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The Slavic Word: Suffix Order and Parsability¹

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Abstract

In this paper, I test the Parsability Hypothesis (PH) (Hay 2001, 2002, 2003) against data from Slavic languages. I demonstrate an intricate relationship between derivation and inflection in the sense that inflectional suffixes serve to identify derivational suffixes but the two types of suffixes differ in respect to further suffixation, and thus suffixes should be distinguished according to their position either in the derivational or inflectional word slot. Based on synchronic and diachronic evidence, I contend that in Slavic languages, parsability holds for inflection, provided that a language stacks suffixes in the inflectional word slot, but not for derivation, though parsability may be used as a supporting criterion for establishing the +/- closing character of a suffix in the derivational word-slot. I show that different stages in the diachronic development of a language exhibit different degrees of parsability, i.e. parsability is not a constant but a tendency. I conclude that in order to account adequately for Slavic word structure, PH requires some revisions: to consider the role of the word-length and assume two different domains of parsability – derivational and inflectional, as well as to allow the same suffix to apply recursively in derivation and to undermine the role of phonotactics in derivational morphology.

Keywords: suffix order, parsability, derivation, inflection, Slavic languages, closing suffixes

1. Introduction

Hay (2001, 2002, 2003) claimed that combination of affixes in English depends on processing constraints. Hay has argued that more parsable affixes do not occur within less parsable affixes because the attachment of a less separable affix to a more separable one is difficult to process. Hay's parsability hypothesis (PH) assumes a dual-route access model of morphological processing, i.e. we access derived words either as whole words or as decomposable units. PH defines parsability in terms of relative frequency, derived as a ratio of frequency of the derivative to frequency of the base. "If the derived form is more frequent than the base it contains (*illegible* is more frequent than *legible*), then the whole-word route will have an advantage. If the derived form is less frequent than the base it contains (*illiberal* is less frequent than *liberal*), then the decomposed route will be advantaged" (Hay 2002: 529). Thus the same affix can exhibit differing degrees of parsability in different morphological forms (*il-* in *illegible* is less parsable than *il-* in *illiberal*). Hay also demonstrates that relative frequency correlates with productivity, semantic transparency and phonotactics. Productive categories are semantically transparent and accessed via decomposition, whereas unproductive categories are semantically opaque and therefore accessed as whole words. Parsing is related to phonotactics in the sense that across the morpheme boundary, highly parsable affixes form combinations of phonemes that do not occur morpheme-internally. Moreover, C-initial suffixes are more easily parsable than V-

¹ Abbreviations used in the text: ACC – accusative, ADJ – adjective, AOR – aorist, ASP – aspect, Bg. – Bulgarian, C- consonant, DAT – dative, DEF – definite, DU – dual, E. – English, G. – German, GEND – gender, GEN – genitive, IMP – imperfect, IMPFV1 – primary imperfective, IMPFV2 – secondary imperfective, INST – instrumental, LOC – locative, MB – Modern Bulgarian, N – noun, NUM – number, OB – Old Bulgarian, P. – Polish, PER – person, PH – Parsability Hypothesis, PL – plural, PRES – present, PRET – preterite, PFV – perfective, R. – Russian, RNC – Russian National Corpus, SG – singular, TM – thematic marker, V – vowel, VOC – vocative, WF – word-formation.

initial suffixes and do not blur the morpheme boundary via phonological and morphonological alternations. Thus parsability depends on different factors and occurs by gradations, which allows affixes to be ordered hierarchically according to their ability to parse.

As already mentioned, the PH has been formulated originally for English. Up to now, the hypothesis has been tested against data from English (cf. Hay 2001 and later works, Plag 2002, Hay & Baayen 2002, Hay & Plag 2004, Zirkel this volume) and Dutch (Baayen and Plag, forthcoming). Both English and Dutch are Germanic languages and display quite similar morphological organization, with Dutch inflectional morphology being a bit richer than that of English. It is unclear whether degree of inflectional complexity has some impact on parsability in derivation, but it is a fact that Baayen & Plag (forthcoming) conclude that (derivational) affix order in (the inflectionally richer) Dutch is less tightly constrained by parsability than in English.

Although derivation, like inflection, creates word structure, PH makes predictions neither about the role of inflection in the processing of complex words nor about the order of inflectional affixes. Of course, one expects that since inflection follows derivation and is prototypically more productive and transparent than the latter, inflectional affixes should be more parsable than derivational affixes. However, contra such expectations, inflectional affixes (e.g. in the Slavic languages), are, as a rule, vowel initial and often cause stress changes and palatalizations, i.e. are difficult to parse. Thus in order to find some explanation of this and related problems, the present paper will challenge the PH with data from languages with very rich inflectional morphology such as the Slavic ones.

Typologically, the Slavic morphology is inflecting-fusional and there is a clear differentiation between derivational and inflectional affixes (Skalička 1979), actually suffixes since Slavic languages represent right-hand-headedness. As inflection is necessary for the well-formedness of the Slavic word, derivational suffixes occur jointly with inflectional suffixes, as a rule, e.g. R. *-ic-a*, *-stv-o*, etc. where the final *-a*, and *-o* are inflection. Inflection cannot be omitted, since in some instances it helps to distinguish between two derivational suffixes, e.g. Bg. *-k-a* derives females from males (*učitel* ‘teacher’ → *učitel-k-a* ‘female teacher’), whereas *-k-o* derives males after their negative characteristics (*mārzeliiv* ‘lazy’ → *mārzeliiv-k-o* ‘lazy male person’). Other derivational suffixes do not require an additional inflectional suffix, e.g. Bg. *uča* ‘(I) learn’ / R. *učit* ‘to learn’ → Bg./R. *uč-enik*. The fusional character of the Slavic morphology is seen clearly in the blurred by phonological and morphonological changes morpheme boundaries and in the frequency of cumulative exponence in inflectional morphology (i.e. a single suffix often remains for more than one meaning, cf. Matthews 1972). Crucially, blurred morphemes boundaries can be due to the addition of derivational suffixes, e.g. Bg. *uč-enik* ‘pupil’ → ADJ *uč-enič-eski* ‘pupil-’, as well as to the addition of inflection, e.g. *uč-enik* ‘pupil’ → PL *uč-enic-i*.

It should be emphasized here that a proper test of PH requires extensive use of electronic resources that unfortunately are not available for Slavic languages, in the form they exist for English. The electronic corpora of Slavic languages are relatively small and not annotated for carrying out morphological research, except the Russian National Corpus (RNC). Moreover, in languages with rich inflectional morphology derivational suffixes, since almost always followed by inflectional suffixes, are not word-final, which constitutes a further obstacle in investigations on Slavic derivational morphology. Therefore, the approach adopted herein relies primarily on synchronic and diachronic evidence from books and papers rather than on electronic corpora.

The paper is structured as follows: section 2 presents briefly the inflectional systems of the three Slavic languages – Bulgarian, Russian and Polish – that provide the data for the discussion; section 3 gives a typologically and cognitively motivated definition of the structure of the Slavic word and argues for a clear differentiation between addition of suffixes

in the derivational and inflectional word slots; the next two sections, section 4 and section 5, are devoted to parsability in derivation and in inflection respectively; section 6 provides diachronic evidence for the importance of parsability in inflectional morphology; in section 7, in order to see whether parsability can make the same sort of distinctions that a language's morphology makes, the PH is applied to instances of derivation involving closing suffixes and their synonymous and homonymous non-closing suffixes. The last section is a summation with conclusions.

2. The data and their inflectional properties

The data for this paper come from three Slavic languages – Bulgarian, Russian and Polish, the derivational morphology of which has been characterized above and the inflectional systems of which are described below.

Bulgarian is a South Slavic language with very simple nominal inflection. Nouns inflect only for number and definiteness, whereas adjectives have inflection suffixes for gender, number and definiteness. Masculine inanimate nouns have a special count form that is used after numerals. Bulgarian verb inflection is very rich. Bulgarian has nine tenses in the indicative and every verb, irrespective of its aspect, can be used in every tense. Besides the voice and mood forms, Bulgarian has a set of renarrative forms, and some mood forms can also be renarrated. In its diachronic development, Bulgarian lost the infinitive and now 1SG PRES IND serves as the citation form of the verb. The inflectional categories of Bulgarian, Russian and Polish are listed in table 1.

Russian belongs to the East Slavic branch and is characterized by rich nominal inflection. Nouns inflect for case and number and there are six cases in the singular and in the plural. Unlike Bulgarian, Russian expresses animacy via syncretism of inflectional forms (either ACC = NOM or ACC = GEN). Adjectives change for number, gender and case. Russian verb inflection is very simple and Russian verb conjugation comprises only three tenses (present, past and future) in the indicative active, as well as imperative and conditional mood forms and passive voice.

Polish is a West Slavic language and its inflectional system is similar to that of Russian. Polish, however, has preserved the vocative and exhibits seven cases in the singular and in the plural. Besides animacy, the personal - non-personal distinction for masculines is also relevant to nominal inflection. Like noun inflection, Polish verb inflection is similar to that of Russian – there are three tenses in the indicative active, a set of passive voice forms, and imperative and conditional mood forms.

Unlike Bulgarian, Polish and Russian have infinite form of the verb but no articles, and in both languages, there are restrictions on the combinations of tense and aspect, e.g. perfective verbs cannot be used in the present tense, which further simplifies verb inflection in comparison to Bulgarian. Also, Russian and Polish nominal inflection is richer in cumulative exponence than that of Bulgarian.

Since Slavic inflectional suffixes are vowel-initial, the derivation-inflection boundary is often subject to phonological and morphonological alternations, e.g. Bg. *ogledá-l-o* 'mirror' → PL *ogleda-l-á*, *vojn-ik* 'soldier' → PL *vojn-ic-i* (*-o*, *-a* and *-i* are inflectional suffixes). However, in an inflecting language both derived and non-derived words inflect, therefore the same phonological and morphonological changes occur also in non-derived words, e.g. Bg. *sélo* 'village' → PL *selá*, *vrag* 'enemy' → PL *vraz-i*.

Table 1: Inflectional categories in Bulgarian, Russian and Polish

Language	Noun	Adjective	Verb
Bulgarian	<ul style="list-style-type: none"> • number (2)* (count plural for masculine inanimates) • definiteness (suffixes definite article) 	<ul style="list-style-type: none"> • number (2) • gender (3) • definiteness (suffixes definite article) 	<ul style="list-style-type: none"> • person (3) • number (2) • tense (9 tenses in indicat. active) • mood (3) • voice (2) • renarrative (5+3) • gender (3, in some analytic forms and in 3 SG & PL renarrated) <p>(no restrictions on the combination of aspect and tense)</p>
Russian	<ul style="list-style-type: none"> • number (2) • case (6) 	<ul style="list-style-type: none"> • number (2) • gender (3) • case (6) 	<ul style="list-style-type: none"> • person (3) • number (2) • tense (3 tenses in indicat. active) • mood (3) • voice (2) • gender (3) <p>(perfective verbs do not have present tense)</p>
Polish	<ul style="list-style-type: none"> • number (2) • case (7) 	<ul style="list-style-type: none"> • number (2) • gender (3) • case (7) 	<ul style="list-style-type: none"> • person (3) • number (2) • tense (3 tenses in indicat. active) • mood (3) • voice (2) • gender (3) <p>(perfective verbs do not have present tense)</p>

*The numbers in brackets indicate the number of features of the respective category.

3. The structure of the Slavic word

As already mentioned, Slavic languages represent the inflecting-fusional type and make a clear distinction between derivational and inflectional suffix slots (cf. Skalička 1979). Unfortunately, this distinction of slots, though widely recognized, is not considered in sources on Slavic morphology. As a rule, Slavic grammars neglect deletion of inflection in WF but in case of an empty derivational slot reanalyse the added inflection as a derivational suffix (not always, however, and not for every part of speech; see the discussion in Manova 2003b). As a consequence, a given suffix at times may be considered inflectional and at other times derivational, which is more than a little confusing. Moreover, since different sources classify the same morphological change differently, comparative analyses based on original sources can be difficult. Therefore, in this section, I put forward a methodology for uniform analysis of Slavic derivation and inflection. Note that many Slavic sources assign only inflection to morphology and set apart word-formation as an idiosyncratic domain between morphology and the lexicon, see, for example, the Russian Academy Grammar 1980, Bojadžiev et al. 1999, Barić et al. 1995, to mention just a few.

For the Slavic word, I assume a generalized structure (involving particular slots) based on: 1) the typological fact that Slavic languages make a clear distinction between derivational and inflectional suffixes; 2) the universal principle of constructional diagrammaticity (in the

sense of Natural morphology, cf. Dressler et al. 1987), i.e. addition of semantics implies addition of form; and 3) the notion of prototype (in the sense of Cognitive grammar, cf. Langacker 1987), i.e. the easiest way of accessing a phenomenon is via that manifestation that is most salient or otherwise most reflective of the phenomenon's prototype. The slots in question are (cf. Manova 2002 and later works):

(1) (PREFIX)-BASE-(DERIVATIONAL SUFF)-(THEMATIC MARKER)-(INFLECTIONAL SUFF)

The slot BASE is always occupied, and the BASE can be a root, a stem or a word. The other slots are not obligatory and, as indicated by the brackets, can be empty. We can use (1) for production of new words as well as for analysis of already existing words. In the best (i.e. easiest for analysis) case, a word will have a base accompanied by a single affix in every slot, as is the case with the following verb forms:

- (2a) Bg. *iz-săx-n-a-x* '(I) dried (completely)-AOR'
 (2b) R. *pod-pis-yv²-a-t* 'to sign'

As might be expected, the structure of not all Slavic words coincides with the prototype in (1). The derivation of (2a) illustrates the point. The verb has the root '*săx-*' as a base and is a tense form of the verb *iz-săx-n-ø-a* '(I) dry (completely)' that is derived from the verb *săx-n-ø-a* '(I) dry', the latter being formed from the adjective *sux* 'dry' and the derivational suffix *-n-*. The derivation of the verb *izsăxna* is summarized in (3a). Note that \emptyset remains for an empty slot (the slots being those of (1)). It should be mentioned that the traditional presentation of Slavic word structure involves neither slots nor parsing and empty elements are not noted, i.e. example (3b), below, shows how such examples are treated in most sources on Slavic morphology, especially those written in Slavic languages. However, since this paper is addressed also to non-Slavists, I will, for the sake of clarity and convenience, give further consideration to the slots in (1).

- (3a) Bg. ADJ \emptyset -*sux*- \emptyset - \emptyset - \emptyset → IMPFV1 \emptyset -*săx-n-ø-a* → PFV *iz-săx-n-ø-a* → AOR *iz-săx-n-a-x*
 (3b) Bg. ADJ *sux* → IMPFV *săxna* → PFV *izsăxna* → AOR *izsăxnax*

As can be seen in (3a), the PREF-slot is related to PFV aspect, and the addition of the prefix *iz-* changes the aspect of the IMPFV1 verb *săxna* to perfective. Actually, the PREF slot can be viewed as 'reserved' for the expression of perfective aspect, since prefixes have only a marginal role in the derivation of nouns and adjectives.

Prototypically, derivation takes place in the derivational slot of the word, whereas inflection is located in the inflectional slot. TMs predict the set of inflectional suffixes a particular stem is associated with. TMs are thus recognized only in verbal morphology where they have inflectional status (cf. the discussion in Manova 2005), i.e. the TM slot of nouns and adjectives is always empty, as illustrated with the following examples:

- (4a) Bg. N \emptyset -*pisa-tel-ø-ø* 'writer' (BASE is the stem *pis-a-*)
 (4b) Bg. ADJ \emptyset -*pisatel-sk-ø-i*, 'writer's' (BASE is the derived word *pisatel* 'writer')

From this point forwards, the TM slot of nouns and adjectives, since always empty, will be omitted. The same practice holds for the empty by default PREF slot of nouns and basic verbs (recall also that the focus of this paper is on suffixation). Thus from this point forward, the

² -yv- is non-prototypical inflection and therefore in the derivation slot of the Slavic word, see the discussion in Manova (2005)

examples will have the following format: 1) for nouns, *pisa-tel-ϕ* (instead of ϕ -*pisa-tel-ϕ-ϕ*); 2) for adjectives, *pisatel-sk-i* (instead of ϕ -*pisatel-sk-ϕ-i*); and for verbs, *săx-n-ϕ-a* (instead of ϕ -*săx-n-ϕ-a*, cf. (3a)).

It should be mentioned that the TM slot of verbs is either empty or occupied by a single suffix. Since prototypically every derivational (i.e. WF) step adds a single derivational suffix, the derivational suffix slot is also occupied by a single suffix. Consider: *piš-ϕ-ϕ-a* ‘(I) write’, AOR stem *pis-a-* → *pisa-tel-ϕ* (stem-based) → *pisatel-sk-i* ‘writer’s’ (word-based). However, if we access the adjective *pisatelski* as a whole word and provide a morpheme analysis, i.e. apply WF rules backwards (cf. the discussion in Aronoff 1976: 30ff), then at some point we have to see the derivational slot of *pisa-tel-sk-i* as hosting two suffixes *-tel-* and *-sk-*, cf. (5a,b) below. The same holds for the rules of inflection, see (6a,b). Thus derivation and inflection suffix slots of already existing forms (and that is what we analyse herein) may host more than one suffix³:

(5a) Bg. *pisa-tel-sk-i* ‘writer’s’

(5b) R. *pisa-tel'-sk-ij* ‘writer’s’

(6a) Bg. *pisatel-i-te*
writer-PL-DEF
‘the writers’

(6b) Bg. *kup-i-xme*
kup-TM-PRET/PER/NUM
‘we bought-AOR’

The example in (7) exhibits more than one suffix in both, derivational and inflectional, slots:

(7) Bg. *pisa-tel-sk-a-ta* ‘writer’s-FEM-DEF’

Stacking of prefixes is also possible:

(8) Bg. *iz-po-pre-săx-n-ϕ-a* ‘(I) totally dry’

Crucially, the above-illustrated structural differentiation of derivational and inflectional suffix slots is of importance for the proper functioning of morphological rules. One expects derivatives belonging to the same word-class and terminating in phonologically equal derivational suffixes to be treated in the same way by language’s morphology (note that a great deal of research on English morphology, inclusive on PH, relies on this fact). However, the two Bulgarian suffixes *-k-a* in (9a) and (9b)⁴ and the two Russian suffixes *-nic-a* in (9c) and (9d)) that produce feminine nouns are the same suffix for inflectional morphology, see (10a) through (10d), but different suffixes for derivational morphology, see the examples of adjectivization and the diminutivizations in (11a) through (11d):

Bulgarian

(9a) *snim-ϕ-a-m* ‘to take a picture’ → N FEM *snim-k₁-a* ‘a photograph’

³ The BASE slot also can host more than one morpheme, e.g. in cases of compounding, e.g. Bg. *čern-o-ok* ‘black-eyed’, where *čern* and *ok* are roots and *-o-* is an interfix. Slavic compounds are usually interfixed.

⁴ The already mentioned (in section 1) Bulgarian suffixes *-k-a* (as in *učitel-k-a* ‘female teacher’) and *-k-o* (as in *mărzeliv-k-o* ‘lazy male’) are not homophonous and therefore are treated in two different ways by derivational and inflectional morphology: 1) Derivation: *učitelka* cannot be further derived, whereas *mărzelivko* can, e.g. relational ADJ *mărzeliv-k-o-vsk-i*; 2) Inflection: SG *učitel-k-a*, PL *učitel-k-i*, SG DEF *učitel-k-a-ta*, PL DEF *učitel-k-i-te* and SG *mărzeliv-k-o*, PL *mărzeliv-k-ovci*, SG DEF *mărzeliv-k-o-to*, PL DEF *mărzeliv-k-ovci-te*, cf. (10a-b).

(9b) *profes-or-∅* ‘professor’ → N FEM *profesor-k₂-a* ‘female professor’

Russian

(9c) *mel-it* ‘to mill’ → N FEM *mel’-nic₁-a* ‘a mill’

(9d) *prepodavatel’* ‘professor’ → N FEM *prepodavatel’-nic₂-a* ‘female professor’

(10a) and (10b) give all possible inflectional forms of *snimka* ‘a photograph’ and *profesorka* ‘a female teacher’ in Bulgarian:

(10a) *snim-k₁-a* → DEF *snim-k₁-a-ta*, PL *snim-k₁-i*, PL DEF *snim-k₁-i-te*

(10b) *profesor-k₂-a* → DEF *profesor-k₂-a-ta*, PL *profesor-k₂-i*, PL DEF *profesor-k₂-i-te*

The paradigms in (10c) and (10d) encompass all possible inflectional forms of *prepodavatel’nic-a* and *mel’nic-a* in Russian:

(10c) SG	PL
NOM <i>mel’-nic₁-a</i>	<i>mel’-nic₁-y</i>
ACC <i>mel’-nic₁-u</i>	<i>mel’-nic₁-y</i>
GEN <i>mel’-nic₁-y</i>	<i>mel’-nic₁-∅</i>
DAT <i>mel’-nic₁-e</i>	<i>mel’-nic₁-am</i>
INST <i>mel’-nic₁-oj</i>	<i>mel’-nic₁-ami</i>
LOC <i>mel’-nic₁-e</i>	<i>mel’-nic₁-ax</i>

(10d) NOM <i>prepodavatel’-nic₂-a</i>	<i>prepodavatel’-nic₂-y</i>
ACC <i>prepodavatel’-nic₂-u</i>	<i>prepodavatel’-nic₂-∅⁵</i>
GEN <i>prepodavatel’-nic₂-y</i>	<i>prepodavatel’-nic₂-∅</i>
DAT <i>prepodavatel’-nic₂-e</i>	<i>prepodavatel’-nic₂-am</i>
INST <i>prepodavatel’-nic₂-oj</i>	<i>prepodavatel’-nic₂-ami</i>
LOC <i>prepodavatel’-nic₂-e</i>	<i>prepodavatel’-nic₂-ax</i>

The next examples illustrate all possible further derivations from bases terminating in the suffixes under scrutiny:

(11a) *snim-k₁-a* → ADJ *snim-k₁-ov-∅* ‘photo-‘

snim-k₁-a → DIM *snim-č₂-ic-a*

(11b) *profesor-k₂-a* → ADJ ∅

profesor-k₂-a → DIM ∅

(11c) *mel’-nic₁-a* → ADJ *mel’-nič₁-n-yj* ‘mill-‘

mel’-nic₁-a → DIM *mel’-nič₁-k-a*

(11d) *prepodavatel’-nic₂-a* → ADJ ∅

prepodavatel’-nic₂-a → DIM ∅

The examples in (10) and (11) show that derivation and inflection differ in respect to further suffixation: *-k₂-a* and *-nic₂-a* are closing for derivational morphology (Manova 2008b)

⁵ The inflectional paradigms of *prepodavatel’nic-a* and *mel’nic-a* differ only in ACC PL, which is due to animacy, i.e. ACC=GEN for animates (i.e. for *prepodavatel’nica*) and ACC=NOM for animates (i.e. for *mel’nica*). We cannot attribute this difference in inflection to some structural property of the suffix under investigation but should see it as a result of the semantics of the entire derivative. The Bulgarian examples in (10a) and (10b) support such an understanding – Bulgarian does not distinguish between animate and inanimate nouns in inflection and therefore all respective forms in (10a) and (10b) inflect the same.

and cannot be followed by other derivational suffixes, whereas their homophones *-k₁-a* and *-nic₁-a* can. However, *-k₁-a* & *-k₂-a* and *-nic₁-a* & *-nic₂-a* appear as pairs of two equal suffixes for inflectional morphology, since the members of each pair belong to the same inflectional class and receive the same set of inflectional suffixes. Thus this clearly different behaviour of derivation and inflection in regard to further suffixation supports our postulation of two independent word slots. We can conclude that in Slavic languages, derivation and inflection have a complicated relationship: on the one hand derivational suffixes occur jointly with inflectional suffixes (and the latter may serve for identification of the former, recall the discussion in section 1) but on the other hand derivational suffixes and inflectional suffixes are also independent due to their location in two separate slots.

To sum up this section, we defined a prototypical structure of the Slavic word and started making a distinction between derivational and inflectional suffix slots. With the help of two pairs of homophonous suffixes, we demonstrated that the assumed structural separation of derivation and inflection is also morphologically relevant – derivation and inflection behave differently in respect to further suffixation. Based on the latter fact, in the next two sections I will discuss parsability in derivation and inflection separately, i.e. I assume two different domains of parsability – one derivational and one inflectional, in which derivational and inflectional suffixes are expected to order according to the predictions of PH.

4. Parsability in derivation

Two phenomena typical for the Slavic WF put into doubt the relevance of PH for the order of derivational suffixes: 1) recursive application of the same morphological structure; and 2) phonotactics in terms of allomorphy and unpredictable behaviour of consonant initial suffixes.

In derivation, the parsability hypothesis assumes BASE-A-B-C order of suffixes where A, B, C are different suffixes that differ in parsability, A being the least parsable and C – the most parsable. Thus, by implication, recursive application of the same suffix is excluded from the outset. Recursive suffixation, however, is one of the properties that differentiates between derivation and inflection, being typical for derivation. “[W]hereas an inflectional process is applied only once to a word in order to create a word form that fills a cell of a paradigm, derivational morphology may apply recursively because each derivational step may add some additional meaning” (Booij 2002). Slavic languages suggest enough examples to support this observation. In Russian, Bulgarian and Polish, one can add the same derivational suffix more than once in order to make an abstract noun even more abstract (12), or to express further diminutivization (13):

(12) Abstract nouns in *-(n)ost-n-ost'*

(12a) R. *revnostnost'* (*revn-iv-yj* ,jealous' → *revn-ost'* ,jealousy' → *revn-ost-n-yj* ,devoted' → *revn-ost-n-ost'* ,devotedness')
verojatnostnost' (*verojatn-yj* ,probable' → *verojatn-ost'* ,probability' → *verojatn-ost-n-yj* ,related to probability' → *verojatn-ost-n-ost'* ,(greater) probability')
(bez)ličnostnost' (*lico* ,face' → *lič-n-yj* 'personal' → *lič-n-ost'* 'person, personality' → *lič-n-ost-n-yj* 'related to personality' → *lič-n-ost-n-ost'* '(greater) personality')

Such derivatives are typical for journalism, literary criticism and psychology texts (cf. RNC). Similar to the examples above are the following:

(12b) R. *poverxnostnost'* (*po* 'above, on' *verx* 'top, surface' → *poverx-nost'* ,surface' → *poverx-nost-n-yj* ,superficial' → *poverx-nost-n-ost'* 'superficiality')

Note, however, that *poverxnost* ‘surface’, the bases of *povernostniost* is not an abstract noun. Thus one can assume two different derivational suffixes – *-nost*’ for concrete nouns and *-ost*’ for abstract nouns.

Examples parallel to those in (12a,b) are less frequent in Bulgarian (12c) but exist:

- (12c) Bg. *revn-ost-n-ost* ,devotedness’
verojatn-ost-n-ost ,(greater) probability’
povǎrx-nost-n-ost ‘superficiality’
(bez)lič-n-ost-n-ost ‘(without) (greater) personality’
cjal-ost-n-ost ‘comprehensiveness’ (*cjal* ‘whole’ → *cjal-ost* ‘whole, entirety’ → *cjal-ost-en* ‘comprehensive, exhaustive’ → *cjal-ost-n-ost*)

Polish has very few such formations: P. *cał-y* ‘whole’ → *cał-ość* ‘whole, entirety’ → *cał-ość-iow-y* ‘comprehensive, exhaustive’ → *cał-ość-iow-ość* ‘comprehensiveness’.

Diminutivization offers another example of recursive suffixation in Slavic (recursive diminutivization is a well known phenomenon in morphological theory, cf. Booij 2000). Diminutivization is extremely productive in Bulgarian and Polish and both Polish (13a) and Bulgarian (13b) allow double diminutives, though only Bulgarian seems to favor multiple diminutivization (13b)⁶.

- (13a) P. *dom* ‘house’ → DIM1 *dom-ek* → DIM2 *dom-ecz-ek*
ram-a ‘frame’ → DIM1 *ram-k-a* → DIM2 *ram-ecz-k-a*
sit-o ‘sieve’ → DIM1 *sit-k-o* → DIM2 *sit-ecz-k-o*
(Szymanek & Derkach 2005)

- (13b) Bg. *snim-k-a* ‘photograph’ → DIM1 *snim-č-ic-a*
→ DIM2 *snim-č-ič-ic-a*
→ DIM3 *snim-č-ič-ič-ic-a*
palto ‘coat’ → DIM1 *palt-enc-e*
→ DIM2 *palt-enc-enc-e*
→ DIM3 *palt-enc-enc-enc-e*

The unpredictable behavior of Slavic consonant-initial suffixes suggests another challenge to PH. Slavic consonant-initial suffixes often have vowel-initial allomorphs, as can be seen in (14):

- (14) Bg. *-sk-i* and *-esk-i*
brat-φ-φ ‘brother’ → *brat-sk-i* ‘brother’s’
žen-φ-a ‘woman’ → *žen-sk-i* ‘woman’s; female’
BUT
vrag ‘enemy’ → *vraž-esk-i* ‘enemy’s; hostile’
katolik ‘a Catholic’ → *katolič-esk-i* ‘Catholic’

The suffix *-sk-i* also has a consonant-initial allomorph *-k-i*. The latter, however, surprisingly causes palatalization (which is, of course, due to diachronic reasons):

- (15) Bg. *mǎž-φ-φ* ‘man’ → *mǎž-k-i* ‘male’
BUT

⁶ Double diminutives are rare in Russian.

vojn-ik-ø ‘soldier’ → *vojn-iš-k-i* ‘soldier’s’
vlox-ø-ø ‘Wallachian’ → *vlaš-k-i* ‘Wallachian’

Such examples are not isolated, and the diminutive *-k-a* (16a), as well as *-k-a* that derives females from males (16b) also can give rise to palatalization of the final consonant of the base:

(16a) Bg. *čaš-ø-a* ‘cup’ → DIM *čaš-k-a* ‘little cup’
 BUT
knig-ø-a ‘book’ → DIM *kniž-k-a* ‘little book’

(16b) Bg. MASC *uču-tel-ø* ‘teacher’ → FEM *uči-tel-k-a* ‘female teacher’
 BUT
 MASC *istor-ik-ø* ‘historian’ → FEM *istor-ič-k-a* ‘female historian’

Examples such as these in (14) through (16) undoubtedly show that phonotactics is not a reliable criterion for establishing degree of parsability in Slavic languages and perhaps in the inflecting-fusional type at all, cf. Gaeta (this volume) for Italian.

To this point, we could see that PH faces significant difficulties in accounting for the order of Slavic derivational suffixes. In the next section, I apply PH to affix combinations in the inflectional slot, expecting that inflection, being prototypically more transparent and productive than derivation and not applying recursively (on the prototypical features of inflection, see Dressler 1989, Booij 2000), behaves better in regard to parsability.

5. Parsability in inflection

Two facts makes inflection particularly appropriate for testing PH: 1) inflectional suffixes are less numerous than derivational suffixes and 2) the order of inflectional suffixes is fixed. Analysis of that fixed order should reveal the role of parsability in inflection.

5.1. Cumulative exponence

A typical characteristic of the Slavic inflectional morphology is the so-called cumulative exponence, where two or more properties are expressed by a single morpheme. Cumulative exponence, however, implies semantic opacity and thus can be seen as indirect evidence against parsability in inflection. The point is illustrated with one Russian (17) and one Polish (18) paradigm. The structure of the inflected forms is BASE–CASE/NUM, which means that CASE and NUM are expressed cumulatively:

(17) Russian

	SG	PL
NOM	<i>cen-a</i> ‘price’	<i>cen-y</i>
ACC	<i>cen-u</i>	<i>cen-y</i>
GEN	<i>cen-y</i>	<i>cen-ø</i>
DAT	<i>cen-e</i>	<i>cen-am</i>
INST	<i>cen-oj</i>	<i>cen-ami</i>
LOC	<i>cen-e</i>	<i>cen-ax</i>

(18) Polish

	SG	PL
NOM	<i>miast-o</i> ‘city’	<i>miast-a</i>

ACC	<i>miast-o</i>	<i>miast-a</i>
GEN	<i>miast-a</i>	<i>miast-ϕ</i>
DAT	<i>miast-u</i>	<i>miast-om</i>
INST	<i>miast-em</i>	<i>miast-ami</i>
LOC	<i>mieśc-ie</i>	<i>miast-ax</i>
VOC	<i>miast-o</i>	<i>miast-a</i>

Unfortunately, Russian and Polish put only a single suffix in the inflectional slot of nouns and thus cannot tell us much about parsability in inflection. Bulgarian, however, is different in this respect. The Bulgarian equivalents of (17) and (18) are given in (19) and (20). The structure of the nouns is BASE-NUM-DEF:

- | | | |
|------|------------------------------|------------------|
| | SG | PL |
| (19) | INDEF <i>cen-a</i> ‘price’ | <i>cen-i</i> |
| | DEF <i>cen-a-ta</i> | <i>cen-i-te</i> |
| (20) | INDEF <i>mjast-o</i> ‘place’ | <i>mest-a</i> |
| | DEF <i>mjast-o-to</i> | <i>mest-a-ta</i> |

Significantly, Bulgarian also stacks suffixes in the inflectional slot of the verb (section 5.2.3), which makes multiple inflection a typical feature of the inflectional system of the language, and the latter thus appears appropriate for testing the correctness of PH in inflection.

5.2. Parsability of Bulgarian inflection

5.2.1. Bulgarian noun inflection

As already illustrated above, the inflectional slot in a Bulgarian noun has subslots for NUM and DEF suffixes:

- (21) BASE–NUM–DEF

This template is illustrated in (21a) through (21c). For more examples and specific instances, see the detailed analysis of the Bulgarian noun inflection in Manova & Dressler (2001) and Manova (2003a).

- (21a) *učenik-ϕ-ϕ* ‘pupil’
učenik-ϕ-a (for objects) & *učenik-ϕ-ăt* (for subjects and predicatives) ‘pupil-DEF’
učenic-i-ϕ ‘pupil-PL’
učenic-i-te ‘pupil-PL-DEF’
- (21b) *žen-a-ϕ* ‘woman’
žen-a-ta ‘woman-DEF’
žen-i-ϕ ‘woman-PL’
žen-i-te ‘woman-PL-DEF’
- (21c) *sel-o-ϕ* ‘village’
sel-o-to ‘village-DEF’
sel-a-ϕ ‘village-PL’
sel-a-ta ‘village-PL-DEF’

As can be seen from the above paradigms, in Bulgarian noun inflection, the first suffix after the base is always vowel-initial. Nowever, if NUM (i.e. the first subslot in the inflectional

slot) is occupied, the next suffix is always consonant-initial, which thus favours parsability. In other words, parsability is relevant, only if there is more than one suffix in the inflectional slot.

5.2.2. Bulgarian adjectival inflection

The adjectival inflection of Bulgarian can be represented with the following template, where GEND and NUM share the same subslot:

(22) BASE–GEND/NUM–DEF

(22a) *krasiv- \emptyset - \emptyset* ‘beautiful’ (masculine)
krasiv- \emptyset -ijat ‘beautiful-DEF’

(22b) *krasiv-a- \emptyset* ‘beautiful-FEM’
krasiv-a-ta ‘beautiful-FEM-DEF’

(22c) *krasiv-o- \emptyset* ,beautiful-NEUT’
krasiv-o-to ‘beautiful-NEUT-DEF’

Bulgarian adjectives do not inflect for gender in the plural:

(22d) *krasiv-i- \emptyset* ‘beautiful-PL’
krasiv-i-te ,beautiful-PL-DEF’

In respect to parsability, adjectival inflection is organized like noun inflection, i.e. here again, if the first suffix in a combination of two inflectional suffixes is overt, the second suffix is always consonant-initial. If there is only a single suffix in the inflectional slot, parsability appears irrelevant, since the suffix is always vowel-initial.

To sum up, in Bulgarian, in cases of two suffixes in the inflectional slot, of either a noun or an adjective, the second suffix is always more parsable than the first suffix, which supports PH. Note that the definite article that is the second suffix in a sequence of nominal inflectional suffixes, does not cause phonological and morphological alternations (with very few exceptions), cf. Manova & Dressler (2001) and Manova (2003a). However, in cases of a single suffix in the inflectional slot, parsability does not matter, since the suffix is always vowel-initial.

Let us see now whether the extremely rich inflection of Bulgarian verbs (the richest among Slavic languages) will support the observations made up to this point.

5.2.3. Bulgarian verbal inflection

The following template remains for the structure of a Bulgarian verb:

(23) (PREF)–BASE–ASP–TM–TENSE/PER/NUM

Since Bulgarian verbs are seldom derived, the BASE coincides with the verb root by default. TENSE/PER/NUM are cumulatively expressed. As the different tenses exhibit different TMs, the structure of a Bulgarian verb can be seen as obeying the morpheme order established by Bybee (1985).

The category of aspect dominates Bulgarian verb morphology, and there are three types of verbs in Bulgarian: basic verbs (IMFV1), perfective verbs (PFV) and secondary imperfective verbs (IMPFV2), each derived from the other, i.e. IMPFV1 → PFV → IMPFV2. Basic verbs are imperfective by default and are thus called primary imperfectives (IMPFV1).

Of all basic verbs, only some 50 verbs are perfective (cf. the Bulgarian Academy Grammar 1983). The present, aorist and imperfect forms of IMPFV1 *skārbja* ‘(I) sorrow’ are given in Table 2.

Table 2: Basic verbs in Bulgarian

<i>skārb-ϕ-ϕ-ja</i> ‘(I) sorrow’			
BASE–ASP–TM–TENSE/PER/NUM			
	PRESENT	AORIST	IMPERFECT
1SG	<i>skārb-ϕ-ϕ-ja</i>	<i>skārb-ϕ-i-x</i>	<i>skārb-ϕ-ja-x</i>
2SG	<i>skārb-ϕ-i-š</i>	<i>skārb-ϕ-i</i>	<i>skārb-ϕ-e-še</i>
3SG	<i>skārb-ϕ-i</i>	<i>skārb-ϕ-i</i>	<i>skārb-ϕ-e-še</i>
1PL	<i>skārb-ϕ-i-m</i>	<i>skārb-ϕ-i-xme</i>	<i>skārb-ϕ-ja-xme</i>
2PL	<i>skārb-ϕ-i-te</i>	<i>skārb-ϕ-i-xte</i>	<i>skārb-ϕ-ja-xte</i>
3PL	<i>skārb-ϕ-ϕ-jat</i>	<i>skārb-ϕ-i-xa</i>	<i>skārb-ϕ-ja-xa</i>
	Present stem: <i>skārbi-</i>	Aorist stem: <i>skārbi-</i>	Imperfect stem: <i>skārbja-</i>

In table 2, as everywhere in this paper all examples are transliterated, which can lead to the misleading conclusion that the inflection suffixes *-ja* and *-jat* (1SG and 3PL PRES) are consonant initial. Actually, *j* is not a consonant but palatalises the preceding consonant, as can be seen from the phonological transcriptions: *skārbja* [skārb’a] and *skārbjat* [skārb’at].

As already mentioned in section 3, perfective verbs are derived from basic verbs by prefixes by default. Prefixes add lexical semantics to basic verbs, and thus basic verbs and perfective verbs exhibit different, though related, semantic meaning (on perfectivization in Bulgarian, see Manova 2007). As regards the conjugation of perfective verbs, the latter, being derived by prefixation from basic verbs receive the same inflection, i.e. the perfective verb *o-skārbja* ‘(I) make sorrow’ inflects the same as its base, the verb *skārbja* ‘(I) sorrow’ (table 2).

Secondary imperfective verbs are derived from perfective verbs by addition of aspectual suffixes by default (table 3). An imperfectivizing suffix is of the type *-(V)v-* and is followed in all instances by the TM *-a-*, which allows for interpreting the sequence ASP–TM as a big TM of type *-(V)va-*, though the ASP suffixes are in the derivational slot of the Slavic verb (cf. the discussion in Manova 2005):

Table 3: Secondary imperfectives (productive pattern) in Bulgarian

<i>o-skārb-jav-a-m</i> ‘(I) make sorrow’			
PREF–BASE–ASP–TM–TENSE/PER/NUM			
	PRESENT	AORIST	IMPERFECT
1SG	<i>o-skārb-jav-a-m</i>	<i>o-skārb-jav-a-x</i>	<i>o-skārb-jav-a-x</i>
2SG	<i>o-skārb-jav-a-š</i>	<i>o-skārb-jav-a</i>	<i>o-skārb-jav-a-še</i>
3SG	<i>o-skārb-jav-a</i>	<i>o-skārb-jav-a</i>	<i>o-skārb-jav-a-še</i>
1PL	<i>o-skārb-jav-a-me</i>	<i>o-skārb-jav-a-xme</i>	<i>o-skārb-jav-a-xme</i>
2PL	<i>o-skārb-jav-a-te</i>	<i>o-skārb-jav-a-xte</i>	<i>o-skārb-ja-v-a-xte</i>
3PL	<i>o-skārb-jav-a-t</i>	<i>o-skārb-jav-a-xa</i>	<i>o-skārb-ja-v-a-xa</i>
	Present stem: <i>oskārbjava-</i>	Aorist stem: <i>oskārbjava-</i>	Imperfect stem: <i>oskārbjava-</i>

Very few verbs imperfectivize following what is now an older and completely unproductive pattern that requires a change of the TM only. The present tense TM changes from either *-e-* or *-i-* to *-(j)a*. This type of imperfectivization can be illustrated with the perfective verb *izmislja* ‘(I) find out, invent’, the present tense TM of which is *-i-*. Consider:

- (24) PRES PFV *izmisl-ϕ-ϕ-ja*, *izmisl-ϕ-i-š*, *izmisl-ϕ-i-ϕ*, etc. →
 → PRES IMPFV2 *izmisl-ϕ-ja-m*, *izmisl-ϕ-ja-š*, *izmisl-ϕ-ja-ϕ*, etc.

Table 4: Secondary imperfectives (unproductive pattern) in Bulgarian

<i>iz-misl-ϕ-ja-m</i> ‘(I) invent’			
PREF–BASE–ASP–TM–TENSE/PER/NUM			
	PRESENT	AORIST	IMPERFECT
1SG	<i>iz-misl-ϕ-ja-m</i>	<i>iz-misl-ϕ-ja-x</i>	<i>iz-misl-ϕ-ja-x</i>
2SG	<i>iz-misl-ϕ-ja-š</i>	<i>iz-misl-ϕ-ja</i>	<i>iz-misl-ϕ-ja-še</i>
3SG	<i>iz-misl-ϕ-ja</i>	<i>iz-misl-ϕ-ja</i>	<i>iz-misl-ϕ-ja-še</i>
1PL	<i>iz-misl-ϕ-ja-me</i>	<i>iz-misl-ϕ-ja-xme</i>	<i>iz-misl-ϕ-ja-xme</i>
2PL	<i>iz-misl-ϕ-ja-te</i>	<i>iz-misl-ϕ-ja-xte</i>	<i>iz-misl-ϕ-ja-xte</i>
3PL	<i>iz-misl-ϕ-ja-t</i>	<i>iz-misl-ϕ-ja-xa</i>	<i>iz-misl-ϕ-ja-xa</i>
	Present stem: <i>iz-mislja-</i>	Aorist stem: <i>iz-mislja-</i>	Imperfect stem: <i>iz-mislja-</i>

Verbs such as those in table 4 often have doublets – one according to the unproductive pattern and one productive: *zakrep-ja-m* and *zakrep-v-a-m*, both meaning ‘(I) fix’, *podlep-ja-m* and *podlep-v-a-m*, both meaning ‘(I) stick’, etc.

All forms in tables 3 and 4, since IMPFV2, exhibit the TM *-(j)a*, and all inflectional suffixes following the TM *-(j)a*, if any, are always consonant initial. This TM, however, depends largely on imperfectivization, the default pattern of which adds *-(V)v-a-* to the base (table 3) and produces the longest forms in the paradigm. Imperfectivization in Bulgarian collapses the distinction between PRES, AOR and IMP stems and thus provides the highest degree of parsability in the paradigm (cf. conjugation III in the Appendix).

If we scrutinize the forms in tables 2, 3 and 4, we will see that only present tense forms without an overt TM (1SG and 3PL of *skārbja*, table 2) receive vowel-initial TENSE/PER/NUM inflection after the BASE. Thus we can conclude that if the TM is overt, it is always followed by a consonant initial suffix. This observation is parallel to what we established for Bulgarian nominal inflection, wherein an overt NUM suffix is followed in all instances only by consonant initial suffixes.

Of course, it is also possible to analyse the aorist and the imperfect tense forms as containing the special preterite marker *-x-*, which will result in a different way of parsing of the aorist and imperfect paradigms. However, against parsing of *-x-* (and thus against the most popular analysis of Bulgarian verb paradigm available in English that in Stump 2001, chapter 2) and in favor of our analysis speaks the fact that there is no preterite stem in Bulgarian, i.e. the forms BASE-TM-PRET- (= BASE-TM-*x-*) does not occur as a base of any verbal form, whereas the aorist and the imperfect stems (both of the type BASE-TM-) do, e.g. as bases of participles. Note that the way of parsing I promote is used as well in all major sources on Bulgarian morphology that are written in Bulgarian (see Andrejčín 1978, the Bulgarian Academy Grammar 1983, Stojanov 1993) and Russian (Maslov 1981).

In conclusion, Bulgarian inflection is highly parsable. The first suffix in the inflectional slot is always vowel-initial and causes palatalizations of the base-final consonant (recall [*skārb'-a*]), which disadvantages parsing. However, if there are two suffixes in the inflectional slot, parsability holds, and it appears that the overt expression of a particular suffix, NUM in nominal inflection and TM in verbal inflection, favours parsability. NUM and TM suffixes are followed in all instances by consonant initial suffixes. Thus, if a form does not possess more than one inflectional suffix, inflection does not obey the parsability principle (which we illustrated also with Russian and Polish noun inflection). This fact evidences the importance of word length in parsability. Moreover, we could establish that the longest verbs in Bulgarian, those with ASP suffix *-(V)v-* are the most parsable.

4. Diachrony of Bulgarian aorist and imperfect inflection

This section provides diachronic evidence for the importance of parsability in inflection and demonstrates that the degree of parsability and semantic transparency associated with the phonological expression of a particular inflectional category is not constant.

A mere comparison of the aorist inflection in tables 2, 3 and 4 with the Old Bulgarian (OB) patterns in 5 reveals the main difference between the aorist inflection of OB and MB. OB did not possess a uniform aorist pattern but followed four different patterns: 1) root aorist, 2) sigmatic aorist, 3) asigmatic aorist, and 4) productive aorist. Verbs, depending on their conjugation class (note that OB had four conjugations and a class of athematic verbs) and phonological properties of the base (the verb root in OB), such as +/-consonant-final determine the aorist pattern of the verb (in some cases, the presence of a particular consonant associated the root with one of the four aorist patterns). Readers interested in the exact diachronic development of Bulgarian aorist patterns are referred to Ivanova-Mirčeva & Xaralampiev (1999) and Mirčev (2000). Table 5 illustrates the OB aorist patterns. For convenience, the respective MB forms are also listed.

Table 5. OB Aorist Inflection

	Root Aorist	Sigmatic Aorist	Asigmatic Aorist	Productive Aorist
Infinitive	<i>pas-ti</i> ‘to fall’	<i>ves-ti</i> / <i>*vedti</i> ‘to lead’	<i>reš-ti</i> ‘to say’	<i>reš-ti</i> ‘to say’
1SG	<i>pad-ъ</i>	<i>věs-ъ</i>	<i>rěx-ъ</i>	<i>rek-ox-ъ</i>
2SG	<i>pad-e</i>	<i>ved-e</i>	<i>reč-e</i>	<i>reč-e</i>
3SG	<i>pad-e</i>	<i>ved-e</i>	<i>reč-e</i>	<i>reč-e</i>
1PL	<i>pad-o-mъ</i>	<i>věs-o-mъ</i>	<i>rěx-o-mъ</i>	<i>rek-ox-o-mъ</i>
2PL	<i>pad-e-te</i>	<i>věs-φ-te</i>	<i>rěs-φ-te</i>	<i>rek-os-te</i>
3PL	<i>pad-ę</i>	<i>vās-ę</i>	<i>rěš-ę</i>	<i>rek-oš-ę</i>
1DU	<i>pad-o-vě</i>	<i>věs-o-vě</i>	<i>rěx-o-vě</i>	<i>rek-ox-o-vě</i>
2DU	<i>pad-e-ta</i>	<i>věs-φ-ta</i>	<i>rěs-φ-ta</i>	<i>rek-os-ta</i>
3DU	<i>pad-e-ta</i>	<i>věs-φ-te</i>	<i>rěs-φ-te</i>	<i>rek-os-te</i>
Modern Bulgarian				
1SG	<i>pad-a-x</i>	<i>vod-i-x</i>	<i>rek-o-x</i>	<i>rek-o-x</i>
2SG	<i>pad-a</i>	<i>vod-i</i>	<i>reč-e</i>	<i>reč-e</i>
3SG	<i>pad-a</i>	<i>vod-i</i>	<i>reč-e</i>	<i>reč-e</i>
1PL	<i>pad-a-xme</i>	<i>vod-i-xme</i>	<i>rek-o-xme</i>	<i>rek-o-xme</i>
2PL	<i>pad-a-xte</i>	<i>vod-i-xte</i>	<i>rek-o-xte</i>	<i>rek-o-xte</i>
3PL	<i>pad-a-xa</i>	<i>vod-i-xa</i>	<i>rek-o-xa</i>	<i>rek-o-xa</i>

As can be seen in table 5, none of the four types of aorist in OB was as parsable as its respective MB forms. The first three patterns (root, sigmatic and asigmatic aorist) involve changes of the final consonant of the verb root and are thus less semantically transparent and phonotactically clear than the productive aorist, from which the MB aorist inflection has developed. Even the productive OB aorist is still less parsable than MB aorist, since the aorist extension *-x-* is not uniform but appears as *-x-*, *-s-* and *-š-* (which is, of course, because of the sigmatic pattern).

The development of the imperfect inflection is more or less similar, though it seems that imperfect still followed a uniform pattern in OB. The two verbs in table 6 illustrate imperfect inflection with consonant-final and vowel-final roots, a distinction that is not relevant to the MB imperfect paradigm, cf. Appendix at the end of the paper.

As can be seen in table 6, imperfect in OB adds an internal vowel-initial (i.e. difficult to parse) extension. With development of the imperfect inflection, the vowel part of the extension contracted, which made the imperfect forms more easily parsable.

Table 6: OB Imperfect Inflection

Consonant-final root		
Infinitive	<i>nes-ti</i> 'to carry'	
1SG	<i>nes-jaax-ъ</i>	<i>nes-jax-ъ</i>
2SG	<i>nes-jaaš-e</i>	<i>nes-jaš-e</i>
3SG	<i>nes-jaaš-e</i>	<i>nes-jaš-e</i>
1PL	<i>nes-jaax-омъ</i>	<i>nes-jax-омъ</i>
2PL	<i>nes-jaaš-ete</i>	<i>nes-jaš-ete</i>
3PL	<i>nes-jaax-о</i>	<i>nes-jax-о</i>
1DU	<i>nes-jaax-ově</i>	<i>nes-jax-ově</i>
2DU	<i>nes-jaaš-etъ</i>	<i>nes-jaš-etъ</i>
3DU	<i>nes-jaaš-ete</i>	<i>nes-jaš-ete</i>
Modern Bulgarian		
1SG	<i>nos-e-x</i>	
2SG	<i>nos-e-še</i>	
3SG	<i>nos-e-še</i>	
1PL	<i>nos-e-xme</i>	
2PL	<i>nos-e-xte</i>	
3PL	<i>nos-e-xa</i>	

Vowel-final root		
Infinitive	<i>moli-ti</i> 'to ask'	
1SG	<i>molja-ax-ъ</i>	<i>molja-x-ъ</i>
2SG	<i>molja-aš-e</i>	<i>molja-š-e</i>
3SG	<i>molja-aš-e</i>	<i>molja-š-e</i>
1PL	<i>molja-ax-омъ</i>	<i>molja-x-омъ</i>
2PL	<i>molja-aš-ete</i>	<i>molja-š-ete</i>
3PL	<i>molja-ax-о</i>	<i>molja-x-о</i>
1DU	<i>molja-ax-ově</i>	<i>molja-x-ově</i>
2DU	<i>molja-aš-etъ</i>	<i>molja-š-etъ</i>
3DU	<i>molja-aš-ete</i>	<i>molja-š-ete</i>
Modern Bulgarian		
1SG	<i>mol-e-x</i>	
2SG	<i>mol-e-še</i>	
3SG	<i>mol-e-še</i>	
1PL	<i>mol-e-xme</i>	
2PL	<i>mol-e-xte</i>	
3PL	<i>mol-e-xa</i>	

For the sake of completeness, the present tense inflection of one OB verb is given below. Recall, however, that OB distinguishes four conjugation types in the present and an extra set of athematic verbs, i.e. table 7 does not reveal the whole picture. Yet it is evidence that development of the aorist and imperfect patterns was towards unification of the aorist and imperfect inflection (which in MB differ only in TM and in the inflection *-še* for 2&3SG imperfect, cf. Appendix) and its differentiation from the present tense inflection.

Table 7: OB present tense inflection

Infinitive	<i>bъra-ti</i> 'to pick'
1SG	<i>ber-о</i>
2SG	<i>ber-e-ši</i>
3SG	<i>ber-e-тъ</i>
1PL	<i>ber-e-мъ</i>
2PL	<i>ber-e-te</i>
3PL	<i>ber-отъ</i>
1DU	<i>ber-e-ově</i>
2DU	<i>ber-e-тъ</i>
3DU	<i>ber-e-te</i>
Modern Bulgarian	
1SG	<i>ber-a</i>
2SG	<i>ber-e-š</i>
3SG	<i>ber-e</i>
1PL	<i>ber-e-m</i>
2PL	<i>ber-e-te</i>
3PL	<i>ber-at</i>

In sum, the diachrony of Bulgarian aorist and imperfect inflection further supports our conclusion from the previous paragraph that parsability is an important factor in inflection. Less parsable patterns received internal (consonant) extensions, regularized, thus becoming more parsable. Further evidence in regard to parsability is the clear tendency towards pattern

unification across preterite tenses. Actually, in the last twenty years the MB aorist pattern has developed even further towards parsability: forms that in the 80's of the last century were pronounced with stressed aorist inflection, i.e. differ in stress-pattern from the present and the imperfect (25), have regularized and do not exhibit any stress-change now (compare the aorist forms in the Bulgarian Academy Grammar 1983 with that in Stankov et al. 2002), and see the discussion in Manova 2008a):

- (25) PRES *píša* 'write', IMP *píšex*, AOR *pisáx* (old), *písax* (current)
 PRES *míslja* '(I) think', IMP *mísllex*, AOR *mislíx* (old), *míslix* (current)

These examples converge nicely with our conclusion about the development of the aorist pattern in Old to Modern Bulgarian and show once again that parsability is not a constant.

Clearly, all the changes in the paradigm of Bulgarian verbs are due to regularizations required by the extreme richness of the system. I would like to stress here that MB conjugation is highly parsable and therefore also very easy to generate (Manova 2008a), with almost no suppletion and gaps (Manova 2007).⁷

7. Closing suffixes and PH

Up to this point, we could see that on the one hand, PH cannot account for all the peculiarities of Slavic derivational morphology, but on, the other hand, parsability dominates the diachronic development of inflection. Below, I will seek to establish the extent to which PH can make adequate predictions for the order of Slavic derivational suffixes. Two instances of closing suffixes, a phenomenon that appears relevant to the morphological organization of the inflecting-fusional morphological type (Szymanek 2000 for Polish; Manova 2008b for Bulgarian; Melissaroupollu & Ralli, this volume, for Greek), will be used for the examination of the relation between closing suffixes and parsability. The definition assumed herein for a closing suffix, however, differs from that in Aronoff & Fuhrhop (2002). While for Aronoff & Fuhrhop (2002) a derivational suffix is closing if it is never followed by another derivational suffix (which leads to postulation of very few closing suffixes, if any), I see a derivational suffix as closing, if, due to phonological, morphological or semantic reasons, it is never followed by another derivational suffix (cf. Manova 2008b). For example, the suffix *-k-a* that derives females from males is closing only if the base of the derivation is a male person. If the base denotes an animal, the suffix is not closing. Based on PH, I expect a closing suffix, always being the last suffix in its slot, to be easily parsable.

7.1. *ne*-nouns vs. *nie*-nouns in Bulgarian

Bulgarian, unlike many Slavic and non-Slavic languages, exhibits two patterns for derivation of nouns denoting actions and processes: *-Vne* (as in South Slavic) and *-Vnie* (under Russian influence) (cf. E. *-ing*, G. *-ung*, R. *-Vnie*, P. *-Vnie*, etc.). While *nie*-nouns can be formed from perfective and imperfective verbs, but not from every verb (see (26b)), *ne*-nouns can be derived from imperfective verbs only, including every imperfective verb (see (26a) and (26b)).

- (26a) IMPFV1 *dvíža se* '(I) move' → *dvíž-en-e* 'moving'
 → *dvíž-éni-e* 'moving'

- (26b) PFV *prepodám* '(I) teach' → IMPFV2 *pre-pod-áv-a-m* '(I) teach' → *pre-pod-áv-ane*

⁷ Most of the available English sources on Bulgarian verb inflection often leave a completely different impression about the organization of MB verb inflection (see, for example, Aronson 1968, Scatton 1983, Stump 2001), due to the fact that they assume an artificially complicated relation between stems and inflectional suffixes and model the system in terms of truncated and non-truncated stems (Jakobson 1948).

‘teaching’

There is a *nie*-noun neither from the PFV verb nor from the IMPFV2 one in (26b).

The output of both patterns can be subject to lexicalization but overall, the *nie*-pattern is much more lexicalised (27) than the *ne*-pattern (28):

- (27) PFV *sāberá* ‘(I) collect’ → *sābr-áni-e* ‘meeting’
PFV *označá* ‘(I) mark’ → *označ-éni-e* ‘mark’
IMPFV1 *píša* ‘(I) write’, AOR stem *pís-a-* → *pís-áni-e* ‘a piece of writing’ vs. *pís-an-e* ‘writing’
- (28) *píja* ‘(I) drink’ → *pí-en-e* ‘drinking’ & ‘a drink’
jám ‘(I) eat’ → *jád-en-e* ‘eating’ & ‘food’
perá ‘(I) wash’ → *pr-án-e* ‘washing’ & ‘laundry’

Moreover, some *-nie* nouns have been borrowed from Russian via Church Slavonic, and in MB they appear non-derived:

- (29) \emptyset → *upravl-éni-e* ‘managing; management; building for the management’
 \emptyset → *sāmn-eni-e* ‘hesitation’
Crucially, the two suffixes *-ne* and *-nie* differ in respect to further suffixation, namely *nie*-nouns diminutivize (30a), while *ne*-nouns do not (30b):

- (30a) *dviženie* ‘moving, movement’ → *dvizeni-jc-e*
sābranie ‘meeting’ → *šābrani-jc-e*
označenie ‘mark’ → *označeni-jc-e*
- (30b) *dvižene* ‘moving’ → \emptyset
prepodavane ‘teaching’ → \emptyset

The fact that *ne*-nouns do not lend themselves to diminutivization is not due to semantic constraints on the base. Lexicalized *ne*-nouns cannot diminutivize either:

- (30c) *píene* ‘drinking’ & ‘a drink’ → \emptyset
jádene ‘eating’ & ‘food’ → \emptyset
práne ‘washing’ & ‘laundry’ → \emptyset

In Bulgarian, diminutivization appears to be a reliable criterion for establishing a +/-closing character of a suffix, and *ne*-nouns cannot serve as bases for further derivations, i.e. the suffix *-Vne* is closing, whereas the suffix *-Vnie* is not. In other words, derivational morphology makes a clear distinction between the two synonymous suffixes. Let us see now whether the PH will be able to account for this distinction. As regards phonotactics, the suffix *-Vnie* is stress changing whereas the suffix *-Vne* preserves the stress-pattern of the base (see the examples in (26) through (30)). Thus based on phonotactics, *-Vne* should be the more parsable of the two suffixes. As regards productivity and semantic transparency, *-Vne* again appears to be the more parsable suffix (recall that *-Vne* attaches to every IMPFV verb and that *ne*-nouns seldom lexicalize). Finally, the non-existing bases in (29), further support the already established reduced parsability of *nie*-nouns in comparison to *ne*-nouns. Thus we can conclude that the pattern of *ne*-nouns is more productive, semantically more transparent and does not blur the morpheme boundary, i.e. the suffix *-Vne* appears easily parsable on all PH criteria applied. We could, however, establish that the suffix *-Vne* is closing as well. Based on this case study, we can conclude that parsability seems to support the feature +closing.

In order further to test the relation between closing suffixes and parsability, we will examine a more complicated instance of derivation involving the closing suffix *-k-a* and two of its homophones.

7.2. Females in *-k-a*

In Bulgarian, the suffix *-k-a* is the most productive suffix for derivation of female humans from already derived male humans:

- (31) *direct-or-ø* ‘director’ → FEM *direktor-k-a* ‘female director’
pisa-tel-ø ‘writer’ → FEM *pisatel-k-a* ‘female writer’
drug-ar-ø ‘friend’ → FEM *drugar-k-a* ‘female friend’

The closing character of the suffix *-k-a* has been demonstrated in section 3 above (the nouns in (31), like *professor-k-a* ‘female professor (11b), do not diminutivize). Though closing (or perhaps specifically for that reason), the suffix *-k-a* attaches freely to derived bases and is semantically transparent, i.e. seems to be easily parsable but can blur the morpheme boundary (see 11 and 12 in Table 8), i.e. if phonotactics is considered, *-k-a* appears difficult to parse. Since productivity, transparency and phonotactics make different predictions in respect to parsability, we will try to establish the relative frequency of the suffix under examination. The Internet frequency of 18 *-k-a* derivatives and their bases is listed in Table 8. (Note that there is neither a complete frequency dictionary nor a reliable and large enough electronic corpus of MB that can be consulted for our purposes.) Therefore I use Google, being aware that the results often vary from day to day and moreover can be ambiguous due to coincidence and misinterpretation of forms. Thus the numbers in tables 8 and 9 have to be seen as an orienting, imprecise indicator of token frequency (of particular inflectional forms). In order to obtain an objective picture, the 18 lexemes in table 8 are selected to represent different derivational patterns, each pattern being illustrated with two nouns. The search was done in Cyrillic and only on Internet pages in Bulgarian.

As can be seen in Table 8, all the derivatives with the suffix *-k-a* are much less frequent than their bases. Moreover, the difference in occurrence of the derivatives and their bases is too significant (and without exceptions) to be by chance. Relative frequency thus defines the suffix *-k-a* as easily parsable. Note that our conclusion is supported further by the fact that in Bulgarian, nouns for males can remain for both males and their derived female-mates.

Table 8: Relative frequency of females derived from males by the suffix *-k-a*

No	Male person	Google pp.	Female person	Google pp.	Relative Frequency
1.	<i>директ-ор</i> <i>direktor</i> ,director'	454.000	<i>директор-к-а</i>	13.900	0.030
2.	<i>инспект-ор</i> <i>inspektor</i> ,inspector'	292.000	<i>инспектор-к-а</i>	10.500	0.036
3.	<i>шоф-ьор</i> <i>šof'or</i> ,driver'	841.000	<i>шофьор-к-а</i>	24.900	0.029
4.	<i>фриз-ьор</i> <i>friz'or</i> ,hair-stylist'	122.000	<i>фризьор-к-а</i>	39.100	0.320
5.	<i>писа-тел</i> <i>pisatel</i> ,writer'	199.000	<i>писател-к-а</i>	27.700	0.139
6.	<i>учи-тел</i> <i>učitel</i> ,teacher'	554.000	<i>учител-к-а</i>	244.000	0.440
7.	<i>друг-ар</i> <i>drugar</i> ,friend'	31.700	<i>другар-к-а</i>	4.300	0.136
8.	<i>струг-ар</i> <i>strugar</i> ,turner'	31.200	<i>стругар-к-а</i>	178	0.006
9.	<i>брокер</i> <i>broker</i> ,broker'	663.000	<i>брокер-к-а</i>	2.270	0.003
10.	<i>хакер</i> <i>xaker</i> ,hacker'	208.000	<i>хакер-к-а</i>	3.950	0.019
11.	<i>хим-ик</i> <i>ximik</i> ,chemist'	82.000	<i>химич-к-а</i>	3.300	0.040
12.	<i>истор-ик</i> <i>istorik</i> ,historian'	163.000	<i>историч-к-а</i>	3.140	0.019
13.	<i>мотор-ист</i> <i>motorist</i> ,motorist'	115.000	<i>моторист-к-а</i>	511	0.004
14.	<i>социал-ист</i> <i>socialist</i> ,socialist'	262.000	<i>социалист-к-а</i>	2.700	0.010
15.	<i>аристокр-ат</i> <i>aristokrat</i> ,aristocrat'	25.800	<i>аристократ-к-а</i>	8.010	0.031
16.	<i>демокр-ат</i> <i>demokrat</i> ,democrat'	59.100	<i>демократ-к-а</i>	1.720	0.029
17.	<i>българ-ин</i> <i>bălgarin</i> ,a Bulgarian'	1.050.000	<i>българ-к-а</i>	349.000	0.332
18.	<i>англичан-ин</i> <i>angličanin</i> 'Englishman'	331.000	<i>англичан-к-а</i>	36.300	0.110

Google search as of July 1, 2008.

Significantly, the suffix *-k-a* has a homophone that is however not a suffix but an artificial extension (32). With the change from stem-oriented to gender-oriented declension in OB, a handful of feminine nouns received the extension *-k-a* in order to fit better to the declension system (where the default termination of feminines was *-a*), as in Ivanova-Mirčeva & Xaralampiev (1999: 100), which gives in MB:⁸

- (32) $\emptyset \rightarrow$ FEM *miš-k-a* 'mouse' (cf. OB *myšь*)
 $\emptyset \rightarrow$ FEM *gās-k-a* 'goose' (cf. OB *gōnsь*)
 $\emptyset \rightarrow$ FEM *meč-k-a* 'bear' (cf. OB *medvěďь*)
 $\emptyset \rightarrow$ FEM *vāš-k-a* 'louse' (cf. OB *vyšь*)

⁸ This unification of forms did not take place in other Slavic languages. Consider R. FEM *myš'* 'mouse', MASC *gus'* \rightarrow FEM *gus-yn-ja*, MASC *medved'* 'bear' \rightarrow FEM *medved-ica*, FEM *voš'* 'louse'.

These nouns remain for the respective species as well as for the female animals⁹ (except *vășka* ‘louse’ for which sex is irrelevant). Thus although non-derived, the nouns in (32) can be seen as being in a derivational paradigmatic relation with females derived from males with the suffix *-k-a*, i.e. with the females in table 8. However, since the nouns with the extension are non-derived, they behave, as can be expected, differently in respect to further suffixation, in comparison to nouns derived by the real suffix *-k-a* (all the nouns in table 8). The extension *-k-a* is not closing and the nouns in (32), unlike the nouns in table 8, can be further suffixed, as the following diminutivizations demonstrate:

- (33) *miš-k-a* ‘mouse’ → DIM *miš-č-ic-a*
găș-k-a ‘goose’ → DIM *găș-č-ic-a*
meč-k-a ‘bear’ → DIM *meč-ic-a* (**meč-č-ic-a*).
văș-k-a ‘louse’ → DIM *văș-č-ic-a*

Based on the examples in (33), I contend that derivational morphology makes a clear distinction between females derived with the suffix *-k-a* (which do not diminutivize) and the semantically related to them animals with the extension *-k-a*. I will now test whether PH also can distinguish between the suffix *-k-a* and the extension *-k-a*. Recall that we established that the suffix *-k-a* is easily parsable. For the test, I will use three different types of possible bases: 1) short adjectives that have the same roots as the nouns in (33) but no derivational suffix and thus can be interpreted as formal bases of the derivatives in (33), see table 9.1; 2) the corresponding nouns for male animals which have the suffix *-ok-ø*, see table 9.2; and 3) the nouns for little animals which, like the short adjectives, have the same root and no derivational suffix, table 9.3. Note, however, that where semantics is concerned, the females with the extension *-k-a* are basic in all three cases (see the discussion in Manova 2003b). Clearly, the adjectives and the little animals are older than the nouns with the extension *-k-a* and were formed from the non-extended nouns. The noun *vășka* ‘louse’ that, as already mentioned does not express sex, does not have a corresponding short adjective and masculine noun, and there is also no noun for the little of a louse derived by the addition of the inflection *-e* only.

If the adjectives and nouns in table 9 are less frequent than the nouns in (32), the fact will be seen as evidence for a whole-word access of the nouns, which ought to be the case, since the nouns really are not derived, and some of them (*vășka* and *miška*) do not possess all forms that could have served as possible bases. The number of occurrences of all the items in the Internet is given in table 9.

Table 9: Relative frequency of nouns with the extension *-k-a*

Table 9.1: BASE ‘short adjective’

Animal in <i>-k-a</i>	Google pp.	Adjective	Google pp.	Relative frequency
<i>миш-k-a</i> <i>miš-k-a</i> ‘mouse’	228.000	<i>миш-ø-u</i>	8.400	27,142
<i>гъс-k-a</i> <i>găș-k-a</i> ‘goose’	13.400	<i>гъш-ø-u</i>	5,450	2,459
<i>меч-k-a</i> <i>meč-k-a</i> ‘bear’	96.200	<i>меч-ø-u</i>	10.100	9,525
<i>въш-k-a</i> <i>văș-k-a</i> ‘louse’	24.500	ø	ø	--

⁹ In the examples given by Ivanova-Mirčeva & Xaralampiev (1999: 100), the only exception to this semantic pattern is OB *bolb*, MB *bolka* ‘ache’.

Table 9.2: BASE ‘masculine animal’

Animal in -к-а	Google pp.	Maculine animal	Google pp.	Relative frequency
<i>миш-к-а</i> <i>miš-k-a</i> ‘mouse’	228.000	<i>миш-ок-φ</i>	39.400	5,787
<i>гъс-к-а</i> <i>gās-k-a</i> ‘goose’	13.400	<i>гъс-ок-φ</i>	2.250	5,956
<i>меч-к-а</i> <i>meč-k-a</i> ‘bear’	96.200	<i>меч-ок-φ</i>	34.600	2,780
<i>вѣш-к-а</i> <i>vāš-k-a</i> ‘louse’	24.500	φ	φ	--

Table 9.3: BASE ‘little animal’ (short form)

Animal in -к-а	Google pp.	Little animal	Google pp.	Relative frequency
<i>миш-к-а</i> <i>miš-k-a</i> ‘mouse’	228.000	φ	φ*	--
<i>гъс-к-а</i> <i>gās-k-a</i> ‘goose’	13.400	<i>гъс-φ-е</i>	503	26,640
<i>меч-к-а</i> <i>meč-k-a</i> ‘bear’	96.200	<i>меч-φ-е</i>	91.700	1,049
<i>вѣш-к-а</i> <i>vāš-k-a</i> ‘louse’	24.500	φ	φ	--

*There exists *miš-l-e* but it is not formed by addition of inflection only, *-l-e* is a (derivational) diminutive suffix. Google search as of July 1, 2008.

As can be seen in table 9, where relative frequency is concerned, the nouns with the extension *-k-a* appear primary, i.e. accessed as whole-words, which converge with their non-derived and non-closing character.

I would like to emphasize here that I am aware that the above tests for relative frequency are somewhat imprecise. Such tests refer to the frequency of a particular form from the paradigm of a noun and not to all its inflected forms, and account neither for type nor for token frequency of the suffixes involved, as is the case in studies on parsability (though, to the best of my knowledge, no research on parsability of homophonous forms has been done so far). It is clear that in order to establish the exact relationship between closing derivational suffixes and parsability, further research is needed. Actually, we should start with the proper definition of parsability in the inflecting-fusional morphological type, in order to establish an exact and reliable procedure for measuring parsability. Yet at this stage, based on the above tests, we can conclude that research on the relation between parsability and closing suffixation seems worth attempting. Parsability could turn out to be a reliable supporting criterion for establishing the +/- closing character of a suffix, especially in doubtful cases.

8. Summary and conclusions

In this paper, I have challenged the Parsability Hypothesis (PH) with data from the inflecting-fusional type, specifically as pertains to Slavic languages. I have demonstrated that there is an intricate relationship between derivation and inflection in the sense that inflectional suffixes serve for identification of derivational suffixes but the two types of suffixes differ in respect to further suffixation and consequently, one should systematically distinguish between suffixes in the derivational word slot and suffixes in the inflectional word slot, i.e. in Slavic languages, not all the suffixes that follow the BASE are of the same type. I established two different domains of parsability in suffixation – one derivational and one inflectional, illustrated by the following form: BASE-[[A-B-C-D]_{DER}-[X-Y]_{INFL}]_{SUFF}, where A,B,C,D remain for (a) derivational suffix(es), X,Y are graded for parsability inflectional suffixes, and the overt expression of any of these suffixes, irrespective of whether they are derivational or

inflectional, means suffixation. I have shown that PH encounters difficulties in accounting for the order of derivational suffixes but successfully explains the (fixed) order of inflectional suffixes, providing that a language stacks suffixes in the inflectional slot. Intriguingly, if there is a single suffix in the inflectional slot parsability does not play any role, since the first inflectional suffix is always vowel-initial (34), and consequently, the boundary between derivation and inflection is often blurred by phonological and morphological alternations. Moreover, I have demonstrated that the presence of a particular suffix favors parsability. This observation has two aspects: 1) the overt expression of a particular inflectional suffix (NUM in nominal inflection and TM in verbal inflection) assures addition of a C-initial (i.e. parsable) second suffix (see the order in (34b)); and 2) the presence of a particular suffix (ASP in the derivational slot of the verb) regularizes the entire paradigm ((35) but see also III conjugation in the Appendix), which also corresponds to a higher degree of parsability. I see these facts as evidence for a relationship between parsability and word length.

(34)	BASE–		INFL SUFF1–	INFL SUFF2
(34a)	BASE–		∅ –	V-initial
(34b)	BASE–		V-initial–	C-initial
(35)	BASE–	ASP–	INFL SUFF1–	INFL SUFF2
	BASE –	(V)v–	a–	C-initial

Then, with evidence from diachronic change, I have demonstrated that the different stages in the diachronic development of inflectional categories differ in degree of parsability. In other words, parsability is not a constant but a tendency. The tendency towards parsability appears to dominate diachronic development of inflectional morphology. The fact that parsability changes over time might be the explanation of why attested affix orders do not strictly obey the predictions of PH (Plag 2002, Hay & Plag 2004, Baayen & Plag, forthcoming, Gaeta, this volume, Zirkel, this volume).

In the last part of the paper I tested PH against problematic cases of derivational suffixation involving closing suffixes. Despite the very questionable frequency data, it seems that there is a clear relationship between parsability and closing suffixes, and PH can distinguish successfully between closing suffixes and their synonymous and homonymous suffixes. Although further research on the topic is needed, parsability appears to be a promising supporting criterion for establishing the +/- closing character of a suffix (a closing suffix, being the last suffix in a slot, is expected to be (the most) parsable).

In conclusion, PH can explain the general structure of the Slavic word. However, in order to be able to account adequately for all instances of suffixation in Slavic, PH requires some revisions: based on the evidence from this study, it seems reasonable to consider the role of the word-length and assume two different domains of operation – derivational and inflectional, as well as to allow the same suffix to apply recursively in derivation and to undermine the role of phonotactics. Also, in order to be certain that we all measure the same parameters, a precise, unified procedure for establishing relative frequency in the inflecting-fusional type should be worked out.

Finally, the data and approach presented herein give rise also to theoretical questions about the nature of derivation and inflection and the relation between them, as well as about the bases of morphological rules, their representation and the definition of notions such as lexeme and stem. Due to space limitations, I have not tackled such theoretical issues explicitly but hope to have provoked some thoughts in this direction as well.

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Appendix: Modern Bulgarian Verb Inflection (based on Manova 2007)

Conjugation	I conjugation				II conjugation			III conjugation
PRESENT	1.	2.	3.	4.	1.	2.	3.	1.
1SG	<i>četa</i> '(I) read'	<i>píjna</i> '(I) drink- SEMELF'	<i>igrája</i> '(I) play'	<i>lája</i> '(I) bark'	<i>visjá</i> '(I) hang'	<i>strojá</i> '(I) build'	<i>míslja</i> '(I) think'	<i>otkrívam</i> '(I) discover'
2SG	<i>četěš</i>	<i>píjnes</i>	<i>igráeš</i>	<i>láeš</i>	<i>visíš</i>	<i>stroíš</i>	<i>míslíš</i>	<i>otkrívaš</i>
3SG	<i>četé</i>	<i>píjne</i>	<i>igráe</i>	<i>láe</i>	<i>visí</i>	<i>stroí</i>	<i>míslí</i>	<i>otkríva</i>
1PI	<i>četém</i>	<i>píjnem</i>	<i>igráem</i>	<i>láem</i>	<i>visím</i>	<i>stroím</i>	<i>míslim</i>	<i>otkrívame</i>
2PL	<i>četéte</i>	<i>píjnete</i>	<i>igráete</i>	<i>láete</i>	<i>visíte</i>	<i>stroíte</i>	<i>míslite</i>	<i>otkrívate</i>
3PL	<i>četát</i>	<i>píjnat</i>	<i>igrájat</i>	<i>lájat</i>	<i>visját</i>	<i>stroját</i>	<i>mísljat</i>	<i>otkrívat</i>
AORIST								
1SG	<i>čétox</i>	<i>píjnox</i>	<i>igráx</i>	<i>lájax</i>	<i>visjájx</i>	<i>stroíx</i>	<i>míslíx</i>	<i>otkrívax</i>
2SG	<i>čéte</i>	<i>píjna</i>	<i>igrá</i>	<i>lája</i>	<i>visjá</i>	<i>stroí</i>	<i>míslí</i>	<i>otkríva</i>
3SG	<i>čéte</i>	<i>píjna</i>	<i>igrá</i>	<i>lája</i>	<i>visjá</i>	<i>stroí</i>	<i>míslí</i>	<i>otkríva</i>
1PL	<i>čétoxme</i>	<i>píjnoxme</i>	<i>igráxme</i>	<i>lájaxme</i>	<i>visjájxme</i>	<i>stroíxme</i>	<i>míslíxme</i>	<i>otkrívaxme</i>
2PL	<i>čétoxte</i>	<i>píjnoxte</i>	<i>igráxte</i>	<i>lájaxte</i>	<i>visjájxte</i>	<i>stroíxte</i>	<i>míslíxte</i>	<i>otkrívaxte</i>
3PL	<i>čétoxa</i>	<i>píjnoxaxa</i>	<i>igráxaxa</i>	<i>lájaxaxa</i>	<i>visjájaxa</i>	<i>stroíxaxa</i>	<i>míslíxaxa</i>	<i>otkrívaxaxa</i>
IMPERFECT								
1SG	<i>četjájx</i>	<i>píjnex</i>	<i>igráex</i>	<i>láex</i>	<i>visjájx</i>	<i>strojájx</i>	<i>mísléx</i>	<i>otkrívax</i>
2SG	<i>četěše</i>	<i>píjneše</i>	<i>igráeše</i>	<i>láeše</i>	<i>visěše</i>	<i>stroěše</i>	<i>míslěše</i>	<i>otkrívaše</i>
3SG	<i>četěše</i>	<i>píjneše</i>	<i>igráeše</i>	<i>láeše</i>	<i>visěše</i>	<i>stroěše</i>	<i>míslěše</i>	<i>otkrívaše</i>
1PL	<i>četjájxme</i>	<i>píjnexme</i>	<i>igráexme</i>	<i>láexme</i>	<i>visjájxme</i>	<i>strojájxme</i>	<i>mísléxme</i>	<i>otkrívaxme</i>
2PL	<i>četjájxte</i>	<i>píjnexte</i>	<i>igráexte</i>	<i>láexte</i>	<i>visjájxte</i>	<i>strojájxte</i>	<i>mísléxte</i>	<i>otkrívaxte</i>
3PL	<i>četjájxaxa</i>	<i>píjnexaxa</i>	<i>igráexaxa</i>	<i>láexaxa</i>	<i>visjájxaxa</i>	<i>strojájxaxa</i>	<i>mísléxaxa</i>	<i>otkrívaxaxa</i>
IMPERATIVE								
SG	<i>četí</i>	<i>píjní</i>	<i>igráj</i>	<i>láj</i>	<i>visí</i>	<i>strój</i>	<i>míslí</i>	<i>otkrívaj</i>
PL	<i>četéte</i>	<i>píjnéte</i>	<i>igrájte</i>	<i>lájte</i>	<i>viséte</i>	<i>strójte</i>	<i>mísléte</i>	<i>otkrívajte</i>