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► **To cite this version:**

Dejan Stosic. The semantics of space: A study of the prefix "pro-" in Serbian. Nicole Delbecque, Bert Cornillie. On interpreting construction schemas, Mouton de Gruyter, pp.331-357, 2007. halshs-00272884

HAL Id: halshs-00272884

<https://shs.hal.science/halshs-00272884>

Submitted on 3 Feb 2017

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The semantics of space : A study of the prefix *pro-* in Serbian *

Dejan Stosic

Most of the studies dealing with prefixes in the Slavic languages focus on their role in expressing verbal aspect. Research on the expression of motion in Serbian rarely takes into account the semantic contribution of prefixes when they are associated with verbs. In this paper¹, we will attempt to show by analysing the prefix *pro-* in Serbian that prefixes also play a very important role in the semantic structuring of space. First, we will examine effects which may cause the addition of the prefix *pro-* to different semantic classes of simplex verbs (§ 2.2). Next, we will show that *pro-* prefixed verbs involve, because of the semantic particularities of this prefix, more than one syntactic as well as semantic constraint on the nature of selected objects (§ 3). Finally, we will point up the relationship which exists between the spatial and the aspectual meaning of the prefix *pro-* (§ 4).

1. Introduction

The interaction between verbs and prefixes in the Slavic languages has been the subject of many studies in the last century. The importance of prefixation especially has been emphasized in the studies dealing with verbal aspect because of the quite central role which prefixes play in aspectual morphology. *Aspectual morphology* in the Slavic languages refers to a set of morphological processes which the languages use in deriving perfective verbs from imperfective verbs and imperfectives from perfectives. So, in Serbian, it is possible to change the aspectual value of a verb either by the addition of a prefix (e.g. imperfective *trčati* ‘to run’ vs perfective *istrčati* ‘to run out from’), or by that of a suffix (e.g. perfective *završiti* ‘to finish’ vs imperfective *završavati* ‘to be in the process of

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finishing’). Examples (1) and (2) illustrate the way in which speakers of Serbian contrast imperfectives (e.g. *pisati pismo* ‘to write a letter’) and perfectives (e.g. *napisati pismo* ‘to finish the letter’) by adding a prefix (Pfx) to the former (see List of abbreviations on page 28):

- (1) *Pisao sam joj pismo kada su oni ušli u kuću.*
written AUX her letter-ACC when AUX they entered into house-ACC
‘I was writing her a letter when they entered the house.’
- (2) *Napisao sam joj pismo za sat vremena.*
Pfx-written AUX her letter-ACC in hour time-GEN
‘I wrote her a letter in one hour.’

This article will not deal any further with imperfectivizing suffixes. So, for the remainder of the article, all unprefixated verbs can be assumed to be imperfective (unless otherwise noted), all prefixed verbs can be assumed to be perfective.

Studies dealing with verbal aspect have also shown that prefixes play a very important role in expressing *Aktionsart*. Moreover, the addition of a prefix can change the combinatorial properties of the verb. Thus, the base form and the prefixed verb can require a different type of object, or one of them can be transitive, the other intransitive.

But, verbal prefixes, which obviously have aspectual meaning, play also a very important role in the semantic structuring of space. In spite of the very abundant literature on the semantics of prefixes in Slavic languages, few Slavists have really tried to define the semantic contribution of prefixes in the expression of motion (e.g. Dabrowska 1996). With regard to Serbian, few studies deal with the spatial meaning(s) of prefixes (e.g. Mitrinović 1990; Ivić 1982); most of the studies dealing with the semantics of space focus on prepositions and cases (e.g. Ivić 1957, 1957-1958; Piper 1997; Klikovac 2000). But, two very simple examples such as (3) and (4) aim to show that the meaning of a prefixed verb is significantly distinct from the meaning of the base form. So, in the case of the motion event described by the derived verb *istrčati* which means ‘to run out from’, the prefix

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expresses the "path" (Talmy 2000), and the base form (*trčati* 'run') expresses the "manner of motion" (Talmy 2000).

- (3) *Trčao je ceo dan.*
 run AUX all day
 'He ran all day long.'
- (4) *Istrčao je u baštu.*
Pfx-run AUX into garden-ACC
 'He ran out into the garden.'

These examples show that although prefixes are not autonomous elements, they seem to have a very rich semantic potential, entirely comparable to the semantic potential of spatial prepositions. According to L. Talmy (2000), prepositions and verbal prefixes in Slavic languages constitute the class of "satellites" which play a very important role in the expression of motion events because the Path component is characteristically represented in them. So, according to L. Talmy's typology, Serbian belongs to "satellite-framed" languages as well as English, German, Dutch, Russian, Chinese, and so on. Satellite-framed languages oppose to "verb-framed" languages such as French, Spanish, Hebrew, etc. which characteristically express Path in the verb root (cf. Talmy 2000).

In this paper, our primary purpose will be to precisely define the semantic contribution of the prefix *pro-* in the expression of motion in Serbian. The prefix *pro-* is typically used in its spatial meaning in describing situations as exemplified in (5) and (6):

- (5) *Mačka je projurila kroz kuhinju.*
 cat AUX **Pfx**-run through kitchen-ACC
 'The cat ran (passed running) through the kitchen.'
- (6) *Pas je protrčao ispred kuće.*
 dog AUX **Pfx**-run in front of house-GEN
 'The dog ran (passed running) in front of the house.'
- (7) *Pas je trčao ispred kuće kada smo ušli u baštu.*
 dog AUX run in front of house-GEN when AUX entered into garden-ACC

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‘The dog was running in front of the house when we entered the garden.’

We will use the term *Figure* to designate a moving or located entity and the term *Ground* to designate a reference entity with respect to which the position of a Figure is determined (Talmy 2000). Thus, in examples (6) and (7), the *dog* functions as the Figure and the *house* as the Ground. These terms respectively correspond to Langacker's terms *Trajector* and *Landmark*.

2. The Spatial Meaning of the prefix *pro-* in Serbian

According to several studies dealing with the evolution of prefixes in different Indo-European languages (Ernout and Meillet 1959; Mitrinović 1990), the prefix *pro-* derives from the Indo-European root *PER*. This root has produced in different languages a range of prefixes and prepositions which preserved a substantial resemblance in form, but also in meaning. Thus, the basic spatial sense of Indo-European *PER* ‘ahead’ has evolved into both a spatial and a temporal sense: ‘through’, ‘across’, ‘from one end to the other’, ‘from beginning to end’, ‘entirely’. It is currently expressed in the Slavic languages by prefixes and/or prepositions *pre(-)*, *pro(-)*, *preko*, *pri(-)*, *per(-)*, *prze-*, *przez*, and so on. The same element(s) exist(s) in Latin (e.g. *per(-)*), in French (e.g. *per-*, *par(-)*) and in English (e.g. *pre-*, *per(-)*).

These elements have been the subject of a number of studies, especially in Russian and Polish. With regard to Serbian, (Mitrinović 1990) constitutes the most detailed analysis of the prefixes *pro-* and *pre-*. In fact, it is a cross-linguistic study of the prefix *prze-* in Polish and its Serbian equivalents *pro-* and *pre-*. This study is based on a very large quantity of data and deals with all the uses of selected prefixes. However, (Mitrinović 1990) doesn't provide a really detailed semantic description of the prefix *pro-*.

2.1. *The prefix pro- and the grammatical structuring of conceptual content (Talmy, 2000)*

The main idea which we will take as our starting point in describing *pro-* is the one developed in several works of L. Talmy, according to whom: “The

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open-class, or lexical, subsystem represents conceptual content, while the closed-class, or grammatical, subsystem represents conceptual structure” (Talmy 2000, 2: 32-33). What makes the grammatical structuring of conceptual content possible are schemas – in idealized form –, specified by closed-class elements. Thus, each of these grammatical elements specifies a particular concept or schema according to its meaning.

So, as a closed-class item, the prefix *pro-* itself refers to a particular conceptual schema. First we will attempt to identify and secondly to characterize – from both a semantic and a cognitive point of view –, the concepts conveyed by this prefix in its spatial uses, as seen in (8), previously given in (6):

- (8) *Pas je protrčao ispred kuće.*
 dog AUX Pfx-run in front of house-GEN
 ‘The dog ran in front of the house.’

We assume that, in its spatial uses, the prefix *pro-* mainly specifies two concepts: the concept of progress and the concept of carving out a segment of a motion event. In the next section, we will sharpen these two concepts by analysing the behaviour of *pro-* in relation to different classes of simplex (unprefixed imperfective) verbs².

2.2. *The combination of the prefix pro- with different classes of simplex verbs*

The analysis of the spatial meaning of the prefix *pro-* first of all has to take into account the semantic properties of the simplex verbs with which this element can be associated. In ‘The Dictionary of Standard Serbo-Croatian’ (*Rečnik srpsko-hrvatskoga književnog jezika*) in six volumes, there are more than 600 verbs accepting the prefix *pro-* which is due to the fact that this prefix is extremely polysemous. Of course, the list of *pro-* prefixed verbs figuring in that dictionary cannot be exhaustive because this prefix is still productive.

Thus, according to the *The Dictionary of Standard Serbo-Croatian* and (Mitrinović 1990), the prefix *pro-* has at least eight different meanings. It can express space, time, inchoativity, penetration, loss, and so on. We will

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not analyse all the verbs derived via *pro-* which can be found in the *The Dictionary of Standard Serbo-Croatian*, but only 440 among them which are actually used by speakers of Serbian. Half of these *pro-*-prefixed verbs in usage (about 220 verbs) express dynamic spatial phenomena, that is a change of location in space. Only these 220 verbs formed via *pro-* will be analysed here in order to define the spatial meaning of the prefix *pro-*. This paper will only deal with these 220 *pro-*-prefixed verbs; all of them are perfective which means that they are derived via simple addition of the prefix to simplex verbs (e.g. *protrčati* ‘to pass running’, i.e. ‘to run past’).

The analysis of this corpus of 220 verbs shows that the prefix *pro-* expresses motion in combination with five semantic classes of simplex verbs: verbs of motion (e.g. *trčati* ‘to run’), verbs denoting sound phenomena (e.g. *pištati* ‘to whistle’), verbs of visual perception (e.g. *viriti* ‘to glance’), verbs of change of material integrity of an object (e.g. *kopati* ‘to dig’) and verbs of change of state (e.g. *kvasiti* ‘to soak’).

(1) Verbs of motion. According to the corpus of 220 verbs taken into account, the prefix *pro-* more often than not enters into combination with verbs of motion, broadly speaking. It is worth noting that the term ‘verb of motion’ may designate, on the one hand, verbs of movement literally speaking which express change of shape (e.g. *to grow*) or change of posture (e.g. *to gesticulate*) – there is some entity which moves, but it does not change location in the given reference-frame –, on the other hand, it may designate a genuine motion involving change of location (e.g. *to enter*). With regard to motion involving change of location, a Figure can either shift within a same reference-frame (e.g. *to run*, *to wander*) which we will term *site shift*, or pass from one reference-frame to another (e.g. *to enter*, *to exit*) which we will term *reference-frame shift*. We broadly adopt here the classification of verbs of motion proposed by Aurnague (2000) (see also Aurnague & Stosic 2002).

(1.a) Addition of *pro-* to verbs of motion without reference-frame shift. Most of the verbs of motion beginning with the prefix *pro-* derive from verbs of motion without reference-frame shift but which obligatorily involve site shift, such as *trčati* ‘to run’, *defilovati* ‘to defile’, *galopirati* ‘to

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gallop’, *leteti* ‘to fly’, and so on. Let us compare sentence (9) which contains this kind of simplex verb to sentences (10) and (12) which contain *pro-*prefixed verbs:

- (9) *Ptica je letela iznad kuće.*
 bird AUX flown above house-GEN
 ‘The bird was flying above the house.’
- (10) *Ptica je proletela iznad kuće.*
 bird AUX **Pfx**-flown above house-GEN
 ‘The bird flew past above the house.’
- (11) *Konji su galopirali ispred štale.*
 horses AUX **Pfx**-galloped in front of stable-GEN
 ‘The horses were galloping in front of the stable.’
- (12) *Konji su progalopirali ispred štale.*
 horses AUX **Pfx**-galloped in front of stable-GEN
 ‘The horses galloped past in front of the stable.’

The base forms *leteti* ‘to fly’, *trčati* ‘to run’, *galopirati* ‘to gallop’, and so on, express site shift (i.e. a shift from one to the other sub-part of a same Ground entity). Those verbs describe atelic situations and stress the manner of motion, as seen in (9) and (11). But the addition of the prefix *pro-* to this type of verb results in a formation of verbs which express reference-frame shift, as in (10) and (12) (e.g. *proleteti* ‘to fly past’; *progalopirati* ‘to gallop past’). More precisely, we fix a landmark by selecting some entity as reference entity which (artificially) divides the trajectory into three portions: one before, another after and a third one corresponding to the scope of a fixed landmark. All *pro-* prefixed verbs focus on this segment of motion where the Figure is in the scope of the Ground. This means that situations described in (10) and (12) are telic ones because the Figure shifts from one reference-frame to another during the motion. It can be noted that, on the one hand, *pro-* prefixed verbs at issue express a continuous motion which takes place before, in the scope of and after the Ground, on the other hand, this continuity seems to be broken because of the presence of the Ground (respectively, the house and the stable in (10) and (12)).

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The reference-frame shift is much more salient when derivatives with *pro-* introduce objects which express internal localisation, as seen in the following example:

- (13) *Petar je protrčao kroz dnevnu sobu.*
 Peter AUX Pfx-run through living room-ACC
 ‘Peter ran (passed running) through the living room.’

Unlike the situations illustrated in (10) and (12) where the path followed by the Figure is artificially divided into three distinct portions (BEFORE, IN THE SCOPE OF and AFTER), in the situation exemplified in (13), the Ground entity naturally divides trajectory on three portions. By focusing on the median phase of motion, the prefix *pro-* underlines, by virtue of its semantics, both the reference-frame shift and the fact that movements at issue extend beyond the scope of the Ground (the notion of continuity). In order to stress the reference-frame shift conveyed by the prefix *pro-* in combination with different kinds of verb, we will often use in the translations the preposition *past*.

Thus, it is clear that there is a fundamental semantic difference between prefixed verb and base form due to the addition of the prefix *pro-*. Let us also remember that, in accordance with the principles of aspectual morphology, verbs derived with *pro-* are perfective (e.g. *proleteti* ‘to fly past’ – (10)) contrary to the corresponding base forms (verbs of motion without reference-frame shift) which are intrinsically imperfective (e.g. *leteti* ‘to fly’ – (9)).

(1.b) Addition of *pro-* to verbs of motion involving reference-frame (and site) shift. Even if it happens very rarely, verbs of motion involving reference-frame (and site) shift such as *pasti* ‘to fall’(perfective verb) and *kročiti* ‘to cross, to get over’ can take the prefix *pro-*, as seen in (14):

- (14) *Propao je kroz led koji se iznenada razbio.*
 Pfx-fallen AUX through ice-ACC which itself suddenly cracked
 ‘He fell through the ice which suddenly cracked.’

In this case, the addition of prefix *pro-* emphasizes the reference-frame shift already involved in the semantics of the base form and introduces the

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idea of continuity. This kind of verbs generally expresses the movement through the Ground.

(1.c) Addition of *pro-* to verbs of motion which can involve (but not obligatorily) site shift. In the case of verbs such as *tapkati* ‘to stamp’ and *skakutati* ‘to hop’, site shift is possible but not obligatory because someone can hop while remaining in the same place. However, prefixed with *pro-*, all of these verbs denote dynamic spatial relationships.

(15) *Marija je skakutala u dvorištu pola sata.*
 Mary AUX hopped in backyard-LOC half hour
 ‘Mary hopped in the backyard for half an hour.’

(16) *Marija je proskakutala pored Petra.*
 Mary AUX Pfx-hopped beside Peter-GEN
 ‘Mary hopped past Peter.’

In (15), it is difficult to determine precisely whether Mary hops in the same place or shifts position, but in (16) where the verb *skakutati* ‘to hop’ is prefixed with *pro-*, it is clear that there is a motion involving reference-frame shift. The Ground entity, as it happens ‘Peter’, fixes a reference-frame with respect to which it can be considered that the Figure changed locations.

(1.d) Addition of *pro-* to verbs of motion without site shift. Reference-frame shift also appears when the prefix *pro-* occurs with certain verbs of motion such as *batrgati se* ‘to stagger’ or *rasti* ‘to grow’ which do not intrinsically involve any site shift. Notice that the derived verbs *probatrgati se* ‘to stagger past’ and *prorasti* ‘to grow through’ are actually little used, but everyone understand what they mean.

(17) *Biljka je prorasla izmedju ploča.*
 plant AUX Pfx-grown between paving stones-GEN
 ‘The plant grew between the paving stones.’

Once again, a dynamic interpretation of the action denoted by the base form obviously comes from the addition of the prefix *pro-*.

(1.e) Addition of *pro-* to causative verbs of motion. Causative verbs of motion (e.g. *terati* ‘to drive’) are distinguished from other verbs of motion by their argument structure which incorporates, in addition to Figure and

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Ground, an Agent which causes the Figure to move. The subject usually denotes an Agent, and the direct object denotes a Figure, as seen in the following example:

- (18) *Proterali su stado ispred naše kuće.*
Pfx-driven AUX herd-ACC in front of our-GEN house-GEN
 ‘They drove the herd past our house.’

To sum up, all the verbs of motion prefixed with *pro-* which we have seen above describe reference-frame shift. Since some base-form verbs do not involve reference-frame shift (e.g. *trčati* ‘to run’), it must be conveyed by the prefix (e.g. *protrčati* ‘to run past’).

(2) Addition of *pro-* to verbs denoting sound phenomena. Another semantic class of verbs which can take the prefix *pro-* are those verbs which refer to sound phenomena accompanying certain motions³. Sentences (19) and (20) exemplify this case:

- (19) *Granata je propištala iznad šume.*
 shell AUX **Pfx-whistled** above forest-GEN
 ‘The shell whistled past above the forest.’

- (20) *Nešto prošušta nedaleko od nas.*
 smth **Pfx-rustled** not far from we-GEN
 ‘Something rustled past not far from us.’

Unlike the simplex verbs *pištati* ‘to whistle’ et *šuštati* ‘to rustle’, the corresponding verbs derived with *pro-* are capable of expressing dynamic spatial phenomena because of the concept of progress involved in the semantics of the prefix *pro-*.

(3) Addition of *pro-* to verbs of visual perception. Next, the prefix *pro-* can be used in its spatial meaning in combination with certain verbs of visual perception such as *viriti* ‘to glance’ and *gledati* ‘to watch’, as seen in the following examples:

- (21) *Neko je provirio kroz prozor.*
 smbd AUX **Pfx-glanced** through window-ACC
 ‘Somebody glanced through the window.’

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- (22) *Naprežu oči ne bi li progledali⁴ kroz maglu.*
 strain eyes-ACC in order to Pfx-watch through fog-ACC
 ‘They are straining their eyes to see through the fog.’

The semantic contribution of the prefix *pro-* consists in stressing the fact that the act of perception runs through a material entity or through an aperture. These sentences describe what L. Talmy (2000) called “fictive motion” (see Talmy 2000: vol. 1: ch. 2).

(4) Addition of *pro-* to verbs denoting a change of material integrity of an object. Apart from verbs of motion and verbs of (auditory and visual) perception, there are about sixty verbs prefixed with *pro-* which express dynamic spatial relationships and which derive from verbs denoting a change of material integrity of an object. This class includes verbs such as *bušiti* ‘to drill’, *kopati* ‘to dig’, *seći* ‘to cut’, *grebati* ‘to scratch’, *kositi* ‘to mow’, and so on.

- (23) *Moj tata je prokosio detelinu.*
 my father AUX Pfx-mown clover-ACC
 ‘My father mowed through the clover.’

- (24) *Čim probušim dasku, dodaj mi jedan ekser.*
 as soon as Pfx-drilled plank pass I-DAT one nail-ACC
 ‘As soon as I drill the plank pass me a nail.’

The base forms denote, generally, actions which consist in extracting or in separating a substance from a material entity. What is particular about their derivatives with *pro-* is the fact that they involve the creation of a portion of space, namely of an immaterial entity, within a given material entity. If the region devoid of substance by action indicated by the simplex verb does not have any precise shape, the space portion resulting from the action expressed by verbs derived via *pro-* appears mainly either as a hole or as a space longer than wide like a road, footpath, passage, tunnel, canal, and so on. In addition to their specific shape, these created entities have a very particular function which consists in providing a passage through the material entity whose integrity is changed. The idea of making a path is arrived at by combining the semantic properties of simplex verbs (substance extraction or separating a substance) with the idea of progress

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conveyed by the prefix *pro-*. Such an assumption therefore is in contrast with what is usually said about the semantics of *pro-*. For example, Grickat (1966-67 : 205) argues that this prefix conveys the idea of penetration (through an entity) which we rather term as ‘making a path’. In fact, the idea of penetration can occur in the interpretation of only a few verbs derived via *pro-* because their base forms (e.g. *bušiti* ‘to drill’, *kopati* ‘to dig’) denote substance extraction. The notion of penetration is inadequate in many other cases where the prefix *pro-* is attached to verbs such as *trčati* ‘to run’, *leteti* ‘to fly’ which do not express a change of material integrity of an object.

(5) Addition of *pro-* to verbs of change of state. Moreover, there are a few verbs of change of state such as *kvasiti* ‘to soak’, *mrznuti* ‘to freeze’ which, when prefixed with *pro-*, express the penetration of the Ground entity. Such a case is illustrated by example (25):

(25) *Kiša nas je prokvasila do kostiju.*
rain we-ACC AUX Pfx-soaked until bone-GEN
‘The rain soaked us to the bone.’

As in the previous case, the object of the verb refers to a material entity which undergoes an internal modification, but this time there is no substance extraction suggested by the semantics of the simplex verb. In association with this kind of verb, the prefix *pro-* encodes a dynamic relationship between the Ground and some substance (Figure) which seeps into it and passes through from one end to the other. These derivatives with *pro-* go usually together with the adverb *skroz* which means ‘entirely’, ‘from one end to the other’.

Summing up the basic points made above, it seems that adding the prefix *pro-* to semantically different classes of verbs results in making derived verbs extremely dynamic. This dynamic nature of *pro-* is reflected by the ability of this prefix to form verbs of motion even out of those base forms which intrinsically cannot refer to spatial phenomena. Pairs of verbs such as *šuštati* ‘to rustle’ vs *prošuštati* ‘to rustle past’ and *kositi* ‘to mow’ vs *prokositi* ‘to mow through’ are a very good examples (see examples (20)

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and (23)). Other prefixes in Serbian have the same ability but they do not convey the same concepts.

It may also be noted that all the verbs prefixed with *pro-* seen above involve reference-frame shift. This property of derivatives via *pro-* is revealed by their comparison to the corresponding base forms, as illustrated by examples (26) vs (27), previously given in (9) and (10):

(26) *Ptica je letela iznad kuće.*
bird AUX flown above house-GEN
'A bird was flying above the house.'

(27) *Ptica je proletela iznad kuće.*
bird AUX Pfx-flown above house-GEN
'A bird flew past above the house.'

In (26), the relationship between the bird and the house does not change during the motion, whereas in example (27), the relationship between the bird and the house obviously changes which is marked by the prefix *pro-*. The localization specified by verbs prefixed with *pro-* is in effect as long as the position of the Ground can be evaluated with respect to a given reference-frame. The space portion adjacent to the landmark can be situated either outside it – in which case the *pro-*prefixed verb is usually followed by prepositional phrases introduced by *ispred* 'in front of, past', *pored* 'closed to, past', *iznad* 'above', *iza* 'behind', etc. –, or within the landmark and then the *pro-*prefixed verb is mainly followed by prepositional phrases introduced by *kroz* 'through' (see below § 3). Once again, other prefixes in Serbian involve reference-frame shift, but the spatial relationship which they establish between Figure and Ground is different (e.g. the prefix *u-* encodes movements going from outside to inside and focuses on the endpoint of the motion: *trčati* 'to run' vs *utrčati* 'to run into'). What makes different the prefix *pro-* from other verbal prefixes is its capacity of making us conceptualise the motion event as a tripartite one. More precisely, the action specified by verbs derived with *pro-* represents just one spatiotemporal portion of a larger movement which extends over both sides of the segment delimited by the framework of the Ground. Such a relationship can be schematised as seen in Figure 1 below.

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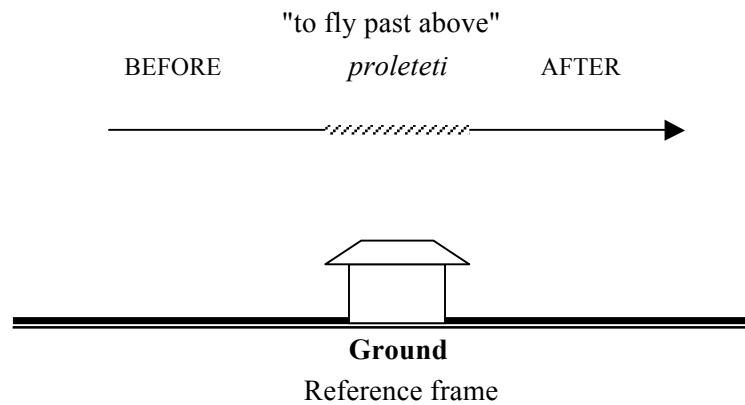


Figure 1. The prefix *pro-* : Carving out a segment / Continuous progress

Figure 1 shows that the motion itself is conceptualized rather as continuous since the motion event takes place BEFORE, DURING and AFTER the momentary localization of the Figure with respect to a given reference-frame. In fact, the action of passing through the extracted segment, that is, through the scope of the Ground does constitute a reference-frame shift. This concomitance of continuity and discontinuity in the representation of motion events specified by verbs prefixed via *pro-* directly derives from both the notion of carving out a segment and the notion of continuous progress involved in the semantics of *pro-*⁵. These two notions have been pinpointed through the analysis of perfectives prefixed via *pro-*.

3. The argument structure of verbs prefixed with *pro-*

In this section, we will look at both syntactic and semantic types of objects which can occur with *pro-*prefixed verbs. We will concentrate on showing that the syntactic and semantic structure of verbs derived with *pro-* is closely dependent on the semantic characteristics of the prefix. We will see that the concepts of continuous progress and carving out a segment which are claimed to define the semantics of *pro-* play a very important role in selecting not only base forms to which this prefix can be attached but also objects capable of combining with *pro-*prefixed verbs.

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Data have shown that the 220 verbs prefixed with *pro-* which we have taken into account above occur in one of the three following syntactic constructions:

- [NP_{Ag} *pro-V* NP],
- [NP_{Ag} *pro-V* NP_{figure} Prep NP_{ground}],
- [NP_{figure} *pro-V* Prep NP_{ground}].

3.1. The Direct-Transitive Construction [NP_{Ag} *pro-V* NP]

*Pro-*prefixed verbs which are derived from verbs denoting a change of material integrity of an object (class 4, e.g. *kopati* ‘to dig’) and from verbs of change of state (class 5, e.g. *kvasiti* ‘to wet’) occur in the direct-transitive construction [NP_{Ag} *pro-V* NP]. The following examples illustrate the point:

(28) *Prokopali su tunel za deset dana.*
Pfx-dug AUX tunnel in ten days-ACC
 ‘They dug the tunnel in ten days.’

(29) *Pacov je proglodao zid.*
 rat AUX **Pfx**-gnawed wall-ACC
 ‘The rat gnawed through the wall.’

In some cases, the Agent of motion encoded by the Subject NP acts simultaneously as Figure because of its progress through the Ground during the realization of a given process. The direct object can specify either the entity whose material integrity is changed (e.g. the wall, in (29)) or the immaterial entity which results from the action designated by the simplex verb (e.g. the tunnel, in (28)).

The complexity of both the syntactic and the semantic structure of these verbs is directly due to their morphological complexity. On the one hand, the prefix *pro-* focuses – because of its semantic properties –, on the act of motion involving reference-frame shift. On the other hand, the base form (i.e. the simplex verb) expresses – because of its high degree of transitivity (Sarda 1999) and its lexical meaning –, the modification of the Ground entity resulting from the change of location.

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3.2. The Causative Construction [NP_{Ag} *pro-V* NP_{figure} Prep NP_{ground}]

*Pro-*prefixed verbs which are derived from causative verbs of motion (class 1.e., e.g. *terati* ‘to drive’) appear in the causative construction [NP_{Ag} *pro-V* NP_{figure} Prep NP_{ground}]. Although transitive, this construction is significantly distinct from the previous construction through the syntactic encoding of the semantic components of the motion event, namely Figure, Ground and Agent.

- (30) *Pastir je proterao stado ispred naše kuće.*
 shepherd AUX Pfx-driven herd-ACC in front of our house-GEN
 ‘The shepherd drove the herd past our house.’

This type of derivatives has retained the basic causative structure (e.g. *terati* ‘to drive’, (31)) in which the direct object noun phrase encodes the Figure, the noun phrase in the prepositional phrase encodes the Ground and the subject noun phrase encodes the Agent.

- (31) *Marija tera stado kroz selo.*
 Mary drives -ACC herd-ACC through village-ACC
 ‘Mary is driving the herd through the village.’

3.3. The Indirect-Transitive Construction [NP_{figure} *pro-V* Prep NP_{ground}]

All the other verbs prefixed with *pro-* – the great majority –, occur in the indirect-transitive construction [NP_{figure} *pro-V* Prep NP_{ground}]. This kind of verb can be derived from verbs of motion (class 1 apart c.), from verbs denoting sound phenomena (class 2) and from verbs of visual perception (class 3). In such a case, the moving entity is denoted by the subject noun phrase, the Ground by the prepositional phrase.

We will now tackle the issue of which prepositions (i.e. prepositional phrases) may be combined with *pro-*prefixed verbs. This analysis will help to bring out more than one semantic characteristic of the prefix *pro-* and confirm our assumptions that the concepts of progress and carving out a segment can be considered as defining the semantics of *pro-*. The spatial prepositional phrases which can be combined with *pro-*prefixed verbs fall

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into two groups: (a) External localization prepositional phrases, as seen in (32), and (b) Internal localization prepositional phrases, as seen in (33).

(32) *Pas je protrčao ispred/ iza/ pored kuće.*
 dog AUX Pfx-run in front of/ behind/ beside house-GEN
 ‘The dog ran past in front of/ behind/ beside the house.’

(33) *Vojska je prodefilovala preko glavnog trga/ kroz grad.*
 army AUX Pfx-defiled across principal square-GEN/ through city-ACC
 ‘The army marched across the central square / through the city.’

From a cognitive point of view, this means that the reference-frame with respect to which a moving entity is temporarily localized can be situated either on the path itself followed by the Figure (internal localization – (33)) or outside the path (external localization – (32)).

a) External localization prepositional phrases. With regard to external localization, verbs derived with *pro-* mainly occur with the prepositional phrases *ispred*+NP-GEN ‘in front of’, *iza*+NP-GEN ‘behind’, *pored*+NP-GEN ‘beside, past’, and so on. In all these situations, the Ground may be conceptualized as a (reference) point lying outside the path. Such a point divides the motion event into two further portions (BEFORE and AFTER) and, at the same time, makes possible a reference-frame shift. However, not all prepositional phrases denoting external localization can appear with *pro-*prefixed verbs. Thus, the prepositional phrases such as *duž*+NP-GEN ‘along’ and *oko*+NP-GEN ‘around’ never enter into combination with *pro-*derivatives.

(34) **Marko je protrčao duž reke/ oko kuće.*
 Mark AUX Pfx-run along river-GEN/ around house-GEN
 ‘*Mark ran past along the river/ around the house.’

Such an incompatibility is due to the fact that these prepositional phrases refer to extended and boundless spatial configurations which it is impossible to conceptualize as a simple point with respect to which reference-frame shift takes place. So, carving out a segment of a entire motion is not possible.

b) Internal localization prepositional phrases. With regard to internal localization, verbs derived with *pro-* appear most frequently with

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prepositional phrases such as *kroz*+NP-ACC ‘through’, *preko*+NP-GEN ‘across, by’, *niz*+NP-ACC ‘down’ and *uz*+NP-ACC ‘up’. What is important about all of these prepositional phrases is the fact that the Figure, during its continuous motion, really crosses the Ground entity. Sentences (35) to (37) exemplify the point:

- (35) *U povratku smo prošli preko Srbije.*
 in way back-LOC AUX passed via Serbia-GEN
 ‘On the way back we passed via Serbia.’
- (36) *Provukao se kroz živu ogradu.*
Pfx-shuffled itself through hedge-ACC
 ‘He passed through the hedge.’
- (37) *Petar je projahao kroz grad.*
 Peter AUX **Pfx**-riden through city-ACC
 ‘Peter rode through the city on horseback.’

The reference-frame with respect to which the Figure is temporarily located can correspond either to the whole Ground entity as in (35) and (36), or to an implicitly present landmark situated within the Ground, as in (37). In the latter case, the Ground (the city) is not crossed from end to end.

Next, verbs prefixed with *pro-* very often take only noun phrases in the instrumental case, as is illustrated in example (38):

- (38) *Auto je projurio našom ulicom.*
 car AUX **Pfx**-rushed our-INS street-INS
 ‘The car rushed by our street.’

Entities denoted by noun phrases in the instrumental case are conceptualized as boundless (see Ivic 1954; Stosic 2002). Such a representation of a given configuration corresponds perfectly to the concept of continuous progress conveyed by the semantics of the prefix *pro-*. With regard to carving out a segment, we assume that it takes place with respect to some region delimited by the field of vision of an observer situated outside the Ground (generally a speaker). This means that the Figure is located not only with respect to the Ground which is explicitly mentioned in the sentence (the street), but also with respect to some third element involved in the configuration. Thus, according to Borillo (1998: 19):

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... the location of a Figure with respect to a Ground can also be determined from the coordinates of some third participant, namely an observer who, in describing a spatial phenomenon, creates a situation of utterance in which he makes himself play the role of speaker. The spatial relationship which he establishes between the Figure and the Ground places him in such a situation in which he must take into account his position in the space. He establishes, from his person and from the place he occupies, the location of entities, generally in the space limited by his field of vision, and in doing so, he plays in some way a role of ‘polarizer’. (translation D.S.)

Sentence (39) exemplifies in a more salient way the ability of the speaker to implicitly appear himself (without being explicitly designated) in a spatial description (such as a reference-point):

- (39) *Neko je protrčao.*
 smbd AUX Pfx-run
 ‘Somebody ran past.’

Just as the presence of the prefix *pro-* in the sentence suggests that the spatial relationship between the Figure and the Ground is a temporary one (reference-frame shift) and that there is some reference-point capable of dividing into three portions the path followed by the Figure and, more generally, the motion event itself. This reference-point can only be the location of the speaker himself.

Furthermore, independently of internal or external nature of localization, verbs derived with *pro-* do not accept prepositional phrases which designate the starting point or endpoint of the Figure's movement, as seen in examples (40) to (42) below:

- (40) **Prošli smo iz Beograda.*
 passed AUX from Belgrade-GEN
 ‘We passed from Belgrade.’

- (41) **Prošli smo u kuhinju.*
 passed AUX into kitchen-ACC
 ‘We passed into the kitchen.’⁶

- (42) **Prošli smo iz sobe u kuhinju.*
 passed AUX out bedroom-GEN into kitchen-ACC
 ‘We passed from the bedroom to the kitchen.’

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Sentences (40) to (42) are not acceptable because the Ground entities locating the Figure in the initial or final phase of motion, far from being capable of acting as a simple point which may provide carving out a median portion of a motion event, fix limits to the whole Figure's movement. The combination of *pro-*prefixed verbs with initial or final localization prepositional phrases results in a clash between the notion of continuous progress conveyed by *pro-* and the existence of the initial and final limits of the whole motion event conveyed by prepositional phrases. Unlike the prefix *pro-* which suggests boundless of a whole Figure's movement, initial or final localization prepositional phrases suggest its boundedness, namely its beginning or its end. Note that derivatives with *pro-* – because of the notion of carving out a segment –, only allow the presence of limits which define a portion within the motion event and never of those corresponding to the beginning or the end of the whole motion event.

To sum up, the restrictions which the prefix *pro-* imposes on adverbials of space capable of combining with its derivatives directly result from the concepts of progress and carving out a segment of the motion event.

4. Consequences on the aspectual level

What was previously shown by the semantic and syntactic analysis of motion verbs derived with prefix *pro-* has more than one consequence on the aspectual level. For this reason, we will now focus on the aspectual side of the concepts of progress and carving out a segment.

In accordance with principles of verbal aspectual morphology characteristic of Slavic languages (see § 1), the addition of the prefix *pro-* to some, generally, imperfective verbs results in a change in aspectual value, making it perfective. What is interesting about situations denoted by perfectives derived with *pro-* is that all of them involve a transition. In terms of Vendler's (1957) distinctions, these situations correspond either to achievements or to accomplishments. These two kinds of transitional situations can be distinguished by applying the test of the time adverbial introduced by the preposition *za* 'in' (such as *za pet minuta* 'in five

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minutes’). Whereas accomplishments license a time adverbial introduced by *za* ‘in’, as seen in (43), achievements cannot, as seen in (44).

(43) *Prokopali su tunel za mesec dana.*
Pfx-dug AUX tunnel-ACC in month-ACC days-GEN
 ‘They dug the tunnel in a month.’

(44) *Markov pas je projurio pored nas (*za dva minuta).*
 Mark's dog AUX **Pfx-run** beside we-GEN
 ‘Mark's dog ran past us (*in two minutes).’

Table 1. Change of aspect of simplex verb due to the addition of the prefix *pro-*

Base form			Verb derived with <i>pro-</i>				
Semantic class of verbs	Example	Aspect		Example	Aspect		
		Impf	Pf		Perfective		
					Ach.	Accom.	
1. Verbs of motion (VM)	a) VM without reference-frame shift	<i>leteti</i> ‘to fly’	+		<i>proleteti</i> ‘to fly past’	+	
	b) VM with reference-frame shift	<i>pasti</i> ‘to fall’		+	<i>propasti</i> ‘to fall through’	+	
	c) Vmvt with possible site shift	<i>skakutati</i> ‘to hop’	+		<i>proskakutati</i> ‘to hop past’	+	
	d) Vmvt without site shift	<i>batrgati se</i> ‘to stagger’	+		<i>probatrgati se</i> ‘to stagger past’	+	
	e) Causative VM	<i>terati</i> ‘to drive’	+	+	<i>proterati</i> ‘to drive past’	+	
2.	Verbs denoting sound phenomena	<i>pištati</i> ‘to whistle’	+		<i>propištati</i> ‘to whistle past’	+	
3.	Verbs of visual perception	<i>viriti</i> ‘to glance’	+		<i>proviriti</i> ‘to glance through’	+	
4.	Verbs of change of material integrity of an object	<i>kopati</i> ‘to dig’	+		<i>prokopati</i> ‘to dig through’		+
5.	Verbs of change of state	<i>kvasiti</i> ‘to soak’	+		<i>prokvasiti</i> ‘to soak to bone’		+

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Applying this test to the verbs which this study dealt with above (see Table 1) shows that only *pro-*prefixed verbs derived from verbs denoting a change of material integrity of an object (class 4) and from verbs of change of state (class 5) refer to accomplishments (43), whereas all other derivatives with *pro-* refer to achievements (44), as the table 1 shows.

First, this table shows that almost all the base forms (simplex verbs) are imperfective ones. Secondly, it can be observed that, by contrast, all verbs formed by prefixation with *pro-* are perfective ones, whether the base form is imperfective or perfective. Moreover, most of these verbs formed via the prefix *pro-* refer to achievements, that is to punctual situations.

The transitional nature of situations designated by *pro-*prefixed verbs which this paper deals with is quite compatible with the concept of carving out a segment of space and time and constitutes in fact its aspectual dimension. Let us consider the following example:

- (45) *Pacov je proglodao zid.*
rat AUX Pfx-gnawed wall-ACC
'The rat gnawed through the wall.'

First, this example shows that, on the spatial level, the action specified by the direct-transitive verb *proglodati* 'to gnaw through', is delimited by the extension, that is by the limits of the entity which the Figure move through. It means that the segment of space extracted from the motion event coincides with the thickness of the entity which is gnawed through. On the aspectual level, the extracted segment corresponds to a portion of time which the Figure needs to cross the Ground from end to end. Thus, the fact that the action specified by the verb *proglodati* 'to gnaw through' is space-bounded results, on the aspectual level, in introducing limits to an intrinsically imperfective situation (*glodati* 'to gnaw'). Such a situation delimited both in space and time becomes a segment which is very easy to carve out from the entire motion event.

The realization of the same schema – which consists in mapping the spatial limits of the reference-frame onto the temporal limits of the action –, can be observed in the case of derivatives via *pro-* which enter into the indirect transitive construction (see § 3.3). In all these situations, a moving

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entity can be considered as being located with respect to a certain Ground as long as a given Figure is within reach of it, i.e. in the space portion adjacent to the Ground specified by the spatial prepositional phrases (such as *in front of the house, beside me*). Because of the addition of the prefix *pro-*, the imperfective situation designated by the simplex verb is not considered as such, but only during a particular interval corresponding to the duration of a Figure's localization with respect to a given reference-frame. From an aspectuo-temporal point of view, such a situation lasts from the moment of the Figure's entering this reference-frame to the moment of the Figure's leaving it. These two moments can coincide, in which case there is a punctual event. This particular kind of reference-frame shift and the focusing on the median portion of a previously homogenous situation can only be due to the semantics of the prefix *pro-*, as the following examples show:

- (46) *Trčao je ispred kuće nekoliko minuta.*
 run AUX in front of house-GEN a few minutes
 'He ran in front of the house for a few minutes.'
- (47) *Protrčao je ispred kuće (*nekoliko minuta).*
 Pfx-run AUX in front of house-GEN a few minutes
 'He ran past (in front of) the house (*for a few minutes).'

In sentence (46) with imperfective *trčati* 'to run', the situation 'to run in front of the house' is atelic and corresponds to a simple site shift (see § 2.2): the Figure moves from one place to another within the same reference-frame, namely in front of the house. Consequently, this is a durative situation. By contrast, in sentence (47) with perfective *protrčati* 'to run past', the situation 'to run in front of the house' is punctual. Such a relationship is true only for one interval, this one in which the Figure, during its motion extended over more than one entity, is in front of the house.

The three level analysis which we used to examine the prefix *pro-* (its combining with simplex verbs, argument structure and intrinsic aspectual value of its derivatives) shows that *pro-* conveys via its semantics the notions of progress and carving out a segment. In the case of perfectives

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derived with *pro-* we have shown that a reference-frame shift on the spatial level always corresponds to a transition on the aspectual level, which represents a convergence between the spatial and the aspectual characteristics of the prefix *pro-*.

5. Conclusion

The aim of this study was to show that semantics of the prefix *pro-*, when used in a spatial sense, can be defined principally by means of two concepts: the concept of continuous progress and the concept of carving out a segment of the entire motion. We have pointed out these concepts by successively observing first, the semantic classes of simplex verbs to which the prefix *pro-* can be applied, secondly, the nature of locative adverbials able to combine with *pro-*prefixed verbs and finally, the aspectual properties of situations expressed by these *pro-*prefixed verbs.

First of all, we have found that when the prefix *pro-* has a spatial meaning it can associate with five semantic classes of simplex verbs (see table 1). The analysis of the combination of *pro-* with these different classes of verbs allowed us to isolate, on the one hand, the dynamic nature of this prefix (reflected by its capacity to transform those simplex verbs which do not express motion into verbs of motion), and on the other, the fact that all perfectives formed with *pro-* involve a particular kind of reference-frame shift. These two characteristics of the prefix *pro-* are directly related to the concepts of continuous progress and carving out a segment. From a syntactic point of view, we have shown that, in indirect transitive constructions, *pro-*prefixed verbs accept only spatial adverbials introduced by prepositions whose semantics is compatible with the above concepts. In the direct transitive construction, the entity denoted by the direct object imposes through its extension both spatial and temporal limits on the situation and defines in this manner an extractible portion of the entire motion. From an aspectual point of view, perfectives formed via *pro-* express processes whose realisation leads to a transition. This transition presents the aspectual side of the concept of carving out a segment.

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This work represents the first step in establishing a correlation between aspectual and spatial characteristics involved in the semantics of prefixes in Serbian. Contrary to the aspectual side of verbal prefixes which has been the subject of numerous studies, their spatial side was not studied in detail. The analysis of the prefix *pro-* has turned out to reveal essentially the spatial characteristics of situations designated by verbs derived via *pro-*. We stressed that the aspectual and spatial characteristics involved in the semantic content of this prefix are not only far from being incompatible but rather converge.

However, numerous problems remain to be resolved. One of the most interesting ones is the possibility that certain perfectives derived with *pro-* become imperfectives via the addition of imperfectivizing suffixes. We could wonder what happens with the schema specified by *pro-* which we presented in this study when certain derivatives formed with *pro-* become imperfectives and in this way refer to durative or repetitive situations. It is certain that the consequences on the spatial level are inevitable and significant, but this is the subject of an ongoing study. Another very interesting problem is about the relation of *pro-* to the all other verbal prefixes in Serbian.

List of abbreviations

ACC	– accusative case	Pf	– perfective
Accom	– accomplishments	Pfx	– prefix
Ach	– achievements	PP	– prepositional phrase
Ag	– agent	Prep	– preposition
AUX	– auxiliary	smbd	– somebody
DAT	– dative case	smth	– something
GEN	– genitive case	V	– verb
Impf	– imperfective	VM	– verb of motion
INS	– instrumental case	Vmvt	– verb of movement (literally speaking)
LOC	– locative case		
NP	– noun phrase		

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Notes

* This work was carried out within the project “Spatial entities and their categorization in language and cognition” (COG135 ; 1999-2001) granted by the Action Concertée Incitative “Cognitique” of the French Research Ministry.

¹ I should like to thank Andrée Borillo, Michel Aurnague, Milka Ivić, Paul Garde, Dany Amiot and Francis Cornish for their valuable comments and remarks concerning an earlier version of the paper; without their help, the final draft of this paper would have never been written. I would also like to express my thanks to Ana Rosić and Saso Cemerski for their patient reviewing of the paper.

² It is worth noting that the verb *proći* which means ‘to pass’ is formed by the combination of the prefix *pro-* and the verb *ići* ‘go’. Thus, the verb *proći* has had to incorporate in its meaning most of the semantic properties of the prefix *pro-*. Note that the Serbian verb *proći* corresponds to the English verb *to pass* only in this kind of use where the Ground does not define the endpoint of the motion (e.g. *My dog passed in front of/behind/through the hedge*). The uses of *to pass* where the Ground defines the endpoint of the motion (e.g. *The guests passed into the living room*) are typically expressed in Serbian with the verb *preći* ‘cross’ (see note 6).

³ In a cross-linguistic study dealing with several Slavic languages (Serbian, Bulgarian, Slovenian and Polish), M. Ivić (1982) traces the evolution of the ability of two prefixes – the directive prefix *do-* ‘until’ and the ablative prefix *od-* ‘from’ – to enter into combination with different semantic classes of simplex verbs. According to the author, these two prefixes had initially been applied exclusively to verbs of motion in order to essentially express direction (e.g. *do-trčati* ‘until-run’). Later, their semantic potential extended and they began to express motion itself. Thus, the prefixes *do-* and *od-* also began to be combined with verbs which express actual movement (e.g. *lepršati* ‘to flutter’) and transform them into verbs of motion (e.g. *od-lepršati* ‘to go from fluttering’). Next, the directive prefix *do-* and the ablative prefix *od-* were applied to verbs which denote sound effects resulting from a motion of certain specific objects. For example, there is a clattering of a cart only when the cart moves, never when it stands still. The very fact that someone specifies the production of such a sound effect by the verb *tandrakati* ‘to clatter’ suggests that inevitably there is motion. That is the reason why among a number of verbs which do not express motion via their lexical meaning, verbs referring to sound phenomena have followed the model of verbs of motion by taking the prefixes *do-* and *od-*. Since the prefix *pro-* seems to behave in synchronic terms in the same way in relation to these classes of verbs, it must have undergone an evolution analogous to those of the prefixes *do-* and *od-*. It is worth noting that Slovenian has gone further by combining the prefixes *do-* and *od-* even

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with verbs such as *to laugh*, *to cough* or *to cry* which express processes entirely independent of motion (Ivić 1982).

⁴ Note that the use of the verb *progledati* in the sense ‘to watch through’ is very archaic. The current sense of this verb is ‘to begin to see’, so that the prefix *pro-* conveys an inchoative meaning as in the verb *progovoriti* ‘to begin to talk’ or ‘to start talking’. For example, it can be said about a kitten: *Mače je progledalo pre dva dana*. ‘The kitten began to see two days ago’.

⁵ The same phenomenon can be observed in English regarding the verb *to pass* which specifies motion events involving both the notion of continuity and the notion of reference-frame shift with respect to some fixed or really crossed landmark (e.g. *My dog passed in front of/ through my house.*)

⁶ In examples (41) and (42), this is the verb *preći* which could normally be used in Serbian. This verb, derived via prefix *pre-*, expresses the passage from one side to another or, more generally, the passage from one reference frame to another. Compared with English, the verb *preći* covers the spatial uses of the verb *to cross* (e.g. *Peter crossed the street*. ‘Petar je **prešao** ulicu.’) and only one part of the uses of *to pass* (e.g. *They passed into the living room*. ‘Oni su **prešli** u dnevnu sobu.’).

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