा	jestе
3	jestъ (je)	jeste	sotъ (sq)

Old Church Slavonic had two simple past tenses, aorist and imperfect. They were retained and remain productive in only two modern Slavic languages, Bulgarian and Macedonian. The paradigms of the aorist and imperfect forms of the auxiliary *byti* 'be' are presented in the charts in (3) and (4), respectively.<sup>1</sup>

## (3) The paradigm of the aorist form of 'byti' in OCS (Schmalstieg 1983: 140)

	Singular	Dual	Plural
1	byxъ	byxově	byxomъ
2	bystъ (by)	bysta	byste
3	bystъ (by)	byste	byšę

## (4) The paradigm of the imperfect form of 'byti' in OCS (Schmalstieg 1983: 139)

	Singular	Dual	Plural
1	běxъ	běxově	byxomъ
2	běaše (bě)	běašeta (běsta)	běašete (běste)
3	běaše (bě)	běašete (běste)	běaxę (běšę)

The counterparts of the past forms are used as auxiliaries in past perfect forms in Bulgarian and Macedonian. Importantly for the analysis presented here, they were never morphophonologically reduced into clitics. As shown in (5-d) they may occur clause-initially in Bulgarian, in contrast to the clitic forms, which morphologically are present tense variants used in present perfect structures (see (5-b)).

(5) a. Gledali sa filma. (Bulgarian)  
     watch.PTCP.PL are.PRS.3.PL movie-the  
     'They have watched the movie.' (Lambova 2004: ch. 4)

b. \*Sa gledali filma.

c. Gledali bjaxa filma.  
     watch.PTCP.PL are.PST.3.PL movie-the

d. Bjaxa gledali filma.  
     'They had watched the movie.'

In Old Slavic, the verb 'to be' displayed the same paradigm whether it functioned as a copula verb or an auxiliary. However, its distribution and syntactic properties were different, at least in some variants of Old Slavic. Van Schooneveld (1959: 142) points out that whereas the auxiliary in Old Russian was a second position enclitic (though see Jung 2020, who suggests that the second position placement may have been incidental), the copula was not and was attested clause-initially, in front of adjectives and present active participles. In (6) the copula is preceded by the conjunction *i*, but conjunctions were not potential clitic hosts in Old Slavic.

(6) I by obladjä Olegъ Poljany. (Old Russian)  
     and are.AOR.3.SG rule.PAP.3.SG Oleg Poljane  
     'And Oleg was ruling over the Poljane.' (Povest' Van Schooneveld 1959: 143)

<sup>1</sup>Due to morphological similarities, the paradigm in (4) is interpreted in different ways in the literature. For Lunt (1974: 121), the bracketed forms represent the imperfective aorist variants, while Vaillant (1948: 298) considers them to be imperfect forms.

Another syntactic difference concerns the context of ellipsis. Růžička (1963: 202) shows that while the finite forms of the verb 'to be' were optional in copula structures in Old Slavic texts, the auxiliary was obligatorily overt in compound tense structures formed with the *l*-participle. In modern Slavic a syntactic contrast of the opposite type is observed in the distribution of the auxiliary and the copula in Czech (see (7)) and Macedonian, where the 3rd person singular and plural forms of the verb 'be' are present when used as a copula, but they are null in the auxiliary usage when a pronoun is used as the subject (see also (see also Franks 2017: 234–245) for a detailed analysis of auxiliary drop in BCMS).

(7) a. On \*(je) učitel. (Czech)  
 he is teacher  
 'He is a teacher.'  
 b. On přišel.  
 he come.PTCP.M.SG  
 'He came.' (Toman 1980)

Another distinction between the two variants concerns ellipsis. As indicated in (8-a), when the subject is a pronominal element in Czech, the 1st person singular auxiliary may be deleted, but the copula must remain overt, as in (8-b).

(8) a. Já (jsem) už spal. (Czech)  
 I am.AUX already sleep.PTCP.M.SG  
 'I was already asleep.'  
 b. Já \*(jsem) už pět let učitel.  
 I am already five years teacher  
 'I have been a teacher for five years.' (Toman 1980)

Furthermore, the auxiliary 'to be' may be reduced to an affix-like form in the 2nd person singular (see (9)), whereas the copula may not (see (10)). For a discussion of related contrasts observed in Old Czech texts, see Březina 2024.

(9) a. Ty jsi přišel. (Czech)  
 you are.AUX.2.SG come.PTCP.M.SG  
 'You came.'  
 b. Ty-s přišel.  
 you+are.AUX.2.SG come.PTCP.M.SG  
 'You came.' (Toman 1980)

(10) a. Ty jsi učitel.  
 (Czech) you are.2.SG teacher  
 'You are a teacher.'  
 b. \*Ty-s učitel.  
 you+are.2.SG teacher  
 'You are a teacher.' (Toman 1980)

Outside Czech, Frasson (forthcoming) has recently analyzed auxiliary/copula reduction in Nadiža/Natisone Slovenian, showing that it uses reduced forms in the 2nd and 3rd person, which may incorporate into pronominal clitics, the *l*-participle, complementizers, and *wh*-words. Frasson convincingly demonstrates that the copula (see (11-a)) and the auxiliary (see (11-b)) form a single morphological unit in clusters with pronominal clitics and presumably also other elements they combine with.

(11) a. Je reku da-*j* že tam. (Nadiža/Natisone Slovenian)  
 he say.PTCP.M.SG that-is.AUX already there  
 'He said that he's already there'

### 3.2 AUXILIARY WEAKENING IN POLISH

As was shown in the chart in (2) above, in Old Church Slavonic the auxiliary verb 'be' had predominantly strong forms, but some texts featured occurrences of clitic variants in the 3rd person, whose counterparts were extended to the whole paradigm in the history of Slavic. The chart in (12) below presents the reduction of the verb 'to be' in the history of Polish (Decaux 1955: 126ff, Andersen 1987: 24). The strong forms were used for expressing emphasis, with the 3rd person form *jest*, *jestą*, and *są* attested until the 16th century (Decaux 1955: 116, 127–128, Andersen 1987: 25), but their usage kept diminishing; the other person forms of the strong variants declined earlier.

(12) Diachronic development of the auxiliary verb 'to be' in Polish (Andersen 1987: 24)

	Strong forms in Old Polish	Reduced 'be' in Old Polish	Reduced 'be' in Modern Polish
1SG	jeśm	-(e)śm/-e)m	-(e)m
2SG	jeś	-(e)ś	-(e)ś
3SG	jest/jeść/je	-	-
1PL	jesm(y)	-(e)smy	-(e)śmy
2PL	jeśće	-(e)śće	-(e)śće
3PL	są	-	-
1DUAL	jeswa	-(e)swa	-
2DUAL	jesta	-(e)sta	-
3DUAL	jesta	-(e)sta/-0	-

The examples in (13) illustrate the distribution of strong auxiliaries in Old Polish. As can be seen, their placement is not restricted by prosodic constraints. The sentences in (13) exemplify what may appear to be auxiliary doubling, with the strong 3rd person form *jest* co-occurring with the weak auxiliary attached to the clause-initial demonstrative *to* in (13-b) and to the l-participle in (13-c). As observed by Decaux (1955: 127-128, 133) and Andersen (1987: 28), this was a strategy of marking emphasis in the clause when all other strong auxiliary forms except for the 3rd person fell out of use.<sup>2</sup>

(13) a. Wiem ze stworzyciela wszego luda porodziła jes.  
 know.1.SG that creator all mankind bear.PTCP.F.SG AUX.2.SG  
 'I know you bore the creator of all mankind.'

b. Tom jest oglądała.  
 that.1.SG AUX.3.SG.EMPH see.PTCP.F.SG  
 'That I did see.'

c. *Jest* ja ciebie zepchnął albo uczynilem  
 AUX.3.SG.EMPH I you.ACC repulse.PTCP.M.SG or do.PTCP.M.SG+AUX.1.SG  
 tobio co zlego?  
 you any harm  
 'Did I repulse thee or do thee any harm?' (Old Polish, Andersen 1987: 28)

<sup>2</sup>An anonymous reviewer asks about the status of the auxiliary in example (13-c), in which the 1st person singular form *-em* attaches to the entire coordinated structure *zepchnął albo uczynił*. The auxiliary on the first *l*-participle may be deleted because of the presence of the overt subject pronoun *ja*, which expresses person and number features. Auxiliary ellipsis is in fact also available in Modern Polish in the coordination of plural forms of *l*-participles, as in *czytaliśmy i śpiewaliśmy* '(We) read.PTCP+AUX.1.PL and sing.PTCP+AUX.1.PL' They are discussed in Franks & Bański (1999).

In comparison to the placement of the strong forms, the distribution of the reduced forms of the auxiliary was restricted, as demonstrated in (14), where they encliticize on the first element in the clause, and thus appear in second position.

(14) a. Ani-ś mię zepchnął, ani rzucił, ani-ś  
 not+AUX.2.SG me repulse.PTCP.M.SG nor desert.PTCP.M.SG nor+AUX.2.SG  
 niektóre złości uczynił. (Old Polish)  
 any harm do.PTCP.M.SG  
 'You neither pushed me nor threw me down, nor have you done me any  
 evil.'  
 b. Bo-cie-*m* się cała darowała.  
 for-you+AUX.1.SG REFL entire give.PTCP.F.SG  
 'For I gave myself wholly to thee.' (Andersen 1987: 28)

Syntax-wise, the auxiliary occurred in two positions. On the one hand, the auxiliary targeted second position. This type of placement was common when the clause-initial element was a conjunct, pronoun, *wh*-word or a particle, especially in subordinate clauses (Kowalska 1976).

(15) a. A teraz-*eś* mi tę robotę náznaczył.  
 and now+AUX.2.SG me.DAT this work assign.PTCP.M.SG  
 'And now you have assigned this work to me.'  
 (Zwieciadło duchowej łaski 1645)  
 b. Ju-że-*ście* się go dośytz namęczyli.  
 already+FOC+AUX.2.PL REFL him.DAT enough tire.PTCP.PL  
 'You have tired him enough already.'  
 (Żywoł Pana Jęzu Krysta 1522, Kowalska 1976: 43)

On the other hand, the auxiliary immediately followed the *l*-participle. In that case, the auxiliary could occur lower in the structure and was gradually reanalyzed as an affix on the *l*-participle.

(16) a. Egiptowi podáli-*śmy* ręce.  
 Egypt.DAT give.PTCP.PL+AUX.1.PL hands  
 'We gave our hands to Egypt'  
 (Wereszczyński 1592 *Excitarz do podniesienia wojny...*)  
 b. Y zdrowie swoie położyli-*ście* dla mnie.  
 and health your give.PTCP.PL+AUX.2.PL for me  
 'And you gave your health for me.'  
 (Grzegorz z Żarnowca 1582 *Postyllę część wtorą*, Kowalska 1976:43)

The chart in (17) presents the diachronic changes in the position of the auxiliary in Polish. It shows that the placement after the *l*-participle steadily prevails over time. According to Kowalska (1976), at first it is found most often in clauses that contain non-finite verbs, nouns, adjectives or numerals in the initial position, but then it becomes common also in other contexts.

(17) The position of auxiliary verbs in Polish (adapted from Kowalska 1976: 63)

Century	Placement after the clause-initial element	Placement after the <i>l</i> -participle
14th-1520 (religious texts)	1153 (53%)	1007 (47%)
14th-1520 (legal texts)	3651 (91%)	341 (9%)
1st half 16th	746 (71%)	301 (29%)
2nd half 16th	293 (67%)	145 (33%)
1st half 17th	296 (67%)	146 (33%)
2nd half 17th	487 (55%)	394 (45%)
1st half 18th	188 (45%)	234 (55%)
2nd half 18th	260 (27%)	710 (73%)
1st half 19th	117 (18%)	538 (82%)
2nd half 19th	204 (16%)	1106 (84%)
1st half 20th	56 (3%)	2009 (97%)

Similar calculations of the possible auxiliary placement are provided by Rittel (1975: 91), who in addition specifies the ratio of the second position violations; they are given in (18).

(18) The position of auxiliary verbs in Polish (based on Rittel 1975: 91)

Century	Aux preceding the <i>l</i> -participle	Aux (immediately) following the <i>l</i> -participle	2nd position violations
14-15th	89%	10%	3%
14-15th Bible	34%	65%	12%
16th	77%	22%	2%
17th	50%	49%	5%
18th	31%	69%	4%
19th (prose)	27.5%	72%	13%
20th (prose)	15%	85%	15%

Two patterns of development are worth observing here. First, we see an increase in the ratio of second position violations. The violations were more prominent in the 14-15th century Bible translations than in the non-religious (mostly legal) texts from the period. Kowalska (1976: 37) observes that since legal texts represent spoken language more faithfully than religious writings, the difference may indicate that in spoken language the second position rule was observed more diligently. Regardless, the rise in the second position violations had been rather insignificant. A property that is more striking and clearly visible in charts (17) and (18) is an increasing tendency for the auxiliary to appear right-adjacent to the participle. This trend most likely indicates a morphological reanalysis of the auxiliary clitic as a verbal affix, which continues in Modern Polish (see Franks & Bański 1999, Bański 2000, Migdalski 2006).

### 3.3 THE TRIGGER FOR THE CHANGE

Recall from §2 that language change is assumed to occur when the learner is confronted with PLD that due to factors such as morphological or phonological erosion or stylistic changes is interpreted in a different way by the learner than by other speakers, which leads to the construction of a new grammar. Długosz-Kurczabowa & Dubisz (2001: 307–308) argue that auxiliary weakening in Polish may have been triggered by a change in the word stress. They observe that the rhythm patterns of medieval texts reveal a lack of regular lexical stress in Old Polish. In the 14th–15th century, the main stress was established on the first syllable of a word, which may have fostered the encliticization of the auxiliary. Along with the initial stress, some words received

a secondary stress on the penultimate syllable, which eventually prevailed as the main stress in the early 18th century. The penultimate stress pattern may have led to further morphological impoverishment of post-verbal auxiliaries. This hypothesis may be supported by Czech, which has retained the initial word stress, with less severe reduction of the auxiliary clitics, as shown in §3.2.

The stress shift may have been a contributing factor for the change in Polish, but a major trigger that has led to the cliticization of auxiliaries across Slavic seems to be the simplification of the tense system and the loss of tense morphology. Hewson & Bubenik (1997: 285) argue that the tense/aspect system of late Common Slavic and Old Church Slavonic was imbalanced. It featured two simple past tense forms, aorist and imperfect, which specified aspectual information, and which were in addition morphologically marked for perfective or imperfective aspect. Either tense could be used with both imperfective and perfective verbs, so the tense and aspect markings were in principle independent of each other. However, in most cases the aspectual tenses semantically coincided with the specifications of aspect. As a result, the same aspectual distinction was morphologically expressed twice. In line with the theory of language change assumed in this paper, the learner may have reanalyzed aorist and imperfect as purely aspectual forms, as may be the case in the contemporary variants of Serbian that still use aorist, though with a non-temporal interpretation (see Todorović 2016 for a discussion of the non-temporal meanings of aorist in Serbian, which include future and 'hot news perfect' marking). Subsequently, since aspect is expressed on each verb in Slavic anyway, the aorist and imperfect forms became redundant and were lost in most Slavic languages, whereas the complex tense formed with the auxiliary 'be' and the *l*-participle, which was earlier used to mark resultativity, was adopted as the default past tense. Bulgarian and Macedonian, which retained aorist and imperfect, have largely reanalyzed the complex tense as a marker of non-evidentiality. In the case of Polish, Kowalska (1976: 42) argues that the loss of simple tenses led to the increase in the usage of the complex tense forms, which in turn gave rise to the morphophonological impoverishment of the auxiliary.<sup>3</sup>

In Migdalski (2006: 47), I propose a generalization that relates the loss of tense morphology in Slavic to the morphological reduction of the auxiliary. Recall that Old Church Slavonic used past-tense-marked auxiliaries in past perfect structures (see (3) and (4)), and their counterparts are still used in Bulgarian (see (5-b)) and Macedonian. These forms were never reduced into clitics, but with the decline of tense morphology, in the other languages they were replaced with the verb 'be' taking the form of the *l*-participle (for example, *bio* in BCMS and *był* in Polish). Correspondingly, the auxiliary clitics started to only represent *phi*-feature distinctions, which is reflected in their morphological divergence from the copula. In Czech and dialectal Slovenian, the reanalysis is observed only in some person forms, but in Polish it comprises the whole paradigm, as the auxiliary is radically different than the copula. As the chart in (19) indicates, the former 3rd person strong variant *jest* was reinterpreted in Polish as a stem for a newly formed copula, to which the reduced auxiliaries were affixed as agreement morphemes.

<sup>3</sup>As an alternative, an anonymous reviewer presents another potential motivation for the loss of the simple tense form. S/he correctly observes that the language learner would likely encounter lexical and morphological forms of aspect in various contexts other than aorist and imperfect. Such a scenario could have triggered the learner to merge aorist and imperfect into a single past form instead of erasing both categories. This could indeed be the case, and a related situation is currently attested in Macedonian, where aorist is becoming obsolete, and imperfect adopts the function of the default past tense. Another anonymous reviewer points out that in Old Russian aorist and imperfect forms were already lost before a coherent aspect-based system was established, referring to Bermel's (1997) observations. While this observation does not undermine the traditional reasoning about the loss of tense forms reported in this paper, it could also be the case that in Old Russian they were lost due to usage obsolescence.

(19) Paradigm of the copula in Modern Polish (Andersen 1987: 37)

	Modern Polish dialects	Standard Polish
1SG	<i>jest-em</i>	<i>jest-em</i>
2SG	<i>jest-eś</i>	<i>jest-eś</i>
3SG	<i>jest</i>	<i>jest</i>
1PL	<i>są-śmy</i>	<i>jest-eśmy</i>
2PL	<i>są-śce</i>	<i>jest-eście</i>
3PL	<i>są</i>	<i>są</i>

This reanalysis completed the morphological differentiation of the verb 'be' in its copula and auxiliary functions in Polish. The contrast between Bulgarian, a tensed language where the auxiliary is identical to the copula, and Polish is presented in (20) and (21).

(20) a. Čel *sūm* knigata. (Bulgarian)  
 read.PTCP.M.SG am.AUX book-the  
 'I have read the book.'

b. Az *sūm* čel knigata.  
 I am.AUX read.PTCP.M.SG book-the

c. Dovolen *sūm.*  
 glad.PTCP.M.SG am  
 'I am glad.'

(21) a. Czytał-*em* książkę. (Polish; 'be' as an auxiliary)  
 read.PTCP.M.SG+AUX.1.SG book.ACC  
 'I have read a book.'

b. Jestem zadowolony. ('be' as a copula)  
 am glad.PTCP.M.SG  
 'I am glad.'

The auxiliary reduction in Polish had syntactic repercussions. As shown in Migdalski (2006), it involved the reanalysis of XP-fronting of the *l*-participle to Spec,TP (currently attested in South Slavic) as head movement of the *l*-participle to T<sup>0</sup> in Modern Polish, as evidenced, for example, by the subject gap requirement present in South Slavic, but not in Modern Polish. As shown in (22-b), in Bulgarian the fronted *l*-participle and the subject are in complementary distribution, competing for the same position (Spec,TP). This is not the case in Polish, where the *l*-participle moves to T<sup>0</sup>, which leaves Spec,TP empty and available for the subject, as indicated in (23-b).

(22) a. Az *sūm* čel knigata. (Bulgarian)  
 I am.AUX read.PTCP.M.SG book-the  
 'I have read the book.'

b. \*Az čel *sūm* knigata. (Lambova 2004: ch. 4)

(23) a. Ty-ś czytał książkę. (Polish)  
 you+AUX.2.SG read.PTCP.M.SG book  
 'You have read the book.'

b. (Ty) czytał-eś książkę.  
 you read.PTCP.M.SG+AUX.2.SG book

'You have read the book.'

The weakening of the auxiliary in Polish, which was impoverished into a clitic and is now being reanalyzed as an affix on the *l*-participle (see Franks & Bański 1999), is a case of grammaticalization, arguably triggered by the weakening of the Tense feature.<sup>4</sup>

<sup>4</sup>An anonymous reviewer asks about other consequences of the weakening of the T-feature for the verbal domain. They are discussed by Jung (2020) and include the reanalysis of the auxiliary as a weak subject

Van Gelderen (2004) interprets grammaticalization as a Head Preference Principle, which states that external merge is preferred over internal merge. In syntactic terms, van Gelderen's proposal may be adopted to relate the auxiliary impoverishment to properties of *l*-participle movement in Polish. At the historical stage when the auxiliary is interpreted as a clitic, the *l*-participle undergoes head movement from  $V^0$  to  $T^0$ , as in Borsley & Rivero's (1994) analysis. Once the auxiliary is interpreted as an affix on the *l*-participle, the *l*-participle+auxiliary complex becomes merged directly on  $T^0$  (or some other functional head in the extended VP projection).

#### 4 THE STRENGTHENING OF PRONOMINAL ELEMENTS IN SLAVIC

This section addresses the diachronic change of the opposite type, the strengthening of pronominal forms, which proceeds from verb-adjacent to second position cliticization in South and West Slavic languages (except Bulgarian and Macedonian), and in addition it involves the reinterpretation of clitics as weak pronouns in Modern Polish. I have analyzed the data extensively elsewhere recently (Migdałski 2016), so here I present the main findings.

Modern Slavic languages have two types of pronominal clitics: verb-adjacent clitics in Bulgarian and Macedonian, which cannot be separated from the verb by any lexical material (see (24)), and second position clitics in BCMS, Slovenian, Czech, and Slovak, which occur after the first syntactic constituent in the clause but do not need to be adjacent to a verb or any other category (see (25)). As will be shown below, second position clitics are "stronger" than verb-adjacent clitics, as they are syntactically more independent and mobile.

(24) a. Vera *mi* go dade včera. (Bg/Mac)  
 Vera me.DAT it.ACC gave.3.SG yesterday  
 'Vera gave it to me yesterday.'

b. \*Vera *mi* go včera dade. (Franks & King 2000: 63)

(25) a. Veoma lepu haljinu *si* *mi* kupio. (BCMS)  
 very beautiful.ACC dress.ACC are.AUX me.DAT buy.PTCP.M.SG  
 b. Veoma lepu *si* *mi* haljinu kupio.  
 very beautiful.ACC are.AUX me.DAT dress.ACC buy.PTCP.M.SG  
 c. Veoma *si* *mi* lepu haljinu kupio.  
 very are.AUX me.DAT beautiful.ACC dress.ACC buy.PTCP.M.SG  
 'You've bought me a very beautiful dress.' (Tomić 1996: 817)

Diachronically, pronominal clitics in Old Church Slavonic were predominantly verb-adjacent (Radanović-Kocić 1988, Pancheva 2005). The only clitics that targeted second position in all contexts were operator clitics that specify the illocutionary force of the clause: the focus particle/conjunction *že*, the complementizer *bo*, the focus/question marker *li*, as shown in (26) for *že* and the pronominal clitics *sę* and *ei*.

(26) Elisaveti *že* isplъni *sę* vrěmę roditi *ei*. I rodi  
 Elizabeth CONJ fulfilled REFL time give-birth.IMP her.DAT and gave-birth  
 son.ACC  
 'And it was time for Elizabeth to have her baby, and she gave birth to a son.'  
 (Luke 1: 57, Pancheva et al. 2007)

In the Slavic languages that subsequently evolved the pronominal clitics moved to second position. Radanović-Kocić (1988) observes that in the oldest Serbian texts (12th–15th c.) the distribution of clitics mirrored the Old Church Slavonic pattern.

pronoun and the loss of verb movement to  $T^0$  in Old Russian.

Operator clitics uniformly targeted second position. Pronominal clitics were verb-adjacent (see (27-a) and (27-b)), but they obligatorily occurred in second position if they were accompanied by operator clitics (see (27-c)).

(27) a. Ězъ veli župan klъnu *se*. (Old Slavic)  
       I great prince swear.PRS.1.SG REFL.ACC  
       'I, great prince, swear...' (Radanović-Kocić 1988: 160)

b. I sie učiniv *imb*.  
       and this do them.DAT  
       'And having done that to them.' (Radanović-Kocić 1988: 158)

c. Kto *li ga* ime taiti.  
       who Q him.ACC has hide.INF  
       'Who will be hiding him?' (Radanović-Kocić 1988: 158)

In later texts pronominal clitics gradually shifted towards second position. Some of the texts in which pronominal clitics were still verb-adjacent in the 19th century come from Montenegro, exemplified in (28). In Migdalski (2018) I take this fact to be significant, as the dialects of this area preserved tense distinctions the longest, which points to a correspondence between the availability of verb-adjacent pronominal cliticization and the presence of morphological tense.

(28) a. Ako iguman sakrivi *mi*. (BCMS)  
       if prior does-wrong me.DAT  
       'If the prior does me wrong' (Radanović-Kocić 1988: 166)

b. Na stepen arhimandritski *se* uzvisio.  
       on rank archimandrite REFL rise.PTCP.M.SG  
       'He rose to the rank of archimandrite.' (Radanović-Kocić 1988: 168)

c. Drugo ništa ne predstavljujaju *mi*.  
       else nothing NEG represent me.DAT  
       'They are nothing else to me.'

d. Kći nebesna usliša *mi* molbu.  
       daughter heaven hear.AOR.3.SG me.DAT prayer  
       'The daughter of the heavens heard my prayer.' (Migdalski 2018: 200)

The correspondence between the availability of tense morphology and verb-adjacent cliticization is also confirmed by Slovenian, where pronominal clitics shifted to second position very early, as they are found already in *The Freising Manuscripts*, the oldest Slovene manuscript from the 10th–11th century. This fact coincides with Vaillant's (1966:60) observation that the simple tenses were lost early in Old Slovene, and in the earliest texts aorist is limited to certain verb forms (the examples in (29) below are transliterations, which preserve the original orthography, rather than transcriptions).

(29) a. I' vueruiú da *mi ie* na zem zuete beufi.  
       and believe.1.SG that me.DAT is.AUX on this world was.PST.ACT.PTCP  
       'And I believe that, having been in this world...' (10th-11th c. Slovenian, *Glagolite po naz redka zlouzeza, The Freising Manuscripts*, Migdalski 2016:266)

b. I da *bim* na zem zuete tacoga grecha pocazen vzel.  
       and that be.COND.1.SG on this world such sin penance take.PTCP.M.SG  
       'And that I may in this world accept penance for such sin.'

c. paki *se* uztati na zodni den. Imeti *mi ie* sivuot.  
       again REFL rise.INF on judgment day have.INF me.DAT is life  
       'And to rise again on the day of judgement. I am to have life.'

The same type of relation between the presence of tense morphology and verb-adjacent

cliticization is observed for Old Russian and Old Polish in Jung & Migdalski (2021). Pronominal clitics move to second position when tense morphology is lost. I propose that the movement is related to the loss of tense distinctions, which could be interpreted as the weakening of the T-feature, whereas verb-adjacent cliticization is possible only in languages that have morphological tense, that is in Bulgarian and Macedonian, which retained the simple past tense forms. These are the languages in which pronominal clitics adjoin to  $T^0$  (Kayne 1991). In the other languages, the Tense feature of  $T^0$  is weak (alternatively, the TP projection is missing in tense-less languages; see Bošković 2012, Migdalski 2006, Todorović 2016), and the pronominal clitics target specifier positions in the extended projections of VP, rather than adjoin to  $T^0$  (Migdalski 2016, Jung & Migdalski 2021). The proposal is further supported by systematic contrasts between second position cliticization in BCMS versus verb-adjacent cliticization in Bulgarian and Macedonian. For example, as shown in (30-a), BCMS permits VP fronting in which a clause-mate pronominal clitic is separated from the auxiliary clitic outside the fronted VP (Ćavar 1999). Moreover, in BCMS clause-mate clitics may be split from each other by a parenthetical, as in (30-b).

(30) a. [Dali *ga* Mariji] *su* Ivan i Stipe. (BCMS)  
           give.PTCP.M.SG it.ACC Marija.DAT are.AUX Ivan and Stipe  
           ‘Give it to Marija, Ivan and Stipe did.’ (Bošković 2001: 50)  
   b. Ti *si* *me*, kao što *sam* već rekla, lišio  
       you are.AUX me.DAT as am.AUX already say.PTCP.F.SG deprive.PTCP.M.SG  
       *ih* juče.  
       them yesterday  
       ‘You, as I already said, deprived me of them yesterday.’ (Bošković 2001: 60)

By contrast, pronominal clitics cannot be separated from each other or from the auxiliary in Bulgarian in any context, as shown in (31).

(31) a. \*[Celunala *go*] Maria *e*. (Bulgarian)  
           kissed him.ACC Maria is.AUX  
           ‘Kissed him, Maria has.’  
   b. \*Te *sa*, kakto *ti* kazah, predstavili *gi* na  
       they are.AUX as you.DAT told introduced.PTCP.PL them.ACC to  
       Petür.  
       Peter  
       ‘They have, as I told you, introduced them to Peter.’ (Bošković 2001: 189)

Furthermore, it is possible delete the accusative clitic (such as *ga* in (32-b) to the exclusion of the dative clitic (such as *mu*) under VP ellipsis in BCMS, though it must be the higher pronominal clitic that undergo deletion (see (32-c)).

(32) a. Mi *smo* *mu* *ga* dali, a i vi *ste* *mu* *ga*  
       we are.AUX him.DAT him.ACC gave and also you are.AUX him.DAT him.ACC  
       dali.  
       gave  
       ‘We gave it to him, and you did, too.’ (Stjepanović 1998: 530-532)  
   b. Mi *smo* *mu* *ga* dali, a i vi *ste* *mu* *ga* dali, (takodje).  
   c. \*Mi *smo* *mu* *ga* dali, a i vi *ste* *mu* *ga* dali, (takodje).

Conversely, no pronominal clitic may be deleted in Bulgarian or Macedonian in the corresponding contexts, as shown in (33).<sup>5</sup>

<sup>5</sup>An anonymous reviewer reports that in Czech, a second position clitic language, clitic deletion is not possible in VP ellipsis contexts either, as shown by Adam (2024: 35-36). Still, pronominal clitics may be

(33) a. \**Nie sme mu go dali, i vie ste mu go* dali (sůšto).  
 we are.AUX him.DAT him.ACC gave and you are.AUX him.DAT him.ACC  
 dali (sůšto).  
 gave too  
 (intended) ‘We gave it to him, and you did too.’ (Bošković 2002: 331)

b. \**Nie sme mu go dali, i vie ste mu go dali* (sůšto).

c. \**Nie sme mu go dali, i vie ste go mu dali* (sůšto).

These properties have been taken in the literature to indicate that each second position pronominal clitic is a separate constituent that targets an XP position (Stjepanović 1998, Migdalski 2006), while verb-adjacent clitics all adjoin to a functional head carrying *phi*-features, such as  $T^0$ , and form a constituent together as a cluster. Since the change observed in Slavic involves a switch from verb-adjacent to second position cliticization, Jung & Migdalski (2021) argue that it instantiates degrammaticalization, understood as an  $X^0$  to XP change.<sup>6</sup> In this way it is a reversal of grammaticalization, analyzed in the literature as a reinterpretation of phrasal material as an  $X^0$  (van Gelderen 2004). The change proceeded further in Polish, where former pronominal clitics have been reinterpreted as weak pronouns (see Witkoś & Łęska Bayraktar 2024 for a recent detailed analysis and extensive data coverage).

## 5 CONCLUSION: THE DIRECTIONALITY OF LANGUAGE CHANGE AND THE NATURE OF *PHI*-FEATURES

I have argued in this paper so far that a single syntactic modification, the weakening of the  $T$ -feature, may trigger opposite changes in terms of morphosyntactic strength: the weakening of auxiliaries and the strengthening of pronouns. I propose now that the actual direction of the change is determined by an economy condition related to the (un)interpretability of features carried by the elements undergoing the change, with the uninterpretable ones being more prone to weakening and loss. This proposal relates to hypotheses pursued in research on heritage languages and second language acquisition (SLA). Thus, it has been observed that in comparison to native speakers, heritage speakers favor more economical structures, with fewer feature values. For example, Scontras et al. (2018) show that heritage Spanish speakers combine number and gender into a feature bundle, in contrast to native Spanish speakers, who express number and gender separately and arguably project them independently in the syntactic structure. Recently, Frasson (2022) has argued that feature specification plays a significant role in the interpretation of subject pronouns in Romance and different heritage Italo-Romance varieties. Specifically, he proposes that strong pronouns carry a discourse-related [R] feature, which makes the pronoun referentially specific enough to switch the reference to a non-salient discourse antecedent. This feature is present on strong pronouns, but not on weak pronouns, which may only co-refer with the most salient discourse antecedent, or on clitics, which behave as agreement markers. Crucially, Frasson (2022) demonstrates that in heritage Italo-Romance varieties subject clitics display

(marginally) interrupted by a parenthetical (as in example (30-b)). The Czech data needs further scrutiny.  
<sup>6</sup>An anonymous reviewer states that the fact that clitics were initially attached to a head, and then they are treated as XPs does not necessarily imply that they underwent degrammaticalization in South Slavic, given that they did not change from verbal person morphemes into independent clitics or from clitics into full pronouns. Since clitics are generally assumed to be XPs with the ability to attach to heads (following Kayne 1975, Chomsky 1995, Matushansky 2006:84ff), pronominal clitics in Slavic could therefore have been XPs before moving to second position. According to the reviewer, instead of analyzing the process as a case of degrammaticalization, we could be facing a mere instance of a reanalysis (of the position and the related properties) of the clitics, which could probably be a “back-and-forth reanalysis”, rather than degrammaticalization. Still, as was shown in the current section, second position clitics are syntactically stronger and more mobile; moreover, it has been suggested in the literature that verb-adjacent pronominal clitics in Macedonian in fact display properties of object agreement markers (Franks 2020). It is for these reasons that Jung & Migdalski (2021) assume that the process involves degrammaticalization.

the distribution of full pronouns, which in his view indicates that they encode the [R] feature. This is an economy-driven solution as well, because it leads to a simpler system in the heritage languages, in which all overt pronouns in the system encode the [R] feature.

Moreover, the economy of feature specification and interpretation plays a role in SLA studies pursued in the generative framework, in which L2 acquisition is assumed to involve resetting the parameters that exist in the learner's L1 or reassigning new values to them (Haegeman 1988: 255). If the process of resetting does not happen or is incomplete, the learner does not attain the L2 successfully or may produce L2 with negative transfer. Drawing on these assumptions, Lardiere (2008) proposes that errors in adult L2 acquisition arise due to a failure in the selection of parameterized formal features. Importantly, she argues that the features that the adult learner may fail to acquire are not only those that are missing in L1, but specifically the ones that are present in L2 and are also uninterpretable. Lardiere (2008) attributes the learner's failure to acquire the uninterpretable features in L2 to a critical period effect.

In view of these theoretical postulates and the diachronic empirical findings, I propose that the interpretability of features is an economy condition that plays a role in language change. I have argued that the changes analyzed in this paper arose due to the uneconomical double marking of aspectual distinctions on the verb via both aspectual morphology and tense (aorist and imperfect) morphology. It has led to the weakening of the present perfect auxiliary into a clitic that no longer expresses tense, but only *phi*-features. Notably, the past perfect auxiliary was not reduced and also retained the T-feature. Within the pronominal domain, the loss of tense morphology, understood as the weakening of T<sup>0</sup>, coincided with the shift from verb-adjacency to second position cliticization. As a result, pronominal clitics lost the eligible host for cliticization and, possibly in line with "Minimize Structure" (Cardinaletti & Starke 1999), second position clitics (and weak pronouns in Polish) had to be selected, as no other weaker options were available. Crucially, the direction of the change corresponds to *phi*-features interpretability: the elements on which *phi*-features are uninterpretable (i.e. verbs) were more prone to weakening than pronouns, which carry interpretable *phi*-features. Likewise, the past perfect auxiliaries, which carry the interpretable Tense feature, were not reduced either. If the analysis pursued in this paper is correct, it may indicate that in general interpretable features are less likely to erode than uninterpretable features, whose contribution seems secondary and restricted to syntactic mechanisms. Moreover, this analysis may also demonstrate that language change is, after all, deterministic, though in a different sense than it was postulated by the 19th century linguists: it occurs within limits imposed by UG, but at the same time it is driven by economy conditions.

#### ACKNOWLEDGEMENTS

I would like to thank Alberto Frasson, Hakjung Jung, Adrian Stegovec, and the FASL audience for discussion and helpful feedback. I am also grateful to the two anonymous reviewers for their very detailed comments which have led to many improvements and clarifications in the paper. All errors remain my responsibility.

#### CONTACT

KRZYSZTOF MIGDALSKI – [krzysztof.migdalski@uwr.edu.pl](mailto:krzysztof.migdalski@uwr.edu.pl)

## ABBREVIATIONS

1	1st person	FOC	focus
2	2nd person	GEN	genitive
3	3rd person	INF	infinitive
ACC	accusative	M	masculine
ACT	active	Mac	Macedonian
AOR	aorist	NEG	negation
AUX	auxiliary	OCS	Old Church Slavonic
BCMS	Bosnian/Croatian/ Montenegrin/Serbian	PAP	present active participle
Bg	Bulgarian	PL	plural
CL	clitic	PLD	primary linguistic data
CONJ	conjunction	PRS	present
DAT	dative	PST	past
EMPH	emphasis	PTCP	(l)-participle
F	feminine	SG	singular
		SLA	Second Language Acquisition

## REFERENCES

Adam, Nina. 2024. *Optimal clitic positioning in Czech and beyond*. Göttingen: University of Göttingen dissertation.

Andersen, Henning. 1987. From auxiliary to desinence. In Martin Harris & Paolo Ramat (eds.), *Historical development of auxiliaries*, 21–52. Berlin: Mouton de Gruyter.

Anderson, Stephen R. & David W. Lightfoot. 2002. *The language organ: Linguistics as cognitive physiology*. Cambridge: Cambridge University Press.

Axel, Katrin. 2007. *Studies on Old High German syntax: Left sentence periphery, verb placement and verb-second*. Amsterdam: John Benjamins.

Bański, Piotr. 2000. *Morphological and prosodic analysis of auxiliary clitics in Polish and English*. Warsaw: Warsaw University dissertation.

Bermel, Neil. 1997. *Context and the lexicon in the development of Russian aspect*. Berkeley, CA: University of California Press.

Biberauer, Theresa, Glenda Newton & Michelle Sheehan. 2009. Limiting synchronic and diachronic variation and change: The final-over-final constraint. *Language and linguistics* 10(4). 701–743.

Biberauer, Theresa & Ian Roberts. 2008. Cascading parameter changes: Internally driven change in Middle and Early Modern English. In Thórhallur Eythórsson (ed.), *Grammatical change and linguistic theory: The Rosendal papers*, 79–114. Amsterdam: John Benjamins.

Blevins, Juliette. 2004. *Evolutionary phonology*. Cambridge: Cambridge University Press.

Bopp, Franz. 1816. *Über das Conjugationssystem der Sanskritsprache in Vergleichung mit jenem der griechischen, lateinischen, persischen und germanischen Sprache*. Frankfurt am Main: Andreaische Buchhandlung.

Borsley, Robert & María-Luisa Rivero. 1994. Clitic auxiliaries and incorporation in Polish. *Natural language and linguistic theory* 12(3). 373–422.

Bošković, Željko. 2001. *On the nature of the syntax-phonology interface: Cliticization and related phenomena*. Amsterdam: Elsevier.

Bošković, Željko. 2002. Clitics as non-branching elements and the Linear Correspondence Axiom. *Linguistic inquiry* 33. 329–340.

Bošković, Željko. 2012. On NPs and clauses. In Günther Grewendorf & Thomas Ede Zimmermann (eds.), *Discourse and grammar: From sentence types to lexical categories*, 179–242. Boston/Berlin: Walter de Gruyter.

Breitbarth, Anne. 2005. *Live fast, die young: The short life of the Early Modern German auxiliary ellipsis*. Tilburg: Tilburg University dissertation.

Březina, Martin. 2024. Exploring phonological and prosodic factors shaping the positional variability of the Old Czech *be*-auxiliary. In *Proceedings of Formal Approaches to Slavic Linguistics (FASL) 33: The Halifax meeting 2024*.

Cardinaletti, Anna & Michal Starke. 1999. The typology of structural deficiency: A case study of the three classes of pronouns. In Henk Van Riemsdijk (ed.), *Clitics in the languages of Europe*, 185–234. Berlin: Mouton de Gruyter.

Ćavar, Damir. 1999. *Aspects of the syntax-phonology interface*. Potsdam: University of Potsdam dissertation.

Chomsky, Noam. 1995. *The minimalist program*. Cambridge, MA: MIT Press.

Decaux, Étienne. 1955. *Morphologie des enclitiques polonais*. Travaux de l'institut d'études slaves, vol. 23. Paris: Institut d'études slaves.

Długosz-Kurczabowa, Krystyna & Stanisław Dubisz. 2001. *Gramatyka historyczna języka polskiego*. Warszawa: Wydawnictwa Uniwersytetu Warszawskiego.

Faarlund, Jan-Terje. 1990. *Syntactic change: Toward a theory of historical syntax*. Berlin: Walter de Gruyter.

Ferraresi, Gisella. 2005. *Word order and phrase structure in Gothic*. Leuven: Peeters.

Franks, Steven. 2017. *Syntax and spell-out in Slavic*. Bloomington, IN: Slavica.

Franks, Steven. 2020. *Microvariation in the South Slavic noun phrase*. Bloomington, IN: Slavica.

Franks, Steven & Piotr Bański. 1999. Approaches to ‘schizophrenic’ Polish person agreement. In Katarzyna Dziwirek, Herbert Coats & Cynthia M Vakareliyska (eds.), *Proceedings of Formal Approaches to Slavic Linguistics 7: The Seattle meeting 1998*, 123–143. Ann Arbor, MI: Michigan Slavic Publications.

Franks, Steven & Tracy Holloway King. 2000. *A handbook of Slavic clitics*. New York: Oxford University Press.

Frasson, Alberto. 2022. *The syntax of subject pronouns in heritage languages. Innovation and complexification*. Utrecht: Utrecht University dissertation.

Frasson, Alberto. forthcoming. The fate of auxiliaries in Nadiža/Natisone Slovenian clitic clusters. *Journal of Slavic linguistics*.

Fuß, Eric. 2017. Language change. In Ian Roberts (ed.), *The Oxford handbook of Universal Grammar*, 459–485. Oxford: Oxford University Press.

van Gelderen, Elly. 2004. *Grammaticalization as economy*. Amsterdam: John Benjamins.

van Gelderen, Elly. 2022. *Third factors in language variation and change*. Cambridge/New York: Cambridge University Press.

Haegeman, Liliane. 1988. The categorial status of modals and L2 acquisition. In Suzanne Flynn & Wayne O’Neil (eds.), *Linguistic theory in second language acquisition*, 252–276. Boston: Kluwer.

Haspelmath, Martin. 2004. On directionality in language change with particular reference to grammaticalization. In Olga Fischer, Muriel Norde & Harry Perridon (eds.), *Up and down the cline: The nature of grammaticalization*, 17–44. Amsterdam/Philadelphia: John Benjamins.

Hewson, John & Vit Bubenik. 1997. *Tense and aspect in Indo-European languages: Theory, typology, diachrony*. Amsterdam: John Benjamins.

Holmberg, Anders. 2000. Deriving OV order in Finnish. In Peter Svenonius (ed.), *The derivation of OV and VO*, 123–152. Amsterdam: John Benjamins.

Holmberg, Anders & Christer Platzack. 1995. *The role of inflection in Scandinavian syntax*. Oxford: Oxford University Press.

Hopper, Paul & Elizabeth Traugott. 1993. *Grammaticalization*. Cambridge: Cambridge University Press.

Igartua, Iván. 2015. From cumulative to separative exponence in inflection: Reversing the morphological cycle. *Language* 91(3). 676–722.

Jung, Hakyung. 2020. The *be*-auxiliary’s categorial status in Old Russian. *Studia linguistica* 74(3). 613–644.

Jung, Hakyung & Krzysztof Migdalski. 2021. Degrammaticalization of pronominal clitics in Slavic. In Thórhallur Eyþórsson & Jóhannes Gísli Jónsson (eds.), *Syntactic features and the limits of syntactic change*, 139–160. Oxford: Oxford University Press.

Kayne, Richard. 1975. *French syntax: The transformational cycle*. Cambridge, MA: MIT Press.

Kayne, Richard. 1991. Romance clitics, verb movement and PRO. *Linguistic inquiry* 22(4). 647–686.

Kowalska, Alina. 1976. *Ewolucja analitycznych form czasownikowych z imiesłowem na -ł w języku polskim*. Katowice: Uniwersytet Śląski.

Lambova, Mariana. 2004. *On information structure and clausal architecture: Evidence from Bulgarian*. Storrs, CT: University of Connecticut dissertation.

Lardiere, Donna. 2008. Feature-assembly in second language acquisition. In Juana Liceras, Helmut Zobl & Helen Goodluck (eds.), *The role of formal features in second language acquisition*, 106–140. New York: Lawrence Erlbaum Associates.

Lightfoot, David. 1979. *Principles of diachronic syntax*. Cambridge: Cambridge University Press.

Lightfoot, David. 1999. *The development of language: Acquisition, change and evolution*. Oxford: Blackwell.

Longobardi, Giuseppe. 2001. Formal syntax, diachronic minimalism, and etymology: The history of French *chez*. *Linguistic inquiry* 32(2). 275–302.

Lunt, Horace G. 1974. *Old Church Slavonic grammar*. The Hague: Mouton.

Madariaga, Nerea. 2017. Reanalysis. In Adam Ledgeway & Ian Roberts (eds.), *The Cambridge handbook of historical syntax*, 70–91. Cambridge: Cambridge University Press.

Matushansky, Ora. 2006. Head movement in linguistic theory. *Linguistic inquiry* 37(1). 69–109.

Migdalski, Krzysztof. 2006. *The syntax of compound tenses in Slavic*. Tilburg: Tilburg University dissertation.

Migdalski, Krzysztof. 2016. *Second position effects in the syntax of Germanic and Slavic languages*. Wrocław: Wydawnictwo Uniwersytetu Wrocławskiego.

Migdalski, Krzysztof. 2018. On two sources of second position effects (part 2). *Studies in Polish linguistics* 13(4). 187–208.

Pancheva, Roumyana. 2005. The rise and fall of second-position clitics. *Natural language and linguistic theory* 23(1). 103–167.

Pancheva, Roumyana, Agnieszka Łazorczyk, Jelena Krivokapić & Yulia Minkova. 2007. *Codex Marianus*. USC parsed corpus of Old South Slavic.

Radanović-Kocić, Vesna. 1988. *The grammar of Serbo-Croatian clitics: A synchronic and diachronic perspective*. Urbana-Champaign, IL: University of Illinois dissertation.

Rask, Rasmus Christian. 1818. *Undersøgelse om det gamle Nordiske eller Islandske Sprogs Oprindelse*. Copenhagen: Gyldendalske Boghandlings Forlag.

Rittel, Teodozja. 1975. *Szyk członów w obrębie form czasu przeszłego i trybu przypuszczającego*. Wrocław: Ossolineum.

Roberts, Ian. 1993. *Verbs and diachronic syntax: A comparative history of English and French*. Dordrecht: Kluwer.

Roberts, Ian. 2007. *Diachronic syntax*. Oxford: Oxford University Press.

Roberts, Ian & Anna Roussou. 2003. *Syntactic change: A minimalist approach to grammaticalization*. Cambridge: Cambridge University Press.

Růžička, Rudolf. 1963. *Das syntaktische System der altslavischen Partizipien und sein Verhältnis zum griechischen*. Berlin: Veröffentlichungen des Instituts für Slawistik/Deutsche Akademie der Wissenschaften zu Berlin.

Sapir, Edward. 1921. *Language*. New York: Harcourt, Brace & World.

Schleicher, August. 1848. *Über die Bedeutung der Sprache für die Naturgeschichte des Menschen*. Weimar: Hermann Böhlau.

Schmalstieg, William R. 1983. *An introduction to Old Church Slavic*. Columbus: Slavica.

Van Schooneveld, Cornelis H. 1959. *A semantic analysis of the Old Russian finite preterite system*. Slavic printings and reprintings 7. The Hague: Mouton.

Scontras, Gregory, Maria Polinsky & Zuzanna Fuchs. 2018. In support of representational economy: Agreement in Heritage Spanish. *Glossa* 3(1).

Stjepanović, Sandra. 1998. On the placement of Serbo-Croatian clitics: Evidence from VP ellipsis. *Linguistic inquiry* 29(3). 527–537.

Todorović, Neda. 2016. *On the presence/absence of TP: Syntactic properties and temporal interpretation*. Storrs, CT: University of Connecticut dissertation.

Toman, Jindrich. 1980. Weak and strong: Notes on *be* in Czech. In Gunter Brettschneider & Christian Lehmann (eds.), *Wege zur Universalienforschung: Sprachwissenschaftliche Beiträge zum 60. Geburtstag von Hansjakob Seiler*, 305–310. Tübingen: Gunter Narr.

Tomić, Olga. 1996. The Balkan Slavic clausal clitics. *Natural language and linguistic theory* 14(4). 811–872.

Vaillant, André. 1948. *Manuel de vieux slave*, vol. 1. Paris: Institut d'études slaves.

Vaillant, André. 1966. *Grammaire comparée des langues slaves*, vol. 3. *Le verbe*. Paris: Institut d'études slaves.

Willis, David. 2007. Syntactic lexicalization as a new type of degrammaticalization. *Linguistics* 45(2). 271–310.

Willis, David. 2017. Degrammaticalization. In Adam Ledgeway & Ian Roberts (eds.), *The Cambridge handbook of historical syntax*, 28–48. Cambridge: Cambridge University Press.

Witkoś, Jacek & Paulina Łęska Bayraktar. 2024. The Person Case Constraint, Person Ordering Constraint and pronominal clusters in Polish. *Glossa* 9(1).