

Scattered Reciprocals*

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Workshop on Cross-Linguistic Semantics of Reciprocals

Utrecht University | 7 October 2019

1 Introduction

- **Scattered Reciprocals (SRs)**: syntactically complex reciprocals constructions built from two autonomous phrases, one in an adverbial-like position and another in an argumental one.

- (1)
- | | | |
|----|---|-----------------------------|
| a. | Os meninos compraram um a foto d- o outro . | |
| | the boys bought one the photo of-the other | |
| | ‘The boys bought each other’s photo.’ | <i>Brazilian Portuguese</i> |
| b. | I ragazzi hanno comprato l’-uno la foto dell’-altro . | |
| | the boys have bought the-one the photo of.the-other | |
| | ‘The boys bought each other’s photo.’ | <i>Italian</i> |
| c. | Ta agoria agorasan o enas tin fotografia tu allu . | |
| | the boys bought the one the photo of.the other | |
| | ‘The boys bought each other’s photo.’ | <i>Greek</i> |
| d. | Ha-yeladim kanu exad et ha-tmuna sel ha-seni . | |
| | the-boys bought one ACC the-picture of the-second | |
| | ‘The boys bought each other’s photo.’ | <i>Hebrew</i> |

- (2) *Schema for Scattered Reciprocals*

[Antecedent ... [**one** ... [... **other** ...]]]

argument position adverbial-like position argument position

- SRs have been investigated in only a few studies in the formal literature (e.g. Belletti 1982, Arregi 2001).¹ This talk aims to fill in this gap, building primarily on data from Brazilian Portuguese.
- In this talk, I will be concerned with a question immediately raised by the syntactic complexity of SRs: how do the pieces of SRs compose to give rise to the meaning of reciprocity?

*For their judgements, I thank Ido Benbaji, Sherry Yong Chen, Christos Christopoulos, Omri Doron, Enrico Flor, Sabine Iatridou, and Stan Zoppi’. For valuable discussion and feedback, I thank Athulya Aravind, Christopher Baron, Keny Chatain, Sherry Yong Chen, Luka Crnič, Patrick Elliott, Danny Fox, Kai von Fintel, Enrico Flor, Martin Hackl, Sabine Iatridou, David Pesetsky, Eric Reuland, Roger Schwarzschild, Stan Zoppi’, and the students of the MIT Workshop of Spring 2019. All usual disclaimers apply.

¹LaTerza (2011, 2014) analyzes similar constructions found in many other Indo-European languages. However, I do not refer to those as Scattered Reciprocals because they lack a crucial property of the constructions I focus on: the unbounded dependency between *one* and *other*. See appendix for other differences.

- To answer this question, I will consider two approaches concerning the mapping between syntactic structures and reciprocal meanings:
 - **The decompositional approach:** reciprocity is decomposed into two operations, each performed by a distinct syntactic object.
 - **The polyadic quantifier approach:** reciprocity involves a single polyadic quantifier.
- Although initial appearances might suggest a decompositional analysis of SRs, I present evidence that SRs *must* be analyzed as involving a polyadic quantifier.
- Having shown this, I develop a compositional analysis of SRs within Dalrymple et al.'s (1998) theory of reciprocity. The resulting analysis accounts for both those properties of SRs that are shared with other reciprocal constructions and those that are particular to SRs.
- **Roadmap for today:**
 - §2. General properties of Scattered Reciprocals: semantics and syntax
 - §3. Two approaches to the mapping between the syntax and the semantics of reciprocals
 - §4. A test to tease apart these two approaches
 - §5. Proposal
 - §6. Final remarks

2 General Properties of Scattered Reciprocals

2.1 Scattered Reciprocals are interpreted as Reciprocals

- Like other reciprocal constructions found cross-linguistically, SRs allow for a variety of possible interpretations (below is not meant to be an exhaustive list):²
 - (3) a. *Strong Reciprocity*
 $\forall y \in A \forall x \in A [x \neq y \rightarrow R(y)(x)]$
 b. Os meninos gostam **um** d-o cachorro d-**o** **outro**.
 the boys like one of-the dog of-the other
 'The boys like each other's dog.'
 - (4) a. *One-Way Weak Reciprocity*
 $\forall y \in A \exists x \in A [x \neq y \wedge R(y)(x)]$
 b. Os meninos estão **um** olhando o cachorro d-**o** **outro**.
 the boys are one looking the dog of-the other
 'The boys are looking at each other's dog.'
 - (5) a. *Intermediate Reciprocity*
 $\forall x \in A \forall y \in A [x \neq y \rightarrow \exists m \exists z_0, \dots, z_m \in A [x = z_0 \wedge y = z_m \wedge R(z_1)(z_0) \wedge \dots \wedge R(z_m)(z_{m-1})]]$
 b. Os meninos estão **um** sentados d-o lado d-**o** **outro**.
 the boys are one seated on-the side of-the other
 'The boys are seated alongside each other.'

²The definitions of these different readings come from Langendoen (1978) and Dalrymple et al. (1998).

- (6) a. *Intermediate Alternative Reciprocity*
 $\forall x \in A \forall y \in A [x \neq y \rightarrow \exists m \exists z_0, \dots, z_m \in A [x = z_0 \wedge y = z_m$
 $\wedge (R(z_1)(z_0) \vee R(z_0)(z_1)) \wedge \dots \wedge (R(z_{m-1})(z_m) \vee R(z_m)(z_{m-1}))]]$
- b. Os pratos estão **um** empilhados em cima d-**o** **outro**.
the plates are one stacked on top of-the other
‘The plates are stacked on top of each other.’

- SRs thus differs from English *each ... the other(s)* sentences such as (7), given that these sentences do not have such a wide range of readings:

(7) The students **each** talked with the supervisor of **the other(s)**.

- (8) a. #The boys are **each** seated next to **the other(s)**.
b. #The plates are **each** stacked on top of **the other(s)**.

2.2 Particular properties of Scattered Reciprocals

- Differently from English *each other*, SRs always involves distributivity down to atoms for both the first and the second argument of the reciprocated relation:

- (9) Os animais velhos e os animal novos vão ser **um** separados d-**o** **outro**.
the animals old and the young animals will be one separated from-the other
‘Every animal will be separated from every other animal.’
*‘The old animals will be separated from the young animals.’

- Furthermore, SRs cannot have *pluralia tantum* nouns as antecedents:

- (10) *As costas d-o João e d-a Maria estão **uma** encostando n-**a** **outra**.
the backs of-the João and of-the Maria are one touching on-the other
Intended: ‘João and Maria’s backs are touching each other.’

- Finally, the position of *one* seems to track down the scope of distributivity in SRs:

- (11) a. O Pedro e o José vão dar dois presentes **um** pr-**o** **outro**.
the Pedro and the José will give two gifts one to-the other
‘Pedro and José will give two gifts to each other.’ $2 \gg \text{Dist}; \text{Dist} \gg 2$
- b. O Pedro e o José vão **um** dar dois presentes pr-**o** **outro**.
the Pedro and the José will one give two gifts to-the other
‘Pedro and José will give two gifts to each other.’ $*2 \gg \text{Dist}; \text{Dist} \gg 2$

2.3 The pieces of Scattered Reciprocals are syntactically autonomous

- There are two syntactic dependencies at play in SRs:

(12) [Antecedent ... [**one** ... [... **other** ...]]]

- These dependencies have different locality profiles:

- the antecedent-*one* dependency is constrained by c-command and clause-boundedness:
- (13) *Eles_i querem [CP que [algum amigo d-[os meninos]_j] falem **um**_{i/j/k} com **o outro**].
 they want that some friend of-the boys speak one with the other
 *‘They_i want some friend of the boys_j to talk to each other_{i/j/k}.’
- the *one-other* dependency constrained by c-command but not locality:
- (14) Os meninos vão [**um** falar [(***um**) com ela] [depois que **o outro** chegou]].
 the boy will one speak one with she after the other arrived
 ‘Each boy will speak with her after the others arrive.’
- (15) a. Os meninos vão **um** comprar [_{island} a foto que eu tirei d-**o outro**].
 the boys will one buy the photo that I took of-the other
 ‘Each boy bought the photo I took of another boy.’ *Relative clause island*
- b. Os meninos vão **um** perguntar [_{island} o que **o outro** comeu].
 the boys will one ask what the other ate
 ‘The boys asked what each other eat.’ *Wh-Island*
- c. O João e o Pedro estão **um** chorando [_{island} porque **o outro** chegou].
 the João and the Pedro are one crying because the other arrived
 ‘John and Pedro are each crying because the other arrived.’ *Adjunct island*
- Given that syntactic dependencies such as movement are constrained by locality, I take the above data to indicate that *one* and *other* do not form a constituent at any point in the derivation of SRs and that these two phrases are syntactically autonomous.
 - Note that, although unconstrained by locality, something must be said about why *one* cannot appear in a sentence by itself:³
- (16) *Os alunos falaram **um** com a minha orientadora.
 the students spoke one with the my supervisor

2.4 Summary

- Key properties of SRs:
 - * allow for a variety of interpretations
 - * involve distributivity down to atoms
 - * cannot have *pluralia tantum* nouns as antecedents
 - * *one* is a scope marker
 - * the antecedent-*one* dependency is constrained by c-command and clause boundedness
 - * the *one-other* dependency is constrained by c-command but not by locality
 - * *one* can only appear in a sentence if it c-commands *other*

³In Greek and Italian, *one* can appear post-nominally in what seems to be a construction akin to English binomial *each*. However, it still stands that *one* cannot appear “floating” along the clausal structure if the sentence is not reciprocal.

3 Two approaches to compositionality in reciprocal sentences

- I present two approaches to the compositionality of reciprocals and apply them to SRs.⁴
- I focus on what they say about the mapping of syntactic structures to reciprocal meanings.
- To make things more concrete, I choose two representative instantiations of these approaches.

3.1 The decompositional approach

- Heim et al. (1991) on *each other*: morphological complexity of reflects semantic complexity.

(17) each other = each + other

- Building on Bennett (1974), Heim et al. argued that reciprocity was to be decomposed into two semantic operations: distributivity and differentiation, each corresponding to one of the pieces of *each other*.⁵

(18) Recip = Dist + Diff

(19) a. Dist := $\lambda x_e. \lambda P_{et}. \forall x' [x' <_{at} x \rightarrow P(x)]$
 b. Diff := $\lambda x_e. \lambda y_e. \lambda P_{et}. \exists z [z \neq y \wedge z <_{at} x \wedge P(z)]$

(20) a. $\llbracket \text{each} \rrbracket = \text{Dist}$
 b. $\llbracket \text{other} \rrbracket = \text{Diff}$

- Reciprocal sentences involve the distribution of a plural antecedent over a differentiated VP:

(21) a. Sarah and Alex know each other.
 b. $\text{Dist}(\llbracket \text{Sarah and Alex} \rrbracket)(\lambda x_e. \text{Diff}(\llbracket \text{Sarah and Alex} \rrbracket)(x)(\lambda y_e. \llbracket \text{know} \rrbracket(y)(x)))$
 c. $\forall x [x <_{at} s+a \rightarrow \exists y [y \neq x \wedge x <_{at} s+a \wedge \text{know}(y)(x)]]$

- Heim et al. assume that the LF of (22-a) is derived in the following way (where it is assumed that pro_3 is coreferential to *Sarah and Alex*):

(22) a. Sarah and Alex $\lambda_1 [t_1 \text{ know } [\text{each other } \text{pro}_3]] \Rightarrow \text{each-movement}$
 b. $\llbracket [\text{Sarah and Alex}] \text{ each} \rrbracket \lambda_1 [t_1 \text{ know } [t_1 \text{ other } \text{pro}_3]] \Rightarrow \text{QR of other}$
 c. $\llbracket [\text{Sarah and Alex}] \text{ each} \rrbracket \lambda_1 \llbracket [t_1 \text{ other } \text{pro}_3] \rrbracket \lambda_2 [t_1 \text{ know } t_2]$

- **Application to SRs:** The overt syntax of SRs in fact looks a lot like Heim et al.'s covert syntax for *each other*, so an analysis of SRs within this approach is straightforward.

⁴The two approaches I discuss match Dotlačil's (2010) distinction between doubly anaphoric approaches and argument reducing approaches to reciprocals, I believe. I nonetheless use different labels because I'm focusing on a different aspect of these approaches.

⁵In Heim et al.'s proposal, Diff actually involves universal quantification. In order to facilitate the discussion in the next section, I have chosen to analyze it as an existential quantifier. It should be pointed out, however, that in later developments of the Heim et al.'s approach to reciprocity, Diff is not interpreted as quantificational item, but more like a definite description just like *the others* (Schwarzschild 1996, Beck 2001).

- (23) a. $\llbracket \mathbf{um} \rrbracket = \text{Dist}$
 b. $\llbracket \mathbf{o outro} \rrbracket = \text{Diff}$
- (24) a. The girls **um** know **o outro**
 b. [the girls] λ_1 $\llbracket \mathbf{um} \ t_1 \rrbracket$ λ_2 $\llbracket \mathbf{o outro} \ t_2 \ \text{pro}_1 \rrbracket$ λ_3 [t_2 know t_3]]

3.2 The polyadic quantification approach

- Dalrymple et al. (1998): “Reciprocals express a single polyadic quantifier that binds two variables in its scope, both variable ranging over one set, the restricted domain of the quantification.”
- Dalrymple et al. (1994) and Dalrymple et al. (1998) advanced the hypothesis that, regardless of their morphosyntax, reciprocal constructions are universally mapped to Recip, a multiply ambiguous quantifier over pairs of type $(et)(eet)t$.

- (25) a. Sarah and Alex know each other.
 b. $\text{Recip}(\{s, a\})(\lambda x_e. \lambda y_e. \text{know}(y)(x))$

- For facilitate the discussion to follow, I will just consider one of the meanings that Recip might have, that of Strong Reciprocity:

$$(26) \quad \text{SR} = \lambda P_{et}. \lambda R_{eet} \forall y \forall z [P(y) \wedge P(z) \wedge y \neq z \rightarrow R(z)(y)]$$

- The important aspect of this approach is that a single quantifier is responsible for Heim et al.’s distributivity and differentiation.
- **Application to SRs:** *um* denotes *Recip*, while *o outro* is just interpreted as a variable marking the second argument of the reciprocated relation.

- (27) a. $\llbracket \mathbf{um} \rrbracket^g = \lambda x_e. \lambda R_{eet}. \text{Recip}(\{y : y \leq_{\text{at}} x\})(R)$
 b. $\llbracket \mathbf{o outro}_i \rrbracket^g = g_i$

- (28) a. the girls λ_3 [**um** pro_3] λ_1 λ_2 [t_1 know **the other** $_2$]
 b. $\text{Recip}(\{z : z \leq_{\text{at}} \text{the.girls}\})(\lambda x_e. \lambda y_e. \text{talk-to}(y)(x))$
 c. $\forall x \forall y [x \leq_{\text{at}} \text{the.girls} \wedge y \leq_{\text{at}} \text{the.girls} \wedge x \neq y \rightarrow \text{know}(y)(x)]$

4 Testing the two theories

- The two theories differ with respect to the source of the quantifier of the second argument of the reciprocated relation (the differentiation component of the reciprocal):
 - *the other*, according to the decompositional approach, and
 - *one*, according to the polyadic quantification theory.
- **The test:** Use another quantificational item as a way to track down the scope of the differentiation component of reciprocals.

$$(29) \quad [\mathbf{one} \dots [Q \dots [\text{Island} \dots \mathbf{other} \dots]]]$$

- **Predictions:** The two approaches predict that a sentence that fits the schema above will only have one reading:

- **Approach #1 - Reciprocity is decomposable:** Dist \gg Q \gg Diff
Given that the differentiation component of the reciprocal is located in *the other*, it will be trapped inside the island and will obligatorily be interpreted in the scope of Q.
- **Approach #2 - Reciprocity involves quantification over pairs:** Dist \gg Diff \gg Q
Given that both the distributivity and the differentiation component of the reciprocal are located in *um*, Q will obligatorily take lowest scope, regardless of the syntactic position of *the other*.

- **Applying the test:**

- *The key sentence:*

- (30) Os meninos compraram **um** [island] duas fotos que o **outro** tirou].
the boys bought one two photos that the other took
Approx: 'Each boy bought two photos that the others took.'

- *Meanings assigned by each approach:*

- (31) a. **Approach #1**
 $\forall x[x <_{\text{at}} \text{the.boys} \rightarrow \exists z[\text{two-photos}(z) \wedge \forall z'[z' <_{\text{at}} z \rightarrow \exists y[y <_{\text{at}} \text{the.boys} \wedge y \neq x \wedge \text{take}(z')(y)] \wedge \text{buy}(z)(x)]]]$
'For each boy there are two photos that he bought, and each of these photos were taken by a boy that is not him.'

- b. **Approach #2**
 $\forall x[x <_{\text{at}} \text{the.boys} \rightarrow \forall y[y <_{\text{at}} \text{the.boys} \wedge y \neq x \rightarrow \exists z[\text{two-photos}(z) \wedge \text{buy}(z)(x)]]]$
'For each pair of boys, one of them bought two photos taken by the other of them.'

- *Contexts and truth judgments:*

- (32) a. **Context 1:** There are three boys. Each boy bought exactly two photos, each taken by one of the two other boys.
b. **Predicted Judgement by Approach #1:** True
c. **Predicted Judgement by Approach #2:** False
d. **Attested Judgment:** False

- (33) a. **Context 2:** There are three boys. Each boy bought exactly two pairs of photos, each pair taken by one of the two other boys.
b. **Predicted Judgement by Approach #1:** False
c. **Predicted Judgement by Approach #2:** True
d. **Attested Judgment:** True

- **Conclusion:** The polyadic quantifier approach is making the correct predictions.

- Before moving on, it's interesting to see that English *each...the others*, a construction in which the semantic roles of reciprocity are indeed coming from different parts of the sentence, actually behaves as predicted by the decompositional theory:

(34) The boys **each** bought two photos that **the others** took.

5 The Proposal

5.1 *The Syntax of Scattered Reciprocals*

- First, I'm going to assume that *one* in SRs is a floated quantifier: as can be seen in (35)-(36), they have similar distributions.

(35) a. As crianças vão **uma** ter falado com a mãe d-a **outra**.
the children will one have spoken with the mother of-the other

b. As crianças vão ter **uma** falado com a mãe d-a **outra**.
the children will have one spoken with the mother of-the other

c. As crianças vão ter falado **uma** com a mãe d-a **outra**.
the children will have spoken one with the mother of-the other
'The children will have spoken with each other's mother.'

(36) a. As crianças vão **cada uma** ter falado com a mãe de duas professoras.
the children will each one have spoken with the mother of two teachers

b. As crianças vão ter **cada uma** falado com a mãe de duas professoras.
the children will have each one spoken with the mother of two teachers

c. As crianças vão ter falado **cada uma** com a mãe de duas professoras.
the children will have spoken each one with the mother of two teachers
'The children will have spoken with each other's mother.'

- Note, furthermore, that the dependency between a floated quantifier and its antecedent is subject to the same constraints as the dependency between *one* and its antecedent: c-command and clause-boundedness.

(37) *The students_i said that [[a friend of [the professors]_j] will all_{i/j/k} go to the movies].

- I assume a stranding analysis of floated quantifiers (Sportiche, 1988): floated quantifiers are partitive quantifiers which are stranded by the movement of their complement DP to some higher position in the clause.

(38) The students will each write a paper
a. [each of the students] write a paper
b. the boys λ_1 will [[each of t_1] write a paper]

- Furthermore, as proposed in Jackendoff (1977), I take partitives to involve a noun phrase deleted under identity, as in (39).

(39) one of the boys \Rightarrow [one [[boy] [of the boys]]]

- Therefore, the structure of a sentence such as (40-a) will be that in (40-b):

(40) a. The boys will **um** talk to **o outro**.
 b. [the boys]₁ will [[**um** boy-of *t*₁] talk to **o outro**]

5.2 Semantics of Scattered Reciprocals

- I assume that Dalrymple et al.'s (1998) Recip is located in the *um*-phrase, but not actually in *um* itself. Rather, I assume that it is the denotation of a null REC determiner, and *um* is assigned its usual denotation of a set of atomic individuals.

(41) [REC [**um** NP]]

(42) a. [[REC]] = Recip
 b. [[um]] = $\lambda x_e. \text{atom}(x)$

- An SR sentence will thus have an LF as in (43), which will be interpreted as (44):

(43) the boys λ_1 [[REC [one boy-of *t*₁]] $\lambda_2 \lambda_3$ [*t*₂ knows the-other₃]]

(44) $\text{Recip}(\lambda x_e. \text{boy}(x) \wedge \text{atom}(x) \wedge x < \text{the.boys})(\lambda y_e. \lambda z. \text{know}(z)(y))$

- In the present analysis, the different readings of reciprocal sentences are accounted for in the same way as in Dalrymple et al. (1998).⁶
- The obligatory distribution over atoms is accounted for by the presence of *um* in the restrictor of REC: it guarantees that the first argument of Recip will always be a set of atomic individuals.
- The present approach also explains the fact that reciprocal can't have *pluralia tantum* antecedents: given that SRs involve a partitive structure, this property of SRs can be cashed out by the same principle that rule out (45):

(45) **uma das costas do Pedro e da Maria*
 one of-the backs of-the Pedro and of-the Maria

- Finally, the ungrammaticality of (46) is due to the fact that the *um*-phrase needs to take a relation as its argument.

(46) **Os alunos falaram um com a minha orientadora.*
 the students spoke one with the my supervisor

- A remaining puzzle is the dependency between *one* and *other*. Currently, we're dealing with it as if it were the same dependency as that between a quantifier and a pronoun, but that doesn't explain why (47) is ungrammatical:

⁶Note that the present account is compatible with other theories in which reciprocity involves a polyadic quantifier.

(47) *Os alunos vão **um** falar com **ele**.
 the students will one speak with he
 Intended: ‘The students will speak with each other.’

- I propose that this restriction could be cashed out by (i) enriching the meaning of **o outro** to (48), and (ii) making REC denote a partial function that is sensitive to the domain of the relation it takes as an argument:

(48) $[[\mathbf{o}_i \text{ outro}_j]]^g = g(i)$, if $g(i) \neq g(j)$

(49) $[[\text{REC}]]^g = \lambda P_{et}.\lambda R_{et} : \forall x \forall y [\langle x, y \rangle \in \text{dom}(R) \rightarrow x \neq y]. \text{Recip}(P)(R)$

- The entry (49) guarantees that REC can only combine with its second argument if it denotes a partial function whose domain only contains pairs of non identical individuals. Thus, it will combine with (50-a) but not with (50-b).⁷

(50) a. $[[\lambda_1 \lambda_2 [t_1 \text{ likes } \mathbf{o}_2 \text{ outro}_1]]]^g = \lambda x_e.\lambda y_e : x \neq y. \text{like}(y)(x)$

b. $[[\lambda_1 \lambda_2 [t_1 \text{ likes } \mathbf{him}_2]]]^g = \lambda x_e.\lambda y_e. \text{like}(y)(x)$

5.3 Remaining issues

- Although pronouns interpreted as bound variables can sometimes precede their binder, as in (51), *other* cannot ever precede *one*:

(51) the book about them_i that no_i celebrity wants a journalist to write

(52) *os livros sobre **o outro** que os meninos vão **um** escrever
 the books about the other that the boys will one write
 ‘the books about each other that the boys will write’

- We have seen that SRs do not allow quantifiers to be interpreted between distributivity and differentiation. However, sentence-internal *different* seems to be able to do so:

(53) Os três alunos vão **um** apontar um professor diferente pr-**o outro**.
 the three boys will one point a teacher different to-the other
 ‘The three students will point a different teacher to each other.’

(54) a. Student A points teacher X to student B and to student C.
 Student B points teacher Y to student A and to student C.
 Student C points teacher Z to student A and to student B. \rightsquigarrow **True**

b. Student A points teacher X to student B and teacher Y to student C.
 Student B points teacher X to student A and teacher Y to student C.
 Student C points teacher X to student A and teacher Y to student B. \rightsquigarrow **False**

⁷Note that, for this proposal to get off ground, one would need to say that the relation denoted by expressions like *be the mother of* are not partial functions.

6 Final Remarks

- In this talk, I have proposed a compositional analysis of Scattered Reciprocals, a syntactically complex reciprocal construction found in certain languages.
- Although LaTerza (2014) has actually used constructions similar to these to make the case in favor of a decompositional approach to reciprocity, I have shown that, not only can they be accounted for assuming quantification over pairs, but also that they must be.
- It's worth pointing out that, in my final analysis of SRs, the pieces *one* and *other* are assigned to meanings that one would expect these words to have.
- Finally, SRs nicely fit Dalrymple et al.'s claims that variation in the morphosyntactic realization of reciprocals does not correlate to variation in their semantics.

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Appendix: Prepositional Reciprocals

- There are certain apparent examples of SRs in which *um* appears inside a nominal, which could potentially be a counterexample to my claim that *um* is a stranded quantifier:

(55) Os alunos falaram com a orientadora **um d-o outro**.
the students spoke with the supervisor one of-the other
'The student spoke with each other's supervisor.'

- There are reasons to believe, however, that these constructions are different from SRs.⁸
- I call these **Prepositional Reciprocals** (PRs), given that they always involve *one* and *other* being separated by a single preposition.
- **Differences between SRs and PRs:**

- In PRs, *one* and *other* can only be separated by a single preposition.

(56) a. Eles compraram a foto d-a mãe **um d-o outro**.
they bought one the photo of-the mother of-the other
b. *Eles compraram a foto **um d-a mãe d-o outro**.
they bought one the photo one of-the mother of-the other
'They bought the photo of each other's mother.'

- PRs can be fronted, SRs cannot:

(57) a. **Um d-o outro**, eles gostam.
one of-the other they like
'Each other, they like.'
b. ***Um d-o professor d-o outro**, eles gostam.
one of-the teacher of-the other they like
'Each other's teacher, they like.'

- PRs have a plural version, SRs don't:

(58) Os cavalos e os porcos foram separados **uns dos outros**.
the horses and thee pigs were separated ones of-the others
'The horses and thee pigs were separated.'

(59) *Os cavalos e os porcos vão **uns ser separados dos outros**.
the horses and thee pigs were separated ones of-the others

- The antecedent doesn't need to c-command *one* in PRs:

(60) a. A música que o Pedro e o Paulo escreveram beneficiou as gravadoras
the song that the Pedro and the Paulo wrote benefitted the labels
um d-o outro.
one of-the other

⁸Thanks to Keny Chatain for pointing me towards this direction.

- 'The song that Pedro and Paulo wrote benefitted each other's labels.'
- b. *A música que o Pedro e o Paulo escreveram beneficiou **um** a(s)
the song that the Pedro and the Paulo wrote benefitted the(PL) label(s)
gravadora(s) d-**o outro**.
one of-the other
'The song that Pedro and Paulo wrote benefitted each other's labels.'