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RECIPROCITY IN CZECH LIGHT VERB CONSTRUCTIONS: THE DEPENDENCY PERSPECTIVE[1]

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Abstract: In this paper, we draw attention to reciprocity in Czech light verb constructions – a language phenomenon, which has not been discussed yet. Reciprocity is contributed to light verb constructions by predictive nouns, as they are the nouns that represent the semantic core of these constructions. Here we focus on reciprocal light verb constructions derived by the syntactic operation of reciprocalization. We show that the complex mapping of semantic participants onto valency complementations, characteristic of reciprocalization, is reflected in reciprocal light verb constructions in the same way as in reciprocal nominal constructions. The main difference between reciprocal nominal constructions and reciprocal light verb constructions lies in the morphosyntactic expression of reciprocalized participants. We demonstrate that surface syntactic changes in reciprocal light verb constructions are regular enough to be described on the rule basis: the rule based generation of reciprocal light verb constructions requires a cooperation of two sets of rules – rules for deep and surface syntactic structure formation of light verb constructions and rules for capturing reciprocity.

Key words: syntactic operation of reciprocalization, reciprocity of nouns, syntactic structure formation of light verb constructions

1. INTRODUCTION

Although light verb constructions (henceforth LVCs) attract considerable attention from linguists, adopting various theoretical frameworks to their analysis (Gross, M. 1981; Gross, G. 1999; von Polenz, 1963; Grimshaw – Mester, 1988; Butt, 2010; Alonso Ramos, 2007; Baron – Herslund, 1998; Brinton – Akimoto, 1999; Wierzbicka, 1982, among others), many of their semantic and syntactic aspects remain unclear. In this paper, we focus on reciprocity as a set of language means for encoding the semantic relation of mutuality in LVCs, which has not been, to our knowledge, discussed so far. Our analysis is based on the assumption that mutuality as a semantic property is brought about into an LVC by a predicative noun, (not by a light verb), since it is the noun that

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represents the semantic core of the LVC. However, mutuality (and reciprocity as its formal manifestation) outside the verbal domain has been understudied so far (König – Gast, 2008; Nedjalkov, 2007c; Maslova – Nedjalkov, 2013; Frajzyngier – Walker, 2000; Evans et al., 2011). We thus draw on the analysis of reciprocal verbs, showing that many findings on reciprocal verbs are valid for reciprocal nouns (Kettnerová – Lopatková, 2019) and LVCs as well; for reciprocity of Czech verbs see esp. (Panevová, 1999, 2007; Panevová – Mikulová, 2007; Kettnerová – Lopatková, 2018a) and (Siloni, 2008) as well.

Our analysis makes use of the Functional Generative Description (henceforth FGD), a dependency oriented framework (Sgall et al., 1986; Panevová et al., 2014), which has been applied to large text collections in the Prague Dependency Treebanks family (esp. Hajič et al., 2018; Hajič et al., 2012) and in valency lexicons (Lopatková et al., 2016; Urešová et al., 2014, 2016, 2017; Cinková, 2006; Klímová et al., 2016).

In FGD, the representation of LVCs passes through the following three layers of language description: the layer of cognitive content, the deep syntactic layer (the so-called tectogrammatical layer in FGD), and the surface syntactic layer. LVCs can be then defined in terms of a specific mapping between units of these three layers: semantic participants, valency complementations, and surface syntactic positions, respectively.[2] It has been shown (Kettnerová et al., 2018) that a pair of a verb and a predicative noun forms an LVC under the following conditions:

- The noun is structured as one valency complementation of the verb; hence it is expressed in one of the verbal surface positions.
- The verb has no semantic participants.[3]
- Semantically underspecified valency complementations of the verb are semantically saturated by semantic participants of the noun (cf. Alonso Ramos, 2007).

[2] FGD, following European structural linguistics, strictly distinguishes between cognitive content and linguistically structured meaning. The linguistically structured meaning, identified with the deep syntax and called here the tectogrammatical layer (Sgall, 1992), is considered as the proper subject of language description. However, in recent development of FGD, some aspects of lexical semantic properties of predicates, falling within the sphere of cognitive content, has appeared to be relevant for description of changes in valency structure. The model based on the mapping of semantic participants of a situation denoted by a predicate onto its valency complementations and surface positions has proved to be crucial for identifying individual types of valency changes as diatheses, reciprocity/reflexivity and conversions. Each of these language phenomena is distinguished by a different asymmetry between the mapping of semantic participants, valency complementations and surface positions (Lopatková et al., 2016).

When characterizing semantic participants, we make use of semantic roles from the CzeEngClass lexicon (Urešová et al., 2019). Linguistic units constituting the other two layers – valency complementations and surface positions – are delineated and thoroughly described esp. in (Panevová, 1994; Panevová et al., 2014).

[3] The only exception is formed by causative light verbs, which semantically saturate one of their valency complementations with Causator, instigating events expressed by the nouns combined with these verbs, e.g., in the LVC *dát vinu* 'to impute blame', the ACTor of the light verb is saturated by Causator provided by the verb (cf., *Voliči*$_{ACT}$ *dali vinu za tento debakl republikánům*. 'Voters$_{ACT}$ imputed blame for the defeat to the Republicans.' with *vina republikánů za tento debakl* 'Republicans' blame for the defeat'), see esp. (Radimský, 2010). Here we disregard these cases.

- Those semantic participants of the noun that semantically saturate verbal complementations are expressed in surface positions of the verb.[4]

As for semantic characteristic of verbs in LVCs, these verbs (usually referred to as light, support or function verbs) are considered as semantically underspecified. Let us, however, mention that the semantic status of these verbs is not clear: some authors consider them to be semantically empty (Jespersen, 1965; Gross, M., 1981; Cattell, 1984; Grimshaw – Mester, 1988; Mel'čuk, 1996; Alonso Ramos, 2007) while others treat them as to some extent semantically distinctive (Butt – Geuder, 2001; Bosque, 2001; Apresjan, 2009; Sanromán Vilas, 2011, Jezek, 2004; Mastrofini, 2005). We can observe that a predicative noun can usually combine with different light verbs, see e.g. the LVCs *podat hlášení* 'to make an announcement' and *přijmout hlášení* 'to accept an announcement'. Such examples show that the situation expressed by the predicative noun can be perspectivized each time from a different participant's view, depending on the light verb. These cases testify against complete semantic emptiness of light verbs. In our approach, light verbs retain linguistically structured part of meaning, i.e., the deep syntactic properties described in terms of valency complementations, which (in contrast to full verb counterparts of light verbs) are not, however, endowed by lexical semantic properties describable by particular semantic roles assigned to semantic participants. With respect to its semantic properties, we refer to the verbal component of LVCs as to a light verb and to the nominal one as to a predicative noun. In this paper, we limit ourselves to those LVCs in which the predicative noun is expressed as the direct object of the light verb (in accusative) as these LVCs represent the central type of LVCs in Czech.

The paper is structured as follows: first, the operation of reciprocalization allowing for deriving symmetric predicates as proposed in (Kettnerová – Lopatková, 2018a) is summarized (Section 2). Second, complex mapping between semantic participants and valency complementations in reciprocal LVCs is described (Section 3). The last section presents the compositional character of rules governing surface syntactic changes in LVCs (Section 4).

2. SYMMETRIC PREDICATES AND SYNTACTIC OPERATION OF RECIPROCALIZATION

2.1 Symmetric predicates

Reciprocity involves language strategies for expressing mutuality. Mutuality (as a semantic property) is encoded by so-called symmetric predicates, i.e., predicates that denote binary (or sporadically n-ary, where $n \geq 2$) relations R among members of a set A of semantic participants with the following semantic property:

(i) $\forall\, x,y \in A\ (x \neq y \rightarrow R(x,y))$

as a consequence, for two particular a, $b \in A$, it holds $R(a,b) \leftrightarrow R(b,a)$ (based on König – Kokutani, 2006).

[4] For rare exceptions see Section 4.1 Principle L1b).

This condition can be informally tested by paraphrases with participants conversed in the affected valency positions (see as well Nedjalkov, 2007b; Evans, 2008). For example, the use of the verb *obdivovat* 'to admire' in (1a) functions as a symmetric predicate as it can be paraphrased as (1b); similarly see examples with the noun *soutěživost* 'rivalry' as a symmetric predicate in (2a) and its testing paraphrase in (2b), and examples with the LVC *vést boj* 'to lead a fight' in (3a) and its paraphrase in (3b).

(1) a. *Jan a Klára se obdivují*.
'John and Claire admire each other.'
b. *Jan obdivuje Kláru a zároveň Klára obdivuje Jana*.
'John admires Claire and at the same time Claire admires John.'

(2) a. *soutěživost starších a mladších kolegů mezi sebou navzájem*
'older and younger colleagues' rivalry with each other'
b. *soutěživost starších kolegů s mladšími a zároveň soutěživost mladších kolegů se staršími*
'older colleagues' rivalry with younger colleagues and at the same time younger colleagues' rivalry with older colleagues'

(3) a. *Němci a Britové vedli nelítostné boje.*
'Germans and Brits led cruel fights.'
b. *Němci vedli s Brity nelítostné boje a zároveň Britové vedli s Němci nelítostné boje.*
'Germans led cruel fights with Brits and at the same time Brits led cruel fights with Germans.'

(4) *Bratři jsou upřímní k sobě navzájem*.
'Brothers are frank with each other.'

(5) *kolmo na sebe*
'perpendicularly to each other'

Under the term "symmetric predicate", we understand here a specific use of a lexical unit of a verb (1), a noun (2), an adjective (4) and an adverb (5), expressing mutuality between some of its two participants.[5] In addition to single word lexical units (1)–(2) and (4)–(5), LVCs, representing multiword lexical units, can fall within symmmetric predicates as well (3).

Note that only a restricted number of lexical units bear the trait of mutuality in their lexical meaning (called as well lexical (inherent) reciprocals, Nedjalkov, 2007b, inherently reciprocal predicates, Evans et al., 2011, or covert reciprocal predicates, Dimitriadis, 2008a), expressing thus mutuality potentially in all their instances (e.g., *soutěžit* 'to compete with', *boj* 'fight', *příbuzný* 'related', *shodně* 'identically'); we refer to them hereinafter as to *lexical reciprocals*. Though these predicates imply

[5] Symmetric predicates sporadically express mutuality among three participants as well (e.g., *Petr, Jana a Pavel se vzájemně seznámili*. 'Peter, Jane and Paul are introduced to each other.'). As these cases are rare, we leave them aside here.

mutuality with high probability, the mutual interpretation of some of their participants can be blocked (cf. *Petr soutěžil s Pavlem se zápalem.* 'Peter was competing with Paul with enthusiasm.' in which the adverbial *se zápalem* 'with enthusiasm' blocks the mutual relation between Peter and Paul; as a result, the given sentence does not imply that *Pavel soutěžil s Petrem se zápalem*. 'Paul was competing with Peter with enthusiasm.' as well; see further *boj dona Quijota s větrnými mlýny* 'Don Quijot's fight with windmills' where semantic heterogeneity blocks mutuality between Don Quijot and windmills). Moreover, these predicates can be associated with a higher or lesser degree of asymmetry concerning "control, initiative and perspective" (cf. *Petr se rozchází s Marií.* 'Peter is breaking up with Mary.' where Peter is an initiator of the breakup, with *Marie se rozchází s Petrem.* 'Mary is breaking up with Peter.' with Mary as an initiator), see (König – Kokutani, 2006) and (Gleitman et al., 1996) as well.

Most symmetric predicates are, however, syntactically derived by the syntactic operation of reciprocalization, applied primarily to lexical units without the trait of mutuality in their lexical meaning (called grammatical (derived) reciprocals, Nedjalkov, 2007b; syntactic reciprocals, Siloni, 2008); we refer to them as to *syntactic reciprocals* as they require the application of the syntactic operation of reciprocalization for expression mutuality. However, this operation can be applied to lexical reciprocals too. With both these types, this operation allows for encoding a perfect symmetry of participants in reciprocal constructions.

Here we focus only on symmetric predicates derived by reciprocalization (being applied to lexical or syntactic reciprocals) and their manifestation in reciprocal LVCs, as illustrated in example (3a). Non-derived symmetric predicates with the trait of mutuality in their lexical meaning are left aside here as their syntactic structure formation is governed by the same principles formulated for unreciprocal LVCs (Kettnerová et al., 2018), here summarized in Section 3.2.1 and 4.1.[6]

2.2 Syntactic operation of reciprocalization

The model of the syntactic reciprocalization in FGD has been proposed by (Kettnerová – Lopatková, 2018a). This model presupposes predicates (verbs, nouns, adjectives and adverbs) allowing two of their semantic participants to enter into a mutual relation.

The operation of reciprocalization produces symmetric predicates. It involves both semantic participants entering into mutuality and the valency complementations onto which these participants are mapped. It is characterized by a complex mapping of the two semantic participants onto the two valency complementations – both these participants are symmetrically mapped onto both affected complementations.

[6] For the sake of clarity, it should be stressed that in some papers the term symmetric predicates refer to lexical reciprocals and the term non-symmetric predicates is used when referring to syntactic reciprocals (Dimitriadis, 2008b; Winter, 2018). However, as we have seen above, symmetry can be blocked even in case of lexical reciprocals.

For simplicity, let us demonstrate it first on a full verb. For example, the verb *poděkovat* 'to thank', falling within syntactic reciprocals, is characterized by the semantic participants Communicator, Recipient and Reason, which are mapped in unreciprocal constructions onto the valency complementations ACTor, ADDRessee and PATient, respectively, see the valency frame (7a). The first two participants – Communicator and Recipient – can enter into mutuality. To express mutuality, the syntactic reciprocalization producing a symmetric predicate must be applied: in this case, both Communicator and Recipient are mapped at the same time onto both ACTor and ADDRessee, see the scheme in Figure 1.

The surface structure formation of symmetric predicates produced by the syntactic operation of reciprocalization can be summarized in the following principles:

R1 The syntactically more prominent surface position (subject or direct object for verbs and corresponding attribute positions for nouns) expressing one of the valency complementations affected by reciprocalization of semantic participants is pluralized (grammatically by morphological plural, syntactically by paratactic or hypotactic coordination, or semantically by a collective noun).

R2 The other surface position can be filled either with the reflexive pronoun or with the bipartite expression *jeden – druhý*[7] as two main reciprocal markers in Czech: while with syntactic reciprocals, the presence of one of these reciprocal markers in the less prominent position is obligatory, with lexical reciprocals, it is only optional.[8] The only exception is represented by the position with the comitative form *s*+instrumental, the reflexive pronoun is not typically present with both lexical and syntactic reciprocals,[9] i.e., the syntactic position is deleted from the surface in this case, or it is filled with the respective form of the bipartite expression (e.g., *jeden – druhý* 'each other').

R3 The adverbial expressions *spolu* 'together', *navzájem*, *vzájemně*, *mezi sebou,* and marginally *dohromady* 'mutually' mark reciprocity as well. Their use is not fully grammaticalized. With verbs they primarily stress the reciprocal meaning or disambiguate between reciprocal and reflexive meaning; only in rare cases, they serve as its primary marker (e.g., *Soucítili spolu.* 'They

[7] In Nedjalkov (2007a), the reciprocal markers *each other, drug druga* and others corresponding in Czech to *jeden – druhý* 'each other' are treated as reciprocal pronouns, unambiguously marking reciprocity. Nicolas Evans (2008, pp. 48) introduces various tests showing that these bipartite expressions pattern in reciprocal constructions as other NPs: they express cases, they can be used in coordination and in the possessive form. The forms of *jeden – druhý* 'each other' in Czech reciprocal constructions are discussed by Kettnerová and Lopatková (2018a, under review).

[8] In this respect, reciprocal nouns, however, differ from reciprocal verbs as their reciprocal constructions require more grammatical marking than reciprocal constructions of verbs, cf. examples (6a) with (6b). However, as this question requires further investigation and it is not crucial for our further explanation, we leave it aside hereinafter.

[9] The reflexive pronoun in the form *se sebou* as a reciprocal marker is attested in the corpus data only sporadically, esp. in the contrastive uses (e.g. *Jen neměl rád, když jsme se hádali s maminkou nebo se sebou navzájem.* 'He did not like when we argued with mum or with each other.').

sympathize with each other.'). With nouns their role appears to be more significant but it has not been explored yet and it requires further investigation.[10]

For example, in the reciprocal construction (6a) with the derived symmetric predicate, ACTor has the form of subject, which is filled with the coordinated group *Češi a Američané* 'Czechs and Americans' (Principle R1) and ADDRessee has the form of indirect object occupied by the reflexive pronoun *si* (Principle R2). Both the coordinated group and the reflexive pronoun are expressed by the morphemic forms prescribed for these valency complementations in the valency frame of the verb *poděkovat* 'to thank' (7a). The reflexive pronoun corefers with the coordinated group *Češi a Američané* 'Czechs and Americans'.

In case of predicative nouns, similar rules are applied for the syntactic operation of reciprocalization of their participants, resulting in symmetric predicates. See for example the use of the predicative noun *poděkování* 'thank' in (6b) from the same derivational family as the verb *poděkovat* 'to thank'. This noun is characterized by the same set of semantic participants as the verb. If Communicator and Recipient of the noun are subject to reciprocalization, they are both symmetrically mapped onto both ACTor and ADDRessee, see Figure 1. ACTor is then expressed as an adnominal attribute filled with the coordinated group, and ADDRessee, expressed as an adnominal attribute as well, is filled with the reflexive pronoun *sobě*, see example (6b). Both ACTor and ADDRessee are expressed in the morphemic forms determined for these complementations in the valency frame of the noun (7b).[11] As in case of the verb, the reflexive pronoun corefers with the coordination. In contrast to verbs, the role of the adverbials is more prominent in the expression of mutuality with nouns, see example (6b).

(6) a. *Češ-i*$_{\text{ACT}}$ *a Američan-é*$_{\text{ACT}}$ *si*$_{\text{ADDR}}$ *poděkovali*
Czech-NOM.PL.M and American-NOM.PL.M REFL.DAT thanked
za spoluprác-i$_{\text{PAT}}$.
for cooperation-ACC.SG.F
'Czechs and Americans thanked each other for cooperation'

b. *poděkován-í Čech-ů*$_{\text{ACT}}$ *a Američan-ů*$_{\text{ACT}}$ *sobě*$_{\text{ADDR}}$
thank-NOM.SG.N Czech-GEN.PL.M and American-GEN.PL.M REFL.DAT
navzájem
mutually
'Czechs and Americans' thank to each other'

(7) a. *poděkovat* 'to thank': ACT_{nom} ADDR_{dat} $\text{PAT}_{\text{za+acc,dcc}}$[12]
b. *poděkování* 'thank': $\text{ACT}_{\text{gen,poss}}$ ADDR_{dat} $\text{PAT}_{\text{za+acc,dcc}}$

[10] See esp. (Kettnerová – Lopatková, 2018b) and (Kettnerová – Lopatková, under review).

[11] Valency of Czech nouns within FGD has been focused in (Kolářová, 2014).

[12] The abbreviations nom, gen, dat, acc, loc and instr stand for the respective morphological cases, poss stands for possessive adnominal forms and dcc for dependent complement clauses. Where necessary for our explanation, obligatoriness is marked in superscript (obl or opt).

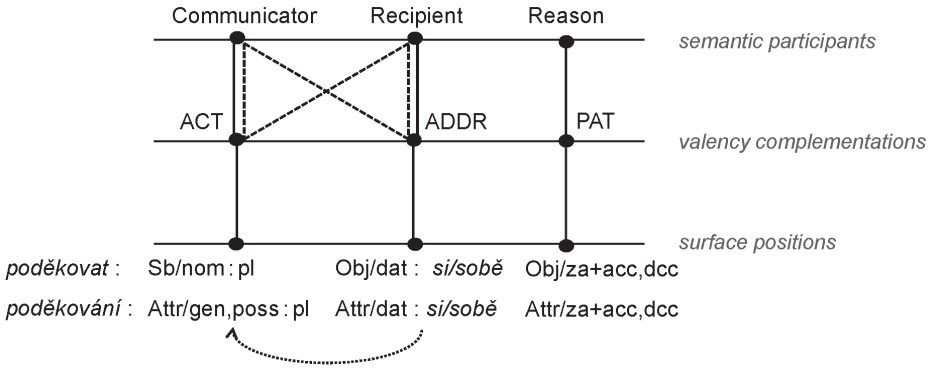

Figure 1: The scheme of the mapping of semantic participants of the verb *poděkovat* 'to thank' and the noun *poděkování* 'thank' onto valency complementations and surface positions (the solid lines depict the mapping in unreciprocal constructions, the dashed lines illustrate reciprocal constructions, and the dotted arrow marks coreference).

As it follows from the scheme in Figure 1, with reciprocity, the mapping of semantic participants onto valency complementations is changed while the correspondence of the involved valency complementations onto surface positions remains the same, thus distinguishing two layers – the layer of cognitive content and the deep syntactic layer – might seem redundant. However, the following examples in (8) show that a proper description cannot rely just on semantic participants and surface forms (and omit the deep syntactic layer with valency complementations). Whereas the complex mapping between semantic participants Part_1 and Part_2 are the same in both reciprocal structures (8b) and (8d), the surface syntactic positions affected by reciprocalization differ: in (8b) the syntactically more prominent position is the position of the direct object and in (8d) it is represented by the subject, compare schemes (a) and (c) in Figure 2. Constructions combining reciprocity and passive together, as e.g. (8d), thus testify in favor of a constructive role of the deep syntactic layer and valency complementations in the description of valency changes: the model distinguishing semantic participants, valency complementations and surface positions and their mappings makes it possible to fully employ the description of individual language phenomena (reciprocalization and passivization in our case) and compositionally apply respective changes. The rationale behind placing the change in the mapping between semantic participants and valency complementations with reciprocity (and preserving the correspondence of valency complementations with surface positions), as illustrated here in example (8b) and displayed in scheme (a) in Figure 2, is supported by the fact that reciprocity is markedly conditioned by semantic properties of participants, which must be semantically homogeneous. On the other hand, the position of changes in the mapping between valency complementations and surface positions with diatheses (while maintaining the correspondence of valency

complementations with semantic participants), as is exemplified by passive sentence (8c) and scheme (b) in Figure 2, is justified by the fact that the primary function of diatheses is to put each time into perspective another valency complementation, regardless of their semantic specificity. The description of their combination is then provided in scheme (c) in Figure 2, depicting the mapping in sentence (8d).

(8) a. *Lékař-i*$_{\text{ACT}}$ *oddělili jedno siamské dvojč-e*$_{\text{PAT}}$
doctor-NOM.PL.M separated one Siamese twin-ACC.SG.N
od druhého siamského dvojč-ete$_{\text{ORIG}}$.
from second Siamese twin-GEN.SG.N
'The doctors separated one Siamese twin from the other Siamese twin.'

b. *Lékař-i*$_{\text{ACT}}$ *oddělili siamská dvojč-ata*$_{\text{PAT}}$ *(od sebe)*$_{\text{ORIG}}$.
doctor-NOM.PL.M separated Siamese twin-ACC.PL.N from REFL.GEN
'The doctors separated the Siamese twins from each other.'

c. *Jedno siamské dvojč-e*$_{\text{PAT}}$ *bylo lékař-i*$_{\text{ACT}}$ *odděleno*
One Siamese twin-NOM.SG.N was doctor-INSTR.PL.M separated
od druhého dvojč-ete$_{\text{ORIG}}$.
from second twin-GEN.SG.N
'One Siamese twin has been separated from the other Siamese twin.'

d. *Siamská dvojč-ata*$_{\text{PAT}}$ *byla lékař-i*$_{\text{ACT}}$ *oddělena*
Siamese twin-NOM.PL.N were doctor-INSTR.PL.M separated
(od sebe)$_{\text{ORIG}}$.
from REFL.GEN
'The Siamese twins have been separated from each other.'

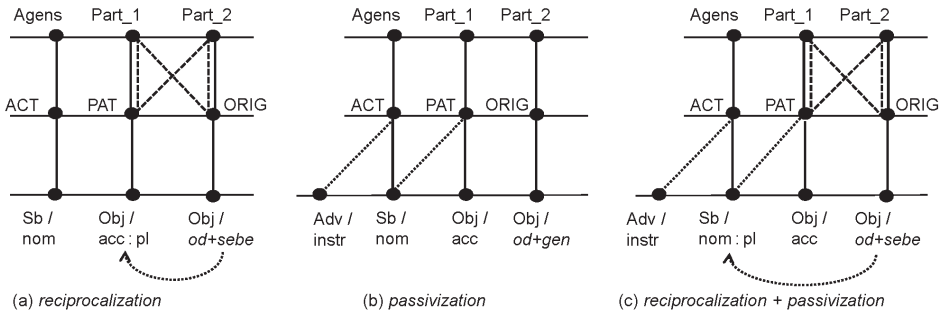

Figure 2: The schemes of the mapping of semantic participants of the verb *oddělit* 'to separate' onto valency complementations and surface positions (the solid lines in all three schemes mark the mapping in unreciprocal active sentence (8a)). The scheme (a) depicts the mapping in the active reciprocal sentence (8b) (the dashed lines illustrate the mapping in reciprocal active constructions, and the dotted arrow marks coreference), the scheme (b) displays the mapping in the unreciprocal passive sentence (8c) (the dotted lines illustrate unreciprocal passive constructions) and the scheme (c) illustrates the combination of passivization and reciprocity in sentence (8d).

3. SYNTACTIC OPERATION OF RECIPROCALIZATION IN LVCs

A key question that should be addressed at the beginning of an analysis of reciprocity in LVCs is what contributes mutuality there: is it the predicative noun, or the light verb? After discussing this issue in Section 3.1, the complex mapping characteristic of reciprocalization in LVCs is introduced in Section 3.2.

3.1 Predicative nouns contributing mutuality to LVCs

As reciprocalization affects semantic participants and as it is the predicative noun that provides its semantic participants for LVCs, it should be the noun that contributes the feature of mutuality to LVCs. This hypothesis can be supported by the following observations:

(i) LVCs with the same light verb are reciprocal or unreciprocal depending on predicative nouns.

(ii) The substitution of a light verb by another one typically neither opens up nor rules out the possibility to apply reciprocalization.

For example, while the LVC *věnovat pozornost* 'to pay attention' allows for reciprocalization (as the noun *pozornost* 'attention' allows two semantically homogeneous participants), see example (9a), the LVC with the same light verb *věnovat úsilí* 'to devote effort' does not (9b) (due to semantically non-homogeneous participants of the noun *úsilí* 'effort'). Compare also examples with the light verb *podat* 'to give' in (10a) and (10b) and with the light verb *získat* 'to gain' in (11a) and (11b), differing in reciprocalization. In (10b), an unequal status of semantic participants in the situation denoted by the noun *výpověď* 'notice', despite their semantic homogeneity, impedes their reciprocalization. In (11b), the noun *rovnováha* 'balance' is endowed by a single semantic participant, which has thus no counterpart with which can be reciprocalized. Further, the substitution of a light verb for another light verb neither precludes the possibility of applying reciprocalization, compare examples (9a) with (9c) in which the light verb *věnovat* 'to pay, to devote' is replaced by other light verbs, nor opens this possibility up, compare examples (9b) and (9d) with the same light verb substituted. These observations point out to predicative nouns as licensors of reciprocity in LVCs.

(9) a. *Karel a Jan si věnovali pozornost*.
'Charles and John paid attention to each other.'
b. *?Karel a Jan si věnovali velké úsilí*.
?'Charles and John devoted great effort to each other.
c. *Karel a Jan k sobě upírali/obraceli pozornost*.
'Charles and John directed/turned attention to each other.'
d. *?Karel a Jan projevili/vyvinuli velké úsilí o sebe*.
?'Charles and John showed/made effort about each other.'

(10) a. *Karel a Jan si podali navzájem vysvětlení.*
‘Charles and John gave an explanation to each other.’
b. ?*Karel a Jan si podali výpověď.*
?‘Charles and John gave their notice to each other.’
(11) a. *Získali od sebe informace.*
‘They gained information from each other.’
b. **Chlapci získali od sebe rovnováhu.*[13]
*‘The boys gained balance from each other.’

The expression of reciprocalized participants in nominal structures is often limited by stylistic aspects, due to the well-known fact that the surface expression of a higher number of valency complementations with nouns leads to overloading nominal structures (Kolářová, 2014). LVCs, allowing predicative nouns to employ their reciprocalized participants in verbal structures, make it possible to express these participants in a stylistically more appropriate way.

3.2 Complex mapping within LVCs

Expressing mutuality in an LVC presupposes reciprocalization of some of semantic participants of the predicative noun forming the LVC. Then the complex mapping of the affected participants onto nominal valency complementations (as described in Section 2.2) is reflected in LVCs as well. Since this complex mapping cooperates with the rules governing the syntactic formation of unreciprocal LVCs, let us first summarize the mapping of semantic participants onto valency complementations in unreciprocal LVCs, as analyzed in (Kettnerová et al., 2018) (Section 3.2.1) and then proceed to reciprocal LVCs (Section 3.2.2).

3.2.1 Within **unreciprocal LVCs**, semantic participants of a noun are mapped onto its valency complementations in the same way as in nominal structures. For example, the noun *opora* ‘support’ provides three semantic participants, Supporter, Supportee and Issue, mapped onto its ACTor, PATient and EFFect, respectively, see the valency frame (13a), examples (12a,b) and Figure 3.

In LVCs, a noun selects a light verb to employ its semantic participants in a verbal structure. A light verb provides its valency potential, with one position reserved for a predicative noun with which it combines into an LVC (in FGD labeled with CPHR, Compound PHRaseme). Besides CPHR, valency complementations of a light verb are not semantically saturated by any participants. These valency complementations acquire their semantic specificity just in LVCs via coreference with valency complementations of the noun. As a consequence, pairs of the coreferring valency complementations refer to the same nominal participants.

[13] The asterisk marks ungrammatical sentences. The question mark is reserved for less pragmatically and semantically acceptable sentences.

Coreference is specific of each LVC and as such it must be captured for individual LVCs in a lexicon (Alonso Ramos, 2007; Kettnerová et al., 2018).

For example, in the LVC *poskytovat oporu* 'to provide support', ACTor and ADDRessee of the light verb *poskytovat* 'to provide', see its valency frame in (13b), corefer with ACTor and PATient of the noun, being thus semantically saturated by Supporter and Supportee, respectively. See the solid lines in Figure 3, displaying the mapping of semantic participants of the noun *opora* 'support' in the LVC *poskytovat oporu* 'to provide support' onto nominal valency complementations and via coreference onto verbal ones (the double-sided arrows); see examples (14a,b) as well.

(12) a. *Petr-ova*$_{\text{ACT-n}}$ *opor-a* *Mari-i*$_{\text{PAT-n}}$[14]
Peter-POSS.SG.F support-NOM.SG.F Mary-DAT.SG.F
v rozhodován-í$_{\text{EFF-n}}$
in decision-LOC.SG.N
'Peter's support for Mary in her decisions'

b. *opor-a* *jednoho zub-u*$_{\text{ACT-n}}$ *druhému zub-u*$_{\text{PAT-n}}$
support-NOM.SG.F one tooth-GEN.SG.M second tooth-DAT.SG.M
'support of a tooth to another tooth'

(13) a. *opora* 'support': $\text{ACT}_{\text{gen,poss,}od+\text{gen}}$ $\text{PAT}_{\text{gen,dat,poss}}$ $\text{EFF}_{v+\text{loc}}$

b. *poskytovat* 'to provide': $\text{ACT}_{\text{nom}}^{\text{obl}}$ $\text{ADDR}_{\text{dat}}^{\text{obl}}$ $\text{CPHR}_{\text{acc}}^{\text{obl}}$

(14) a. *Petr-ø*$_{\text{ACT-v}}$ *poskytuje* *Mari-i*$_{\text{ADDR-v}}$ *potřebnou*
Peter-NOM.SG.M provides Mary-DAT.SG.F necessary
opor-u$_{\text{CPHR-v}}$ *v rozhodován-í*$_{\text{EFF-n}}$.
support-ACC.SG.F in decision-LOC.SG.N
'Peter provides necessary support for Mary in her decisions.'

b. *Zub-ø*$_{\text{ACT-v}}$ *poskytuje* *druhému zub-u*$_{\text{ADDR-v}}$
tooth-NOM.SG.M provides second tooth-DAT.SG.M
opor-u$_{\text{CPHR-v}}$.
support-ACC.SG.F
'One tooth provides support for another tooth.'

[14] Symbols v and n with valency complementations distinguish between verbal and nominal ones.

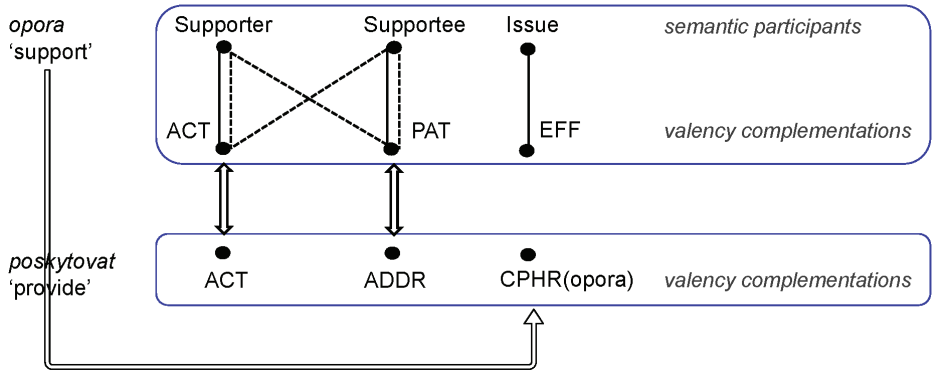

Figure 3: The mapping of semantic participants in the unreciprocal (the solid lines) and reciprocal (the dashed lines) LVC *poskytovat podporu* 'to provide support'. The double-sided arrows capture coreference relations between nominal and verbal valency complementations.

3.2.2 In **reciprocal LVCs**, the mapping of semantic participants of a predicative noun onto valency complementations (as described in Section 3.2.1) further cooperates with changes characteristic of reciprocalization. The latter changes follow from the fact that a pair of semantic participants of the noun is symmetrically mapped onto both valency complementations affected by reciprocalization (see Section 2.2). Thus if the noun combines with a light verb into an LVC, the complex mapping is then reflected in the LVC as well, while the coreference between verbal and nominal valency complementations characterizing the LVC remains preserved.

For example, the participants Supporter and Supportee of the predicative noun *opora* 'support' can be reciprocalized. In this case, they are both mapped onto ACTor and at the same time onto PATient of the noun (see the dashed lines in Figure 3). If this noun employs semantic participants in the LVC *poskytovat oporu* 'to provide support', both Supporter and Supportee semantically specify ACTor and at the same time ADDRessee of the light verb via coreference with the nominal ACTor and PATient (see the double-sided arrows in Figure 3), see also examples (15a,b,c) and Figure 4, displaying the simplified dependency tree of sentence (15b).

(15) a. *Petr-ø*$_{\text{ACT-v}}$ *a* *Mari-e*$_{\text{ACT-v}}$ *si*$_{\text{ADDR-v}}$ *poskytují*
Peter-NOM.SG.M and Mary-NOM.SG.F REFL.DAT provide
potřebnou opor-u$_{\text{CPHR-v}}$ *v rozhodován-í*$_{\text{EFF-n}}$.
necessary support-ACC.SG.F in decision-LOC.SG.N
'Peter and Mary provide necessary support for each other in their decisions.'

b. *Zub-y*$_{\text{ACT-v}}$ *si*$_{\text{ADDR-v}}$ *poskytují* *opor-u*$_{\text{CPHR-v}}$.
tooth-NOM.PL.M REFL.DAT provide support-ACC.SG.F

c. *Zub-y*$_{\text{ACT-v}}$ *poskytují* *opor-u*$_{\text{CPHR-v}}$ *jeden-ø*
tooth-NOM.PL.M provide support-ACC.SG.F one-NOM.SG.M
druh-ému$_{\text{ADDR-v}}$.
second-DAT.SG.M
'Teeth provide support for each other.'

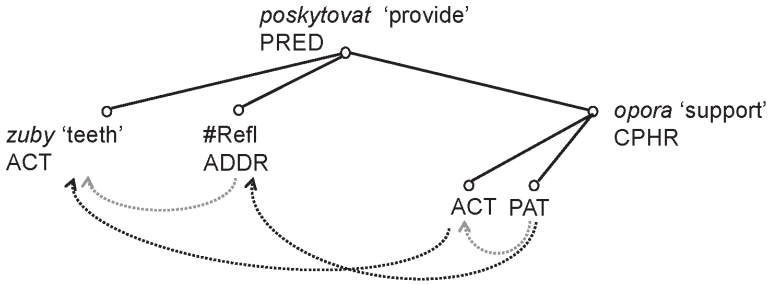

Figure 4: Simplified dependency tree representation of sentence (15b). The dotted arrows mark coreference (the grey lines display coreference yielded by reciprocity and the black lines depict coreference between the valency complementations of the predicative noun and the complementations of the light verb).

4. SURFACE SYNTACTIC CHANGES IN RECIPROCAL LVCs

4.1 Summary of surface structure formation of unreciprocal LVCs

As the surface structure formation of reciprocal LVCs preserves the principles formulated for unreciprocal ones, see (Kettnerová et al., 2018), let us first summarize a slightly revised version of these principles:

(1) In the surface structure of an LVC, one surface position provided by the valency complementation CPHR of the light verb is reserved for a predicative noun; other surface positions are opened for semantic participants of the predicative noun.

(2) Each semantic participant is typically expressed on the surface only once.[15]

(3) Semantic participants in the surface structure of LVCs are expressed as follows:

L1 A semantic participant of the predicative noun mapped in an LVC onto a valency complementation of the predicative noun and at the same time – via coreference – onto a valency complementation of the light verb is expressed on the surface depending on obligatoriness of the respective verbal complementation:

[15] In rare cases, the semantic participant mapped onto the nominal ACTor and – via coreference – onto the verbal ACTor as well can be expressed twice in the surface structure of LVCs, both as the nominal and verbal ACTor (e.g., *Jan*$_{\text{ACT-v}}$ *jim dal svůj*$_{\text{ACT-n}}$ *souhlas*. 'John$_{\text{ACT-v}}$ gave them his$_{\text{ACT-n}}$ consent.'). As these cases are rare and their stylistic appropriateness is often questionable, we leave these cases aside here.

(a) If it is *obligatory*, the semantic participant is expressed in the surface position provided by the respective verbal complementation (in the morphemic form determined for this complementation in the valency frame of the verb).
(b) If it is *optional,* the semantic participant can be expressed in the surface position provided either by the respective nominal complementation or by the respective verbal one.

L2 A semantic participant mapped in an LVC onto a valency complementation of the predicative noun only is expressed in the surface position given by the respective nominal valency complementation.

Let us exemplify the principles on the unreciprocal LVC *poskytovat oporu* 'to provide support' (as analyzed above, see section 3.2.1). As we have seen, the predicative noun *opora* 'support' is characterized by three semantic participants: Supporter, Supportee and Issue. These participants are mapped onto ACTor, PATient, and EFFect of the noun, respectively, see Figure 3. The noun occupies the CPHR valency position of the light verb and as a result, it is expressed on the surface as the direct object of the verb, see the valency frame of the verb (13b). The LVC *poskytovat oporu* 'to provide support' is characterized by coreference between the verbal ACTor and the nominal ACTor and at the same time between the verbal ADDRessee and the nominal PATient, Figure 3. Supporter is mapped onto the former pair, Supportee corresponds to the latter one. As both the verbal ACTor and ADDRessee are obligatory, Supporter and Supportee are expressed in the surface positions provided by these verbal complementations, namely as subject (Supporter) and indirect object (Supportee), Principle L1a), see also examples (14a,b). Issue is mapped onto EFFect of the predicative noun only – as a result, it is expressed on the surface as an adnominal attribute as it is prescribed for this EFFect in the valency frame of the noun, Principle L2, see example (14a).

As to illustrate Principle L1b), let us give an example of the LVC *dostat svolení* 'to get permission'. In this LVC, there are three semantic participants contributed to the LVC by the noun *svolení* 'permission': Speaker, Recipient and Message mapped onto ACTor, ADDRessee and PATient of the noun, respectively, see the valency frame in (16a). If this noun selects the verb *dostat* 'to get', the semantically unsaturated verbal complementations ACTor and ORIGin enter into coreference with ADDRessee and ACTor of the noun, respectively, acquiring their semantic specificity, see the valency frame of the verb in (16b). As a result, ACTor of the verb, coreferring with ADDRessee of the noun, refers to Recipient, and ORIGin of the verb, which is coreferential with ACTor of the noun, refers to Speaker, see Figure 5. While the surface expression of Recipient complies with Principle L1a), the surface expression of Speaker follows Principle L1b) as this participant is mapped via coreference onto the optional complementation ORIGin of the verb. As a result, Speaker can be expressed on the surface either as indirect object as it is prescribed

for the verbal ORIGin (17a), see Figure 6, or as an adnominal attribute as it is determined for the nominal ACTor (17b).

(16) a. *svolení* 'permission': $ACT_{gen,poss,od+gen}$ $ADDR_{dat}$ $PAT_{k+dat,pro+acc,s+intr,inf,dcc}$
b. *dostat* 'to get': ACT_{nom}^{obl} $CPHR_{acc}^{obl}$ $ORIG_{od+gen,z+gen}^{opt}$

(17) a. *Nájemc-e*$_{ACT\text{-}v}$ *již* *od majitel-ů*$_{ORIG\text{-}v}$ *dostal*
tenant-NOM.SG.M already from owner-GEN.PL.M got
svolen-í$_{CPHR\text{-}v}$ *k přestavb-ě*$_{PAT\text{-}n}$ *bytu*.
permission-ACC.SG.N to reconstruction-DAT.SG.F flat
b. *Nájemc-e*$_{ACT\text{-}v}$ *již* *dostal* *svolen-í*$_{CPHR\text{-}v}$
tenant-NOM.SG.M already got permission-ACC.SG.N
majitel-ů$_{ACT\text{-}n}$ *k přestavb-ě*$_{PAT\text{-}n}$ *bytu*.
owner-GEN.PL.M to reconstruction-DAT.SG.F flat
'The tenant has already got owners' permission to reconstruct the flat.'

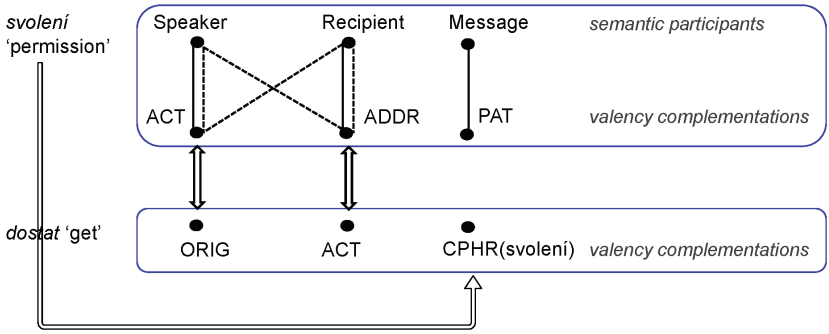

Figure 5: The mapping of semantic participants in the unreciprocal (the solid lines) and reciprocal (the dashed lines) LVC *dostat svolení* 'to get permission'. The double-sided arrows capture coreference relations between nominal and verbal valency complementations.

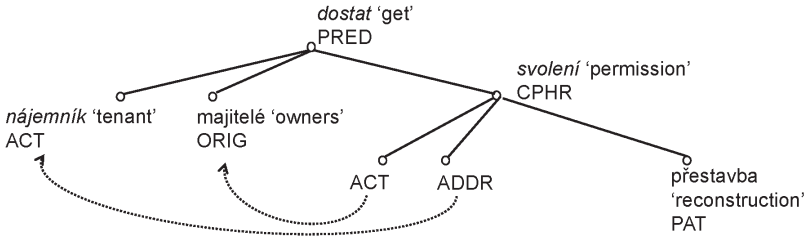

Figure 6: Simplified dependency tree representation of sentence (17a). The dotted arrows mark coreference between the valency complementations of the predicative noun and the complementations of the light verb.

4.2 Surface syntactic changes in reciprocal LVCs

We can observe that in the surface structure of reciprocal LVCs, four situations occur: first, reciprocalized semantic participants are expressed in two surface positions provided by valency complementations of a light verb (Section 4.2.1), second, they are distributed between a surface position given by a light verb and a surface position provided by the predicative noun selecting the light verb (Section 4.2.2), third, they are realized only in one surface position given by a light verb (Section 4.2.3), and lastly, they are expressed in the surface positions provided by a predicative noun (Section 4.2.4).[16] As we show below, these cases are brought about by a cooperation of the rules governing LVCs (Principles L1-2 as given in Section 4.1) and the rules describing reciprocalization (Principles R1-3, as given in Section 2.2).

4.2.1 First, if both reciprocalized semantic participants of a predicative noun are mapped onto nominal complementations and at the same time (via coreference) onto obligatory verbal complementations, the two involved reciprocalized semantic participants are expressed on the surface in verbal positions determined by morphemic forms prescribed for the respective valency complementations in the valency frame of the light verb (Principle L1a), Section 4.1).

For example, in the LVC *poskytovat oporu* 'to provide support', the reciprocalized semantic participants Supporter and Supportee are symmetrically mapped via coreference onto the obligatory ACTor and ADDRessee of the light verb, hence they are expressed in the surface structure of the LVC as subject and at the same time as indirect object (Principle L1a), Section 4.1). The subject – as the more prominent position – is pluralized (Principle R1, Section 2.2), see examples (15a,b,c). As this LVC falls within syntactic reciprocals, the indirect object, as the less significant position, is obligatorily occupied by the reflexive pronoun in dative (Principle R2, Section 2.2), coreferring with the expression in the subject, see examples (15a,b). Alternatively, the indirect object can be filled with the expression

[16] In reciprocal constructions with full verbs, either the position of subject or the position of direct object is affected by reciprocalization as the more prominent surface position (Principle R1, Section 2.2): compare, e.g., the reciprocal construction with the full verb *obdivovat* 'to admire' in example (1) with subject as the more significant surface position affected by reciprocalization and the reciprocal construction with the full verb *oddělit* 'to separate' with direct object as the more prominent position involved in reciprocalization (see e.g. example (8b)). Let us stress that in the studied type of reciprocal LVCs, direct object of the light verb is excluded from reciprocalization as this position is filled with predicative nouns.

However, with nouns, both the positions corresponding to subject and direct object of their base verbs can be affected by reciprocalization, compare, e.g., the noun *opora* 'support' in the LVC *poskytovat oporu* 'to provide support' (see valency frames in (13a,b), scheme in Figure 3 and examples (15a,b,c)) and the noun *oddělení* 'separation' in the LVC *provést oddělení* 'to carry out separation' (see valency frames in (24a,b), scheme in Figure 11 and examples (25a,b,c)).

jeden – druhý ‘each other’ (15c), coreferring with the expression in the subject as well.[17]

4.2.2 Second, reciprocalized semantic participants in LVCs can be distributed between surface positions given by a valency complementation of a light verb and a valency complementation of a predicative noun. In this case, the more prominent position is the verbal position (subject in the studied constructions) and the less significant position is the nominal one.

For example, in the LVC *chovat úctu* ‘to have respect’, the predicative noun *úcta* ‘respect’ is characterized by two semantic participants, Cognizer and Evaluee, mapped onto ACTor and PATient of the noun, respectively, see the valency frame of the noun in (19a) and Figure 7. When this noun selects the light verb *chovat* ‘to have’, the semantically unsaturated ACTor of the verb enters into coreference with ACTor of the noun, see the valency frame of the light verb in (19b) and the double-sided coreferential arrow in Figure 7. As a result, both the nominal ACTor and the verbal ACTor refer to Cognizer. According to the principles governing the surface structure of unreciprocal LVCs, Cognizer is expressed on the surface as subject due to the obligatoriness of the verbal ACTor (Principle L1a), Section 4.1). Further, Evaluee – mapped onto the nominal PATient, and not coreferring with any verbal complementation – is expressed on the surface as an adnominal attribute as it is determined for this PATient (Principle L2, Section 4.1). See example (18) illustrating the surface structure of the unreciprocal LVC.

The semantic participants Cognizer and Evaluee with the noun *úcta* ‘respect’ can be subject to reciprocalization, resulting in their symmetric mapping onto ACTor and PATient of the noun, see the dashed lines in Figure 7 and nominal structures in (20a,b). This mapping is then projected also to the LVC *chovat úctu* ‘to have respect’. In this case, both Cognizer and Evaluee are symmetrically mapped onto ACTor of the noun (see the dashed lines in Figure 7) and – via coreference – onto ACTor of the light verb as well (the double-sided arrow in Figure 7) and at the same time, both these two participants correspond to PATient of the noun as well (the dashed lines). As for their surface expression, ACTor of the verb, as an obligatory valency complementation, provides the more prominent position of subject (Principle Lla), Section 4.1) and PATient of the noun gives the less significant position of an attribute (Principle L2, Section 4.1). According to the principles of reciprocalization, the subject is pluralized (Principle R1, Section 2.2) and the attribute is obligatorily occupied by the reflexive pronoun since the LVC *chovat úctu* ‘to have respect’ classifies as a syntactic reciprocal (Principle

[17] A similar situation occurs when reciprocalized participants are mapped onto optional verbal complementations the surface expression of which is governed by Principle L1b), Section 4.1: the reciprocalized participants are either expressed as the verbal complementation or as the nominal one (e.g., *Partneři v sobě*$_{\text{LOC-v}}$ *vzájemně vyvolávali žárlivost*. and *Partneři vyvolávali vzájemně svou*$_{\text{ACT-n}}$ *žárlivost*. ‘The partners aroused jealousy in each other.’), the latter case falls under the type introduced in Section 4.2.2.

R2, Section 2.2), see example (21a) and Figure 8, illustrating its dependency representation. Alternatively, the attribute can be filled with the expression *jeden – druhý* ‘each other’, see example (21b).

(18) *Politik-ø*$_{\text{ACT-v}}$ *A* *chová* *úct-u*$_{\text{CPHR-v}}$ *k politik-ovi*$_{\text{PAT-n}}$ *B.*
politician-NOM.SG.M A holds respect-ACC.SG.F to politician-DAT.SG.M B
‘Politician A has respect for politician B.’

(19) a. *úcta* ‘respect’: ACT$_{\text{gen,pos}}$ PAT$_{\text{dat,}k\text{+dat,}před\text{+instr,}vůči\text{+dat}}$
b. *chovat* ‘to have’: ACT$_{\text{nom}}^{\text{obl}}$ CPHR$_{\text{acc}}^{\text{obl}}$

(20) a. *úct-a* *politik-ů*$_{\text{ACT-n}}$ *k sobě*$_{\text{PAT-n}}$ *navzájem*
respect-NOM.SG.F politician-GEN.PL.M to REFL.DAT mutually
b. *úct-a* *politik-ů*$_{\text{ACT-n}}$ *jedn-oho*
respect-NOM.SG.F politician-GEN.PL.M one-GEN.SG.M
k druh-ému$_{\text{PAT-n}}$
to second-DAT.SG.M
‘politicians‘ respect for each other’

(21) a. *Politic-i*$_{\text{ACT-v}}$ *k sobě*$_{\text{PAT-n}}$ *chovají* *úct-u*$_{\text{CPHR-v}}$.
politician-NOM.PL.M to REFL.DAT hold respect-ACC.SG.F
b. *Politic-i*$_{\text{ACT-v}}$ *chovají* *úct-u*$_{\text{CPHR-v}}$ *jeden-ø*
politician-NOM.PL.M hold respect-ACC.SG.F one-NOM.SG.M
k druh-ému$_{\text{PAT-n}}$.
to second-DAT.SG.M
‘Politicians have respect for each other.’

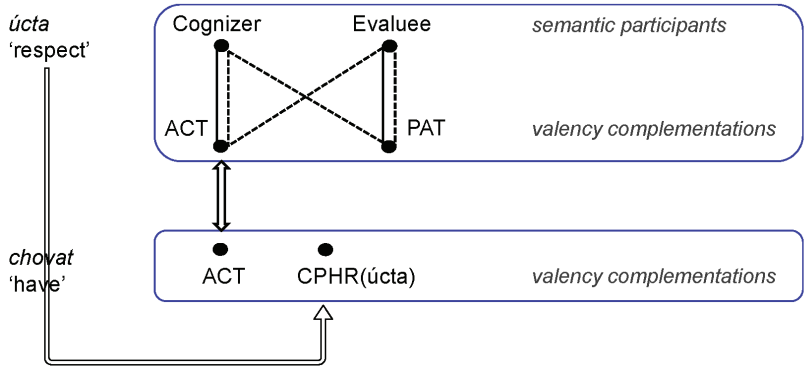

Figure 7: The mapping of semantic participants in the unreciprocal (the solid lines) and reciprocal (the dashed lines) LVC *chovat úctu* ‘to have respect’. The double-sided arrow captures a coreference relation between the nominal and the verbal valency complementation.

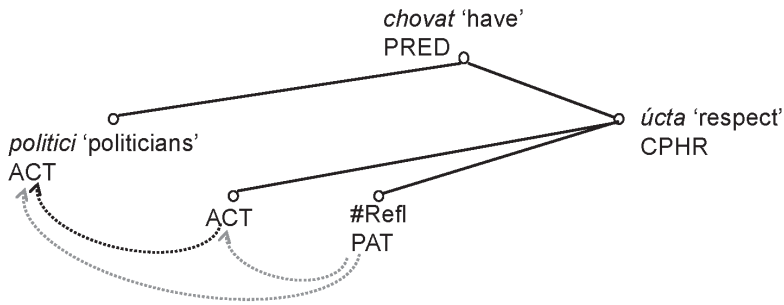

Figure 8: Simplified dependency tree representation of sentence (21a).
The dotted arrows mark coreference (the grey lines display coreference yielded by reciprocity and the black line depicts coreference between the valency complementations of the predicative noun and the complementations of the light verb).

4.2.3 A specific case occurs when reciprocalized semantic participants of a noun are mapped in an LVC onto a valency complementation with the comitative form *s*+instrumental. If this valency complementation, be it verbal or nominal, is not filled with the expression *jeden – druhý* 'each other' or with the reflexive pronoun (which is only rarely), it is subject to the surface deletion (Principle R2, Section 2.2). In this case, both reciprocalized participants are thus realized on the surface only in one surface position. It can be the subject position provided by a light verb or the attribute position of a predicative noun corresponding to direct object with its base verb, the latter case is introduced in Section 4.2.4.

Let us give an illustrative example with the LVC *vést rozhovor* 'to hold a conversation'. With the noun *rozhovor* 'conversation', two of its participants – Interlocutor_1 and Interlocutor_2 mapped onto its ACTor and ADDRessee, see the valency frame of the noun in (22a) – can enter into mutuality. When reciprocalized, these participants are symmetrically mapped onto both these valency complementations (the dashed lines in Figure 9).

When the noun is employed in the unreciprocal LVC *vést rozhovor* 'to hold a conversation', ACTor of the light verb enters into coreference with ACTor of the noun (semantically saturated by Interlocutor_1), see the valency frame of the verb in (22b) and the double-sided arrow in Figure 9; as the verbal ACTor is obligatory, Interlocutor_1 is expressed as subject (Principle L1a), Section 4.1). Interlocutor_2, mapped onto ADDRessee of the noun only, is expressed as an adnominal attribute of the noun (Principle L2, Section 4.1).

In reciprocal LVCs, these principles combine with the symmetric mapping of Interlocutor_1 and Interlocutor_2. First, complying with Principle L1a) (Section 4.1), both these reciprocalized participants are expressed on the surface in the subject position provided by the verbal ACTor; the subject, following Principle R1 (Section

2.2), is pluralized (23a,b). Second, the reciprocalized participants are mapped onto the nominal ADDRessee as well. As this ADDRessee has the comitative form, it is typically omitted from the surface (23a) (Figure 10). Alternatively, it is expressed as an attribute filled with the expression *jeden – druhý* 'each other' (23b), rarely with the reflexive pronoun (23c) (Principle R2, Section 2.2); the latter thus falling within the type discussed in Section 4.2.2.

(22) a. *rozhovor* ' conversation': $ACT_{gen,poss}$ $ADDR_{s+instr}$ PAT_{o+loc}
b. *vést* 'to hold': ACT_{nom}^{obl} $CPHR_{acc}^{obl}$

(23) a. *Stát-y*$_{ACT\text{-}v}$ *vedly* *rozhovor-y*$_{CPHR\text{-}v}$ *o jaderných problém-ech*$_{PAT\text{-}n}$ ...
state-NOM.PL.M held talk-ACC.PL.M about nuclear problem-LOC.PL.M
b. *Stát-y*$_{ACT\text{-}v}$ *vedly* *rozhovor-y*$_{CPHR\text{-}v}$ *jeden*
state-NOM.PL.M held talk-ACC.PL.M one-NOM.SG.M
s druh-ým$_{ADDR\text{-}n}$ *o jaderných problém-ech*$_{PAT\text{-}n}$ ...
with second-INSTR.SG.M about nuclear problem-LOC.PL.M
c. *Stát-y*$_{ACT\text{-}v}$ *vedly* *se sebou*$_{ADDR\text{-}n}$ *navzájem* *rozhovor-y*$_{CPHR\text{-}v}$
state-NOM.PL.M held with REFL.INSTR mutually talk-ACC.PL.M
o jaderných problém-ech$_{PAT\text{-}n}$ ...
about nuclear problem-LOC.PL.M
'The states held talks about nuclear problems.'

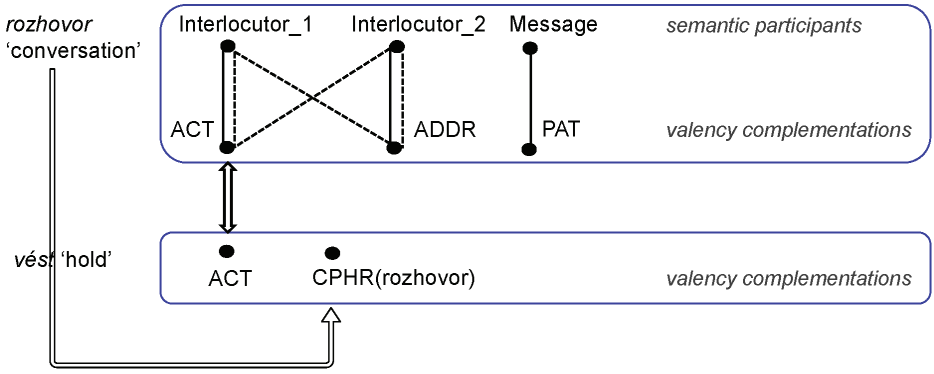

Figure 9: The mapping of semantic participants in the unreciprocal (the solid lines) and reciprocal (the dashed lines) LVC *vést rozhovor* 'to hold a conversation'. The double-sided arrow captures a coreference relation between the nominal and the verbal valency complementation.

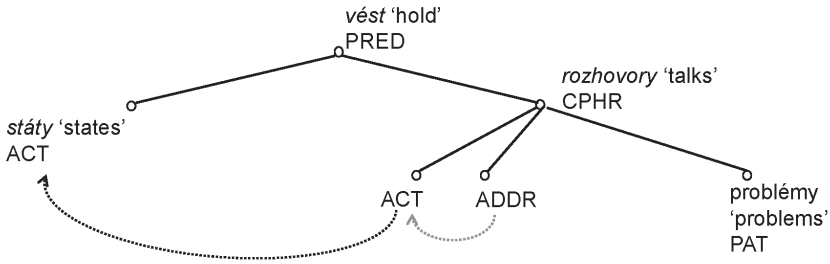

Figure 10: Simplified dependency tree representation of sentence (23a). The dotted arrows mark coreference (the grey line displays coreference yielded by reciprocity and the black line depicts coreference between the valency complementations of the predicative noun and the complementations of the light verb).

4.2.4 In reciprocal LVCs, both reciprocalized semantic participants of a predicative noun can be expressed in the surface positions provided by the noun as well. This surface realization is characteristic of LVCs with predicative nouns with which the more prominent position affected by reciprocalization is the attribute position corresponding to direct object with their base verbs.

Let us exemplify this type on the example of the LVC *provést oddělení* 'to carry out separation'. The predicative noun *oddělení* 'separation' is characterized by three semantic participants: Agent, Part_1 and Part_2, mapped onto its ACTor, PATient and ORIGin, see the valency frame of the noun in (24a) and Figure 11. In the unreciprocal LVC *provést oddělení* 'to carry out separation', the semantically unsaturated ACTor of the verb enters into coreference with ACTor of the noun, both thus referring to Agent, see the valency frame of the light verb in (24b) and the double-sided arrow in Figure 11. As ACTor of the light verb is obligatory, Agent is expressed on the surface as the verbal ACTor (Principle L1a), Section 4.1). The other two remaining participants Part_1 and Part_2, corresponding to the nominal PATient and ORIGin only, are realized on the surface as it is determined for the respective valency complementations in the valency frame of the noun (24a) (Principle L2), Section 4.1).

With the noun *oddělení* 'separation', the semantic participants Part_1 and Part_2 can be reciprocalized. When they are subject to reciprocalization, they are both symmetrically mapped onto PATient and ORIGin of the noun, see the dashed lines in Figure 11. In the reciprocal LVC *provést oddělení* 'to carry out separation', the principles of the surface structure formation of LVCs (namely Principle L2, Section 4.1) interact with Principles R1 and R2 (Section 2.2): the attribute position given by PATient of the noun, as the more prominent position,[18] is pluralized and the attribute position provided by ORIGin, as the less prominent one, can be filled with the reflexive pronoun (25a), Figure 12, or with the expression *jeden – druhý* 'each

[18] The more prominent surface positions with nouns are represented by the adnominal positions corresponding either to subject or direct object with their base verbs (Kettnerová – Lopatková, 2019).

other' (25b). However, the use of the reflexive pronoun or the expression *jeden – druhý* 'each other' is only optional here as the LVC classifies as a lexical reciprocal (25c) (esp. the expression *jeden – druhý* 'each other' is stylistically questionable due to the overloaded nominal structure (25b). See Figure 12, displaying dependency representation of sentence (25a).[19]

(24) a. *oddělení* 'separation': $\text{ACT}_{\text{gen,instr,poss}}$ $\text{PAT}_{\text{gen,poss}}$ $\text{ORIG}_{od+\text{gen}}$
b. *provést* 'carry out': $\text{ACT}_{\text{nom}}^{\text{obl}}$ $\text{CPHR}_{\text{acc}}^{\text{obl}}$

(25) a. *Fridrich-ø*$_{\text{ACT-v}}$ *II.* *provedl* *oddělen-í*$_{\text{CPHR-v}}$ *farmaci-e*
Frederick-NOM.SG.M carried out separation-ACC.SG.N pharmacy
a *medicín-y*$_{\text{PAT-n}}$ *od sebe*$_{\text{ORIG-n}}$.
and medicine-GEN.SG.F from REFL.GEN
b. *Fridrich-ø*$_{\text{ACT-v}}$ *II.* *provedl* *oddělen-í*$_{\text{CPHR-v}}$ *farmaci-e*
Frederick-NOM.SG.M carried out separation-ACC.SG.N pharmacy
a *medicín-y*$_{\text{PAT-n}}$ *jedn-é* *od druhé*$_{\text{ORIG-n}}$.
and medicine-GEN.SG.F one-GEN.SG.F from second-GEN.SG.F
c. *Fridrich-ø*$_{\text{ACT-v}}$ *II.* *provedl* *oddělen-í*$_{\text{CPHR-v}}$ *farmaci-e*
Frederick-NOM.SG.M carried out separation-ACC.SG.N pharmacy
a *medicín-y*$_{\text{PAT-n}}$.
and medicine-GEN.SG.F
'Frederick II carried out separation of pharmacy and medicine from each other.'

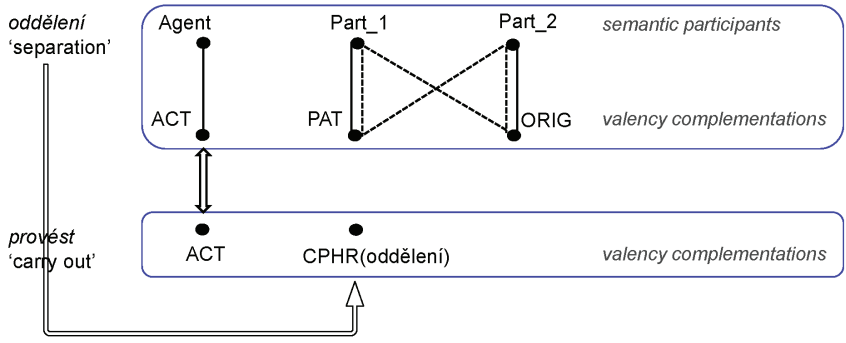

Figure 11: The mapping of semantic participants in the unreciprocal (the solid lines) and reciprocal (the dashed lines) LVC *provést oddělení* 'to carry out separation'. The double-sided arrow captures a coreference relation between the nominal and the verbal valency complementation.

[19] If reciprocalized semantic participants of a noun are mapped in an LVC onto valency complementations of the noun only and one of the affected valency complementations has the comitative form *s*+instrumental, this complementation is typically deleted from the surface and the reciprocalized participants are expressed only in one surface adnominal position provided by the other valency complementation, typically the attribute position of the noun correspoding to direct object of its base verb (e.g., *Město uskutečnilo sloučení obou škol.* 'The municipality merged both schools.').

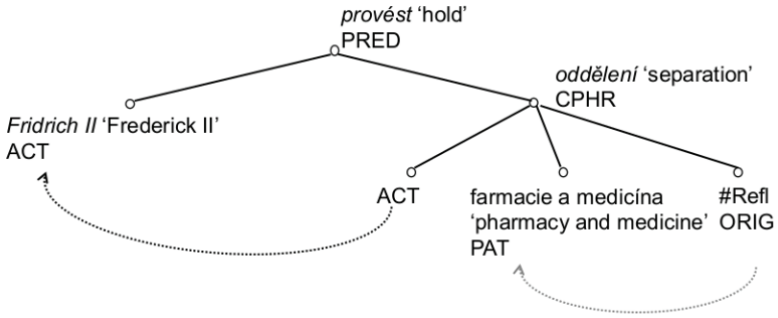

Figure 12: Simplified dependency tree representation of sentence (25a). The dotted arrows mark coreference (the grey line displays coreference yielded by reciprocity and the black line depicts coreference between the valency complementations of the predicative noun and the complementations of the light verb).

5. CONCLUSION

We have provided here a dependency oriented study of Czech light verb constructions expressing mutuality, focusing on those constructions that result from the syntactic operation of reciprocalization. These reciprocal constructions make it possible to express a perfect symmetry between semantic participants involved in reciprocalization. We have shown that mutuality is contributed to these constructions by predicative nouns which – representing a semantic core of light verb constructions – provide their semantic participants for these constructions. If some of these semantic participants are reciprocalized in light verb constructions, they are subject to the complex mapping onto valency complementations in the same way as in nominal constructions. However, their surface expression in reciprocal light verb constructions differs from the one in reciprocal nominal constructions. In contrast to reciprocal nominal constructions, reciprocalized semantic participants in reciprocal light verb constructions are primarily expressed in surface positions of light verbs. This difference arises from the systemic ellipsis of valency complementations of predicative nouns from the surface in light verb constructions, resulting from coreference between verbal and nominal complementations. We have shown that the key factors determining the syntactic reciprocalization – despite not being grammaticalized in Czech to such an extent as e.g. reflexivity – can be described on the rule basis. For the rule based generation of reciprocal light verb construction, a cooperation of two sets of syntactic rules is required, namely rules governing reciprocity and rules underlying syntactic structure formation of light verb constructions.

Although this study discusses only Czech language data, hopefully many of the observations presented here can be adopted for other languages as well, especially those concerning syntactic aspects relevant for an analysis of light verb constructions and reciprocity in these constructions in general.

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