The semantic profile of the verbal prefix *do-* in Bulgarian and Croatian

Семантический профиль глагольного префикса *до-* в болгарском и хорватском языках

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Abstract

This is a comparative study of the verbal prefix *do-* in two South Slavic languages, Bulgarian (Blg.) and Croatian (Cro.). Although these two languages show many similarities in the meaning of the verb stems and prefixation patterns, there are some unusual differences that may confuse foreign learners of Slavic, who expect identical or similar base verbs to combine with the same prefixes. The cognitive linguistics framework allows us to approach these differences systematically. We apply it to two databases of Blg. and Cro. prefixed verbs developed for the purposes of this research and extracted from reference books, dictionaries, and online corpora.

We systematise *do-* verbs in a semantic network and account for both the overlapping meaning categories and the differences between the two languages studied, taking into consideration prefixes semantically similar to *do-* that

combine with the same base verbs to form near-synonyms of *do-* verbs. We point to prefix variation as ensuing from different perspectives on the same event.

Keywords

verbal prefixes, prefixal semantics, the prefix *do-*, Bulgarian, Croatian

Резюме

В статье проводится сопоставительное исследование глагольного префикса *до-* в двух южнославянских языках: болгарском (Blg.) и хорватском (Cro.). Хотя эти два языка обнаруживают много общего в значении основ глаголов и шаблонов префиксов, в них существуют и некоторые специфические различия, затрудняющие иностранцев, изучающих славянский язык, которые ожидают, что идентичные или похожие базовые глаголы будут сочетаться с одинаковыми префиксами. Рамки когнитивной лингвистики позволяют нам систематически подойти к этим различиям. Мы рассматриваем их применительно к двум соответствующим, разработанным для целей данного исследования, базам данных с префиксными глаголами, взятыми из справочников, словарей и онлайн-корпусов.

    Глаголы объединяются в семантическую сеть, учитывая как перекрывающиеся смысловые категории в двух исследуемых языках, так и различия, имея в виду префиксы, семантически похожие на *до-*, которые сочетаются с одними и теми же базовыми глаголами, образуя почти синонимические *до-*глаголы. Указывается на вариативность префикса как вытекающую из из разных точек зрения одного и того же события.

Ключевые слова

глагольные префиксы, семантика префиксов, префикс *до-*, болгарский язык, хорватский язык

1. Introduction

This study focuses on the verbal prefix *do-* in two South Slavic languages, Bulgarian (Blg.) and Croatian (Cro.), in a cognitive linguistics framework using two databases of prefixed verbs extracted from dictionaries, reference books, and online corpora.

    Our interest in the meanings of prefixed verbs in very similar languages, such as those belonging to the South Slavic group, stems from the fact that similar languages do not necessarily follow the same pattern in verbal prefixation. Similar languages exhibit unusual differences in the conceptualisation of space that many prefixed verbs reflect. The systematic approach to these differences that we undertake contributes to understanding the structure and meaning of Slavic prefixed verbs. A comparative approach is also valuable in teaching: students of Slavic languages erroneously expect similar prefixes to combine with similar base verbs across Slavic, and they expect identical

"nodes"; that is, meanings in the semantic networks of prefixes in closely related Slavic languages. However, in our study we found unexpected variation in the prefix choice even with very similar verb stems.

There are a few comparative studies on Slavic prefixes: by Dickey [2011; 2012] on *po-*, [Idem 2005] on *s-/z-*, and [Idem 1999] on *za-*; Mitkovska and Bužarovska [2012] on *nad-*; Šarić and Tchizmarova [2013] on *od-/ot-*; and Šarić and Nedelcheva [2015] on *o(b)-*, and [Eaedem 2018] on *u-*. However, *do-* has not been studied in a comparative manner. Nedelcheva [2010] studies the cognate preposition *do* in Blg. using the semantic network of the English preposition *to* as a background reference. Her analysis shows a partial overlap in the networks of the Blg. prefix and the preposition.[1] The prefix's network, however, is further extended in the abstract domain (see Section 3).

Traditionally, *do-* is associated with the 'terminative' meaning, which corresponds to the grammatical meaning (with which the notion of "empty prefixes" is linked) as opposed to the lexical prefixes [Vinogradov 1947; Bogusławski 1960; Isačenko 1962] and similarly to the distinction between modifying (superlexical) and qualifying (lexical) prefixes.[2] According to this traditional perspective, the fact that the prefix has a clearly aspectual meaning suggests that the prefix is superlexical. Kagan [2012: 207–208] supports this view, claiming at the same time that *do-* in Russian, similarly to lexical prefixes, is perfectly compatible with secondary imperfectivization (e.g., *dočitat′ – dočityvat′* 'finish reading'). This double function is also perceived by Tatevosov [2008: 425], who argues that *do-* is an intermediate prefix.[3]

The terminative meaning of *do-* is also acknowledged by Filip [2000: 77], who presents the case of the Russian perfective verb *do-pisat′* PF 'finish writing', formed with the prefix *do-* from the imperfective *pisat′* IMPF 'write / be writing'. In Slavic languages, *do-* 'to' is associated with the terminative meaning due to its relation to the cognate preposition's spatial meaning; that is, indicating a limit on a PATH, as in Blg. *vărvi* IMPF *do dărvoto* 'walk to the tree'.

Focusing on Slavic prefixed verbs, Biskup [2019] attests a common meaning—adding something to something—with some *do-* verbs in Russian and Czech; for instance, *do-kupit′ – do-koupit* 'buy in addition / some more',

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[1] From a historical point of view, *do* is a typical example of the grammaticalization process [Halliday 1961] because it has passed from an item with the grammatical function of a preposition (e.g., Blg. *Knigata e do čantata* 'The book is next to the bag') to a spatial prefix (e.g., Blg. *dovleka* 'drag to a certain place'), and it has also developed nonspatial meanings such as ADD (e.g., Blg. *dosolja* 'put more salt in').

[2] Consider, however, also Maslov [1958], Van Schooneveld [1959], Filip [1999], Endresen et al. [2012], and Janda and Lyashevskaya [2012] for the opposite view.

[3] Studying multiple prefixation in Blg., Markova [2011: 244] distinguishes three types of prefixes—lexical (idiosyncratic), inner (argument structure–related), and outer (adverbial)—and shows that they surface in a fixed order: [outer [inner [lexical]]].

do-pisat' – *do-psat* 'add a line'. Furthermore, he interprets the second example as having the completive superlexical meaning 'finish the / a line'.

Bajec [1994], when comparing the Slovenian prefixes *do-* and *pri-*, assign a spatial GOAL (directed-motion) meaning and the terminative meaning to *do-*.[4] Consequently, they claim that in directed-motion verbs, as in *do-jadrati* 'finish sailing (by reaching the end; that is, the shore)', *do-* has more of a terminative meaning than a 'proper' productive goal (directed-motion) meaning, such as *pri-jadrati* 'arrive by sailing'.

Dickey [2010: 97] studies Blg. and BCS verbs of motion prefixed with *do-* 'up to' and contrasts them with verbs of motion prefixed with *pri-*, concluding that that *do-* verbs "do not assert contact with the goal, that is, crossing its boundary, but express only the traversal of a trajectory up to the goal."

Janda [1986] offers an interesting case study of the very productive Russian prefix and suffix combination *do*-verb-*sja*, which expresses the meaning of *excess*. However, similar constructions with *-sja* and other prefixes, such as *za*-verb-*sja*, *pere*-verb-*sja*, and *ot*-verb-*sja*, also denote excess. It occurs that the meaning of the base verb and the surroundings in which it appears (adverbs, complements, and other modifiers) favour the use of one prefix and make the others infelicitous.

We take these insights into consideration in what follows, focusing on *do-* verbs and creating their semantic network, but also pointing out prefix variation in Blg. and Cro. verbs sharing the same meaning.

2. Material and method

We approach prefixes as networks of interrelated meanings, assuming that prefixes' concrete spatial meanings motivate abstract meanings via different processes, such as metaphorical and metonymic extensions.

We created the semantic networks of *do-* verbs in Blg. and Cro. based on two databases, one for each language. The Blg. verb corpus used in this research was constructed in three stages. First, all the verbs prefixed with *do-* were extracted from the *Bulgarian Dictionary* [Bulgarian Dictionary] and *Eurodict* (an online multi-lingual dictionary containing 60,000 Blg. words) [Eurodict]. Second, the total of 278 *do-* verbs found in the two dictionaries was compared to the verb entries in Pashov's [1966] comprehensive study on Blg. verbs. As a result, 208 new *do-* verbs were added to the database. In the third stage, the verbs' frequencies were checked in the Bulgarian National Corpus (BulNC),[5] but 65 *do-* verbs exhibited zero frequency and were additionally checked on the internet. Ten of these verbs were attested online and the final number of *do-* verbs in the Blg. database grew to 437.

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[4]   *Pri-* is only assigned the directed-motion meaning.

[5]   The BulNC core consists of approximately 1.2 billion words and more than 240,000 texts.

The initial database for Cro. (around 250 *do-* verbs) was collected from the Croatian-English dictionary by Bujas [2001].[6] A list of *do-* verbs was also generated from the HrWaC corpus[7] and compared to Bujas. Around 50 verbs from Bujas were not found in HrWaC, but instead additional 104 verbs were found. The frequencies of all the verbs found in HrWaC were examined in August 2018. The final database of Cro. verbs includes 363 verbs:[8] among these are 119 verbs with more than 50 occurrences, and 90 verbs with fewer than five occurrences in HrWaC.[9] For a few verbs included in the database, the relation of the prefix and the base verbs originally seemed ambiguous (e.g., Cro. *dobiti* 'get'); however, the etymological information suggests that *do-* is a prefix[10] in these verbs, and we decided to keep them in the database.

We examined the verbs in both databases in detail to establish both the dominant and less frequent meanings. At the initial stage, in assessing which meanings are represented in a large number of verbs and thus dominant, we used dictionary descriptions of verbs' meanings, examined corpora and internet examples, and used our own intuition. The Blg. verbs were first divided into dynamic verbs (e.g., *dolazja* 'crawl to a place', *dopluvam* 'swim to a place') and state verbs (e.g., *dotrjabva mi* 'feel sth is necessary', *doiska mi se* 'want'). In the Blg. database only 23 verbs are state verbs; the remaining 414 denote various kinds of activity.

After examining the Cro. database, we noticed that *do-* attaches to numerous self-motion (locomotion) and caused-motion verbs to denote MOVE UP TO: 133 self-motion verbs (e.g., *dotrčati* 'run (up) to' and 31 caused-motion verbs (e.g., *donijeti* 'bring') were identified; 11 are both (e.g., *dovući* (*se*) 'drag', which is a self-motion verb when used with the reflexive *se*). Some verbs in these groups express some other meanings as well, but in this rough first classification we concentrated on the dominant meaning (the first one given in dictionary descriptions and/or the meaning attested in the majority of examples in the corpus samples). The Blg. database showed 65 motion verbs, 33 of them self-motion *do-* verbs, 20 caused-motion verbs; among these 53 verbs are 10 verbs that can express either caused motion or self-motion, depending on the presence of the reflexive *se* (e.g., *domăkna* (*se*) 'tug (oneself) to a certain place'). We consider verbs denoting motion very important because we assume that the meaning of concrete spatial motion affects the abstract meanings of *do-* verbs.

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[6] The reason for choosing Bujas was the fact that it provides many more prefixed verbs than other one-volume dictionaries, and it also includes colloquial widely used verbs.

[7] Available at: https://www.clarin.si/noske/. HrWaC consists of over 1.2 billion words.

[8] A few verbs from Bujas and/or HrWaC were excluded because their relation to the prefix *do-* was rather unclear.

[9] The number of occurrences for many verbs is approximate because many verb forms with spelling errors are not included in the final count.

[10] See the online dictionary HJP: http://hjp.znanje.hr/.

A second important group, ADD (104 Blg. *do-* verbs and 81 Cro. *do-* verbs), contains material process verbs, creation verbs, and base verbs denoting activities requiring agents' (intentional) acting on diverse objects, which leads to changes in these objects (e.g., the material process verb Blg. *stroja*, Cro. *graditi* 'build'). Added to similar verbs, *do-* contributes the meaning 'do some more of *x*, add/increase quantity by doing *x*', where *x* stands for the base verbs' actions (e.g., Blg. *dostroja*, Cro. *dograditi* 'build more'). The third significant group (Blg. 216 verbs, Cro. 54 verbs) indicates ACHIEVE/FINISH the last segment of. The meanings of the second and third group overlap in some verbs (Blg. 27, Cro. nine). Furthermore, 10 Cro. verbs indicate GET HOLD OF and two indicate CONTACT, whereas reaching metaphorical goals (e.g., a solution in a mental activity) and different types of boundaries (e.g., emotional, temporal) are expressed by 32 Cro. verbs. The Blg. database contains 40 verbs that denote ADD to reach different kinds of boundaries (concrete or abstract: temporal, emotional, etc.); five signify GET HOLD OF and five CONTACT.

While working out the semantic network (see Figure 1) in the second stage, we took into consideration the meanings represented by a large number of verbs, as well as those represented by a fair or low number of verbs (these are all included in Figures 2 and 3). By doing this, we aim to systematically account for transformations of the meaning and relations between different meanings no matter how many verbs they are represented in. (The "centers of gravity" of the meaning groups are shown in Figures 3 and 4.)

3. The semantic networks of Bulgarian and Croatian *do-* verbs

The semantic network constructed on the basis of the meanings identified in the two databases in Figure 1 shows the similarities and overlapping categories, as well as the differences between Blg. and Cro. *do-* verbs. The labels of the meanings of *do-* verbs correspond to the meaning contributed by the prefix *do-* in its specific combination with the meaning of the base verb. The lines indicate the interconnectedness of the subcategories; the dashed line marks the experiential correlation between adding up until reaching a boundary and finishing an activity. We find intersecting points between the networks in the categories MOVE UP TO, CONTACT, FINISH, and ADD. In Blg., one more category is attested: FEEL LIKE (see the gray box in Figure 1).

In the following sub-sections, we discuss the differences and similarities between Blg. and Cro. *do-* verbs. We consider prefixes semantically similar to *do-* (in each one of the languages and in both of them) that combine with the same bases to form either prefixed near-synonyms (e.g., Blg. *dočeta* vs. *pročeta* 'finish reading'; Cro. *dospjeti* vs. *prispjeti* 'arrive'). We also pay attention to the prefix variation in seemingly near-synonymous verbs (e.g., Blg. *do-stigam*, *na-stigam* 'reach', *pri-stigam* 'arrive'; Cro. *do-vesti* 'bring', *pri-vesti* 'arrest',
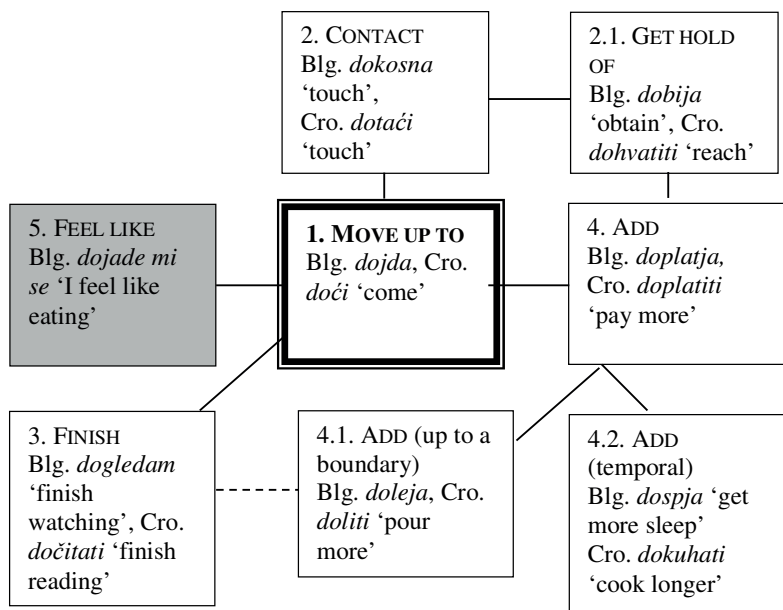
Figure 1. The semantic network of Blg. and Cro. *do-* verbs

na-vesti 'inveigle; quote; state'). We examine the overlap of the meanings of prefixes semantically related to *do-* (e.g., *na-*, *pri-*) within one language and across the two languages, as well as the prefix variation that we consider to be a result of different construals of the same event.

4. Polysemy and semantic classification of *do-* verbs in Bulgarian and Croatian: discussion

The central spatial schema of the prefix *do-* coincides with the *to* schema as described by Tyler and Evans [2003: 146–150] in their methodological framework of the Principled Polysemy model.

4.1 Move up to

Tyler and Evans [2003] define *to* as signaling a relation between a TR[11] "oriented with respect to a highlighted LM" [Eidem 2003: 149].

Figure 2, adapted from Tyler and Evans [2003: 148], illustrates the proto-scene for *to* that can also be applied to *do-*. The orientation of the TR is represented by an arrow. The functional element of the highlighted LM is a *goal*.[12]

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[11] The terms *trajector* (TR) and *landmark* (LM) originate from Langacker's Cognitive Grammar [1987]. A TR is the located object, and the LM is the referent participant.

[12] The GOAL is the endpoint of a PATH and, in most of the cases, it is not equivalent to the other points of the path. It usually designates the motivation for the PATH.
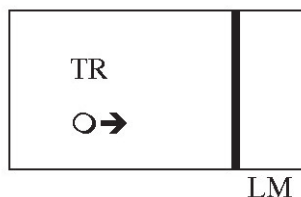
Figure 2. The proto-scene for *to* and *do-*

Similarly, *do-* is attached to verbs expressing *motion up to a certain boundary*, be it an agent's self-motion, an object's motion, or caused motion (an object's motion caused by another entity). The TR progresses on a spatial or other scale and reaches an end point (typically expressed in a prepositional phrase with *do*).

The *do-* pattern is very productive with Cro. self-motion verbs (133 verbs in the database) and less productive with Blg. verbs (65 verbs in the database). In most cases, *do-* attaches to imperfective verbs to form perfective verbs. In both languages, *do-* can combine with almost all types of motion verbs, including verbs expressing a specific manner and speed of motion (e.g., Blg. *dokucam* 'limp to a certain place'; Cro. *doklimati* 'come tottering'). *Do-* in Cro. frequently attaches to sound-emission verbs and transforms these into motion verbs expressing motion up to a boundary and simultaneously producing sound (e.g., *dogrmjeti* 'arrive thundering', *doškripati* 'come creaking'). This pattern is not productive in Blg., but a few examples exist (e.g., *dobrămča* 'come buzzing'; *dobuča* 'come rumbling').

4.1.1 MOVE UP TO A SPATIAL GOAL

4.1.1.1 CONCRETE, SELF-MOTION

The majority of motion verbs in both Blg. and Cro. can be prefixed with do- to express movement toward a GOAL. A few of these verbs have very similar roots; others with (slightly) different roots express the same meaning (see Table 1):

Table 1

Do- verbs of CONCRETE SELF-MOTION, with similar or different roots in Cro. and Blg.

CONCRETE SELF-MOTION		
Blg.	Cro.	English Gloss
doletja	*doletjeti*	'fly up to'
dopluvam	*doplivati*	'swim up to'
dotărkaljam (*se*)	*dokotrljati* (*se*)	'roll up to'
dopărham	*dolepršati*	'flutter up to'

Cro. is more productive in this group of verbs, having such verbs as *doputovati* 'arrive at' and *doseliti* (*se*) 'move in', and a relatively large group of verbs whose base verbs denote sound emission (e.g., *doškripati* 'come creaking', *dotandrkati* 'clatter up to', etc.). The corresponding Blg. verbs combine with different prefixes (*pri-*, *pre-*, *iz-*, etc.) to express similar or slightly different meanings: for instance, *preselja se* 'move / settle in a new place' and *zaselja se* 'settle', *proskărcam* 'make a squeak', and *izskărcam* 'creak, squeak'. The choice of different prefixes in Blg. is motivated by the different construal of the scene. The focal point of *pri-* is a directed motion to a goal. Unlike *do-*, *pri-* does not suggest contact with the goal. *Pre-* adds the meaning of transfer, whereas *pro-* and *iz-* emphasize a single act when combined with verbs of sound production.

4.1.1.2 Concrete caused motion

In caused-motion scenarios, one entity causes another entity to move up to an LM. The combination of the prefix and the base verb results in a new meaning, 'bring', in most of these verbs; for instance, Blg./Cro. *doveda/dovesti* 'bring, take along'. Certain verbs express self-caused motion with the reflexive particle *se* (e.g., Blg./Cro. *dovleka se / dovući se* 'drag oneself up'), whereas when used without *se* these verbs imply caused motion (e.g., *dovleka/dovući* 'drag, bring forcefully'; see Table 2).

Table 2

Do- verbs of concrete caused motion, with similar or different roots in Cro. and Blg.

Concrete caused motion		
Blg.	Cro.	English Gloss
dokaram	*dognati*	'drive up to'
dotărkaljam	*dokotrljati*	'roll up to'
donesa	*donijeti*	'bring (along)'
dovleka	*dovući*	'drag up to, bring forcefully'

In this group, a prefix variation is attested. For instance, *pri-* and *do-* are in an interesting relation in Blg./Cro.; compare *dovleka/dovući* 'bring with difficulties, bring without permission, drag' with Cro. *privući* 'bring closer, attract, persuade, inspire' and Blg. *privleka* 'bring closer, attract'. Cro. does not use *dobližiti* (*se*) but *približiti* (*se*), whereas Blg. has both *dobliža* (*se*) and *približa* (*se*). Furthermore, both can be used with the preposition *do* and a LM (i.e., boundary), or with the reflexive *edin do drug* 'each other'. The difference between *dobliža* (*se*) and *približa* (*se*) lies in the fact that the former implies bringing an entity somewhat closer to a LM, whereas the latter implies movement in the direction of the LM.

Cro. *dotegliti* 'tow, drag' has no Blg. *do-* analogue. However, Blg. *teglja* 'drag' is used in constructions with the preposition *do.* The Cro. verb *dostaviti* 'deliver; denounce' undergoes a metaphorical extension just like the Blg. verb *dostavja* (*infomacija* 'information'); see the abstract meanings (Sections 4.1.2, 4.1.3).

Some Cro. *do-* verbs (e.g., *domamiti* 'lure', *dozvati* 'call, summon') considered to be part of the caused-motion scenario "*x* makes *y* move up to a boundary by doing something." Their simplex verbs are not motion verbs: the verbs express, for instance, verbal processes instead. In Blg., the same base verbs choose alternative prefixes, and so the Blg. equivalents of *domamiti* are prefixed with *iz-* or *pri-* (*izmamja* 'trick', *primamja* 'lure'); there is no equivalent with *do-*. The Blg. equivalent of *dozvati* 'call, summon' is *prizova* 'call, summon'. *Prizvati*[13] is also acceptable in Cro., defined in dictionaries as 'call someone who is already there to come closer'. In similar scenarios in Blg., verbs prefixed with, for example, *pri-* or *pod-* are used, but not those with *do-*. Blg. *pri-* in, for instance, *primamja* 'lure' expresses 'reaching a goal' without crossing a boundary. *Pod-*, on the other hand, emphasises the meaning 'do secretly', which refers to the actions 'hard to detect or understand' [Janda et al. 2013: 76].

4.1.2 Metaphorical movement up to

Self-motion verbs with a very general meaning (e.g., *dojda/doći* 'come') tend to develop metaphorical meanings (e.g., *Dojde li veče moeto vreme?* 'Has my time come?') more frequently than *do-* verbs that express very specific manners of motion. Motion verbs refer to metaphorical motion when used with abstract agents. Numerous fixed expressions and idioms with these verbs also express metaphorical motion. Metaphorical extensions of concrete motion scenarios are observable with motion verbs used with abstract trajectors: in addition to prototypical human trajectors, some verbs also allow for such trajectors (e.g., *doletja/doletjeti* 'fly (for news)').

Some *do-* verbs expressing metaphorical movement (whose simplex verbs are not motion verbs) denote 'reaching an abstract goal'; that is, Blg./Cro. *dokaža/dokazati* 'prove',[14] *dogovorja/dogovoriti* (*se*) 'reach an agreement; negotiate',[15] and Blg. *doverja se na* 'confide in, trust'. Similar verbs have developed a new, abstract meaning that is not predictable from the combination of the base verbs' meanings and the meaning of *do-*. For instance, *Dopitam se* 'ask for advice' not only relates to asking but presupposes asking someone for

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[13] In Cro., *prizvati* is usual in phrases with nouns such as memories: *prizvati sjećanja* 'remember'. However, it cannot be used in this sense in Blg.

[14] The relation of the Blg./Cro. base verbs *kaža/kazati* and *dokazvam/dokazati* 'prove' is semantically somehow complicated; the base verb *kaža kazati* means 'tell'.

[15] Blg./Cro. *dogovorja/dogovoriti* (pf.) – *dogovarjam/dogovarati* (impf.) 'negotiate'. For the pf. form, the base verb is *govorja/govoriti* 'speak'. For the impf., there is no base form.

advice. *Dokaža* is quite different in meaning from the base verb *kaža* 'say'. It denotes not just saying something but verifying and confirming it. In addition, some of the verbs in this group imply that agents need to overcome some obstacles to reach the goal.

Some verbs expressing caused motion in Cro. such as *dogurati*, *dotjerati* 'push up to; bring/chase up to' are also used in the abstract meaning 'achieve with difficulty' in objectless constructions (e.g., *on je daleko dogurao* 'he has done well / gotten far'), whereby an image of moving heavy objects in space maps onto overcoming obstacles of all kinds. Analogously, Blg. *dobera se* 'get, attain' suggests that achieving the goal required some efforts.

Caused-motion verbs of concrete bringing are also used in contexts implying metaphorical bringing; for instance, Blg. *donesa* (*slava*) and Cro. *donijeti* (*slavu*) 'bring (fame)'.

The meaning 'reach a boundary by intellectual activity' is a metaphorical variant of the MOVE UP TO meaning, which is reflected in eight Cro. verbs (e.g., *dokontati*, *dokučiti*,[16] *domudriti* 'figure out, understand, grasp', *dosjetiti se* 'guess, remember'). This metaphorical extension is not attested in Blg. apart from *dosetja se* 'guess'.

The meaning 'reach an emotional boundary' is expressed by some verbs; for example, Blg./Cro. *dosadja/dosaditi* 'nag someone, pester, bore', and the Blg. dative construction *dotjaga mi* 'I get sick and tired of someone' (see Section 4.5). Among the 11 Cro. verbs in this group are *dojaditi*, *dopiliti*, *dogustiti* 'get tired of, get sick of, grow weary of' used in constructions with dative experiencers (*dojadilo mi je čekanje* 'I am tired of waiting').

4.1.3 MOVE UP TO A TEMPORAL GOAL: REACH A TEMPORAL BOUNDARY

Spatial conceptualization is the basis for our understanding of time. The spatial meaning of *do-* extends into the temporal domain: the notion of 'up to a point in space' transforms into 'up to a point in time' in several Blg. and Cro. verbs. The goal is located on a temporal scale with Blg./Cro. *doživeja/doživjeti* 'live up to', *dočakam* (*do pensija*), *dočekati* (*mirovinu*) 'live up to retirement'. Other verbs in this category include Cro. *dospjeti* 'have/find time; due, expected' (the verb's first meaning is 'come'), *doteći* 'be enough, last until' (the verb's less frequently employed concrete spatial meaning is 'flow to'), and *dotrajati* 'last until'. Blg. has temporal reference in *dosedja*, *dostoja*, *dotraja* 'sit, stand, last to a certain point in time' or expresses the same meanings using a different prefix; for instance, *iztraja* 'last, endure' (which also exists in Cro., combining with *trajati* 'last' − *istrajati* 'endure, persist').

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[16] The base verb **kučiti* does not exist. HJP relates *dokučiti* to the noun *kuka* 'hook': http://hjp.znanje.hr/.

4.2 Contact with the goal

The primary *to* schema seems to have a *touch* sub-scenario because one of the options TRs have when they reach the LM is to touch it. A few verbs in both Blg. and Cro. closely relate to the meaning MOVE UP TO (reach) but share the common meaning 'touch' as illustrated by Blg. *dokosna/dopra* 'touch' and Cro. *dotaknuti/dotaći* (*se*) 'touch, come in contact with; mention'. However, the Cro. base verbs already mean 'touch', and so this is not a meaning contributed by the prefix. In Blg., the base forms of these verbs do not exist in the modern language (e.g., *dokosna* (*kosna), *dopra* (*pra)). They denote 'touch' only in combination with the prefix.

With abstract LMs, Blg. and Cro. verbs are metaphorically used; for instance, *dokosvam se do* (*izkustvoto*) 'touch, get a taste of (art)', *dokosna* (*sărceto/ dušata mi*) 'touched (my heart/soul)'. See also Cro. *dotaknuti srce/dušu* 'touch (heart/soul)'.

4.2.1 Get hold of

Another possibility when a TR reaches the goal or LM is for the TR to take or get hold of the LM. The verbs in this sub-scenario (five in Blg. and 10 in Cro.) are often reflexive (e.g., Blg./Cro. *dokopam se do* (*pari*) / *dokopati se* (*para*) 'manage to get, get hold of (money, material possessions)', Cro. *dočepati se* + GEN 'get hold of', *dohvatiti* (*se*) (without *se*: + ACC, with *se*: + GEN) 'seize'. In Blg. *presegna se za* 'reach up to' and *natăkna se na* 'come across' have no equivalents with *do-*.

In Blg. constructions with the verbs from this group, the spatial meaning is even more obvious than in the Cro. constructions (which typically use genitives; e.g., *jučer sam se napokon dočepao cijelog*GEN *članka*GEN 'yesterday I finally got hold of the entire article', HrWaC) due to the preposition *do* used in the prefixed verb's construction (e.g., *No az ne se domogvam do zlatoto* 'But I do not try to get to the gold'). A number of verbs within this sub-scenario imply the concrete (spatial) goals, as illustrated in *Ne moga da͡ dobivam dărven mate- rial ot opožareni gori* 'I cannot get wood from burned forests'.

Detaching *do-* from these verbs does not result in existing simplex verbs in both Blg. and Cro. (*čepati se,[17] *mogvam se). Furthermore, in a few cases, base verbs seemingly exist, but the combination of *do-* and these base verbs does not yield a predictable meaning (e.g., *dokopam se / dokopati se* 'get hold of' versus *kopaja / kopati* 'dig').

Some of these verbs can be used with abstract goals; for instance, Blg./ Cro. *dokopam se / domogna se do vlast nad tezi, koito preziram* 'to gain power over those I despise', *dokopati se / domoći se* (*vlasti*) and *dobivam* (*izvestnost*), *domoći se* (*slave*) 'get (fame / become famous)'.

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[17] HJP relates the verb to the combination of *do-* and *čapati:* http://hjp.znanje.hr/. *Čapati* is attested in HrWaC in the meaning 'catch, capture by force'.

Other verbs denote reaching abstract goals through different senses; namely, hearing, smell, and touch (e.g., *dočuja/dočuti* 'hear' in Blg. *dočuvam sluhove* 'I hear rumors'; Cro. *teta [je] Kata dočula glasine o svom suprugu* (INT) 'Aunt Kata has heard some rumors about her husband'). Cro. has only three such verbs (*dočuti*, *domirisati* 'smell', and *dodirnuti* 'touch', whose base already means 'touch'). Some other verbs related to senses are Blg. *dolovja* 'perceive'[18] and *dosetja se* 'guess, it comes to my mind'. These last two can also be interpreted from the perspective of METAPHORICAL MOVEMENT UP TO.

4.3 FINISH (the last segment of)

Reference works and research literature [Vinogradov 1947; Bogusławski 1960; Filip 2000; Kagan 2012] sometimes describe the meaning of some *do-* verbs as 'completion/termination'. This would imply that *do-* is a pure perfectivizer in these verbs (e.g., in Blg./Cro. *dočeta/dočitati*). However, in both Blg. and Cro. there are other prefixes such as *na-* and *pro-* that, in our view, are much better "perfectivizers" in terms of expressing completion. For instance, there is a difference between Blg./Cro. *pročeta/pročitati* and *dočeta/dočitati*. The verbs with *pro-* present the event as a whole (in its entirety) and may be considered the perfective form of *četa/čitati* 'read'. Here, the prefix *pro-* comes the closest to pure perfectivizers or "empty" prefixes. In contrast, the verbs with *do-* do not focus on the entire event, but only on the last segment of the event. This was pointed out in earlier works [Comrie 1976: 18–19] and is more in line with recent cognitive linguistic works [Lakoff and Johnson 2003 (1980): 31–32] that interpret completion as resulting from a focus on the end of a (metaphorical) path, motivated by the conventional metaphors AN ACTIVITY IS A JOURNEY and AN ACTIVITY (OR EVENT/STATE) IS A CONTAINER. For perfective and imperfective events, Janda [2006: 249] proposes the metaphors A PERFECTIVE EVENT IS A SOLID OBJECT, AN IMPERFECTIVE EVENT IS A fluid SUBSTANCE. She differentiates between perfective and imperfective aspectual forms on the basis of fourteen parameters that exhibit isomorphism between properties of substances and uses of aspect. Another metaphor outlining the distinction between completable and non-completable actions is A COMPLETABLE ACTION IS TRAVEL TO A DESTINATION. Based on this metaphor, Janda [2007a: 93] interprets each completable goal-directed activity as a trip to a destination; for instance, for the Russian *pisat' dissertaciju* 'write one's dissertation'; when the dissertation is finished, the destination is reached. A large group of *do-* verbs in Blg. and Cro. express the meaning 'achieve', 'finish *x*', or, more precisely, 'finish the last segment of something', which we call the *achievement* scenario (see Table 3).

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[18] *Dolovja* (impf. *lovja* 'catch, seize') is not related to catching something. It refers to something that is not clearly said but was perceived by the listener.

Table 3

Do- verbs expressing FINISHING (the last segment of)

Verbs expressing FINISHING (the last segment of)			
Blg.	Cro.	English Gloss	Natural perfectives
dočeta	*dočitati*	'finish reading'	Blg./Cro. *pročeta/pročitati*
dogorja	*dogorjeti*	'burn down, go out'	Blg./Cro. *izgorja/izgorjeti*
dopuša	*dopušiti*	'finish smoking'	Blg./Cro. *izpuša/popušiti*
dopija	*dopiti*	'finish drinking, finish a drink'	Blg./Cro. *izpija/popiti*

In this group, some other prefixes added to the same base verbs form more frequent "natural perfectives" [Janda 2007b], and we have listed some of them in the rightmost column in Table 3.

Some Blg. *do-* verbs (17) in this group can also belong to the ADD group (see Section 4.4); for instance, *dobagrja*, *dobojadisam*, *dovapcam* 'finish coloring by adding more color'. The same is true for eight Cro. verbs (e.g., *dosoliti* 'finish salting by adding more salt').

Some verbs of achieving occur with abstract TRs, abstract LMs, or imply metaphorical paths. For instance, Blg./Cro. *dorasta/dorasti*[19] and *dozreja/dozreti* (*za što*)[20] can all mean 'become a match for someone, be ready for...'. *Tova me dovărši / To* (*me*) *je dokrajčilo*,[21] literally, 'this was the end of me', is used when some news, actions, or words are too much for someone to handle; for example, much too bad or much too funny.

4.4 ADD

The verbs in this group denote actions that either result in additional quantity of objects, or in the implication of an extension of an earlier action, or both. In all these cases, the existence of a contextually relevant border is assumed.

Janda [1986: 190, 191] explains that the meaning ADD in Russian verbs is dependent on the absence of a limit in the given context; there is no "realistic absolute terminus" of the activity in question. The verbs in this group signal "a small increment along the LM axis" [Ibid.: 189]. The prototypical verb in this group is Blg./Cro. *dodam/dodati* 'add'; literally, '*do*-give'. The general sense that the verbs in this group share is 'add by performing an activity; do some more' (see Table 4).

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[19] Frequent constructions for Cro. are: *dorastao je / nije dorastao funkciji/situaciji*$_{DAT}$. 'He is / is not up to that function/situation'. The dative nominals are frequently names of persons.

[20] [...] *čovjek koji očito nije dozreo za ozbiljnu politiku* (INT) 'a man who is obviously not ripe for serious politics'.

[21] In the constructions with *him/her/them* as the direct objects, the verb in very many Cro. usage examples implies death. With *me/us* as the direct object, the verb is used somewhat hyperbolically, as in Blg.

Table 4

Do- verbs expressing ADDING in Blg. and Cro.

Verbs expressing ADDING		
Blg.	Cro.	English Gloss
dopiša	*dopisati*	'add (in writing)'
doplatja	*doplatiti*	'make an additional payment'
dosolja	*dosoliti*	'add some more salt'

The Blg. equivalents of some Cro. *do-* verbs belonging to this group use differ- ent prefixes (e.g., *pod-*) to express the same meaning; for instance, Blg. *Podsl- adja* – Cro. *dosladiti* 'add some more sugar'. Nonetheless, the meaning ADD is more frequently represented among Blg. *do-* verbs (104 verbs) than Cro. ones (54 verbs) in the database.

As with other *do-* verbs, some of these verbs occur with abstract TRs or LMs and may acquire metaphorical meanings; for instance, *dobavja komentari* 'add comments, remarks', *dopălnja vpečatlenija* 'add/complete impressions'.

4.4.1 ADD UP TO A BOUNDARY

A subgroup of the verbs belonging to the ADD scenario (see Table 5) shares the meaning of ADD UP TO A BOUNDARY OF A CONTAINER, a sub-sense of ADD. The LM is regarded as a container whose exterior edges serve as boundaries. Before the activity is performed, one of these boundaries is not reached; that is, the container is not entirely full but, after the activity denoted with the *do-* verb, the TR approximates the boundary. This sense relates to the proximity sense, "close to a border" of the preposition *do* in both Blg. and Cro.

Table 5

Do- verbs of ADDING UP TO A BOUNDARY in Blg. and Cro.

Verbs of ADDING UP TO A BOUNDARY		
Blg.	Cro.	English Gloss
doleja	*doliti*	'fill up (liquids), add by pouring'
dopălnja	*dopuniti*	'fill up, become filled up'
dosipja	*dosuti*	'fill up (solids), pour some more'

There is a slight difference between the verbs in the general ADD category and the verbs expressing ADD UP TO A BOUNDARY. The former implies doing more without the end boundary of the activity being defined clearly—for instance, *doupražnja* 'exercise more', *dopălnja* 'fill up'—whereas the latter implies a spe- cific and well-defined boundary; for instance, the top edge of a bowl, as in *da dopălnja kupata / dopuniti zdjelu* 'to fill up the bowl'. The ADD UP TO A

Boundary sense also relates metaphorically to the finish sense. When the boundary/goal is reached the activity terminates; for instance, Blg. *dopălnja* 'put some more so that the container is full'.

4.4.1 Add in a temporal sense (increased quantity, extended duration)

Table 6 includes some verbs implying adding an extra quantity to an existing one and/or prolonged duration. This meaning is closely related to the add sense; however, the verbs in this group are different from those discussed in Section 4.4.1 since their scenarios do not include the idea of spatial LMs (containers) or their borders, but instead imply an additional resulting quantity and temporal extension of the original action expressed by the base verb. For instance, *dokuhati još pekmeza* 'make some more jam' implies producing an additional quantity on top of the existing quantity of jam by, among other things, investing some more time in making jam. With *dokuhati*, the same action type is performed after the earlier *kuhati* 'cook, make', but the resulting additional quantity is smaller than the earlier one, and the time invested is shorter than that invested in the earlier action. Conceptualized as a whole, cooking is temporally extended in the additional action. Verbs such as Blg. *dovarja/dovra* 'boil longer' and Cro. *dokuhati* 'cook longer' imply additional duration of an activity or prolongation of the initial action, which is explicit in the constructions with temporal adverbials (*dokuhajte smjesu još 2–3 minute* 'cook the mixture for two to three more minutes') in addition to increased quantity. Because adding a quantity or doing some more implies duration, this meaning has a clear experiential basis and is expressed by, for instance, Blg./Cro. *dokvalificiram* (*se*) / *dokvalificirati se* 'earn additional qualifications' and *doobuča* (*se*) / *doškolovati* (*se*) 'study longer'.

Table 6

Do- verbs expressing extended duration / prolongation in Blg. and Cro.

Verbs implying extended duration / prolongation		
Blg.	Cro.	English Gloss
dopeka	*dopeći*	'bake some more; bake a little longer, bake some more until fully baked'
dogotvja	*dokuhati*	'cook some more, cook longer'
dokvalificiram (*se*)	*dokvalificirati se*	'earn additional qualifications'

A number of Blg. verbs (namely, 25) belonging to this group also have the finish sense—for instance, *dokompoziram* 'compose more' and *dovarja* 'boil longer'—whereas in the Cro. database only nine verbs with both these senses were identified. These borderline cases are included in the add group.

4.5 Feel like

This meaning is expressed in a specific type of constructions with Blg. *do-* verbs, but not in Cro., except perhaps in constructions with a single verb, *dopasti se*[22] 'like'. This is the main difference between the two languages in the domain of *do-* verbs. In Blg., desires and emotions are conceptualized as metaphorically *coming up to a border* (of a human who experiences them). The prefixed verb alone does not convey this meaning, but the construction as a whole does. In Blg., the construction's structure is reflexive third-person singular *do-* verb + *experiencer*, represented by a short-form personal pronoun in the dative (e.g., *dospi mi se* 'feel like sleeping, feel sleepy', *dopie mi se* 'feel like drinking, feel thirsty', etc.). Alternatively, similar constructions use simplex verbs (e.g., *spi mi se*, *pie mi se*, *jade mi se*, *gleda mi se*, etc.). The difference between the two constructions is that the first one, with *do-* verbs, sounds as if one has suddenly realized that he or she feels sleepy/thirsty/hungry, whereas the second does not have such an implication of suddenness, and simply states that one feels sleepy/thirsty/hungry. A less frequent structure conveying the same meaning is third-person singular *do-* verb + *me* (ACC); for instance, *dognevee me* 'get angry', *domărzi me* 'start feeling lazy'. The two variants of the FEEL LIKE construction differ in the type of verb, reflexive versus non-reflexive, and the case of the pronoun following the verb, dative versus accusative. Therefore, two distinct slots open in the two structures: for an indirect object (*mi*, DAT) and for a direct object (*me*, ACC).

In contrast, Cro. expresses the same meaning only with the first construction, using a reflexive third-person singular base verb and an experiencer in the dative (e.g., *spava* (*mi*) *se* '(I) feel like sleeping, (I) feel sleepy', *pije* (*mi*) *se* '(I) feel like drinking, feel thirsty'), not *do-* verbs.

A number of Blg. verbs (25 verbs) belonging to this group also have the FINISH sense—for instance, *dokompoziram* 'compose more' and *dovarja* 'boil longer'—whereas in the Cro. database only nine verbs with both these senses were identified. These borderline cases are included in the ADD group.

4.5.1 Desires metaphorically coming to someone

Table 7 presents some of the most common examples with desires. The LMs are animate beings: humans or animals.

Some of the constructions expressing desires relate to base verbs of sound production. Only three are attested in the Blg. database; for instance, *doblee mi se* 'feel like bleating', *doreve mi se* 'feel like roaring', *dopee mi se* 'feel like singing'—but the construction is productive and can be applied to any verb denoting sound production (e.g., *doskimti mi se* 'feel like whimpering', *dosumti mi se*, *dogruhti mi se* 'feel like grunting'). All of them express the same meaning 'feel like doing *x*'.

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[22] The HJP dictionary relates this verb to the prefix *do-*: http://hjp.znanje.hr/.

Do- constructions expressing Feeling like; desires metaphorically coming to someone

Constructions expressing Feeling like; desires metaphorically coming to someone			
Blg.	Cro.	English Gloss	Cro. equivalent construction
dojade mi se	–	'feel like eating, feel hungry'	Cro. *jede mi se*
dopie mi se	–	'feel like drinking, feel thirsty'	Cro. *pije mi se*
dospi mi se	–	'feel like sleeping, feel sleepy'	Cro. *spava mi se*

4.5.2 Emotions metaphorically coming to someone

Table 8 presents some common examples with emotions of animate beings. These feelings are frequently negative, but not necessarily; for instance., *dopadne mi* 'I like *x*, *x* appeals to me'.

Do- constructions expressing Feeling like; emotions metaphorically coming to someone

Constructions expressing Feeling like; emotions metaphorically coming to someone			Cro. equivalent construction
Blg.	Cro.	English Gloss	
doplače mi se	–	'feel like crying, be about to cry'	*plače mi se*
dokrivee mi	–	'feel hurt'	*boli me*, *pogađa me*
dopadne mi	*dopasti se*	'I like *x* / *x* appeals to me'	

A subset of this group includes six verbs related to human senses: touch, sight, hearing, and taste; for instance, *dogorči mi* 'taste bitter', *dokiselee mi* 'taste sour', *dosmădi me / dosărbi me* 'feel itchy'. A common meaning of the subset is 'taste/feel like'. Smell, however, has no representative in the group. The corresponding verb is prefixed with *za-*: *zamirisa mi* 'smell / sense a smell'. *Za-* emphasizes the initial stage of the perception. The doer is not an actor in this situation, but an experiencer. The subject of the *do-* verbs that refer to senses is also an experiencer because seeing and hearing may happen involuntarily. As for touching and tasting, the sensations that follow them are unintentional; for instance, *dogadi mi se* 'start feeling sick', *doteži mi* 'feel heavy'. Again, not only the verbs but all the elements in the construction contribute together to its meaning.

The last example in the table, Blg./Cro. *dopadne mi / dopasti se*, is one of the several verbs for which the relation of the base (*padam/pasti* 'fall') and the prefix is not straightforward due to the fact that some of the prefixed forms have undergone meaning extensions. These prefixed forms are part of our

databases because the prefix *do-* stands in opposition to other prefixes added to the base verbs (e.g., Blg. *izpadna* 'drop (out of)', *pripadna* 'faint'; Cro. *ispasti* 'fall out', *prepasti* 'frighten').

5. Final remarks

Our contrastive analysis has revealed four corresponding meaning categories (see Figures 3 and 4):
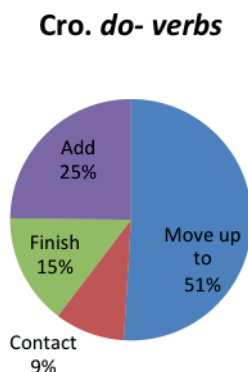

Figure 3. Blg. *do-* verbs

Figure 4. Cro. *do-* verbs

1) Move up to (self-motion or caused motion; abstract motion). In Cro. the self-motion verbs are the most productive group (133 verbs). In Blg., only 33 of all 65 verbs attested in this group are self-motion verbs. Nonetheless, this meaning is considered to be the central (prototypical) one in the network since it is semantically related to all the other categories. This research is synchronic, and so we do not claim that this is the oldest meaning of the prefix. However, bearing in mind that the PROXIMITY SENSE is central for its cognate preposition [Nedelcheva 2013], we can suggest that there is analogy with the prefix. Cro. has a somewhat higher number of verbs (31) expressing caused motion up to a certain point in space than Blg. (20 verbs). A group of verbs can express either self-motion or caused motion (10 in Blg., 11 in Cro.) depending on whether they are used as reflexives or not. In addition, there are six Blg. *do-* verbs and four Cro. verbs expressing motion up to a point in time, or progress in time to a certain temporal boundary. Six additional Blg. verbs and six Cro. verbs denote reaching an abstract goal (after overcoming obstacles).

The share of Blg. and Cro. verbs in this category (see Figures 3 and 4) also includes verbs expressing abstract motion because in many cases the same verb is used in concrete and metaphorical scenarios (with concrete and abstract agents).

2) Contact with the goal and get hold of is represented by 12 verbs in Cro. In addition, in this group there are 22 Cro. verbs expressing metaphorical get hold of (reaching an emotional or other abstract boundary).

In Blg., this is the smallest group, as well, with only 10 verbs, and half of them belong to the get hold of schema.

3) Finish. This is the most numerous group of Blg. verbs (216 attested), approximately 50% of all *do-* verbs. It is represented by a significantly smaller number of verbs in Cro. (54).

4) Add. In Blg., this is the second most numerous group (104 verbs attested). Most of the verbs in this category are process verbs that evolve up to a certain limit by addition of materials and effort. In some cases, the progress is extended in time. This group encompasses 90 verbs in Cro.

The meanings of the categories Finish and Add overlap in some verbs (Blg. 25, Cro. nine), which are included in the add category. This coincidence is due to the experiential correlation of adding more in order to reach a boundary and achieve a goal, which in turn corresponds to the last segment of the activity.

5) Feel like is represented in the Blg. database but not in the Cro. database. All the verbs in this group (42 verbs attested) take part in the same construction: third-person singular *do-* verb + *experiencer*, and 16 of them are reflexive. Two subcategories are distinguished with reference to the denotation of the base verb: desires (11 *do-* verbs attested) and emotions metaphorically coming to someone (31 *do-* verbs in the database).

In general, individual verbs in both languages may belong to more than one category: for instance, Blg. *domarkiram* expresses (4) add some more (marks), but also (3) finish (marking); Cro. *doguliti* 'get tired/sick of' expresses (1) metaphorical motion up to an emotional boundary, but also (3) finish (peeling). Interestingly, the metaphorical meaning is the only one attested in the corpus. This polysemy illustrates close relations between the nodes in the meaning network and paths of semantic extensions. In Figures 3 and 4, we counted similar verbs only once, depending on the most frequently realised meaning.

The distribution of *do-* verbs shows that the centers of gravity in the semantic networks are different in the two languages: in Blg. half of all attested verbs express the finish sense. This prefix is very productive, especially with process verbs. One-fourth of the rest have the meaning add, whereas the last fourth is divided between move up to, feel like, and contact. The meaning of spatial motion up to is dominant in the Cro. network because the prefix *do-* can be added to any self-motion verb or caused-motion verb, no matter how specific the manner of motion is. The second-largest group in Cro. is add, followed by finish and contact. The last is attested in a limited number of verbs.

The only formal difference between Blg. and Cro. is the number of nodes (i.e., meaning categories) in the semantic network: Blg. has an additional salient category, FEEL LIKE. However, the large share of *do-* verbs expressing concrete spatial motion in Cro. as compared to Blg., and the large share of *do-* verbs expressing FINISH in Blg. as compared to a much smaller number of such verbs in Cro., indicates meaning differences between the two languages. Cro. *do-* verbs expressing concrete spatial motion often correspond to Blg. *pri-* verbs, or verbs prefixed with some other prefix. This suggests that the verbal prefix *do-* in Cro. denotes some spatial meanings covered by other spatial prefixes in Blg. These issues require further research, along with some others that remained unaddressed in this study; for instance, the preference of the identical or similar base verbs for different prefixes in the two languages or the effects of prefixation on the Slavic aspectual system.

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HrWaC
Croatian Web Corpus (http://nl.ijs.si/noske/all.cgi/first_form?corpname=hrwac;align=).

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