The Role of Morphosyntactic Feature Economy in the Evolution of Slavic Number

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1. Introduction

The Slavic dual pronouns exhibit two different patterns of diachronic change. The first pattern of diachronic change is exemplified in three languages - Slovenian, Upper, and Lower Sorbian. In these languages, dual pronouns continue to be used by the speakers in a bi-morphemic morphological structure consisting of a plural pronominal stem and the numeral dva ('two') or the dual suffix -j (1a). The second pattern of diachronic change is more pervasive and occurred in all of the Slavic languages including Russian and Kashubian. In Russian and Kashubian, dual pronouns were reanalyzed by the speakers as plural (1b).

(1) Two Patterns of Diachronic Change in the Slavic Dual

a. dual → plural + dva/-j  Slovenian & Upper, Lower Sorbian
b. dual → plural  Russian & Kashubian

The diachronic changes in the Slavic dual, although well documented, remain a puzzling problem for morphological theory. Some scholars attribute diachronic changes in the Slavic dual to morphological markedness of dual number. Derganc (2003) shows that the nominal dual, as a more morphologically marked category, was replaced by the plural in Ljubljana Slovenian and some of its other dialects. In a detailed study of the Old Russian dual, Žolobov (2001) proposes that dual pronouns were reanalyzed as plural due to markedness of the dual as a more restricted category of number as opposed to the plural. Nevins (2011) argues that morphological markedness of the abstract features of the dual in Slovenian and Sorbian can trigger either postsyntactic deletion of the marked dual features themselves or deletion of other phi-features, such as gender.

As the previous studies showed, the reanalysis of the Slavic dual is tied to its morphological markedness. However, it is not clear how morphological markedness determines two different patterns of diachronic change in the Slavic dual, and what linguistic principles are responsible for these changes. I will argue that diachronic changes in the Slavic dual pronouns and verbal agreement are the result of morphological markedness of the [-singular -augmented] feature combination which represents dual number at Morphological Structure. I propose a new principle of Morphosyntactic Feature Economy which triggers repair operations of impoverishment and fission applying postsyntactically to eliminate morphosyntactic markedness of the dual number features. I present new corpus data from Old Russian, Old Sorbian, and Old Slovenian to support my proposal.

2. The Dual in Slovenian and Sorbian

In the 16th century, Old Slovenian monomorphemic dual pronouns my, vy, and oni became syncretic with their plural counterparts. In (2a-b), the 1st person pronoun my is syncretic in the dual and plural. Only the verbal agreement suffixes -va and -mo distinguish dual from plural referents.

(2) a. My bo-va letu mej|tu konzha-l-a ...
   1.PL be-1.DU,FUT this place destroy-PART-DU,MASC
   ‘We two will destroy this place...’ (Jakop b 2008:363)

During this period, the speakers of Old Slovenian began to add the numeral *dva* ('two') to a plural pronominal stem to disambiguate the dual from the plural. As a result, the monomorphemic 1st, 2nd, and 3rd person Slovenian dual pronouns *my*, *vy*, *ona/oni* became bi-morphemic: *my-dva*, *vy-dva*, *oni-dva*, and were easily distinguished from the plural. For example, the 1st person dual pronoun *my-dva*, which triggered dual agreement suffix *-va* on the verb, was clearly distinct from the 1pl *my*.

(3) Oftani-te tukaj, dokler my-dva supet k’vam pride-va
stay-IMP here until 1.PL-TWO to 2.PL.DAT return-1.DU.PRES
‘Stay here until we two come back to you.’ (Jakop 2008:363)

The 1st, 2nd, and 3rd person dual pronouns *midva*, *vidva*, *onadva* continue to be used in Contemporary Standard Slovenian. They trigger verbal agreement expressed by the dual suffixes *-va* and *-ta* (4).

(4) 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 2003:171)

The historical development of the dual in Old Sorbian was very similar to that of Old Slovenian. In the 16th century, the 1st, 2nd, and 3rd person dual pronouns *my*, *wy*, *wone* became syncretic with the plural. The only possibility to differentiate the dual from the plural was through verbal agreement suffixes. In (5a-b), verbal agreement suffixes *-moj* and *-tai* indicate dual reference of the subject pronouns.

(5) a. My chze-moj so, schtzo ...
1.PL want-1.DU.PRES REFL COMP
‘We two want to …’ (Derganc 1998:52)

b. Wy widz-i-tai a schlysch-i-tai
1.PL see-TH-2.DU.PRES and hear-TH-2.DU.PRES
‘You two see and listen.’ (Derganc 1998:50)

The same bi-morphemic structure of the dual which developed in the 16th century is still used in Contemporary Upper and Lower Sorbian. In Upper Sorbian, the 1st, 2nd, and 3rd person dual pronouns *mó-j*, *wó-j*, *wona-j* are composed of a plural stem *mó*, *wó*, *wona* and the dual suffix *-j* derived from the masculine numeral *dvaj* ('two'). Agreement with the dual subjects is indicated by the suffixes *-moj* in the 1st person and *-tej* in the 2nd/3rd persons (6a-b).

(6) a. Ha mó-j smój wostal-oj tam
and 1.PL-DU be.1.DU stayed-DU there
‘And we two stayed there.’ (Scholze 2007:125)

b. Wó-j stej najbóle skók
2.PL-DU be.2.DU most jump
‘You two are the fastest.’ (Scholze 2007:124)

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1. The stems *mó* and *wó* in the Upper Sorbian dual pronouns were the result of labialization and diphthongization which had occurred in Old Sorbian (Schaarschmidt 1998, Scholze 2007). The Old Sorbian high central vowel [i] spelt as *y* in the plural stems *my* and *wy* was labialized as /u/ after the labials /m/ and /w/. Then, the vowel /u/ was diphthongized as /uo/ spelt as *ó* in the dual forms *mó-j* and *wó-j*.

2. In (6a-b), the dual suffixes *-moj* and *-tej* are part of the stem of the irregular verb ‘be.’
In Lower Sorbian, the 1st, 2nd, and 3rd person dual pronouns *mej, wej, and wone-j* are identical in their morphemic composition to their Upper Sorbian counterparts. The Lower Sorbian dual pronouns consist of a plural stem *me, we, wone* and the dual suffix *–j*, which had originated from the genitive forms of the personal pronouns *na-ju, wa-ju, je-ju* and the numeral *dwe-ju* (“two”). In (7a-b), the 1st and 2nd dual pronouns *mej* and *wej* convey dual reference which is marked on the verbs by the dual suffixes *-mej* and *-tej*.

(7) a. *Mej* gledach-*mej* wójadnom jaden na drugego.
   1.PL-DU.NOM look-1.DU.AOR. together one on other
   ‘We two looked at each other.’ (Niedersorbisches Textkorpus)

   b. *We-j* stej grońi-1-ej
   2. PL-DU.NOM be.2.DU say-PERF-2.DU
   ‘We two have said.’ (Niedersorbisches Textkorpus)

The evolution of the dual pronouns in Slovenian and Sorbian is summarized in (8). The speakers of Old Slovenian and Old Sorbian reanalyzed monomorphemic dual pronouns as pronouns with a new bi-morphemic structure. New dual pronouns consisted of a plural pronominal stem and the numeral *dva* or the dual suffix *-j*.

(8) Diachronic Changes in the Slovenian and Sorbian Dual Pronouns

<table>
<thead>
<tr>
<th>Diachronic Changes</th>
<th>Slovenian</th>
<th>Upper Sorbian</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Du/pl syncretism</td>
<td>my, vy, oni</td>
<td>my, wy, wone</td>
</tr>
<tr>
<td>2. Reanalysis as a bi-morphemic dual</td>
<td>mi-dva, vi-dva, oni-dva</td>
<td>mó-j, wó-j, wona-j</td>
</tr>
<tr>
<td></td>
<td>me-j, we-j, wone-j</td>
<td></td>
</tr>
</tbody>
</table>

3. The Dual in Russian and Kashubian

In Old Russian, the 1st and 2nd dual pronouns *vě* and *vy* first appeared in the translations of the Bible in the 11th century (9a-b). Dual reference of the pronouns was marked by the verbal suffixes *-vě* and *-ta*.

(9) a. vě-vě vě jako sì jestř synū najǫ
   know-1.DU.PRES 1.DU.NOM this is son our
   ‘We two know that he is our son.’

   b. jego že vy gle-ta jako slěpű rodi-sę
   3.SG.ACC EMPH 2.PL.NOM say-2.DU.PRES as blind born-REFL
   ‘You two say that he was born blind.’ (Project Manuscript)

As early as in the 11th century, the 2nd person dual pronoun *vy* began to show its first signs of decline since it became syncretic with the plural (10a-b). In (10a), the 2nd person dual *vy* refers to two individuals since the verb is marked by the dual suffix *-ta*. In (10b), the pronoun *vy* has a plural reference since the verb is marked by the plural suffix *-te*.

(10) a. ego že vy gl-te antixrůsta
   3.SG EMPH 2.PL say-2.PL.PRES antichrist
   ‘You two say that he is an antichrist.’
b. vy tvori-te děl-o ots-a vaš-ego
2.PL.NOM do-2.PL.PRES thing-ACC father-GEN your-GEN
‘You (more than two) do things that your father does.’ (Project Manuscript)

By the 15th century, the 2nd person dual vy was already reanalyzed as plural since the Old Russian verb was marked by the 2nd person plural agreement suffix -te (11).

(11) počto vy rasprć ima-te meži soboj
why 1.PL.NOM dispute have-1.PL.PRES between selves
‘Why do you have an argument between the two of you?’ (Project Manuscript)

Unlike the 2nd person dual vy, which became syncretic with the plural in the 11th century, the 1st person dual vě did not syncretize with the 1st person plural my until the end of the 15th century due to the phonological difference between the pronominal stems vě and my in the 1st person (12 a-b). In (12a), the dual reference of the 1st person my is indicated by the dual suffix -vě. In (12b), plural reference of the pronoun my is marked by the suffix -mǔ.

(12) a. my posle-vě ko bratu svojemu
1.PL.NOM send-1.DU.PRES to brother own
‘We two will send to our brother.’

b. jako my slyša-xo-mū as 1.PL hear-PAST-1.PL
‘As we (more than two) heard ...’ (Project Manuscript)

By the end of the 15th century, the reanalysis of the 1st person dual my as plural was complete (13). This reanalysis is evidenced by the appearance of plural suffix -mǔ marked on the verb. Since the Old Russian dual pronouns were reanalyzed as plural, Contemporary Standard Russian pronoun system continues to make only a singular ~ plural distinction (13).

(13) my vědae-mū
1.PL know-1.PL.PRES
‘We know.’ (Project Manuscript)

(14) Contemporary Standard Russian Pronouns

<table>
<thead>
<tr>
<th>Num/Person</th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>ja</td>
<td>my</td>
</tr>
<tr>
<td>2.</td>
<td>ty</td>
<td>vy</td>
</tr>
<tr>
<td>3.</td>
<td>on, on-a, on-o</td>
<td>on-i</td>
</tr>
</tbody>
</table>

The Kashubian dual followed the same pattern of reanalysis as its Russian counterpart. Diachronic changes in the Kashubian dual proceeded in two stages. First, the 1st, 2nd, and 3rd person monomorphemic dual pronouns syncretized with the plural. Second, the dual was replaced by the plural by the end of the 20th century (15).

(15) Diachronic Changes in the Kashubian Dual Pronouns

<table>
<thead>
<tr>
<th>Number/Person</th>
<th>19th Century</th>
<th>1950s</th>
<th>20th Century</th>
</tr>
</thead>
<tbody>
<tr>
<td>DU 1.</td>
<td>ma</td>
<td>ma</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>va</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>wón-ji, wón-e</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PL 1.</td>
<td>me</td>
<td>mě</td>
<td>mě</td>
</tr>
<tr>
<td>2.</td>
<td>ve</td>
<td>wa</td>
<td>wa</td>
</tr>
<tr>
<td>3.</td>
<td>wón-ji, wón-e</td>
<td>oni, oně</td>
<td>woni, woně</td>
</tr>
</tbody>
</table>
As the historical data in (15) show, the 2nd person dual pronoun *va* was the first one to syncretize with the plural */wa/\(^3\). Next, historical change affected the 1st person dual *ma* which syncretized with the plural *mê* \(^4\). The 1st and 2nd person dual forms *ma* and *va* which were attested in the 19th century were replaced by the plural forms *mê* and *wa* by end of the 20th century. As a result of this diachronic change, the dual is no longer a distinct number category in contemporary Kashubian.

Russian and Kashubian exhibit the same pattern of diachronic change in the dual pronouns (16). As in Slovenian and Sorbian, the first stage of diachronic change involved the syncretism between the dual and the plural. As opposed to Slovenian and Sorbian, the second stage of diachronic change resulted in the reanalysis of the dual as plural.

(16) Diachronic Changes in the Russian and Kashubian Dual Pronouns

<table>
<thead>
<tr>
<th>Diachronic Changes</th>
<th>Russian</th>
<th>Kashubian</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Du/pl syncretism</td>
<td>my, vy</td>
<td>ma, va</td>
</tr>
<tr>
<td>2. Reanalysis as plural</td>
<td>my, vy</td>
<td>mê, wa</td>
</tr>
</tbody>
</table>

4. The Principle of Morphosyntactic Feature Economy

In the framework of Distributed Morphology (Harley & Noyer 1999), I propose a new principle of MFE which provides a principled explanation for the two different patterns of diachronic change in the Slavic dual. I argue that application of this principle eliminates markedness of the dual via morphological repairs. The principle of MFE (MFE) is formulated as follows: (17)

(17) The Principle of Morphosyntactic Feature Economy:
A marked [-singular, -augmented] feature combination of the dual cannot be realized at Phonological Form without eliminating markedness of its features at Morphological Structure.

I assume (Noyer 1997) that the two bivalent features [+singular] and [+augmented] are sufficient to encode a singular ~ dual ~ plural number distinction in Old Slovenian, Sorbian, Russian, and Kashubian. I further assume that the marked combination of the Slavic dual is subject to context-free and context-sensitive markedness statements (Nevins 2008, 2011). The feature [-singular] is marked due to context-free markedness, and the feature [-augmented] in marked in the context of the [-singular].

I argue that the principle of MFE is necessary to 'simplify' a morphosyntactically marked and therefore, computationally inefficient [-singular -augmented] feature combination of the Slavic dual. Assuming that the Faculty of Language (part of our cognitive system) is designed for an optimal computation, I stipulate that the proposed principle falls within general Economy Principles not specific to the Language Faculty (FL); namely, within "the third factor" principles of efficient computation (Chomsky 2005, 2008).

Since the [-singular -augmented] feature combination of the dual puts an additional computational burden on the Language Faculty, its computational inefficiency should be resolved via the principle of MFE. As shown in diagram (18), the principle of MFE targets a marked [-singular -augmented] feature bundle of the Slavic dual at Morphological Structure (MS) before morphosyntactic features are filled with phonological content through Vocabulary Insertion at Phonological Structure.

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\(^3\) I suggest that the dual/plural syncretism was possible due to the phonological changes in the stem */va/*. See Stone (1993) for more details.

\(^4\) The 1st person dual *ma* pronounced as *[me]* became syncretic with the 1st person plural *mê* pronounced as *[mê]*. The introduction of the phoneme */ə/*, the so-called Kashubian schwa, resulted in the phonological change *ma* /ma/> *mê* /mê/ in the 1st person (Stone 1993:765).
(18) Application of the Principle of Morphosyntactic Feature Economy

There are two options to make the morphosyntactic representation of the dual less marked and therefore more computationally efficient. One option is to split a marked feature bundle of the dual into two separate terminal nodes [-singular] and [-augmented] via fission, which happened in Old Slovenian and Sorbian. The other option is to delete the [-augmented] feature via a morphological repair operation of impoverishment, which occurred in Old Russian and Kashubian.

5. Reanalysis of the Dual in Slovenian and Sorbian

During its historical development, the Old Slovenian dual became very unstable as a grammatical category in the 16th century (Derganc 1988, 2003; Jakop 2008). I argue this instability of the dual was due to the markedness of its morphosyntactic representation. I propose that the solution to the problem of reducing markedness of the Old Slovenian dual lies in the application of the principle of Morphosyntactic Feature Economy. At Morphological Structure, the Old Slovenian dual pronouns my, vy, oni were represented by the combination of the [-singular -augmented] features whose feature values were marked (19).

(19) The Marked Structure of the Old Slovenian Dual Before Fission

\[ D \]

\[ D \rightarrow \text{Num} [-\text{sg} -\text{aug}] \]

The principle of MFE applied to the marked feature combination of the Old Slovenian dual via fission. A fission rule split the marked feature combination of the Old Slovenian dual into two terminal nodes: [-singular] and [-augmented] (20).

(20) Fission Rule for the Old Slovenian Dual:

[-singular -augmented] → [-singular] [-augmented]

As a result of fission, two separate terminal nodes were created in the morphosyntactic structure. The Number node which hosted the marked [-singular -augmented] feature combination was split into Num\(_1\) with [-singular] feature, and Num\(_2\) with the [-augmented] feature (21). The resultant morphosyntactic structure was less marked and therefore is more computationally efficient.
(21) A Reanalyzed Old Slovenian Dual After Fission

After the rule of fission had split the morphosyntactic combination of the Old Slovenian dual into two terminal nodes, Vocabulary Insertion applied to realize the two positions of exponence with phonological content. Two Vocabulary Items were needed to fill two positions of exponence created by fission (22). The [-singular] feature was filled by Vocabulary Items /mi/, /vi/, or /oni/ (the plural pronominal stems). The [-augmented] feature was realized by the numeral dva (‘two’) as the only minimal non-singular VI. After Vocabulary Insertion, we have the following bi-morphemic dual pronouns - my-dva, vy-dva, oni-dva.

(22) VIs for the Old Slovenian Dual Pronouns:
/my/, /vy/, or /oni/ ↔ Num [-singular]
/dva/ ↔ Num [-augmented]

As a result of the application of the principle of MFE, the 1st, 2nd, and 3rd person reanalyzed dual pronouns mi-dva, vi-dva, oni-dva have become part of the grammatical system in Contemporary Standard Slovenian. Similarly, the principle of MFE applied in Old Sorbian. A reanalyzed pronominal number system in Contemporary Upper and Lower Sorbian retained the dual since it was reanalyzed into a more economical morphosyntactic structure. In Contemporary Upper and Lower Sorbian, bi-morphemic dual pronouns mó-j, wó-j, wona-j and me-j, we-j, woné-j continue to be used by the speakers till present day.

6. Reanalysis of the Dual in Russian and Kashubian

I argue that the application of the principle of MFE is the reason for the reanalysis of the Old Russian 1st and 2nd person dual pronouns vě, vy as plural. Assuming (Nevins 2008, 2011) that the dual is represented by a marked [-singular, -augmented] feature combination in narrow syntax, I suggest that the Old Russian dual had a marked morphosyntactic structure in narrow syntax.

In the [-singular-augmented] representation of the Old Russian dual both number features were marked (23). To eliminate markedness of the [-singular -augmented] combination, the rule of impoverishment deleted the [-augmented] feature in the context of a marked [-singular] feature at Morphological Structure (24).

(23) The Marked Structure of the Old Russian Dual

(24) Impoverishment Rule for Old Russian:
[-augmented] → ∅/ Num [-singular]

I suggest that after the rule of impoverishment deleted the [-augmented] feature in the morphosyntactic structure of the dual, Old Russian speakers of the next generation did not have enough morphological evidence to posit the other ‘+’ value of the [augmented] feature. Due to the lack of distinction in the acquisition input, I suggest that the entire [±augmented] feature was deleted via impoverishment.
(25) Impoverishment of the $[±$augmented$]$ in Old Russian:
\[ [±augmented] \rightarrow \emptyset \]

The result of the application of the principle of MFE in Old Russian was a diachronic change from the dual to plural. In the reanalyzed morphosyntactic structure (26), the terminal Number node retained only the $[-$singular$]$ feature. The Old Russian pronoun vě and vy were no longer represented by the $[-$singular, -augmented$]$ feature combination, but already had an impoverished $[-$singular$]$ morphosyntactic representation.

(26) Dual to Plural after Impoverishment

\[
\begin{array}{c}
D \\
\text{Num} \\
[-\text{sg}] \\
\end{array}
\]

The principle of MFE was a driving force for the morphosyntactic reanalysis of the Old Russian dual as plural, at the end of the 15th century. As a result, the singular ~ dual ~ plural pronominal number system of Old Russian was reanalyzed as a singular ~ plural system in Contemporary Standard Russian. The only feature which distinguishes singular and plural pronouns in Contemporary Standard Russian is $[±$singular$]$. The principle of MFE applied in Kashubian in a similar way.

7. Theoretical Implications of the Principle of Morphosyntactic Feature Economy

The principle of MFE makes an important prediction about diachronic change of the dual cross-linguistically. It predicts that if a language has a singular ~ dual ~ plural number system, the dual will have a bi-morphemic morphological structure. The important consequence of this prediction is that monomorphemic duals should not occur cross-linguistically. This prediction is borne out in languages with dual number which are typologically unrelated to Slavic. In Manam (Austronesian), Hebrew (Afro-Asiatic), and Hopi (Uto-Aztecan), the dual has a bi-morphemic structure. In these languages, the distribution of the number features falls out as predicted by the proposed principle. The plural suffix is encoded by the $[-$singular$]$ feature, and the dual suffix or numeral two is encoded by the $[-$augmented$]$ feature. In combination, both features yield dual number, or referential cardinality of 2.

References


Nevins, Andrew. 2011. Marked triggers vs. marked targets and impoverishment of the dual. Linguistic Inquiry. 42.413-44.


