

# Reciprocal Shift and Symmetry Breaking

Idan Landau

## Abstract

Bipartite reciprocal phrases are common in Indo-European, Indo-Aryan and Semitic languages. When occurring with a case particle (K) or a preposition (P), K/P intervenes between the two units of the reciprocal phrase, producing an otherwise exceptional K/P-medial KP/PP. While diachronic descriptions successfully trace the origin of the two units to separate constituents which have gradually gotten closer, they fall short of explaining the stability of the K/P-medial outcome. Based on a detailed study of the Hebrew reciprocal construction, I argue that its two components are generated as sisters but cannot persist as such because they yield an illicit point of symmetry – an unlabeled phrase. The first member thus raises past K/P, breaking the symmetry, thereby allowing the complement of K/P to be labeled. The analysis is supported by data from intra- and crosslinguistic variation and predicts systematic correlations between the degree of symmetry between the two units of the reciprocal phrase and their separability.

## 1. Introduction

Formal syntax and semantics cannot be charged with overlooking the expression of reciprocity in the grammars of natural languages. On the contrary, topics like the binding properties of reciprocal phrases, distributivity, symmetric vs. asymmetric relations and the demarcation of lexical vs. syntactic reciprocals have been intensively studied for decades. Nonetheless, certain facets of the syntax of reciprocity have drawn remarkably little attention in the generative literature. One such facet is the *internal* syntax of the reciprocal phrase itself, which remained largely unexplored (notable exceptions are Belletti 1982, Sigurðsson, Wood and Sigurðsson 2020, Messick and Harðarson 2022 and Messick & Raghotham to appear). This study focuses on this internal syntax and relates it to fundamental issues in syntactic theory, such as symmetry, c-selection and labeling.

In particular, I zoom in on *bipartite* reciprocal phrases, namely, reciprocal phrases that consist of two separate units, be them heads or phrases, which are both syntactically active. It is well known that languages employ a wide range of strategies of expressing reciprocal relations, some of which are morphological and others syntactic (for typological surveys, see Evans 2008, König and Gast 2008, Evans et al. 2011, Bar-Asher Siegal 2020, Nordlinger 2023). One very broad distinction is between verb-marking strategies (e.g., reflexive or reciprocal affixes) and NP-marking strategies; the latter include different ways of expressing reciprocity via a specialized nominal in an argument position. Of these ways, one involves *bipartite* reciprocal phrases, such as the English *each other*.

A striking, common (though not universal) feature of bipartite reciprocal phrases shows up when they occur in oblique positions, with an overt preposition. In language after language we observe the *preposition* turning into an *inposition*, occurring between the two constituents of the reciprocal phrase (henceforth, Rec1 and Rec2). This pattern is systematic as much as it is exceptional: No other PP in those languages allows, let alone requires, the prepositional object or part thereof to precede P. Below is a sample set from Indo-European, Dravidian and Semitic languages.

(1) [Rec1 P Rec2] in different languages

- a. *French* (Guentchéva and Rivière 1992:577)  
 Vous vous êtes coupé les ongles **l'une à l'autre**.  
 You.PL you.PL were clipped the nails the.one to the.other  
 'You clipped each other's nails.'
- b. *Spanish* (Zimmermann 2014:276)  
 Comparamos a los chicos **el uno con el otro**.  
 compare.1PL DOM the boys the one with the other  
 'We compare the boys with each other.'
- c. *Greek* (Stathi and Haas 2008:77)  
 ðen sineryástikan **o énas me ton álo**.  
 not collaborate.AOR.3.PL the one with the other  
 'They didn't work with each other.'
- d. *Slovenian* (Živanović 2016:317)  
 Starša sta kričala **en na drugega**.  
 parents be.DU yelled one on another  
 'Parents yelled at one another.'
- e. *Telugu* (Subbārāo and Murthy 2000:262)  
 waaLLa-ki **okaLLa miida okkaLLa-ki** koopam waccinidi.  
 they-DAT one on one-DAT anger came  
 'They got angry at each other.'
- f. *Standard Arabic* (Bar-Asher Siegel 2020:35)  
 qāla **ba'ḍ-u-hm li baḍ-in...**  
 said.3SG.M some-NOM-POSS-3PL.M to some.GEN.INDF  
 'They said to each other...'

Let us call this realization of reciprocal phrases *HMRP* (Head Medial Reciprocal Phrase), to be contrasted with *HIRP* (Head Initial Reciprocal Phrase), such as in English, e.g., *They listened [PP to each other]*. The central question of the present study is how HMRP is derived and why it must be derived in this particular way.

To address this question, I will examine in detail two bipartite reciprocal constructions in Modern Hebrew. The study of these constructions in this language benefits from two sources of data: First, Modern Hebrew varieties display an instructive alternation between HMRP and HIRP, and second, the diachronic evidence from the history of Hebrew and other Semitic languages contributes to a fuller understanding of how bipartite constructions emerge and what syntactic pressures shape their behavior. Because the HMRP-HIRP alternation is semantically neutral, it offers a particularly clear window into the working of purely syntactic constraints, whose effects can be studied without interference from other grammatical modules.

The structure of this paper is as follows. Section 2 begins with a description of the two reciprocal constructions in Hebrew, proceeds to establish the constituency of the [Rec1 P Rec2] string and its identity as a standard PP, and motivates a movement analysis (*Reciprocal Shift*), whereby Rec1 raises to [Spec,PP]. We also offer some comparative remarks on the analogous construction in Italian. Section 3 extends Reciprocal Shift to accusative and genitive phrases, a natural move with the nontrivial implication that case particles in Hebrew project a KP layer above DP. Section 4 gathers evidence for the movement analysis, drawing on c-command, locality and island-sensitivity. Section 5 presents evidence for the pre-shift source of HMRP in the shape of HIRP variants in substandard Hebrew, and further describes parallel HMRP-HIRP alternations in Slovenian and Icelandic.

Section 6 offers a theoretical rationale for Reciprocal Shift in terms of the grammar's aversion of symmetry. Adopting a labeling framework, I show that the need to label a symmetrical complement of K/P triggers Reciprocal Shift, allowing c-selection to be satisfied *after* the initial Merge, at the phase level. Certain crosslinguistic patterns of HMRP and HIRP alternations, and the shift from one to the other, fall under this explanatory scheme. The section concludes with a glimpse into the diachrony of bipartite reciprocal constructions and how it informs (as well as benefits from) their synchronic analysis. Section 7 concludes the paper.

## **2. Bipartite Reciprocal Constructions as PPs in Hebrew**

This section presents the empirical basis of this study, drawn from the behavior of bipartite reciprocal constructions occurring in oblique positions in Hebrew. Section 2.1 provides a general description of the morphological and syntactic properties of two such constructions, productively used in the language, citing earlier works and occasionally refining their conclusions. Section 2.2 applies standard constituency tests to demonstrate that HMRP are indeed syntactic constituents *headed* by the medial P. Section 2.3 presents the essence of the movement analysis deriving HMRP from HIRP (which is elaborated in full detail in section 6).

## 2.1 General description

Like many languages, Hebrew employs an array of linguistic strategies to convey mutual or reciprocal relations (see Halevy 2013 for a useful survey). On the one end there are “non-grammatical” strategies like modification by adverbs (*beyaxad* ‘together’, *bemakbil* ‘in parallel’). On the other end there are inherently reciprocal verbs whose morphological shape is not overtly reciprocal or reflexive (*ne’evak* ‘fight’). In between, we find strategies of verbal marking or NP-marking. Most inherently reciprocal verbs appear in the middle-reflexive verbal template *hitpa’el* (e.g., *hitxabek* ‘hug’). These verbs may occur either with a plural subject or with a singular (or plural) subject and a comitative PP, as lexical reciprocal verbs normally do (Siloni 2008, 2012). Finally, a number of NP-strategies have been used throughout the history of Hebrew, based on bipartite constructions (Halevy 2011b, Bar-Asher Siegal 2020, Staps 2020): *iš... axiv* ‘man... his brother’; *iš... xavero* ‘man... his friend’; *iš... re’ehu* ‘man... his fellow’; *exad... mišnehu* ‘one... its second’; *exad... ha-šeni* ‘one... the second’; and *ze... ze* ‘this... this’. While all these constructions are found in modern-day written Hebrew, only the last two are currently productive in the spoken language and give rise to reliable judgements by native speakers. Hence, I will exclusively focus on these two strategies in the present study. However, most of the conclusions to follow, I believe, hold of all the NP-strategies employed in earlier stages of the language.

In simple transitive clauses, *ze... ze* ‘this... this’ and *exad... ha-šeni* ‘one... the second’ occur in the direct object position.

- (2) a. ha-yeladim xiku **ze et ze**.  
the-children imitated.3PL this ACC this
- b. ha-yeladim xiku **exad et ha-šeni**.  
the-children imitated.3PL one ACC the-second  
‘The children imitated each other.’

We immediately note the position of the case marker *et* ‘ACC’ between Rec1 and Rec2. This is a general pattern, but I postpone discussion of these case particles to section 3, and focus on reciprocal *PPs* for now. Their general shape is the following.

- (3) a. Strategy I: *ze P ze* ‘this P this’  
b. Strategy II: (*ha-*)*exad P ha-šeni* ‘one P the-second’

For example:

- (4) a. ha-yeladim sixku **ze im ze**.  
the-children played.3PL this with this

- b. ha-yeladim sixku **exad im ha-šeni**.  
 the-children plays.3PL one with the-second  
 ‘The children played with each other.’

In strategy I, the prepositional head is flanked by two demonstrative pronouns. The two pronouns are specified for number and gender. While their number specifications must match, their gender specifications can differ.

- (5) a. zo im zo ‘this.SG.F with this.F’  
 b. ze leyad zo / zo leyad ze ‘this.M near this.F’ / ‘this.F near this.M’  
 c. ele mul ele ‘these across these’  
 d. \*ze im ele / \*ele leyad zo ‘this.M with these’ / ‘these across this.F’

The absence of the forms in (5d) is not due to any semantic anomaly, for it is perfectly possible to express a (“radial”) reciprocal relation between an individual and (each member of) a set by the forms in (5a,b). Thus, it is a reflection of grammatical number concord within the reciprocal phrase.

Strategy I is somewhat less colloquial than strategy II and occurs more frequently in writing. In strategy II, P is flanked by what appears to be numeral phrases. The cardinal *exad* ‘one’ precedes P and the ordinal *šeni* ‘second’ follows it. However, these numerals are most likely parts of complete DPs, which are partially unpronounced (see (7b)). Note the occurrence of the definite article on both numerals (obligatorily on the ordinal, optionally on the cardinal).<sup>1</sup> This is yet another concord effect (“definiteness spread”), governed by the true bearer of definiteness, the head noun, a common feature in Semitic.

- (6) a. **ha-ševet ha-exad**  
 the-tribe the-one  
 ‘the one tribe’  
 b. **ha-ševet ha-šeni**  
 the-tribe the-second  
 ‘the second tribe’

---

<sup>1</sup> The preferred form is *exad P ha-šeni*, without the initial definite article, but *ha-exad P ha-šeni* is perfectly possible, as in the following example from the web:

(<https://stips.co.il/ask/10373777/%D7%A2%D7%96%D7%A8%D7%94-%D7%91%D7%91%D7%A2%D7%99%D7%99%D7%AA-%D7%AA%D7%A0%D7%95%D7%A2%D7%94>).

(i) šnei roxvey ofanayoim yoc'im **ha-exad likrat** **ha-šeni** mi-bateyhem.  
 two.of riders.of bicycles leave.PL.M the-one towards the-second from.houses.their  
 ‘Two bike riders leave their houses towards one another.’

Like attributive adjectives (Borer and Roy 2010), numerals in Hebrew may be “substantivized”, i.e., used as nouns. Following common practice, I assume that these usages are entirely normal except for the fact that the head noun is null, its content being recovered by processes of anaphora or ellipsis resolution (a difference of no consequence here). This analysis allows us to keep intact the standard syntax and semantics of the overt numeral, avoiding unnecessary complications in category assignment and semantic types. To illustrate, the nominal subjects of the conjuncts in (7a) are structurally represented in (7b).<sup>2</sup> Note that the definite article *ha-* is an affix on the nominal head. When the latter is null, the former must be rendered null too (presumably, by a PF-repair rule), or else it will be a stranded affix.

- (7) a. ha-exad nixnax ka-rega ve-ha-šeni yikanes od daka.  
 the-one entered.3SG.M as.the-moment and-the-second will.enter.3SG.M more minute  
 ‘One (of them) just came in and the second one will in a moment.’  
 b. [DP ~~ha-~~ [NP  $\emptyset_N$  [CardP ha-exad] ] ] / [DP ~~ha-~~ [NP  $\emptyset_N$  [OrdP ha- šeni] ] ]

As in strategy I, Rec1 and Rec2 may differ in gender (8a-b).<sup>3</sup> Differently from strategy I, however, they cannot be pluralized; both Rec1 and Rec2 must be singular. (8c) illustrates the number restriction in action where both Rec1 and Rec2 are plural, but the restriction is completely general: no combination with [+pl] is allowed in strategy II.

- (8) a. exad la-šniya ‘one.SG.M to.the-second.SG.F’  
 b. axat la-šeni ‘one.SG.F to.the-second.SG.M’  
 c. \* axadim mul ha-šniyim ‘ones.M across the-second.PL.M’

The absence of a plural version does not limit the expressive range of strategy II, but it does make it less specific from the interpretive perspective.

- (9) a. ha-yeladim ve-ha-yeladot sixku ele im ele. *Strategy I*  
 the-boys and-the-girls played.3PL these with these.  
 ‘The boys played with the girls.’

<sup>2</sup> In the interest of simplicity, the numerals in (7b) are represented as adjuncts to NP. This is probably wrong but harmless. The structure of Hebrew nominals has been extensively discussed and debated; I steer clear of these debates as they do not bear on the main line of argumentation. For details, see Engelhardt 2000, Sichel 2003, Shlonsky 2004, 2006, Pereltsvaig 2006, Preminger 2020, Breuning 2022.

<sup>3</sup> The order F-M is more marked than M-F but is attested quite widely, as in the following example from the web: (<https://www.haaretz.co.il/captain/software/2016-11-29/ty-article/premium/0000017f-ebad-d4cd-af7f-ebfd24050000>).

- (i) ha-aplikacya te’afšer la-zug ha-potencyali  
 the-application will.allow.3SG.F to.the-couple the-potential  
 licor kešer **axat im ha-šeni** be-hoda’ot.  
 to.make connection one.SG.F with the-second.SG.M in-messages  
 ‘The app will allow the potential couple to make contact with one another through messages.’

- b. ha-yeladim ve-ha-yeladot sixku ze im ze. *Strategy I*  
 the-boys and-the-girls played.3PL this with this.  
 ‘The boys and the girls played with each other.’
- c. ha-yeladim ve-ha-yeladot sixku exad im ha-šeni. *Strategy II*  
 the-boys and-the-girls played.3PL one with the-second.  
 ‘The boys and the girls played with each other.’

The reciprocal relation asserted in (9a) holds between the group of boys and the group of girls. In a situation where the boys play amongst themselves, and the girls do too, (9a) is false. (9b) and (9c), however, are semantically more flexible; both are compatible with any reciprocal relation established between members of the superset comprising the boys and the girls. While I have nothing to say about the difference between the susceptibility of the two strategies to number concord, in section 2.3 I will use the presence of such concord in strategy I as supportive evidence for the proposed analysis.

(9a) shows that [number] is semantically active on both Rec1 and Rec2 in strategy I, as it has interpretive consequences. The same holds for [gender], in both strategies. This is not easy to see in situations of symmetrical reciprocity, but emerges quite clearly in chain reciprocity, as in (10)-(11). In order to guarantee that the semantic effect is solely due to the order of Rec1 and Rec2 and not due to the order of the conjuncts in their plural antecedent, we use collective nouns as antecedents, where no specific participants in the reciprocal relation are mentioned.

- (10) a. ha-zug ha-ca’ir ne’emdu ze me’axorey zo.  
 the-couple the-young stood.up.3PL this.SG.M behind this.SG.F
- b. ha-zug ha-ca’ir ne’emdu exad me’axorey ha-šniya.  
 the-couple the-young stood.up.3PL one.SG.M behind the-second.SG.F  
 Paraphrase: ‘The man from the young couple stood behind the woman from the young couple.’
- (11) a. ha-zug ha-ca’ir ne’emdu zo me’axorey ze.  
 the-couple the-young stood.up.3PL this.SG.F behind this.SG.M
- b. ha-zug ha-ca’ir ne’emdu axat me’axorey ha-šeni.  
 the-couple the-young stood.up.3PL one.SG.F behind the-second.SG.M  
 Paraphrase: ‘The woman from the young couple stood behind the man from the young couple.’

The relation “stand behind” is inherently asymmetric, and the choice of gender on Rec1 and Rec2 fully determines which member of the couple (male or female) stands in which pole of

the relation. (11b) in particular undermines Bar-Asher Siegel’s (2020:105) view of *exad* ‘one’ (=Rec1 in strategy II) “as a frozen expression that is attached to the anaphor *ha-šeni* at PF, but plays no part in the syntax and has no interpretive properties.” To explain its agreement in gender, Bar-Asher Siegel appeals to postsyntactic agreement at PF. Moreover, he maintains that “the variation of gender on the pronouns/demonstratives cannot be explained as semantic agreement” (p. 143). While Bar-Asher Siegel recognizes that mixed gender agreement implies that *both* Rec1 and Rec2 are visible to agreement, he does not take it to be an obstacle to postsyntactic PF agreement (p. 144).

Yet it is doubtful that [GENDER:F] on Rec1 in (11b) is an outcome agreement with the antecedent, since that antecedent is the collective noun *zug* ‘couple’, which, in fact, bears [GENDER:M]. Rather, the gender values of Rec1 and Rec2 track the semantic gender of the members of the antecedent set (which are probably represented on the null N heads they modify, see (7a)).<sup>4</sup> This implies that *exad* ‘one’ is fully active as a syntactic constituent (also visible at LF), a conclusion which is fundamental to the analysis to be developed below, where Rec1 participates in syntactic processes like movement and labeling.<sup>5</sup>

Both strategy I reciprocals and strategy II reciprocals are anaphoric in an intuitive sense, but probably not in the strict sense of Binding Condition A (*pace* Bar-Asher Siegel 2020:77). Thus, the antecedent need not c-command nor be clausemate to the reciprocal, as the following examples from the web attest.<sup>6</sup>

- (12) a. *ha-išiyut šela’hem mat’ima exad la-šeni.*  
the-personality their fits.SG.F one to.the-second  
‘Their personality fits one another.’
- b. *kše-omrim divrey tora, ze me’oded exad et ha-šeni.*  
when-say.3PL words.of scriptures it encourages one ACC the-second  
Lit. ‘When people say words from the scriptures, it encourages each other.’

<sup>4</sup> Indeed, if the relevant couple is homosexual or lesbian, all the examples in (10)-(11) would be inappropriate, and gender matching between Rec1 and Rec2 would be forced.

<sup>5</sup> For important works on the semantics of reciprocity, see Dalrymple et al. 1998 and Sabato and Winter 2012. Within generative grammar, a leading approach had been to decompose the bipartite *each other* to a quantifier (*each*) and an alterity word (*other*), which are dissociated at LF in analogy to standard quantificational structures (Heim et al. 1991, Beck 2001); however, fundamental descriptive difficulties face this approach (Williams 1991, Dalrymple et al. 1998, Bar-Asher Siegel 2020). For a “non-dissociationist” decompositional analysis of the semantics of bipartite reciprocal phrases compatible with the present syntactic proposal, see Zimmermann 2014.

<sup>6</sup><https://m.sport5.co.il/Rio2016/Articles.aspx?docID=324934>

<https://www.news1.co.il/Archive/003-D-40755-00.html>

<https://www.askp.co.il/question/199451>



- c. ulay be'emet yeš ba-xibur beyneynu mašehu  
 maybe really there.is in.the-connection between.us something  
 še-lo merim exad et ha-šeni?  
 that-not uplifts one ACC the-other  
 Lit. 'Maybe there is really something about our connection that doesn't lift up  
 each other?'

I suspect that the Hebrew reciprocals can be logophoric, as they can in English (Pollard and Sag 1992, Reinhart and Reuland 1993), but a detailed investigation of this matter is outside the scope of the present study (see Everaert 2008). In what follows I will exclusively focus on the internal syntax of the reciprocal phrase and ignore its relation to the antecedent.

One last cautionary comment is in order. The members of the reciprocal constructions in Hebrew can appear separately, in what Bar-Asher Siegel (2020) terms “the two unit construction”. This was already seen in (7a), where no reciprocal relation is invoked. However, the two-unit construction may look deceptively similar to the (one unit) reciprocal construction, when its two members occur in the same clause.

(13) *The two-unit construction*

- a. ha-exad natan ecot la-šeni.  
 the-one gave.3SG.M advices to.the-second  
 ‘One gave advices to the other.’
- b. ha-orxim higiu. hicagti et ha-exad la-šeni.  
 the-guests arrived.3PL presented.1SG ACC the-one to.the-other  
 ‘The guests have arrived. I introduced one to the other.’

The two-unit construction does not entail a reciprocal relation; the advices could have passed in one direction only in (13a), and there could have been a single, asymmetric introduction in (13b). The crucial grammatical difference between the reciprocal construction and the two-unit construction is the status of the first member, (*ha-*)*exad* ‘(the) one’. In the reciprocal construction this member occupies a non-thematic position to the left of a preposition, a case particle, or (as we will see below) a DP argument. In the two-unit construction, however, the first member occupies a *thematic* position (e.g., subject in (13a), object in (13b)). Furthermore, there is no locality restriction at all between the two members in the two-unit construction, and indeed, they may occur in different sentences altogether. Finally, although we have seen in (12) that the reciprocal does not require a clausemate antecedent, it is still a dependent element that may not “look beyond” a local human antecedent when present. No such restriction applies to the two-unit construction. Thus, (13b) minimally differs from (14), where a reciprocal phrase occupies the indirect object, and extra-sentential antecedence (across the 1<sup>st</sup> person subject) is blocked.

- (14) \* ha-orxim higu. hicagti et Dan exad la-šeni.  
 the-guests arrived.3PL presented.1SG ACC Dan one to.the-other  
 ‘The guests have arrived. \* I introduced Dan to each other.’

The two-unit construction is interesting in its own right, but I believe that its proper treatment lies in the pragmatics of discourse. I will set it aside in what follows and concentrate on the reciprocal construction, where *syntax* appears to be the key player.<sup>7</sup>

## 2.2 Evidence for a PP

Medial P as in reciprocal phrases is an anomaly. Hebrew adpositions are consistently *prepositions*; a complement of P (or a part thereof) may never occur to its left. This absolute restriction – in Hebrew and other languages – has one systematic exception: Reciprocal PPs. It is therefore legitimate to ask whether strings of the form [Rec1 P Rec2] are genuinely PPs. In this section I establish that they are indeed ordinary PPs. The point may seem trivial, but establishing it is necessary for the analysis I propose in section 2.3 to take off the ground.

Two distributional tests classify [Rec1 P Rec2] strings with standard PPs. First, they can be coordinated with standard PPs, and second, they take the same (restricted) set of modifiers that standard PPs take.

Coordination of likes confirms that [Rec1 P Rec2] is a PP, as it can readily be coordinated with standard PPs. Notice that the P-heads of the conjuncts may be identical (15a,b) or not (15c).

- (15) a. hem samxu [PP al ha-mazal] ve-be’ikar [PP exad al ha-šeni].  
 they relied on the-fortune and-especially one.SG.M on the-second.SG.M  
 ‘They relied on good fortune and especially on each other.’

---

<sup>7</sup> Greek also distinguishes the one-unit (reciprocal) construction from the two-unit construction (Stathi and Haas 2008, Paparounas & Salzmann to appear), and Italian too (Bar-Asher Siegel 2020:96). Belletti (1982:fn. 7) notes the lack of anaphoricity in the latter (i). It seems to me that the cases like (ii), where *l’uno* occurs in front of predicative AP and agrees with it (Belletti 1982:106), presumably receiving its external  $\theta$ -role, should also be classified as a two-unit construction, but this matter needs to be studied more carefully (Belletti takes them to be no different from the prepositional cases).

- (i) Confondo l’un con l’altro.  
 confuse.1SG the-one with the-other  
 ‘I confuse one with the other.’  
 (ii) Le mie amiche rimasero l’una vicina all’altra.  
 the my friends.F remained the-one close.SG.F to.the-other  
 ‘My friends remained close to one another.’

- b. ba-sof hem nifredu [PP ze mi-zo] ve-gam [PP me-ha-xayim].  
 in.the-end they departed.3PL this.SG.M from-this.SG.F and-also from-the-life  
 ‘In the end, they departed from each other and from life.’
- c. ha-axim šeli ve-ha-axayot šeli ne’emdu [PP me-ever la-gader]  
 the-brothers my and-the-sisters my stood.up from-over to.the-fence  
 ve-[PP ele mul ele].  
 and-these across these  
 ‘My brothers and my sisters stood up across the fence and facing each other.’

Consider next modification. Spatial prepositions denote relations that can be measured. Accordingly, spatial PPs may take measure modifiers.

- (16) a. ha-banot amdu meter me-ha-kir.  
 the-girls stood.3PL meter from-the-wall  
 ‘The girls stood one meter from the wall.’
- b. ha-metosim xalfu 20 meter me-al ha-gag.  
 the-airplanes passed.3PL 20 meter from-above the-roof  
 ‘The airplanes passed 20 meters above the roof.’

The very same measure modifiers can modify these spatial relations when they are reciprocal. This is naturally understood if the overall category of the modified phrase is PP.

- (17) a. ha-banot amdu meter zo mi-zo.  
 the-girls stood.3PL meter this.SG.F from-this.SG.F  
 ‘The girls stood one meter from one another.’
- b. ha-metosim xalfu 20 meter exad me-al ha-šeni.  
 the-airplanes passed.3PL 20 meter one from-above the-second  
 ‘The airplanes passed 20 meters above one another.’

Finally, and this should come as no surprise, [Rec1 P Rec2] strings pass all standard constituency tests. They can be coordinated (15), moved (18a) and elided (18b).<sup>8</sup>

- (18) a. hem ohavim leraxel, aval [PP ze al ze]<sub>i</sub> hem af pa’am lo yeraxlu t<sub>i</sub>.  
 they like.PL.M to.gossip but this.SG.M on this.SG.M they no time not will.gossip.3PL  
 ‘They like to gossip, but on each other they never will.’

<sup>8</sup> See Landau 2018 and especially Vardi 2022 for evidence and arguments that PPs may undergo genuine ellipsis in Hebrew.

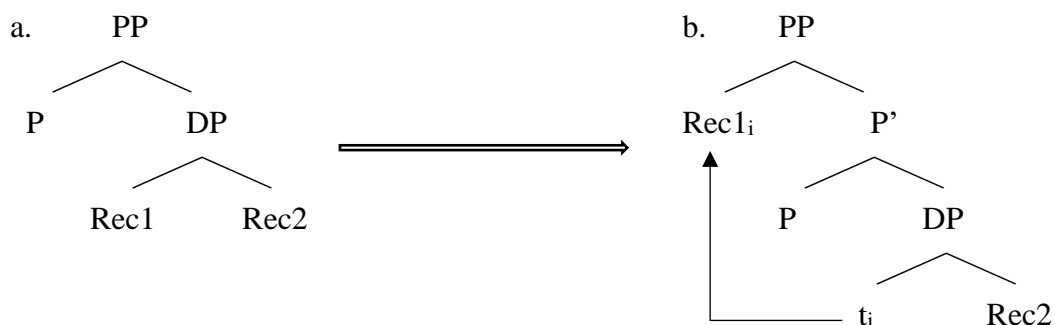
- b. A: hem lo azru exad la-šeni?  
 they not helped.3PL one.SG.M to-the-second.SG.M  
 ‘Didn’t they help one another?’  
 B: lo, hem hifriu [PP exad la-šeni].  
 no they disturbed.3PL one.SG.M to-the-second.SG.M  
 ‘No, they disturbed one another.’

To sum up: There is compelling evidence that [Rec1 P Rec2] strings in Hebrew are constituents, and likewise compelling evidence that they are *PP* constituents. This immediately raises the question of how Rec1 comes to precede the P head, producing an exception to the otherwise consistent *prepositional* character of PPs in the language. This question is addressed next.

### 2.3 A movement analysis: Reciprocal shift

To account for the syntactic data presented above, I propose a straightforward derivation of reciprocal phrases. The proposal has two ingredients. First, assume that reciprocal PPs are base-generated as “well-behaved” PPs, namely, with an initial P followed by Rec1 and Rec2. Second, assume that Rec1 raises to [Spec, PP], yielding the surface word order (see the parallel derivations proposed for bipartite reciprocal constructions in Russian, Spanish and German in Zimmermann 2014 and for those in Icelandic in Messick and Harðarson 2022). This derivation is schematized below.

#### (19) Derivation of reciprocal PPs



This derivation captures all the data with a minimal apparatus. The reciprocal phrase distributes like a PP because it *is* a PP; Rec1 resides in its specifier and not outside of it. It is base-generated with an initial P like all PPs in the language. It has exactly one exceptional syntactic property, accounting for its exceptional word-order: Rec1 raises to [Spec, PP]. I call this *Reciprocal Shift* (RS).

This analysis also accounts for the number concord between Rec1 and Rec2 in strategy I, or at least restores its normalcy. Concord is an extremely local phenomenon; whatever one’s favorite theory is, it will likely block concord across maximal projection boundaries. In the pre-shift

structure, however, Rec1 and Rec2 are minimally dominated by the same maximal projection (DP), which is *not* the case in the post-shift, surface structure. If concord applies before RS, its non-local surface appearance falls into place.

What is the trigger for RS? For the time being, I keep this question open. At present we note that the trigger is not semantic, and in fact, RS is semantically neutral (below we turn to cases and languages where it does not apply); see Kayne 2022 for a recent discussion of the place of such movements in the grammar. In section 6 I develop an analysis of RS, which relates the trigger for RS to c-selection. That analysis draws heavily on the labeling algorithm of Chomsky 2008 and subsequent work. It builds on one obvious anomaly of the structures in (19): The DP node is *exocentric*, not being projected from any head. It is also *symmetric*, dominating two daughters with an identical category status. These properties, I will argue below, are the true driving force behind RS.

### 3. Accusative and genitive reciprocals: Evidence for KP

The discussion so far has focused on reciprocal phrases introduced by prepositions. Because prepositions are unquestionably syntactic heads, motivating the structures in (19) was rather straightforward; we only need to appeal to the conventional X-bar format to accommodate the landing site of the shifted Rec1. In this section we will see that parallel empirical facts point to an analogous structure projected in direct objects of verbs and genitive objects of nouns. In these cases, however, no P head is involved. Instead, it is the *case particle* that occurs medially in the bipartite reciprocal phrase. By parity of reasoning, we will argue that this case particle projects its own phrase, KP, and it is the Spec of this KP that serves to host the shifted Rec1. This will furnish a novel argument in favor of the “KP hypothesis”, which has been under debate for some time now.

The accusative case particle in Hebrew is *et*; it occurs with all definite objects, including pronouns (often amalgamated with them), so it is not surprising to find it being used in reciprocal phrases, which employ either pronouns (strategy I) or definite DPs (strategy II). The genitive case marker is *šel*, and it is used exclusively inside nominal projections. Reciprocal phrases with these particles are formed as follows.

#### (20) Accusative *et*

- a. Strategy I: *ze et ze* ‘this ACC this’
- b. Strategy II: *(ha-)exad et ha-šeni* ‘one ACC the-second’

#### Genitive *šel*

- a. Strategy I: *ze šel ze* ‘this GEN this’
- b. Strategy II: *(ha-)exad šel ha-šeni* ‘one GEN the-second’

Examples of accusative and genitive reciprocal phrases are given in (21).

- (21) a. ha-xaverim šeli he'erixu exad et ha-šeni.  
 the-friends my appreciated.3PL one ACC the-other  
 'My friends appreciated each other.'
- b. ha-xaverim šeli he'erixu tmunot exad šel ha-šeni.  
 the-friends my appreciated.3PL pictures one GEN the-other  
 'My friends appreciated pictures of each other.'

Accusative and genitive reciprocal phrases display parallel distributional properties to prepositional reciprocal phrases. They can be coordinated with standard accusative and genitive phrases (22), moved (23) or elided (24).<sup>9</sup>

(22) *Coordination*

- a. Ben ve-Širi rimu [ze et zo] ve-gam  
 Ben and-Shiri cheated.3PL this.SG.M ACC this.SG.F and-also  
 [et ha-xaverim šelahem].  
 ACC the-friends their  
 'Ben and Shiri cheated each other and (cheated) their friends too.'
- b. hem kar'u širim [šel Puškin] ve-[exad šel ha-šeni].  
 they read.3PL poems of Pushkin and-one of the-second  
 'The read poems by Pushkin and by one another.'

(23) *Movement*

- a. [ele et ele]<sub>i</sub> hem bixlal lo rocim le'hakir t<sub>i</sub>.  
 these ACC these they at.all not want.PL.M to.know  
 'Each other, they don't want to know at all.'
- b. hem hayu [xaverim t<sub>i</sub>] šanim rabot [exad šel ha-šeni]<sub>i</sub>.  
 they were.3PL friends years many one of the-second  
 'They were friends of each other for many years.'

---

<sup>9</sup> Halevy (2011a:419) claims that the string [Rec1 *et* Rec2] resists movement, and that this is due to its advanced stage of grammaticalization. I believe this is untrue, witness (23a). In fact, these strings have not been fully grammaticalized to a frozen unit, given their tolerance to mixed gender agreement (see (5), (8)). (i) and (ii) are further instances of fronted [Rec1 *et* Rec2] found on the web.

- (i) šneynu yod'im še-ze et ze anaxnu me'od ohavim.  
 both.of.us know.PL.M that-this ACC this we very.much love.PL.M  
 'Both of us know that we love each other very much.'  
[https://brachot.net/greeting\\_cards.php/9689](https://brachot.net/greeting_cards.php/9689)
- (ii) mazal še-exad et ha-šeni macatem kvar kodem.  
 lucky that-one ACC the-second found.2PL already earlier  
 'Lucky you had already found each other earlier.'  
<https://www.arba-onot.co.il/page.aspx?cat=32&cat-sub=186>



relations, so the very idea of a dummy preposition, lacking any denotation, is suspect. The Hebrew *et* is clearly semantically empty, as it appears on raised objects in Raising-to-Object constructions, and likewise its counterpart in nominalization, the genitive *šel*, which even occurs on raised subjects in nominalized Raising-to-Subject constructions (Sichel 2007). Unlike other prepositions, these particles can be absorbed under passivization. I will therefore follow the majority view in the syntactic scholarship on Hebrew and take *et/šel* to be case markers rather than prepositions. Where I depart from that scholarship is in the assumption that these case markers are not just added in the morphology, nor do they just spell out features of the heads V or N. Rather, they are syntactic heads projecting their own phrases, as indicated by their interaction with RS.

It is instructive to situate the present proposal within the larger literature on KP. The KP hypothesis (Lamontagne and Travis 1986, Travis and Lamontagne 1992) has been applied extensively in studies of case systems to explain syntactic or configurational effects associated with case particles.<sup>11</sup> For example, like the present study, Cornilescu (2003) uses [Spec,KP] as a space for extending the nominal projection (specifically, a landing site for genitive DPs). The KP projection has been used to explain ECP-type distributional restrictions (Travis and Lamontagne 1992, Bittner and Hale 1996), the resistance of oblique DPs to syntactic processes like serving as binders, transparency to subextraction, topic drop and incorporation into synthetic compounds (Bayer et al. 2001), and their resistance to agreement (Atlamaz and Baker 2018, Manzini 2019). KP has been utilized in the analysis of Differential Object Marking and scrambling (López 2012), in determining Spellout domains (Richards 2010), and in resolving labeling indeterminacy (Saito 2018).

Against this background, it appears that the argument for KP from the mere surface shape of reciprocal phrases is one of the most straightforward arguments one can hope for in this area.

Importantly, the literature on KP does not take it to be universally present in all argument positions and in all languages. In certain situations, there may be no case particle at all; in others, the case particles may be just what they seem to be – morphological markers. We therefore expect some intra- and crosslinguistic variation in the range of available landing sites for RS. An instance of the first type is reciprocal phrases in nominative positions. As nominative is consistently unmarked on (nonpronominal) arguments in many languages, it is plausible to assume that these arguments simply project a DP and no KP above it. This may hold the key for why reciprocals are excluded from subject positions in Hebrew (Bar-Asher Siegel 2020:104-5; the example is my own).

---

<sup>11</sup> Among the languages for which KP has been proposed are: Turkish (Lamontagne and Travis 1986, Travis and Lamontagne 1992), Russian and Finnish (Löbel 1994, Mannien 2003), Dyirbal, Inuit and Walpiri (Bittner and Hale 1996), German (Bayer et al. 2001), Dutch and English (Weerman and Evers-Vermeul 2001), Romanian (Cornilescu 2003, 2020), Greek (Daskalaki 2011), Spanish, (López 2012), Hindi-Urdu (Sinha 2017), Tsez, Sakha, Tamil, Kashmiri and Adyaman Kurmanji (Atlamaz and Baker 2018), Japanese (Saito 2018).



- (26) \* ha-yeladim ka'asu                      še-exad ha-šeni      rimu.  
           the-kids      were.angry.3PL    that-one the-second    cheated.3PL  
           (Intended: 'The kids were each angry that the other had cheated.')

(26) does not obviously violate condition A, given that the complement clause contains no potential antecedent. English sometimes allows embedded subject reciprocals, as in (27) from (Lebeaux 1983), and in fact, we have already seen in (12) that Hebrew reciprocals may take long-distance antecedents.

- (27) John and Mary didn't know what each other had done.

The problem in (26), I submit, concerns the reciprocal phrase itself and not its relation to the antecedent. Without a KP projection in the nominative position, Rec1 has nowhere to raise to. Nor can it stay put, since RS in Hebrew is obligatory (see section 6 for an explanation of this fundamental fact in terms of labeling). String-vacuous movement of Rec1 to the Spec of its mother node, or adjunction to it, violates Anti-locality (Grohmann 2011), and anyway would produce a new unlabeled node, as neither daughter of this mother node probes the other (see section 6). The result is ungrammaticality.

Looking beyond Hebrew, a language without KP is expected to exhibit stricter conditions on the distribution of HMRP than a language with KP (like Hebrew). Italian seems to be such a language. In what follows I revisit some of the data described by Belletti (1982) in terms of the Empty Category Principle (ECP) and reanalyze them in terms of the absence of KP.

The first striking observation is that the bipartite reciprocal construction is not available in direct object positions, but only in oblique ones, headed by a preposition, a puzzling contrast which visibly troubled Belletti (1982:fn. 41). To express (28b), Italian must use the reflexive *si* (optionally with *l'uno l'altro* as an adverbial).<sup>12</sup>

- (28) a.    Quei ragazzi scrivono l'uno all'altro con regolarità.  
           those boys      write      the-one to.the-other with regularity  
           'Those boys write to each other regularly.'

---

<sup>12</sup> An uninflected form of *l'un l'altro* has developed in younger speakers of Italian, which serves to describe non-simultaneous events, mostly with two-place intransitive verbs (see Vezzosi 2010). Since it behaves like an adverbial (meaning 'mutually'), I set it aside.

- b. \*I tuoi colleghi odiano l'un(o) l'altro.  
 the your colleagues hate the-one the-other  
 ('Your colleges hate each other.')

(28b) can be readily explained if nonpronominal direct objects in Italian do not project a KP layer (whether or not abstract accusative case is assigned, which we can leave open). Thus, *l'uno* has nowhere to raise to, and the contiguous sequence Rec-Rec2 is ruled out just as it is in (26).

Interestingly, the hypothesis that Italian has no KP extends to *overt* case markers as well. Belletti observed that genitive *de*-phrases cannot host Rec1 at their edge (29a), so it must shift to the edge of the containing DP (29b).

- (29) a. \*I miei amici ammiravano le foto l'uno dell'altro.  
 the my friends admired the picture the-one of.the-other  
 ('My friends admired each the picture of the other.')
- b. I miei amici ammiravano l'uno le foto dell'altro.  
 the my friends admired the-one the picture of.the-other  
 'My friends admired pictures of each other.'

Recall that an exact analogue of (29a) is grammatical in Hebrew (21b). A natural way of understanding this is to assume that unlike the Hebrew genitive particle *šel*, the Italian *de* does not project a KP (a general feature of the language); once again, there is no structural position to host *l'uno* to the left of *de*. In this context, it is quite revealing to observe that the genuine preposition *de* does project a PP, whose specifier can host Rec1.

- (30) I miei amici parlano l'uno dell'altro  
 the my friends speak the-one of.the-other  
 'My friends speak of each other.'

*de* in (30) is a contentful preposition denoting an aboutness relation; *de* in (29a) is a dummy case particle. This natural distinction is mirrored, in Italian, in their syntactic status: The former is a P head projecting PP, the latter is a morphological marker with no structural presence. Thus, an array of similarities and dissimilarities between Hebrew and Italian is explained by reference to two distinctions: KP vs. PP and K-particles vs. morphological case particles.

Left to be explained is the grammaticality of (29b). If Italian does not project an accusative KP, where does Rec1 raise to in this sentence? The simple answer is that [Spec,DP] is an available

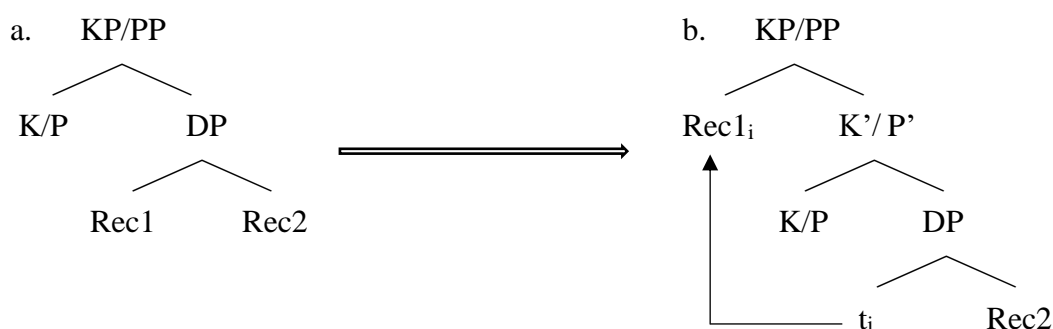
landing site for Rec1 in Italian. This assumption is independently supported by the occurrence of prenominal pronominal possessors in Italian. Being a pronominal element itself, *l'uno* may utilize this option.

#### 4. Properties of movement

In this section I look more closely at the Rec1-Rec2 dependency and show how movement naturally accounts for its properties. C-command, island-sensitivity and minimality are such properties, and they distinguish the *reciprocal* construction from a superficially similar *distributive* construction, involving quantification, which does not involve movement. The next section (section 5) continues this line of argumentation by looking at evidence for a full copy of Rec1 immediately next to Rec2.

Consider the proposed derivation of reciprocal phrases, once again.

(31) *Derivation of reciprocal PPs/KPs*



If movement is involved in deriving reciprocal phrases, we expect to find sensitivity to islands. Indeed, we do; in fact, RS is even more local than standard phrasal movement.

To begin, RS is clausebound; Rec1 cannot be separated from Rec2 by a clause boundary, not even a nonfinite one.

- (32) a. \*Gil ve-Dani xašvu exad še- ha-šeni yefutar.  
 Gil and-Dani thought.3PL one that-the-second will.be.fired.3SG.M  
 (Intended: ‘Gil and Dani each thought that the other will be fired.’)  
 b. \* hem nisu ze le’hakel al ze.  
 they tried this to-make.easy on the-second  
 (Intended: ‘They each tried to make it easier for the other.’)

The locality restriction is even stronger, as even adjunction to the local VP is banned. To guard against the effects of V-to-T movement, we test auxiliary constructions, where V does not raise

(or raises, at most, to Participial Phrase). Note that Rec1 cannot surface to the left of the participial verb regardless of the latter’s agreement (singular or plural).<sup>13</sup>

- (33) a. \*hem hayu exad mitgarim/migare ba-šeni.  
 they were one tease.PL.M/SG.M in.the-second  
 (‘They were teasing each other.’)
- b. \*hen hayu zo mekan’ot/mekanet be-zo.  
 they.F were this.F envy.PL.F/SG.F in.the-this.F  
 (‘They were jealous of each other.’)

The facts in (32)-(33) are of a piece with the general observation that DP positions are not available “for free” (an observation which was at the root of The Case Filter). In section 6 we will see that they are related to the distribution of [uD] features (namely, c-selection of a nominal phrase) on potential licensors of Rec1.

It is important to distinguish strategy II from quantified distributive constructions (QDC), as the two are superficially similar. In a QDC, a QP consisting of a quantifier and Rec1 (*kol exad* ‘every one’) binds Rec2 (*ha-šeni* ‘the-second’). This relation is not clausebound. Thus, as soon as we add a quantifier to Rec1 in (32a), it becomes grammatical (34a). In fact, the quantifier can bind Rec2 across an island too, e.g., the Complex NP in (34b).

- (34) a. Gil ve-Dani xašvu kol exad še-ha-šeni yefutar.  
 Gil and-Dani thought.3PL every one that-the-second will.be.fired.3SG.M  
 ‘Gil and Dani each thought that the other will be fired.’
- b. Ronit ve-xavera šela hišlimu \*(kol) axat im  
 Ronit and-friend.F her accepted.3PL every one.SG.F with  
 ha-uvda še-ha-šniya lo solaxat la.  
 The-fact that-the-second.SG.F not forgives.SG.F to.her  
 ‘Ronit and her friend each accepted the fact that the other does not forgive her.’

QDCs are likewise not island-sensitive in English and in other languages (e.g., Kobayashi 2020), nor are they expected to be; variable binding is not mediated by movement. Notice that despite their superficial similarity, the QDC and the reciprocal construction, specifically in strategy II, are still distinct morpho-syntactically: While Rec1 may occur with the definite

---

<sup>13</sup> Parallel facts hold in Italian (Belletti 1982): *L’uno* cannot move outside its clause (ex. (18d)) or adjoin to the local VP (ex. (40b)).

determiner *ha-* in a reciprocal construction (see fn. 1), it is impossible to insert *ha-* between Q and Rec1 in a QDC.

Another way of bringing out the contrast between the QDC and the reciprocal construction is by manipulating the position of Rec1. In the QDC, Rec1 is part of a floating distributive QP, whose position is rather flexible. Essentially, it may adjoin anywhere within the VP. In the reciprocal construction, however, Rec1 may only appear in [Spec,KP/PP]. This asymmetry gives rise to the following contrast.

- (35) a.    *ha-šutafim    šeli    asu            (kol exad)    kesef*  
           the-partners    my    made.3PL (every one)    money  
           (*kol exad*) al    *xešbon ha-šeni.*  
           (every one) on    expense the-second  
           Lit. ‘My partners (each) made (each) money (each) at the expense of the other.’
- b.    *ha-šutafim    šeli    asu            (\*exad)    kesef*  
           the-partners    my    made.3PL (one)            money  
           (*exad*) al *xešbon ha-šeni.*  
           (one)    on expense the-second  
           ‘My partners made money at the expense of each other.’

In the QDC (35a), the QP *kol exad* ‘every one’ can float between the verb and its object, or next to the PP containing Rec2. In the reciprocal construction (35b), however, Rec1 *exad* ‘one’ can only surface in the second position, namely, in the specifier of the adjunct PP; RS cannot take it any further. Once again, we see clear evidence that reciprocal constructions are derived by movement, unlike other variable binding dependencies.<sup>14</sup>

---

<sup>14</sup> The Hebrew QDC is similar to the Greek discontinuous reciprocal construction *o enas ...o alos* ‘the one ...the other’, recently studied in Paparounas and Salzmann to appear. In both, Rec1 is a quantificational element displaying the flexible distribution of a floating quantifier, which does not form a constituent with Rec2. The bipartite reciprocal construction in Hebrew is clearly different – Rec1 is non-quantificational and does form a constituent with Rec2. In terms of locality, the QDC can span clause boundaries in both Hebrew and Greek, unlike the bipartite reciprocal construction. Paparounas and Salzmann further observe that the reciprocator (Rec2) in the Greek discontinuous construction must not be separated from its antecedent by an intervening subject, which they take to be a signature property of anaphoric binding. Hebrew shows the same asymmetry, although the contrast is somewhat weak; non-local binding yields mixed judgments, ranging from “odd” to “marginal”.

- (i) *ha-me’hamrim    xašvu            kol    exad    še-ha-šeni            merame            et    ha-kazino.*  
       the-gamblers    thought.3PL    every one    that-the-second    cheats.SG.M    ACC    the-casino  
       ‘The gamblers each thought that the other cheated the casino.’
- (ii) ?? *ha-me’hamrim    xašvu            kol    exad    še-ha-kazino            merame            et    ha-šeni.*  
       the-gamblers thought.3PL    every one    that- the-casino    cheats.SG.M    ACC    the-second  
       (Intended: ‘The gamblers each thought that the casino cheated the other.’)

As the QDC is not the construction of interest in the present study, I set it aside.

The fact that RS is clausebound makes most island tests uninformative. Yet one test that is informative is the Coordinate Structure Constraint (CSC). While normal DP complements of P can be coordinated (36a), this is not possible when one of the conjuncts is a reciprocal phrase, no matter whether it is the first or second one (36b-c).

- (36) a. hem paxadu me- [ [ha-mena'hel ha-xadaš] ve-[sgano] ].  
 they were.afraid.3PL from-the-principal the-new and-deputy.his  
 'They were afraid of the new principal and his deputy.'
- b. \*hem paxadu exad me- [ [ha-mena'hel ha-xadaš] ve-[ha-šeni] ].  
 they were.afraid.3PL one from-the-principal the-new and-the-second  
 (Intended: "They were afraid of the new principal and one another')
- c. \*hem paxadu exad me- [ [ha-šeni] ve-[ha-mena'hel ha-xadaš] ].  
 they were.afraid.3PL one from- the-second and-the-principal the-new  
 (Intended: 'They were afraid of one another and the new principal')

Messick and Harðarson (2022) report exactly parallel facts in Icelandic, and I follow their explanation: Rec1 *exad* 'one' in (36b-c) is extracted from a single conjunct, violating the CSC. This conclusion is strengthened by examples in which the one exception to the CSC holds – extraction is ATB-style. Such cases are rare because coordinating two reciprocal phrases is rare to begin with, requiring a very special context. But they are possible, as the following one found on the web shows, confirming our prediction.

- (37)anaxnu yod'im še-ixpat laxem ve-laxen me'od  
 we know.PL.M that-care to.you.PL.M and-to.you.PL.F much  
 exad me-ha-šeni ve-ha-šniya.  
 one from-the-second.SG.M and-the-second.SG.F  
 'We know that you all very much care about one another.'

Nevertheless, RS is not maximally local. In particular, Rec1 may skip the local [Spec,KP/PP] and land in a higher one. Both options are in principle available, although different speakers may favor one over the other in particular situations. In the examples below, the K/P heads are boldfaced, and the relevant surface positions of Rec1 are indicated to their left.<sup>15</sup>

---

<sup>15</sup> See also Halevy 2011b:17-18. Bar-Asher Siegel (2020:100-101) states that these non-locally split reciprocal phrases are only possible when Rec2 stands in a possessive relation to the preceding noun, but examples (38c-d) show that any relation mediated by K/P is possible. It is, in fact, not clear how these cases are consistent with his later claim that the location of *exad* 'one' is "motivated lexically rather than grammatically, and that it is placed before the position in which the pronoun [ha-šeni] receives grammatical case – either accusative by the verb or oblique from a preposition" (p. 105). In (38a-d), *exad* 'one' is not placed before the position in which *ha-šeni* 'the-second' receives case, but rather before the position in which a higher noun does. These difficulties arise because *exad*, 'one' on Bar-Asher Siegel's analysis, is a "frozen PF expression" lacking syntactic mobility and consequences (see section 2.1).

- (38) a. hem kat'u (exad) **et** ha-harca'a (exad) **šel** ha-šeni.  
 they disrupted.3PL (one) ACC the-talk (one) of the-second  
 'They disrupted each other's talks.'
- b. hem hitxab'u (exad) **me'axorey** ha-bayit (exad) **šel** ha-šeni.  
 they hid.3PL (one) behind the-house (one) of the-second  
 'They hid behind each other's houses.'
- c. hem himci'u (exad) **et** **ha-kinuy** (exad) **la-šeni**.  
 they invented (one) ACC the-nickname (one) to.the-second  
 'They invented each other's nicknames.'
- d. hem histapku (ze) **be-maxma'ot** (ze) **mi-ze**.  
 they were.content.3 (this) in-compliments (this) from-this  
 'They were content with compliments from each other.'

It would appear, then, that RS is possible in the following configuration.

(39) *Non-local RS*

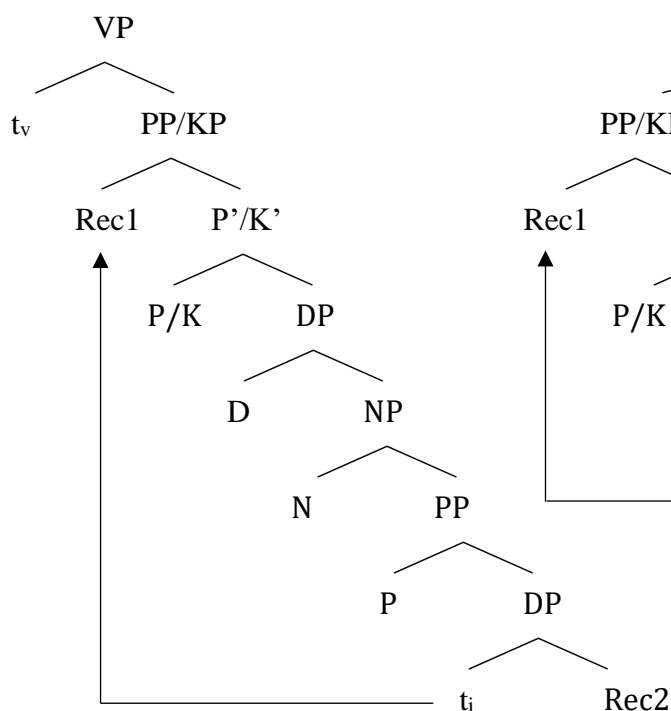


However, (39) must be somehow restricted. As it stands, it overgenerates certain illicit instances of non-local RS. In (40a-b), only local RS is possible.

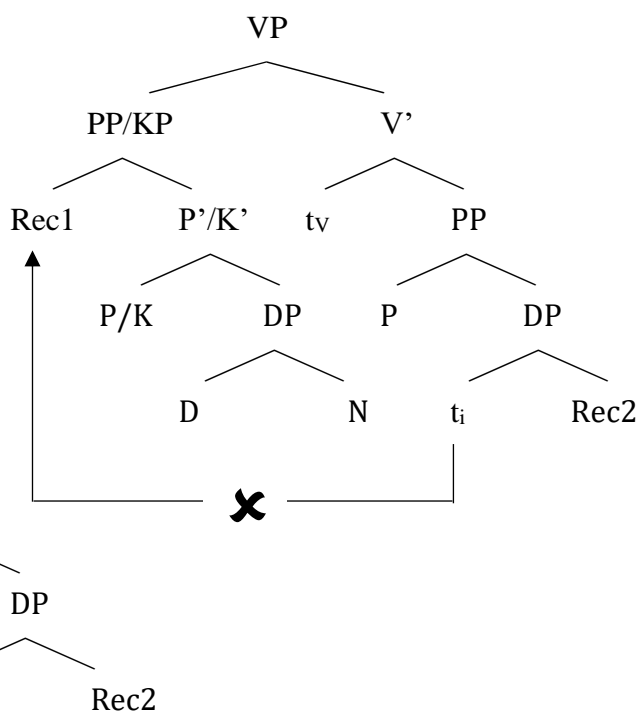
- (40) a. hem lakxu (\*exad) **et** ha-maftexot (exad) **me-ha-šeni**.  
 they took.3PL (one) ACC the-keys (one) from-the-second  
 'They took the keys from each other.'
- b. Ronit ve-Shiri dibru (\*axat) **im** mumxim (axat) **al** ha-šniya.  
 Ronit and-Shiri talked.3P (one) with experts (one) about the-second  
 'Ronit and Shiri talked to experts about each other.'

(40a-b) are linearly identical to (38c-d), respectively: In both, Rec1 skips past a local [Spec,PP] and lands in a non-local [Spec,PP/KP]. The two pairs are crucially different, though. In (40a-b) Rec1 moves *between* two arguments of the verb, whereas in (38a-d) it moves *within* a single argument. Ultimately, movement is to a c-commanding position in the licit cases and to a non-c-commanding position in the illicit ones. This contrast is yet another indication that movement is indeed involved in deriving RS. The contrast is represented schematically in (41) (note that the actual verb has raised outside the VP in both structures).

(41) a. *Grammatical RS*



b. *Ungrammatical RS*



As further confirmation that the contrast is rooted in syntax, consider the following minimal pair. A reciprocal phrase construed as a possessor of the direct object may be realized as a *genitive* possessor, inside that object, or as a *dative* possessor, a dependent of the VP. While the meanings expressed are very similar, the syntactic structures are quite different, corresponding to (41a-b), respectively. Thus, RS may apply locally to shift Rec1 around the genitive marker *šel* ‘of’ (41a) or the dative marker *le* ‘to’ (41b). But non-local RS only succeeds in the former case (41c) and not in the latter (41d), because movement between two VP-dependents would violate the c-command condition. Strategy II (*exad... ha-šeni*) gives rise to identical facts.

- (41) a. harasnu et ha-toxniyot ze šel ze.  
 ruined.1PL ACC the-plans this of this  
 ‘We ruined each other’s plans.’
- b. harasnu et ha-toxniyot ze la-ze.  
 ruined.1PL ACC the-plans this to.the-this  
 ‘We ruined each other’s plans.’ (literally, ‘We ruined the plans to each other.’)
- c. harasnu ze et ha-toxniyot šel ze.  
 ruined.1PL this ACC the-vacation of this  
 ‘We ruined each other’s plans.’



- d. \* harasnu ze et ha-toxniyot la-ze.  
 ruined.1PL this ACC the-vacation to.the-this  
 (Intended: ‘We ruined each other’s plans.’; literally, ‘We ruined the plans to each other.’)

Notice that one implication of the contrast between (41c) and (41d) is that RS indeed targets a KP/PP-internal position and not one stationed along the verbal projection line (in congruence with the evidence in (32)-(33)). Had Rec1 been adjoined to VP, for example, the c-command distinction between the two scenarios would have been erased (specifically, both should have been grammatical).<sup>16</sup> Further support is provided in the following examples, which demonstrate the constituency of the string in (39) using movement and coordination, i.e., the fact that Rec1 is part of the containing (higher) KP/PP.

- (42) a. exad me’axorey ha-bayit šel ha-šeni, atem yexolim le’hitxabe.  
 one behind the-house of the-second you.PL can.PL.M to.hide  
 ‘Behind each other houses, you can hide.’
- b. hem histapku ze be-maxma’ot mi-zo  
 they were.content.3 this.M in-compliments from-this.F  
 ve-zo be-hamlacot mi-ze.  
 and-this.F in-recommendations from-this.M  
 ‘They were content with him getting compliments from her and her getting recommendations from him.’

The derivation in (41a) does raise a minimality issue: How can the intermediate KP/PP be skipped? This seems to defy conventional minimality, which requires movement to halt at the *closest* target where a proper configuration of feature checking can be established. In section 6.2 I return to this puzzle and relate it to the exceptional way in which c-selection is handled under RS.

One last consequence of the present analysis concerns the presence of a KP projection even in indefinite nominals, which, in Hebrew, are not morphologically case-marked.

- (43) a. hem kar’u ze širim šel ze.  
 they read.3PL this poems of this  
 ‘They read each other’s poems.’

---

<sup>16</sup> In contrast to (41b), a ditransitive construction where Rec1 and Rec2 occupy the *entire* argumental positions is grammatical, as shown in (13) and fn. 7 above, but these *two-unit* constructions are quite different in being nonanaphoric. This conclusion is consistent with the standard assumption that movement may not target  $\theta$ -positions.

- b. hem ganvu exad ra'ayonot šel ha-šeni.  
 they stole one ideas of the-second  
 'They stole each other's ideas.'

The occurrence of Rec1 to the left of the indefinite direct object implies either that a null D projects [Spec,DP] as a landing site or that a null K projects [Spec,KP] as a landing site (recall that RS is confined to occur within the argument, for c-command reasons). The first option is excluded for definite nouns; Rec1 precedes the case particle *et* 'ACC' whereas [Spec,DP] should follow it. For uniformity reasons, then, it is better to assume that KP is also projected with indefinite nouns.<sup>17</sup> Incidentally, null K heads commonly figure in the literature and often their nullness is not merely technical but plays an explanatory role (Lamontagne and Travis 1986, Travis and Lamontagne 1992, Bittner and Hale 1996). That said, I am not aware of clear empirical reasons to choose between the two options, so I leave the final decision to future work.

## 5. Evidence for a pre-shift source

One important difference between movement and binding dependencies concerns the syntactic nature of the bound element. In a movement dependency, it is a full syntactic copy of the antecedent, which is normally reduced at PF to silence or near-silence. In a binding dependency, the bound element is not a copy of the antecedent but some anaphoric element, often a simplex pronoun.

In this light, the claim that [Rec1 P/K Rec2] strings are derived by movement from an underlying [P/K Rec1 Rec2] source makes stronger commitments as to the syntactic content of the complement of P/K than those made by non-movement alternatives. In particular, it is committed to the presence of a copy of Rec1 to the *right* of P/K: [Rec1 P/K ~~Rec1~~ Rec2]. While normally silent, this copy need not be so in principle. Low copy pronunciation is a common choice in various constructions and languages (Bošković 2001, Bobaljik 2002, Corver and Nunes 2007).

Striking confirmation for the presence of a low copy of Rec1 to the right of P/K comes from substandard Hebrew (section 5.1) and crosslinguistic data (section 5.2).

### 5.1 Substandard Hebrew

Although reciprocal phrases in standard Hebrew always surface with a medial P/K (HMRP), substandard Hebrew often reveals alternants with an initial P/K (HIRP). This recent

---

<sup>17</sup> Note that this proposal is still compatible with Danon's (2006) claim that indefinite NPs in Hebrew do not project a DP layer, but is incompatible with his further claim that they are caseless.

development has been documented in Bar-Asher Siegel (2020:110), and we present further data.

HIRP alternants are extremely revealing in that they reflect a perfect alignment of the syntax and semantics of reciprocal phrases, free of the “distortion” brought about by RS. I propose that we analyse them using a common model of dialectal and crosslinguistic variation: A shared underlying structure gives rise to different surface structures depending on whether or not movement occurs (e.g., V-movement in French vs. English). Specifically, [P/K Rec1 Rec2] strings in substandard Hebrew simply realize (31a) as a surface structure, avoiding RS. In the next section I discuss parallel alternations in other languages and offer a general way of understanding their grammatical causes within the present proposal.

The following examples, all culled from the web, illustrate HIRP variant of strategy II (in boldface), found in spontaneous substandard Hebrew.

- (44) a. ra’iti et Neil ve-Liam mistaklim **al exad ha-šeni**.<sup>18</sup>  
 saw.1SG ACC Neil and-Liam look.PL.M on one the-second  
 ‘I saw Neil and Liam looking at each other.’
- b. hem tamid ahavu **et exad ha-šeni**, tamid azru ve-af pa’am  
 they always loved.3PL ACC one the-second always helped and-no time  
 lo ravu ve-lo ka’asu **al exad ha-šeni**.<sup>19</sup>  
 not quarrel.3PL and-not were.angry.3PL on one the-second  
 ‘They have always loved each other, always helped and have never quarreled or been angry at each other.’
- c. kulam ba-kita šeli medabrim xofši **im exad ha-šeni**.<sup>20</sup>  
 all.PL.M in.the-class my talk.PL.M freely with one the-second  
 ‘Everybody in my class talk freely with one another.’
- d. le’ha’avir meyda **me-exad ha-šeni** larov ze davar mekubal ve-xuki.<sup>21</sup>  
 to.pass information from one the-second usually it thing acceptable and-legal  
 ‘Passing information from one another is usually acceptable and legal.’

<sup>18</sup> <https://www.wattpad.com/185377076-dear-god-larry-stylinson-dear-god-41>

<sup>19</sup> <https://www.ravdori.co.il/stories/%D7%9C%D7%94%D7%AA%D7%97%D7%99%D7%9C-%D7%90%D7%AA-%D7%94%D7%97%D7%99%D7%99%D7%9D-%D7%9E%D7%97%D7%93%D7%A9-%D7%91%D7%99%D7%A9%D7%A8%D7%90%D7%9C/>

<sup>20</sup> <https://stips.co.il/ask/5863972/%D7%9B%D7%95%D7%9C%D7%9D-%D7%91%D7%9B%D7%99%D7%AA%D7%94-%D7%A9%D7%9C%D7%99-%D7%9E%D7%93%D7%91%D7%A8%D7%99%D7%9D-%D7%97%D7%95%D7%A4%D7%A9%D7%99-%D7%A2%D7%9D>

<sup>21</sup> <https://guardianangel.co.il/%D7%9C%D7%9E%D7%94-%D7%A2%D7%95%D7%A8%D7%9A-%D7%93%D7%99%D7%9F-%D7%96%D7%9B%D7%95%D7%99%D7%95%D7%AA-%D7%99%D7%95%D7%A6%D7%A8%D7%99%D7%9D-%D7%94%D7%95%D7%90-%D7%9B%D7%9C-%D7%9B%D7%9A-%D7%97%D7%A9%D7%95/>

- e. ha-keta še-Reiš ve-chuchu nitka'im **be-exad ha-šeni**  
 the-part that-R and-Chuchu bump.PL.M in-one the-second  
 šafax oti me-cxok.<sup>22</sup>  
 spilled.3SG me from-laughter  
 'The part where R. and Chuchu bump into each other made me laugh my head off.'

While such P/K-initial reciprocal phrases are completely ungrammatical to me and to other speakers, they are nonetheless possible for many speakers, and are, in fact, easy to find in spontaneous colloquial Hebrew.

Questions of variation and its limits immediately arise with such speakers. For example, is the choice of applying or not applying RS rigid for a given P/K head or not? For a given speaker, is it rigid *across* all P/K heads, or not? It is suggestive that both reciprocal phrases in (44b), which are headed by different P/K heads, align without RS, namely, as [P/K Rec1 Rec2]. Yet whether such harmony is obligatory or just preferred is a question that can only be addressed in a large-scale experimental study. For present purposes, it is enough to point to the existence of examples like (44a-e) as direct evidence supporting the underlying, unshifted source of reciprocal phrases in Hebrew. I return to one more option that HIRP speakers allow in substandard Hebrew (and speakers of standard Hebrew do not) in section 6.3.

Interestingly, while substandard Hebrew displays HIRP in strategy II, it does not allow this word order in strategy I, which is based on two demonstrative pronouns; RS is obligatory for all speakers, and no HIRP examples of strategy I were found on the web.

- (45) a. hem tamid ahavu **ze et zo** / \***et ze zo**.  
 they always loved.3PL this.SG.M ACC this.SG.F /\*ACC this.SG.M this.SG.F  
 'They have always loved each other.'
- b. carix le'ha'avir meyda **ze mi-ze** / \***mi-ze ze**.  
 necessary to.pass information this from-this / \*from-this this  
 'It is necessary to pass information from one another.'

This absence conforms with a somewhat pre-theoretical intuition, namely, that there is something wrong in the uninterrupted "doubled" sequence *ze ze* 'this this'; yet clearly it is not phonological identity that is at stake, as gender mismatched sequences are equally excluded (45a). Section 6.2 will cash out this intuition more formally.

<sup>22</sup><https://meirkids.co.il/%D7%9E%D7%A2%D7%9E%D7%95%D7%9C/%D7%9E%D7%A2%D7%9E%D7%95%D7%9C-%D7%A4%D7%A1%D7%A4%D7%95%D7%A1%D7%99%D7%9D/12554/v>

## 5.2 HIRP-HMRP alternations: Crosslinguistic data

Alternations between [Rec1 P Rec2] and [P Rec1 Rec2] are an understudied topic in synchronic grammars (though not in diachronic descriptions, see section 6.4). In this section I briefly discuss two other languages besides Hebrew in which the alternation is found; no doubt more exist and await to be documented.

In Slovenian, for most speakers reciprocal phrases surface as HMRP, but a minority dialect opts for HIRP (Živanović 2016).

- (46) a. Starša sta kričala **en na drugega**. (HMRP, main)  
parents be-DU yelled one on another  
'Parents yelled at one another.'
- b. Starša sta kričala **na en drugega**. (HIRP, minority)  
parents be-DU yelled on one another  
'Parents yelled at one another.'

Živanović does not provide a formal account of the alternation; in a footnote (fn. 1) she mentions that some speakers accept both variants. In general, she ties the alternation to a more general diachronic change in the language, from discontinuous Q(uantifier)... A(naphor) constructions, to cohesive Q-A constituents.

Icelandic also manifests an alternation between HIRP and HMRP. Sigurðsson et al. (2020) (SWS) observe that while reciprocal phrases in traditional Icelandic surface as HMRP, in the last two centuries “everyday” Icelandic developed a HIRP variant. For many speakers, the two variants co-exist, with no discernible semantic difference.

- (47) a. Þeir höfðu talað **hver um annan**. (HMRP, traditional)  
they.NOM.M.PL had talked each.NOM.M.SG about other.ACC.M.SG  
'They had talked about each other.'
- b. Þeir höfðu talað **um hvorn annan**. (HIRP, innovative)  
they.NOM.M.PL had talked about each.ACC.M.SG other.ACC.M.SG  
'They had talked about each other.'

SWS propose that HMRP is derived from HIRP by movement of Rec1 (the quantifier) outside its containing DP, and in that respect anticipate the present RS analysis. However, for them this movement (which they call *e-raising*) targets [Spec, VoiceP], specifically it adjoins Rec1 to the trace of the external argument. E-raising is thus rather unusual: It is *sideward* movement (to a non-commanding position) that is furthermore postponed to PF (syntactic movement

would be countercyclic, applying after the raising of the subject to [Spec,TP]). This leads to the expectation that e-raising should not be able to feed syntactic movement. Yet Messick and Harðarson (2022) show this to be false: e-raising can feed topicalization. Moreover, the topicalized unit is [Rec1 P Rec2], suggesting that the landing site of e-raising is within the PP. This is further confirmed by other constituency tests (coordination and fragment answer). In convergence with the Hebrew facts discussed in section 2.2, then, Messick & Harðarson conclude that Rec1 shifts to the edge of the containing PP. This is just the RS analysis proposed in section 2.3. Messick & Harðarson extend this analysis to HMRP constructions in other languages like Bosnian-Croatian-Serbian, Greek and Telugu.<sup>23</sup>

In fact, something of that alternation persists in modern-day in English too: *one... another* can map either to HMRP or to HIRP (48a). Interestingly, *one... the other* only allows HIRP (48b), a mirror image of *each other*, which only allows HMRP (48c).<sup>24</sup>

- (48) a. She arranged the statuettes (one) next to (one) another.  
 b. She arranged the statuettes (one) next to (\*one) the other.  
 c. She arranged the statuettes (\*each) next to (each) other.

A challenging question to generative syntactic typology is this: What determines the choice between HIRP and HMRP in each particular case? Evidently, this challenge can only be faced after we gain some understanding of the underlying motivation for RS. This will be the job of section 6. Once the mechanism is in place, and the trigger of RS well-understood, we will be able to propose, albeit tentatively, points of variation, leading to the observed distinction between HIRP and HMRP.

## 6. Towards a deeper explanation: Symmetry breaking

In this section the analysis of bipartite reciprocal constructions is laid out, with special attention to the alternation between HIRP and HMRP. Section 6.1 introduces the basic concept of symmetry breaking in syntax as they evolved from the mid-1990s (inspired by Kayne's LCA) to present day explorations (inspired by Chomsky's labeling-framework). Section 6.2 applies the logic of dynamic labeling to explain why RS must apply to the symmetric HIRP and turn it into an asymmetric HMRP, providing step-by-step derivations. Section 6.3 turns to variation, both within and across languages, focusing on the predictable connection between the head/phrase status of reciprocal units and the application of RS. Finally, section 6.4 highlights key insights obtained in the diachronic literature on bipartite reciprocal constructions, which

---

<sup>23</sup> Messick and Raghotham (to appear) propose an alternative, non-movement analysis for Telugu HMRP, where Rec2 directly right-adjoins to [P Rec1]. This alternative appears to require two modes of semantic composition of the reciprocal phrase – one in which Rec1 and Rec2 compose directly (as in direct object positions), and one in which they do not (as in PPs). While this is not inconceivable, the movement option is more economical.

<sup>24</sup> *Each... the other* (with a definite determiner) is of course different, allowing a long-distance relation, as it is not a reciprocal construction but a QDC (see section 4).

fruitfully inform a fuller understanding of the peculiar syntactic status of these constructions; conversely, the synchronic analysis also fills certain lacunas left in the diachronic accounts.

### 6.1 Dynamic antisymmetry and unlabeled phrases

An increasingly influential idea in linguistics holds that the organization of grammatical units is fundamentally *asymmetric* (see Kayne 1994 for the canonical statement of this principle within syntax, and much subsequent work, e.g., di Sciullo 2003, Richards 2010, Haider 2016, Bošković 2021a, Kayne 2022). One area where this idea has proven extremely fruitful is the interaction of phrase structure and movement. Pioneered by Moro 1997, 2000, the claim is that movement can be seen as the grammar’s response to structures deemed unstable *because* they are symmetric: “Movement can be thought of as a way to rescue the structure at PF in case a point of symmetry has been generated: since one of the elements constituting the point of symmetry is turned into an empty category (a trace), no problem arises for linearization” (Moro 2000:3).

Moro’s prime examples were drawn from copular sentences, which are derived from an embedded Small Clause (SC). Either the subject or the predicate (when nominal) of the SC may raise to the pre-copular position.

- (49) a. [John is [<sub>sc</sub> <sub>t<sub>i</sub></sub> [the cause of the riot] ]].  
b. [ [The cause of the riot]<sub>i</sub> is [<sub>sc</sub> John <sub>t<sub>i</sub></sub> ] ].

The SC is an exocentric symmetric structure, [XP YP]. Such structures cannot be linearized in accordance with Kayne’s (1994) Linear Correspondence Axiom (LCA), which requires asymmetric c-command between nonterminal nodes. While Kayne took the LCA to be an overarching principle regulating structure building from the outset, it is natural to think of it more narrowly as a syntax-PF interface constraint, responsible for letting through to PF just those syntactic structures that can be linearized as a phonetic string. As Chomsky (1994) observed, this leads to the expectation that traces (or silent copies of movement), lacking any phonetic content that can be linearized, will be exempt from the LCA. In other words: Movement can repair lethal “points of symmetry”, in Moro’s (2000) terms. Thus, movement is forced in (49a,b) not because of the EPP but rather to make the SC linearizable (see Moro 2000 for extensive discussion of this and other cases and comparison with alternative accounts).

The intuition that symmetric structures are unstable and must be “repaired” by movement has been retained and even strengthened within the labeling-driven framework, initiated in Chomsky 2008: fn. 34, Moro 2009, and further developed in Chomsky 2013, 2015 and Cecchetto and Donati 2015. Within this framework, each node in the syntactic structure must

be properly labeled. There are two dominant views on why labeling is compulsory – the internal and the external definitions (see Cecchetto & Donati 2015:29-32). On the internal definition, labels are needed to drive the derivation. Syntactic objects can only be manipulated by their labels, since any information internal to the object that does not project to the label is inaccessible. In Chomsky’s 2008:141 words: “The label selects and is selected in EM, and is the probe that seeks a goal for operations internal to the SO: Agree or IM.” On the external definition, in contrast, labels are needed not syntax-internally but only at the interfaces. In Chomsky’s 2013:46 words: “We assume that a label is required for interpretation at the interfaces, and that labels are assigned by a minimal search algorithm LA applying to an SO (like other operations, at the phase level).”

As pointed out by Cecchetto & Donati (2015:30) and by Rizzi (2016: fn. 1), the idea that labels are required for interpretation is dubious; semantic composition typically does not refer to the label of node X but rather to its denotation, and the mapping between labels and semantic types is one-to-many (e.g., DPs can denote individuals or events, PPs may denote individuals or predicate modifiers, etc.). I will thus follow the *internal* definition and specifically assume that labeling is required for c-selection throughout the derivation. Nonetheless, I will side with Chomsky 2013 in assuming that labeling operates phase-wise. In other words, categories inside a phase may be labeled at any point up until the completion of the phase. This would allow certain fleeting “delays” in labeling, which will prove crucial in the analysis below.

Normally, the labeling algorithm tracks the head in a binary Merge operation Merge (X,YP) and designates it as the label of the resulting structure (X/XP). I return below to explicit discussion of the version of the labeling algorithm I assume and how this result is guaranteed. Less obvious are cases where two maximal projections merge, Merge (XP,YP), as in SC formation (we ignore the case of phrasal adjunction, which is handled differently), or where two heads merge, Merge (X,Y). Chomsky proposed two methods to determine the label of such symmetric structures: (i) Move either X(P) or Y(P) and make the other one project the label, or (ii) find an important feature they share and make that feature the label. Let us call these “the movement method of resolving symmetry” and “the agreement method of resolving symmetry”.

Regarding movement, Chomsky argued that a trace is not visible to the labeling algorithm not because of its nullness, but because it represents an incomplete object (a syntactic chain); to enter the labeling of a category, an object must be fully dominated by that category. Subsequent to movement, then, [<sub>XP</sub> YP] can be labeled YP and [XP t<sub>YP</sub>] can be labeled XP.

Recent work explores and demonstrates a range of empirical consequences of the movement method of resolving symmetry. Successive cyclic movement is likely driven by the resistance of intermediate CPs to labeling (see Rizzi 2015a, 2016 on how “the halting problem” in criterial



positions is resolved under the labeling framework). Ott (2012) analyzes split topicalization in German as a response to an underlying symmetric phrase that must be broken apart. Citko et al. (2018) derive the noncanonical syntactic position of quirky subjects from failure of labeling (via the agreement method of resolving symmetry). And in a series of recent works, Željko Bošković has developed labeling-driven explanations for a remarkably broad range of syntactic phenomena (Bošković 2016, 2018, 2020, 2021b).<sup>25</sup>

Coming back to symmetric [XP YP] structures, Moro (2000) discusses a case where movement resolves symmetry internally to DP (following analyses by Kayne 1994 and den Dikken 1998).

- (50) a. John read [ of [<sub>SC</sub> books this type] ].  
 b. John read [books<sub>i</sub> of [<sub>SC</sub> t<sub>i</sub> this type] ].  
 c. John read [this type<sub>i</sub> of [<sub>SC</sub> books t<sub>i</sub>] ].

The complement of *read* is headed by the case particle *of*, which in turn takes a SC complement (50a). The notional object of the verb (*books*) is the subject of this SC while *this type* is its predicate. Either one can raise to [Spec,*of*], producing a syntactic alternation which is semantically neutral. The analysis nicely captures the intuition that *type* in (50c), despite its misleading position next to the verb, is not the head of the complement. In fact, although Moro does not specify the category of the complement, it is natural to take it to be KP. This would make the movements in (50b,c) strikingly similar to RS, which similarly targets a daughter of K's complement and shifts it to [Spec,KP] (see (25)). Two differences stand out: (i) In RS, there seems to be no predication relation between Rec1 and Rec2, hence they do not form a SC; (ii) In RS there is no “inverse structure”, where Rec2 raises and Rec1 stays in-situ. Let us consider these differences in turn.

As to (i), note that nothing in the logic of either symmetry-breaking or the labeling algorithm *requires* there to be a predication relation between the two relata in the configuration [XP YP].<sup>26</sup> In fact, it is even doubtful that specificational copular constructions like (49b) are reducible to predication; see the compelling arguments against this reduction in Rosselló 2008 and Heycock 2012. I will follow Roy 2023 in assuming that specificational clauses are *sui generis*, involving

---

<sup>25</sup> Originally, Chomsky (2013) proposed that symmetry breaking is also behind the EPP: The external argument raises from [EXT vP] because this node cannot be labeled. This proposal is problematic insofar as the external argument may remain *in situ* in some constructions in some languages (Stepanov 2007, Citko et al. 2018:fn. 29). On the probing-based algorithm to be presented below, the problem does not arise, given that v selects the external argument, hence provides the label (vP). Indeed, Chomsky (2015) reverts to the earlier conception of the EPP as reflecting a (parametric) deficiency of T. See Gallego 2017 and Messick 2020 for further discussion.

<sup>26</sup> Pace Moro (2000:37): “I propose that all and only small clauses (and their interpretive correlate, predicative linking) be associated to these unlabeled constituents.” The “only” part here is too strong, possibly even on Moro’s assumptions. This is because Moro also considers symmetrical head-head structures and how movement of one head repairs them (e.g., in clitic climbing); yet no predicative relation holds between the two heads.

neither predication nor equation.<sup>27</sup> Note that this modification does not detract from Moro’s fundamental insight: The [DP DP] complement of the copula is still an unstable constituent, resisting labeling, so movement is triggered for the same reason (indeed, this is Roy’s assumption as well). It is just that predication is factored out of the story.

Other configurations of indeterminacy in labeling support this conclusion. In successive cyclic movement, e.g., [*what* ... [ $\beta$  ~~*what*~~ [ $\alpha$  ... ]]], there is no predication relation between the silent copy ~~*what*~~ and  $\alpha$ , and yet  $\beta$  is a point of symmetry that must be resolved (by further movement of *what*).<sup>28</sup> The same is true of structured coordination, which, as Chomsky (2013) pointed out, has always been a puzzle for projection: It distributes like any one of the XP conjuncts, but its head is Conj, not X (51a). Chomsky suggested an underlying structure parallel to (50a), with Conj taking an unlabelable symmetrical phrase (51b). Raising of one conjunct to [Spec,Conj] allows the complement of Conj to be labeled XP (51c). Conj itself is deficient and cannot provide a label for the resulting phrase, so the labeling algorithm picks out its other daughter, the moved XP, as the label for the entire structure.

- (51) a. [XP XP [Conj XP]]  
 b. [XP Conj [XP XP]]  
 c. [XP XP<sub>i</sub> Conj [XP t<sub>i</sub> XP]]

I conclude that non-predicative symmetrical structures do arise in the course of various derivations, and do trigger movement as a way of restoring asymmetry. Reciprocal phrases are just one type of such constructions.<sup>29</sup>

The second question raised above was why RS targets Rec1 and not Rec2, unlike some of the cases discussed above, where either member of the SC may raise. In fact, Moro recognizes that “mirror solutions” (raising either member of the pair) are not always available: “More generally, there is no reason to expect a mirror solution to exist for neutralizing all points of symmetry; the possibility of a mirror solution for a point of symmetry in a given language strictly depends on the morphological restrictions holding in that language.” (p. 61). For example, in successive

---

<sup>27</sup> Roy (2023) follows Romero 2005 and Arregi et al. 2020 in analyzing the subject of specificational clauses as an individual concept (type <s,e>). Note that I abstract away from the necessary focus interpretation of inverted subjects. If Rizzi (2015b) is correct in assuming that the subject must vacate the SC for the “predicate” (or the individual concept) to be accessible to attraction, the SC must be asymmetric, namely, a projection of some F. However, the labeling issue would still arise upon Merge (Subject,FP), hence nothing fundamentally changes under this alternative view of SCs.

<sup>28</sup> Intermediate traces may sometimes serve as arguments for derived predicates (Nissenbaum 2000), but the relation thus established is distinct from the *grammatical* notion of predication which is at issue with SCs.

<sup>29</sup> Richards (2010) discusses a range of cases where symmetric linearization arises and must be repaired, in the CP domain, the vP domain and inside nominals. His notion of symmetry, however, is somewhat looser than the one I presently assume, invoking mutual m-command.

cyclic *wh*-movement, it is the *wh*-phrase in the intermediate [Spec,CP] rather than its sister that raises. Such choices are well-understood; independent grammatical principles guarantee them, thus curbing the space of potential responses to points of symmetry.

In the case of strategy II, there seems to be a straightforward functional explanation for the choice of Rec1 over Rec2 (note that the question cannot be settled for strategy I, where Rec1 = Rec2 = *ze* ‘this’). Crosslinguistically, the quantifier/numeral tends to be the raised Rec1 and the “alterity word” (‘the other’, ‘the second’, etc.) tends to stay put as Rec2. In linear terms of anaphora resolution, the dependent element should follow the independent element since it is in virtue of the latter that the former can be properly interpreted. Thus, the Hebrew cardinal *exad* ‘one’ featuring in Rec1 does not presuppose anything, but the ordinal *ha-šeni* ‘the second (one)’ presupposes that there was a first one (likewise for English “the other” etc.). Simple parsing considerations, therefore, favor the placement of the former first. In essence, the anomaly of the “reverse RS” in (52b) is no different from that of (52d) (the latter being a two-unit construction); it is a semantic-pragmatic communicative failure, not a syntactic violation.<sup>30</sup>

- (52) a. hem berxu (ha-)exad et ha-šeni. RS  
they greeted.3PL the-one ACC the-second  
‘They greeted each other.’
- b. \*hem berxu ha-šeni (et ha-)exad. “Reverse RS”  
they greeted.3PL the-second ACC the-one  
(intended: ‘They greeted each other.’)
- c. (ha-)exad berex oti aval ha-šeni lo.  
the-one greeted.3SG me but the-second not  
‘One greeted me but the second one didn’t.’

---

<sup>30</sup> As noted, it is impossible to tell which reciprocal member raises in strategy I in Hebrew, as they are phonologically identical. However, in many languages, although the same morpheme is used for Rec1 and Rec2, the two members differ in case – one bearing the case of the antecedent, the other the case assigned to the bound argument. In principle, then, the order in which the two members appear might indicate which one has raised. These considerations potentially bear on the curious phenomenon of “swapping”, found in bipartite reciprocal phrases throughout the Dravidian languages (except Malayalam), where Rec1 and Rec2 are basically unordered (Subbārāo et al. 2021). The example in (i) is from Mising (PM = person marker, VR = verbal reflexive, VREC = verbal reciprocal).

- (i) Punyam-bi Migom-bi (akon-ə) akon-əṃ (akon-ə) luyit-su-m̄in.su-to.  
Punyam-PM Migom-PM one-NOM one-ACC one-NOM praise-VR-VREC-PST  
‘Punyam and Migom praised each other.’

Thus, swapping may suggest that, other things being equal and other principles satisfied, either Rec1 or Rec2 can be raised to overcome the symmetry problem. Rightward raising of Rec2 may also derive the HMRP in Telugu, a postpositional language (see (1e)), although Messick & Raghotham (to appear) analyze it without movement. Obviously, further study is needed in order to decide between these options.

- d. \*ha-šeni berex oti aval (ha-)exad lo.  
 the-second greeted.3SG me but the-one not  
 (Intended: ‘One greeted me but the second one didn’t.’)

To understand better the whole range of facts associated with RS, we need to be more explicit about the internal structure of various reciprocal phrases and how these structures trigger, or fail to trigger, symmetry-breaking movement. Before that, we need to spell out explicitly the labeling algorithm that is at work in these derivations, since the details of that algorithm somewhat vary among current proposals.

## 6.2 The labeling algorithm

My approach to labeling draws the insights gathered in the studies discussed above. Specifically, I assume that a label can emerge from two and only two scenarios: A probing scenario and a no-probing scenario. Here, probing is understood in the broadest sense of whatever grammatical feature drives the current step in the derivation. Probing-based Merge encompasses probing for Internal Merge (movement) or for External Merge. Typically, probes of the first type stand for “strong” or “EPP” features in earlier work and probes of the second type are standard c-selectional features. Both methods of labeling will play a prominent role in the analysis of RS below.

Concretely, let us assume the following Labeling Algorithm (see Chomsky 2008, 2013, Cecchetto & Donati 2015:39 for precursors).

### (53) *Labeling Algorithm (LA)*

The label of a syntactic object  $\{\alpha, \beta\}$  is:

- a. **Probing:**  $\alpha$ , if it bears the feature that acts as a probe for the merging operation creating  $\{\alpha, \beta\}$ .
- b. **No probing:**  $\beta$ , if neither  $\alpha$  nor  $\beta$  is a probe and  $\alpha$  is an incomplete syntactic object (= a copy in a chain).

This LA preserves the fundamental insight of Cecchetto & Donati 2015 that probing drives syntactic structure-building by establishing relations between *labels*. At the same time, it gives room, in highly constrained situations, to labeling without probing, thus capturing Moro and Chomsky’s insight that symmetrical structures can be labeled if “broken” by movement. Interestingly, (53b) is subordinate to (53a) and only applies in the absence of a probe. So,  $\{XP, YP\}$  structures are perfectly labelable if either X or Y acts as a probe for Merge (XP, YP). This scenario is quite common: Merge of an indirect argument as a specifier (sister) of

Applicative Phrase; merge of the external argument as specifier (sister) of vP; merge of Topic/Focus in the designated specifier (sister) of TopicP/FocusP, or the construction of any other cartographic projection. All of these configurations are *symmetric but stable* – having been formed by probing (i.e., some featural selection or valuation). Thus, labeling in such cases can operate via (53a) with no recourse to movement. In fact, these probing-based configurations formed by Internal Merge cannot give rise to further movement due to Criterial Freezing (Rizzi 2015a).

(53a) subsumes Chomsky’s (2013) “agreement method” of labeling insofar as it leads to movement, as indeed it does in Chomsky’s examples of subject movement to Spec,TP and *wh*-movement to Spec,CP. However, Chomsky’s primary method of labeling – by searching for the head – becomes obsolete. This, I think, is a positive result.

Labeling by minimal search has been presented by Chomsky as a purely configurational method of picking out the projecting head in  $\{\alpha, \beta\}$ . If  $\alpha$  is a head and  $\beta$  is a phrase, for example, minimal search (from the root) will find  $\alpha$  before it finds the head of  $\beta$ , thus favoring the former. However, immediate problems arise, as Chomsky (2008, 2013) observed, with merge of two heads, e.g.,  $\{invite, him\}$ . One option is to let the wrongly-labeled option (here, D) be generated and then be filtered out by either selectional requirements or semantic coherence. Another option is to suggest that many of these cases involve a root and a categorizing head, e.g.,  $\{v, \sqrt{invite}\}$ , and that because roots are uncategorized, they cannot provide a label, hence no competition arises, and the category projects.

As Rizzi (2016) observed, this creates a new problem for the previous case, which should now be represented as  $\{\{v, \sqrt{invite}\}, him\}$ . How do we still guarantee that the complex verbal head – really, a phrase – wins over the simplex pronominal head in labeling the result as v? Rizzi introduces a feature [lex] and various conditions on its projection. However, note that the probing method (53a) successfully accounts for this case (and many others), with no recourse to interface filtering of mislabeled structures. Indeed, all complementation configurations fall under this method insofar as they all involve some form of c-selection. Adjunction is different, but we set it aside for this discussion.

Furthermore, labeling by minimal search massively overgenerates wrongly-labeled structures that are formed by EM or IM of simplex pronouns – minimal D categories. Whenever such pronouns merge with phrases, minimal search will yield the pronoun as the label. Cecchetto & Donati (2015:36) mention (54a), where a clause is mislabeled as DP. (54b) illustrates an Applicative Phrase mislabeled as a DP (abstracting away from verb movement). Both examples involve EM of a pronoun. Turning to IM, (54c) represents object shift (possible in Scandinavian

languages but not in English), where a pronominal direct object raises outside the vP, mislabeling its mother node as a DP. And (54d) is an embedded declarative complement hosting an intermediate *wh*-copy at its edge. If the copy is a lexical item like *what*, it will mislabel the clause as a DP (all the mislabeled nodes are marked “??” below).

- (54) a. [?? He [<sub>vP</sub> likes John]]  
 b. Paul [<sub>vP</sub> v [?? her Appl<sup>0</sup> [<sub>vP</sub> baked [a cake] ]]]  
 c. Jane [?? it [<sub>vP</sub> ate ~~it~~]].  
 d. ... [?? what [<sub>CP</sub> that [Helen gave ~~what~~ to her friend]].

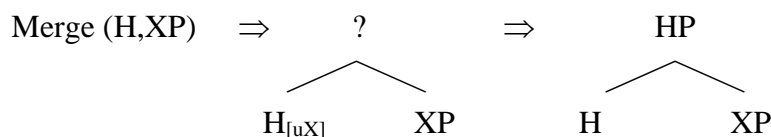
Possibly, solutions can be found so as to prevent the merged pronouns in these cases from determining the label. Tellingly, these solutions, at some level, often involve reference to selection (by the host) or non-selection (by the pronoun); hence, they are likely to sneak in the probing method in the back door. There does not seem to be a genuine case of labeling by a non-probing head.<sup>31</sup>

Armed with the LA in (53), we now turn to the analysis of RS, which must answer two specific questions: First, what is the labeling problem that RS responds to? Second, how does the output of RS solve that problem?

### 6.3 Symmetry-breaking meets reciprocal phrases

In normal head-complement configurations, where the head is labeled (e.g., not a root or a deficient morpheme) and probes its complement, the resulting phrase inherits the label of the head in virtue of (53a).

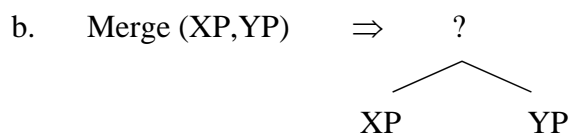
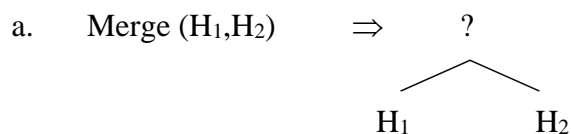
(55) *Labeling asymmetrical head-complement relation*



Immediate labeling is not possible, however, when neither element probes the other. Typically, this is not the case in asymmetric head-phrase merge, but rather in symmetric configurations that arise *without probing*: Head-head merge or phrase-phrase merge.

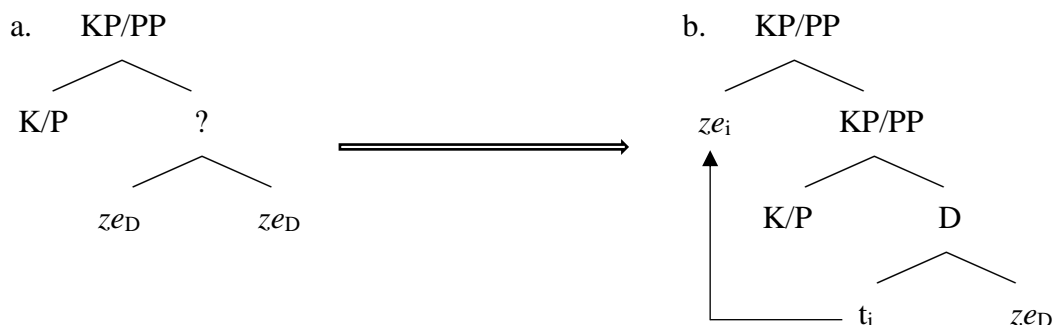
<sup>31</sup> Ceccetto & Donati’s (2015) main argument is that heads *can* re-label structures upon IM (significantly, in relative clause formation). Notably, whether it is N or D that moves, it is a *probe* on their analysis, so this class of cases also does not call for the minimal search method of labeling.

(56) *Indeterminacy in labeling unprobed merge*



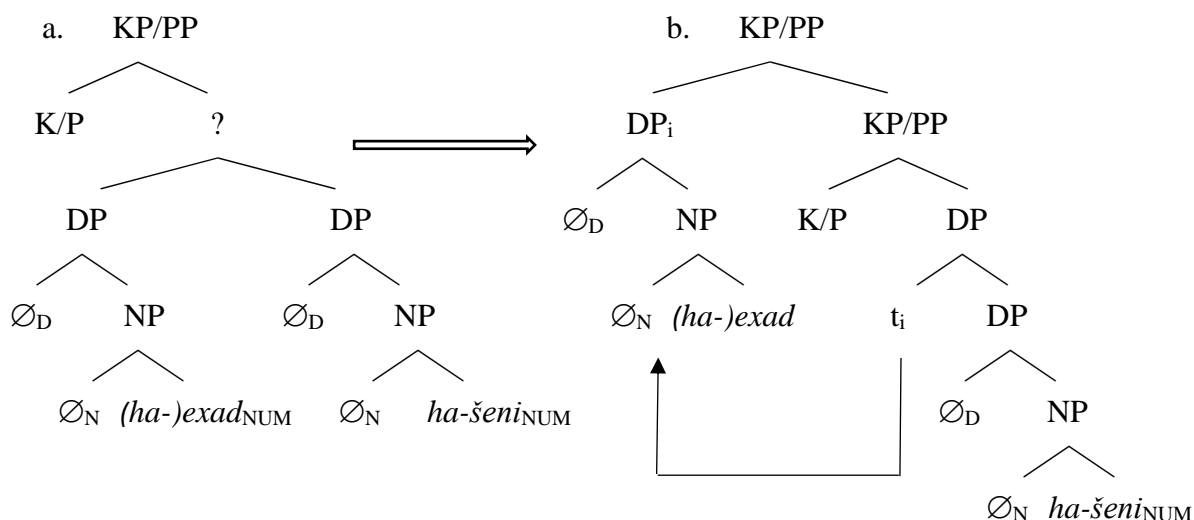
The bipartite reciprocal constructions of strategies I and II in Hebrew are base-generated as the symmetrical structures (56a-b), respectively. Starting with strategy I, both Rec1 and Rec2 are the demonstrative pronoun *ze* ‘this’ (possibly inflected for gender and number). I assume that such a monosyllabic morpheme can only be a head, namely D. Neither one probes the other, so the only possibly way to label K/P’s complement [Rec2 Rec2] is by the movement method (53b). Raising of Rec1 to [Spec,KP/PP] breaks the illicit symmetry of K/P’s complement and allows it to be labeled (by Rec2) as D.

(57) *Derivation of HMRP: Strategy I*



Consider strategy II next. Following the analysis proposed in (7b), I assume that the overt numerals modify null nouns, and that the pronounced [+def] marker (optional on Rec1, obligatory on Rec2) is the result of concord with a null D, in line with the general understanding we have of Hebrew DPs (see fn. 2). Since Rec1 and Rec2 do not probe each other, the structure involves a point of symmetry of type (56b) and RS must apply.

(58) *Derivation of HMRP: Strategy II*



While (57)-(58) represent the final output of RS, they gloss over the fine details of the labeling sequence. Let us take a closer look at these details now. To simplify the exposition, I will talk about P taking a symmetric complement [D1 D2], where D1 and D2 are just Rec1 and Rec2, designated by their labels.

The first stage is Merge (D1,D2), resulting in an unlabeled constituent for the reasons elaborated above. Call this constituent “?1”. The next step is Merge (P,?1). So far, we assumed that the result of this operation is immediately labeled PP, thanks to the head P. But this assumption is not innocuous. Arguably, P provides the label for the outcome of this merging by virtue of the probing method. Note, however, that P’s complement is not yet labeled, hence cannot satisfy P’s probing at this stage. On certain strictly monotonic views of labeling, this outcome is lethal, effectively halting the derivation (see Cecchetto & Donati 2015:35). Chomsky (2013), however, explicitly proposes that full labeling can only be resolved at the phase level. Syntactic constituents, then, may have a short derivational window in which their label is undecided. They may still be manipulated by Merge, provided that when the phase is completed, the resulting configuration is checked for correctness of c-selectional requirements.

It follows that Merge (P,?1) does not and cannot *immediately* deliver a labeled result, so it also delivers an unlabeled category, “?2”. More generally, if X is unlabeled then the mother of X is also unlabeled, simply because the Labeling Algorithm requires as input a *pair* of labeled nodes.

If PPs are phases, all this is unproblematic since the derivation has not crossed a phase boundary yet. However, the fact that P merges with an unlabeled complement has an additional important consequence: The c-selectional feature on P, [uD], which is definitional for prepositions, cannot be checked upon merging with the complement. Because c-selection



requires a label, the implication of having an unlabeled complement in the derivation is that c-selection is *delayed*. How late is it delayed? In fact, there are two options.

Consider the next step, which is just RS: (Internal) Merge (D1,?2), creating a third unlabeled category, “?3”. Its daughter “?2” still carries an unchecked c-selectional feature, [uD], inherited from P. If D1 checks off this feature, “?3” is labeled PP, in virtue of c-selection.<sup>32</sup> Furthermore, the chain <D1,D1> now establishes the lower copy of D1 (inside “?1”) as an incomplete object, allowing “?1” to be labeled by D2 as “D3” (using method (53b)). What about “?2”? The [uD] feature of P has already been used up by the raised Rec1. Notice that the resulting PP dominates two daughters: D1 and ?2. Simple laws of projection require that one of the daughters provide the label for the mother PP. Since it cannot be D1, it follows that ?2 must be labeled PP. Thus all the nodes are properly labeled at the phase level, assuming that PPs are phases (Abels 2012).

(59) *Derivational steps in local HMRP*

- a. Ext. Merge (D1,D2)  $\rightarrow$  {?1,{D1,D2}}
- b. Ext. Merge (P,?1)  $\rightarrow$  {?2,{P,?1}}
- c. Int. Merge (D1,?2)  $\rightarrow$  {?3,{D1,?2}}
- d. Checking [P<sub>[uD]</sub>,D1]  $\rightarrow$  Labeling {P,{D1,?2}}
- e. Labeling {D3,{~~D1~~,D2}}
- f. Labeling {P,{P,D3}}

Thus, the trigger for RS is symmetry breaking, just as we assumed, but the reason it halts at [Spec,PP] is that it satisfies c-selection in that position, launching an immediate cascade of labeling of all the unlabeled nodes in the phase; no further movement is needed and hence none is licensed. The account is principled insofar as it ties triggering and halting to the same source: An unlabeled category (“?1”) which slightly “delays” c-selection.

In fact, c-selection can be delayed slightly more. Operations at the phase level are not intrinsically ordered; any order that yields a converging derivation is possible. Suppose the labeling of {D1,D2} occurs as soon as the chain of <D1,D1> is formed.<sup>33</sup> In other words, step (59e) occurs *before* step (59d). This would have two consequences: (i) checking of [uD] on P will shift from the specifier (D1) to the complement (as is usual), now properly labeled; (ii) the top node of the structure, {?3,{D1,PP}}, will remain unlabeled, since no checking relation has been established between its two daughters (P’s [uD] feature having been exhausted by its

---

<sup>32</sup> Recall that minimal search is not part of the LA in (53), or else D1 would erroneously label the HMRP as a DP, parallel to the mislabeled structures in (54). I assume that ?2, although unlabeled, inherits any feature left unchecked on its daughters, thus allowing it to probe for the missing category at a later stage.

<sup>33</sup> Notice that it cannot occur any earlier, for it depends on D1 being a copy in a chain, and the chain is not defined before D1 internally merges with PP.

complement). In the absence of probing, only movement can label the structure. Therefore, D1 will have to move further up, allowing “?3” to be labeled by its other daughter as PP.

(60) *Derivational steps in non-local HMRP*

- a. Ext. Merge (D1,D2)  $\rightarrow$  {?1,{D1,D2}}
- b. Ext. Merge (P,?1)  $\rightarrow$  {?2,{P,?1}}
- c. Int. Merge (D1,?2)  $\rightarrow$  {?3,{D1,?2}}
- d. Labeling {D3,{~~D1~~,D2}}
- d. Checking [P<sub>[D]</sub>,D3]  $\rightarrow$  Labeling {P,{P,D3}}
- f. Labeling {P,{P,D}}
- g. End of lower phase: {?3,{D1,P}} still unlabeled

This is the derivational basis for the cases of nonlocal RS, where Rec1 targets a KP/PP dominating another one, as in (38). Note that in this higher PP phase, the lower unlabeled phase functions just like the unlabeled category “?1” does in (59): It creates a temporary cascade of unlabeled categories, which will all eventually be resolved when D1 (or Rec1) internally merges with the higher PP-to-become and checks off its [uD] feature.<sup>34</sup>

How far can Rec1 raise? Can it skip two KP/PP projections? In principle it can, but the resulting constructions are exceedingly cumbersome, so it is difficult to interpret their marginal status.

- (61) ?? hem hitxab’u exad **ba**-martef      **šel** ha-bayit      **šel** ha-šeni.  
 they hid.3PL one in.the-basement GEN the-house GEN the-second  
 (‘They each hid in the basement of the house of the other.’)

On the other hand, we have a principled explanation for why RS is “KP/PP-bound”, that is, why Rec1 cannot adjoin to VP or higher up (see (32)-(33)). If KP/PP is a complement of V, it is c-selected by V and so checks a [uP/uK] feature on V. Suppose the KP/PP complement of V is unlabeled because Rec1 has not checked any [uD] feature on K/P and is free to move to the VP domain. The problem is that Rec1 is a D or DP, hence it cannot check a [uP/uK] feature. In other words, the possibility of shifting Rec1 from domain X to a head H non-trivially depends on the fact that *either* Rec1 *or* X can satisfy H’s c-selection, being identical in

---

<sup>34</sup> Bošković (2016) stresses the importance of labeling phases, as an unlabeled phase would disrupt the proper interfaces of syntax with PF and LF, withholding the crucial information required for TRANSFER. Note that the current proposal does not make any phase *permanently* unlabeled. Yet the derivation of nonlocal HMRP implies that the point where a lower node is labeled as PP and determined to be a phase might occur in a higher phase. In fact, it is hard to see how a grammar with successive cyclic movement through phase edges can escape that conclusion. We are therefore led to Chomsky’s (2001) idea that spellout of a phase occurs when the head of the next higher phase is introduced.

category. Any other situation where X is distinct in category from Rec1 will fail to “delay” c-selection in this way. This is what happens whenever a raised DP (Rec1) attempts to check off a mismatching feature on V (e.g., [uK], [uP] or [uC]).<sup>35</sup>

#### 6.4 Explaining variation

The labeling-driven analysis of RS capitalizes on the head-phrase distinction. It is because *both* Rec1 and Rec2 are heads in strategy I that instability arises and RS is recruited to resolve it. Likewise, it is because *both* are phrases in strategy II that the same happens there. In these symmetric structures, Rec1 and Rec2 are simply merged without any probing being involved (note that full symmetry entails lack of probing, for probing is an asymmetric relation). An immediate prediction, therefore, is that reciprocal phrases with an asymmetric head-phrase structure will potentially be formed by probing and therefore *resist* RS.<sup>36</sup>

On this view, movement is not free *even* when it is not triggered by feature checking. Economy at large simply requires any grammatical operation to be justified. Breaking symmetry is a good justification, but if the structure is asymmetric to begin with, so that labeling is unproblematic, this justification is lacking.

We now arrive at a general outlook for the typology of bipartite reciprocal phrases.

(62) *The effect of head/phrase status on reciprocal shift*

	<b>Head-Head</b>	<b>Phrase-Phrase</b>	<b>Head-Phrase Phrase-Head</b>
<b>[K/P Rec1 Rec 2] (HIRP)</b>	✗	✗	✓
<b>[Rec1 K/P Rec 2] (HMRP)</b>	✓	✓	✗

In other words, any instance of RS should be traced to the symmetry between the two components of the reciprocal phrase, while absence of RS should be traced to the presence of

<sup>35</sup> For non-local RS in Italian (29b), it was proposed that Rec1 lands in [Spec,DP]. This implies that Italian D heads optionally carry [uD] to license nominal specifiers (a pronoun or Rec1). What prevents Rec1 in Italian from merging with VP and checking off V’s [uD] feature? The question is more general (as noted by two reviewers). Recall that nominative arguments presumably do not project a KP (explaining (26)), so they must be introduced by a [uD] feature on v. Again, what prevents RS from merging Rec1 with vP and checking off v’s [uD] feature? Notice that the first option would make Rec1 an internal argument (of V), while the second one would make it the external argument (of v), since [uD] on V/v is linked to a thematic role. I assume that such derivations are ruled out by the general ban on movement into  $\theta$ -positions (The *Duality of Semantics*, see Chomsky et al. 2023).

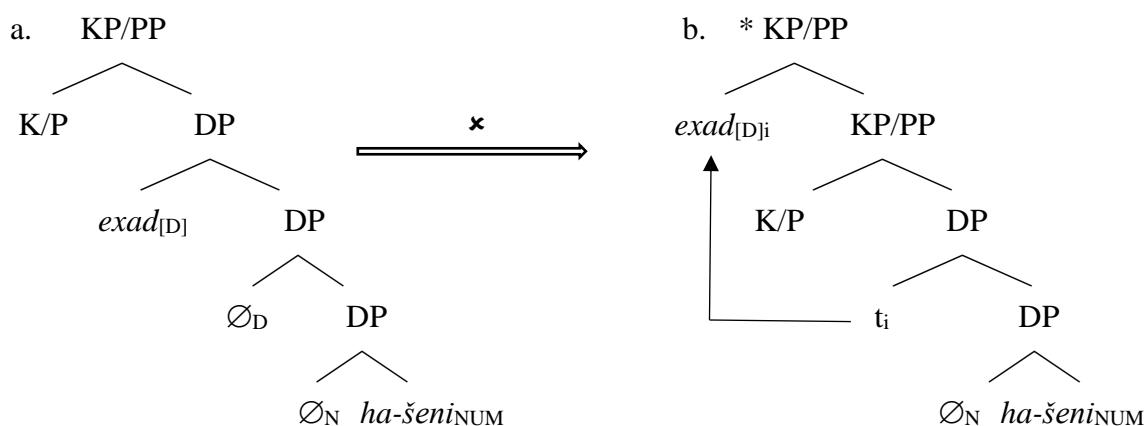
<sup>36</sup> Probing is not logically necessary in head-phrase merge, but in practice, it is nearly always the norm, especially when the head is never seen alternating with a genuine phrase (within the same dialect).

phrasal structure in one component but not in the other. While a detailed investigation of the consequences of this system is beyond the scope of this work, I will now illustrate them with the main classes of data already reported above.

Recall the apparent alternation between HMRP and HIRP in substandard Hebrew (section 5.1) or dialects of Slovenian and Icelandic (section 5.2). Clearly, the very same structure cannot be simultaneously symmetric and asymmetric. Instead, it must be the case that speakers of different dialects assign distinct structural analyses to the same string, namely to [K/P Rec1 Rec2], such that the structure is symmetric under one analysis and asymmetric under the other one. This is possible, I suggest, when the status of the null structure associated with either Rec1 or Rec2 is undecided.

Consider the structures in (58) again. In section 2.1 I argued that, on the basis of the general distribution of numerals and definite markers in Hebrew, speakers can deduce the presence of a null N and a null D in Rec1, *exad* ‘one’ (the D can actually be expressed overtly). This DP structure, in a sisterhood relation with the Rec2 DP, creates a point of symmetry. Suppose, however, that an alternative analysis exists, a sort of “what you see is what you get” (WYSIWYG) analysis, whereby the isolate numeral is the sole element in Rec1; either it is a bare Num, or perhaps it is recategorized as D. After all, these numerals *can* occur as bare arguments (see (7a)); the choice to parse them with or without null structure is informed by a range of paradigmatic and distributional considerations, and we may assume that speakers can harbor different susceptibility to different considerations. Those speakers who opt for the WYSIWYG analysis will end up with an asymmetric structure, where a head (Rec1) merges with a phrase (Rec2).

(63) *Derivation of HIRP: Strategy II (Substandard Hebrew)*



In (63a), *exad* probes its complement and thus projects the label. The idea that the numeral *exad* may select a DP complement is plausible on language-internal grounds, given that definite

DPs with cardinals are formed in Hebrew in a construct state, unambiguously headed by the numeral, which recursively embeds a full DP; see Danon 2012 for data and analysis.

- (64) a. *exad ha-yeladim / axat ha-yeladot*  
 one.M the-boys one.F the-girls  
 ‘One of the boys/girls’  
 b. *šiv’at ha-yeladim / ševa ha-yeladot*  
 seven.M the-boys seven.F the-girls  
 ‘The seven boys/girls’

Let us assume, then, that at least the speakers of the substandard variety under discussion treat *exad* ‘one’ (Rec1) as the head of the HIRP, in analogy to (64a). For speakers who allow either HIRP or HMRP, we may assume multiple analyses, not an uncommon situation in the course of grammatical change, which may or may not eventually converge on a single analysis (see section 6.4).

Clearly, this account should be supported by whatever language-internal evidence exists that bears on the head-or-phrase status of Rec1. In the case of substandard Hebrew, two observations are quite significant. First, in strategy II, although the definite marker *ha-* ‘the’ can be retained in HMRP, it cannot be retained in HIRP, even for those speakers that allow HIRP. Notably, the presence/absence of *ha-* is not associated with any semantic import.

- (65) a. *hem tamid ahavu (ha-)exad et ha-šeni.*  
 they always loved.3PL the-one ACC the-second  
 ‘They have always loved each other.’  
 b. *hem tamid ahavu et (\*ha-)exad ha-šeni. Substandard Hebrew*  
 they always loved.3PL ACC the-one the-second  
 ‘They have always loved each other.’

This is precisely what we expect. A definite marker on the numeral indicates a full DP structure (recall that definiteness spreads from D in Hebrew nominals); a full DP structure for Rec1 would create a point of symmetry with Rec2, which must be resolved by RS.

The second significant observation has been noted in (45a): Substandard Hebrew does not extend HIRP to strategy I.

(66) *Substandard Hebrew*

- hem tamid ahavu ze et zo / \* et ze zo.*  
 they always loved.3PL this.SG.M ACC this.SG.F / \*ACC this.SG.M this.SG.F  
 ‘They have always loved each other.’

Once again, this is as expected. Because Rec1 and Rec2 are identical morphemes in strategy I, neither probes the other. Symmetry will arise either on the head analysis or on the phrase analysis of *ze* (assuming that multiple analyses may coexist in the *grammar* but not in the same *derivation*), and RS will necessarily ensue.<sup>37</sup> In fact, we can generalize this conclusion as (67), which I offer as a potential universal.

- (67) If a language has a bipartite reciprocal construction formed with Rec1-Rec2:  
 Rec1 = Rec2  $\Rightarrow$  \*HIRP (namely, \*[K/P Rec1 Rec2])

The only *apparent* exception to (67) will be a case where the sequence Rec1-Rec2 coalesces into a single syntactic head, undergoing *univerbation*, as the final stage of grammaticalization (e.g. the formation of German *einander*, Dutch *elkar*, Georgian *ertmanet*, Aramic *ḥadāde* and more; see Evans 2008, Bar-Asher Siegel 2020). The exception would be apparent only, however, since a structure with a single head or phrase following K/P no longer counts as bipartite; perforce, it raises no symmetry issues for labeling. In fact, this final stage is nearly inevitable, since structure (63a), although legible to labeling, is modelled on (numeral) construct states in Hebrew. It is well-known that conventionalized construct states are reanalyzed as compounds, shedding off their phrasal properties (Borer 2009, Doron and Meir 2013). It is only natural, then, for Rec1-Rec2 in HIRP to be ultimately fused into a single complex head. Initial indications that this process is under way in Standard Hebrew are provided by the optional phonological reduction occurring in colloquial speech (Bar-Asher Siegel 2020:99), where the first vowel of Rec1 is deleted and the accusative marker *et* is replaced by a colloquial variant *ta*.

- (68) a. *exad et ha-šeni*  $\rightarrow$  *xad ta-šeni* ‘one the second’ (SG.M - SG.F)  
 b. *axat et ha-šniya*  $\rightarrow$  *xat ta-šniya* ‘one the second’ (SG.F – SG.F)

Curiously, univerbation here seems to proceed from HMRP and not from HIRP. I suspect that the reason is phonological. Following vowel reduction and loss of the internal *ha-*, HIRP would produce *ta xad šeni* (or *ta xad šniya*), with a consonant cluster /dš/, which cannot be simplified to a single /t/, as the cluster in (68) can. Yet these forms may appear, for all we know. Univerbation of the bipartite reciprocal phrase in Hebrew is only incipient, as indicated by its highly restricted character: It does not occur with gender mismatched reciprocal phrases (where Rec1 and Rec2 bear different genders), nor with any P head or with the genitive K head *šel*. As change is rapid in this area, it is likely to extend to new formations in the future.

---

<sup>37</sup> The phrase analysis (with a null N) is not unreasonable in light of DPs like (i) in Hebrew.

- (i) yeled ze / yalda zo  
 boy this.SG.M girl this.SG.F  
 ‘This boy / this girl.’

Returning to strategy II in substandard Hebrew, which is manifested in HIRP, it is not so clear whether it has already reached full univerbation or still vacillates between the asymmetric structure (63a) and univerbation; I assume here that as the transition is only beginning to take place, both options are available in the grammar. Importantly, *both* make the prediction that RS is unnecessary (hence excluded), as the reciprocal phrase is properly labeled by a unique D head. We therefore expect examples that were ruled out in Standard Hebrew for failure of RS to be possible in substandard Hebrew, which does not require RS. Such was the case of example (26), repeated below. In section 3 I suggested that the relevant violation here does not concern locality of binding, but rather the absence of a KP projection in nominative DPs, which leaves the obligatory RS with no potential landing site.

- (69) \* ha-yeladim ka'asu še-exad ha-šeni rimu. *Standard Hebrew*  
 the-kids were.angry.3PL that-one the-second cheated.3PL  
 (Intended: 'The kids were each angry that the other had cheated.')

Interestingly, Bar-Asher Siegel (2020:110) notes that the same idiolects allowing the HIRP with no RS (see (44)) also allow reciprocal phrases in nominative positions. Such examples are still not common, but a few already exist on the web.<sup>38</sup>

(70) *Nominative HIRP (Substandard Hebrew)*

- a.anaxnu yod'im ma **exad ha-šeni** margiš aval lo medabrim al ze.  
 we know.PL.M what one the-second feels.SG.M but not speak.PL.M on it  
 'Each of us know what the other one feels but we don't speak about it.'
- b.šney ne'arim mit'ahavim ax lo yod'im  
 two boys fall.in.love.PL.M but not know.PL.M  
 še-**exad ha-šeni** lo ohavim banot.  
 that-one the-second not like.PL.M girls  
 'Two boys fall in love but neither of them knows that the other doesn't like girls.'

This is a promising finding, although more extensive research is needed to establish that (44) and (70) indeed represent the same idiolects (in one website I found a paragraph with one instance of HIRP and another instance of a nominative reciprocal phrase). It furthermore confirms that binding-wise, nothing is wrong with (69), indirectly supporting the labeling-based account.

---

<sup>38</sup> <https://www.askp.co.il/question/228991>

<https://hportal.co.il/index.php?showtopic=113116&st=15#>

As already acknowledged, a systematic crosslinguistic study of the predictions made by (62) and (67) is well worth undertaking but cannot be carried out here.<sup>39</sup> I will end this section by reconsidering the English reciprocal paradigm from (48).

- (71) a. She arranged the statuettes (one) next to (one) another.  
b. She arranged the statuettes (one) next to (\*one) the other.  
c. She arranged the statuettes (\*each) on top of (each) other.

(71b) is straightforward. Rec2 is visibly a phrase, hence the obligatory RS indicates that English speakers necessarily analyze Rec1 (*one*) as a phrase too. Indeed, a common analysis of anaphoric *one* associates it with a null N (Llombart-Huesca 2002, Harley 2007, Kayne 2017), and it is reasonable to extend that conclusion to the Rec1 *one* as well. The phrasal status of both Rec1 and Rec2 in (71b), then, explains why RS is obligatory.

(71c) is also straightforward. Rec1, the quantifier *each*, is a head probing its complement NP, the phrasal Rec2, which contains a null N (*other*  $\emptyset_N$ ), labeling the result as a QP. As in (63), RS is blocked. Finally, the alternation in (71a) suggests that either Rec1 or Rec2 (or both) is ambiguously analyzed. Keeping to the assumption that *one* is phrasal, it is Rec2, *another*, that must be syntactically ambiguous between a head and a phrase. That it can be phrasal – more precisely, associated with a null N – is witnessed in stand-alone contexts (e.g., *Here's a meteor! And here's another!*). But how can *another* project as a bare head? Presumably it is a modifier (perhaps an adjective), so it seems to depend on a head noun to be licensed.

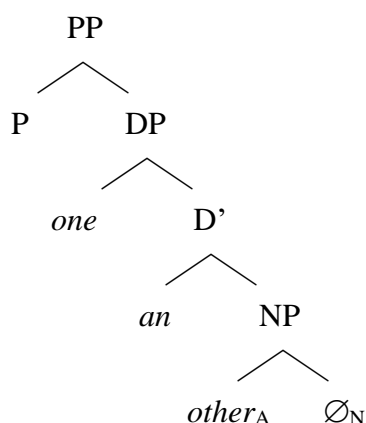
I would like to propose a different solution to the HIRP version of (71a). Rather than taking it to be a bipartite construction, assume that the sequence [Rec1 Rec2] is a single DP constituent, with *one* in its specifier, *an-other* decomposed to D and Adj, and a null noun.

---

<sup>39</sup> Messick & Harðarson (2022) offer a different perspective on the trigger for RS. They propose that Rec1 raises to the edge of the containing phase (a PP) in order to be accessible to case-agreement with its antecedent. This is motivated for languages like Icelandic, Bosnian-Croatian-Serbian, Greek and Telugu, with a case-split between Rec1 and Rec2 (the latter bearing the case assigned to the argument position of the reciprocal). One problem with this idea is the recourse to look-ahead: movement at stage A is triggered by an effect at a later stage B. This is all the more surprising in Icelandic, where a non-movement option has evolved (see (47b)), and Rec1 can get default NOM case in-situ. More broadly, the case-driven account does not generalize to languages without overt case morphology that still employ RS. Notice, in passing, that the existence of RS in case-split languages challenges Richard's (2010) claim that mismatch in Case is (usually) sufficient for Distinctness (hence, should obviate movement).



(72) Structure of [*P one another*]



This somewhat tentative analysis accounts for the HIRP option, and it may also make sense of the intuitive unity of the colloquial phrase *one-another*, which may be progressing towards full univerbation. In short: Both options in (71a) parse *one* as part of a phrasal DP. The HMRP option parses *another* as an adjective modifying a null noun, projecting a separate DP from the *one*-DP, hence creating a point of symmetry and an unlabeled constituent. The HIRP option, in turn, parses *one-an-other* as pieces of a single DP (with a null N), headed by *an* and creating no labeling problem. Note that the analysis in (72) derives one additional fact, namely the exclusion of the definite determiner from Rec1 in this variant (the HMRP marginally tolerates it).

- (73) a. She arranged the statuettes (? the) one next to another.  
b. He arranged the statuettes next to (\*the) one another.

In (73a), *one* in the raised Rec1 can be analyzed as a numeral (Num) following D, but *one* in (73b) is, by hypothesis, the specifier of a DP already hosting an overt head *an*, as in (72), hence there is no room for *the*.

Evidently, the details of particular analyses of bipartite reciprocal constructions in particular languages should be carefully fleshed out. In fact, much of the descriptive work has not been done yet, outside Italian, Icelandic and Hebrew. The analytic tools developed here will hopefully bring to focus the empirical parallels and differences that ought to be addressed in any comprehensive endeavor towards this goal.

#### 6.4 The perspective from diachrony

From a functional point of view, the existence of RS in many grammars is somewhat puzzling. Why would the grammar generate structures that must be “repaired”? If asymmetry is such a

fundamental tenet of syntax, why is it not imposed on initial structures, avoiding the cost of breaking the symmetry by later operations?

The simple answer is that grammars are multidimensional systems, and what appears as “functional” on one dimension may well conflict with the dictates of other dimensions. Yet thanks to extensive studies of how reciprocal constructions emerged and evolved in different grammars, we can offer a more substantive answer to this puzzle.

In the diachronic literature it is generally agreed that the nominal (NP) strategy of reciprocalization is historically descended from a two-unit construction, where Rec1 and Rec2 function independently of each other. One common type of the two-unit construction, which may well survive and co-exist synchronically with the later, grammaticalized one-unit construction, consists of a quantifier (universal or existential) and an alterity word like *other* or *second* (see (13) and fn. 7). It is not restricted to reciprocal meanings and even when it used for conveying them, it usually delivers an exhaustive, strong reading, as opposed to the weak reciprocity of the grammaticalized construction. The historical shift from one construction to the other is a gradual process, e.g. the following description: “Bipartite reciprocal markers seem to occupy different positions on a scale between the transparent use of a quantifier and an alterity word spelling out the reciprocal relation (or allowing an interpretation thereof) on the one hand, and a frozen lexical item being conventionally used as a nominal reciprocal marker with the distribution of an argument expression on the other.” (Stathi & Haas 2008:79).

When grammaticalization advances to the one-unit construction, symmetry and labeling become pertinent. No longer two separate constituents, Rec1 and Rec2, both phrasal constituents, now attempt to fit in a single argument position, which is crucially headless. The problem is rendered more conspicuous in those frequent scenarios in which Rec1 and Rec2 are identical, as in Finnish *toinen toinen* ‘other other’ (Kaiser 2008) or Mising *akon-ə akon* ‘one.NOM one’ (Subbārāo et al. 2021): “Being formally composite – consisting of two (often identical) affixes, words, phrases, or indeed clauses – is a frequent design feature of reciprocal marking in general” (Plank 2008:356). In fact, the doubling strategy is very common in Semitic, where Rec1=Rec2 is either a doubled existential quantifier, common noun (like *man* or *brother*), the numeral *one*, or the demonstrative pronoun (Bar-Asher Siegel 2020), the latter also attested in strategy I in Modern Hebrew.<sup>40</sup>

---

<sup>40</sup> Nonetheless, Bar-Asher Siegel shows that the trajectory of the NP-strategies towards Modern Hebrew was not conventional. Strategy I, originating in Biblical and Mishnaic Hebrew, had only ever existed in a one-unit form. Strategy II entered Hebrew as a one-unit construction in the 19<sup>th</sup> century under Indo-European influence (possibly from Lithuanian), and was later recruited to form secondary two-unit constructions.

There is an obvious *iconic* incentive to express reciprocity through doubling of linguistic units: The visible sameness of or similarity between Rec1 and Rec2 facilitates the perception of the same or similar role their referents play in the complex event. Combine this iconic pressure towards sameness with the common historical origin of reciprocal constructions in two separate phrasal constituents, and your cooking pot contains all the necessary ingredients to produce symmetrical structures that flout the overarching preference of syntax to asymmetry.

This, I believe, is the answer to the puzzle raised above: Why does language create structures that must be repaired? Anything that enters the computational system, be its source historical or iconic, can only be moulded within its formal constraints. Syntax has no control over those external factors, but it has absolute control over its own output. At some point, due to their proximity and occasionally due to the partial impoverishment of independent morphological marking, the two units are re-parsed as a single argument – a one-unit construction. At this very moment, they must be generated together, e.g., as a complement of K/P. Speakers are not aware of the historical trajectory of what they choose to reanalyze as a one-unit construction. For this reason, there is no contradiction between the *diachronic* observation that HIRP historically follows HMRP and the *synchronic* claim that the latter is derived from the former. Before the two-unit construction is reanalyzed as one-unit argument, no problem arises for structure building and labeling. When it is so analyzed, Rec1 and Rec2 must be generated together as a single constituent, simply because syntax has no way *other than movement* to “scatter” around pieces of arguments. But then a point of symmetry is created, labeling becomes impossible, and so repair by movement is called upon, producing the surface word order.

The synchronic and diachronic accounts of reciprocal constructions complement each other (no pun intended). As we saw, the diachronic data explain why syntax is faced with the problem of resolving symmetrical structures in the NP-strategy to begin with. However, the diachronic account, in and of itself, does not provide a complete answer to the question why grammaticalization can stop at HMRP and not proceed to HIRP. In other words, the impressive crosslinguistic *stability* of HMRP as a productive format for bipartite constructions (e.g., strategy I has practically gone unchanged since Biblical Hebrew to the present) is not easy to explain on the diachronic scenario, which ultimately aims towards fusion in the HIRP format.<sup>41</sup> Furthermore, even within HIRP, it is not clear why the process cannot halt at the two-phrase stage [K/P DP<sub>Rec1</sub> DP<sub>Rec2</sub>]. As far as we know, this is never a stable outcome, and it must be converted to a single word outcome, [K/P DP<sub>Rec</sub>].

---

<sup>41</sup> Staps (2020:66) suggests that “bipartite reciprocal markers only grammaticalize into one-unit pronouns when a case marker is not obligatory”. Note that this hypothesis begs the question of what licenses the exceptional medial position of K/P in KP/PP as a stable construction in many languages that are otherwise consistently prepositional. Moreover, the development of HIRP in substandard Hebrew (section 5.1), where the ACC marker is *retained*, militates against this proposal.

Both questions receive a unified answer on the present syntactic account. Symmetric structures like [K/P DP<sub>Rec1</sub> DP<sub>Rec2</sub>] cannot be the ultimate terminus of diachronic change because they cannot be properly labeled. Thus, they must be resolved in one of two ways: (i) Applying RS to produce [DP<sub>Rec1</sub> K/P DP<sub>Rec2</sub>], or (ii) univerbation of the two members into [K/P DP<sub>Rec</sub>]. Either strategy is legitimate insofar as it breaks the symmetry and allows the complement of K/P to be labeled. From a purely syntactic point of view, both are stable outcomes. Particular bipartite constructions in particular languages may then be subject to occasional influences that push towards solution (i) or (ii), but neither one should be considered simpler or “more economical” than the other.

## 7. Conclusion

Bipartite reciprocal constructions display many differences across languages: They may consist of quantifiers, common nouns, modifiers or pronouns; their two members may be monomorphemic or phrasal; they may inflect to the same degree or not; and when they do inflect, they may register any subset of  $\phi$ -features and case. Despite all this crosslinguistic variability, there are a few remarkable recurring patterns at the syntactic level. One such pattern involves the combination of bipartite reciprocal phrases with prepositions and case particles. Again and again we find the K/P head buried inside the KP/PP, an outstanding exception in languages otherwise consistently projecting head-initial KP/PP constituents. It is this “systematic irregularity” that calls for a principled explanation.

Focusing on the Hebrew reciprocal construction (but with an eye open to close parallels in other languages), I proposed that the “systematic irregularity” should be viewed as systematic *regularity* from a higher vantage point – namely, that of maintaining asymmetry in syntactic configurations. Ultimately, what makes bipartite reciprocal phrases exceptional is not their surface syntax but rather their underlying syntax: It is the attempt to “squeeze in” two nominal projections in a single nominal slot. One way of doing it is to reduce the two projections to such an extent that they would fit into the structural space of a single DP; this is known as univerbation. Otherwise, the two phrases create a symmetrical structure that cannot survive. This idea was cashed out within the labeling framework of recent minimalism, where immediate labeling is only guaranteed for endocentric categories. Exocentric categories, such as the constituent [Rec1 Rec2], can only be labeled if one of their constituents moves. Reciprocal shift to the specifier of KP/PP achieves that goal, yielding [Rec1 K/P Rec2].

An interesting implication of the analysis, so far implicit in labeling-based syntax, is that c-selection, normally thought of as the online “book-keeper” of structure building, can be checked somewhat “offline”, that is, at the phase level. Another implication, again implicit and rarely

observed in action, is that heads do not select “complements” or “specifiers”; these are merely conventional labels for the more fundamental concepts of “first merge” and “second merge”. Although normally the complement of K/P satisfies the head’s c-selectional feature, in HMRP configurations, Rec1, which raises to [Spec,KP/PP], can accomplish that goal.

This study also highlights the value of integrating insights from typology and diachrony into theoretical syntax. Specifically for Hebrew, the KP hypothesis has not been proposed or tested previously; yet the behavior of accusative and genitive reciprocal phrases strongly corroborates it. The overall landscape of bipartite reciprocal constructions in the history of Semitic lends itself to analogous treatments, with interesting variations in the extent to which grammaticalization proceeded from the two-unit construction to the fused, singular reciprocal pronoun. Our analysis makes specific predictions regarding correlations between the presence of HMRP and the head vs. phrase status of Rec1 and Rec2. Admittedly, these predictions are embedded in a broader understanding of the distribution of null nouns (or determiners) in the languages of interest, but this distribution too is open to empirical investigation.

Open questions remain, e.g., how is symmetry breaking expressed in head-final languages (e.g., Indo-Aryan)? In these languages, reciprocal shift to the left – if it is indeed to the left – would leave the [Rec1 Rec2 K/P] string unchanged (see fn. 30). This may well be a promising testing ground for deciding between PF-based notions of symmetry breaking (Chomsky 1994, Moro 2000, Nunes 2004), and configuration-based notions (Kayne 1994, Richards 2010, Chomsky 2013), for it is only on the latter view that string-vacuous movement is still forced when structural symmetry arises. Thus, while Telugu manifests HMRP with a right-shifted R2 (i.e., [Rec1 K/P Rec2]), Lezgian only manifests head final reciprocal phrases [Rec1 Rec2 K/P], where Rec1 case-agrees with the antecedent (Hapselmath 1993, Messick & Raghotham to appear), possibly indicating its displaced position.

Other consequences follow for the possible detection of null structure inside nominal projections – null K heads that trigger movement, null N heads accompanying numeral/adjectival modifiers, and so on. Hopefully, these questions will feed into future studies of reciprocal constructions and symmetry breaking in syntax, at large.

### **Acknowledgements**

I am grateful to Elitzur Bar-Asher Siegel for comments on an early draft of this work and to two anonymous NLLT reviewers whose incisive comments greatly improved the analysis and presentation.

## References

- Abels, Klaus. 2012. *Phases: An Essay on Cyclicity in Syntax*. Berlin: De Gruyter.
- Arregi, Karlos, Francez, Itamar, and Martinović, Martina. 2020. Three Arguments for an Individual Concept Analysis of Specificational Sentences. *Natural Language and Linguistic Theory* 39:687–708.
- Atlamaz, Umit, and Baker, Mark. 2018. On Partial Agreement and Oblique Case. *Syntax* 21:195–237.
- Bar-Asher Siegal, Elitzur A. 2020. *The NP-strategy for Expressing Reciprocity*. Amsterdam: John Benjamins.
- Bayer, Joseph, Bader, Markus, and Meng, Michael. 2001. Morphological Underspecification Meets Oblique Case: Syntactic and Processing Effects in German. *Lingua* 111:465–514.
- Beck, Sigrid. 2001. Reciprocals are Definites. *Natural Language Semantics* 9:69–138.
- Bittner, Maria, and Hale, Ken. 1996. The Structural Determination of Case and Agreement. *Linguistic Inquiry* 27:1–68.
- Bobaljik, Jonathan. D. 2002. A-Chains at the PF-Interface: Copies and 'Covert' Movement. *Natural Language and Linguistic Theory* 20:197–267.
- Borer, Hagit. 2009. Compounds: The view from Hebrew. In *The Oxford Handbook of Compounding*, eds. Rochelle Lieber and Pavol Štekauer, 491–511. Oxford: Oxford University Press.
- Borer, Hagit, and Roy, Isabelle. 2010. The Name of the Adjective. In *Adjectives: Formal Analyses in Syntax and Semantics*, eds. Patricia Cabredo Hofherr and Ora Matushansky, 85–114. Amsterdam: John Benjamins.
- Bošković, Željko. 2001. *On the Nature of the Syntax-Phonology Interface: Cliticization and Related Phenomena*. Amsterdam: Elsevier Science.
- Bošković, Željko. 2016. On the Timing of Labeling: Deducing Comp-trace Effects, The Subject Condition, The Adjunct Condition, and Tucking-in from Labeling. *The Linguistic Review* 33:17–66.
- Bošković, Željko. 2018. On Movement out of Moved Elements, Labels, and Phases. *Linguistic Inquiry* 49:247–282.
- Bošković, Željko. 2020. On The Coordinate Structure Constraint, Across-the-Board-Movement, Phases and Labeling. In *Recent Developments in Phase Theory*, eds. Jeroen van Craenenbroeck, Cora Pots and Tanja Temmerman, 133–182. Berlin: Mouton de Gruyter.
- Bošković, Željko. 2021a. Generalized Asymmetry. In *Keynotes from the International Conference on Explanation and Prediction in Linguistics: Formalist and Functionalist Approaches*, eds. Peter Kosta and Katrin Schlund, 15–77. Frankfurt am Main: Peter Lang.
- Bošković, Željko. 2021b. Merge, Move, and Contextuality of Syntax: The Role of Labeling, Successive-Cyclicity, and EPP Effects. Ms., UCONN.
- Breuning, Benjamin. 2022. Hebrew Nominals Do Not Require Functional Structure Above the NP. *Glossa* 7 DOI: <https://doi.org/10.16995/glossa.5763>.
- Cecchetto, Carlo, and Donati, Caterina. 2015. *(Re)labeling*. Cambridge, MA: MIT Press.
- Chomsky, Noam. 1994. *Bare Phrase Structure*. Cambridge, MA: MIT Working Papers in Linguistics.
- Chomsky, Noam. 2001. Derivation by Phase. In *Ken Hale: A Life in Language*, ed. Michael Kenstowicz, 1–52. Cambridge, Massachusetts: MIT Press.
- Chomsky, Noam. 2008. On Phases. In *In Foundational Issues in Linguistic Theory: Essays in Honor of Jean-Roger Vergnaud*, eds. Robert Freidin, Carlos Peregrín Otero and Maria Luisa Zubizarreta, 133–166. Cambridge, MA: MIT Press.
- Chomsky, Noam. 2013. Problems of Projection. *Lingua* 130:33–49.
- Chomsky, Noam. 2015. Problems of Projection: Extensions. In *Structures, Strategies and Beyond : Studies in honour of Adriana Belletti*, eds. Elisa Di Domenico, Cornelia Hamann and Simona Matteini, 1–16. Amsterdam: John Benjamins.
- Chomsky, Noam, Seely, T. Daniel, Berwick, Robert C., Fong, Sandiway, Huybregts, M. A. C., Kitahara, Hisatsugu, McInnerney, Andrew, and Sugimoto, Yushi. 2023. *Merge and the Strong Minimalist Thesis: Elements in Generative Syntax*. Cambridge: Cambridge University Press.
- Citko, Barbara, Germain, Allison, and Witkoś, Jacek. 2018. If You Cannot Agree, Move On! On Labels and Non-nominative Subjects. *Glossa* 3(1): 28 DOI:<https://doi.org/10.5334/gjgl.399>.
- Cornilescu, Alexandra. 2003. Romanian Genitives Revisited. *Bucharest Working Papers in Linguistics* 5:104–128.
- Cornilescu, Alexandra. 2020. Ditransitive Constructions with Differentially Marked Direct Objects in Romanian. In *Dative Constructions in Romance and Beyond*, eds. Anna Pineda and Jaume Mateu, 117–142. Berlin: Language Science Press.
- Corver, Norbert, and Nunes, Jairo. 2007. *The Copy Theory of Movement*. Amsterdam: John Benjamins.
- Dalrymple, Mary, Kanazawa, Makoto, Kim, Yookyung, Mchombo, Sam A., and Peters, Stanley. 1998. Reciprocal Expressions and the Concept of Reciprocity. *Linguistics and Philosophy* 21:159–220.
- Danon, Gabi. 2006. Caseless Nominals and the Projection of DP. *Natural Language & Linguistic Theory* 24:977–1008.

- Danon, Gabi. 2012. Two Structures for Numeral-Noun Constructions. *Lingua* 122:1282-1307.
- Daskalaki, Evangelia. 2011. Case Mis-matching as Case Stranding. *UPENN Working Papers in Linguistics* 17:77-86.
- den Dikken, Marcel. 1998. Predicate Inversion in DP. In *Possessors, Predicates and Movement in the Determiner Phrase*, eds. Artemis Alexiadou and Chris Wilder, 177-214. Amsterdam: John Benjamins.
- di Sciullo, Anna Maria ed. 2003. *Asymmetry in Grammar*. vol. Volume I. Amsterdam: John Benjamins.
- Doron, Edit, and Meir, Irit. 2013. Construct State: Modern Hebrew. In *The Encyclopedia of Hebrew Language and Linguistics*, ed. Geoffrey Khan. Brill Online.
- Engelhardt, Miriam. 2000. The Projection of Argument-Taking Nominals. *Natural Language & Linguistic Theory* 18:41-88.
- Evans, Nicholas. 2008. Reciprocal Constructions: Towards a Structural Typology. In *Reciprocals and Reflexives - Theoretical and Crosslinguistic Explanations*, eds. Ekkehard König and Volker Gast. Berlin: de Gruyter Mouton.
- Evans, Nicholas, Gaby, Alice, Levinson, Stephen C., and Majid, Asifa eds. 2011. *Reciprocals and Semantic Typology*. Amsterdam: John Benjamins.
- Everaert, Martin. 2008. Domain restrictions on Reciprocal Interpretation. In *Reciprocals and Reflexives: Theoretical and Typological Explorations*, eds. Ekkehard König and Volker Gast, 557-576. Berlin: De Gruyter Mouton.
- Gallego, Ángel J. 2017. Remark on the EPP in Labeling Theory: Evidence from Romance. *Syntax* 20:384-399.
- Grohmann, Kleanthes. 2011. Antilocality: Too Close Relations in Grammar. In *The Oxford Handbook of Linguistic Minimalism*, ed. Cedric Boeckx, 260-290. Oxford: Oxford University Press.
- Guentchéva, Zlatka, and Rivière, Nicole. 1992. Reciprocal and Reflexive Constructions in French. In *Reciprocal Constructions*, ed. Vladimir P. Nedjalkov, 561-607. Amsterdam: John Benjamins.
- Haider, Hubert. 2016. *Symmetry Breaking in Syntax*. Cambridge: Cambridge University Press.
- Halevy, Rivka. 2011a. Reciprocal Constructions in Hebrew between Syntax and the Lexicon (Mivney hadadiyut be-Iverit beyn ha-taxbir la-leksikon). *Leshonenu* 73:401-422.
- Halevy, Rivka. 2011b. The Grammaticalization of Bipartite Reciprocal Markers in Hebrew. *Hebrew Studies* 52:7-18.
- Halevy, Rivka. 2013. Reciprocals. In *Encyclopedia of Hebrew Language and Linguistics*, ed. Geoffrey Khan, 323-327. Leiden & Boston: Brill.
- Hapselmath, Martin. 1993. *A Grammar of Lezgian*. Berlin: Mouton de Gruyter.
- Harley, Heidi. 2007. One-Replacement, Unaccusativity, Acategorial roots, and Bare Phrase Structure. *Harvard Working Papers on Linguistics* 11:637-678.
- Heim, Irena, Lasnik, Howard, and May, Robert. 1991. Reciprocity and Plurality. *Linguistic Inquiry* 22:63-101.
- Heycock, Caroline. 2012. Specification, Equation, and Agreement in Copular Sentences. *Canadian Journal of Linguistics* 57:209-240.
- Kaiser, Eli. 2008. Consequences of Using One Form and Not the Other: Interpreting Finnish Reciprocals. In *Proceedings of WCCFL 27*, eds. Natasha Abner and Jason Bishop, 256-264. Somerville, MA: Cascadia Press.
- Kayne, Richard. 1994. *The Antisymmetry of Syntax*. Cambridge, MA: MIT Press.
- Kayne, Richard. 2017. English *One* and *Ones* as Complex Determiners. In *Perspectives on the Architecture and Acquisition of Syntax: Essays in Honor of R. Amritavalli*, eds. Gautam Sengupta, Shruti Sircar, Madhavi Gayathri Raman and Rahul Balusu, 77-114. Dordrecht: Springer.
- Kayne, Richard S. 2022. Antisymmetry and Externalization. *Studies in Chinese Linguistics* 1:1-20 DOI:10.2478/scl-2022-0001.
- Kobayashi, Filipe Hisao 2020. Composing Reciprocity: An analysis of Scattered Reciprocals. In *Proceedings of SALT 30*, eds. Joseph Rhyne, Kaelyn Lamp, Nicole Dreier and Chloe Kwon, 734-752. Ithaca, NY: LSA and CLC.
- König, Ekkehard, and Gast, Volker eds. 2008. *Reciprocals and Reflexives - Theoretical and Crosslinguistic Explanations*. Berlin: de Gruyter Mouton.
- Lamontagne, Greg, and Travis, Lisa. 1986. The Case Filter and the ECP. *McGill Working Papers in Linguistics* 3:51-75.
- Landau, Idan. 2018. Missing Objects in Hebrew: Argument Ellipsis, not VP Ellipsis. *Glossa* 3(1), 76:1-37.
- Lebeaux, David. 1983. A Distributional Difference between Reciprocals and Reflexives. *Linguistic Inquiry* 14:723-730.
- Llombart-Huesca, Amàlia. 2002. Anaphoric *One* and NP-Ellipsis. *Studia Linguistica* 56:59-89.
- Löbel, Elizabeth. 1994. KP/DP Syntax: Interaction of Case-Marking with Referential and Nominal Features. *Theoretical Linguistics* 20:37-70.
- López, Luis. 2012. *Indefinite Objects: Scrambling, Choice Functions and Differential marking*. Cambridge, MA: MIT Press.

- Mannien, Satu. 2003. *Small Phrase Layers: A study of Finnish Manner Adverbials*. Amsterdam: John Benjamins.
- Manzini, Rita. 2019. The Agreement of Structural Obliques Parameter: Pseudopartitives, DOM and Partitive Articles in Romance *Studies in Polish Linguistics* Special volume:35-51.
- Messick, Troy, and Harðarson, Gísli R. E-raising Reconsidered: Constituency, Coordination and Case-agreeing Reciprocals. To appear in *Linguistic Inquiry*.
- Messick, Troy, and Raghotham, Sreekar. On Case-copying Reflexives. To appear in *Natural Language and Linguistic Theory*.
- Messick, Troy. 2020. The Derivation of Highest Subject Questions and the Nature of the EPP. *Glossa* 5(1):13 DOI:<https://doi.org/10.5334/gjgl.1029>.
- Moro, Andrea. 1997. Dynamic Antisymmetry: Movement as a Symmetry-Breaking Phenomenon. *Studia Linguistica* 51:50-76.
- Moro, Andrea. 2000. *Dynamic Antisymmetry*. Cambridge, MA: MIT Press.
- Moro, Andrea. 2009. Rethinking Symmetry: A Note on Labeling and the EPP. *Snippets* 19:17-18.
- Nissenbaum, Jon. 2000. *Investigations of Covert Phrase Movement*. PhD dissertation, MIT.
- Nordlinger, Rachel. 2023. The Typology of Reciprocal Constructions. *Annual Reviews of Linguistics* 9:71-91.
- Nunes, Jairo. 2004. *Linearization of Chains and Sideward Movement*. Cambridge, MA: MIT Press.
- Ott, Denis. 2012. *Local Instability: Split Topicalization and Quantifier Float in German*. Berlin: De Gruyter.
- Paparonas, Lefteris, and Salzman, Martin. The Syntax of Greek Discontinuous Reciprocals. To appear in *Syntax*.
- Pereltsvaig, Asya. 2006. Head Movement in Hebrew Nominals: A Reply to Shlonsky. *Lingua* 116:A1-A40.
- Plank, Frans. 2008. Thoughts on the Origin, Progress, and Pronominal Status of Reciprocal Forms in Germanic, Occasioned by those of Bavarian. In *Reciprocals and Reflexives: Theoretical and Typological Explorations*, eds. Ekkehard König and Volker Gast, 347-373. Berlin: De Gruyter.
- Pollard, Carl, and Sag, Ivan A. 1992. Anaphors in English and the Scope of Binding Theory. *Linguistic Inquiry* 23:261-303.
- Preminger, Omer. 2020. Functional Structure in the Noun Phrase: Revisiting Hebrew Nominals. *Glossa* 5 DOI:<https://doi.org/10.5334/gjgl.1244>.
- Reinhart, Tanya, and Reuland, Eric. 1993. Reflexivity. *Linguistic Inquiry* 24:657-720.
- Richards, Norvin. 2010. *Uttering Trees*. Cambridge, MA: MIT Press.
- Rizzi, Luigi. 2015a. Cartography, Criteria, and Labeling. In *Beyond the Functional Sequence*, ed. Ur Shlonsky, 314-338. New York: Oxford University Press.
- Rizzi, Luigi. 2015b. Notes on Labeling and Subject Positions. In *Structures, Strategies and Beyond: Studies in honour of Adriana Belletti*, eds. Elisa Di Domenico, Cornelia Hamann and Simona Matteini, 17-46. Amsterdam: John Benjamins.
- Rizzi, Luigi. 2016. Labeling, Maximality and the Head – Phrase Distinction. *The Linguistic Review* 33:103-127.
- Romero, Maribel. 2005. Concealed Questions and Specificational Subjects. *Linguistics and Philosophy* 28:687-737.
- Rosselló, Joana. 2008. Some Arguments Against Some Prevalent Ideas on Specificational Sentences. *Journal of Portuguese Linguistic* 7:109-130.
- Roy, Isabelle. 2023. Predication, Specification, Equation. Handout of a talk given in Oxford University.
- Sabbato, Siva, and Winter, Yoad. 2012. Relational Domains and the Interpretation of Reciprocals. *Linguistics and Philosophy* 35:191-241.
- Saito, Mamoru. 2018. Kase as a Weak Head. *McGill Working Papers in Linguistics (Special Issue in Honour of Lisa Travis)* 25:382-391.
- Shlonsky, Ur. 2004. The Form of Semitic Noun Phrases. *Lingua* 114.
- Shlonsky, Ur. 2006. Rejoinder to "Pereltsvaig's Head movement in Hebrew Nominals: A Reply to Shlonsky". *Lingua* 116:1195-1197.
- Sichel, Ivy. 2003. Phrasal Movement in Hebrew DPs. In *Research in Afroasiatic Grammar II: Selected Papers from the Fifth Conference on Afroasiatic Languages, Paris, 2000*, ed. Jacqueline Lecarme, 447-479. Amsterdam: John Benjamins.
- Sichel, Ivy. 2007. Raising in DP Revisited. In *New Horizons in the Analysis of Control and Raising*, eds. William D. Davies and Stanley Dubinsky, 15-34. Dordrecht: Springer.
- Sigurðsson, Halldór Á., Wood, Jim, and Sigurðsson, Einar F. 2020. Hvor 'Each' Reciprocals and Distributives in Icelandic: E-Raising + Short Main Verb Movement. *Linguistic Inquiry* 53:571-588.
- Siloni, Tal. 2008. The Syntax of Reciprocal Verbs: An Overview. In *Reciprocals and Reflexives: Theoretical and Typological Explorations*, eds. Ekkehard König and Volker Gast, 451-498. Berlin: Mouton de Gruyter.
- Siloni, Tal. 2012. Reciprocal verbs and Symmetry. *Natural Language & Linguistic Theory* 30:261-320.
- Sinha, Yash. 2017. Ergative Case Assignment in Hindi-Urdu: Evidence from Light Verb Compounds. *Proceedings of the LSA* 2:32:1-14.



- Staps, Camil. 2020. Prepositions and the Grammaticalization of Ancient Hebrew Bipartite Reciprocal Markers. *Journal of Semitic Studies* 65:61-84.
- Stathi, Katerina, and Haas, Florian. 2008. The Morphosyntactic Status of the Greek Bipartite Reciprocal in Cross-linguistic Perspective. *Language Typology and Universals* 61:67–80.
- Stepanov, Arthur. 2007. The End of CED? Minimalism and Extraction Domains. *Syntax* 10:80-126.
- Subbārāo, Kārumūri V., and Murthy, B. Lalitha 2000. Lexical Anaphors and Pronouns in Telugu. In *Lexical Anaphors and Pronouns in Selected South Asian Languages: A Principled Typology*, eds. Barbara C. Lust, Kashi Wali, James W. Gair and Kārumūri V. Subbārāo, 217-273. Berlin: de Gruyter Mouton.
- Subbārāo, Kārumūri V., Taid, Tabu, and Everaert, Martin. 2021. Reflexive and Reciprocal Marking in Mising. In *Trends in South Asian Linguistics*, eds. Ghanshyam Sharma and John J. Lowe, 291-310. Berlin: De Gruyter Mouton.
- Travis, Lisa, and Lamontagne, Greg. 1992. The Case Filter and Licensing of Empty K. *Canadian Journal of Linguistics* 37:157-174.
- Vardi, Yarden. 2022. *Argument Ellipsis of Prepositional Phrases in Hebrew*. MA thesis, Ben Gurion University.
- Vezzosi, Letizia. 2010. Micro-processes of Grammaticalization: The case of Italian *l'un l'altro*. In *Grammaticalization : Current Views and Issues*, eds. Katerina Stathi, Elke Gehweiler and Ekkehard König, 343-372. Amsterdam: John Benjamins.
- Weerman, Fred, and Evers-Vermeul, Jacqueline. 2001. Pronouns and Case. *Lingua* 112:301-338.
- Williams, Edwin. 1991. Reciprocal Scope. *Linguistic Inquiry* 22:159-173.
- Zimmermann, Ilse. 2014. Reciprocity Expressions. In *The Nominal Structure in Slavic and Beyond*, eds. Lilia Schürcks, Anastasia Giannakidou and Urtzi Etzeberria, 275-298. Berlin: de Gruyter Mouton.
- Živanović, Sašo. 2016. Quo Vadis, Slovenian Bipartite Pronouns? In *Formal Studies in Slovenian Syntax : In honor of Janez Orešnik*, eds. Franc L. Marušič and Rok Žaucer, 313–328. Amsterdam: John Benjamins.