

The Evolution of the Dual Pronouns in Slovenian and Sorbian

This chapter addresses the diachronic development of the dual pronouns in Slovenian and Sorbian. The proposed analysis is based on the diachronic data drawn from the corpora of the 16th-century Slovenian and the 19th-century Sorbian texts. The author argues that the historical reanalysis of the old dual pronoun forms and the emergence of the new bimorphemic dual forms is the result of two types of markedness: semantic and morphosyntactic. With regard to semantic markedness, the author develops a presuppositional account of the semantics of dual pronouns according to which dual number feature has a presupposition that a reference be made to a plurality of two singular individuals; thus, the dual is more marked than the plural, which has no presupposition. At the level of its morphosyntax, the dual is subject to feature value markedness. The dual is represented by the (+minimal (-atomic) number features. Specifically, the (+minimal) feature is marked in the presence of the (-atomic) feature. The author suggests that the number features of the dual be split for economy reasons into two separate nodes - (+minimal) realized by the numeral *two* or a dual suffix and (-atomic) realized by the plural pronominal base. In sum, the new bimorphemic Slovenian and Sorbian dual pronouns are shown to emerge as more diachronically stable and more morphosyntactically efficient.

Keywords: dual number, semantic markedness, feature value markedness, presuppositional semantics, Slovenian, Upper Sorbian, Lower Sorbian.

1. Introduction

Despite inheriting dual number from Proto-Slavic, most of the Slavic languages have lost dual pronouns during their evolution except for three – Slovenian (South Slavic), Upper Sorbian (West Slavic), and Lower Sorbian (West Slavic).¹ In these languages, instead of being ousted and replaced by their plural counterparts, the dual pronouns survived due to a historical reanalysis and change in their morphological structure. As a result of this diachronic change, which possibly occurred in the 16th century or even much earlier, the Slovenian and Sorbian dual pronouns obtained a complex bipartite structure. Specifically, a structural change in their morphology involved an addition of the numeral *dva* ('two') to a plural pronominal base in Slovenian and a dual suffix *-j* in Upper and Lower Sorbian (1-3). This structural change made the

¹ Lower Sorbian is a West Slavic minority language spoken in Germany in the historical province of Lower Lusatia (Brandenburg). It is highly endangered and nowadays has about 200 native speakers left (Pankau, 2021). Upper Sorbian is a West Slavic minority language spoken in eastern Germany in the historical province of Upper Lusatia (Saxony). It is endangered and has an estimated 20,000-25,000 number of speakers (Howson, 2017).

dual pronouns a stable and thriving category in the grammar of contemporary Slovenian and Upper and Lower Sorbian.

(1) *Contemporary Slovenian*

Mi-dva/vi-dva/ona-dva hodi-va/-ta v šolo.
1.PL-two/2.PL-two/3.PL-two go-1.DU.PRES/2.3DU.PRES to school
'We/you/they two go to school.'

(Derganc, 2003, p. 171)

(2) *Contemporary Upper Sorbian*

Wó-j stej najbóle skók
2.PL-DU be.2.DU most fast
'You two are the fastest.'

(Scholze, 2007, pp. 124-125)

(3) *Contemporary Lower Sorbian*

gaž **me-j** se trefijo-mej, **me-j** pšecej serbske pówěda-mej.
when1.PL-DU REFL meet-1.DU.PRES 1.PL-DU always Sorbian speak-1.DU.pres
'When we two meet, we two always speak Sorbian.'

(Text Corpus of Colloquial Lower Sorbian)

The preservation of the dual pronouns in Slovenian and Upper and Lower Sorbian presents an interesting counterexample to a pattern of diachronic change leading to the loss of dual number in the descendants of ancient languages with a singular-dual-plural number system, such as Old Church Slavonic, Old Russian, Attic Greek, Vedic and classical Sanskrit, Old Persian, Old Icelandic, Old English, Old Irish, and others.

Although the historical development of dual pronouns has been previously addressed by Tesnière (1925), Belić (1932), Derganc (1988, 1998, 2003), Jakop (2008, 2010, 2012), and Jelovšek (2014, 2016) in Slovenian and by Ermakova (1970), Unger (1998), and Schuster-Šewc (2000, 2007) in Sorbian, some key questions remain to be answered. These questions are the focus of the present chapter:

1. How did a bipartite structure of the Slovenian and Sorbian dual pronouns emerge?

2. Why did a bipartite structure of the Slovenian and Sorbian dual pronouns include the cardinal numeral *dva* ('two') or the dual suffix *-j*?
3. What grammar-internal (markedness, competition) or grammar-external (language contact, language attitudes, economy) factors can account for the diachrony of dual pronouns in Slovenian and Sorbian?
4. What can the diachrony of dual pronouns in Slovenian and Sorbian tell us about the evolution of languages with the pronominal dual cross linguistically?

This chapter explores the evolution of the dual pronouns in Slovenian and Sorbian and aims to analyze both grammar-internal and grammar-external factors which are responsible for diachronic change in their structure. The data cited in this chapter (unless noted otherwise) are obtained from the following primary sources:

16th century Slovenian - Korpus Besedil Slovenskih Protestantskih Piscev 16. Stoletja (The Corpus of Texts of the Slovenian Protestant Writers of the 16th Century) available at

<https://fran.si/korpus16/>

Colloquial Lower Sorbian – Maminorečna Dolnoserbščina (The Text Corpus of Colloquial Lower Sorbian) available through the Sorbian Institute at

<https://dolnoserbski.de/dobes/?r%C4%9Bc=dsb>

The Lower Sorbian Bible of 1868 <https://dolnoserbski.de/biblija/>

This chapter is structured as follows. Section 2 highlights the key points in the diachronic emergence of the bipartite structure of the Slovenian and Sorbian dual pronouns. Section 3 analyzes the role of semantic and morphosyntactic markedness in shaping the form and function of the dual pronouns in Slovenian and Sorbian. Section 4 analyzes and accounts for the diachronic changes in the Slovenian and Sorbian dual pronouns with a special emphasis on the

role of the cardinal numeral *dva* in Slovenian and the dual suffix *-j* in Sorbian. Section 5 concludes the chapter and discusses the evolution of dual pronouns cross-linguistically.

2. Diachrony of Dual Pronouns in Slovenian and Sorbian

2.1. Dual Pronouns in Slovenian

Dual pronouns in contemporary Slovenian take their roots from Proto-Slavic. The Proto-Slavic personal pronouns distinguished three numbers – singular, dual, and plural (see Table 1).² As the data in Table 1 show, there are two key points that are crucial for the development and evolution of the dual pronouns in Slovenian that should be noted. First, the 2nd person dual pronoun had two variants *va* and *vy*, and the dual form *vy* was already syncretic with its plural counterpart. Thus, as early as in Proto-Slavic, the dual/plural syncretism had occurred in the 2nd person before the 1st. The 1st person dual *vě* and the 1st person plural *my* were not syncretic in Proto-Slavic yet, and in Slovenian their syncretism did not develop until much later, possibly in the 16th century or much earlier. Second, the pronominal forms of the dual in comparison to the singular and plural show fewer paradigmatic distinctions. Specifically, we observe the Gen/Loc *naju*, *vaju* and the Dat/Instr *nama*, *vama* oblique case syncretism. The lack of more paradigmatic distinctions in the dual points to its grammatical markedness.

² The 3rd person pronoun was expressed by the anaphoric **j-* (See Schenker, 1995, pp. 126-127).

Num/Person	Nom	Acc	Gen	Loc	Dat	Instr
SG 1.	azŭ	mene		m'ně		mŭnojq
2.	ty	tebe		tebě		tobojq
DU 1.	vě	na	naju		nama	
2.	va/vy	va	vaju		vama	
PL 1.	my	nasŭ			namŭ	nami
2.	vy	vasŭ			vamŭ	vami

Table 1 Proto-Slavic 1st and 2nd Person Pronouns (Sussex & Cubberley, 2006, p. 273)

Besides the reconstructed forms of the dual pronouns in Proto-Slavic, Old Church Slavonic (South Slavic), the ancestor language of Slovenian and the written language of the earliest translations of biblical literature dating to the 10th -11th centuries, offers evidence of the dual/plural *vy* syncretism in the 2nd person (see Table 2).³ Besides the dual/plural number syncretism, both Proto-Slavic and Old Church Slavonic pronominal forms show instances of case syncretism in oblique cases in dual number. For example, we observe the Gen/Loc *naju*, *vaju* well as the Dat/Instr *nama*, *vama* instances of oblique case syncretism. The syncretism of oblique case forms again points to the grammatical markedness of dual number.

Number/Person	Nom	Acc	Gen	Loc	Dat	Instr
SG 1.	azŭ	mene		m'ně		mŭnojq
2.	ty	tebe		tebě		tobojq
DU 1.	vě	na	naju		nama	
2.	va/vy	va	vaju		vama	

³ For the 3rd person pronouns, the anaphoric **j-* is used, or less commonly *onŭ* (Lunt, 2001, p. 76).

PL 1.	my	nasŭ	namŭ	nami
2.	vy	vasŭ	vamŭ	vami

Table 2. Old Church Slavonic 1st and 2nd Person Pronouns 10th-11th centuries (Huntley, 1993, p. 144)

The evolution of the Slovenian dual pronouns during the Middle Ages remains obscure due to the lack of research studies conducted on the topic. There are only a few extant texts from the period before the Protestant Reformation including the *Freising Manuscripts* (ca. 972-1039), the *Klagenfurt Manuscript* (1362-1390) and some later texts, such the *Oath Formulas of Kranj* (ca.1440), *Cividale Manuscript* (1492-1498), the *Udine Manuscript* (1458), the *Škofja Loka Manuscript* (1466) which have not been analyzed by linguists. To my knowledge there have been no research studies conducted on the dual pronouns in the Slovenian medieval manuscripts. Thus, there seems to be a gap covering the development of the Slovenian dual pronouns during the Middle Ages.⁴ Clearly, more research is needed to establish the diachrony of the Slovenian dual pronouns during the Middle Ages before the period of the Protestant Reformation in the 16th century.

The diachronic development of the Slovenian dual pronouns can be analyzed more accurately when Slovenian began to develop as a literary language in the 2nd half of the 16th century. The forms of the Slovenian dual pronouns can be traced to the 16th century texts written/translated by the Slovenian Protestant writers, such as Trubar, Dalmatin, Krelj, Bohorič, and others during the period of the Protestant Reformation. Among the Protestants' works, Primož Trubar's *Cathechismus* (1550), the earliest Protestant translation, and Jurij Dalmatin's

⁴ However, some scholars, such as Jelovšek (2016, p. 97) suggest that the dual was not attested in the Slovenian medieval manuscripts, and it was not possible to follow its development until the 2nd half of the 16th century.

translation of the *Bible* (1584) were the most influential texts that laid the foundation for the literary tradition of the Slovenian language.

In the 2nd half of the 16th century, Slovenian personal pronouns continued to maintain three numbers – singular, dual, and plural. Their paradigm is represented following Jelovšek (2016) and is based on the data obtained from the diachronic corpus of 53 texts by the 16th century Slovenian Protestant writers (see Table 3). In the 2nd half of the 16th century, we observe two significant diachronic changes occurring in the structure of the Slovenian dual pronouns: a). dual/plural syncretism, particularly in the 1st and 2nd person, and b). an addition of the numeral *dva* ('two') to the plural pronominal base (4a-b).

	1 st Dual	2 nd Dual	3 rd Dual		
			masc	neut	fem
Nom	midva/mi/ midvej (dvuja)	vidva/vi (vidvej/dvuja)	ona/onadva/oni	ona (dvuja)	one (dvej)
Gen	naju /najh	vaju /vas/vajh	njiju/njih/njijo, jih		
Dat	nama /nam	vama /vam/vom	njima/njim/njema, jim/jima		
Acc	naju /nas/najh	vaju /vas	njiju/nje/njih/ona(s), je/jih		
Loc	naju /nama/nas/nami		njiju/njima/njih		
Instr	nama /nami	vama /vami	njima/njimi		

Table 3. Dual Pronouns in the 16th century Literary Slovenian (Jelovšek, 2016, p. 99)

(4) Diachronic Changes in the Dual Pronouns of the 2nd half of the 16th century Slovenian

a) Dual/Plural *my*/*vy* Syncretism in the 1st and 2nd person

- b) Old Dual (du/pl Pronoun) → New Dual = PL pronominal stem + the numeral Dva
(‘two’)

As we can see in Table 3, the 1st person dual has new bimorphemic forms *midva* (masc), *midvej* (fem) alongside the original form *mi*. Likewise, the 2nd person dual has a new bimorphemic form *vidva* (masc) and *vidvej* (fem) in addition to the original form *vi*. In the 3rd person masculine dual, we observe a new bimorphemic form *onadva* alongside the original form *ona*. We also find the Gen/Loc/Acc *naju/vaju* and the Dat/Instr *nama/vama* instances of oblique case syncretism in dual number, a pattern of case syncretism which continued to persist since the period of Proto-Slavic and Old Church Slavonic.

I will argue that the rise of the new bimorphemic dual pronouns in Slovenian has been the result of the dual/plural syncretism triggered by the grammatical markedness of dual number. The dual/plural syncretism developed first in the pronominal paradigm in the 1st and 2nd person before affecting the 3rd person (Derganc, 1988, p. 244) (4a). This can be explained if we take into account the animacy hierarchy which constrains grammatical number. According to the criterion of animacy, the speaker and the addressee are the primary participants in discourse which outrank the 3rd person participant (see Figure 1). Thus, the 1st and 2nd person dual pronouns are more prone to the dual/plural syncretism than the 3rd person.

speaker > addressee > participant > kin > human > animate > inanimate

Figure 1 The Animacy Hierarchy (Corbett, 2000, p. 56)

In the 2nd half of the 16th century, the forms of the 1st and 2nd person dual pronouns *my*, *vy* became syncretic with those in the plural. The dual/plural pronominal syncretism can be seen in the following examples (5-6). The 1st person plural pronoun *my* has a dual reference since it triggers a dual agreement suffix *-va* on the verb (5). In contrast, the 1st person plural pronoun *my*

indicates plurality of its referent and triggers the plural agreement suffix *-mo* on the verb (6). As examples (5-6) show, due to the dual/plural syncretism, pronominal reference can be differentiated only by the means of verbal agreement forms.

- (5) Mojŝter, **my** hozhe-**va**, de nama ŝturiŝh, kar te bo-**va**
 teacher **1.PL** desire-**1.DU** COMP **1.DU.DAT** do-**2.SG.PRES** which **2.SG** be-**1.DU.FUT** proŝsil-**a**.
 ask-**1.DU**
 ‘Teacher, we two wish that you do for us two what we two will ask you.’

(Dalmatin *Bible* 1584, Mr 10:35)

- (6) **My** iei-**mo** ta sad
1.PL eat-**1.PL.PRES** this fruit
 ‘We eat this fruit ...’

(Trubar *Catechismus*, 1550)

As examples (7-8) illustrate, the 2nd person dual pronoun *vy* became syncretic with its plural counterpart. The dual pronominal reference is indicated by the dual suffix *-ta* on the verb ‘to be’ and the dual verbal suffix *-a* (7). In contrast, the plural reference of the 2nd person pronoun *vy* is expressed by the plural suffix *-te* (8). The dual/plural syncretism also occurred in the 3rd person. For example, the 3rd person plural *oni* has a dual reference since it triggers a dual agreement suffix *-a* on the verb (9). In contrast, the 3rd person plural *oni* has a plural reference and agrees with the verb in the plural expressed by the suffix *-i* (10). Derganc (1994, p. 74) notes that examples such as (9) when the 3rd person plural is used to indicate a dual reference are rarer than examples with the 1st and 2nd person.

- (7) **Vy** ŝ-ta me v’neŝrezho pèpravi-l-**a**
2.PL be-**2.DU** me in trouble make-PST-**2.DU**
 ‘You two got me in trouble.’

(Dalmatin *Bible* 1584, 1 Mz 34:30)

- (8) aku **vy** jèŝ-te ali pye-te, ali kar dela-te ...
 so **2.PL** eat-**2.PL.PRES** whether drink-**2.PL.PRES** whether what do-**2.PL.PRES**
 ‘So whether you eat, drink, whatever you do ...’

(Dalmatin *Bible* 1584, 1 Kor 10:31)

- (9) **Oni** fe ne f-ta nikogar bal-a
3.PL REFL NEG be-**3.DU.PRES** no one fear-**3.DU**
 ‘They two were not afraid of anyone.’

(Trubar *Testament* 1557: 13b)

- (10) **ony** teim kateri so nega vidi-l-i
3.PL those who him see- PST-**3.PL**
 ‘They who saw him.’

(Trubar *Cathechismus* 1550, 54 (28a))

As shown above, the dual/plural syncretism the 1st, 2nd, and 3rd person pronouns created a situation when it was difficult to differentiate the dual pronoun reference from the plural one due to the identity of form. A solution to this problem was found in the so-called ‘renewal’ or restructuring of the dual pronouns by means of adding the cardinal numeral *dva* (‘two’) to the plural pronominal base (4b). Incorporation of the cardinal numeral *dva* was a genuine Slovenian innovation which prevented the loss of the dual that occurred in the majority of the Slavic languages. The cardinal numeral *dva* (‘two’) was a perfect candidate to renew duality of reference since it denotes a set of two members with a cardinality value 2. The inclusion of the cardinal numeral *dva* (‘two’) helped disambiguate the dual which denotes a dyad from the plural which denotes a set with at least three or more members with a cardinality value 3 or more.

The process of the replacement of the old dual pronominal forms with the new bimorphemic ones was gradual and slow. In the 16th-century Protestant texts, the new bimorphemic dual pronouns occurred alongside the old forms. Specifically, in the Corpus of Texts of the Slovenian Protestant Writers of the 16th Century, the new forms of the 1st and 2nd dual pronouns occurred more frequently than the old ones (Jelovšek, 2016, pp. 100-101).⁵

Crucially, the new bimorphemic 1st, 2nd, and 3rd person dual pronouns always triggered dual agreement with other grammatical categories, such as verbs, auxiliaries, adjectives, participles

⁵ See Jelovšek’s diachronic corpus study for a detailed distribution of the new 1st and 2nd dual pronouns versus the old ones (2016, pp. 100-101).

etc. For example, the 1st person masculine dual pronoun *midva* (spelt as *midva*, *mydva*, *midua*) triggered dual agreement suffixes *-va* and *-a* on the verb (11-12). There is a total of 28 tokens of the 1st person dual masculine pronoun *midva* occurring in the Corpus of Texts of the Slovenian Protestant Writers of the 16th Century. In contrast, there is only 1 occurrence of the 1st person dual feminine *midvej* found in the Dalmatin's *Bible* (1584) (Jelovšek, 2016, p. 102) (13). Example (13) is noteworthy because it contains both the old dual form *my* and the new dual form *mi dvej* in the same sentence.

- (11) Moifter, **mi-dua** hozhu-**a**, de ti tu nama šturish, kar boua tebe proffil-**a**.
 teacher 1.PL-**two** want-1.DU COMP 2.SG. 1.DU.DAT. do what both you ask-PST-1.DU
 'Teacher, we (two) want you to do for us what we both asked.'

(Trubar *Testament* 1557:130, Mr 10:35)

- (12) Oštani-te tukaj, dokler **my-dva** supet k'vam pride-**va**
 stay-2.PL.IMP here until 1.PL-**two** to 2.PL.DAT return-1.DU.PRES
 'Stay here until we (two) come back to you.'

(Dalmatin *Bible* 1584, 2 Mz 24:14)

- (13) inu my fve bile vkup, de oben ptuji nej bil s'nama v'hifhi, kakòr le **my dvej**
 and 1.PL be.PL were together there stranger not was with us in house save 1.PL two
 'And we were together, there was no stranger with us in the house, save we two.'

(Dalmatin *Bible* 1584, 1:185a, Kings 3:18)

Similar to the 1st person, the new bimorphemic 2nd person new dual pronoun *vidva* (spelt as *vidva*, *vydva*, *uidua*, *vidua*) was more prevalent than the old form *vi*. There is a total of 38 tokens of the 2nd person dual masculine pronoun *vidva* occurring in the Corpus of Texts of the Slovenian Protestant Writers of the 16th Century, which is greater than 28 tokens of the 1st person dual *midva*. This finding might be due to the fact that the dual/plural syncretism had developed in the 2nd person earlier than in the 1st person. The 2nd person dual masculine pronoun *vydva* induced dual verbal agreement expressed by the suffixes *-ta* and *-a* (14-15).

- (14) **Vy-dva** bo-**ta** rejs ta Kelih pyl-**a**
 2.PL-two be-2.DU really that cup drink-DU
 ‘You two will drink from that cup.’

(Dalmatin *Bible* 1584, Mr 10:39)

- (15) **Ui-dua** slishi-**ta** inu uidi-**ta**
 2.PL-two hear-2.DU and leave-2.DU
 ‘You two listen and leave.’

(Trubar, *The First Part of the New Testament* 1557, 29)

The new bimorphemic forms of the 3rd person dual pronoun occur in the Corpus of Texts of the Slovenian Protestant Writers quite frequently; there is a total of 63 tokens of the 3rd person masculine *onadva* (spelt as *onadva*, *onadua*). The 3rd person masculine dual pronoun *onadva* triggered agreement expressed by the dual suffixes *-ta* and *-a* (16). The 3rd person dual feminine *onedvej* is different from the 3rd person dual masculine *onadva* in terms of agreement with the verb; in the feminine gender verbal agreement is plural and not dual (17). The plural agreement with the 3rd person feminine subject is the result of the dual/plural syncretism which occurred in the nouns in the feminine gender first before the nouns in the neuter and masculine gender (Tesnière, 1925; Derganc, 1988, p. 241).

- (16) kadar f-**ta** **ona-dva** bil-**a** na puli,
 when be-3.DU.PRES 3.MASC.DU-two be-3.DU on field
 ‘When they two were in the field ...’

- (17) **one duei** bo-**te** ukupe mleil-**e**
 3.FEM.DU. be.3.PL together grind-3.PL
 ‘They two will be grinding together.’

(Trubar *The First Part of the New Testament* 1557: 225)

The new bimorphemic dual pronouns which have emerged in the 2nd half of the 16th century have become part of the grammar of Slovenian and are still used today. The Slovenian dual pronouns distinguish between three persons and two genders – the masculine/neuter and the

feminine in the nominative case only (see Table 4).⁶ The masculine forms are *midva*, *vidva*, *onadva* while the feminine forms are *midve/medve*, *vidve/vedve*, *onidve/onedve*.

Num/Person	Nom	Acc	Gen	Loc	Dat	Instr
SG	1.	jaz	men-e	men-i		men-oj
	2.	ti	teb-e	teb-i		teb-oj
	3.	on, ona, ono	njega, nje	njem, njej	njemu, njej	njim, njo
DL	1.	mi-dva, mi-dve/me-d ve	na-ju	na-ma		
	2.	vi-dva, vi-dve/ve-dve	va-ju	va-ma		
	3.	ona-dva, oni-dve/one-d ve	nji-ju	nji-ma		
PL	1.	mi, me	na-s	na-m		na-mi
	2.	vi, ve	va-s	va-m		va-mi
	3.	oni, one	nji-h	nji-m		nji-mi

Table 4. Personal Pronouns in Contemporary Standard Slovenian (Derganc, 2003, p. 166)

We have already seen that the process of oblique case syncretism began in Proto Slavic and continued its development in Old Church Slavonic as well as in the 16th-century Slovenian. In Proto-Slavic and Old Church Slavonic, we observed the Gen/Loc *naju*, *vaju* and the Dat/Instr *nama*, *vama* oblique case syncretism. However, by the 16th century when Slovenian has reached the status of a literary written language, we see more variation in the inflectional suffixes of oblique forms and the emergence of patterns of syncretism that were different from those which existed in Proto-Slavic and Old Church Slavonic (see Table 3). As Table 4 shows, in contemporary Slovenian, oblique case syncretism has shifted and has become more widespread. Specifically, we observe the Acc/Gen *naju*, *vaju* and the Loc/Dat/Instr *nama*, *vama* patterns of

⁶ Forms of different genders (masculine/neuter and feminine) are set off by a comma. Different forms of the same gender are indicated by a slash.

case syncretism. The spread of oblique case syncretism serves as a diagnostic for an increasing markedness of dual number.

In sum, grammatical markedness of dual number has become one of the major factors which drives diachronic change in the Slovenian dual pronouns. First, markedness of the dual in the 1st and 2nd person dual pronouns has resulted in the dual/plural *mi/vi* syncretism followed by the syncretism in the 3rd person. Second, the dual/plural syncretism has created a situation in which it was difficult to disambiguate the dual from the plural due to the identity of the pronominal forms. As a result, the dual/plural syncretism triggered diachronic change as a bimorphemic restructuring by adding the cardinal numeral *dva* ('two') to a plural pronominal *mi/vi* base. Thus, the new bimorphemic dual pronouns *midva*, *vidva*, *onadva* have emerged in the 2nd half of the 16th century and continue to be used in contemporary Standard Slovenian and its dialects.

2.2. Dual Pronouns in Lower and Upper Sorbian

Sorbian dual pronouns show a diachronic development similar to that of their Slovenian counterparts. Like in Slovenian, the emergence of the dual pronouns in Sorbian was driven by the markedness of dual number embedded in a singular-dual-plural number system. In this three-way number system, the dual was less marked than the singular, but more marked than the plural. The markedness of the dual needed to be resolved either by eliminating it altogether (a diachronic change which occurred in the majority of the Slavic languages), or by innovating its grammatical structure. The latter happened in Sorbian.

We can identify two key stages in the diachronic evolution of the Sorbian dual pronouns:

- 1). the dual/plural syncretism of the pronominal forms which occurred approximately in the 2nd half of the 16th century (a period when the first translations of the biblical literature were made in

Sorbian, and Sorbian got established as a literary language⁷) or even much earlier and 2). the emergence of a new bimorphemic structure which was derived from the plural pronominal stem and the dual suffix *-j* (18).

(18) *Diachronic Changes in the Dual Pronouns in the 16th century Sorbian*

- a) Dual/Plural *my/wy/wone* Syncretism
- b) Old Dual (du/pl Pronoun) → New Dual = PL pronominal stem + dual suffix *-j*.

The dual/plural syncretism was the result of the ‘weakening’ of the dual as a more marked grammatical category compared to the plural. Since the forms of the dual and plural pronouns were identical, it was only possible to disambiguate the two through the verbal agreement suffixes (19a-b). In (19a), the 2nd person plural form *wy* is used to refer to two individuals rather than many, which is evidenced by the dual agreement suffix *-taj* marked on the verb. In contrast, in (19b), the 1st person plural pronoun *my* has a plural reference and is used with its appropriate plural agreement suffix *-my*.⁸

(19) *Upper Sorbian* (1670 Michał Frencel’s Translation of the Gospels of St. Matthew and St. Mark)

- a. powěž-**taj** ... štož **wy** widži-**taj** a slyši-**taj**
tell-2.DU.PRES COMP 2.DU see-2.DU.PRES and hear-2.DU.PRES
‘Tell you two ... what you two see and hear.’
(Lötzsch, 1965, p. 59)

- b. **my** chce-**my**, štož ...
1.PL want-1.PL.PRES COMP
‘We would like to ...’

(Lötzsch, 1965, p. 59)

⁷ To be precise, the 1st extant document written in Sorbian was the *Bautzen Burghers’ Oath* (1532), an oath of allegiance of the citizens of Bautzen to the king and the town authorities (Comrie & Corbett, 2006, p. 596). See Comrie & Corbett (2006) for more details on the history of Sorbian as a literary language.

⁸ Additional diachronic data were inaccessible to the author at the time of writing since the key Sorbian documents dating to the 16th century, such as the 1548 Mikławs Jakubica’s translation of the New Testament (Lower Sorbian) and the 1595 Winzeslaus Warichius’s *Catechism* (Upper Sorbian) were not available as digital corpora yet.

The disambiguation of the dual/plural syncretism through the verbal agreement suffixes was not viable from a learnability perspective. To further disambiguate the dual from the plural, a new and distinct pronominal dual form was needed to ‘strengthen’ the place of the dual in a singular-dual-plural number system. The new 1st, 2nd, and 3rd person dual pronoun forms – *mej*, *wej*, *wonej* in Lower Sorbian and *mój*, *wój*, *wonaj/wonej* in Upper Sorbian were first attested in the 2nd half of the 16th century (Derganc, 1998). These new pronominal forms have a transparent morphological structure, in which the plural pronominal stem is augmented with a dual suffix *-j* (20a-c). Examples 20 (a-c) come from the 1548 Mikławs Jakubica’s translation of the New Testament, one of the first translations of the *Bible* from German into Sorbian.⁹ The entire paradigm of the Lower Sorbian dual pronouns dating to the 16th century is shown in Table 5.¹⁰

(20) *Lower Sorbian* (1548 Mikławs Jakubica’s Translation of the New Testament)

- a. **Me-y ...** **moſche-mey**
 1.PL-DU can-1.DU.PRES
 ‘We two can.’
 (Unger, 1998, p. 57)
- b. **Moſche-tey** **we-y** **pytz ...**
 can-2.DU.PRES 2.PL-DU drink
 ‘You two can drink ...’
 (Unger 1998:57)
- c. A **wone-y** **knomu reknufsch-tey ...**
 and 3.PL-DU to him tell-3.DU.PRES
 ‘And they two answer him ...’
 (Unger, 1998, p. 58)

⁹ It was written in the dialect spoken in the area close to Żary, a town in the present-day western Poland (Comrie and Corbett, 2006, p. 596).

¹⁰ The pronoun data in Table 5 are simplified for convenience. Unger (1998, p. 90) attests some variation in the forms of the Lower Sorbian dual pronouns, but this variation does not matter for purpose of the present analysis. See Unger (1998) for the details on the variation in dual pronouns in Lower Sorbian as attested in Jakubica’s 1548 translation of the New Testament as well as in some historical grammars of Sorbian.

	1 st Dual	2 nd Dual	3 rd Dual
Nom	mej	wej	wonej
Gen	naju	waju	jeju
Acc			
Dat	nama	wama	nima
Loc			
Instr			

Table 5 Lower Sorbian Dual Pronouns from Jakubica's 1548 Translation of the New Testament
(adapted from Unger, 1998, p. 60)

The presence of the dual suffix *-j* in the new bimorphemic structure of the Upper and Lower Sorbian dual pronouns was not random. It can be accounted for by the need to preserve the reference to two individuals or entities. Although there are slightly different accounts of the origin of the dual suffix *-j*, both accounts underscore the importance of the referential cardinality of two individuals or entities that this suffix became to encode. According to Löttsch (1965), the dual suffix *-j* could be traced to the Upper Sorbian cardinal numeral *dwaj* ('two'). Schuster-Šewc (2000, p. 92) suggests that the dual suffix *-j* developed from the genitive forms (*naju*, *waju*) of the 1st and 2nd person Lower Sorbian dual pronouns as well as from the genitive form of the Lower Sorbian numeral 2 (*dweju*).¹¹ In any case, both accounts point to the fact that the dual suffix *-j* was derived from the forms (*dwaj/dweju*) of the cardinal numeral 2, and as such, the

¹¹ Schuster-Šewc notes (2000, p. 90) that the appearance of the dual suffix *-j* in the structure of the Sorbian dual pronouns probably dates back to the time period much earlier than the 16th century, possibly to the period when Sorbian was still unwritten ("vorschriftsparchliche Periode").

dual suffix was a perfect candidate to encode the reference to two individuals or entities. The dual suffix *-j* was a genuine Sorbian innovation used to solve the problem of the dual/plural pronominal syncretism and to disambiguate the dual from the plural. In the new bimorphemic structure, the dual suffix *-j* allowed to convey the duality of reference and as well as to disambiguate contexts with the dual/plural syncretism.

By the 19th century, the new bimorphemic dual pronouns *mej*, *wej*, *wonej* have become widespread and have formed a stable part of the Lower Sorbian grammar. Examples (21-23) from the *Lower Sorbian Bible* dating to 1868 attest to the widespread use of the new bimorphemic structure of the dual pronouns. In (21-23), we also observe the dual suffixes *-mej* *-tej*, *-ej* which indicate agreement with dual referents on the verb.

- (21) **Wónej** pak **žaš-tej** k njomu: **žo** ga **coš**, aby **mej** jo **pšigótowa-ł-ej**?
 3.DU then say-3.DU to him where that want COMP 1.DU prepare- PST-1.DU
 ‘They two say to him: where would you like us two to prepare?’
 (The Lower Sorbian Bible
 1868, Luke 22, 9)

- (22) A wón **žašo** k nima: **co** jo, **až wej** **stej** **mnjo** **pyta-ł-ej**?
 And he said to 3.DU.DAT what 2.DU BE.2.DU. me seek-PST-2.DU
 ‘And he said to the two of them: how is it that you two were seeking me?’
 (The Lower Sorbian Bible,
 1868, Luke 2, 49)

- (23) **wucabnik, mej** **kšělej** **rad**, aby ty **nama** **cynił**, **což mej** **ši** **pšosyś** **bužo-mej**.
 teacher, 1.DU want that 2.SG 1.DU.DAT did what 1.DU REFL ask be.FUT-1.DU
 ‘Teacher, we two would like you to do what we two would ask you to.’
 (The Lower Sorbian Bible
 1868, Mark, 10, 35)

Currently, the dual pronouns make up a stable part in the grammar of both contemporary Upper and Lower Sorbian.¹² Their complete paradigm is shown in Tables 7-8.

¹² Gvozdanovic (2012) notes that contemporary Upper Sorbian is in the process of losing the dual particularly in the nominal declension. I suggest that Upper Sorbian dual pronouns are more resistant to being lost since their bimorphemic structure contains the dual suffix *-j* encoding reference to two individuals or entities.

	1st Dual	2nd Dual	3rd Dual	
Nom	mój	wój	wonaj (masc)	wonej (non-masc)
Gen	naju	waju	jeju	jeju
Acc				jej
Dat	namaj	wamaj	jimaj	
Loc			nimaj	
Instr				

Table 7. Dual Pronouns in Contemporary Upper Sorbian (adapted from Stone, 2006, p. 621)

	1st Dual	2nd Dual	3rd Dual	
Nom	mej	wej	wonej	
Gen	naju	waju	jeju	
Acc			jeju : jej	jej
Dat	nama	wama	jima	
Loc			nima	
Instr				

Table 8. Dual Pronouns in Contemporary Lower Sorbian (adapted from Stone, 2006, p.622)

In sum, similar to Slovenian, the emergence of the new bipartite dual pronouns in Sorbian has been the result of grammatical markedness of dual number. Grammatical markedness of the dual triggered the dual/plural syncretism, which created ambiguity between the dual and plural reference. The ambiguity between the dual and the plural was resolved via innovating the morphological form of the old dual pronouns and creating a new bipartite structure.

3. Semantic and Morphosyntactic Markedness of Dual Number

3.1. Semantic Markedness of the Dual

In the previous sections I have suggested that the new bimorphemic dual pronouns in Slovenian and Upper and Lower Sorbian have emerged due to grammatical markedness of dual number. However, the term, grammatical markedness, is not exactly precise. In this section, I will replace a general and ‘loose’ term of grammatical markedness by a more appropriate notion of semantic markedness. Specifically, I will argue that semantic markedness of dual number is one of the underlying factors which necessitated the morphological restructuring of the dual pronouns in Slovenian and Sorbian and led to their diachronic change. First, I will define semantic markedness and explain how it applies to dual number. Next, following Sauerland (2003, 2008) and Sauerland et al (2005), I will show that in languages with a three-way number system, such as Slovenian and Upper and Lower Sorbian, the dual is semantically less marked than the singular, but it is semantically more marked than the plural.

Semantic markedness is a notion which applies to interpretable ϕ -features, such as person, number, and gender and presuppositions on their reference. The core idea which underlies semantic markedness is that presuppositions are tied to categorization of semantic ϕ -features, such as person, number, and gender. Let us consider an abstract example of linguistic categorization. A binary division creates two categories A and B. We expect one of the

categories, A, for example, to be marked and possess a semantic feature F. The unmarked category, B, need not be characterized by any semantic feature. Following the view (Sauerland 2003, 2008; Sauerland et al 2005) that pragmatic principles will override the purely semantic interpretation, the semantic feature F will be interpreted as a presupposition that the referent has of whatever property that characterizes the category A. Thus, category A which has a presupposition of a particular semantic feature F will be more marked than category B which does not have a presupposition. Category A will be a marked category, and category B will be a default one.

Following Sauerland (2003), Sauerland et al (2005) and Dvořák and Sauerland (2006), I assume that the number features are hosted by the functional ϕ -head where they are interpreted as presuppositions on their reference. Under this proposal, the number features in the ϕ -head are always interpreted as presuppositions which must be satisfied relative to the present discourse. The denotations of the number features with presuppositions on their reference are the following. The denotation of the plural is not constrained by any inherent presupposition since the feature plural presupposes nothing of its DP referent (24).¹³ In the denotation of the dual, the feature dual presupposes a plurality with exactly two singular parts, which is a dyad (25). In the denotation of the singular, the singular number feature presupposes that its referent DP denotes a singular atomic entity (26).

(24) [[PLURAL]] presupposes nothing.

(25) [[DUAL]] presupposes that the DP complement of ϕ refers to a plurality that has exactly two singular parts.

¹³ The fact that plural is semantically unmarked has been attested cross-linguistically (Alexiadou, 2019).

- (26) $[[\text{SING}]]$ presupposes that the DP complement of ϕ denotes a singular (atomic) entity.

Further, the interpretation of the above listed denotations of the number features is governed by the principle, *Maximize Presupposition*, a version of the Gricean quantity maxim applied to presuppositions (Heim, 1991). This principle requires that out of two lexical items, whose presuppositions are satisfied, the item with the strongest presupposition should be used (27).

- (27) *Maximize Presupposition*: Presuppose as much as possible in your contribution to the conversation. Use the most specific ϕ -feature possible whose presupposition is satisfied.

It is important to stress that the denotations of number features listed above form a markedness hierarchy with the plural being the most unmarked since it has no presupposition, the dual being more marked than the plural, but less marked than the singular, and the singular being the most marked member of the hierarchy (28).

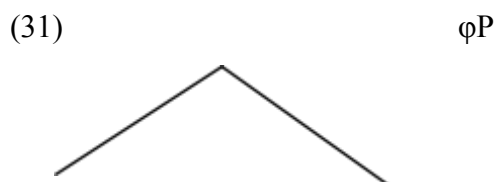
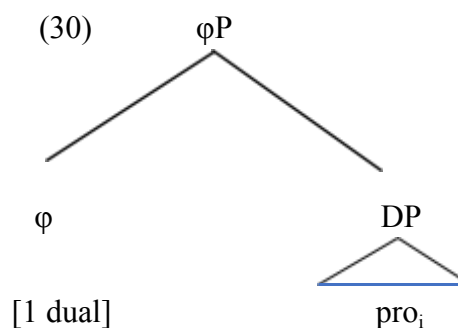
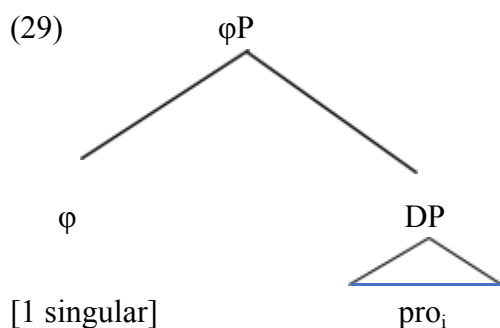
- (28) *Semantic Markedness Hierarchy of Number* (Dvořák & Sauerland, 2006)

PLURAL < DUAL < SINGULAR

I follow Sauerland's (2003) proposal which suggests that ϕ -features (person, number, gender) are interpreted in a separate functional head ϕ which takes DP as its complement. I assume that " ϕ -features, when they are interpreted, interpreted as a presupposition on the reference of an expression that denotes an individual" (Sauerland, 2008, p. 61). This assumption generally applies to the ϕ -features of pronouns. When the DP complement of the ϕ -head is a

pronoun, it bears an index (i), which indicates the value of the variable. The value of the variable is assigned by the context of an utterance and the speaker's referential intentions.

For example, let us take the 1st person singular pronoun *jaz* in Slovenian (29). The ϕ -features of *jaz* are the 1st person and singular. The 1st person feature presupposes that the referent must be the speaker, and the singular number feature presupposes that it must be a singular (atomic) individual. Together, the presuppositions of the 1st person and the singular number feature entail that the reference is made to exactly the speaker of an utterance. If we take the 1st person dual Slovenian pronoun *midva*, the ϕ -features of the 1st person and dual have the following presuppositions (30). The 1st person feature presupposes the reference to the speaker, and the dual number feature presupposes a dyad, exactly two singular individuals (without proper subsets). The combination of these two presuppositions produces a reference to exactly two individuals who are the speakers of an utterance. Let us take the 1st person plural Slovenian pronoun *mi* (31). Its ϕ -features are the 1st person and plural. The 1st person presupposes a reference to the speaker of an utterance, but the plural number feature has no inherent presupposition and is completely unmarked. Thus, in a three-way singular-dual-plural number system, the plural is most semantically unmarked; the dual is more marked than the plural but less marked than the singular.





The evidence for the presuppositional account of the semantics of the dual comes from the distribution of the dual in contemporary Slovenian in the following contexts: coordination of two singular conjuncts, noun phrases with overtly used *two* or *both*, instances of pronouns and nouns with dual antecedents. For example, in the context of two singular coordinated conjuncts, the dual is marked both on the verb and the adjective in agreement with the two coordinated conjuncts (32). In (32), the dual number feature is interpreted in accordance with the presupposition of the dual number given in (25), according to which the referents of *Janez* and *Tone* are two singular individuals.

- (32) Janez in Tone **sta** srečn-**a**
 John and Tony be.3.DU happy-3.DU
 ‘John and Tony are happy.’
 (Dvořák & Sauerland, 2006)

Similarly, in (33b) the presupposition of dual number applies to the pronominal clitic *ju*, and it is interpreted with reference to two singular individuals established by the discourse of the previous sentence. Since the dual antecedent has been already previously established in (33a) and the presupposition of the dual number feature was met, the response in (33b) with the dual clitic pronoun *ju* is felicitous. In contrast, (33c) is an infelicitous response since the plural clitic *jih* does not satisfy the presupposition of dual number which requires the reference be made to two singular individuals. In this case, the principle *Maximize Presupposition* is not met and the dual clitic *ju* with the strongest presupposition is not chosen, but it should have been.

- (33) a. A ne poznāš Petra in Vere?
 Q NEG know.2.SG Peter.GEN and Vera. GEN

‘Don’t you know Peter and Vera?’

- b. Sevèda **ju.**
of course CL.ACC.DU
‘Of course, I do.’
- c. * Sevèda **jih.**
of course CL.ACC.PL

(Dvořák & Sauerland, 2006)

The use of the dual is subject to additional pragmatic constraints. Its use is restricted to contexts where the numeral *two* and the quantifier *both* occur overtly in a sentence (34a-35a). The quantifier *obe* and the numeral *dve* restrict quantification to entities with two singular parts thus satisfying the presupposition of dual number given in (25). As shown in (34b-35b), the dual number features do not directly combine with either the numeral or the quantifier, but only with a trace bound by the numeral and the quantifier. The values of the variable *x* that satisfy the restrictors *both* and *two* are dual entities; therefore, the use of the dual is felicitous.

- (34) a. Umíj si **obé** rok-i!
wash-IMP REFL both hand-DU
‘Wash both hands!’
- b. [both]_x [NP wash [hand [φ-dual x]]]
- (35) a. Kúpil sem **dve** knjíg-i.
buy.PST AUX .1 two book-DU
‘I bought two books.’
- b. [2 books]_x [NP bought [φ-dual x]]

(Dvořák and Sauerland, 2006)

However, when the overt numeral *two* and the quantifier *both* do not occur, the use of the dual is not licensed. In such cases the plural is used instead. In (36a), the presupposition of the dual is not satisfied (even though it is established/well-known that humans have two hands) due to the absence of the restrictor *both*, and the plural is used instead (36b). The use of the plural in

(36b) proves that the dual is more restricted, more specific, and more marked than the plural. Similarly, the use of the dual without the numeral *two* as a pragmatic restrictor is not licensed (37). In (37), the presupposition of the dual would be satisfied only if all the pluralities consisting of books consisted of two singular books, which is obviously not the case.

(36) a. *Umij si rok-i!
 wash-IMP REFL hand-DU
 ‘Wash your hands!’

b. Umij si rok-e!
 wash-IMP REFL hand-PL
 ‘Wash your hands!’

(37) *Kupoval sem knjig-i.
 buy.PST AUX .1 book-DU
 ‘I bought books.’

(Dvořák & Sauerland, 2006)

Finally, the last piece of evidence for the semantic markedness of the dual comes from the contexts governed by politeness constraints. The application of politeness constraints is especially visible on pronouns and verbs. In Slovenian, in contexts of politeness, “the second person plural replaces the second person singular (but never the second person dual)” (Priestly, 2006, p. 414).¹⁴ In (38), the politeness consideration blocks the use of the singular and requires the use of the plural, which has no inherent presupposition as stated in (24). Thus, the plural surfaces as a less semantically marked category than the singular in accordance with the Semantic Markedness Hierarchy of Number Features (28). However, in contexts where the reference to two singular entities is presupposed, the use of the dual is felicitous (39). Since the

¹⁴ The replacement of the 1st person singular by the 2nd person plural pronoun in the context of politeness is attested in many Indo-European (Russian, French, German, Macedonian, Bulgarian, Czech, Polish) and non-Indo-European languages (Mparntwe Arrernte, Khasi, Usan, Kannada) (Corbett 2000; Comrie & Corbett, 2006). Head (1978) mentions that there are 84 languages that use the plural instead of the singular to show politeness – degrees of respect or social distance.

presupposition of dual number given in (25) is satisfied, the use of the dual is warranted. The use of the plural in (39) would be infelicitous since the plural has no inherent presupposition.

- (38) Ali se **boste** (vi) used-l-i ?
 Q REFL AUX.FUT.2.PL 2.PL sit-PART-PL.MASC
 ‘Would you like to sit down?’ (Polite to one person.)

- (39) Ali se **bosta** (vidva) used-l-a ?
 Q REFL AUX.FUT.2.DU 2.DU sit-PART-DU.MASC
 ‘Would you like to sit down?’ (To two persons.)

(Corbett, 2000, p. 226)

Politeness constraints in Upper Sorbian are somewhat different from those in Slovenian. In Upper Sorbian, the singular number is blocked by the plural when reference is made to one, two, or more than two entities or individuals. It is interesting to note that “ambiguity as to number arises from the honorific use of ostensibly plural forms to address one person or two persons” (Stone, 2006, p. 635). An example in (40) can be used to address one, two, or more than two persons. Since the plural has no inherent presupposition, its use in this context is felicitous and expected. Since both the dual and the plural are both non-singulars, the extension of the dual (a plurality of two singular entities) is a subset of the plural (a plurality of three or more entities). Thus, ambiguity in the interpretation between the dual and plural becomes possible due the dual’s subset relation to the plural.

- (40) *Upper Sorbian*
 Što činić-e?
 what do-2.PL
 ‘What are you doing?’

(Stone, 2006, p. 635)

The application of politeness constraints on pronoun use show that semantic markedness of number features is driven by their presuppositions. Furthermore, it shows that number

categories – singular, dual, and plural are not parallel but stand in markedness relations. Specifically, the dual is more marked than the plural, but it is less marked than the singular.

In sum, when number features categorize entities according to their numerosity, markedness relations arise among number categories. According to a presuppositional account of number features outlined above, a language with a singular-dual-plural number system, shows the following semantic markedness relations among its number categories. The plural number feature has no inherent presupposition, and as such it is the most semantically unmarked. The dual number feature has a presupposition that a reference be made to a plurality of two singular individuals, and thus it is more marked than the plural. The singular number feature has a presupposition that a reference be made to a singular entity, and as such it is the most marked number category.

3.2. Feature Value Markedness of the Dual

In the previous section, I have argued for the semantic markedness of dual number. In this section, I will focus on the feature value markedness which applies to the morphosyntactic features of the dual. Following (Nevins 2008, 2011), I understand feature value markedness as an asymmetric treatment of one value of a binary feature in relation to the other value; that is, one value of the feature is considered to be marked while the other value is unmarked. To understand how feature value markedness applies in a singular-dual-plural number system, number features need to be semantically decomposed.

The compositional semantics of number features is as follows. I assume a lattice-theoretic semantic approach to number according to which number features compose with lattices in terms of superset and subset relations (Link 1983). Following Harbour (2014), I adopt the following semantic definitions of number features (41). The (+atomic) feature partitions the lattice into

atomic and non-atomic regions. The positive value of (+atomic) feature applied to a predicate P picks out atomic elements while the negative value of this feature selects non-atomic elements. The (+minimal) feature applied to a predicate P captures sets of elements that have no proper subsets within a given region of the lattice. The (-minimal) feature picks out sets of elements with proper subsets.

(41) *Definitions of Number Features*

a. $\pm\text{atomic} = \lambda(x) (\neg) \text{atom}(x)$

b. $\pm\text{minimal} = \lambda P \lambda x (\neg) \neg \exists y (P(y) \wedge y \subset x)$

The semantic composition of the singular, dual, and plural number features proceeds as follows. The ($\pm\text{atomic}$) feature composes first breaking up the lattice into atomic and non-atomic elements. The ($\pm\text{minimal}$) feature composes via the function application. It applies to atomic or non-atomic elements checking for proper subsets. In the singular, the feature combination (+minimal (+atomic)) yields atoms without proper subsets (42a). In the dual, the feature combination (+minimal (-atomic)) yields dyads without proper non-atomic subsets (42b). In the plural, the feature combination (-minimal (-atomic)) produces non-atomic pluralities with proper non-atomic subsets (42c).

(42) *Number Features in Slovenian and Sorbian*

a. Singular (+minimal (+atomic))

b. Dual (+minimal (-atomic))

c. Plural (-minimal (-atomic))

The relative markedness of the number features – the singular, dual, and plural can be formalized in terms of markedness statements. I will borrow the concepts of context-free and context-sensitive markedness from (Nevins 2008, 2011); however, my interpretation of these markedness statements is different from Nevins's. I suggest that according to a context-free markedness statement, the marked value of the ($\pm$ atomic) feature is + (43). The (+atomic) feature occurs only in the singular number. The feature specification of the singular number (+minimal (+atomic)) denotes atoms without proper subsets, singular entities. Thus, the singular number denoting singular entities is most marked.

(43) *Context-Free Markedness*

The marked value of the ($\pm$ atomic) is +.

Neither value of the feature ($\pm$ minimal) is inherently marked; either of its values can be marked or unmarked relative to the context in which it occurs. I suggest that according to a context-sensitive markedness statement, the positive value of the (+minimal) feature is marked only when it appears in the context of the (-atomic) feature, which is in the dual (44). The dual feature specification (+minimal (-atomic)) denotes dyads, non-atomic entities without proper non-atomic subsets. The dual and plural share the (-atomic) feature, but the negative value of the (-minimal) feature in the plural is unmarked in comparison to the dual. Thus, dyads are more marked than pluralities.

(44) *Context-Sensitive Markedness*

The (+minimal) feature is marked in the context of the (-atomic).

In sum, the application of the notion of feature value markedness to number features has shown similar effects as semantic markedness. The singular number denoting atomic entities

without proper subsets is most marked. The dual number denoting dyads without proper non-atomic subsets is less marked than the singular, but it is more marked than the plural denoting pluralities with proper non-atomic subsets. The markedness of the number feature combination (+minimal (-atomic)) that specify the dual make it very unstable as a number category. That is why the dual is more prone to diachronic change, reanalysis, and morphological restructuring. There are two options of reducing the markedness of dual number: 1) replacing the dual by a less marked plural or 2) restructuring old dual forms and replacing them with new more efficient dual forms.

4. Markedness, Diachronic Change, and Economy

In this section, I will argue that both semantic markedness and feature value markedness are the factors which led to the diachronic change in the Slovenian and Sorbian dual. First, I will show how semantic markedness of the dual has affected its diachronic change. Second, I will analyze how feature value markedness has influenced the formation of the new bimorphemic dual pronouns. Third, I will discuss the role of economy in diachronic change and in the structure of the dual pronouns in Slovenian and Sorbian.

Recall that there are two stages of the diachronic change in the Slovenian and Sorbian dual pronouns identified earlier in the chapter (45). The 1st stage of the diachronic change involves the dual/plural syncretism of the pronominal forms. The 2nd stage involves the morphological restructuring and the formation of a new bimorphemic structure consisting of a plural pronominal stem and the cardinal numeral *dva* ('two') in Slovenian and a dual suffix *-j* in Sorbian.

(45) Diachronic Change in the Slovenian and Sorbian Dual Pronouns

a) Dual/Plural Syncretism

- b) New Dual = PL pronominal stem + the numeral *dva* ('two') in Slovenian and the dual suffix *-j* in Sorbian

I suggest that the 1st stage of the diachronic change of the dual pronouns can be accounted for in terms of the semantic markedness of dual number features. Recall that in the 16th century both Slovenian and Sorbian dual pronouns became syncretic with their plural counterparts. The dual/plural syncretism became possible since the plural number feature without any inherent presupposition could replace the dual number feature with a much stronger presuppositional specification that a reference be made to two singular individuals.

For example, in the case of the dual/plural *my* syncretism in Slovenian, the plural form supplanted the dual (46-47 repeated from 5-6). Similarly, in Sorbian the dual/plural pronominal syncretism was triggered by the semantic markedness of the dual, and it resulted in the use of the plural as a less semantically marked number category. It is important to note that both in Slovenian and Sorbian, the verbal forms were marked for dual number which helped disambiguate the pronominal reference. However, from a learnability perspective, it was difficult to delineate the difference between the dual and plural pronominal reference using the same morphological form.

- (46) Mojŝter, **my** hozhe-**va**, de nama ŝturiŝh, kar te bo-**va**
 teacher **1.PL** desire-1.**DU** COMP 1.**DU**.DAT do-2.SG.PRES which 2.SG be-**1.DU**.FUT proŝsil-**a**.
 ask-**1.DU**
 'Teacher, we two wish that you do for us two what we two will ask you.'

(Dalmatin *Bible* 1584, Mr 10:35)

- (47) **My** iei-**mo** ta sad
1.PL eat-1.**PL**.PRES this fruit
 'We eat this fruit ...'

(Trubar *Cathechismus*, 1550)

The 2nd stage of the diachronic development of the dual pronouns was necessitated by the 1st one. Specifically, the dual/plural pronominal syncretism has created a situation of ambiguity

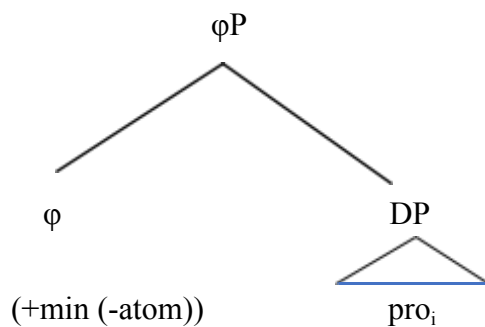
of the dual and plural pronominal forms which had to be resolved. The solution was found in the morphological restructuring of the dual pronouns. In Slovenian, new pronominal dual forms were created by adding the cardinal numeral *dva* ('two') to the plural pronominal base. The new Slovenian dual pronouns created included the following forms: *midva, midve; vidva, vidve; onadva, onidve*. In Upper and Lower Sorbian, the new dual pronominal forms were created by adding the dual suffix *-j* (derived from the numeral 2) to the plural pronominal base. The new Upper Sorbian dual pronouns included the following forms: *mój; wój; wonaj, wonej*. The new Lower Sorbian dual pronouns include the following forms: *mej, wej, wonej*.

As it was explained earlier in Section 3.1, the use of the dual is felicitous when it is subject to additional pragmatic constraints, such as an overtly used cardinal numeral *two* or the quantifier *both*. The cardinal numeral *dva* which augments the plural pronominal base in Slovenian dual pronouns *midva, midve; vidva, vidve; onadva, onidve* was a perfect candidate to disambiguate pronominal reference and distinguish the dual from the plural. The cardinal numeral *dva* with a cardinality reference 2 licenses reference to two singular entities or individuals. Similarly, in Sorbian, the dual suffix *-j* derived from the numeral *dwaj* ('two') licenses reference to two singular entities or individuals in the new bimorphemic dual pronouns: *mój; wój; wonaj, wonej* in Upper Sorbian and *mej, wej, wonej* in Lower Sorbian.

Next, I will argue that feature value markedness can be used to account for the two stages of diachronic change in the Slovenian and Sorbian dual pronouns (45). Stage 1 of the diachronic development of the dual pronouns in Slovenian and Sorbian is illustrated by a syntactic structure in (48). In this syntactic structure, the ϕ -head hosts the feature combination (+minimal (-atomic)) of the dual, which is marked. According to a context-sensitive markedness statement (44), the (+minimal) feature is marked in the presence of the (-atomic) feature. Since the number feature

combination of the dual (+minimal (-atomic)) is marked, it has become very unstable in the singular-dual-plural number system. Being marked, the (+minimal) number feature cannot remain in the feature bundle; it has to be either deleted or split from the feature bundle.

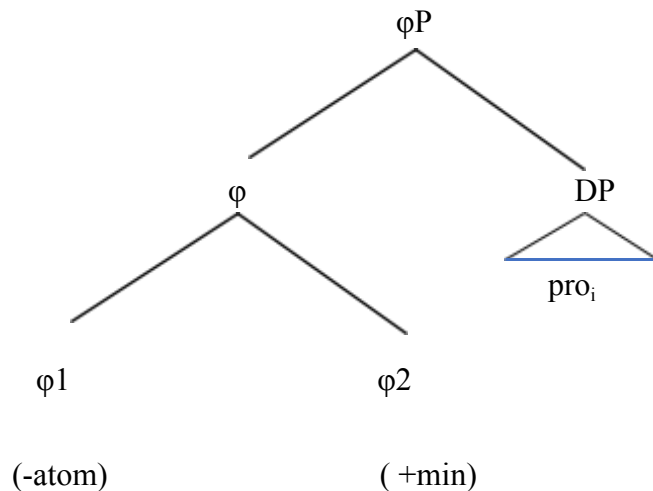
(48) Diachronic Stage 1 (Old Dual Pronouns in Slovenian and Sorbian)



Stage 2 in the diachronic development of the Slovenian and Sorbian dual pronouns is shown in a syntactic structure in (49). In this syntactic structure, the number feature combination of the dual (+minimal (-atomic)) is split by Fission (Noyer, 1998) (an operation in Distributed Morphology (Halle and Marantz, 1993) which can split a feature bundle) into two separate syntactic heads (ϕ_1 and ϕ_2) hosting the (-atomic) and (+minimal) number features separately. The syntactic structure with split syntactic nodes has made the morphosyntactic representation of the dual less marked and more efficient. The split number features (-atomic) and (+minimal) will be phonologically filled by the Vocabulary Items. In Slovenian, the (-atomic) number feature will be realized by the plural pronouns *mi*, *vi*, *ona* while the (+minimal) number feature will be realized by the cardinal numeral *dva* ('two'). Together these two morphemes make up the new bimorphemic dual pronouns in Slovenian - *midva*, *midve*; *vidva*, *vidve*; *onadva*, *onidve*. Similarly, in Slovenian, the (-atomic) number feature will be realized by the plural pronouns while the (+minimal) feature will be realized by the dual suffix *-j*. The combination of two

morphemes formed the new bimorphemic dual pronouns: *mój; wój; wonaj, wonej* in Upper Sorbian and *mej, wej, wonej* in Lower Sorbian.

(49) Diachronic Stage 2 (New Dual Pronouns in Slovenian and Sorbian)



As I have shown above, both semantic markedness and feature value markedness of dual number have triggered diachronic change; that is reanalysis and the formation of the new bimorphemic dual pronouns in Slovenian and Sorbian. As a result of reanalysis, the new bimorphemic dual pronouns were less marked than their old counterparts. More importantly, the new bimorphemic dual pronouns were more economical and more efficient. I suggest that reducing or eliminating markedness is one of the ways of optimizing a language category, such as grammatical number. In regard to dual number, Slobodchikoff (2019) proposes a principle of morphosyntactic feature economy which drives diachronic change in Slavic languages with the dual (50). The proposed principle of morphosyntactic feature economy belongs to the “third factor” principles of computational efficiency which optimize and constrain linguistic structures (Chomsky 2005, van Gelderen 2011, Di Sciullo & Jenkins 2016, Medeiros & Piattelli-Palmarini 2018). This principle can be used to account for a more economical and efficient bimorphemic structure of the new dual pronouns in Slovenian and Sorbian. More importantly, investigation of

markedness of ϕ -features in other languages can lead us to the discovery of other economy principles which optimize linguistic categories and structures.

(50) *Morphosyntactic Feature Economy*

Optimize a morphosyntactic representation of the dual.

5. Conclusion

In this chapter, I have analyzed the diachronic evolution of the dual pronouns in Slovenian and Sorbian. Using diachronic language corpora, I have identified the diachronic stages and linguistic forms of the Slovenian and Sorbian dual pronouns. I have argued that the emergence of new bimorphemic dual pronoun in Slovenian and Sorbian was triggered by two kinds of markedness: semantic and morphosyntactic. I have further suggested that the existence of marked and unmarked linguistic structures correlates with principles of economy which constrain human language, as a biological system. In the case of the dual, a principle of morphosyntactic feature economy can be used to account for the emergence of the new bimorphemic dual pronouns which were less marked and as a result more economical and computationally efficient.

Cross-linguistic studies on the evolution of the dual have shown that the dual, as a category of number, is very unstable and prone to diachronic change. While the dual has been lost in many languages (Old Church Slavonic, Old Russian, Attic Greek, Vedic and classical Sanskrit, Old Persian, Old Icelandic, Old English, Old Irish), it is attested in at least 10 contemporary languages (with 3 persons and 3 numbers): Awtuw (Sepik-Ramu), Arapesh (Torricelli), Hmong Njua (Hmong Mien), Lithuanian (Indo-European), Tonkawa (Coahuiltecan), Tunica (Gulf), Wappo (Yuki), Zuni (isolate) Navajo (Na-Dene), and Central Yupik (Eskimo-Aleut) (Harley & Ritter 2002). While none of these languages exemplify a

morphological structure of the dual pronouns similar to that in Slovenian and Sorbian, a number of these languages have dual pronouns which are morphologically complex. I will leave the investigation of the historical development of the dual pronouns in these languages for further research.

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