

E-raising reconsidered: Constituency, coordination and case-agreeing reciprocals

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Abstract

In Icelandic, part of the complex reciprocal *hvor annar* agrees in case with the reciprocal's antecedent. In structures where the reciprocal is embedded in a PP, the P intervenes between the two parts. A recent analysis of these data suggests that part of the reciprocal overtly moves to the base position of the antecedent by an operation termed *e-raising*. We show that such an analysis makes a number of wrong predictions about the constituencies of such structures and also about the behavior of reciprocals in island environments. We show that this is also the case for other languages that show case-agreeing reciprocals. We instead argue that agreement in case between antecedent and reciprocal can occur with the reciprocal staying in situ. Instances with PPs do involve movement but only to the edge of PP and not further. This analysis is in line with a number of recent approaches that advocate for a morphosyntactic agreement relation between antecedent and locally bound anaphors.

Sigurðsson et al. (2020) develop a theory of an underanalyzed set of constructions in Icelandic, all involving the distributive element *hvor*. The constructions they investigate are given in (1): the reciprocal *hvor annar* construction (1a), the distributive *hvor sinn*

construction (1b), and the distributive *sinn hvor* construction (1c). They refer to the two parts (e.g., *hvor* and *annar* in (1a)) of these elements as *e-associates*.

- (1) a. þeir höfðu talað hvor um annan
 they.NOM.M.PL had talked each.NOM.M.SG about other.ACC.M.SG
 ‘They had talked about each other.’
- b. þeir höfðu komið hvor á sínu
 they.NOM.M.PL had come each.NOM.M.SG on their.DAT.N.SG
 hjólinu
 bike.the.DAT.N.SG
 ‘They had (each) come on separate bikes.’
- c. þeir höfðu komið sinn á hvoru
 they.NOM.M.PL had come their.NOM.M.SG on each.DAT.M.SG
 hjólinu
 bike.the.DAT.N.SG
 ‘They had (each) come on separate bikes.’ (Sigurðsson et al. 2020: ex. 1-3)

Sigurðsson et al. point out the the data in (1) raise two puzzles about the syntax of these structures: the *case puzzle* and the *position puzzle*. The case puzzle concerns how the higher of the two e-associates agrees in case with its antecedent. In (1), the antecedent is always nominative, and the higher e-associate must also be in the nominative case. Compare this to the example in (2). In this example, the antecedent is dative and the higher e-associate must also be dative.¹

¹As Sigurðsson et al. (2020) note (their footnote 19), it is difficult to create constructions with a dative subject and *annar* in the nominative case. It is much easier to create examples with a dative subject and PP object. Sigurðsson et al. leave the reason for this distinction open, but an answer may lie in the so-called Anaphor Agreement Effect (AAE) (Rizzi 1990; Woolford 1999; Murugesan 2022), as nominative objects control agreement in Icelandic, and the AAE bans anaphors from controlling agreement, then the reason a reciprocal cannot occur in a nominative, agreement controlling, position is the same reason why the anaphor *sig* cannot occur in the same position, as shown below.

- (i) *Konunum leiddust sig
 women.DAT bored.3PL REFL.NOM
 Intended: ‘The women were bored with themselves.’ (Murugesan 2022: 40 ex. 3)

Presumably both reciprocals and reflexives in agreement controlling position are ruled out via the AAE.

additionally problematic, as coordinations are islands for movement operations hence they should block the application of e-raising. We then discuss similar types of reciprocals in other languages: Greek, Bosnian-Croatian-Serbian and Telugu, and show that the reciprocals in these languages behave nearly identically to the Icelandic reciprocal in terms of their case-agreement and their constituency. We conclude by arguing that the case puzzle can be solved by the mechanism of agreement between an anaphor and its antecedent, and that the position puzzle should be solved not by movement out of PP, but movement to the edge of PP in a movement operations that is analogous to *ni*-movement found for negative concord items in Slavic.

If this proposal is on the right track, it presents evidence for an agreement relation holds between an anaphor and its antecedent with the anaphor staying *in situ* (Kratzer 2009; Hicks 2009; Heinat 2009; Bader 2011; Reuland 2011; Wurmbrand 2012, 2017; Antonenko 2011; Sundaresan 2018; Murphy & Meyase 2020; Akkuş & Paparounas to appear). The behavior of these case agreeing anaphors within PPs cross-linguistically also reveals additional information about the locality of such an agreement relation. These constructions can be seen as the reciprocal counter parts of so-called case-copying reflexives, where complex reflexive anaphors may agree in case with their antecedents (see Subbarao & Murthy 2000 and Messick & Raghatham 2021 for Dravidian, Forker 2020 for Nakh-Daghestanian and Volkova 2014 and Volkova & Reuland 2014 for Uralic).

1 E-raising and Constituency

Under the e-raising analysis presented in the previous section, the two e-associates do not form a syntactic constituent on the surface, hence this analysis predicts that the two elements should not be able to be picked out as a constituent via classic tests for constituency. Below we show that this prediction is incorrect. Using three tests for constituency: topicalization, fragment answers, and coordinations, we show that the two e-associates form a constituent.

This is even the case when there appears to be a preposition intervening between the two elements.

1.1 Topicalization

The first test we employ is topicalization. Icelandic allows for constituents to be topicalized to the front of the sentence, and this is possible for constructions involving the two e-associates. The examples in (4) show that this is possible whether the higher e-associate surfaces with nominative (4a-b) or dative case (4c). The examples in (4b-c) show that the sequence *e-associate Prep e-associate* also pass this constituency test, suggesting those three elements form a constituent.³

- (4) a. hvor annan, hafa þeir séð
 each.NOM.M.SG other.ACC.M.SG have they.NOM.M.PL seen
 ‘Each other, they have seen.’
- b. hvor um annan, höfðu þeir talað
 each.NOM.M.SG about other.ACC.M.SG, had they.NOM.M.PL talked
 ‘About each other, they had talked.’
- c. hvorum við annan, hefur þeim alltaf líkað
 each.DAT.M.SG with other.ACC.M.SG, has them.DAT.PL always liked
 ‘Each other, they have always liked.’
- d. Hvorn við öðrum hefur þá alltaf hryllt
 each.ACC.M.PL with other.DAT.M.PL has them.ACC.M.PL always horrify
 ‘Each other, they’ve always given the creeps.’

³The judgments reported here conform to the grammar of the second author of this paper. In discussions with other native Icelandic speakers, we did encounter variation in the acceptability of these examples, with some speakers finding them degraded. It should be noted that for all speakers the examples in (4) are more acceptable than the counterparts in (8), where only one e-associate is displaced without the other. In addition, we found a naturally occurring example in the Icelandic Gigaword Corpus (Steingrímsson et al. 2018) where the two e-associates are displaced together, as shown in (i).

- (i) og hvor öðrum trúað fyrir sínum hjartans málum
 and each.NOM other.DAT confided for self’s heart.the.GEN matters
 ‘... and confided in each other their heart’s desires.’ (The Icelandic Gigaword Corpus)

We take this to indicate that displacement of the two e-associates together is possible at least for some speakers, and leave investigating the source of degradation for other speakers as a matter for future research.

One may wonder if the the examples in (4) are instances of headless *v*/VP movement of some sort, where the constituent that has moved to the front of the sentence is actually a *v*P remnant after the verb had undergone short head movement. This is schematized in (5).

(5) [_{*v*P} hvor_{*j*} t_{*i*} [_{PP} um t_{*j*} annan]]_{*k*} höfðu þeir talað_{*i*} t_{*k*}

While the existence of headless remnant movement is restricted cross-linguistically (Müller 1998; Takano 2000; Arano 2018), it does exist at least in some languages. For instance, the German example in (6) is analyzed as remnant VP-fronting after the main verb has moved out.

(6) [Kindern bonbons t_{*i*}]_{*k*} gibt_{*i*} man besser nicht t_{*k*}
 children.DAT sweets.ACC gives one.NOM better not
 ‘One shouldn’t give candy to children.’ (Arano 2018, ex. 12b)

If Icelandic allowed for headless *v*P fronting to explain (5), then we would also expect it to allow for headless *v*P fronting with ditransitive VPs, hence we would predict that the Icelandic equivalent of (6) should be grammatical. As shown in (7), this is not the case. Icelandic cannot front a headless *v*P for ditransitives. In fact, it appears that *v*P fronting in Icelandic is never allowed (see Wood 2018 and references).

(7) a. *Jón-i bók gaf Pétur
 Jon-DAT book.ACC gave Peter.NOM
 Intended: ‘Peter gave John a book’
 b. *Bók til Jón-s sendi Pétur
 book.ACC to Jon-GEN sent Peter
 Intended: ‘Peter sent a book to John.’

The ungrammaticality of (7) leads one to doubt the *v*P fronting analysis of (4) and in favor of treating the moved constituent as a DP or PP.

We also see that *annan* and P+*annan* cannot be topicalized on their own to the exclusion

of *hvor*, as shown in (8). This follows naturally if these elements form a surface constituent, but requires additional assumptions if these elements were not constituents.

- (8) a. *annan, hafa þeir séð hvor
 other.ACC.M.SG have they.NOM.M.PL seen each.NOM.M.SG
 Intended: ‘Each other, they have seen.’
- b. *um annan, höfðu þeir talað hvor
 about other.ACC.M.SG, had they.NOM.M.PL talked each.NOM.M.SG
 Intended: ‘About each other, they had talked.’
- c. *við annan, hefur þeim alltaf líkað hvorum
 with other.ACC.M.SG, has them.DAT.PL always liked each.DAT.M.SG
 Intended: ‘Each other, they have always liked.’
- d. *við öðrum hefur þá alltaf hryllt Hvorn
 with other.DAT.M.PL has them.ACC.M.PL always horrify each.ACC.M.PL
 Intended: ‘Each other, they’ve always given the creeps.’

1.2 Fragment Answers

The next constituency test that we utilize is the fragment answer test: only constituents can occur as a fragment answer to a constituent question. Once again, the two e-associates can occur as a fragment, regardless of case or whether or not there is a preposition intervening between them. In each example below, the response in (b) is a grammatical fragment to the question posed in (a).

- (9) a. hvað/hverja sáu þeir
 what/whoACC saw they.NOM.M.PL
 ‘Who/what have they seen?’
- b. hvor annan
 each.NOM.M.SG other.ACC.M.SG
 ‘Each other.’
- (10) a. hvað/hverja töluðu þeir um
 what/who.ACC talked they about
 ‘Who/what had they talked about?’

- b. hvor um annan
 each.NOM.M.SG about other.ACC.M.SG
 ‘About each other.’
- (11) a. hverja hefur þeim alltaf líkað við
 who.ACC has them.DAT.PL always liked with
 ‘Who have they always liked?’
- b. hvorum við annan
 each.DAT.M.SG with other.ACC.M.SG
 ‘Each other’

In addition to the non-contrastive fragments like those above, the two e-associates can occur as a contrastive fragment as well as shown in (12).

- (12) a. Rökuðu rakararnir SJÁLFA SIG?
 shaved barbers.the self SE
 ‘Did the barbers shave THEMSELVES?’
- b. Nei, HVOR ANNAN.
 no each.NOM.M.SG other.ACC.M.SG
 ‘No, EACH OTHER.’

Finally, the two associates can occur as a fragment coordinated with another NP, suggesting that the two form an NP constituent themselves, as shown in (13).

- (13) a. Hvað borðuðu músar?
 what ate mice.the
 ‘What did the mice eat?’
- b. Ostinn og hvor aðra.
 cheese.the and each.NOM.F.SG other.ACC.F.SG
 ‘the cheese and each other.’

1.3 Coordinations

The final constituency test we consider is coordination. As hinted at by the fact that the reciprocal can occur in a coordination in fragment answers as in (13), the two e-associates

can occur in a coordination together with another NP or in the case with PPs another PP. This is shown in (14).

- (14) a. Kennararnir hjálpuðu hvor öðrum og nemendunum út úr
 teachers.the.NOM helped each.NOM other.DAT and students.the.DAT out of
 rútnni
 bus.the
 ‘The teachers helped each other and the students out of the bus.’
- b. þeir höfðu talað hvor um annan og
 they.NOM.M.PL had talked each.NOM.M.SG about other.ACC.M.SG and
 um stjórnmál
 about politics
 ‘They had talked about each other and about politics.’

While there are preferences for the ordering of the conjuncts, neither order is ungrammatical, hence the reciprocal can be the second conjunct as in (15).

- (15) Kennararnir hjálpuðu nemendunum og hvor öðrum út úr
 teachers.the.NOM helped students.the.DAT and each.NOM other.DAT out of
 rútnni
 bus.the
 ‘The teachers helped the students and each other out of the bus.’

These coordination data provide a second argument against the e-raising analysis of these constructions. As the e-raising analysis relies on a movement operation, a prediction of the analysis would be it should be sensitive to constraints on movement such as islands. As coordinations are well known island environments, under the e-raising account, it is surprising that these constructions can occur in coordinations without violating the coordinate structure constraint (Ross 1967). Under the e-raising analysis, in order for *hvor* to agree in case with the antecedent it would have to move to the specifier of *vP*. When the two e-associates are coordinated with another DP, then such a movement would violate the CSC, as we have asymmetric extraction out of a conjunct. This is shown schematically in (16) for the example in (14a).

- (16) $[_{vP} \text{ hvor}_i [_{VP} [\&P [_{DP} t_i \text{ öðrum}] \text{ og } [_{DP} \text{ nemendunum}]]]]$


1.4 Summary

In this section, we provided three constituency tests that indicated that the two e-associates are a surface constituent in Icelandic. We further argued that the fact that these constructions can occur in coordinations are problematic for the e-raising account not only because it suggests that the two form a constituent but also because this would suggest that e-raising is possible out of a coordination in violation of the coordinate structure constraint.

These data suggest a reanalysis of the e-associate construction and the *case puzzle* and *position puzzle*. We argue below that in the structures with two e-associates, the higher associate gets its case value from agreement with the antecedent, but it remains a constituent with lower e-associate. In the cases where a preposition intervenes between the two e-associates, we suggest that the higher e-associate moves to adjoin to the edge of the PP where it can have its case feature valued. These solution account for the case and position puzzles while allowing us to maintain the constituency of the two e-associates.

Before we present the details of the alternative analysis, we present additional data from other languages, Telugu, Greek and Bosnian-Croatian-Serbian (BCS) that similar reciprocals show the same constituency and case facts.

2 Cross-linguistic Comparisons

In the next three sections, we show that reciprocals in three other languages: Greek, BCS, Telugu have the same characteristics as the Icelandic reciprocal, suggesting that all of these languages should be analyzed similarly.

2.1 Greek

Greek is another language that has been reported to have case agreement with part of the reciprocal (Everaert 2000).⁴ This is shown for a nominative antecedent in (17a). The example in (17b) shows an accusative direct object antecedent. Here we see that the first part of the reciprocal must also be accusative and not nominative in this situation.

- (17) a. i ginekes agapoun i mia tin
the.NOM.PL women.NOM.PL love.3SG.PL the.NOM.SG one.NOM.SG the.ACC.SG
alli
other.ACC.SG
'The women love each other.'
- b. Tis sistisa ti mia stin alli
them.ACC introduced.1SG the.ACC one.ACC to.the other.ACC
'I introduced them to each other.'

Just as with Icelandic and Telugu, Greek reciprocals are split by adpositions (18) (Mackridge 1987).

- (18) Dhe milane o enas me ton allo
NEG talk-3PL.PRES.ACT the.NOM.M.SG one with the.ACC.M.SG other
'They don't talk to each other.'

Fragments once again suggest that the two parts of the reciprocal form a constituent even when split by a preposition as shown in (19) and (20).

- (19) a. Se pjon sistises tis jinekes?
to who introduced.2SG the women.ACC
'Who did you introduced the women to?'
- b. ti mia stin alli
the.ACC one.ACC to.the other.ACC
'To each other'

⁴Greek judgments are from Anonymized (p.c).

- (20) a. Pjon agapun i jinekes?
 who.ACC love the.NOM women.NOM
 ‘Who do the women love?’
- b. i mia tin alli
 the.NOM.SG one.NOM.SG the.ACC.SG other.ACC.SG
 ‘Each other.’

And the reciprocal can be coordinated with another NP or PP, as shown in (21).

- (21) a. i mathites aresun o enas ston allo ke stus kathigites
 the students.NOM please.3PL the one.NOM to.the other and to.the professors
 ‘The students like each other and the professor.’
- b. Sistisa tus mathites ton ena ston allo ke stus
 introduce.1SG the students.ACC the one.ACC to.the other and to.the
 kathigites
 professors
 ‘I introduced the students to each other and to the professors.’

2.2 Bosnian-Croatian-Serbian

Slavic languages also show this type of reciprocal as shown for Bosnian-Croatian-Serbian (BCS) in the examples in (22) (Despić 2011; LaTerza 2014).⁵ In (22a), a nominative subject binds the reciprocal, and the first part of the reciprocal surfaces in the nominative case. If the antecedent is an accusative marked direct object, however, then the first part of the reciprocal displays accusative case (22b). As we have seen with the previous languages, the two parts of the reciprocal can be separated via preposition (22c).

- (22) a. Studenti su udarali jedan drugog
 Student.PL.NOM AUX hit each.NOM other.ACC
 ‘The students hit each other. (LaTerza 2014: 123, ex. 4.48)
- b. student je predstavio profesore jedne drugima
 student AUX introduced professor.PL.ACC each.ACC other.DAT
 ‘The student introduced the professors to each other.’ (LaTerza 2014: 124, ex.

⁵Judgments for non-attributed examples are due to Anonymized (p.c.).

4.51a)

- c. Gosti su plesali jedni s drugima
guest.PL AUX danced each.PL.NOM with other.DAT
'The guests danced with each other.' (LaTerza 2014: 124, ex. 4.43)

We can once again use standard constituency tests to show that the two parts of the reciprocal form a constituent. The examples below show this using the fragment answer test.

- (23) a. koga su studenti udarali?
who.ACC are student.PL hit
'Who did the students hit?'
b. jedan drugog
each.NOM other.ACC
'Each other.'
- (24) a. kome je student predstavio profesore?
who.DAT is student introduce professor.PL.ACC
'Who did the student introduce the professors to?'
b. jedne drugima
each.ACC other.DAT
'Each other'
- (25) a. s kim su gosti plesali
with who are guests danced
Who did the guests dance with?
b. jedni s drugima
each.PL.NOM with other.DAT
'With each other'

The reciprocal can also occur in coordinations (26). While there is a preference for the reciprocal to be the first conjunct in a coordination, it is possible for it to occur as the second conjunct as well (27).

- (26) a. Studenti su udarali jedan drugog i profesore
Student.PL.NOM AUX hit each.NOM other.ACC and professor.PL.ACC

‘The students hit each other and the professors.’

- b. Gosti su plesali jedni s drugima i s konobarima
guest.PL AUX danced each.PL.NOM with other.DAT and with waiter.PL.DAT
‘The guests danced with each other and with the waiters.’

- (27) a. ?Studenti su udarali profesore i jedan drugog
Student.PL.NOM AUX hit professor.PL.ACC and each.NOM other.ACC
‘The students hit the professors and each other.’

- b. Gosti su plesali s konobarima i jedni s drugima
guest.PL AUX danced with waiter.PL.DAT and each.PL.NOM with other.DAT
‘The guests danced with the waiters and each other.’

Finally VP level material such as adverbs cannot come between the first part of the reciprocal and the second even if the two are separated by a preposition (28).

- (28) Gosti su (graciously) plesali (graciously) jedni (*graciously) s
guests are (gracefully) danced (gracefully) each.PL.NOM (*gracefully) with
drugima
other.DAT
‘The guests danced gracefully with each other.’

2.3 Telugu

The Telugu reciprocal is created via doubling of the numeral quantifier *okaLLa* (‘one’). Like the languages we have seen thus far, part of the reciprocal agrees in case with its antecedent. The difference between Telugu and the languages thus far is it is the second element in the reciprocal that agrees in case with the antecedent. The second *okaLLa* in (29a) is nominative agreeing with the subject antecedent, but it is dative in (29b) agreeing with the quirky subject (Messick & Raghotham 2021).

- (29) vaLLu okaLLa-ni okaLLa tiTTu-konn-aa-ru
3PL.NOM one-ACC one.NOM scold-VR-PST-PL
‘They scolded each other.’

- (30) vaLLa-ku okkar-anTe okkari-ki iṣTam
 3PL-DAT one-OBL one-DAT like
 ‘They like each other’ (Messick & Raghotham 2021: ex. 6-7)

Also unlike the other languages discussed here, locally bound reflexives in Telugu also show case-agreement with their antecedents (Subbarao & Murthy 2000; Messick & Raghotham 2021) as shown in (31).

- (31) a. Vanaja tana-ni tanu poguDu-kon-di
 Vanaja 3SG-ACC 3SG.NOM praise-VR-F.SG
 ‘Vanaja praised herself_F.’
 b. Vibha-ki tana-miida tana-ki koopam wacc-in-di
 Vibha-DAT 3SG-on 3SG-DAT angry become-PST-F.SG
 ‘Vibha got angry at herself.’ (Messick & Raghotham 2021: ex. 2)

These elements can occur in coordinations as shown in (32), once again casting doubt on analyses that have the case-agreeing element moving in order to agree with the antecedent. Similarly, the two parts of the reflexive must be scrambled together as shown in (33) suggesting that the two form a constituent.

- (32) Ravi-ki tana-miida tana-ku mariyu Rani-miida koopam waccindi
 Ravi-DAT 3SG-on 3SG-DAT and Rani-on anger become.PST.3NSG
 ‘Ravi became angry at himself and at Rani.’ (Messick & Raghotham 2021: ex 51)

- (33) a. [tana-ni tanu] raamu gillu-konn-aa-ḍu
 3SG-ACC 3SG.NOM Ramu pinch-VR-PST-3MSG
 ‘Ramu pinched himself.’
 b. *tana-ni raamu tanu gillu-konn-aa-ḍu
 3SG-ACC Ramu 3SG.NOM pinch-VR-PST-3MSG
 ‘Ramu pinched himself.’ (Messick & Raghotham 2021: ex 10-11)

Another similarity between the Telugu facts and Icelandic is that the complex reflexive and reciprocal can be split apart by an adposition. In (32), the postposition *miida* can intervene between the two parts of the complex reflexive.

3 The case Puzzle

The data in the sections above cast doubt on the analysis of case-agreeing reciprocals in terms of e-raising of part of the reciprocal to the base position of the subject for the languages under examination. This forces us to analyze the case facts differently than Sigurðsson et al. (2020); Sigurðsson et al. (2021). The data suggests that (part of) of the reciprocal may agree in case with its antecedent *in situ*. By allowing the agreement to happen in situ, the case-agreeing part can stay a constituent with the case independent part. There are several theories that posit an agreement relation between a locally bound anaphor and its antecedent (Kratzer 2009; Hicks 2009; Heinat 2009; Bader 2011; Reuland 2011; Wurmbrand 2012, 2017; Antonenko 2011; Sundaresan 2018; Murphy & Meyase 2020; Messick & Raghotham 2021; Akkuş & Paparounas to appear). While the analyses differ in the details, all the cited authors agree that antecedent and anaphor may enter into an agree relation without the anaphor moving to the position of the antecedent. For concreteness, we will adopt an analysis that makes use of Feature Transmission (Kratzer 2009).

(34) a. *Predication (Spec-Head agreement)*

When a DP occupies the specifier position of a head that carries a λ -operator, their ϕ -feature sets unify. (Kratzer 2009: 196 ex. 19)

b. *Feature Transmission*

The ϕ -feature set of a bound DP are unified with the ϕ -feature of the verbal functional head that hosts its binder. (Kratzer 2009: 195 ex. 18)

For Kratzer, transmission of features from the antecedent to an anaphor is mediated via the functional head that introduces the antecedent in its specifier (see also Reuland 2011; Antonenko 2011; Akkuş & Paparounas to appear; Murphy & Meyase 2020 for similar proposals). While Kratzer focus was on ϕ -feature, case-agreeing reciprocals reveal that case features can also be transmitted from antecedent to *hvor*. We assume that *hvor* and its cross-linguistic

counterparts are transmitted the case feature of the antecedent via the above mechanisms. The other e-associate, i.e., *annar* and its counterparts, are assigned structural case given its position in the clause.

For concreteness, we will assume accusative case is assigned via dependent case rules (Marantz 1991; Baker 2015; Wood 2011, 2017). The assignment of nominative and accusative are determined by the rule in (35).

- (35) If a DP α has no case feature at spellout, it is assigned accusative iff there is some other DP α' which is visible to α and where (a) α' has no case feature and (b) α' c-commands α . Otherwise, α will be nominative. (Wood 2011: 8)

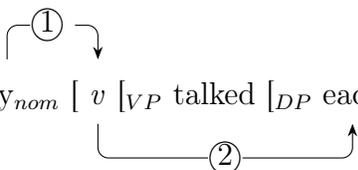
Let's walk through the example in (36), to see how the proposal works for simple examples.

- (36) þeir hafa séð hvor annan
 they.NOM.M.PL have seen each.NOM.M.SG other.ACC.M.SG
 'They have seen each other.'

We assume that *hvor* resides at the edge of the traditional NP projection headed by *annan* and is hence accessible for agreement even if we were to treat DP as a phase (Bošković 2012; Despić 2011). When the subject is merged into the specifier of *vP* and the phase is completed, the DP headed by *annan* will be assigned accusative case and the subject will be assigned nominative by the rule in (35) as shown in (37).

- (37) [_{vP} they_{nom} [v [_{VP} talked [_{DP} each [_{nP} other_{acc}]]]]]
- 

The subject and *v* undergo Predication ① and the *v* transmits the case feature to *hvor* ② as shown in (38).

- (38) [_{vP} they_{nom} [v [_{VP} talked [_{DP} each_{nom} [_{nP} other_{acc}]]]]]
- 

In this section we proposed that case-agreement between *hvor* (and its counterparts in other languages) receives its case not via movement to the base position of its antecedent, but via in situ agreement.⁶

In the next section, we propose that for PPs, *hvor* does undergo movement, but only short movement to the edge of PP. From this position, it may undergo Feature Transmission with the antecedent.

4 The position puzzle

The puzzle about why a P may intervene between the two e-associates cannot be solved via e-raising out of the PP into the extend projection of the verb. As we have seen, for the languages that have case-agreeing reciprocals, the two e-associates and the P appear to form a constituent. We suggest that the higher e-associate does move, but only to the edge of PP. This movement in many respects mirror movement found for negative concord items (NCIs) in Russian. NCIs are morphologically complex, being composed of a wh-item and a negative prefix. In cases of PPs, the negative concord reading is only possible if the negative prefix comes before the preposition. If the negative prefix comes after the preposition, only the

⁶One may wonder if these data can be analyzed in terms of Upward/Reverse Agree, where *hvor* probes upward and agrees with its antecedent in case features (for the use of Reverse Agree between anaphor and antecedent, see Bader 2011; Wurmbrand 2012, 2017 among others). While this alternative plausible one obstacle that needs to be overcome is that Agree is typically thought to be subject to *minimality*, such that a probe must target the most local goal. This does not appear to be the case for reciprocals in Icelandic or BCS, where the higher e-associate can Agree with a nominative antecedent despite the presence of a closer NP. This is shown in (i) for Icelandic and (ii) for BCS.

(i) Nemendurnir sögðu kennaranum hvor frá öðrum
 students.THE.NOM told teacher.THE.DAT each.NOM from other.DAT
 ‘The students told the teacher about each other.’

(ii) Studenti su predstavili profesore jedni drugima
 students.NOM AUX introduced professors.ACC one.NOM other.DAT
 ‘The students introduced the professors to each other.’ (LaTerza 2014: 123, ex. 4.50a)

If one wished to account for these facts under Reverse Agree, we would need to augment it in some way so that the probe can look past a closer NP to match with another further NP.

double negative reading is possible as shown in (39).

- (39) a. Vera ne sdelala salat iz ni-čego
 Vera NEG made salad from *n*-what
 ‘Vera did not make salad out of nothing.’ *NC/DN
- b. Vera ne sdelala salat ni iz čego
 Vera NEG made salad *n* from what
 ‘Vera did not make a salad out of anything.’ NC/*DN

Fitzgibbons 2010:70 argues that *ni*-movement moves the negative prefix to the left edge of the PP domain.⁷ Once at the edge of PP, the negative prefix may agree with the sentential negation *ne* giving rise to the negative concord interpretation (39b). If the negative prefix, does not undergo movement, but instead stays within the complement of the P as in (39a), then it is not local enough to enter an agreement relation with the sentential negation, hence the double negation interpretation arises. On the assumptions that P is a phase head (Abels 2003) and agreement is subject to the accessibility condition, we can account for this distinction elegantly. In (39a), the negative prefix is in the spell-out domain of the P phase head, hence is inaccessible to agreement with the sentential negation in the higher phase. In (39b), as the negative prefix has moved to the edge of the phase, it has escaped the spell out domain of the P and is hence accessible to agreement relations in the higher phase.

We suggest a similar analysis for the reciprocals discussed here: in cases where the reciprocal wraps around a preposition, there is something like e-raising of *hvor*, but only to the left edge of the PP and not further.⁸ Evidence for this short movement comes again

⁷She assume a highly articulated PP structure, where PPs project the equivalent of a clausal CP.

⁸The movement put forth here also has some similarities to movement analyses of R-pronouns in Germanic languages like Dutch (van Riemsdijk 1978; Koopman 2000; den Dikken 2010). R-pronouns are locative pronouns that can occur in prepositional phrases, however the order of the elements is R-pronoun \prec P unlike full DP complements which follow the preposition. Below is an example from Dutch.

- (i) Ik heb de bal daar.op gelegd
 I have the ball there.on put
 ‘I have put the ball on there.’

The authors cited above argue that this word order is derived via movement from the complement position of

from coordinations. It is typically fine to coordinate two NPs under a single preposition as shown in Icelandic (40a), Greek (40b) and BCS (40c).

- (40) a. þeir tölðu alltaf um kvikmyndir og stjórnmál
 they.NOM.M.PL talked always about movies and politics
 ‘They always talked about movies and about politics.’
- b. milisan me tus mathites ke tus kathigites
 talk.3PL with the students and the professors
 ‘They talked with the students and the professors.’
- c. plesali su s konobarima i gostima
 danced are with waiters and guests
 ‘They danced with the waiters and guests.’

However it is not possible to coordinate the reciprocal with another NP under a single preposition as shown for all three languages (41).

- (41) a. *þeir tölðu alltaf hvor um annan og stjórnmál
 they.NOM.M.PL talked always each.NOM.M.PL about other and politics
 Intended: ‘They always talked about each other and about politics.’
- b. *milisan o enas me ton allo ke tus mathites
 talked.3PL the one with the other and the students
 Intended: ‘They talked with each other and the students.’
- c. *Gosti su plesali jedni s drugima i konobarima.
 guests are danced each.NOM with other.DAT and waiters.DAT
 Intended: ‘The guests danced with each other and the waiters.’

Under the analysis where the higher e-associate undergoes movement to the left edge of the PP, then this example can be ruled out via the CSC, as we have asymmetric extraction out of a conjunct as schematized for Icelandic in (42).

- (42) [_{PP} hvor_i um [_{&P} [_{DP} t_i annan] og [_{DP} stjórnmál]]]


 the P to a functional projection at the edge of the PP, similar to our analysis of *hvor* and other e-associates here.

Further evidence for this analysis comes from the innovative reciprocal in Icelandic. This reciprocal does not wrap around the P, both parts of the reciprocal stay as the complement to the preposition, as shown in (43).

- (43) þeir höfðu talað um hvorn annan
 they.NOM.M.PL had talked about each.ACC.M.SG other.ACC.M.SG
 ‘They had talked about each other.’ (Sigurðsson et al. 2020: ex. 20)

The innovative reciprocal can be coordinated with another NP under a single preposition, because in these cases *hver* is not moving, but rather stays within the first conjunct.

- (44) þeir töluðu alltaf um hvorn annan og stjórnmál
 they.NOM.M.PL talked always about each.ACC.M.PL other and politics
 ‘They always talked about each other and politics.’

Note that the innovative reciprocal does not agree in case features with its antecedent. It instead undergoes case concord with *annan*, hence both *hver* and *annan* appear in the same case (accusative). We suggest that it is not accidental that the reciprocal that does not wrap around the P also does not show case agreement. We propose that this follows from Feature Transmission being phase bound (Kratzer 2009: 197). On Chomsky (2000, 2001)’s conception of spell out, the edge of the phase is not spelled out with phase head complement, hence is accessible to operations in the higher domain. Based on these assumption, we make the following cross-linguistic prediction given in (45).⁹

⁹ Note that this generalization is a one way generalization. There are languages like Russian and French that move part of the reciprocal to the edge of PP, but do not show case agreement with their antecedent as shown in (i) and (ii).

- (i) Na vybor-ax politik-i golosuj-ut drug za drug-a
 on election-PL.LOC politician-PLL.NOM vote-PRS.3PL other for other-ACC
 ‘On the elections, the politicians vote for each other.’ (Letuchiy 2011: 314, ex. 3)
- (ii) Vadius et Trissotin s’ adressent l’un à l’autre des louanges ridicules
 Vadius and Trissotin SE address.PRS.PL the.one to the.other DET praises ridiculous
 ‘Vadius and Trissotin address ridiculous praises to each other.’ (Labelle 2008: 846,ex. 34d)

(45) P-Edge Generalization

A reciprocal embedded within a PP can only agree in case features with its antecedents, if it occupies a position at the edge of the PP.

While the languages we have looked at thus far are head initial, Messick & Raghotham (2021) report a mirror image of the facts for the head final Telugu. As we have seen a postposition may intervene between the two parts case-agreeing reciprocal (46).

- (46) *valla-ku okkar miida okkari-ki koopam wacc-aa-ru*
3PL-DAT one.GEN on one-DAT angry become-PST-PL
'They got angry at each other.'

This again appears to conform to the generalization in (45), though the case-agreeing element is at the right edge of the PP instead of the left edge.

4.1 The Icelandic hybrid

A potential counterexample to the proposal that case agreement requires the target to be at the PP edge comes from the Icelandic hybrid construction discussed in Sigurðsson et al. 2021. In this construction, the reciprocal does not wrap around the P, hence it does not appear that *hver* has moved to the edge of the PP. Nevertheless, *hver* appears in nominative, the same case as its antecedent in (47). We can once again see that there is no movement in these examples, as like the innovative reciprocal, the hybrid reciprocal does not violate the CSC when it is coordinated with another NP under a single preposition, as shown in (48).

- (47) *þeir höfðu talað um hvor annan*
they.NOM.M.PL had talked about each.NOM.M.SG other.ACC.M.SG
'They had talked about each other.'

- (48) *þeir töluðu alltaf um hvor annan og stjórnmál*
they.NOM.M.PL talked always about each.NOM.M.PL other and politics
'They always talked about each other and politics.'

As Sigurðsson et al. (2021) note however, in these constructions, the nominative does not appear to be the result of agreement with the antecedent. Instead, the nominative displayed by *hvor* appears to be a form of default case. Evidence for this position comes from the fact that the nominative case appears even when the antecedent is dative, as shown in (49).

- (49) að undir niðri líki þeim við hvor annan
 that under neath like them.DAT with each.NOM other.ACC
 ‘that deep down they like each other.’ (Sigurðsson et al. 2021: ex. 12)

This suggests that (47) is not truly an exception to the correlation between case agreement and the PP edge position. It appears that the agreeing element must be at the edge of the PP to agree. If it does not, the case of the e-associates may undergo case concord, as in the innovative reciprocal (43), or one of the associates may occur in the default case, as in the hybrid (47).

5 Conclusion

In this paper, we presented data that show that complex reciprocals that agree in case with their antecedents do not undergo movement to the base position of their antecedent. The arguments against such a movement operation came from constituency and (coordination) islands. This was shown for Icelandic, but also Greek, BCS, and Telugu as well. This suggests that case agreement must occur between an antecedent and reciprocal with the reciprocal staying *in situ*. We present a way forward using previous theories that allow for agreement between an anaphor and antecedent without need for movement.

In cases where the reciprocal appears to wrap around an adposition, we argued that the such wrapping is derived via movement. We presented evidence once again from coordination that such a movement can induce a CSC violation, but since the two parts of the reciprocal and the P still behave as if they were a constituent, we argued that this movement was short: only to the edge of the PP. We argued that such a movement facilitated the agreement

relation between the reciprocal and the antecedent (building off of a similar analysis put forth for NCIs in Russian). This analysis makes a cross-linguistic prediction that case-agreeing reciprocals must move to the edge of the PP in order to agree. We discussed potential counterexamples to this generalization, and show how they may fit within the system.

The findings presented here have many implications for the syntax of locally bound anaphora and agreement. First, the fact that we get case agreement between an anaphor and its antecedent provides a novel argument that at least some feature matching between anaphor and antecedent must be derived via morphosyntactic Feature Transmission. Second, the analysis of P intervention between the two e-associates presented in this paper provides a new argument for the phase status of PP and the accessibility condition on Feature Transmission.

Finally, these findings also bear on the question on whether the domain for Principle A of the binding theory should be reduced to the domain of agreement (e.g., phasal domains). The interaction we see with regards to PPs seems like a fertile testing ground for these proposals. It is often assumed in the agreement literature that PPs block agreement between an element outside the PP with an element within the complement of P (see Bruening 2021:433), but at least in some languages, like English (or the Icelandic innovative reciprocal), binding of a reflexive or reciprocal in a PP is acceptable. If the generalization in (45) is correct, then it shows that languages that show case agreement between an anaphor and antecedent must have part of the anaphor move out of the complement of the P to agree. In fact, other languages have part of a complex reflexive/reciprocal appear at the edge of PPs even if they do not agree in case (see footnote 9). A number of factors may be at play. One factor might be the transparency of PP to other operations such as movement. There does appear to be a tendency that languages that do have Ps intervening between the two parts of a complex reciprocal do not allow for P-stranding under A'-movement. Another factor may be the structure of the PP itself, as the structure of the PP does influence the possibility of binding in some languages (Bassel 2018). A final consideration is whether the anaphor in

the complement of P may allow for exempt uses (Pollard & Sag 1992; Reinhart & Reuland 1993; Charnavel 2019). All of these different dimensions may play a role in explaining the differences between languages and the relationship between binding, phases, and agreement in PPs. We are not able to explore all of these dimensions here, but hope that our discussion here spurs on more research in this area.

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