

***Hvor* ‘Each’ Reciprocals and Distributives in Icelandic: E-Raising + Short Main Verb Movement**

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We discuss remarkable constructions in Icelandic that have the distributive pronoun *hver* ‘each’ in common: the reciprocal construction *hver annar* ‘each other’, and the distributive construction *hver sinn* ‘each their’, which also comes in a *sinn hver* ‘their each’ version. We provide the first detailed description of these constructions, in particular their case and word order properties, which raise recalcitrant puzzles, and then we discuss what they say about the syntax of nonfinite verbs. Specifically, the word order and case properties of these constructions indicate that nonfinite verbs in Icelandic undergo short verb movement within the verb phrase. That is, the evidence indicates that the leftmost element in these constructions, alternatively *hver* or *sinn*, originates inside an object DP and moves, by what we call e-raising, to the base position of an antecedent with which it agrees, before being stranded by that very antecedent. Nevertheless, the verb appears to the left of this element, even when it is a nonfinite verb, showing that it must undergo short movement to the left of Spec,vP. In addition, the interaction of e-raising and case has important consequences for Case theory, as it indicates that case agreement and case marking take place in PF.

Keywords: Icelandic, e-raising, ‘each’, reciprocals, distributives, word order, short verb movement, case

1 Introduction

It is well-known that finite verbs in Icelandic move to the TP domain in non-verb-second (non-V2) environments and may also move to the CP domain in V2 environments (see Thráinsson 2007 and the many references there). It is usually assumed, however, that nonfinite verbs remain in their base-generated position inside the VP domain.¹ In this article, we claim that even nonfinite verbs undergo short verb movement within the verb phrase. This claim is motivated by an analysis of understudied constructions in Icelandic that have the distributive element *hver* ‘each’ in common: the reciprocal construction *hver annar* ‘each other’, and the distributive contrastive or separative *hver sinn* ‘each their’, which also comes in a *sinn hver* ‘their each’ version.² We

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¹ In monotransitive and nontransitive constructions. It is widely assumed that the main verb raises in the double object construction (Larson 1988 and much subsequent work), but that movement is different from the verb raising discussed here.

² We refer to the constructions with the masculine singular nominative forms, *hver annar*, *hver sinn*, and *sinn hver*, even though double nominatives of this sort occur rarely. We consistently gloss and translate singular *sinn* as plural ‘their’, even though it might also be glossed/translated as singular ‘his, her, its’.

provide the first in-depth description and analysis of the word order and case properties of these constructions, which, if correct, entail that nonfinite verbs undergo short verb movement below TP. We emphasize, though, that not only the verb movement but also the *hvor* constructions themselves are interesting and curious, in particular with respect to case, so we present a broad description of them.

The *hvor* constructions are exemplified in (1)–(3) (where the 3PL agreement of the finite verb is not glossed).

(1) *The reciprocal hvor annar construction*³

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.’

(2) *The distributive hvor sinn construction*⁴

Þeir höfðu komið **hvor** á **sínu** hjólinu.
 they.NOM.M.PL had come each.NOM.M.SG on their.DAT.N.SG bike.the.DAT.N.SG
 ‘They had (each) come on separate bikes.’

(3) *The distributive sinn hvor construction*

Þeir höfðu komið **sinn** á **hvoru** hjólinu.
 they.NOM.M.PL had come their.NOM.M.SG on each.DAT.N.SG bike.the.DAT.N.SG
 ‘They had (each) come on separate bikes.’

We refer to *hvor* and *annar* and *hvor* and *sinn* as ‘each’ associates, *e*-associates for short. *Hvor* is the first or the *higher e*-associate in (1) and (2), while *sinn* is the higher *e*-associate in (3). In all three examples in (1)–(3), the *e*-associates are positionally split, and they are also case split. The higher associate agrees in case and gender (but not in number) with the nominative subject; this is the most common pattern, but there are also instances where it agrees in case and gender with a nonnominative antecedent, as we will demonstrate in sections 4 and 5. The lower associate, in turn, either gets case directly from the preposition, as does *annan* in (1), or agrees in case, gender, and number with a noun (or a noun phrase) that gets case from the preposition, as do *sínu* in (2) and *hvoru* in (3). Notice also that the higher *e*-associate is c-commanded by the main verb, thus seemingly in its case domain yet showing up in the nominative in (1)–(3), a central issue we will return to shortly.

The associates also take distinct cases in examples without a preposition, even though they are adjacent in such examples. This is illustrated in (4).

³ Icelandic does not have a counterpart to English *one another*: **einn annar* ‘one (an)other’.

⁴ The *sinn hvor* construction is more marked and more heavily constrained than the *hvor sinn* construction; see section 2. There is also a reverse version of the *hvor sinn* construction: *á sínu hjólinu hvor* ‘on their bike each’, instead of *hvor á sínu hjólinu*. We will return to this version in section 5.

- (4) a. *The reciprocal hvor annar construction*
 Þeir hafa séð **hvor** **annan**.
 they.NOM.M.PL have seen each.NOM.M.SG other.ACC.M.SG
 ‘They have seen each other.’
- b. *The distributive hvor sinn construction*
 Þeir hafa keypt **hvor** **sína** **bókina**.
 they.NOM.M.PL have bought each.NOM.M.SG their.ACC.F.SG book.the.ACC.F.SG
 ‘They have (each) bought separate books.’
- c. *The distributive sinn hvor construction*
 Þeir hafa keypt **sinn** **hvora** **bókina**.
 they.NOM.M.PL have bought their.NOM.M.SG each.ACC.F.SG book.the.ACC.F.SG
 ‘They have (each) bought separate books.’

The facts in (1)–(4) hold for traditional standard Icelandic, but there are also everyday language varieties (or mainly everyday varieties) where the higher e-associate behaves differently. We address these briefly in section 3. The morphosyntactic properties of the standard Icelandic e-associate constructions are unusual, but similar properties are found in reciprocals and distributives in varieties of Faroese (see Thráinsson et al. 2004:129–130) and in reciprocals in Russian and some other Slavic languages.⁵ We limit our discussion to Icelandic.

The ‘each’ part of both the reciprocal and the distributive constructions is actually either *hvor* or *hver*. While *hvor* specifies that the individuals referred to are exactly two in number (dual), *hver* applies when the individuals are three or more (plural).⁶ In (1)–(4), and more generally, these elements agree with an antecedent in case and gender, but not in number. Both are formally singular, even though their antecedent is plural. They can be formally plural (*hvorir*, *hverjir*), but these plurals are set plurals rather than regular individual plurals: *hvorir* refers to two sets or groups of individuals (commonly nationalities and sports teams), *hverjir* to three or more sets or groups. We set this aside here. These elements—*hvor*, *hver*, *hvorir*, and *hverjir*—are semantically distinct, but they all show the same syntactic behavior.⁷

⁵ In Russian *drug drug-* ‘each other’, only the second item inflects; the first element has the invariable form *drug* (Knjazev 2007, Letuchiy 2009). However, in a less common reciprocal construction, with *odin* ‘one’ and *drugoj* ‘another’, *odin* and *drugoj* take different cases, as in *odin drugogo* ‘one.NOM another.ACC’ (Knjazev 2007:699).

⁶ This also applies to interrogative *hvor/hver* ‘who.DU/PL’. Other pronouns in Modern Icelandic (in contrast to Old Icelandic; see Guðmundsson 1972) do not have specific dual forms. The dual/plural distinction between *hvor* and *hver* is commonly leveled out in everyday Icelandic—usually in favor of *hver*, it seems.

⁷ The morphological facts in the *hvor annar*, *hvor sinn*, and *sinn hvor* constructions are fascinating. Both parts inflect in case (4), gender (3), and number (2), yielding 24 (4×3×2) combinations each, expressed by 12 or 13 distinct forms (see the Database of Modern Icelandic Inflection, <http://bin.arnastofnun.is>). There are thus 576 (24×24) potential feature combinations for both parts together—even more if one also takes the distinctions between *hvor/hvorir* and *hver/hverjir* into account. Many of these combinations are excluded by independent limitations, though; for instance, singular *hvor* cannot combine with plural *annar* (*aðrir*, etc.). However, we will largely gloss over the morphological complexities—as well as the limitations—involved. Case is central to our analysis, but number and gender variation are irrelevant for our purposes.

The Icelandic e-associate constructions raise two recalcitrant issues that will be our main concern here. Call them the *case puzzle* and the *position puzzle*. As pointed out above, the higher e-associate is c-commanded by the main verb (in the verb's surface position), even though it is most commonly nominative, as it is in (1)–(4).⁸ Nominatives that are c-commanded by main verbs are typical of passive, unaccusative, and quirky predicates, but the predicates in (1) and (4) are transitive; if the nominative e-associate is really below the base position of the main verb, we would be forced to adopt a conjecture that, as far as we can see, defies any systematic understanding of both case marking and case agreement. First, it would then have to be possible for a transitive verb to opt to not assign its case to its right-adjacent nominal, *hvor* or *sinn*, nevertheless assigning case to its object, across the case-marked *hvor* or *sinn*. Second, it would also have to be possible for a nominal element, *hvor* or *sinn*, to be located inside the case-marking domain of a transitive verb yet be able to agree in case with an antecedent outside that domain. We reject this conjecture, claiming instead that the higher e-associate has raised out of the case domain of the prepositions in (1)–(3) and the main verbs in (4).

The position of the higher e-associate is also puzzling; it is unclear where it sits in the structure. It is in a position where it scopes over the lower e-associate, yet it is somehow in an agreement relation with its antecedent, most commonly the subject. In addition, the prepositional split (*hvor um annan* 'each about other', etc.) is peculiar. We propose a unified account of these puzzles: the higher e-associate, *hvor* or *sinn*, raises to the base position of its antecedent, by what we call *e-raising*, thus getting the same case as the antecedent (nominative in the examples above). Subsequently, the main verb raises to Voice, across the e-raised *hvor* or *sinn*, thereby masking the e-raising, except when the structure contains a PP object. This is sketched in (5) for the example in (1);⁹ the auxiliary *höfðu* 'had' has raised out of vP to T, but we do not indicate this.

- (5) [_{TP} they_i had [_{VoiceP} talked_j [[_{vP} they_i each_{i+k} [_v talked_j [_{PP} about [_{DP} [each_k [_{NP} other_k]]]]]]]]]]]]
- þeir höfðu talað hvor um annan
- NOM NOM (no case) ACC
- ↑
e-raising

That e-raising targets the base position of the antecedent is an unexpected discovery; on the face of it, it would seem that *hvor* does not c-command out of Spec,vP in (5), as Spec,vP contains both *hvor* and a copy of the antecedent *þeir*. Tentatively, we assume that the internal structure of the DP antecedent in Spec,vP is more complex than indicated in (5), such that both *hvor* and the copy of *þeir* c-command the object DP. Examples where the antecedent is an object, discussed in section 4, show that *hvor* tucks in under the antecedent (or right-adjoints to it), so the natural assumption is that the same applies to structures with a subject antecedent. In the absence of any

⁸ Icelandic is an SVO language. The transitive verb assigns accusative, dative, or genitive to its object.

⁹ Parallel facts hold in infinitival complements, as in (i).

- (i) Þeir sáu eftir að hafa talað hvor um annan.
they saw after to have talked each.NOM about other.ACC
'They regretted having talked about each other.'

evidence that bears on the issue, though, we refrain from pursuing an exact analysis of the internal structure of the DP antecedents involved. However, as the landing site of *hvor* cannot be empirically distinguished from the base position of its antecedent, we refer to it as the antecedent's base position. As we will show, the higher e-associate also raises to antecedents that do not vacate their base position, so it is not an option to explore the possibility that *hvor* fills the subject position after the subject *þeir* has raised to Spec,TP (which would be reminiscent of Icelandic Stylistic Fronting; see Holmberg 2000, Thráinsson 2007, among many). The evidence that the raised element does move to the base position of its antecedent, in the intended sense, is robust, as we will show in sections 4 and 5.

Coindexing *hvor* in (5) with both the subject *þeir* and the PP object *annan* is a simple device to indicate that it relates to both. This is informal and just descriptive. As far as we can judge, the semantics of the reciprocal is largely parallel to that of English *each other*, and the semantics of the distributives is largely parallel to that of distributives in other Scandinavian languages (see Lødrup, Singh, and Toivonen 2019). We will thus not analyze the semantics of the Icelandic e-associate constructions. Their semantics is of course intriguing, but it is not special. What makes these constructions special is their unusual morphosyntactic properties, which we accordingly focus on.

With this much in place, the remainder of the article is structured as follows. In section 2, we provide evidence and arguments that the e-associates are base-generated in adjacent positions high in the DP structure, internal to the object DP, even when the higher e-associate winds up in the subject Spec,vP. In section 3, we briefly describe recent varieties in everyday Icelandic where the higher e-associate stays within the object DP (as it commonly does in comparable constructions in related languages), thus supporting our claim that it also originates within the object DP in the traditional reciprocal and distributive constructions. In sections 4 and 5, we discuss the traditional reciprocal and distributive constructions, respectively, providing robust evidence to support our claim that the higher e-associate moves to the base position of the antecedent it agrees with. This, in turn, entails that even nonfinite verbs must undergo short movement from their base position. Section 6 concludes.

2 The Basic Structures: Both E-Associates Originate within the Object DP

Reciprocity, including split reciprocals such as English *each other*, has been widely discussed (see Nedjalkov 2007, König and Gast 2008, among many), but we are not aware of any general discussion of distributive 'each her/his/its/their' constructions (for a recent study of such constructions in Norwegian and Swedish, though, see Lødrup, Singh, and Toivonen 2019).¹⁰ Heim, Lasnik, and May (1991) (see also Belletti 1982, Sauerland 1998:190, Buring 2005:207) pursue an approach where *each* and *other* are base-generated (first-merged) within the same NP. In addition, Heim, Lasnik, and May (1991:66) "assume that a marker of distribution, the element

¹⁰ According to Lødrup, Singh, and Toivonen (2019), distributives of this sort are crosslinguistically rare.

each . . . , is removed from its surface position and adjoined at LF to its ‘antecedent’ phrase. Thus, we have the mapping indicated in [(6)]” (S = CP/TP, VP = vP, and NP = either nP or DP in more recent terms).

(6) The men saw each other \Rightarrow [_S[_{NP}[_{NP} the men]₁ each₂] [_{VP} saw [_{NP} e₂ other]₃]]

This analysis raises the same c-command issue discussed in relation to (5), albeit in LF instead of PF.

Instead of only raising in LF, as *each* does in English on this analysis, the first e-associate in standard Icelandic (*hver* or *sinn*) raises *overtly* to the *base position* of its antecedent. That is interesting in itself, as it shows that the base position of arguments is active, even when the antecedent later vacates the base position (as we will show). Everyday Icelandic, in contrast, behaves much like English in not having overt e-raising (see section 3). Presumably, therefore, it applies to distributive raising in LF only. We take the facts in standard Icelandic to suggest that the landing site of LF raising is the base position of the antecedent, rather than its overt position, in both English and everyday Icelandic.

We follow Heim, Lasnik, and May (1991) and others mentioned above in assuming that *each/hver* and its e-associate—*other/annar* in reciprocals, *sinn* in distributives—are generated in adjacent positions in a complex DP. They do not start out as a single item, though, as indicated by the fact that they are case-marked differently and can be split; rather, they are generated in separate positions high in DP structure. We simply refer to these positions as F1 and F2.¹¹ That they are generated high in DP is indicated by the fact that they precede adjectives as well as the definite suffixed article, as illustrated in (7).

- (7) a. Þeir keyptu **hver** **sína** nýju bókina.
 they.NOM.M bought each.NOM.M their.ACC.F new.ACC.F book.the.ACC.F
 ‘They (each) bought their separate book(s).’
- b. Þeir keyptu **sinn** **hvora** nýju bókina.
 they.NOM.M bought their.NOM.M each.ACC.F new.ACC.F book.the.ACC.F
 ‘They (each) bought their separate book(s).’

We cannot do justice to the structures of Icelandic DPs here (see the extensive discussion in Delsing 1993, H. Á. Sigurðsson 1993, 2006, Julien 2005, Roehrs 2006, Thráinsson 2007:88ff., Pfaff 2015, Ingason 2016, and Harðarson 2017). The following incomplete sketch will have to do. Icelandic has two definite articles: a freestanding prenominal article, *hin-* (as in *hina nýju bók* ‘the new book.ACC’), and a suffixed postnominal article, *-in-* (as in *nýju bókina* ‘new book.the.ACC’ = ‘the new book’). According to Pfaff’s (2015) one-article analysis, and according to the traditional standard assumption as well (see, e.g., Delsing 1993, H. Á. Sigurðsson 2006), the two are basically the same element, generated prenominally: Art \gg Adj \gg Noun (as in *hina nýju bók*). The order with the postnominal suffixed article (as in *nýju bókina*) is derived by

¹¹ It is unclear whether these positions are functional heads or specifiers of silent heads (in the spirit of Cinque 1999). We do not take a stand on the issue.

movement of Adj+Noun in front of the article, *-(h)in-*, to Spec,Art(icle)P in Pfaff's analysis. The evidence that Adj+Noun indeed both move and are glued together, as if they form a constituent, originally presented in H. Á. Sigurðsson 1993, is uncontroversial. However, while Sigurðsson assumes, as does Pfaff, that a single movement is at work here, Harðarson (2017) argues that two separate movements are involved. Setting this controversy aside here, we simply refer to the resulting structure as xP. The (partial) structure of *hvor sína nýju bókina* in (7a) is sketched in (8).

- (8) [_{DP} . . . [_{F1} **hvor** [_{F2} **sína** [_{ArticleP} [_{xP} nýju bók]_i [_{Art} (h)-ina [_{xP} nýju-bók]_i] . . .]]]]
 each their new book the
 NOM ACC ACC ACC

As far as we can judge, the reversed order of *hvor* and *sinn* in (7a) and (7b) has no semantic effects, so we assume that both *hvor* and *sinn* may access either F1 or F2. If so, the (partial) structure of *sinn hvora nýju bókina* in (7b) is as sketched in (9).

- (9) [_{DP} . . . [_{F1} **sinn** [_{F2} **hvora** [_{ArticleP} [_{xP} nýju bók]_i [_{Art} (h)-ina [_{xP} nýju-bók]_i] . . .]]]]
 their each new book the
 NOM ACC ACC ACC

Irrelevant minor differences aside, this is compatible with the understanding in Pfaff 2015, the most detailed study to date of Icelandic DPs containing adjectives. It should be noted, though, that *hvor* accesses F1 more frequently and more easily in Modern Icelandic than does *sinn*. That is, *hvor sinn* is more common and more neutral in the modern language than *sinn hvor*, although the latter is accepted by some speakers, including the first author of this article (see also Þráinsson, Whelpton, and Jónsson 2015:357), and can be found in corpora (as confirmed by a search of the Icelandic Gigaword Corpus, <http://malheildir.arnastofnun.is/>, 12 November 2019).

The DP structure of the reciprocal *hvor annar* is sketched in (10) (presumably in an overly simplified manner, but further details are irrelevant for our purposes).

- (10) [_{DP} . . . [_{F1} **hvor** [_{nP} annar]]]

We postpone a more detailed discussion of traditional *hvor annar* until in section 4.

The structures in (8) and (9) are not final products. There is evidence that the higher e-associate, either *hvor* (as in (7a)) or *sinn* (as in (7b)), raises out of DP. As mentioned in section 1, we refer to the raising as *e-raising* (regardless of whether it applies to *hvor* or *sinn*); in the same vein, we refer to the raised e-associate as the *e-raiser*. As also mentioned in section 1, this analysis entails that the main verb actually moves too, across the e-raiser, commonly masking the e-raising. We hypothesize that this *short main verb movement* moves the verb to Voice.¹² Adopting the mainstream approach (following H. Á. Sigurðsson 2012, Wood and H. Á. Sigurðsson 2014, and E. F. Sigurðsson 2017, among many), we assume that TP has the functional sequence

¹² Wood (2018) suggests, on independent grounds, that the main verb in Icelandic usually raises out of vP (to Asp(ect), which corresponds to Voice in our analysis).

T \gg Voice \gg (Appl₁) \gg v-V (\gg Appl₂). Following H. Á. Sigurðsson (2012), we assume that Voice event-licenses agentive subjects “downward,” in the highest available argument position, usually in the left edge of vP (here referred to as Spec,vP, for descriptive simplicity).¹³

3 The E-Raiser Originates in the Object DP: Support from Everyday Icelandic

In our analysis, the e-raiser is base-generated within an object DP, much as in English and other related languages: *They had not seen each other*, and so on. This is supported not only by related languages but also by variation in everyday Icelandic. The facts described so far apply to standard Icelandic. However, in the last two centuries everyday Icelandic has developed innovative reciprocal and distributive constructions where the higher e-associate behaves differently than in the traditional standard varieties (see Þráinsson 2005:88, E. F. Sigurðsson 2008, Þráinsson, Whelpton, and Jónsson 2015, Guðmundsdóttir 2016). See (11) and (12).

(11) *The innovative reciprocal construction*¹⁴

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.’

(12) *The innovative distributive construction*¹⁵

Þeir höfðu komið á sitthvoru hjólinu.
 they.NOM.M.PL had come on their-each.DAT.N.SG bike.the.DAT.N.SG
 ‘They had (each) come on separate bikes.’

As far as we can judge, there are *no* semantic differences between the traditional and the innovative constructions (this holds even when the higher e-associate bears “inherent” dative or genitive in the innovative reciprocal construction, instead of nominative in the traditional one). This strongly indicates that both e-raising and case agreement take place in PF; we claim that this is the correct understanding. That case marking—hence, case agreement as well—is a PF process has been widely claimed (see, e.g., H. Á. Sigurðsson 2012, Schäfer and Anagnostopoulou 2020).¹⁶ The

¹³ Others, including E. F. Sigurðsson and Wood (2020), assume that agentive subjects are generated in Spec,VoiceP. The difference is immaterial for our purposes.

¹⁴ Both (11) and (12) have no e-raising + no case split, instead of the traditional e-raising + case split, showing that there is an intimate relation between the two phenomena. However, reciprocals (but not distributives) that show no e-raising + case split can also be found in corpora: *Þeir höfðu talað um hvor.NOM annan.ACC*, and so on. We set such examples aside here (but see H. Á. Sigurðsson, E. F. Sigurðsson, and Wood 2020 for discussion). E-raising + no case split (as in **Þeir höfðu talað hvorn.ACC um annan.ACC*) is completely absent.

¹⁵ The innovative distributive amalgamates the e-associates. The first part, *sitt-*, is the nominative neuter singular form of *sinn*, with no case variation, while the second part, *-hvor*, inflects for case (showing, again, that there is an intimate relation between e-raising and case split). *Sithvor*, with neuter *sitt-*, commonly modifies nouns in all three genders, but as corpora show, there is a weak tendency to use the much less frequent masculine *sinnhvor-* and feminine *sínhvor-* in agreement with masculine and feminine objects, respectively. Also in these masculine and feminine forms, there is no case variation in the first part, *sinn-* or *sín-*.

¹⁶ Wood, Barros, and E. F. Sigurðsson (2020) also adopt this view on case agreement, but not necessarily for case assignment. For a syntactic account of case agreement, however, see for example E. F. Sigurðsson 2017.

e-associate constructions yield an additional and hitherto unnoticed piece of evidence supporting the conclusion that at least case agreement takes place in PF.

As shown, the potential e-raiser stays within the object DP in these varieties, and it also agrees in case with the object and not with the subject, as in the traditional variety. The e-associates are *case congruent*, not *case split*. The historical development seen in process here thus involves two changes: the e-raising is lost (in line with the past historical development in the Mainland Scandinavian languages), and direct case marking + DP-internal case concord blocks case agreement with the antecedent. This, in turn, supports our claim that the e-raiser is base-generated within the object DP in the traditional variety, much as in the innovative varieties and in e-associate constructions in related languages, the main difference being that e-raising does not apply in the latter. This is the null hypothesis. Otherwise, we would have to assume that the historical development involves lowering of the e-raiser (from different positions, subject position vs. object position; see sections 4 and 5).

This brief description of the innovative varieties does not do justice to the variation found (see H. Á. Sigurðsson, E. F. Sigurðsson, and Wood 2021), but we must set it aside here. The standard (formal) and the everyday (informal) varieties coexist in Modern Icelandic. Many speakers, including ourselves, have access to more than one system for both the reciprocal and the distributive constructions. It is thus difficult to distinguish among the competing varieties. Nevertheless, we will try here to “isolate” the traditional case-split reciprocal and distributive constructions. This is a bold attempt; due to the extensive variation and complexities seen in these constructions, no one has tried this seriously before. To the extent we succeed, then, we will be taking a significant step forward.

In the next two sections, we describe the traditional reciprocal and distributive constructions, showing that there is robust evidence that the higher e-associate moves to the base position of its antecedent, regardless of the antecedent’s grammatical function.

4 The Traditional Reciprocal *hvor annar* Construction

The general pattern in the traditional reciprocals and distributives is that the structurally higher e-associate agrees in case and gender with its antecedent.¹⁷ Thus, the reciprocal *hvor annar* and the distributive *hvor sinn* and *sinn hvor* constructions share central properties. For ease of exposition and clarity, though, we will discuss them separately. We deal with *hvor annar* in this section, turning to *hvor sinn* and *sinn hvor* in section 5.

The antecedent is most commonly a nominative subject, but it can also be a quirky (i.e., nonnominative) subject or a nonsubject. We will describe these constructions separately in what follows.

¹⁷ In Old Icelandic, *hvor* (*hvar*-) itself was an argument DP, most commonly the subject (type “each greeted other” = ‘they greeted each other’); see E. F. Sigurðsson 2008 and the Saga Corpus (<http://malheildir.arnastofnun.is>, accessed 12 November 2019). This is obsolete in Modern Icelandic, where *hvor* must normally have a coreferential antecedent.

4.1 Examples with Nominative Subject Antecedents

A simple example with *hvor annar* and a feminine subject antecedent is given in (13).¹⁸

- (13) Þær hjálpuðu **hvor** annarri.
 they.NOM.F.PL helped each.NOM.F.SG other.DAT.F.SG
 ‘They helped each other.’

While *hvor* agrees in case and gender with the nominative subject antecedent, the object (the lower e-associate) gets dative from the verb. Apart from case, the object “cross-agrees” with the subject and with *hvor*; that is, it agrees in gender with the subject (as does *hvor*) and in singular number with *hvor*.

In simple examples such as (13), the position of *hvor* is obscured by finite verb raising to T (and further to C). Examples with auxiliaries, though, show that *hvor* is *right-adjacent to the main verb*. This is illustrated in (14).

- (14) Þær hafa sennilega aldrei **hjálpað** **hvor** annarri.
 they.NOM.F.PL have probably never helped each.NOM.F.SG other.DAT.F.SG
 ‘They have probably never helped each other.’

Remarkably, *hvor* is also right-adjacent to the main verb in examples with a prepositional object, as in (1), repeated here as (15).

- (15) 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.’

This holds generally, regardless of other factors: verbs, prepositions, case marking, and so on. In examples with a subject antecedent, *hvor* in *hvor annar* reciprocals and *hvor* in *hvor sinn* distributives as well as *sinn* in *sinn hvor* (see section 5) is always stuck in the position right-adjacent to the main verb. As we will show, this is not so in examples with object antecedents.

Each is usually assumed to be a universal quantifier (Heim, Lasnik, and May 1991, and many others since). Semantically, Icelandic *hvor* (and *hver*) is also a universal quantifier. Syntactically, however, it behaves differently from other quantifiers in the language, including universal *báð*- ‘both’ and *all*- ‘all’ (H. Á. Sigurðsson 1994, E. F. Sigurðsson 2008). While most regular quantifiers can float rather freely, showing up in a number of positions above vP (H. Á. Sigurðsson 2019b), *hvor* cannot float at all, as illustrated in (16).

- (16) a. Þær mundu sennilega hafa talað **hvor** við aðra.
 they would probably have talked each with other
 ‘They would probably have talked with each other.’

¹⁸ There is an exceptional syncretism between nominative masculine singular and nominative feminine singular in the inflectional paradigm of *hvor*.

- b. *Þær mundu sennilega **hvor** hafa talað við aðra.
- c. *Þær mundu **hvor** sennilega hafa talað við aðra.
- d. *Þær **hvor** mundu sennilega hafa talað við aðra.
- e. ***Hvor** mundu þær sennilega hafa talað við aðra.
- f. ***Hvor** þær mundu sennilega hafa talað við aðra.

This behavior of *hvor*, though, is specific to the reciprocal *hvor annar* construction (and to the distributive *hvor sinn* construction). Modified *hvor*-phrases behave differently, including *hvor þeirra* (lit. each.NOM their.GEN) ‘each of them’ and *hvor um sig* (lit. each for self.REFL) ‘each separately’. Reciprocal and distributive *hvor* are always stranded and cannot, for example, raise to subject, as seen in (16d–f): *þær *hvor* and **hvor* . . . þær are ungrammatical. Modified *hvor*-phrases, on the other hand, can raise to subject: *hvor þeirra mundi* . . . (lit. each.NOM their.GEN would.3SG) ‘each of them would . . .’, and *hvor um sig mundi* . . . (lit. each.NOM for self.REFL would.3SG) ‘each of them would . . .’. We do not have an explanation for this difference and set the modified *hvor*-phrases aside here.

Summing up for reciprocals with a nominative subject antecedent: *Hvor* undergoes e-raising, and, except in structures with PP objects, the e-raising is masked by subsequent main verb raising to Voice. E-raising raises *hvor* to the base position of its antecedent. In the case of agentive nominative subject antecedents, the base position is Spec,vP, but other antecedents (obviously) have different base positions. In sections 4.2 and 4.3, we demonstrate that *hvor* e-raises to these positions in the traditional variety.

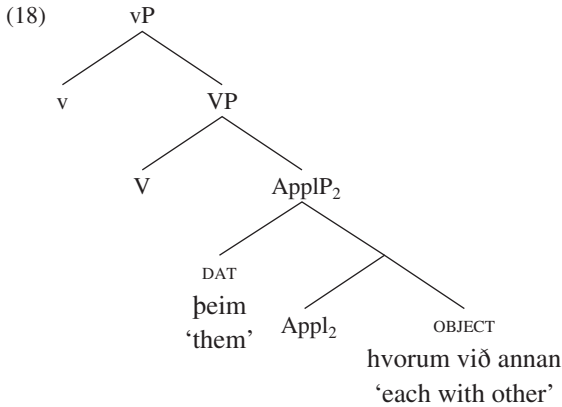
4.2 Examples with Quirky Subject Antecedents

Two reciprocal examples with a quirky subject antecedent are given in (17).¹⁹

- (17) a. **Þeim** hefur alltaf líkað **hvorum** við annan.
 them.DAT.PL has always liked each.DAT.M.SG with other.ACC.M.SG
 ‘They have always liked each other.’
- b. **Þeim** hefur alltaf líkað **hvorri** við aðra.
 them.DAT.PL has always liked each.DAT.F.SG with other.ACC.F.SG
 ‘They have always liked each other.’

According to the analysis proposed by Wood and H. Á. Sigurðsson (2014), both the dative subject and the PP object are generated low in vP, inside ApplP₂, with dative as the higher argument, in Spec,ApplP₂. Adopting their analysis, we assume that the base structure of the vPs in (17) is (18).

¹⁹ In contrast, dative-nominative constructions (like “them.DAT have always liked each.DAT other.NOM”) cannot easily be constructed with *hvor annar*. For reasons of space, we do not discuss this here. There is a general gender syncretism in plural datives and genitives in the pronominal inflection system, so the plural subject *þeim* shows no gender distinctions here, while the singular reciprocal does. These data are interesting in that they demonstrate that clause-external semantic gender can easily access clause-internal syntax/morphology (see H. Á. Sigurðsson 2019a).



Hvorum e-raises to its antecedent *þeim* in Spec,AppIP₂, where it gets dative (and where it is stranded when the antecedent moves further to Spec,TP). The remnant PP object, *annan*, subsequently gets accusative from the preposition *við*. Thus, *hvor* must have e-raised out of the case domain of the preposition before case marking takes place. Both the case agreement of *hvorum* with *þeim* and the direct case marking of *annan* must take place after e-raising. If e-raising, in turn, is a PF process, as we suggest in section 6, it follows that not only case agreement but also case marking must be a PF process.²⁰

4.3 Examples with Nonsubject Antecedents

It is commonly difficult to construct examples with nonsubject antecedents of reciprocal *hvor annar*, and even when such examples can be constructed, they tend to be semantically odd. However, insofar as such examples can be constructed, *hvor* agrees in case (and gender) with its antecedent. The word order found in such examples supports the claim that *hvor* moves specifically to the base position of the antecedent, regardless of the antecedent's grammatical function. We demonstrate this with a direct object antecedent (19a) and a prepositional object antecedent (19b) (in contrast, we have not been able to construct natural examples with an indirect object as the antecedent of *hvor annar*; we set this issue aside here).

- (19) a. Ég kynnti þá hvorn fyrir öðrum.
 I introduced them.ACC each.ACC for other.DAT
 'I introduced them to each other.'

²⁰ That is, syntax does not operate with case markers (accusative, dative, etc.); these are assigned in PF. Case markers interpret or "translate" abstract syntactic case instructions, variably so in different languages, but the instructions cannot be stated in terms of accusative, dative, and so on (or else we would expect languages to be "case similar," which is very far from true). For extensive discussion, see H. Á. Sigurðsson 2012 and E. F. Sigurðsson 2017.

- b. Ég talaði við **þá** **hvorn** um annan.²¹
 I talked with them.ACC each.ACC about other.ACC
 ‘I talked with them about each other.’

Hvor undergoes e-raising out of [*fyrir/um hvor annar*], to its antecedent, where it gets the same case as the antecedent, while the remnant object, *annar*, gets case from the preposition. Both e-associates are accusative in (19b), as both prepositions, *við* and *um*, assign accusative. In (19a), on the other hand, *hvor* is accusative while *annar* is dative, as the verb *kynnti* assigns accusative whereas the preposition *fyrir* assigns dative. Again, e-raising must have applied prior to both case marking and case agreement. Subsequently, *hvor* is stuck in the base position of the antecedent, even when the antecedent undergoes object shift, across a sentence adverb, as shown in (20) (on Scandinavian object shift, see Holmberg 1986 and much subsequent literature, including Holmberg 1999, Thráinsson 2001).²²

- (20) a. Ég kynnti **þá**_i aldrei ____i **hvorn** fyrir öðrum.
 I introduced them.ACC never each.ACC for other.DAT
 ‘I never introduced them to each other.’
 b. *Ég kynnti **þá hvorn** aldrei fyrir öðrum.

As (20b) shows, *hvor* cannot object-shift along with *þá*. Notice also that short verb movement to Voice is never detectable in structures where the antecedent is not a transitive subject, as the landing site of *hvor* in such structures is always below both Voice and *v*.

5 The Traditional Distributive *hvor sinn* and *sinn hvor* Constructions

As examples (2)–(3) and (4b–c) illustrate, with nominative subject antecedents, the higher e-associate in the distributive constructions behaves much like *hvor* in *hvor annar* ‘each other’, with respect to both case agreement and e-raising. The higher e-associate also agrees in case with its antecedent in the examples in (21)–(22): a direct object in (21), and an indirect object in (22).

- (21) a. Við sendum **þá** **hvorn** í sinn skólann.
 we sent them.ACC each.ACC in their.ACC school.the.ACC
 ‘We sent them (each) to separate schools.’
 b. Við sendum **þá** **sinn** í hvorn skólann.
 we sent them.ACC their.ACC in each.ACC school.the.ACC
 ‘We sent them (each) to separate schools.’

²¹ Example (19b) is constrained, though. Þráinsson (2005:534) gives it a question mark. The innovative case-congruent variety has *hvor* within the PP: *Ég kynnti þá fyrir hvorum öðrum, Ég talaði við þá um hvorn annan*.

²² Topicalization also strands *hvor*, as in (i).

- (i) **Þá** kynnti ég aldrei **hvorn** fyrir öðrum.
 them.ACC introduced I never each.ACC for other
 ‘Them, I never introduced to each other.’

- (22) a. Ég gaf **þeim** **hvorum** sína bókina.
 I gave them.DAT each.DAT their.ACC book.the.ACC
 ‘I gave them (each) separate books.’
 b. Ég gaf **þeim** **sínum** hvora bókina.
 I gave them.DAT their.DAT each.ACC book.the.ACC
 ‘I gave them (each) separate books.’

Again, as for *hvor annar*, the higher e-associate is stranded by object shift, as shown in (23)–(24).

- (23) a. Við sendum **þá**_i ekki ____i **hvorn** í sinn skólann.
 b. Við sendum **þá**_i ekki ____i **sinn** í hvorn skólann.
 ‘We did not send them (each) to separate schools.’
 (24) a. Ég gaf **þeim**_i ekki ____i **hvorum** sína bókina.
 b. Ég gaf **þeim**_i ekki ____i **sínum** hvora bókina.
 ‘I did not give them (each) separate books.’

Object-shifting *hvor* or *sinn* along with *þá* yields ungrammatical orders: *... *þá hvorn ekki* . . . , *... *þá sinn ekki* . . . , and so on.

There is one more twist to be considered here, namely, that the *hvor sinn* construction also comes in an inverted version. This is illustrated in (25).

- (25) a. Þeir fóru **hvor** [með sínum bílnum].
 they.NOM went each.NOM with their.DAT car.the.DAT
 ‘They (each) went in separate cars.’
 b. Þeir fóru [með sínum bílnum] **hvor**.
 they.NOM went with their.DAT car.the.DAT each.NOM
 ‘They (each) went in separate cars.’

In all cases of this sort, the morphological facts in the inverted order, (25b), are exactly the same as in the noninverted order, (25a). The only difference between these types is that the object phrase, a direct object or a PP object, precedes *hvor* in the inverted order. We thus hypothesize that the inverted order is derived from the noninverted one by movement of the object phrase across *hvor*, after the e-raising and case agreement of *hvor*.²³

²³ Curiously, a parallel object inversion is excluded for the *sinn hvor* construction; it only comes in a noninverted version.

- (i) a. Þeir fóru **sinn** [með hvorum bílnum].
 they.NOM went their.NOM with each.DAT car.the.DAT
 ‘They (each) went in separate cars.’
 b. *Þeir fóru [með hvorum bílnum] **sinn**.

This (hitherto unnoticed) difference between the constructions is presumably due to the fact, previously mentioned, that *sinn hvor* is less common and more constrained than *hvor sinn*, but we do not have a formal account of it.

In sum, the higher e-associate, *hvor* in *hvor sinn* and *sinn* in *sinn hvor*, undergoes e-raising to the base position of its antecedent, stays there, and gets the same case as its antecedent by agreement. Importantly, this entails that the verb undergoes short movement, thus preceding whichever part has moved.

6 Concluding Remarks

In this article, we have described and analyzed Icelandic reciprocal and distributive pronouns: reciprocal *hvor annar* ‘each other’ and distributive *hvor sinn* ‘each their’ or the more marked *sinn hvor* ‘their each’. These constructions show extensive variation and complexities, and we believe we are the first to systematically analyze them. In so doing, we have provided support for the idea that nonfinite verbs in Icelandic undergo short verb movement. First, we provided reasons to assume that the e-raiser, alternatively *hvor* or *sinn*, originates inside an object DP. We then showed that it moves to its antecedent in the verb phrase, often the subject in Spec,vP. In the surface word order, however, the verb precedes the e-raiser, which indicates that the verb has moved to the left of vP, to Voice. Interestingly, also, the fact that e-raising targets the base position of the e-raiser’s antecedent (regardless of grammatical function), shows that the base position of arguments is syntactically active, even when the antecedent later vacates its base position.

Our analysis develops a unified account of the case puzzle and the position puzzle addressed in section 1. In particular, the case puzzle is problematic unless one assumes e-raising; without e-raising and subsequent short main verb movement, we would be forced to assume, first, that transitive verbs may opt to not assign their case to their right-adjacent nominal, *hvor* or *sinn*, nevertheless assigning case to their object, across *hvor* or *sinn*; and, second, that a nominal element, *hvor* or *sinn*, can be positioned within the case-marking domain of a transitive verb and nonetheless be able to agree in case with an antecedent that is outside that domain. Our analysis solves this puzzle.

A number of problems remain unresolved, though. *Why* questions in linguistics can rarely be answered with certainty. We have not developed a theory of why e-raising and short main verb movement apply, but we wrap up with some speculations. As for e-raising, it arguably applies for the purpose of successful case agreement with the antecedent of either *hvor* or *sinn*; in the innovative varieties, e-raising is lost and case agreement with the antecedent is replaced by direct case marking to the hosting object DP + case concord within that DP. However, the fact that e-raising does not apply in the innovative varieties—or, for that matter, in reciprocal and distributive constructions in most related languages—indicates that e-raising is not syntactically motivated. Rather, it is a PF adjustment process, specific to traditional Icelandic and some other case languages, including varieties of Faroese; this is also indicated by the fact that there are no discernable semantic differences between the traditional varieties of the reciprocal and distributive constructions, with e-raising, and the innovative varieties, without e-raising. Case agreement is a shallower process than case marking, and the case of the higher e-associate is due to case agreement in the traditional e-associate constructions, while it is due to direct case marking + DP-internal case concord in the innovative constructions. The fact that there are no semantic correlates to these different strategies, not even when the “inherent” cases are involved, indicates

that not only case agreement but also case marking is a PF process. Short main verb movement, in turn, might be triggered by the need of Voice for lexical support, perhaps somewhat in line with finite verb movement to T and C. If so, one might expect that short main verb movement also applies in related languages. We leave this intriguing issue for future research.

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