The lexical and superlexical verbal prefix *iz-* and its role in the stacking of prefixes

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Abstract

In this paper I show that there are two distinct *iz-* prefixes in Serbian: a lexical, and a superlexical one. I show that there are criteria for the distinction between the two types of verbal prefixes (restricting my claims to the superlexical prefixes that stack after the secondary imperfectivization). I focus on the lexical *iz-* occurring with transitive verbs and show that it can be analyzed along the same lines as the English resultative particles *up* and *out*. I also consider the role of the lexical *iz-* as a perfectivizer and point to the distinction between the notion of telicity and overtly marked boundedness on the lexical level. It also follows from the discussion below that a more elaborate event structure would be necessary for the analysis of superlexical *iz-*.

1. Introduction

As in other Slavic languages, in Serbian (or Serbo-Croatian)[1] the aspectual properties of propositions are related to the verbal morphology, that is, verbs come in perfective/imperfective pairs and the distinction is obtained both by means of prefixation and suffixation as illustrated in (1) (see the Introduction to this volume for explanation of abbreviations in glosses).

(1)	a.	spavati	'sleep[I]'	**pre**-spavati	'oversleep[P]'
	b.	oštriti	'sharpen[I]'	**iz**-ostriti	'sharpen (up)[P]'
				iz-ostr-**ava**-ti	'sharpen (up)[I]'
	c.	duvati	'blow[I]'	du-**nu**-ti	'blow once[P]' (semelfactive)

The base forms of verbs are either imperfective and can be perfectivized by means of prefixation ((1a and b)) or by adding the suffix -*nu* as in (1c). Also the (secondary) imperfective can be derived through suffixation as indicated in (1b). There is also a class of verbs whose base forms are perfective as in (2) and (3):

(2)	a.	kupiti	'buy[P]'	kup-**ova**-ti	'buy[I]'
	b.	lišiti	'deprive[P]'	liš-**ava**-ti	'deprive[I]'
	c.	rešiti	'solve[P]'	reš-**ava**-ti	'solve[I]'

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[1] I will refer to the language in question as Serbian though until recently it was commonly referred to as Serbo-Croatian. I abandoned my initial inclination to refer to it as Serbo-Croatian respecting the prevailing judgements of its native speakers that they should live in small countries and speak languages with short names.

In contrast with the verbs in (2), the verbs in (3) (mainly semelfactive) do not contain imperfective suffixes *-(o)va*, *-(i)va*, *-(a)va* when imperfective, but rather result from a less regular (transparent) derivational process or in suppletive aspectual forms:

(3)　a.　baciti　'throw^P'　bacati　'throw^I'
　　　b.　skočiti　'jump^P'　skakati　'jump^I'
　　　c.　uzeti　'take^P'　uzimati　'take^I'
　　　d.　udariti　'hit^P'　udarati　'hit^I'

Most of the loan verbs and a small number of native verbs are not overtly marked for aspect, and the perfective/imperfective distinction is a matter of contextual coercion, as can be seen from the meaning contrasts in (4) and (5).[2]

(4)　a.　Večerali　smo　i　otišli　u　bioskop.
　　　　　*dined.*PL^P *be.*1PL *and gone.*PL *in cinema.*ACC
　　　　　'We had dinner and went to the cinema.'
　　　b.　U sedam smo　još uvek večerali.
　　　　　*in seven be.*1PL *still*　*dined.*PL^I
　　　　　'At seven we were still having dinner.'

(5)　a.　Testirali　smo　novi proizvod.
　　　　　*tested.*PL^P *be.*1PL *new product*
　　　　　'We tested the new product (and finished it).'
　　　b.　Testirali smo　novi proizvod ceo dan.
　　　　　*tested.*PL^I *be.*1PL *new product　all　day*
　　　　　'We tested the new product all day.'

　　This is just a short and very rough summary of the mechanisms involved in specifying the aspectual category of verbs in Serbian. In what follows I will not deal with the larger issues of the Slavic aspect semantics. I will rather focus on the role of verbal prefixation in modifying verb meanings, or more precisely the lexical and functional properties of the prefix *iz-*.

　　The investigation of verbal prefixation bears on the interaction between lexical semantics and syntax as well as the issue of the nature of morphological processes involved. A relevant framework for such investigation is provided by the studies of the decomposition of verbal meanings and the syntactic predictions drawn from the lexico-semantic properties of verbs. I will mainly draw on the approaches to the study of events and their aspectual properties by Tenny (1994) and Ramchand (2003).

　　In §2 of this paper I briefly present the problem of how verbal prefixation in Serbian (or more precisely the notion of completion encoded by it) is related to the well known semantic classification of verbal meanings into

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[2]In the case of (5a) it would actually be more accurate to say that the event denoted is ambiguous between the perfective and imperfective meaning. However I will treat it as perfective for the sake of comparison with the more explicit example (5b).

states, processes, achievements and accomplishments, and the notion of boundedness and/or telicity.

In §3 I briefly present the basic distinction between lexical and super-lexical prefixes (with the limited application to the three prefixes discussed in this paper) and their distinct properties.

In §4 I discuss the properties of the Serbian prefix *iz-* regarding both its semantic contribution to the denotation of the verb stem and its aspectual function. For this purpose I will adopt the division of Slavic prefixes into *lexical* or *low* and *superlexical* or purely perfectivizing ones and I will show that *iz-* can fall into both categories. I will discuss the (superlexical) stacking phenomenon with regard to the superlexical *iz-*. The phenomenon is illustrated by (6).

(6) Na-po-is-pre-po-znavao se lica u svom
     CMLT-DSTR-CMPL-*PRE-PO-knew* RFX *faces*.GEN *in his*.DAT
     životu.
     life.DAT
     'He has recognized a lot of faces in his life.'

It also shows the only available environment for *iz-* in this role, which can include superlexical verbal prefixes *na-* and *po-*. They all attach later in the derivation following the lexical stage of verb stem prefixation and the (secondary) imperfectivization. I intend to show that they are phrasal projections, that is event modifiers scoping over the VP headed by transitive verbs with plural objects as complements.

§5 will consider a possible analysis of *iz-* prefixed perfectives and I will discuss the applicability of the event decomposition approach proposed by Ramchand (2003).

2. Prefixation and Perfectivity

There are 17 verbal prefixes in Serbian (*do-, iz- na-, nad-, o(b)-, od, po-, pod- pre- pri-, pro-, raz-, s(a)-, u-, uz-, za-*) (Klajn 2002). In the following examples (7b) and (8b) and (d) illustrate the kinds of perfective readings obtained through prefixation:

INCEPTIVE meaning of the prefixed perfective

(7) a. Plakao je. (activity)
       cried.M.SG^I *is*
       'He was crying.' 'He cried (a lot/often).'
    b. Za-plakao je. (achievement)
       ZA-cried.M.SG^P *is*
       'He started crying.'

COMPLETIVE meaning of the prefixed perfective

(8) a. Pio   je kafu.   (activity)
        drunk.M.SG^I *is coffee*.ACC
        'He drank coffee/ a coffee/ the coffee.' 'He was drinking coffee.'

    b. Po-pio   je kafu.   (accomplishment)
        PO-drunk.M.SG^P *is coffee*.ACC
        'He drank up a coffee/all the coffee/the coffee.'

    c. Želeo   je kafu.   (state)
        wanted.M.SG *is coffee*.ACC
        'He wanted coffee.'

    d. Po-želeo   je kafu.   (achievement)
        PO-wanted.M.SG *is coffee*.ACC
        'He wished for coffee/a coffee.'

However, verbal prefixes in Slavic languages at the same time, much like the verb particles and separable prefixes in Germanic languages, modify lexical properties of the verb stem. In the traditional linguistic literature on the Serbian language their lexical contribution has been mainly accounted for by associating the meaning of the prefixes with their homophonous prepositional counterparts where such relatedness is 'obvious' (all except the less productive *pro-* and *raz-* are also prepositions). Thus, *iz-* in the verb *iskopati* ('dig out') is related to the meaning of the preposition ('out,' 'from'). However, a more systematic account of such relatedness is still missing from the study of Serbian verb formation. Of the diagnostics for (im)perfectivity in Slavic languages (such as the impossibility of their combining with phase verbs, future interpretation of the present tense, and the analytic future tense—which is in some Slavic languages composed with only the imperfective form of the main verb), only the phase verbs test is reliable for establishing perfectivity in Serbian:[3]

(9) a. Počeo   je da plače/plakati. (imperf./activity)
        started.M.SG *is that cry*.3SG^I/*cry*.INF^I
        'He started crying/ to cry.'

    b. *Počeo   je da za-plače/za-plakati (perf./accomp.)
        started.M.SG *is that ZA-cry*.3SG^P/*ZA-cry*.INF^P
        'He started crying/to cry'

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[3]It is claimed in the grammars of Serbian that the incompatibility with the present tense reference (in main clauses) also indicates perfectivity (cf. Mrazović and Vukadinović's *Gramatika srpskohrvatskog jezika za strance* for example). However, this does not hold since perfectives can be used for present tense reference when denoting habitual events:

(i) Svakog jutra u-stanem,   is-tuširam   se...
    every morning in-stand.1SG^P *IZ-shower*.1SG^P RFX
    'Every morning I get up, have a shower, ...'

The question is how the notions of perfectiveness encoded by prefixation can be related to the notion of 'boundedness' of verbal predicates or telicity. Telicity is regarded as relevant for Vendler's widely accepted classification of verbal meanings into *states, activities, achievements* and *accomplishments.* Unlike activities and states, achievements and accomplishments are said to comprise the notion of reaching the end point (telos), and the possibility of application of a time-span adverbial is widely accepted as a reliable test for telicity. Thus the application of the test in (10) classifies *walk* as an activity.

(10)   a.   He walked for an hour.
          b.   *He walked in an hour.

The same test applied to the imperfective *šetati* ('walk') in Serbian yields the corresponding result.

(11)   a.   Šetao   se   jedan sat.
               walk.PST.M.SG RFX *one*   *hour*
               'He walked for an hour.'
          b.   *Šetao   se   za jedan sat.
               walk.PST.M.SG RFX *in one*   *hour*
               'He walked in an hour.'

However the example in (12) with the perfective prefixed form *prošetati,* although implying that the process of walking is bounded (or is of bounded duration) shows that the time-span adverbial test for telicity is not applicable.

(12)   a.   *Pro-šetao   se   jedan sat.
               PRO-walk.PST.M.SG RFX *one*   *hour*
               'He took a walk for a while.'
          b.   *Pro-šetao   se   za jedan sat.
               PRO-walk.PST.M.SG RFX *in one*   *hour*
               'He took a walk in an hour.'

Notice that the same prefix attached to a transitive verb can be tested in the same way, this time successfully.

(13)   a.   *Pro-čitao   je knjigu   jedan sat.
               PRO-read.PST.M.SG *is book*.ACC *one*   *hour*
               'He read a book for an hour.'
          b.   Pro-čitao   je knjigu   za jedan sat.
               PRO-read.PST.M.SG *is book*.ACC *in one*   *hour*
               'He read a book in an hour.'

The problem similar to the one exemplified in (13) was noticed by Filip (2001) regarding Russian:

(14)   a.   Ivan po-guljál   čas/*za čas v párke.
              Ivan ATTN-*walk*.PST^P *hour/*in hour in park*
              'Ivan took a walk in the park for an hour/*in an hour.'
     b.   Ivan na-guljálsja   *čas/#za   čas   v parké.
              Ivan CMLT-*walk*.PST.RFX^P *hour*.ACC/*in hour*.ACC *in park*
              'It took Ivan an hour to have enough of walking.' ('Ivan had
              enough of walking in the park in an hour.') (from Filip 2001)

However, the inapplicability of the 'adverbial' test may not be sufficient evidence for the 'autonomy' of Slavic perfectivity. As noted by Tenny (1994), "using purportedly syntactic tests as indicators of delimitedness is an imperfect art" since delimitedness (or boundedness, as I refer to it) is a semantic notion. Some English examples support this view:

(15)   a.   John will sleep for an hour.
     b.   John will sleep in an hour. (Tenny 1994:6)

As she observes the *in an hour* adverbial does not indicate boundedness in example (15b), since the sleeping event will begin in an hour and thus the adverbial does not refer to the time of the event of sleeping itself. The adverbial itself denotes the hour before the beginning of the 'activity' of sleeping. Similarly, if the meaning of the prefixes *po-* (Russian example (14a)) and *pro-* (Serbian example (12a)) is informally interpreted as the one of the adverbial used for testing ('for a while/an hour') then the meaning which introduces the time boundary on the syntactic level is already incorporated into the meaning of the verb and leads to the oddness observed. For native speakers of Serbian or Russian, however, the eventuality described is clearly a bounded activity of walking. Just as for speakers of English *John took a short walk* refers to the same kind of event.

It is questionable, however, whether Tenny's definition of boundedness (or in her terminology 'delimitedness') as referring "to the property of an event's having a distinct, definite and inherent *end point* in time" would satisfactorily cover the denotation of perfectiveness. It would possibly fail to include the perfective Slavic verbs referring to the beginning of the event denoted by the verb stem, as well as semelfactives (as an illustration there is a Serbian example in (16)).

(16)   Za-spao   je brzo.
       ZA-sleep.PST.M.SG *is quickly*
       'He quickly fell asleep.'

Both the inceptives (*zaspati* 'fall asleep'/'start sleeping', *potrčati* 'start running') and semelfactives (*skočiti* 'jump') represent events which share with the achievements the property of, in Tenny's words, happening "instantaneously, having little or no duration." Therefore, what is crucially important in defining the notion of boundedness would be the transition of the entity denoted by a verb's argument from one state to another, the path or

time covered by the transition not necessarily represented (as in the cases under discussion). Both *zaspati* ('fall asleep') and *potrčati* ('start running') imply a transition from one state to another (if for the present purposes the activity entailed by the latter is taken as a result state—a state of running), where the end state is the one lexically represented. Therefore, the existence of the notion of transition could be a sufficient argument for treating the events in question as achievements.

Under the assumption that lexical representation is syntactic in nature (as proposed by Hale and Keyser 1993) and that syntax operates with the phonological material in broader sense (or features which get phonological representation) and not just on words, the problem boils down to how well a particular event decomposition captures the processes which lead to different aspectual properties of expressions. One such theoretical approach (Ramchand 2003) is illustrated by the tree structure in (17). The subevental components—causal (vP), core process (VP) and the result state of the process (RP)—represent the basic semantic components of events identified by the phrasal heads (v, V, and R), and the specifier positions of the separate phrases (the subevent components' projections) are filled by the arguments associated with the distinct thematic roles. In the representation of the maximal event projection, NP1 is the holder of the result state or RESULTEE, NP2 the UNDERGOER of the process, NP3 subject of CAUSE. They host lexical items, which are inserted in the process of derivation.

(17)
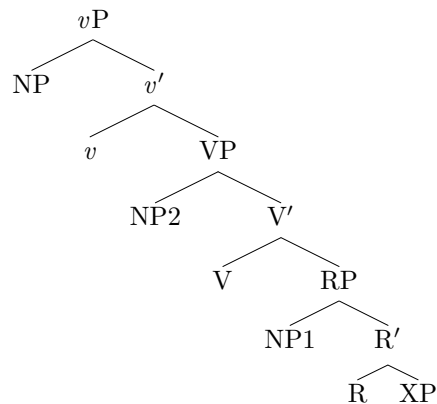
The approach presented aims at capturing the argument structure alternations involved in the *first phase syntax*,[4] and the variety of the derived aspectual meanings, abandoning the standard assumption about the uniqueness of the Theta role assignment. The same lexical argument can be assigned more than one thematic role (leading to a composite thematic interpretation) and the thematic assignment triggers the operation Move.

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[4]The term is used by Ramchand and identifies a process often considered to take place in the lexicon as syntactic (along the lines of Hale and Keyser 1993, as mentioned earlier).

The discussion regarding whether this or similar approaches to the way events are built up in syntax can host morphological processes overtly signaling those lexical property alternations will be discussed later on.

3. Classification of Prefixes

In his detailed description of verbal prefixation in Russian, Isačenko (1960) divides Russian verbal prefixes into *qualifiers* and *modifiers*. The distinction is made on the basis of the lexical contribution made to the verb base. Namely, qualifiers cause a semantic drift that modifiers do not. The distinction is made on the compositional grounds since the same phonological forms are treated as allomorphic depending on the semantic reading (change) they bring about when combined with different stems.

He notices another relevant property of *modifiers*: verbs which they attach to do not undergo further (or commonly known as *secondary*) imperfectivization.

In the analysis of the Serbian verbal prefix *iz-* I will basically adopt this division and I will try to sharpen the criteria for it. Namely I will argue for the existence of both *lexical* and *superlexical iz-*. The claims about such a distinction will be restricted to the prefixes that stack (*na-* and *po-* in addition to *iz-*).

Regarding lexical *iz-*, *po-*, and *na-* prefixes in Serbian I believe the following generalizations can be made:

(i) When lexical, these prefixes change lexical properties of verb stems in terms of their argument structure and the affectedness of their arguments. In this way they modify the lexical aspectual properties of the events denoted, deriving verb forms with bounded (perfective) meaning.

(ii) Lexical *na-*, *po-* and *iz-* also derive idiomatic (or idiosyncratic) wholes with the stem (restricted productiveness). They can in this sense be related to particles in Germanic languages since they involve a similar kind of l-selection (cf. Svenonius 2004).

(iii) Lexical prefixes can be attached to both perfective and imperfective stems inside *v*P through incorporation (in terms of Baker 1988).

(iv) The semantic drift they cause (which is implied by the above generalizations) allows for further (secondary) imperfectivisation.

Regarding superlexical *iz-*, *po-* and *na-* the following hold:

(i) They do not change lexical properties of verbs but are purely perfectivizing.

(ii) They attach only to imperfective stems (unless they co-occur in stacking) which have undergone the overt or non-overt stage of lexical prefixation and the subsequent (secondary) imperfectivization .

(iii) They enforce cumulative and distributive readings on the events denoted (quantify over them), but are otherwise semantically bleached (not related to their prepositional counterparts referring to spatial relations).

(iv) They attach outside/scope over the *v*P.

(v) They do not allow further imperfectivization.

4. *IZ-*

The verbal prefix *iz-* is one of the most productive in the Serbian language. It attaches to both imperfective and perfective stems (both prefixed and unprefixed ones) as well as to the few bound stems. It is also combined with the loan verbs mentioned in the introduction and exemplified by the verb *testirati* ('test') in (5). Some examples of each of the configurations are shown below.

(18)　a.　**iz- + bound stem**
　　　　　iz-gladneti 'get very hungry' (the stem can be a noun when unbound)
　　　　　is-poljiti 'to exhibit, display (an emotion)'
　　　　　iz-raziti 'express'
　　　b.　**iz- + perfective stem**
　　　　　is-kočiti 'jump out'
　　　　　is-pustiti 'drop' (lit. *down-let*)
　　　　　is-kupiti 'redeem, bail out'
　　　c.　**iz- + imperfective stem**
　　　　　i[z]-sitniti 'chop up'
　　　　　i[z]-sisati 'suck out'
　　　　　is-hodati se 'walk to one's final limits' (lit. *out/up-walk oneself*)
　　　d.　**iz- + imperfective prefixed stem**
　　　　　is-pre-turati 'jumble up'
　　　　　is-pod-vlačiti 'underline completely/all of'
　　　e.　**iz- + perfective prefixed stem** (the case of prefix stacking)
　　　　　is-po-preporučivati
　　　　　is-po-zatvarati
　　　f.　**iz- + loan stem** (+suffix *-ira, -ova*, or *-isa*)
　　　　　is-planirati 'make a plan'
　　　　　is-kritikovati 'criticize thoroughly/completely'
　　　　　is-terorisati 'terrorize completely'

The data presented above can illustrate how the variety of morphological make-up related to *iz-* prefixation relates to the issue of semantic compositionality (transparency) of the derived verbs. The examples in (18a) display the highest degree of idiosyncrasy, which is gradually decreasing in the following examples (18b–e). At the same time the productivity of the pattern is growing. Furthermore, examples (18a–c) illustrate the properties mentioned in the previous section regarding lexical *iz-* especially in terms of its strong correlation with the English particles as can be seen from the translations into English. The verbs in (18d–e) on the other hand do not exhibit such a correlation and the contribution of *iz-* in those cases is more consistent and productive in encoding the notion of completeness (or perfectivity).

4.1. 3. 1 The semantics of lexical *iz-*

The correlation between Germanic particles and Slavic prefixes is well-known.[5] They are related both in terms of their lexical and aspectual functions in various studies.

Both Germanic particles and Slavic prefixes share lexical features with their prepositional counterparts. They create idiosyncratic wholes with the verbs whose meaning they modify, and they both combine with native verbs, and not the loan ones (for example English particles do not combine with Latinate verbs, and Serbian prefixes tend to refuse to combine with loan verbs such as those in (18b)). Also it has been widely accepted that, as Bolinger (1971) noted, verb-particle constructions are essentially causative or resultative. In this sense, Slavic prefixes are again closely related to their Germanic counterparts.

In most cases lexical *iz-* is comparable to the English particles *up* and *out*:[6]

(19)   a.   Iseckao   je meso.
              up.cut.PST.M.SG *is meat*.ACC
       b.   He cut up the meat.
           He cut the meat up.

(20)   a.   Izbacio   je loptu.
              out.threw.M.SG *is ball*.ACC
       b.   He threw out the ball.
           He threw the ball out.

English particles *up* and *out* are known as the more productive ones in the constructions of the type given above. They are held responsible for what is known as telic augmentation of the event. In other words, they add the notion of completion to the otherwise aspectually ambiguous events such

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[5]Cf. Svenonius (2004) and references there.

[6]The English examples also serve as translations of the Serbian examples.

as *cut the meat* (in (19b)) or *throw the ball* (in (20b)). Also, as can be seen from the example in (21), the *iz*-prefixation is comparable to the adverbial and prepositional use of *out* in English.

(21) a. Iskočio   je (kroz   prozor).
          *out.jumped.*M.SG *is through window.*ACC
      b. He jumped out (through the window).
          He jumped out (the window).

In all of the cases mentioned the modification of the verbal meaning involved (whether transitive or not) is the reference to the result state reached by the argument thematically specified as the Undergoer of the event (cf. Van Valin 1990). The path of change can imply undergoing a transition with respect to the participant's location, state or its material extent (cf. Ramchand 2003). In Ramchand's approach to event structure representation briefly sketched out earlier, and repeated here as (22), the result state is projected optionally as a separate sub-event (RP).

(22)   (causing subevent) → [process subevent → (result state)]
              *v*P   VP   RP

The question remains whether the result sub-event necessarily implies reaching the end-point or telicity. As noted by Ramchand and Svenonius (2002) it is not always the case when a particle heads the RP, as they illustrate with the example repeated in (23).

(23) a. John moved the rat poison around (for hours).
      b. John moved around the rat poison (for hours).
          (Ramchand and Svenonius 2002:398)

The particle *up*, which is usually referred to as completive, exhibits the same kind of ambiguity with regard to telicity. Although, as mentioned above, it tends to combine with particle-taking verbs quite productively and compositionally, with some verbs its aspectual contribution is parallel to the one exemplified in (21). For example, with the verbs *heat, roll, turn*, and *loosen*, the particle *up* does not entail 'reaching the end point':

(24) a. They heated (up) the broth (up) but not completely.
      b. She rolled (up) the carpet (up) only halfway.
      c. He turned (up) the music (up) a little.
      d. The music loosened (up) Mary (up), but not completely.

These examples bring the semantic definition of boundedness back into the picture, and specifically the notion of measuring-out events as used in Tenny's (1994) approach to defining aspectual roles assigned by the verbs. I will adopt again here her approach to the issue of boundedness.

Drawing on work such as that of Krifka (1992), Verkuyl (1972), and Verkuyl (1993) regarding the contribution of the internal argument to the

aspectual readings on the level of VP, she employs the notion of measuring
out events in dealing with the linking problem. More specifically, the inter-
action between lexical semantics and syntax is determined by the aspectual
properties of verbs, which are specified in the lexicon in terms of the aspec-
tual roles assigned to arguments. The measuring out of the events denoted
by verbs plays a crucial role.

On her view only the internal argument can have a MEASURE role (at
the same time measuring out and defining the temporal boundary of the
event). Resultatives and verb-particle constructions can add the aspectual
MEASURE role to a verb grid. One of the tests of *measuring-out* is the use
of adverbial expressions *compatible* with this notion. On my understanding
of the problem it is the kind of testing applied for checking telicity,[7] and
the examples in (24) are instances of it.

The examples in (24) obviously fail the tests for delimitedness but are
eventually saved by Tenny's modified definition of boundedness. It is this
approach to the problem of what a bounded event is that can plausibly
capture what the notion of perfectivity is about. In this definition the end
state of the change-of-state verbs (accomplishments) can also be modified
with respect to the degree of completeness. In other words, an accomplished
degree of some contextually understood property or the path of change
undergone by the internal argument is still an accomplishment and therefore
bounded. For example:

(25)   a.   They heated the broth up (for a while/in a while).
       b.   He boiled up the eggs (for a while/in a while).

Sentences such as these can refer to bounded events regardless of the fact
that they are not telic.

As already noted in the literature on aspect, events of this kind can be
'telicized' by further event modification. In the case of the sentences in (25)
this can be achieved by explicitly stating the degree of accomplishment,
which is in (25) only implicit or 'provided by context' on the 'bounded'
reading of the events denoted. Thus, the following telic propositions can
be derived:

(26)   a.   They heated up the broth to 38 degrees in ten minutes.
       b.   He boiled up the eggs completely in a few seconds.

The ambiguity of the examples in (25) with respect to telicity can be cap-
tured only through entailment tests:

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[7]By this I mean that there is no crucial difference between using a time-span adverbial
(*in/for a little while*) and adverbial expressions such as *a little* or *completely*.

(27) a. Za-grejali   su   čorbu   za nekoliko
          up-warmed.PST.PL[P] *be*.3PL *broth*.ACC *in few*
          minuta/*nekoliko minuta/ali   ne   potpuno.
          minutes/few   minutes/but not completely
          'They warmed up the broth in a few minutes/*for a few min-
          utes/but not completely.'

Unlike English verb-particle constructions, verbs with resultative prefixes such as *iz-* (or *za-* in the example above) are *never* ambiguous with respect to boundedness of the event, and are therefore incompatible with durative adverbials (*for a while, for a few minutes*). So, it can be said that in *the relative degree of accomplishment* cases of the resultative constructions in Slavic languages (subsuming particle-like constructions), prefixes play the same aspectual role as *delimiting* adverbials (*in ten minutes, to 38 degrees, completely*) in English. In other words, they do encode *boundedness* as defined by Tenny (see the discussion above).[8]

Another morphological consequence of this state of affairs is related to secondary imperfectivization.

Consider the examples in (28):

(28) a. izlečiti 'cure[P]'
      b. izvaditi 'take out[P]'
      c. izmeriti 'measure out[P]'
      d. iskrojiti 'carve out[P]'
      e. izliti 'spill out [P]' izlivati 'spill out[I]'
      f. izvuci 'pull out[P]' izvlačiti 'pull out[I]'
      g. isprati 'wash out[P]' ispirati 'wash out[I]'

All of the listed verbs are derived from imperfective stems (or imperfective verbs, since none of the stems above is of the 'bound' type). However, verbs (28a–d) do not form secondary imperfectives. Their imperfective pairs are *lečiti* ('cure'), *vaditi* ('take out'), *meriti* ('measure'), *krojiti* ('carve, cut'). The idea that the blocking of the formation of secondary imperfectives is semantically motivated is an old one. In the Slavic linguistic literature it is traditionally assumed that the semantic contribution of the prefixes can be of different degrees and that secondary imperfectivization depends on the semantic drift following the derivation of the prefixed base. In the case

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[8]In this paper I will concentrate only on the particle-like *iz-*, but a similar semantic approach seems to apply to other resultatives such as:

(i) a. izbeliti 'whiten' izbeleti 'whiten' (inchoative)
     b. izluditi 'drive crazy' izludeti 'go crazy'

The alternation of the stem vowel indicated (-*i*-/-*e*-) is consistent with the deadjectival verbs, and coincides with the transitive/intransitive alternation. This should indicate that the prefix is not a causativizer in these cases but is incorporated from the lower position (plausibly from the same position as the particle-like *iz-*).

of particle-like *iz-* (as illustrated by the examples in (28)) the semantic drift can be identified in terms of the aspectual properties discussed above. Namely, if the interpretation of the derived perfectives is telic and the prefix denotes the actual end point of the event (which would presuppose that the actual end point is conceptually attainable, as in the case of the Incremental themes) secondary imperfectivization is blocked. The notion of reaching the actual end point (telicity) of the event is obtained in the cases (28a–d) (as shown by the badness of examples in (29a–d)), but not in the examples (28e–g) (as shown by (29e–g)).

(29) a. *izlečiti nekoga   ali ne potpuno
          cure^P someone but not completely
          (*'cure someone but not completely')

      b. *izvaditi nešto   ali ne potpuno
          out.take^P something but not completely
          (*'take something out but not completely')

      c. *izmeriti   nešto   ali ne potpuno
          out.measure^P something but not completely
          (*'measure something out but not completely')

      d. *iskrojiti   nešto   ali ne potpuno
          out.carve^P something but not completely
          (?'carve something out but not completely')

      e. izliti   nešto   ali ne potpuno
          out.spill^P something but not completely
          'spill something out but not completely'

      f. izvuci   nešto   ali ne potpuno
          out.pull^P something but not completely
          'pull something out but not completely'

      g. isprati   nešto   ali ne potpuno
          out.wash^P something but not completely
          'wash something out but not completely'

Of the verbs above only (29d) belongs to the class of creation/consumption verbs. If something is carved out then the end of the event of carving coincides with the carved-out object coming into being. In the case of *izmeriti* ('measure out') there is a strong intuition that the temporal extent of the event of measuring something has to coincide with the material/spatial extent of the object being measured, provided that the object has definite boundaries.[9] Unlike with the typical Incremental objects though, it is less clear how such intuition could be formally expressed. It is even less clear

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[9]It is quite conceivable that a portion of an entity can be measured out but then the object of measuring would be that portion in its own right. The expressions *roll up* and *measure out* differ in this respect. One can *roll up the carpet halfway*, but not *measure it out halfway*. The only possibility would be to *measure out half of the carpet*. However, I will not go deeper into the issue of how the grammaticalized properties of NPs enter the picture of the aspectual boundary definition.

how the object of *take out* should be formally treated in this respect, although it is again intuitively clear that things cannot be half way out or incompletely out of the source location. There is a strong indication that the affectedness of the object and its grammaticalization play an important role in blocking secondary imperfectivization with other lexical prefixes as well, but the extent of this topic requires much more space and a lot of further research. For the present purposes I rely on the entailment tests with 'completely,' as applied in (29).

4.2. Superlexical *iz-* and Superevent (evidence from stacking)

The most obvious reason for accepting the idea of the existence of superlexical *iz-* comes from the simple observation of the morphological composition of the verbs in Serbian. An illustration in (30) displays two occurrences of what is phonologically the same prefix.

(30)   **Iz**-po-**iz**-bacivao   je sve flaše   iz   kuhinje.
       CMPL-DSTR-***out***-*threw*.M.SG *is all bottles*.ACC *from kitchen*.ACC
       'He threw out all of the bottles from the kitchen.'

Of the two *iz-* overtly present in the example above, the one closer to the stem is the lexical, particle-like prefix discussed in previous sections. The second one, glossed as COMPL is the productive counterpart of the former, which is semantically empty and denotes the completion of the event. It is, as I believe, a functional morpheme marking aspect above the lexical level (lexical level as understood and discussed in the previous section).

   The superlexical *iz-*, when it cooccurs with a lexical prefix, always occurs after secondary imperfectivization (in most cases the marker of secondary imperfectivization is the suffix -*va*). The verb in (30) is derived through the following stages:

(31)   **iz**-po-**iz**-baci-vati
       CMPL-DSTR-***out***-*throw*-IMPF.INF
       'throw completely all of ... out one by one'
       I   baciti → **iz**-baciti
       II   izbaciti → izbaci-**va**ti
       III   izbacivati → **po**-izbacivati
       IV   poizbacivati → **iz**poizbacivati

The pattern above is confirmed by the derivational pattern of the verbs in (18), and some of them are repeated in (32). The derivational cycles are indicated by bracketing. I will disregard special phonological processes (when the suffix -*va* is not the marker of imperfectivity) apart from indicating in the footnotes the possibility of their occurrence. The perfective/imperfective results of the derivational processes are indicated in superscript. The infinitive marker -*ti* is not bracketed.

(32)   **iz- + imperfective prefixed stem**

    a. is-pre-turati
        CMPL-*over-push* 'jumble up completely'
        [is[[pre-tur^P]a^I]^P]ti[10]

    b. is-pod-vlačiti
        CMPL-*under-pull* 'underline completely/all of'
        [pod-vu^P]ći ∼ [is-[pod-vlači^I]^P]ti[11]

(33)   **iz- + perfective prefixed stem** (the case of prefix stacking)[12]

        is-po-pre-poručivati
        CMPL-DISTR-*before-order* 'recommend all of ... one by one'
        [is[po[pre[poruči^P]^P]va^I]^P]^P]ti

(34)   **iz- + loan stem** (+suffix *-ira, -ova,* or *-isa*)

        is-kritikovati
        CMPL-*criticize* 'to criticize thoroughly/completely'
        [is[[kritik]ova^I]^P]ti

In all the examples above (except (34)), the completive prefix occurs outside a lexical prefix (or lexical + superlexical prefix, as in (33)). The example (34) is also an illustration of a very productive pattern. Considering the fact that loan verbs fall into the category of verbs with a single phonological form denoting both imperfective and perfective meaning, and the fact they do not take (lexical) prefixes, the special status of the (superlexical) *iz-* is in accordance with the assumptions made here. The impossibility of marking perfective aspect lexically is signaled in the bracketed form in (34).

In fact, there is another strong indication that the division into lexical and superlexical prefixes is not just a stipulation. The prefixation of the verbs exemplified in in (2) and (3) points to the same conclusion. Take for example the verb *baciti* ('throw'). Its unprefixed imperfective form is *bacati* (iterative 'throw'). The prefix *iz-* can be attached to either stem giving the forms in (35).

(35)   a. izbaciti 'throw out^P'
       b. izbacati 'throw something extensively^P' ('repeat the act of throwing something many times')

The forms in (35) do not seem to be 'true' aspectual pairs. The real imperfective counterpart of *iz-baciti* is rather a derived secondary imperfective form *izbaci-vati* obtained through the usual mechanism of suffixation. What I mean by 'true' pair is the one covering all the imperfective meanings of the event denoted by the base form. In the case of *iz-bacati* the only im-

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[10]The stem has a final vowel *-i*, which is deleted in the process of imperfectivization marked with the vowel *-a*.

[11]This is a suppletive stem.

[12]I make the distinction between these cases and the cases where *iz-* perfectivizes.

perfective reading available is the iterative one. The prefix *iz-* does not contribute the expected particle-like meaning (out). Therefore the form *iz-bacati* seems to be the combination of the notion of completion ('bleached' *iz-*) and iteration denoted by the imperfective stem *bacati*. That is why I propose the following derivational pattern of *izbacati*:

(36)   baciti → ∅-bacati → iz-∅-bacati

I believe that all the other verbs from the same group (cf. ex. (2) and (3)) could be treated along these lines.

Superlexical *iz-* also occurs productively within the configuration exemplified in (6) (together with superlexical *na-* and *po-*) repeated here as (37).

(37)   Na-po-is-pre-po-znavao   se   lica   u   svom
         CMLT-DSTR-CMPL-*PRE-PO-knew* RFX *faces*.GEN *in his*.DAT
         životu.
         life.DAT
         'He has recognized a lot of faces in his life.'

Both *po-* and *na-* can be lexical and superlexical. When superlexical, they consistently modify the events contributing the following (aspectual) meanings:

- *na-* CUMULATIVE (cf. Filip 2000, Piñon 2001)

- *po-* DISTRIBUTIVE, when occuring outside the first pure terminative prefix its distributive function is restricted to the object argument of the verb phrase

Sentence (37) can informally be interpreted in the following way: completive *iz-* perfectivizes the event of recognizing faces, distributive *po-* individuates faces the way each in a quantified NP each of the faces would, cumulative *na-* refers to the accumulation of the event(s) of recognizing individual faces with respect to the subject of the proposition (all accumulated in subject's experience). *Na-* in this case obligatorily occurs with the reflexive *se*, which binds the external argument.

However, I will not deal further with their separate meanings or the scoping issue raised by the stacking phenomenon. I present it only as the illustration of the environment or one of the morphological patterns in which completive *iz-* occurs. The following two generalizations about their co-occurrence can be made:

- when all three of them are stacked they can occur only with transitive verbs taking plural objects

- the most natural order in which they occur is *na-po-iz-*

The examples in (38a) show the impossibility of stacking with intransitives, while those in (38b) show the impossibility of stacking with verbs taking singular objects.

(38) a. trčati 'run'
          po-trčati 'start running'
          *is-po-trčati
          *na-po-trčati
          *is-na-po-trčati
          *na-is-po-trčati

      b. pre-trčati   ulicu
          across-run^P street.ACC
          'run across the street' (*pre-* is lexical and transitivizing)
          pre-trčavati ulicu (imperfective)
          *is-pre-trčavati ulicu
          *na-pre-trčavati ulicu
          *po-pre-trčavati ulicu
          *po-is-pre-trčavati ulicu
          *na-is-pre-tčavati ulicu
          *is-na-pre-trčavati ulicu
          *po-na-pre-trčavati ulicu

The examples in (39) show the acceptability of different combinations of prefixes in given contexts (plural accusative and genitive objects).

(39) a. pre-trčati^P ulice (PL.ACC) 'run across streets'
      b. pre-trčavati^I ulice
      c. is-pre-trčavati   ulice/   ?ulica/   dosta ulica
          CMPL-*across-run^P streets*.ACC/*streets*.GEN/*many streets*.GEN
      d. *po-pre-tčavati ulice.ACC/ulica.GEN/dosta ulica.GEN
      e. *na-pre-trčavati ulice.ACC/ulica.GEN/dosta ulica.GEN
      f. na-pre-trčavati se *ulice.ACC/ulica.GEN/*dosta ulica.GEN
      g. na-is-pre-trčavati se *ulice.ACC/ulica.GEN/?dosta ulica.GEN
      h. po-is-pre-trčavati ulice.ACC/*ulica.GEN/dosta ulica.GEN
      i. ?na-po-is-pre-trčavati ??ulice.ACC/?ulica.GEN/?dosta ulica.GEN
      j. na-po-is-pre-trčavati se *ulice.ACC/ulica.GEN/*dosta ulica.GEN
      k. po-na-is-pre-trčavati se ?ulice.ACC/*ulica.GEN/?dosta ulica.GEN
      l. po-na-is-pre-trčavati ?ulice.ACC/*ulica.GEN/?dosta ulica.GEN
      m. *is-po-na-pre-trčavati ulice.ACC/*ulica.GEN/dosta ulica.GEN
      n. *is-po-na-pre-trčavati se *ulice.ACC/??ulica.GEN/*dosta ulica.GEN

For the sake of convenience my assumptions about the properties of superlexical *iz-*, *po-*, and *na-* prefixes in Serbian are repeated below:

(vi) They do not change lexical properties of the verbs they attach to.

(vii) They attach only to imperfective stems (unless they co-occur in stack-

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ing) which have undergone the overt or non-overt stage of lexical pre-
fixation and the subsequent (secondary) imperfectivization.

(viii) They enforce cumulative and distributive readings on the events de-
noted (quantify over them), but are otherwise semantically bleached
(not related to their prepositional counterparts referring to spatial
relations).

 (ix) They attach outside/scope over the vP.

  (x) They do not allow further imperfectivization.

5. The analysis

In dealing with the properties of two *iz-* I tried to bring several strands
of investigation together, but the complexity of the problem is yet to be
investigated. The resultative semantics of the lexical *iz-* in combination
with transitive verbs (which is the most common environment it occurs in)
and its close relatedness to the resultative particles in Germanic languages
discussed above is the reason why I will treat it as a syntactic bit of the
same kind.

I will use the event-decomposition model by Ramchand (2003) as the
basis for considering a possible approach to an adequate syntactic analysis.
The question raised in §2 was how well event semantics and in particular
theoretical models handling the syntax/semantic interface can capture the
properties of the rich morphology of the verbal system found in Slavic
languages. I believe that some conclusions can be drawn from the material
presented.

Considering the distinction between the semantics of perfectivity and
telicity I adopted earlier, I find Ramchand's approach less compelling in
terms of defining aspectual boundaries. For her telicity is a semantic prop-
erty which can be obtained on different levels of a proposition by entailment,
and not a lexicalized aspectual property. She puts the emphasis on iden-
tifying phases of events, which in the present analysis allows prefixes to
be perceived as result identifiers without presupposing the nature of the
aspectual boundary involved.

Following Ramchand and Svenonius's (2002) analysis of the verb particle
construction within the same theoretical framework, I assume that lexical
iz- in Serbian also lexicalizes the result subevent of the complex event and
originates in the head position of RP (see (22)). The argument of the verb
originates as the holder of the result state in the specifier position of RP.
The prefix is incorporated into the verb (inserted under V) by a head to
head movement (along the lines of Baker 1988). Thus, the derivation of
izbaciti loptu ('throw out the ball') is represented in (40).

(40) $[_{v}$P Agent v $[_{VP}$ Undergoer *baci* $[_{RP}$ *loptu iz-*]]]
$[_{v}$P Agent v $[_{VP}$ *loptu$_i$ iz$_j$-baci* $[_{RP}$ t$_i$ t$_j$]]]

Another possible advantage of this approach is that it allows the semantic interpretation of the (thematic) roles of arguments to follow from the syntactic operations (see the discussion in §2). The thematic role variations are not specified prior to the processes of composition and the alternations are stated in terms of movement.

There are two things, however, which are not quite clear to me. As phonological units lexical prefixes do have an independent syntactic distribution (as prepositions), as well as identifiable lexical content, and in the theory applied in this analysis they can plausibly be successfully treated as lexical items fed to the combinatorial system (syntax). However, with verbs in Serbian, lexical information is also encoded by finer bits of phonology, which are usually regarded as unseparable parts of stems. For example, with some verbs the so-called thematic vowels (*-a, -e, -i, -va*) alternate with the semelfactive marker *-nu*:

(41)   duvati   'blow'   dunuti   'blow once'
        kucati   'knock'   kucnuti   'knock once'
        štucati   'hiccough'   štucnuti 'hiccough once'

The alternation of the stem vowels themselves can mark causativisation as well (with deadjectival verbs for instance):

(42)   crveneti   'redden'   crveniti   'redden' (trans.)
        o-slepeti 'go blind'   o-slepiti 'blind' (trans)

In principle, such alternations do fall in the domain of l-syntax or first phase syntax. However I do not see how this event structure approach (or any other that I am aware of) can account for them. At the same time it is unclear to me whether it makes any sense (considering their distribution) to snatch them from the realm of morphology, and claim that these stems are not listed.

The second problematic issue is the treatment of the superlexical prefixes. In order to account for their role in modifying the properties of the event, a more elaborate structure of an 'augmented event' would be necessary. For now, I can only assume they are attached outside VP. The order in which the aspectual meanings they contribute occur would be (from the stem outward):

(43)   completive (*iz-*) < distributive < cumulative

6. Conclusion

In this paper I have shown that there are two distinct *iz-* prefixes in Serbian: a lexical, and a superlexical one. I have shown that there are criteria for the distinction between the two types of verbal prefixes (restricting my claims to the superlexical prefixes that stack after the secondary imperfectivization). I have focused on the lexical *iz-* occurring with transitive verbs and shown

that it can be analyzed along the same lines as English particles *up* and *out*, verb-particle resultatives. I have also considered the role of the lexical *iz-* as a perfectivizer and pointed to the distinction between the notion of telicity and overtly marked boundedness on the lexical level. It also follows from the discussion above that a more elaborate event structure would be necessary for a complete analysis of the superlexical *iz-*.

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