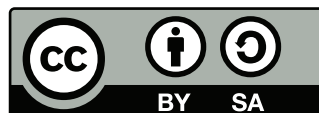


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Ranko Matasovic

Aspect and *Aktionsart* in Slavic, Inflection and Derivation in RRG



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Aspect and *Aktionsart* in Slavic, Inflection and Derivation in RRG

Ranko Matasović
University of Zagreb

Abstract

Slavic languages are characterized by systematic pairings of verbs showing aspectual oppositions. Usually the perfective verbs are derived from imperfectives by prefixation, but the other processes, such as the derivation of secondary imperfectives and perfectives by suffixation, also exist. In this paper, it is argued that Slavic aspect needs to be represented chiefly in terms of derivation, as the system of lexical rules relating logical structures of verbs that form aspectual pairs, although it also shows some features usually associated with inflection (as a grammatical category expressed by nuclear operators in the operator projection).

1 How does Slavic aspect work?

The structure of this paper is as follows: I first briefly explain how the system of aspectual oppositions is expressed in Croatian. In Section 2, I discuss whether aspect is a derivational or inflectional category in Croatian, building upon Anelia Ignatova's (2008) RRG analysis of Bulgarian aspectual system. Section 3 is dedicated to the question how the difference between derivation and inflection should be captured in RRG. It is argued that lexical rules must be used in representation of derivational processes, but not inflectional processes. Finally, in Section 4 we discuss the types of rules that figure in the derivation of Croatian perfective verbs from imperfectives. We show that aspectual alternations involve the change of *Aktionsarten* in the lexical representation of verbs, and the current RRG system of representation of *Aktionsarten* turns out to be insufficient to capture all the *Aktionsart* types found in Croatian. This leads us to a proposal of a more economical system of features that define *Aktionsarten*, and to a theory that predicts the common cross-linguistic patterns of *Aktionsart* alternations. All examples in this paper are from Croatian, unless noted otherwise. The aspectual system of Croatian is similar to those of other Slavic languages in all the respects relevant to the argument presented

in this paper. There are two aspects: perfective and imperfective. Slavic perfective aspect expresses the event as a whole, without reference to its internal constituents:¹

- (1) Ivan je na-pisa-o knjig-u
 I. AUX PFV-write-PPTC.M book-ACC.SG
 ‘Ivan wrote a book’

Slavic imperfective aspect expresses the event with respect to its internal constituents:

- (2) Ivan je pisa-o knjig-u
 I. AUX write-PPTC.M book-ACC.SG
 ‘Ivan wrote a book’

Verb stems are either perfective or imperfective, with a small number of bi-aspectual verbs, e.g. *vidjeti* ‘see’, *čuti* ‘hear’. In Croatian, perfective verbs are not used in the present tense to express absolute present (the present tense of perfective verbs is a relative tense, and occurs mostly in subordinate clauses).

Perfective verbs are formed from imperfectives by prefixation, e.g. *pisati* (ipfv.) ‘write’ vs. *na-pisati* (pfv.) ‘write’. There are some unprefixated perfectives; their imperfective counterparts are often formed by *Ablaut*, e.g. *skočiti* ‘jump’ (pfv.) vs. *skakati* ‘jump’ (ipfv.).

Perfectives are not formed exclusively by prefixation. The suffix *-nu-* forms perfective verbs with semelfactive meaning, e.g. *mahnuti* ‘wave (once)’, *viknuti* ‘shout (once)’.

Secondary imperfectives can be formed from perfective verbs by suffixation (sometimes also by *Ablaut*), e.g. *prevesti* ‘transport’ (pfv.) vs. *prevažati* ‘be transporting’ (ipfv.), *donijeti* ‘bring’ (pfv.) vs. *donašati* ‘be bringing’ (ipfv.).

2 Is Slavic aspect inflectional or derivational?

The distinction between inflection and derivation is scalar, not absolute (Aikhenvald 2007), see Table 1.

¹ This standard definition of the functions and meanings of Slavic aspect is found, e.g., in Comrie 1976 and Maslov 2004.

Inflection	Derivation	Slavic Aspect
1. Usually obligatory	Optional	inflectional (?); but, note that there are bi-aspectual verbs
2. Final process (if affix, on rim of grammatical relationships bet a word)	Pre-final process (if affix, between root and inflection)	derivational
3. Forms a complete word	Derives a stem which takes inflections	derivational
4. Defining characteristics of a word class (e.g. nouns inflect for case)	Usually specific to a word class	?
5. Does not change word class	Either derives a stem of a different word class, or adds some semantic specification to a root without changing class	derivational
6. May indicate grammatical relationship between words and/or participate in agreement	Never indicates grammatical relationships between words or participates in agreement	derivational
7. Usually does not show gaps in the paradigm	Often shows gaps in the paradigm	?(no paradigm)
8. Generally semantically regular	Often semantically irregular	derivational
9. Tends to form smallish systems	May be large systems	derivational (the number of prefixes is large)
10. Tends to have high frequency	Likely to have lower frequency	?(the frequency of individual morphemes is low)
11. Tends to be monosyllabic	May be monosyllabic or longer	?(most prefixes are monosyllabic, but there are polysyllabic combinations of prefixes)

Table 1: Criteria for distinguishing inflection from derivation

Each of the distinguishing criteria adduced in Table 1 needs a few comments, when applied to Slavic aspect:

Ad 1) Aspect appears to be an obligatory category in Slavic, as all verbs are necessarily either perfective or imperfective. However, there is a small residue of the so-called “bi-aspectual” verbs that are inherently neither, e.g. *vidjeti* ‘to see’ in Croatian. Therefore, this criterion is not decisive.

Ad 2) Aspect is a pre-final process, as morphemes expressing it are closer to the root than morphemes expressing clearly inflectional categories such as person and number, cf. Croat. *mah-n-em* (wave-PERF.-1SG.PRS) ‘I wave’.

Ad 3) Aspect morphemes generally do not form a complete word, as inflectional morphemes for person/number/tense must also be added, as in the example mentioned Ad 2).

Ad 4) Slavic aspect defines verbs as a word-class (along with other categories, such as person and number). Other word-classes do not have aspect.

Ad 5) Aspect does not change the word class, as morphemes marked for aspect are verbal roots which remain verbal. However, Aikhenvald does not consider this criterion decisive, as many derivational morphemes also do not change the word class.

Ad 6) Aspect may not involve grammatical relations or agreement, so in this sense it is clearly derivational. However, there are clearly inflectional categories that also do not involve grammatical relations (e.g. tense).

Ad 7) Except if the bi-aspectual verbs are considered as gaps (i.e. as having no inherent aspect), aspect does not show gaps in the paradigm, so in this sense it is inflectional.

Ad 8) Aspectual morphemes are often semantically irregular, in that the meaning of the verb derived by perfective prefix often cannot be predicted from the meaning of the verbal root and the meaning of the prefix. In this sense, aspect is derivational.

Ad 9) The Slavic aspectual system is small, in that there are only two aspects: perfective and imperfective. However, both within perfectives and imperfectives we can distinguish other sub-categories, and if they are taken into account, the system is quite large: for example, among perfective verbs in Croatian we find inchoatives, finitives, resultatives, etc. Thus, this criterion is not decisive.

Ad 10) Since all verbs are marked for aspect, the frequency of aspectual forms is high, and aspect is inflectional in this sense. But obviously the criterion 10) is not independent of other criteria such as 7) and 1) – all obligatory categories are bound to be frequent.

Ad 11) Apart from a few exceptions, all morphemes expressing aspect in Slavic are monosyllabic. However, this is not decisive, since derivational categories may also be expressed by short, monosyllabic morphemes (as Aikhenvald acknowledges). Only if a category is consistently expressed by relatively long morphemes is this an argument that it is derivational, but

the converse does not follow: if morphemes expressing it are short, the category may or may not be inflectional.

Ignatova (2008), working on Bulgarian, argues that Slavic aspectual prefixes are derivational, because many of them have lexical (besides purely aspectual) meaning. There are around 25 perfective-forming prefixes in Croatian, but only fifteen are frequent and productive.² They can express a variety of secondary verbal meanings, and many of the prefixes often have more than one meaning, so the exact meaning of the derived perfective cannot be simply predicted from the meanings of the constituent parts. We will give the examples only with the eleven most common prefixes:

1. *na-* derives sative verbs (*najesti se* ‘eat one’s fill’ ← *jesti* ‘eat’), superessives/superlatives (*nakapati* ‘sprinkle onto’ ← *kapati* ‘sprinkle’)
2. *od-* derives ablative verbs (*odagnati* ‘chase away’ ← *gnati* ‘chase’) and completives (*odsvirati* ‘play (to the end)’ ← *svirati* ‘play (an instrument)’)
3. *po-* derives distributives (*pobiti* ‘kill (multiple undergoers)’ ← *biti* ‘strike’, *poloviti* ‘hunt’, ‘catch (multiple undergoers)’ ← *loviti* ‘hunt’, ‘chase’), inceptives (*poletjeti* ‘start flying’, ‘take off’ ← *letjeti* ‘fly’, *pojuriti* ‘start running’ ← *juriti* ‘run’), diminutives (*poigrati se* ‘play a little’ ← *igrati se* ‘play’), and it is also the default perfectivizer without any inherent meaning (*pogledati* ‘take a look at’ ← *gledati* ‘watch’).
4. *pod-* derives subteressive verbs (*podstaviti* ‘place under’ ← *staviti* ‘place’), diminutives (*podnapiti se* ‘get a little drunk’ ← *napiti se* ‘get drunk’)
5. *pre-* derives translatives (*preploviti* ‘sail across’ ← *ploviti* ‘sail’), repetitives (*preprodati* ‘re-sell’ ← *prodati* ‘sell’) and excessives (*prepeći* ‘over-bake’ ← *peći* ‘bake’, *pregladnjeti* ‘become too hungry’)
6. *pri-* derives apudessives/allatives (*privući* ‘draw close’ ← *vući* ‘draw’), diminutives (*prileći* ‘lay down a little’ ← *leći* ‘lay down’), and it can also function as a default perfectivizer (*prisiliti* ‘force’ (pfv.) ← *siliti* ‘force’ (ipfv.)).
7. *pro-* derives illatives (verbs denoting a piercing action), e.g. *provući* ‘draw through’ ← *vući* ‘draw’, *probosti* ‘pierce through’ ← *bosti* ‘pierce’, ‘stab’), praeteressives (verbs denoting an action that is performed passing by an object (*proletjeti* ‘fly by’ ← *letjeti*

² Babić (1986: 477) claims there are 27 perfectivizing prefixes, of which 16 are productive. He included the prefixes *de-* and *re-*, as well as the prefix *dis-*, which occur only in loanwords and are of Latin and Greek origin respectively.

- ‘fly’), inceptives (*procvasti* ‘start blossoming’ ← *cvasti* ‘blossom’), and it is often a default perfectivizer (*proliti* ‘pour’ (pfv.) ← *liti* ‘pour’ (ipfv.), *proširiti* ‘widen’, ‘spread’ (pfv.) ← *širiti* ‘spread’ (pfv.)).
8. *raz-* derives verbs denoting an action aimed in several directions simultaneously (*razaslati* ‘send in several directions’ ← *slati* ‘send’, *razjuriti* ‘chase in several directions’ ← *juriti* ‘run’, ‘chase’), intensives (*raspaliti* ‘light up’, ‘burn energetically’ ← *paliti* ‘burn’ (transitive)), privatives (*rasteretiti* ‘remove the burden from’ ← *teretiti* ‘burden’, *razuvjeriti* ‘dissuade’ ← *uvjeriti* ‘persuade’), and it also serves as the default perfectivizer (*rashladiti* ‘cool’ (pfv.) ← *hladiti* ‘cool’ (ipfv.)).
 9. *s-* derives verbs that denote centripetal, joining actions (*slijepiti* ‘glue together’ ← *lijepiti* ‘glue’, *skovati* ‘hew together’ ← *kovati* ‘hew’), actions that denote removing from some surface (*sprati* ‘wash away’ ← *prati* ‘wash’, *sjahati* ‘dismount’ ← *jahati* ‘ride (a horse)’) and it also functions as a default perfectivizer with no lexical meaning (*slediti se* ‘freeze’ (pfv.) ← *lediti se* ‘freeze’ (ipfv.)).
 10. *u-* derives illatives (*uliti* ‘pour into’ ← *liti* ‘pour’, *ugurati* ‘push into’ ← *gurati* ‘push’) and it can also have no lexical meaning (*ubрати* ‘pick’ (pfv.) ← *brati* ‘pick’ (ipfv.), *upitati* ‘ask’ (pfv.) ← *pitati* ‘ask’ (ipfv.)).
 11. *uz-* is a directional denoting a vertical (top-oriented) action (*uzvesti* ‘lead up’ ← *vesti* ‘lead’) and it can also have no lexical meaning (*uzmoći* ‘be able’ (pfv.) ← *moći* ‘be able’, ‘can’).
 12. *za-* derives inceptives/inchoatives (*zavoljeti* ‘start loving’ ← *voljeti* ‘love’), verbs denoting immersing or covering actions (*zavući* ‘draw into’ ← *vući* ‘draw’, *zagaziti* ‘wade into’ ← *gaziti* ‘wade’), and it can also be without lexical meaning (*zaoštriti* ‘sharpen’ ← *oštriti* ‘sharpen’).

Often different prefixes can be used to derive synonymous, or quasi-synonymous perfectives, e.g. *zaoštriti* and *naoštriti* ‘sharpen’, or *zapitati* and *upitati* ‘ask’. There may be slight difference in meaning between such pairs of verbs, but these are mostly pragmatic, e.g. *zapitati* has a stronger force and expresses a slightly less polite way of asking than *upitati*.

As we have seen in the examples, the lexical meaning of aspectual prefixes is often directional. RRG’s operator scope hierarchy predicts that directionals fused with aspectual prefixes will be nuclear directionals, i.e. those that modify the orientation of action or event without reference to participants (arguments), and this prediction is fully borne out by the facts:

slagati ‘place’ (ipfv.) vs. *naslagati* ‘place on’ (pfv.)
letjeti ‘fly’ (ipfv.) vs. *izletjeti* ‘fly out of’ (pfv.)
plivati ‘swim’ (ipfv.) vs. *uplivati* ‘swim into’ (pfv.)
trčati ‘run’ (ipfv.) vs. *protrčati* ‘run past’ (pfv.)

Some prefixes can express only directionality, without changing the aspect/*Aktionsart* of the verb:

skočiti ‘jump’ (pfv.) vs. *uskočiti* ‘jump into’ (pfv.)

Likewise, prefixes can only affect the aspect/*Aktionsart*, without having a directional value or any semantic content. The default such prefix in Croatian is *po-*:

piti ‘drink’ (ipfv.) vs. *popiti* ‘drink’ (pfv.)
jesti ‘eat’ (ipfv.) vs. *pojesti* ‘eat’ (pfv.)

Ignatova (2008) also argues that suffixes deriving secondary imperfectives are purely inflectional, rather than derivational, since they do not have any lexical meaning. However, even if we view them in isolation from the prefixes, they also show some derivational characteristics, e.g. they do not represent a final process, they do not form a complete word, but they do show gaps in the paradigm. Most importantly, they cannot be automatically formed from any perfective verb, e.g. there are no derived imperfectives **pojedavati*, **uplivavati* corresponding to perfectives *pojesti* ‘eat’, *uplivati* ‘swim into’. Lastly, some imperfectivizing suffixes do add a component of meaning, e.g. frequentative:

pitati ‘ask’ (ipfv.) → *za-pitati* ‘ask’ (pfv.) → *za-pit-kivati* ‘be asking (frequently)’
(ipfv.)

Hence, we believe that Croatian aspect as a whole is best defined as a derivational, rather than inflectional category, though we do acknowledge that the difference between derivation and inflection is scalar rather than absolute (cf. also Bybee 1985: 87).

3 What is the difference between derivation and inflection in RRG?

Our initial hypothesis about the difference between inflection and derivation in RRG was that inflectional morphemes are expressed on the Operator projection, while derivational morphemes are not. But this is clearly not the case: some clearly inflectional categories are not represented on the operator projection (e.g. person markers in familiar Indo-European languages), and there is no theoretical principle in RRG stating that derivational morphemes should not be represented in the operator projection.

Arista (2008), following Everett (2002) argues that derivational morphemes are Nuclei, while inflectional morphemes are arguments. This has far-reaching consequences for their conception of the Layered Structure of the Word (parallel to the Layered Structure of the Clause), but is irrelevant for our present purposes. On the other hand, Arista (2008: 124) discusses the problem of *lexical integrity*: whether internal constituents of a word are visible to syntax. This is highly relevant, as it represents an independent criterion for distinguishing derivational from inflectional processes in word-formation. We take the view that inflectional processes are indeed invisible to syntax (i.e. syntactic rules do not refer to inflectional morphemes), while this does not necessarily apply to derivational morphemes and lexical rules. Nearly all of the word-formation processes adduced as exceptions to the Lexical Integrity Hypothesis involve derivation, rather than inflection (Lieber & Scalise 2007).

Derivational processes are handled by Lexical rules, cf., e.g., the rule relating (3a) to (3b): $pro- + do'(x, [pred_1'(x, y)]) \rightarrow do'(x, [pred_1'(x, y)])$ & INGR $pred_2'(y)$.

- (3) a. Ivan je čitao knjig-u
 I. AUX read-PPTC.M book-ACC.SG
 'Ivan read a book'
- b. Ivan je pro-čita-o knjig-u
 I. AUX PFV-read-PPTC book-ACC.SG
 'Ivan read a book'

Inflectional morphemes can be applied across the lexicon, and their function need not be specified in the lexicon by means of lexical rules. Therefore, the difference between derivation and inflection in RRG can be stated as follows: a morphological process is derivational if it must be represented in terms of lexical rules. If not, it is inflectional.

Morphemes expressing derivational categories are subject to the same scope restrictions in the Operator Projection as the inflectional morphemes. However, there is a separate restriction stating that derivational morphemes tend to be closer to the verbal root (Nucleus) than inflectional morphemes.

If both derivational and inflectional affixes are represented as operators, the order of derivational and inflectional affixes can interfere with the scope and order of the operators (which is predicted to be universal by RRG). Thus, in Tepehua (Totonacan) the incorporated morpheme *-alhi-*, 'always', is a core operator, but it occurs closer to the verbal root than the morpheme expressing the perfective aspect *-ta*, which is a nuclear operator (4):

- (4) xix-'alhi-ta
 get.dry-CONT-PFV
 'S/he is always dry' (Watters 2009: 263)

In Bulgarian, we have an interesting case where (derivationally) imperfective verbs can be in the perfective aspect (aorist), and vice versa, (derivationally) perfective verbs can be in the imperfective aspect (imperfect), as in (5). The inflectional morpheme fusing person/number and aspect always follows the derivational morpheme expressing – essentially – the *Aktionsart* of the verb (see Lindstedt 1985).

- (5) Štom puk-ne-še zora-ta, izkarva-x- ovc-i-te navən
 As.soon.as break-PFV-IPFV.3SG. dawn-DEF.F drive-IPFV.1SG sheep-PL-DEF out
 ‘As soon as dawn broke, I used to drive the sheep out’ (Beaulieux & Mladenov 1950: 335)

Here the imperfect ending of the first verb superimposes upon it the habitual reading, although the meaning of the verb is inherently perfective (it is an achievement verb, which cannot be imperfective). A similar process exists in Georgian (Comrie 1976: 32). It is obvious that the fused person/number/tense/aspect morpheme has a wider scope than the morpheme expressing the *Aktionsart* of the verb. As predicted, in example (5), the inflectional morpheme with wider scope (-še-) is farther from the Nucleus than the derivational morpheme (-ne-).

4 What types of lexical rules express Slavic aspectual derivations?

We saw above that Slavic aspectual systems are characterized by systematic pairings of verbs showing the opposition between perfectives and imperfectives. Perfectives in Croatian generally belong to the following *Aktionsarten*:

1. Semelfactives: *bljesnuti* ‘flash’, *mahnuti* ‘wave’, *zalepršati* ‘flutter’
2. Achievements: *razbiti se* ‘shatter’, ‘break’, *pročitati* ‘read’
3. Accomplishments: *otopiti se* ‘melt’, *naučiti* ‘learn’
4. Active accomplishments: *pojesti* ‘eat’, *popiti* ‘drink’, *dosegnuti* ‘reach’

Imperfectives belong to the following *Aktionsarten*:

1. States: *spavati* ‘sleep’, *sjediti* ‘sit’
2. Activities: *plesati* ‘dance’, *skakati* ‘jump’

In some cases, the tests applied to establish the *Aktionsart* of a particular verb do not seem to work for Slavic, cf. e.g. the pair *skočiti* ‘jump’ (pfv.) *skakati* ‘jump’ (ipfv.). *Skakati* is certainly an activity: it can be used with a dynamic adverb.

- (6) *Snažno je skakao* (vigorously/AUX/jumped) ‘he jumped vigorously’

It can be used with adverbs expressing duration:

- (7) *Brzo je skakao* (quickly/AUX/jumped) ‘he jumped quickly’

With the *for*-PP phrase:

- (8) *Skakao je tri sata* (jumped/AUX/three/hours) ‘he jumped for three hours’

In these examples the verb is clearly atelic and does not imply a result state. Its perfective counterpart, *skočiti*, passes nearly all of the tests that *skakati* does (*Snažno je skočio*, *Brzo je skočio*), but it is not durative (**Skočio je tri sata*). Clearly, then, it cannot be simply an activity verb. A similar argument can be produced with respect to a verb such as *zalepršati* ‘flutter’ (pfv.), which is perfectly compatible with adverbs such as *snažno* ‘strongly’, *brzo* ‘quickly’, but it is atelic (there is no result state) and it is non-durative (**Zalepršao je tri sata*).

Moreover, the current system of *Aktionsarten* does not provide for Croatian verbs such as *sagnuti se* ‘bend down’, ‘bow’, which is the perfective counterpart of *sagibati se* ‘bend down’, ‘bow’; while the latter passes all the tests for a State predicate, the former can be used with dynamic adverbs (*Snažno se sagnuo* ‘he forcefully bent down’). If this is viewed as a causative verb (‘to bend down’ = ‘to cause to be bent’, which is not the most obvious analysis in my opinion),³ then some other verbs of change of posture can be considered better examples of this *Aktionsart*, e.g. *ustati* ‘to stand up’; these are telic (they can be construed with *in*-PP phrases), dynamic (they can be construed with *energično* ‘forcefully’, ‘energetically’), and they are punctual (they cannot be construed with *for* PP, e.g. *tijekom tri sata* ‘for three hours’).

It could be claimed that this is simply an inchoative/inceptive of a stative verb, and that we should deal with it by introducing an operator (BEGIN) that can be added to the logical structure of a basic verb (in this case a state predicate). However, the verb *ustati* clearly does not have an inceptive meaning ‘to begin to stand’; rather, it means ‘to perform an action that leads to one’s being in an upright position’. Inchoatives/inceptives are often perfective versions of stative imperfectives, e.g. *zaspati* ‘fall asleep’ (pfv.) from *spavati* ‘sleep’, or of imperfective activity verbs, e.g. *zapjevati* (pfv.) ‘start to sing’ vs. *pjevati* (ipfv.) ‘sing’ – but

³ The current RRG system of *Aktionsarten* allows us to analyze any transitive verb referring to a physical action as basically causative, and we do not have clear criteria for distinguishing transitive activity verbs and causative modifications of activity verbs. Hence, *žvakati* ‘chew’ can be viewed as an activity, but also as a causative (informally ‘cause to become chewed’), and *saviti* ‘bend’ as ‘cause to become bent’. However, I would prefer to treat as causatives only those verbs that lexicalize the notion of *external* force, i.e. force not inherent in the actor. (Non-causative) Activity verbs lexicalize the notion of *internal* force.

the inchoative/ingressive prefix is generally *za-*, and these verbs do not allow secondary imperfectivization (i.e. there is no **zapjevavati* ‘be starting to sing’, **zaspavavati* ‘be falling asleep’ parallel to *ustajati* ‘be standing up’).

We could argue that some of the tests for *Aktionsarten* used in RRG (Van Valin 2005: 39) are not relevant in Croatian, but this would be ad hoc; rather, on the basis of Croatian data, we should consider the possibility that a few more *Aktionsarten* should be posited. Moreover, it would be nice to have a system of features that define *Aktionsarten* from which the possibility of existence of these *Aktionsarten* would follow. And indeed, such a system exists, but it is not the current RRG system (Van Valin 2005: 33):

1. State: [+static], [-dynamic], [-telic], [-punctual]
2. Activity: [-static], [+dynamic], [-telic], [-punctual]
3. Achievement: [-static], [-dynamic], [+telic], [+punctual]
4. Semelfactive: [-static], [+/-dynamic], [-telic], [+punctual]
5. Accomplishment: [-static], [-dynamic], [+telic], [-punctual]
6. Active accomplishment: [-static], [+dynamic], [+telic], [-punctual]

The causative operator (CAUSE) can be used to derive the causative versions of each basic *Aktionsart*, and the operator DO’ to derive agentive versions of activity verbs (e.g. agentive *murder* vs. non-agentive *kill*, etc.).

The current RRG system allows for the possibility of other combinations of features, but some apparently never co-exist (e.g. +static and +dynamic). Does the theory *claim* that there are no verbs in any languages that have a logical structure combining, e.g. [+dynamic], [+telic], and [+punctual]? Some combinations of features are certainly going to be rare cross-linguistically, as certain types of events are rare in the human experience, e.g. there is only a handful of semelfactive activities lexicalized as the Croatian verb *zalepršati* ‘flutter’, and there is only a handful of semelfactive accomplishments denoting punctual changes in body posture (e.g. *sagnuti se* ‘bend down’), but what we want is a system of lexical representation in which the existence of such lexicalizations would be predicted.

Moreover, the current system of features does not help us understand why some lexical rules appear to be more common, cross-linguistically, than other theoretically possible rules. Van Valin (2005: 41) notes that the pattern deriving accomplishments from states (or vice versa) is very common cross-linguistically, but does not say why. Nearly all direct derivations of aspectual pairs in Croatian involve one of the two types of rule: either a State verb is related to an Accomplishment (as in 9a vs. 9b), or an Activity verb to an Active accomplishment (as in 9a vs. 9b):

- (9) a. Led se topio
ice melted.IPFV
'Ice was melting' (State)
- b. Led se otopio
ice melted.PFV
'Ice melted' (Accomplishment)

In terms of lexical rules this derivation can be expressed as **pred'(x) → BECOME pred'(x)**.

Of course, 'to melt' is a Process, not a State in a strict sense, but Processes can be viewed as a sub-type of stative predicates – the type in which temporal sections of the state are not identical. Processes having result states are Accomplishments in the RRG system (they are derived from basic static predicates with the operator BECOME).⁴

- (10) a. Ivan je jeo jabuku
Ivan ate.IPFV apple.ACC.SG
'Ivan ate an apple' (Activity)
- b. Ivan je pojeo jabuku
Ivan ate.PFV apple.ACC.SG
'Ivan ate the apple' (Active accomplishment)

In terms of lexical rules this derivation can be expressed as **do'(x) pred'(x, y) → do'(x) pred'(x, y) & INGR pred'(y)**.

We would like to posit a system of features in which the frequency of this pattern would be intuitively clear, and also a system in which the rareness of certain kinds of lexical rules (e.g. those relating Activities to Semelfactives) would be predictable. In order to establish a clear relation with the system of Van Valin 2005 we will use the same three semantic features: [\pm punctual], [\pm dynamic] and [\pm telic]. These features correspond to three important and probably innate psychological concepts: *duration* (the perception of time), (*internal*) *force* (as opposed to external force, or causation), and *telicity* (having an internal end, or purpose), respectively. The relevance of these concepts for cognitive processes is well-established in cognitive psychology,⁵ and we would not find it surprising if categories playing a large role in other cognitive systems were also involved as semantic primitives in lexical semantics of verbs. The primitive semantic features and their combinations are represented in the Table 2.

⁴ On processes as basic *Aktionsart* see Van Valin (2005: 43).

⁵ On the role of force dynamics and conceptualization of time in lexical semantics see especially Talmy (2000).

	punctual (non-durative)	dynamic (= having internal force)	telic	e.g.
Semelfactives	+	–	–	<i>bljesnuti</i> ‘flash’
Achievements	+	–	+	<i>puknuti</i> ‘pop’
States	–	–	–	<i>sjediti</i> ‘sit’
Accomplishments	–	–	+	<i>otopiti se</i> ‘melt’
Semelfactive activities	+	+	–	<i>skočiti</i> ‘jump’, <i>zalepršati</i> ‘flutter’
Activities	–	+	–	<i>pjevati</i> ‘sing’
Active accomplishments	–	+	+	<i>pojesti</i> ‘eat’
Semelfactive active accomplishments	+	+	+	<i>sagnuti se</i> ‘bend down’, <i>ustati</i> ‘stand up’

Table 2: The features defining *Aktionsarten*

Moreover, we suggest that the system of *Aktionsarten* is structured, in that the features are organized hierarchically. This system can be represented as the Feature Hierarchy (Figure 1). Arrows on the Hierarchy show the adjacent *Aktionsarten* (dominated by a single node) which are likely to be related by means of lexical rules. That we do not often find lexical rules relating Semelfactives (in all three varieties) to other *Aktionsarten* should be attributed to the fact that Semelfactives are rarely lexicalized in languages, as punctual events do not often occur in everyday experience.

The system of features defining *Aktionsarten* proposed here is more intuitive and economical than the current RRG system:

- it does not posit both features Static and Dynamic; since they never co-occur in the lexical representation of verbs, having both of them is redundant.
- it does not require any *Aktionsart* to be characterized with the value $[\pm]$ for any feature (the RRG system characterizes Semelfactives as $[\pm \text{dynamic}]$).
- it makes strong empirical predictions: 1) it predicts the existence of two *Aktionsarten* that the RRG system does not distinguish (Semelfactive Activities and Semelfactive Active Accomplishments); 2) it predicts that only those *Aktionsarten* that are adjacent on the Feature Hierarchy will frequently be derived from each other by means of lexical rules.

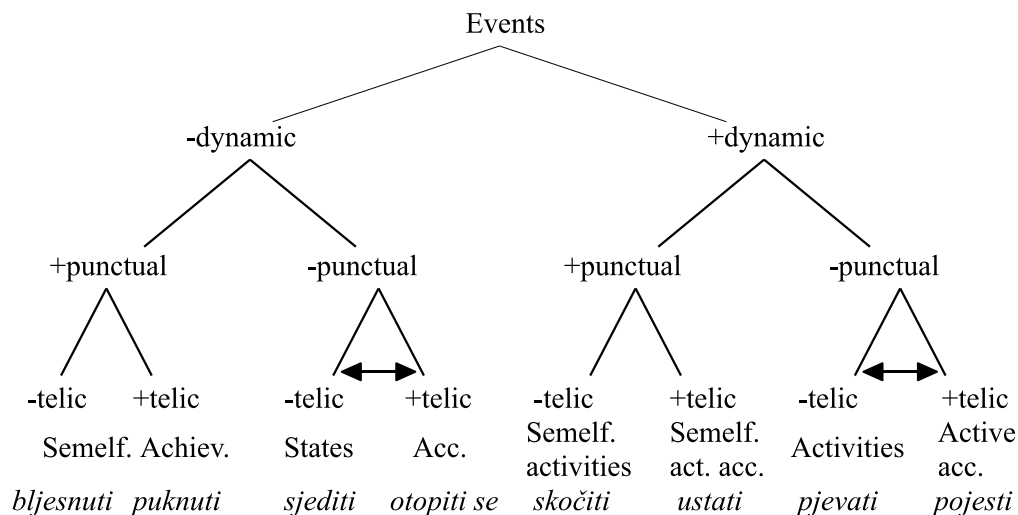


Fig. 1: The feature hierarchy

The system of lexical rules does not have to be economical. Grammars are messy. But our prediction is that it will tend to be economical, i.e. that, statistically, we will find that rules involving adding or subtracting only one feature are common cross-linguistically. This prediction has yet to be tested empirically in future investigations.

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