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DOI: <https://doi.org/10.1515/flin-2022-2012>

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ZORA URL: <https://doi.org/10.5167/uzh-218334>

Journal Article

Published Version

Originally published at:

Wandl, Florian (2022). Trapped morphology and the rise of the Slavic definite adjective inflection: a reexamination. *Folia Linguistica*, 56(s43-s1):1-31.

DOI: <https://doi.org/10.1515/flin-2022-2012>

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Trapped morphology and the rise of the Slavic definite adjective inflection: a reexamination

<https://doi.org/10.1515/flin-2022-2012>

Received January 14, 2021; accepted May 6, 2021; published online April 1, 2022

Abstract: Slavic and Baltic show a curious way of overt definiteness marking by means of a specific type of adjective inflection. It arose when the adjective merged with a definiteness marker of pronominal origin. This paper aims at a comprehensive explanation of the rise of the definite adjective morphology in the former branch. First of all, it is argued that contrary to what has been claimed, there is no need to posit loss of trapped morphology to plausibly account for the definite adjective inflection. It can be explained by a series of well-established processes, i.e., sound change, reanalysis, and analogy. An interplay of these processes led to an increase in the phonological fusion of the adjective and the definiteness marker and ultimately resulted in their merger. In discussing the involved changes and in identifying factors that may have motivated them, the paper contributes to the general study of how new inflectional morphology emerges from the coalescence of two formerly independent elements.

Keywords: definite adjective; grammaticalization; reanalysis; Slavic; trapped morphology

1 Background

Harris and Faarlund (2006) propose that there is a specific diachronic process, distinct from phonological erosion, that results in the loss of inflectional morphology which has been internalized due to the attachment of a clitic becoming an affix. Since the inflection is perceived as ‘trapped’ between a stem and the new affix, the authors speak of ‘trapped morphology’. One of their key witnesses for the loss of trapped morphology is the definite adjective inflection of Slavic. This type of inflection arose when a pronoun with the stem **j-* attached at the right edge of an

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adjective. Because the nominal endings were ‘trapped’ in the course of this process, in some case endings they were affected by loss, it is supposed. This article takes Harris and Faarlund’s account as a starting point for a detailed discussion of the rise of the definite adjective inflection. It will be argued that there is no need to propose a specific morphological mechanism to explain the new paradigm. In fact, it can be accounted for by well-known processes, namely phonological change, reanalysis, and analogy. To detect the processes at work, it is, however, necessary to consider the entire paradigm as well as inflectional patterns apart from those of the definite adjective. More specifically, certain features of the pronominal inflection played a decisive role in the development of the endings examined by Harris and Faarlund (2006).

The article is organized as follows. Section 2 introduces the concept of trapped morphology and Section 3 presents how Harris and Faarlund (2006) apply this concept to explain certain forms in the Slavic definite adjective inflection. After having evaluated their scenario in Section 4, I aim for a comprehensive account of the origin of the Slavic definite adjective inflection in Section 5. Section 6 then discusses possible motivations for the rise of the definite adjective inflection. The paper’s conclusions are presented in Section 7.

2 The concept of trapped morphology

Based on a variety of examples from different categories and language families Harris and Faarlund (2006) claim that there is a specific morphological change which results in the loss of inflectional morphology that is trapped between a stem and a clitic turning into an affix. This change, it is supposed, differs from phonological erosion in at least the following ways (see Harris and Faarlund 2006: 312):

- The morphological process typically targets complete morphemes, while erosion does not.
- Erosion is driven by prosody or phonotactic constraints.
- Erosion applies primarily in the word cliticizing (and its affixes), not in the host and its affixes.

Moreover, the loss of trapped morphology is distinguished from the externalization of inflection as described by Haspelmath (1993). The latter often occurs when inflected bases combine with an uninflected element. The loss of the trapped morphology, as it is defined by Harris and Faarlund (2006), would thus have resulted in complete loss of inflection in these instances.

Harris and Faarlund (2006: 311) suggest that the reason why trapped morphology is lost can be found in a preference for certain morpheme orders. In

most of the presented examples person-number agreement markers or case markers would have ended up in a position which, according to the authors, is dispreferred. To avoid this outcome, “speakers have lost the trapped morphemes” (Harris and Faarlund 2006: 311).

3 Trapped morphology in the Slavic definite adjective

In the prehistory of Slavic, a special type of adjective inflection arose from the attachment of an inflected pronoun with the stem **j-* to the adjective (cf. already Leskien 1876: 131).¹ This resulted in the emergence of a specific set of endings denoting definiteness of a noun phrase on the adjective.² Since in Slavic thematic nouns inflect according to either a hard or a soft type, we find two inflectional patterns also in the definite adjective. It should, however, be noted that the latter type, which arose from regular fronting of desinence-initial back vowels after soft, i.e., (pre-)palatal, stem-final consonants, in adjectives was rather marginal in comparison with the hard type (cf., for example, Birnbaum and Schaecken 1997: 57–65). Productively it occurred almost exclusively with possessive adjectives which in Slavic are not, however, marked for definiteness (cf. Flier 1974 and Tolstoj 1957 on Old Church Slavonic; Kuznecov et al. 2006 on Old Russian).

As can be seen from the examples *novъ* ‘new’ (hard type) and *lъžь* ‘false’ (soft type) in Table 1, the original state of affairs is still apparent in certain endings in Old Church Slavonic (cf. the paradigms in Diels 1963: 191–198; Lunt 2001: 64–67; Vaillant 1948: 120–121).³

¹ Unless otherwise specified, the term ‘adjectives’ here and in the following includes participles and ordinal numbers.

² It is beyond the scope of this paper to discuss the functions of the definite adjective which to some extent differ from those typically found with definite articles. For an analysis of the use of definite and indefinite adjectives, also referred to as long and short, or simple and compound forms of the adjective, in Old Church Slavonic cf. Flier (1974); Honowska (1963); Tolstoj (1957). Old Russian data are discussed in Kuznecov et al. (2006) and Larsen (2006). An outline of the further development of the two adjectival types in Slavic can be found in Hansen (2004).

³ The so-called ‘jers’ ъ and ь were most probably pronounced as [i], and [u] respectively, ⟨y⟩ is usually interpreted as a high central vowel [ɨ], and ⟨ě⟩ as a low front vowel [æ]. ⟨ę⟩ and ⟨ǫ⟩ present e- and o-like nasal vowels. For the further discussion it is, moreover, important to know that the vowels *a*, *ě*, *ę*, *ǫ*, *i*, *y*, and *u* were originally long, while *o*, *e*, *ь*, and *ъ* were originally short. Vowel length will be marked specifically only when it is relevant for the argument. A macron (̄) denotes a long vowel and a breve (̆) a short vowel. ‘>’ marks phonological change; non-phonological change is specified by ‘→’; an unattested form is indicated by a preceding †. Glossing follows the *Leipzig glossing rules* whereby labels are put before a cited form or ending in both tables and in-text

Table 1: Rise of the Slavic definite adjective inflection I.

Case form	a.			b.		c.	
	Adjective	Pronoun		Pre-OCS		OCS	
NOM.SG.M	* <i>novъ</i>	+	* <i>ъ</i>	>	* <i>novъъ</i>	>	<i>novъi</i>
	* <i>lъžъ</i>				* <i>lъžъъ</i>		<i>lъžъi</i>
NOM.SG.N	* <i>novo</i>	+	* <i>je</i>	>	* <i>novoje</i>	>	<i>novoje</i>
	* <i>lъže</i>				* <i>lъžeje</i>		<i>lъžeje</i>
NOM.SG.F	* <i>nova</i>	+	* <i>ja</i>	>	* <i>novaja</i>	>	<i>novaja</i>
	* <i>lъža</i>				* <i>lъžaja</i>		<i>lъžaja</i>
GEN.SG.M/N	* <i>nova</i>	+	* <i>jego</i>	>	* <i>novajego</i>	>	<i>novajego</i>
	* <i>lъža</i>				* <i>lъžajego</i>		<i>lъžajego</i>
DAT.SG.M/N	* <i>novu</i>	+	* <i>jemu</i>	>	* <i>novujemu</i>	>	<i>novujemu</i>
	* <i>lъžu</i>				* <i>lъžujemu</i>		<i>lъžujemu</i>
ACC.SG.F	* <i>novъ</i>	+	* <i>ъ</i>	>	* <i>novъъ</i>	>	<i>novъъ</i>
	* <i>lъžъ</i>				* <i>lъžъъ</i>		<i>lъžъъ</i>
LOC.SG.M/N	* <i>nově</i>	+	* <i>jemъ</i>	>	* <i>novějemъ</i>	>	<i>novějemъ</i>
	* <i>lъži</i>				* <i>lъžijemъ</i>	→	<i>lъžiiimъ^a</i>
NOM/ACC.DU.M	* <i>nova</i>	+	* <i>ja</i>	>	* <i>novaja</i>	>	<i>novaja</i>
	* <i>lъža</i>				* <i>lъžaja</i>		<i>lъžaja</i>
NOM/ACC.DU.F/N	* <i>nově</i>	+	* <i>ji</i>	>	* <i>nověji</i>	>	<i>nověi</i>
	* <i>lъži</i>				* <i>lъžiji</i>		<i>lъžii</i>
NOM.PL.M	* <i>novi</i>	+	* <i>ji</i>	>	* <i>noviji</i>	>	<i>novii</i>
	* <i>lъži</i>				* <i>lъžiji</i>		<i>lъžii</i>
NOM/ACC.PL.N	* <i>nova</i>	+	* <i>ja</i>	>	* <i>novaja</i>	>	<i>novaja</i>
	* <i>lъža</i>				* <i>lъžaja</i>		<i>lъžaja</i>
NOM/ACC.PL.F	* <i>novy</i>	+	* <i>je</i>	>	* <i>novyje</i>	>	<i>novyje</i>
	* <i>lъže</i>				* <i>lъžeje</i>		<i>lъžeje</i>
ACC.PL.M	* <i>novy</i>	+	* <i>je</i>	>	* <i>novyje</i>	>	<i>novyje</i>
	* <i>lъže</i>				* <i>lъžeje</i>		<i>lъžeje</i>
INS.PL.M/N	* <i>novy</i>	+	* <i>jimi</i>	>	* <i>novyjimi</i>	>	<i>novyjimi</i>
	* <i>lъži</i>				* <i>lъžijimi</i>		<i>lъžiiimi</i>

^aInstead of the expected **lъžijemъ*. The attested form can be explained as resulting from an adaptation to the masculine/neuter instrumental singular.

In these case forms, trapped morphology was, according to Harris and Faarlund (2006: 312), retained because the nominal endings provided suitable “buffer or transition” vowels.

In the remaining endings, the original state of affairs has been rendered opaque by several changes. Those presented in Table 2 are identified by Harris and Faarlund (2006: 298–299) as instances in which trapped morphology has been lost.⁴

citations. Note that labeling of gender is omitted whenever a form is indifferent to this category, e.g., GEN.PL *novъ* ‘new’ (NOT GEN.PL.M/N/F *novъ*).

⁴ The remaining endings are discussed in Section 5.2.

Table 2: Rise of the Slavic definite adjective inflection II.

Case form	a.			b.		c.	
	Adjective	Pronoun		Pre-OCS	OCS		
INS.SG.M/N	* <i>novomъ</i> * <i>lъžemъ</i>	+	* <i>jimъ</i>	>	* <i>novomъjimъ</i> * <i>lъžemъjimъ</i>	→	<i>novyimъ</i> <i>lъžimъ</i>
DAT/INS.DU.M/N	* <i>novoma</i> * <i>lъžema</i>	+	* <i>jima</i>	>	* <i>novomajima</i> * <i>lъžemajima</i>	→	<i>novyima</i> <i>lъžima</i>
DAT/INS.DU.F	* <i>novama</i> * <i>lъžama</i>	+	* <i>jima</i>	>	* <i>novamajima</i> * <i>lъžamajima</i>	→	<i>novyima</i> <i>lъžima</i>
GEN.PL	* <i>novъ</i> * <i>lъžъ</i>	+	* <i>jixъ</i>	>	* <i>novъjixъ</i> * <i>lъžъjixъ</i>	→	<i>novyixъ</i> <i>lъžixъ</i>
DAT.PL.M/N	* <i>novomъ</i> * <i>lъžemъ</i>	+	* <i>jimъ</i>	>	* <i>novomъjimъ</i> * <i>lъžemъjimъ</i>	→	<i>novyimъ</i> <i>lъžimъ</i>
DAT.PL.F	* <i>novamъ</i> * <i>lъžamъ</i>	+	* <i>jimъ</i>	>	* <i>novamъjimъ</i> * <i>lъžamъjimъ</i>	→	<i>novyimъ</i> <i>lъžimъ</i>
INS.PL.F	* <i>novami</i> * <i>lъžami</i>	+	* <i>jimi</i>	>	* <i>novamijimi</i> * <i>lъžamijimi</i>	→	<i>novyimъ</i> <i>lъžimi</i>
LOC.PL.M/N	* <i>nověxъ</i> * <i>lъžixъ</i>	+	* <i>jixъ</i>	>	* <i>nověxъjixъ</i> * <i>lъžixъjixъ</i>	→	<i>novyixъ</i> <i>lъžixъ</i>
LOC.PL.F	* <i>novaхъ</i> * <i>lъžaxъ</i>	+	* <i>jixъ</i>	>	* <i>novaхъjixъ</i> * <i>lъžaxъjixъ</i>	→	<i>novyixъ</i> <i>lъžixъ</i>

In fact, morphology has not been lost in these cases, however. As can be seen, in Old Church Slavonic the originally disyllabic nominal endings INS.SG.M/N **-omъ*/**-emъ*, DAT/INS.DU.M/N **-oma*/**-ema*, DAT/INS.DU.F **-ama*, GEN.PL **-ъ*, DAT.PL.M/N **-omъ*/**-emъ*, DAT.PL.F **-amъ*, INS.PL.F **-ami*, LOC.PL.M/N **-ěxъ*/**-ixъ*, LOC.PL.F **-axъ* have been replaced by a segment *y* (hard type), and *i* (soft type) respectively.⁵ Harris and Faarlund (2006: 312) explain this peculiarity by assuming that the original -VCV structured endings of the adjective were replaced by -*y* (they do not consider the soft-type inflection) when they were lost. The purpose of this replacement was to provide a transition vowel as it existed in the cases presented in Table 1. Thus, it is supposed that phonological factors determined in which endings trapped morphology was lost (Harris and Faarlund 2006: 298–299). The loss itself, on the other hand, according to the authors, must have been morphological in nature. Otherwise, it would remain unclear why the analogical replacement of the original nominal endings by **-y-* from the genitive plural affected case forms in the singular and dual, e.g., INS.SG.M/N **-omъ*, and DAT/INS.DU.M/N **-oma*. Harris and Faarlund

5 Throughout this paper, hard- and soft-stem variants will be cited separated by a forward slash, e.g., INS.PL.M/N **-y*/**-i*.

(2006: 298–299) conclude: “This phenomenon in Proto-Slavic makes much more sense if it is viewed as part of a common morphological process”, i.e., the loss of trapped morphology.

4 Evaluation

There are several problems with Harris and Faarlund’s (2006) account. First, although morphology was trapped in all case forms, only the disyllabic nominal endings have been lost. As stated above, the authors try to account for this fact by assuming that monosyllabic nominal endings have been retained because they served as a buffer or transitional vowel. However, if the presence of such a vowel was for some reason favorable or even required, it seems contradicting that the disyllabic endings were lost at all. It remains unclear why DAT.PL.M/N **novomъjimъ* and INS.PL.F **novamijimi* changed to †*novjimъ* and †*novjimi*, respectively, before the vowel *-y- was generalized, whereas NOM.SG.F **novaja* did not develop into †*novja*. Some kind of phonotactic constraint cannot be held responsible for this fact since in both cases the loss of trapped morphology would have resulted in the same sequence of sounds, i.e., a non-syllabic stem-final segment + the glide *j. Therefore, it remains unclear what the vowels were ‘buffering’ or ‘transferring’ in the endings in Table 1. Second, Harris and Faarlund’s (2006: 298) claim, according to which the analogical replacement of singular and dual forms by *-y- from the genitive plural makes much more sense if it is examined within the concept of trapped morphology, is unwarranted. It implies that the extension of this vowel is somewhat easier to understand had it occurred only after the loss of the disyllabic adjectival endings. However, since the involved endings shared a common feature distinguishing them within the paradigm already before the supposed loss of trapped morphology, i.e., disyllabicity, this is not the case.⁶ Additional reasons are needed to plausibly account for the extension of the vowel *y. A third problem is constituted by the fact that the proposed loss of trapped morphology is not attested in any Slavic language (no reflexes of DAT.PL.M/N †*novjimъ*, INS.PL.F †*novjimi* etc.).

Because of these problems, the assumption of a loss of trapped morphology in the Slavic definite adjective would be justified only if the corresponding forms could not be explained otherwise. However, as I am going to show in Section 5, it is possible to plausibly account for the rise of the definite adjective inflection by means of changes that are well established in historical linguistics.

⁶ The assumption of a regular epenthesis of *y is implausible because of a lack of independent evidence for this process, i.e., other examples with such an epenthesis.

5 Towards a comprehensive account

When explaining the emergence of the definite adjective inflection in Slavic, one has to distinguish at least two levels. The first concerns the rise of the semantic category of definiteness. Since there is no evidence that overt definiteness marking on the adjective was a feature of Proto-Indo-European, it must have arisen in the pre-history of Slavic and, as we shall see further below, also Baltic. As shown above, its origin can be found in a construction consisting of an adjective and a pronoun. The original function of this construction is, however, uncertain since the etymology of the involved pronoun is unclear. Two competing hypotheses exist. One derives the definite adjective from a nominal relative clause (Koch 1992; Meillet 1965: 445–446; Petit 2009; Vaillant 1958: 495–496; Zinkevičius 1958), and the other posits a combination of an adjective and a demonstrative (Ballester 2001; Sommer 2019). Both these hypotheses have their advantages and disadvantages (cf. especially the discussion in Petit 2009), which makes the choice between them largely one of personal preference. Unfortunately, this renders the path along which definiteness marking was grammaticalized as a category in Slavic largely obscure.

The second level concerns the degree of phonological fusion of the two involved components.⁷ From a typological point of view, the state of affairs in column a. in Table 1 can be compared to the isolating type in Bickel and Nichols' (2007: 180) scale of phonological fusion, cf. Table 3. Columns b. and c. in Table 1, on the other hand, correspond to the concatenative type in Table 3. These two columns (b. and c. in Table 1), however, differ in that in the latter definiteness is not expressed by a discrete formative. The nominal ending and the earlier definiteness marker have merged into a portmanteau morph. From a diachronic perspective, we must, therefore, reckon with several changes leading to an increase in the phonological fusion of the adjective and the pronoun.

Table 3: Scale of phonological fusion according to Bickel and Nichols (2007: 180).

a.		b.		c.
isolating	>	concatenative	>	nonlinear

⁷ Hopper and Traugott (2008: 154–159) speak of “phonological concomitants of morphologization” implying that they are not the decisive factor in the process. However, as will be shown below (Section 5.2), it can be argued that in the definite adjective phonological change provided the grounds for the following morphological changes.

Possibly, changes on the semantic level and changes in the degree of phonological fusion proceeded simultaneously.⁸ However, since grammaticalization does not necessarily involve univerbation (cf., for example, Haspelmath 2012: 347; Joseph 2003: 475–478), definiteness could have been grammaticalized at either stage, a. or b. in Table 3. It is, therefore, impossible to reliably establish a relation between the semantic and the formal level in the rise of the Slavic definite adjective inflection. Hence, in the present article I limit myself to reconstructing the developments which led to an increase in the phonological fusion of the involved components. At their end, the definiteness marker had ceased to exist as an independent entity by fusing with the nominal endings of the adjective.

A scenario of how this development proceeded is presented in Sections 5.1 and 5.2. The former is concerned with the development of the pronominal element from a free form to a bound clitic, while the latter deals with the clitic element turning into an affix. In this context, it should be noted that in any reconstruction the notions of clitic and affix, which are often difficult or impossible to distinguish even in attested language data, should be understood as ‘having properties typically associated with clitics/affixes’. No clear-cut distinction between these categories can be made.⁹ Note further that for the sake of convenience, I refer to the clitic element as a definiteness marker already at a stage when this function cannot yet be assured.

5.1 From free form to clitic

As noted above (Section 4.2), the origin of the pronoun involved in the formation of the definite adjective inflection is uncertain. Possible candidates are the demonstrative or anaphoric pronoun PIE **i-*, cf. Lith. *jis* ‘he’, Lat. *is* ‘this; he’, Ved. *ayám*, *iyám* ‘this’, and the relative pronoun PIE **(H)iō-*, cf. Gk. *ὅς* ‘which’, Ved. *yás* ‘which’ etc. (cf. Dunkel 2014: 363–374 and 312–320). In Slavic, the former is continued in the oblique cases of the third person personal pronoun, cf. OCS GEN.SG.M/N *jego*, DAT.SG.M/N *jemu* etc. The relative pronoun, on the other hand, cannot be attested with certainty in this language. Some scholars assume that it is to be found in the Old Church Slavonic relative *i(že)* ‘which’. However, this pronoun may well go back to a combination of the above-mentioned demonstrative and the particle *že*, i.e., **i + *že* (see van Wijk 1935).

⁸ Note Haspelmath (2012: 347): “[g]rammaticalization involves both phonological and morpho-syntactic changes, but these are not directly linked. It needs to be explained specifically why they tend to occur together”.

⁹ The line between morphology and syntax is notoriously difficult to draw (cf. Haspelmath’s 2011 typological survey; Sommer 2018 with regard to data from a corpus language).

Given these uncertainties it is impossible to unequivocally establish the original construction underlying the Slavic definite adjective.¹⁰ What may be established, however, is that the pronominal element involved in the construction was originally a free form. This is clear from the above-mentioned Indo-European forms as well as their cognates in Slavic, whatever pronoun they continue. Neither the occurrence of the demonstrative nor the relative was bound to the presence of a host form. Furthermore, both pronouns originally bore stress, a feature that must have been lost in the course of the development too.

Now, considering the general progression of grammaticalization processes, it seems safe to assume that the first step in the rise of the definite adjective inflection consisted in a closer association of the adjective and the definiteness marker.¹¹ As Hopper and Traugott (2008: 141) state: “The beginning of morphologization must be sought in repeated use of syntactic constructions” (see also Lehmann 2020: 209). The further development can then be understood as a consequence of the increased frequency of the construction.¹² From his data on English, Krug (1998: 309–310) concludes: “String frequency (...) can safely be considered the most important motivation in phonological and morphological changes that result in the cliticization and merger of two adjacent items across languages”.¹³

The most common consequence of an increase in the frequency of a certain construction is phonological reduction.¹⁴ With regard to the definite adjective, a reductive change is constituted by the deaccentuation of the definiteness marker.¹⁵ Both the adjective and the pronoun, which was to become the definiteness marker, originally bore stress while the forms resulting from their merger continue only the accentuation of the adjective. Therefore, at some point the definiteness marker must have lost its accentuation. The fact that the further development of the

10 It follows that it is likewise impossible to reconstruct when the definiteness marker lost its free word counterpart. Therefore, we cannot use this criterion to determine the status of the marker as a clitic or an affix as it is done, for example, by Faarlund (2009: 623–624) in reconstructing the history of the definiteness marker in Scandinavian.

11 Cf. Haspelmath (2012: 347): “What all cases of prosodic grammaticalization share is that the function element becomes more dependent on its host”.

12 Note Hopper and Traugott (2008: 142): “It is the frequent syntactic collocation of a particular word class, such as a noun, with a particular type of clitic, such as an adposition, that most typically leads to morphologization (e.g., as a noun with a case affix)”.

13 Cf. also: Bybee (2002, 2003); Haspelmath (2012: 352–355).

14 Cf. Bybee (2003: 616): “(...) increasing frequency of use of grammaticizing constructions leads to phonological reduction”. Other terms used with regard to phonological reduction are “erosion” (Heine and Reh 1984: 21–25) and “phonological attrition” (Lehmann 2015: 134–141).

15 Hopper and Traugott (2008: 143) claim that “clitic forms are more context-dependent and more general in meaning” compared with their full forms. If this is correct, deaccentuation in the pronoun may have been accompanied or preceded by a semantic generalization.

definite adjective involves loss of a syllable that originally bore stress (cf. Section 5.2.1) suggests that deaccentuation occurred at an early stage. After all, this syllable loss is much easier to understand if we assume that it was preceded by deaccentuation. Moreover, the assumption of a deaccentuation of the definiteness marker is supported by typological data which indicate that the development from an independent word to an inflectional affix proceeds through a stage at which the function word loses its accent (see Jeffers and Zwicky 1980: 58).¹⁶

By losing its ability to bear stress, the definiteness marker lost its independence as a prosodic word. As a consequence, its realization became dependent on a host form with which it formed an accentual unit. Ultimately, the deaccentuated definiteness marker ended up being bound to the position immediately following the adjective. However, at an earlier stage it may still have exhibited greater positional freedom.

Wandl (2022) argues that the superlative prefix OCS *nai-* can be interpreted as consisting of an emphasizing prefix *na-* plus the reduced remainder of the definiteness marker. If this is correct, the definiteness marker would at some point have been placed between the prefix, which at that point most probably still presented an adverbial modifier, and the adjective. A parallel phenomenon can be found in contemporary colloquial Slovene. Here the marker *ta* may split the otherwise closed domain of a prefix and an adjective. Examples (1a) and (1b) are taken from Marušič and Žaucer (2007: 106) (their glossing). As can be seen, in (1a) *ta* is placed between the superlative prefix *naj* and the adjective.¹⁷

- (1) a. *ta naj ta boljša tortica*
 TA most TA better cake
 ‘The best cake’
- b. *ta pred na zadn tekač*
 TA before TA last runner
 ‘The penultimate runner’

However, the most important evidence for the assumption that the definiteness marker still exhibited greater positional freedom even after it had been deaccentuated comes from Baltic. Like Slavic, Baltic developed a specific set of inflectional endings denoting definiteness of a noun phrase on the adjective (cf. Zinkevičius 1958). Since it involved components cognate to those in the Slavic construction (adjective + pronoun PIE **i-* or **(H)jo-*), it is reasonable to speak of either a

¹⁶ Wichmann (2012) even argues that the phonological changes typically occurring in grammaticalization processes are consequences of underlying prosodic changes.

¹⁷ The more common variants of these expressions are *ta najboljša tortica* ‘the best cake’ and *ta predzadn tekač* ‘the penultimate runner’.

Table 4: Rise of the Lithuanian definite adjective inflection (adapted from Petit 2009: 313).

Case form	a.				b.		c.	
	Adjective		Pronoun		Pre-Lith.		Lith.	
NOM.SG.M	* <i>geras</i>	+	* <i>jis</i>	>	* <i>gerasjis</i>	>	<i>geràsis</i>	
GEN.SG.M	* <i>gero</i>	+	* <i>jo</i>	>	* <i>gerojo</i>	>	<i>gėrojo</i>	
GEN.SG.F	* <i>geros</i>	+	* <i>jos</i>	>	* <i>gerosjos</i>	>	<i>geròsios</i>	
ACC.SG.M	* <i>gerq</i>	+	* <i>ji</i>	>	* <i>gerqji</i>	>	<i>gėrajį</i>	
ACC.SG.F	* <i>gerq</i>	+	* <i>jq</i>	>	* <i>gerajq</i>	>	<i>gėrajq</i>	
NOM.PL.F	* <i>geros</i>	+	* <i>jos</i>	>	* <i>gerosjos</i>	>	<i>gėrosios</i>	
GEN.PL.M/F	* <i>gerų</i>	+	* <i>jų</i>	>	* <i>gerųjų</i>	>	<i>gerūjų</i>	
INS.PL.M	* <i>gerais</i>	+	* <i>jais</i>	>	* <i>geraisjais</i>	>	<i>geraisiais</i>	

Balto-Slavic or a common Baltic-Slavic innovation.¹⁸ Within Baltic the original state of affairs is best preserved in Lithuanian where the origin of the corresponding endings is still transparent in many cases (cf., for example, the endings in Table 4).¹⁹

As can be seen, definiteness marking has become a part of the ending in modern Lithuanian as it did in Slavic.²⁰ However, in Old Lithuanian the definiteness marker still displayed greater positional freedom. When definiteness was expressed on a prefixed adjective or participle, the marker did not occur word-finally but between the prefix and the adjective (see [2] and [3]; cf. Zinkevičius 1957: 7–9, 1966: 277–279 for these and further examples).

- (2) case attested normalized indefinite translation
 GEN.SG.M *paioprasta* = *pa-jo-prasto* *paprasto* ‘simple’
- (3) case attested normalized indefinite translation
 ACC.PL.M *paiüsdütus* = *pa-juos-duotus* *paduotus* ‘given’

From examples such as (2) and (3), Stolz (2010: 231) concludes that the definiteness marker still had “many properties of a clitic in Old Lithuanian”. This is confirmed by the analysis of Sommer (2018: 170–181), who stresses that the definiteness marker shared both features traditionally associated with affixes and clitics.

18 Hybrid accounts can be found in Andersen (2021); Hill (2014); Mayer (1978); Mendoza (2015).

19 For a discussion of Latvian and the extinct Old Prussian see most recently Petit (2009); Sommer (2018, 2019).

20 Stolz (2010: 222) interprets the definite adjective endings as consisting of three independent morphs: internal portmanteau morph + definiteness marker *-j-* + final portmanteau morph. However, according to Sommer (2018: 159–162) the definite endings do not allow for a straight-forward concatenative analysis because of several differences between the free adjectival endings and their counterparts in the definite adjective inflection. Therefore, it seems most plausible to reckon with a specific set of definite adjective endings also in Lithuanian (cf. Levin 1979).

Before the background of the typologically well attested gradualness of the coalescence of words in grammaticalization (cf. Haspelmath 2012; Lehmann 2020: 238–239) as well as the evidence from Baltic, which does not only show a strikingly similar declensional system as Slavic but employs an identical way of definiteness marking, it seems probable that an intermediate stage at which the definiteness marker had already acquired properties of a clitic, i.e., at which it had lost its prosodic independency, but had not yet become bound to the position immediately following the adjective, existed also in the prehistory of Slavic. A relic of this period may have been preserved in the superlative prefix Sl **nai-* (Wandl 2022). The further development then comprised a limitation of the occurrence of the definiteness marker to the right-edge of the adjective and the subsequent merger of the two elements. The changes involved in this process are discussed in the following section (Section 5.2).

5.2 From clitic to affix

How and when the definiteness marker became confined to the right edge of the adjective is unknown. In instances such as those in Old Lithuanian above (cf. examples [2] and [3]), internal definiteness marking seems to have been eliminated through externalization (cf. Stolz 2010: 230–231). This is suggested by the example in (4) which shows pleonastic definiteness marking in both internal and external position and thus corresponds to the intermediate pattern in Haspelmath's (1993) externalization scenario (cf. Petit 2009: 316; Zinkevičius 1957: 8 for the Old Lithuanian form).

(4)	case	attested		normalized	indef.	translation
	GEN.SG.M	<i>neiokaltoia</i>	=	<i>ne-jo-kalto-ja</i>	<i>nekalto</i>	'not guilty'

A parallel development may have occurred in Slavic without, however, leaving any direct traces. Another possibility would be that right-edge definiteness marking was simply generalized from the more frequent unmodified adjectives, i.e., from adjectives that were not preceded by an adverbial modifier that was to become a prefix. In any case, at some time the subsequent occurrence of adjective and definiteness marker must have increased to a point which allowed the following processes, resulting in a merger of the two components, to occur.

5.2.1 Haplology

The change which, according to the scenario proposed in this paper, was decisive for the further development of the definite adjective, concerns a set of endings that

Table 5: Rise of the Slavic definite adjective inflection III.

Case form	a.			b.		c.	
	Adjective	Pronoun		Pre-OCS	OCS		
GEN.SG.F	*novy *lʔžę	+	*jeje	>	*novyjeje *lʔžęjeje	>	novyje lʔžęje
DAT/LOC.SG.F	*nově *lʔži	+	*jeji	>	*novějeji *lʔžijeji	>	nověi lʔžii
INS.SG.F	*novǫ ^a *lʔžǫ	+	*jejo	>	*novojejo *lʔžojejo	>	novǫjo lʔžǫjo
GEN/LOC.DU	*novu *lʔžu	+	*jeju	>	*novujeju *lʔžujeju	>	novuju lʔžuju

^aSee Olander (2015: 163–166) on the original *ǫ*-stem instrumental singular ending.

has not yet been discussed. As can be seen in Table 5, in the endings of the feminine genitive, dative/locative, and instrumental singular and in the endings of the genitive/locative dual the initial syllable of the pronoun has been lost.

Two changes have been proposed to account for this loss: (1) reduction, and (2) haplology.²¹ The former is assumed by Tolkačev (1959: 106) who sketches the following development (his notation): GEN.SG.F *dobry-ieję ‘good’ > *dobry-ĩ^bje > *dobry-ȳę > *dobry-je.²² While this scenario certainly presents a feasible explanation for the forms at hand, it raises the question of why reduction did not occur also in instances such as GEN.SG.M/N *-a-jego, DAT.SG.M/N *-u-jemu and LOC.SG.M/N *-ě-jemь, which shared the same prosodic properties as the endings in Table 5. Apparently, loss of the initial syllable of the definiteness marker was limited to instances in

21 Kuznecov et al. (2006: 73) argue that the reason why the newly arisen definite adjective endings were unstable is to be found in their polysyllabicity. In cases such as GEN.SG.F *dobr-y-je-ę ‘good’ the component *-je- of the middle part was, according to the authors, syncopated easily because it did not bear any morphological meaning. The fact that these case endings had more than two syllables is obviously insufficient to account for the loss since it is a characteristic of other endings as well, cf. OCS GEN.SG.M/N -a-jego and DAT.SG.M/N -u-jemu. Furthermore, it is incorrect that the dropped syllable did not bear any grammatical meaning since it distinguished the feminine genitive singular ending from the ending of the nominative/accusative plural of the same gender and from the ending of the masculine accusative plural, cf. GEN.SG.F -y-jeę : NOM/ACC.PL.F, ACC.PL.M -y-je, and the feminine ending of the dative/locative singular from the ending of the feminine/neuter nominative/accusative dual, cf. DAT/LOC.SG.F -ě-jeji : NOM/ACC.DU.N/F -ě-ji. The assumption that the number of syllables in the endings played a role in the loss (thus Leskien 1876: 134 for Slavic; Zinkevičius 1958: 66 for Lithuanian) is also criticized by Tolkačev (1959: 106). For a criticism of Il’inskij’s (1916: 458–459) hypothesis of originally monosyllabic pronominal forms in Slavic see Tolkačev (1959: 105–106).

22 Tolkačev (1959: 106) considers the possibility of a secondary stress on the final vowel, which he marks by gravis. The superscript character «^b» denotes a reduced front vowel.

which it was followed by a syllable with an identical structure, i.e., *-jV-. This indicates that what we are dealing with here is in fact a case of haplology as it has been proposed, for example, by Vondrák (1908: 115). Tolkačev's (1959: 106) objection according to which haplology could not be held responsible for the rise of the truncated forms because the subsequent syllables were not in fact identical is unfounded. Examples such as Lat. *trierarchus* 'captain of a triera' > *trierØchus* or *triØarchus*, or Gk. *amphiporeús* 'two-handed pitcher' > *amØphoreús* (see Hock 1991: 109) clearly show that syllables involved in haplology may differ with regard to their vocalism as they do in the definite adjective.

Further support for the assumption of haplology rather than reduction may come from data on the typology of clitics. Schiering (2006: 53–82), based on his language sample, observes that in clitics reduction of unstressed syllables is typical for stress-based phonologies but not for tone-based phonologies (cf. also Schiering 2006: 214–215). Considering that Slavic at the time under discussion most probably presented a pitch-accent language (cf. Kapović 2015: 67–79; Olander 2009: 127–132; Stang 1957 and others), the assumption of haplology may be more in line with the typological evidence.

Thus, we may conclude that haplology allows to plausibly account for the syllable loss in the definiteness marker. As will be argued in the following section (Section 5.2.2), this loss resulted in a situation which favored the occurrence of a number of morphological innovations which ultimately led to the rise of the definite adjective inflection.

5.2.2 Reanalysis

Since syllable loss does not otherwise occur in the pronoun, it may synchronically be interpreted as a lexically conditioned morphophonological idiosyncrasy, a phenomenon that Zwicky and Pullum (1983: 505) attribute to combinations of stems and affixes but not host-clitic combinations (cf. also Faarlund 2009: 624–625). Even though it has been shown that a clear-cut distinction between affixes and clitics cannot be upheld (cf. Haspelmath 2011), syllable loss certainly resulted in a closer integration of the definiteness marker into the adjective whereby the boundary between the two elements was rendered less transparent. Considering that opacity undoubtedly favors morphological change in general (cf. Anderson 2015: 266), and reanalysis in particular (cf. Haspelmath 1995: 16; Plank 1981: 67–89), it seems reasonable to assume that the decrease in transparency resulting from haplology provided a basis for resegmentation in the definite adjective (cf. Section 6). The truncated definiteness marker was interpreted as a part of the ending which resulted in the rise of definite adjective endings as demonstrated in (5). The same segmentation was then applied to those

endings which were homonymous to the endings which had been affected by haplology, cf. ACC.PL.M, NOM/ACC.PL.F $*-y-ję/*-ę-ję \rightarrow *-yję/*-ęję$ (as GEN.SG.F $*-yję/*-ęję$; cf. Table 5), ACC.SG.F $*-q-jq \rightarrow *-qj$ (as INS.SG.F $*-qj$; cf. Table 5), NOM/ACC.DU.F/N $*-ě-ji/*-i-ji \rightarrow *-ěji/*-iji$ (as DAT/LOC.SG.F $*-ěji/*-iji$; cf. Table 5), and subsequently to all other disyllabic combinations of a nominal ending and the definiteness marker, cf. NOM.SG.M $*-b-jb/*-b-jb \rightarrow *-bjb/*-bjb$, NOM.SG.N $*-o-je/*-e-je \rightarrow *-oje/*-eje$, NOM.SG.F $*-a-ja \rightarrow *-aja$ etc. (see Table 1).

(5)	case	stem	haplology	reanalysis	
	GEN.SG.F	hard $*-y-ję$	>	$*-yję \rightarrow$	$*-yję$
		soft $*-ę-ję$	>	$*-ęję \rightarrow$	$*-ęję$
	INS.SG.F	hard $*-q-jq$	>	$*-qj \rightarrow$	$*-qj$
		soft $*-q-jq$	>	$*-qj \rightarrow$	$*-qj$
	DAT/LOC.SG.F	hard $*-ě-ji$	>	$*-ě-ji \rightarrow$	$*-ěji$
		soft $*-i-ji$	>	$*-i-ji \rightarrow$	$*-iji$
	GEN/LOC.DU	hard $*-u-ju$	>	$*-u-ju \rightarrow$	$*-uju$
		soft $*-u-ju$	>	$*-u-ju \rightarrow$	$*-uju$

As regards those endings which continue nominal case markers containing a long vowel, i.e., $-a$, $-ě$, $-ę$, $-q$, $-i$, $-y$, and $-u$ (see fn. 3), reanalysis could, moreover, have been favored by a further morphophonological idiosyncrasy. In Slavic, long vowels were shortened in word-final syllables (cf. Garde 1976: 207–208; Holzer 2005: 50; Kapović 2005: 76; Vaillant 1950: 277–278). Originally, this shortening affected only the final syllable of an accentual unit, but the shortened variants were subsequently generalized to all other positions as well. However, in some instances the original state of affairs has been preserved. Thus, in BCS *zimūs* ‘(in) this winter’, which presents an adverbialized combination of a feminine noun in the accusative and a demonstrative, i.e., ACC.SG.F $*zimū$ ‘winter’ + demonstrative $*s-$, the length of the ending ACC.SG.F $*-ū$ (< CSL. $*-ō$) has been retained because it did not occupy the final position of the accentual unit (cf. Holzer 2005: 50; Kapović 2005: 76).²³ The reason why the shortened ending, cf. BCS ACC.SG.F *zīmu* ‘winter’, has not been generalized in this case can be found in the frequent collocation of the noun and the demonstrative in this temporal expression. The idiosyncrasy resulting from the unmotivated length could then have played a role in the univerbation of the noun and the demonstrative. *Mutatis mutandis* the same can be assumed for the definite adjective where length of originally word-final vowels in the adjective would have been retained due to the frequent collocation of the adjective and the definiteness marker.

²³ This pattern can also be found in other adverbs, e.g., *jesènas* ‘this autumn’ (< ACC.SG.F $*jesenb$ ‘autumn’ + demonstrative $*s-$) (cf. Dolobko 1927 for a comprehensive account).

Apart from the disyllabic endings containing a nominal case marker consisting of a long vowel discussed above in this section, this concerns the masculine/neuter instrumental plural as well as the genitive, dative and locative singular of the same genders, cf. *INS.PL.M/N* **y-jimi*/**i-jimi*, *GEN.SG.M/N* **-a-jego*, *DAT.SG.M/N* **-u-jemu*, and *LOC.SG.M/N* **-ě-jemb*/**-i-jemb*. Once the shortened word-final vowel had been generalized in the simple nominal form, the occurrence of length in the definite adjective endings would have become unmotivated. This idiosyncrasy could then have favored resegmentation in these endings, e.g., *GEN.SG.M/N* **-ā-jego* > **-ājego*.

Independent evidence for the proposed resegmentations comes from the further development of the instrumental singular feminine of the definite adjective and from the inflection of the interrogative/relative pronoun OCS *kyi* ‘which’. In the instrumental singular, haplology had originally resulted in an ending **-ojo* (see Table 5) which is still attested in some instances in Old Church Slavonic (e.g., *INS.SG.F* *čestъnojo mokojo svojejo* ‘through your righteous martyrdom’, see Leskien 1922: 106). In most cases this ending has, however, been replaced by the pronominal ending *-ojo*, cf. *INS.SG.F* *novojo* (instead of *novojō*). As can be seen, the new ending attached directly to the stem and not to the nominal ending. This replacement seems to make sense only if the original ending **-ojo* had already been perceived as a single ending and not as a combination of a nominal ending **-o* and a definiteness marker **-jo*.²⁴

The origin of the pronoun OCS *kyi* ‘which’ is not entirely clear. It may either go back to a combination of the interrogative **kъ* and the pronoun **jb*, which also took part in the formation of the definite adjective inflection (cf. Section 5.1), or it may be based on a stem **koje-* (cf. the discussion in Tolkačev 1959: 93–98 and the references therein). Within the pronouns it stands out because of its unique inflectional pattern. Interestingly, in the masculine/neuter instrumental singular and in the genitive, dative, instrumental, and locative plural *kyi* shows endings identical to those of the definite adjective, cf. *INS.SG.M/N* *kyjimъ*, *GEN.PL* *kyjixъ*, *DAT.PL* *kyjimъ*, *INS.PL* *kyjimi*, *LOC.PL* *kyjixъ* (cf. Vaillant 1948: 143). However, differently than in the adjective where an instrumental singular ending **yjimi* arose regularly in the masculine/neuter (see Table 1 and cf. Section 5.2.3), none of these endings can be original. Even if the pronoun had emerged from a combination of **kъ* and **jb*, the relevant endings would not have contained a vowel *y* (cf. the corresponding endings in the paradigm presented in Table 6). Furthermore, the original endings of the pronoun **kъ* must have triggered palatalization of the

²⁴ Note that with regard to structure, a reintroduction of the definiteness marker should not have presented a problem, cf. the VjVjV-sequence in *INS.SG.F* *kojejo* ‘which’.

Table 6: Slavic pronominal inflection.

CSL.	*t- ‘this’			*j- ‘he’		
NOM.SG	*t _b	*to	*ta	*j _b	*je	*ja
GEN.SG		*togo	*toje		*jego	*jeje
DAT.SG		*tomu	*toji		*jemu	*jeji
ACC.SG	*t _b	*to	*t _o	*j _b	*je	*j _o
INS.SG		*těmb	*tojo		*jim _b	*jejo
LOC.SG		*tom _b	*toji		*jem _b	*jeji
NOM/ACC.DU	*ta	*tě	*tě	*ja	*ji	*ji
DAT/INS.DU		*toju			*jeju	
GEN/LOC.DU		*těma			*jima	
NOM.PL	*ti	*ta	*ty	*ji	*ja	*je
GEN.PL		*těx _b			*jix _b	
DAT.PL		*těmb			*jim _b	
ACC.PL	*ty	*ta	*ty	*je	*ja	*je
INS.PL		*těmi			*jimi	
LOC.PL		*těx _b			*jix _b	

velar, cf. OCS INS.SG.M/N *cěmb*, GEN.PL **cěx_b*, DAT.PL **cěx_b*, INS.PL **cěmi*, LOC.PL **cěx_b*.²⁵ The attested forms can thus solely have arisen by analogy with the definite adjective, whereby the transfer again makes sense only if the endings were already interpreted as single formatives, i.e., INS.SG.M/N **-yjim_b*, GEN.PL **-yjix_b*, DAT.PL **-yjim_b*, INS.PL **-yjimi*, LOC.PL **-yjix_b* (see Section 5.2.3 for the rise of these endings). Thus, the proposed reanalysis can be supported by independent evidence.

5.2.3 Analogy

Resegmentation in the masculine instrumental plural (cf. INS.PL.M/N **-y-jimi/*-i-jimi* > **-yjimi/*-ijimi*) was then crucial for the development in the endings which according to Harris and Faarlund (2006) present examples for a loss of trapped morphology. This ending presented the example for the extension of the desinence-initial vowel **-y-/*-i-* at the cost of the original nominal endings in the masculine/neuter instrumental singular, the dative/locative dual, and the oblique cases of the plural (cf. Table 2). To be sure, some scholars also cite the genitive plural as a source for the spread of **-y-/*-i-* (cf., for example, Aitzetmüller 1991: 129;

²⁵ The change at work here is the so-called Second regressive palatalization which changed the velars **k*, **g*, **x* to **c*, **dz*, **s/š* before the front vowels **ě*, and **i* (cf. most recently Wandl 2020). Of the cited forms the latter are not attested because the plural of the interrogative **k_b* is not continued in Slavic. Note that the pronoun OCS *kyi* ‘which’ shows palatalization in the NOM.PL.M *ci* and in the NOM.DU.F *cěi* (see Vaillant 1948: 143).

Schenker 2014 [1995]: 91 who refers to the instrumental plural as well). However, in this ending, the rise of **-y/*-i-* is not a Common Slavic innovation. The development of the so-called tense jers, i.e., **-ǔ-* and **-b-* in the position before the glide **j*, into **y* and **i* is limited to certain areas of Slavic. For example, in Old Church Slavonic, we find dialectal variants such as NOM.SG.M *trǔje* with a retained sequence **-bj-* ‘3’ next to *trije* ‘id.’, with a reflex of the change **-bj- > *-ij-*, INS.SG.F *kostǔjǔ* ‘bone’ next to *kostijǔ* ‘id.’, 1SG.PRS *pǔjǔ* ‘drink’ next to *pijǔ* ‘id.’ (cf. Diels 1963: 64–69; Vaillant 1948: 40–44). Thus, the genitive plural ending *-ǔjǔǔ* would not have changed to *-yjǔǔ* by sound law in the entire Slavic speech area.²⁶ It follows that the source for the extension of the desinence-initial **-y/*-i-* must be sought in the INS.PL.M/N **-yjimi/*-ijimi*. But how could a single pattern have been transferred to all the oblique case forms of the plural, the dative/locative dual and the instrumental singular masculine and neuter? The answer to this question can be found in two properties inherent to the pronominal inflection.

Table 6 presents the Slavic pronominal inflection in its soft and hard variants (cf. Vaillant 1948: 138 for the OCS continuants). As can be seen, the plural and dual endings which have generalized **y/*i* at the cost of the original nominal endings in the definite adjective show no difference as to gender in the pronouns. Furthermore, the involved endings share a structural commonality: they are all disyllabic with a vowel **ě* or its soft stem counterpart **i* in the first syllable. The latter property ties the instrumental singular masculine and neuter to the same group of endings.

That these commonalities are not simply descriptive but play a role in morphological change has been shown in Wandl (2020: 97–104) on the example of certain developments affecting pronouns. It can, therefore, hardly be considered coincidental that it is exactly these case forms which were affected by the extension of the vowels **y* and **i*, all the more so since the second part of the definite adjective continues a pronoun. The further development of the definite adjective can thus be understood as an adaptation to the pronominal inflection. Based on the example of the genitive plural, which was the only case form that did not show any gender differences in the nominal nor in the pronominal ending, cf. nominal ending GEN.PL **-ǔ/*-b-*, pronominal ending GEN.PL **-jǔǔ*, leveling across genders occurred in the instrumental plural, cf. GEN.PL.M **-ǔjǔǔ* : N **-ǔjǔǔ* : F **-ǔjǔǔ* = INSTR.PL.M **-yjimi* : N **-yjimi* : F *X*; *X* = **-yjimi* (instead of **-amijimi*; cf. Table 2).²⁷ On the example of the pronouns the structure was then transferred to the

²⁶ Cf., for example, Vondrák (1900: 10). In contrast to this scholar, I do not, however, assume that *ǔ* should have changed to *o* in the position before *j*.

²⁷ Cf. Vondrák (1900: 10–11) who, however, believes that it was the identical pronominal endings occurring across the three genders that induced the replacement of the singular feminine nominal ending **-ami* by its masculine/neuter counterpart **-y*.

dative and locative plural, the dative and locative dual and the masculine/neuter instrumental singular, cf. DAT.PL.M/N *-omъjimъ, DAT.PL.F *-amъjimъ → *-yjimъ; LOC.PL.M/N *-ѣхъjixъ, DAT.PL.F *-axъjixъ → *-yjixъ; DAT/INS.DU.M/N *-omajima, DAT/INS.DU.F *-amajima → *-yjima; INS.SG.M/N *-omъjimъ → *-yjimъ.²⁸ Furthermore, at some point the genitive plural ending *-ъjixъ was replaced by *-yjixъ. The direction of the leveling was thus twofold: (1) within the same gender across different cases, and (2) within the same case across different genders. After this leveling had taken place, a paradigm largely in accordance with that attested in Old Church Slavonic had emerged.²⁹

We may, therefore, end this section by concluding that it is possible to plausibly account for the rise of the definite adjective inflection without positing an unattested loss of trapped morphology. The proposed scenario consists in a sequence of phonological and morphological innovations as it is typical for grammaticalization processes. What has largely been left aside so far is a discussion of the possible motivations for the posited changes. Section 6 is dedicated to this issue.

6 Motivating the rise of the definite adjective inflection

One of the primary sources of change in morphology is opacity (cf., for example, Anderson 2015: 266). When the form-meaning correspondence of a certain morpheme becomes opaque to the speakers, it is often the target of change reestablishing such a correspondence. In the scenario presented above, it is supposed that the morpheme boundary between the adjective and the definiteness marker became opaque due to the rise of morphophonological idiosyncrasies (see Section 5.2). As a result, the marker was reanalyzed as a part of the ending.

That morphotactic opacity is indeed a key factor in the emergence of new affixes from reanalysis, is shown in Haspelmath (1995).³⁰ The examples discussed therein differ, however, from that of the Slavic definite adjective because they do not include instances in which two inflectional affixes are concatenated. It is either two derivational affixes or a derivational affix and an inflectional affix that are

²⁸ Note that the pronominal inflection played an important role also in the further development of the Slavic adjective inflection (cf. Zinkevičius 1958: 57; for Russian most recently Bratishenko 2019; Kuznecov et al. 2006).

²⁹ Extension of an original nominal ending in the definite adjective inflection is attested also in an Aukštaitian variety of Lithuanian (cf. Stolz 2010: 236; Zinkevičius 1966: 288–292).

³⁰ Morphotactic opacity is present in 26 out of the 36 instances of reanalysis discussed by Haspelmath (1995: 16).

affected by reanalysis. However, I believe that the reanalysis in the definite adjective may still be accounted for by one of the processes described by Haspelmath.

In conglutination “(...) an inner affix and an outer affix are combined (‘conglutinated’) in such a way that the inner affix becomes formally part of the outer affix, but not semantically. Semantically, the new conglutinated affix is not different from the original outer affix” (Haspelmath 1995: 6). One of the examples given by the author is the Ancient Greek suffix *-eú(ō)* which derives denominal verbs. It originated in derivations from nouns in Gk. *-eu-* by means of the suffix **-je/o-*, cf. **hipp-eu-* ‘horseman’ → **hipp-eu-je/o-* ‘be a horseman’. As in the instances with haplology in the Slavic definite adjective above, in the Greek example the original morpheme boundary became opaque due to a phonological change: the loss of intervocalic **j*. The subsequent resegmentation **hipp-eu-je/o-* → **hipp-eue/o-* resulted in a new suffix which was used to derive verbs also from nouns that had never contained the suffix *-eu-*, e.g., *tamías* ‘administrator’ → *tami-eú(ō)* ‘be an administrator’ (cf. Debrunner 1917: 104–108).

Since loss of the first syllable in sequences **-jejV-* (see Section 5.2.1) did not constitute a regular sound change in Slavic, cf. the retention of the corresponding syllable in INS.SG.F *kojejo* ‘which’, it resulted in a lexically conditioned alternation in the formation of the definite adjective inflection. This decoupling of the definiteness marker from the pronoun in the relevant case forms most probably not only contributed to the marker becoming more affixal in type but led to a decrease in transparency in the affix combination.

Further morphophonological idiosyncrasies arose in the definite adjective due to changes affecting the adjective in isolation (cf. Section 5.2.2). When shortening of word-final vowels was generalized to all syntactic positions outside the definite adjective and certain similar patterns (e.g., the adverb BCS *zimūs* ‘(in) this winter’, see Section 5.2.2), lengthening of the original nominal ending became lexically conditioned in the definite adjective.

Instances of reanalysis favored by a parallel development can be found among the cases of reanalysis which Haspelmath (1995) subsumes under the notion of secretion, i.e., affix extension by incorporation of a root element. In French, the loss of the word-final dental plosive in cases such as *fruit* [fruʔi] ‘fruit’ rendered the morpheme boundary in *fruitier* [fruʔitje] ‘fruit grocer’ opaque and this led to a resegmentation *fruit-ier* → *frui-tier*. The newly arisen suffix could then be used to derive agent nouns also from words that had never contained a dental plosive, cf. *bijou* ‘jewel’ → *bijoutier* ‘jeweler’ (see Haspelmath 1995: 23; Meyer-Lübke 1921: 18).

In Old Indic, certain roots show an alternation of a stem-final *-i-* in preconsonantal position and *-Ø-* in prevocalic position, cf. *ani-* : *an-* ‘breathe’.³¹ In the past

³¹ Cf. Aufderheide and Keydana (2016) on the phenomenon of *i*-epenthesis in Old Indo-Aryan.

participle the root final *-i-* has been interpreted as belonging to the suffix *-ta-* which resulted in a new morpheme *-ita-*, cf. past participle *ani-ta* → *an-ita-*. The new suffix was then subsequently also used to derive past participles from roots which had never displayed an alternation between root-final *-i* and \emptyset , e.g., *rakš-* ‘protect’ → past participle *rakš-ita-* (see Haspelmath 1995: 10; Leumann 1940).

In the same way that the morphological boundary in the French agent noun or the Old Indic past participle became opaque due to an unpredictable or complex stem variation, the lexically motivated alternation between the short ending in the simple adjective, e.g., GEN.SG.M/N **novǎ* ‘new’, and its long counterpart in the definite form, e.g., **novājego*, could have rendered the boundary between the adjective and the definiteness marker opaque. Therefore, also in the case of the GEN.SG.M/N **-ajego*, DAT.SG.M/N **-ujemu*, LOC.SG.M/N **-ějemb/*-ijemb*, and INS.PL.M/N **-yjimi* factors favoring reanalysis can be identified (see Section 5.2.2). Moreover, the morphophonological idiosyncracies which arose as a result of the shortening of word-final vowels may also have favored reanalysis in the cases with haplology since all of them contained case endings with a long vowel in the nominal inflection (see Table 1 and fn. 3 for a list of long and short vowels). These changes rendered the origin of the internalized vowels non-transparent. They could now either be interpreted as a part of the stem or the ending. This ambiguity has been resolved in favor of the latter analysis.³²

In the case endings discussed so far, we were dealing with instances of reanalysis favored by phonological changes resulting in phonotactic opacity. The development in the masculine/neuter instrumental singular and in the genitive, dative, instrumental, locative plural differed insofar as it involved the replacement of the original nominal endings by a single vowel segment *-y/-i-* formerly present only in the instrumental plural. Therefore, the question arises whether we can identify factors which explain the different development in these endings.

Within the paradigm of the definite adjective the endings of the masculine/neuter instrumental singular and of the genitive, dative, instrumental, locative plural stand out through the disyllabicity of the nominal endings. It is possible that because of this property the morphotactic transparency was greater in these endings as compared to other endings. For example, the origin of the internalized nominal masculine/neuter locative plural ending **-ěxъ* in **-ěxъjixъ* may have been transparent for a longer period of time than the origin of the internalized masculine accusative plural ending **-y* in **-yje*. The resulting paradigm would then have been highly complex because the nominal and pronominal inflections show different kinds of syncretism as well as differences in their ability to distinguish gender in the relevant endings. While the pronominal endings coincide in the genitive and

³² Cf. Haspelmath (1998: 326–327) on the role of ambiguity in reanalysis.

locative plural, cf. GEN/LOC.PL **-ixъ*, they differ in the nominal inflection, cf. GEN.PL **-ъ* : LOC.PL.M/N **-ѣхъ* : F **-axъ*. Therefore, in the definite adjective difference in case was expressed solely by the internal morpheme in these endings (cf. [6] where differing parts are written in bold letters). Likewise, in the dative/instrumental dual and in the dative, instrumental, locative plural differences in gender are indicated only internally (cf. [7] where differing parts are written in bold letters). At the same time, case and number are expressed both internally and externally. The nominal endings **-ѣхъ* and **-axъ* carry information about case (locative), number (plural), and gender (masculine/neuter, or feminine respectively). The corresponding pronominal ending **-jixъ* is again specified for case, and number. Therefore, the arising definite adjective endings LOC.PL.M/N **-ѣхъ-jixъ*, LOC.PL.F **-axъ-jixъ* are redundantly marked for these features. The arising inflection is thus not only exceptionally complex for Slavic but also redundant with regard to certain categories.

(6)	GEN.PL	LOC.PL
	M	<i>*-ѣхъjixъ</i>
	N	<i>*-ъjixъ</i>
	F	<i>*-axъjixъ</i>

(7)	M/N	F
DAT/INS.DU	<i>*-imajima</i>	<i>*-amajima</i>
DAT.PL	<i>*-omъjimъ</i>	<i>*-amъjimъ</i>
INS.PL	<i>*-yjimi</i>	<i>*-amijimi</i>
LOC.PL	<i>*-ѣхъjixъ</i>	<i>*-axъjixъ</i>

Thus, the endings of the masculine/neuter instrumental singular, and the genitive, dative, instrumental, locative plural exhibit a number of features which are generally assumed to favor morphological change. They are highly complex, displaying double inflection with syncretism that deviates in internal and external inflectional affixes while at the same time expressing certain categories redundantly which is certainly dispreferred in morphology (cf., for example, Harris and Faarlund 2006; Haspelmath 1993: 299; Wurzel 2001: 36).³³ Redundancy, according to Harris (2008: 274), disrupts the iconicity of agreement which preferably has one morphological representation for one referential entity. Finally, the definite adjective inflection goes against the universally preferred order of morphemes according to which derivational affixes occur closer to the root than inflectional

³³ Note Kiparsky's (1982: 8–9) "elsewhere condition" (also Anderson 1986), and the criticism of this constraint in Haspelmath (1993: 304–304).

affixes (cf. Bybee 1985; Greenberg 1966: 93; Harris and Faarlund 2006: 309–312; Haspelmath 1993: 291–292; Nida 1949: 99).³⁴

In Harris and Faarlund's (2006) scenario, loss of trapped morphology preserved both the iconicity of agreement and the preferred morpheme order (cf. Harris 2008: 274). The same can be said about the analogical extension proposed in the present paper, whereby 'preserved', however, needs to be replaced by 'reestablished'. Reanalysis and analogical leveling eliminated redundancy in the definite adjective endings. Admittedly, in certain case endings gender-specific features were lost in the course of the development (see Section 5.2.3) but since leveling proceeded on the example of the pronominal inflection no new pattern was introduced with regard to marking this feature. As concerns semantics, the newly arisen endings of the definite adjective can be interpreted as identical with the outer affix, i.e., the affix going back to the definiteness marker, as it is the case in the examples subsumed under the term conglutination by Haspelmath (1995: 6–8). Apart from information about gender, number, and case, they also carry the feature of definiteness.³⁵

An interesting question that has not yet been addressed is whether we may identify any reasons why the definite adjective endings proved more resistant to change in Lithuanian than in Slavic. One important aspect could have been that in Lithuanian the definiteness marker preserved its independent status for a longer period of time. While the changes discussed in this paper must have proceeded before Slavic became a written language in the ninth century AD (manuscripts are attested from the tenth century onwards), in Old Lithuanian texts from the sixteenth and seventeenth centuries the definiteness marker still exhibited properties usually associated with clitics (cf. Sommer 2018: 170–181; Stolz 2010: 231). Furthermore, there were no significant differences between the adjective endings and the pronominal endings when the merger occurred.³⁶ Until today, apart from the general loss of the neuter gender, a distinction between masculine and feminine gender is preserved in the pronoun.³⁷ It should, however, be noted that the

³⁴ Note, however, that according to Bybee (1985: 85) noun number lies closer to the lexical end of the continuum of morphological categories than definiteness.

³⁵ An anonymous reviewer suggests that the development of the original nominal endings could perhaps be captured by Lass' (1990, 1997) notion of exaptation (cf. the contributions in Van de Velde and Norde 2016 for different opinions on this controversial notion). However, as regards the morphological changes involved, I believe that reanalysis and analogical extension are sufficient to plausibly account for the rise of the definite adjective inflection.

³⁶ Note that the only case where Baltic and Slavic match in syncretism is in the genderless genitive plural (see Mayer 1978: 83).

³⁷ Mayer (1978: 81) observes that in Slavic the definite adjective tends to be more pronominal while in Lithuanian it tends to be more nominal. Note, however, that with regard to syncretism,

same is true for Latvian where the definite adjective has undergone significant restructuring processes (cf. Endzelin 1922: 343–352; more recently Forssman 2001: 131–133; Petit 2009: 321–324; Sommer 2018: 181–187, 2019: 181–187).³⁸ Another difference between Slavic and Lithuanian is that in the latter language the definiteness marker was not affected by any far-reaching phonological reduction comparable to haplology in Slavic.³⁹ The phonological fusion of the adjective and the definiteness marker may, therefore, have been weaker which is why morphotactics remained transparent for a longer period of time.

We may, therefore, end this section by concluding that it is possible to motivate the changes proposed in Sections 5.2.2 and 5.2.3 by identifying factors which have been shown to favor morphological innovations in a variety of independent studies, and that it is, moreover, possible to determine certain differences between the original situation in Slavic and Lithuanian definite adjectives which may be held responsible for their deviating development.

7 Conclusion

In this paper I have presented a detailed account of the rise of the Slavic definite adjective inflection. I have argued that all the attested endings can be explained by processes which are well established in historical linguistics: phonological change, reanalysis, and analogical leveling. As regards the morphological innovations involved, I have, moreover, shown that they can be motivated by factors which are generally assumed to favor morphological change.

One of the advantages of the proposed scenario is that the emergence of the Slavic definite adjective inflection can be understood as a sequence of innovations which in each case provided the grounds for the next change.⁴⁰ The

haplology (see Section 5.2.1) resulted in a situation that is typical for nouns. It created syncretism in the feminine genitive singular, the masculine accusative plural, and the feminine nominative/accusative plural, cf. OCS *-y/-ę*, and syncretism in the feminine dative/locative singular and the feminine/neuter nominative/accusative dual, cf. OCS *-ě/-i*, which does not exist in pronouns, cf. OCS GEN.SG.F *-oje/-eje* vs. ACC.PL.M, NOM/ACC.PL.F *-y/ę*, and DAT.LOC.SG.F *oji/-eji* vs. NOM.ACC.DU.F/N *-ě/-i*. The iconicity of Slavic noun vs. adjective/pronoun markers is discussed in Menzel (2002).

³⁸ Data from Old Prussian are unfortunately too scarce to draw any firm conclusions (cf. Petit 2009: 324–325; Sommer 2018: 187–195, 2019: 209).

³⁹ Cf. Sommer (2018: 158–159) on the assimilation processes affecting the initial glide *j-* of the definiteness marker.

⁴⁰ Note that this does not imply a causality in the sense that each change made the following inevitable. Rather it resulted in a situation which favored a certain kind of change to occur.

rise in frequency of the collocation of the adjective and the definiteness marker was accompanied by a deaccentuation of the latter component. As a result of this development, the two elements became even more closely associated (cf. Section 5.1). The phonological fusion of the adjective and the definiteness marker was then further increased by haplology and shortening of word-final long vowels in isolated simple adjectives (cf. Section 5.2). Both these changes rendered the morphological make-up of the definite adjective less transparent. Morphotactic opacity can then be identified as the motivation for the reanalysis that fused the monosyllabic nominal ending and the definiteness marker into a single affix.

The most complex situation within the definite adjective inflection certainly arose in the cases which contained disyllabic nominal endings, i.e., in the masculine/neuter instrumental singular, the dative/instrumental dual of all three genders, the dative, locative plural of all three genders, and the feminine instrumental plural. According to Harris and Faarlund (2006), it was resolved by the loss of trapped morphology which was followed by the extension of the vowel *-y- from the nominal ending of the instrumental plural. Since the proposed loss is not attested anywhere in Slavic and since its assumption does not carry any explanatory value (cf. Section 4), this explanation is, however, infelicitous. The extension of the structure of the instrumental plural can be explained on the example of the pronouns. In the pronominal inflection, the corresponding endings share a structural commonality which in the case of the dual and plural endings is accompanied by a common morphosyntactic feature, i.e., indifference to gender. That these commonalities play a role in analogy is shown by the fact that on several occasions in the history of Slavic the corresponding case endings were exclusively targeted by a morphological innovation (cf. Wandl 2020: 97–104).

At the latest when the analogical leveling in the masculine/neuter instrumental singular, the dative/instrumental dual, and the genitive, dative, instrumental and locative plural took place the definiteness marker ceased to exist as a separate morpheme that was added to the adjective in a concatenative manner. It had merged with the nominal endings of the adjective now forming a new set of endings designating definiteness of a noun phrase on the adjective. The rise of the definite adjective inflection, therefore, presents a curious example of how an interplay of phonological and morphological processes affecting different cases within a paradigm can result in an increase in the phonological fusion of two elements and ultimately lead to their merger.

List of abbreviations

ACC	accusative
ALL	allative
BCS	Bosnian/Croatian/Serbian
CSL	Common Slavic
DAT	dative
DU	dual
F	feminine
GEN	genitive
Gk.	Greek
INS	instrumental
Lat.	Latin
Lith.	Lithuanian
LOC	locative
M	masculine
NOM	nominative
N	neuter
OCS	Old Church Slavonic
PIE	Proto-Indo-European
PL	plural
PRS	present
SG	singular

Acknowledgments: I would like to thank Andreas Hölzl, Florian Sommer, James Joshua Pennington, Rafał Szeptyński and two anonymous reviewers for their comments on earlier drafts of this paper. Moreover, I am indebted to Maria Napoli and the members of the editorial board of *Folia Linguistica Historica* for their helpful suggestions for improvement. Any remaining errors or omissions are my own.

Research funding: Parts of this article have been elaborated during a research stay at the Department of Linguistics, University of Zagreb, funded by the Swiss National Science Foundation (SNF) (grant no. P1ZHP1_187851) which is gratefully acknowledged.

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