

The Rich Agreement Hypothesis Rehabilitated

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The generalization that V-to-I movement is conditioned by rich subject agreement on the finite verb (the Rich Agreement Hypothesis) has long been taken to indicate a tight connection between syntax and morphology. Recently, the hypothesis has been questioned on both empirical and theoretical grounds. Here, we demonstrate that the empirical arguments against this hypothesis are incorrect and that it therefore must be rehabilitated in its strongest form. Theoretically, we argue that the correlation between syntax and morphology is not direct (morphology does not drive syntax) but follows from principles of language acquisition: only if language learners are confronted with particular morphological contrasts do they postulate the presence of corresponding formal features that in turn drive syntactic operations.

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1 Introduction: The Rich Agreement Hypothesis

The generalization that V-to-I movement is conditioned by rich subject agreement on the finite verb, generally referred to as the *Rich Agreement Hypothesis* (RAH), has long been taken as an important argument in favor of a direct connection between syntax and morphology (e.g., Kosmeijer 1986, Platzack and Holmberg 1989, Pollock 1989, Holmberg and Platzack 1991, 1995, Roberts 1993, Rohrbacher 1994, Bobaljik 1995, Vikner 1995, 1997, Bobaljik and Thráinsson 1998, Koeneman 2000). In recent years, however, the RAH has been disputed on both empirical and theoretical grounds. Empirically, data have been put forward that seem to suggest the existence of language varieties that are poorly inflected but still display V-to-I movement (e.g., Jonas 1995 for Faroese, Rohrbacher 1994 for French, Bentzen et al. 2007 for Regional Northern Norwegian varieties), as well as varieties that do not display obligatory V-to-I movement despite being richly inflected (e.g., Bailyn 1995 for Russian, Bentzen et al. 2007 for Icelandic, Garbacz 2010 for Älvdalen Swedish).

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Theoretically, under lexicalist approaches (see Chomsky 1995), the tight connection between rich agreement and V-to-I movement has been taken as a strong argument for the idea that morphology drives syntax (see Rohrbacher 1994, Vikner 1995, Koeneman 2000). However, in more current generative models of grammar, morphological insertion is assumed to take place after the syntactic computation (see Bonet 1991, Marantz 1991, Noyer 1992, Bobaljik 2008), suggesting that morphology can have no direct influence on the syntactic derivation.

Two lines of response have been formulated to the empirical problems. One is to abandon the RAH altogether (see, e.g., Bentzen et al. 2007). The other is to weaken it by assuming that it applies only in one direction. Generally speaking, examples showing that V-to-I movement may take place in the absence of rich agreement have always appeared stronger than examples suggesting that languages with rich agreement lack V-to-I movement. If so, one can maintain a weak version of the RAH: if a language has rich agreement, it must have V-to-I movement, but no prediction is made for languages without rich agreement (see Rohrbacher 1994, Bobaljik 1995, Vikner 1995, Thráinsson 1996, Bobaljik and Thráinsson 1998, Koeneman 2000).

Abandoning the RAH eliminates the presupposition that morphology and syntax are correlated in any way and thus aligns with recent ideas on postsyntactic spell-out of morphology. However, as Bobaljik (1995), Thráinsson (1996), and Bobaljik and Thráinsson (1998) point out, the idea that morphological insertion takes place after syntax does not entail that any correlation between morphology and syntax becomes unstatable. For these authors, rich inflection may reflect the presence of more functional projections, and it is this extra structure that triggers verb movement.

In this article, we provide novel arguments showing that both of these approaches are on the wrong track and that, contrary to current ideas, the RAH should be reinstalled in its strongest, bidirectional form. There are two reasons for this. First, we demonstrate that all the empirical arguments hitherto purported to show that the RAH is (at least partially) incorrect are at best incomplete and often simply wrong. Second, we argue with Bobaljik and Thráinsson (1998) that morphological richness reflects a rich(er) functional structure. Contrary to Bobaljik and Thráinsson, though, we argue that rich morphology does not merely reflect but also determines functional structure: rich morphology provides the only possible cue for language learners to postulate those formal features that can project this richer functional structure in the first place. In this way, even though morphology does not drive syntax in the linguistic model, morphology does determine syntax through acquisition, causing a tight connection between the two.

To state our proposal in a nutshell: V-to-I parameterization and the specific definition of richness required do not have to be stipulated but can be derived from the following new observation: the lower bound of what counts as rich agreement is identical to the lower bound of what may constitute the poorest pronominal system in the world's known languages (Greenberg's (1963) Universal 42). In terms of a featural system, all languages in the world show featural distinctions with respect to at least [speaker], [participant], and [plural] in their pronominal systems (see Greenberg 1963, Harley and Ritter 2002, Cysouw 2003). Thus, if a verbal paradigm contains affixes with similar featural distinctions, this can be taken as evidence that these affixes

are argumental in nature and base-generated under a separate head. By contrast, if these featural distinctions are not represented in the verbal paradigm of a particular language, the learner has no evidence that argumental features must be hosted in a separate functional projection. In fact, as we demonstrate, such features cannot be acquired as part of the formal feature inventory of that language. Therefore, the structural difference between languages with rich agreement and those with poor agreement is that only the former have this functional position. This position is standardly referred to as I^0 but we will propose that it is a projection of the feature [argument]. Movement to this position can then simply be taken to result from application of the Stray Affix Filter (Lasnik 1981, 1995, Baker 1988) or any reimplementations of it.

The empirical scope of this article is limited to the languages that have thus far been used to confirm or disconfirm the RAH. This is a conscious choice. Before embarking on a large-scale typological investigation to test any existing crosslinguistic hypothesis, one must first establish the (in)validity of the hypothesis for those languages that have thus far proven to be problematic for it. Now, it has taken scholars more than 25 years to establish whether the RAH holds for these languages alone, which shows that the data and their interpretation have turned out to be less straightforward than first thought. Here, we argue that all languages that initially looked like counterexamples to the RAH actually comply with it, while the languages that initially supported the RAH still do. Therefore, we conclude that the hypothesis is valid for at least all those languages that have been discussed in its context in the past decades. The next step should be to evaluate the RAH on the basis of more, preferably unrelated languages, a subject of further study.

This article is organized as follows. In section 2, we provide our definition of richness and the basic foundation of the RAH. In section 3, we demonstrate that none of the counterexamples to the RAH shows that the RAH in its strong form is incorrect. We also demonstrate that an alternative definition of richness, by Bobaljik and Thráinsson (1998), runs into problems. In section 4, we explain the correlation between rich agreement and verb movement. In section 5, we discuss the consequences of our proposal for V-to-T movement, and in section 6, we offer conclusions. Finally, in an appendix, we discuss three consequences of our analysis, concerning the predictions that it makes for SOV and VSO languages, for language change, and for language acquisition.

2 The Correlation between Richness and V-to-I Movement

In its classical conception, the RAH states that a language is rich, and therefore has V-to-I raising, if and only if the regular present tense paradigm shows a significant number of morphological distinctions (see Roberts 1993, Rohrbacher 1994, Holmberg and Platzack 1995, Koenenman 2000 for concrete implementations).

We propose a definition of richness in terms of the number of morphological contrasts in a paradigm by directly linking the building blocks of verbal paradigms to those of pronoun inventories. We start from the observation that even the most minimal pronominal systems known have at least forms distinguishing between (a) speaker and nonspeaker, (b) participant and nonparticipant, and (c) plural and nonplural (see Greenberg 1963, Harley and Ritter 2002). An example of such a system is Kuman, spoken in Papua New Guinea (see Cysouw 2003).

(1) *Kuman*

	SG	PL
1st	na	no
2nd	ene	
3rd	ye	

As shown in (2), these morphological contrasts motivate three featural distinctions: [\pm speaker], [\pm participant], and [\pm plural].

- (2) na → [+speaker], [-plural]
 no → [+speaker], [+plural]
 ene → [-speaker], [+participant]
 ye → [-speaker], [-participant]

We propose that the lower bound on featural distinctions in pronominal systems is identical to the lower bound on featural distinctions in the regular verbal paradigms of those languages that display V-to-I movement. This leads us to the following novel definition of richness:

- (3) A language exhibits rich subject agreement if and only if agreement involves at least the same featural distinctions as those manifested in the smallest (subject) pronoun inventories universally possible.

Note that under this definition of richness, what counts is the number of *featural distinctions*, not the number of *form differences*. Also note that this definition does not hinge on a particular choice or type (binary or privative) of features. What is crucial is that the featural distinctions minimally underlying pronominal systems also minimally underlie regular verbal paradigms of languages displaying V-to-I movement.¹

Let us provide some examples (the data in this section are mostly from Rohrbacher 1994). We will assume that richness is determined on the basis of the richest productive paradigm of the language in question. This will in most cases be the present tense paradigm (although exceptions, like Hebrew, are attested). According to (3), the Icelandic and Yiddish paradigms, displayed in (4), count as rich, since (as shown in (5)) a proper formal description of these paradigms requires the three featural distinctions that are also necessary to describe the Kuman pronoun inventory.

¹ An anonymous reviewer wonders whether marking 1st person plural as [participant] would entail that a 1st person plural pronoun gives rise to an inclusive and not an exclusive reading. Harley and Ritter (2002) propose that it is the presence or absence of the feature [addressee] that makes the appropriate distinction. In their system, a morpheme that is marked as [participant; speaker] is interpreted as exclusive unless the feature [addressee] is added. Other feature systems deriving the inclusive/exclusive distinction have been proposed as well (see Sauerland 2008). It is important to note that the definition in (3) does not depend on a particular choice of feature system but implies that any choice of features describing the distinctions in (1) counts as rich.

(4) a. <i>Icelandic</i>			b. <i>Yiddish</i>		
	Inf. <i>seg-ja</i> ‘to say’			Inf. <i>loyf-n</i> ‘to run’	
	SG	PL		SG	PL
1st	<i>seg-i</i>	<i>seg-jum</i>	1st	<i>loyf-∅</i>	<i>loyf-n</i>
2nd	<i>seg-ir</i>	<i>seg-ið</i>	2nd	<i>loyf-st</i>	<i>loyf-t</i>
3rd	<i>seg-ir</i>	<i>seg-ja</i>	3rd	<i>loyf-t</i>	<i>loyf-n</i>

(5) a. <i>Icelandic</i>	
-i	→ [+speaker], [-plural]
-ir	→ [-speaker], [-plural]
-jum	→ [+speaker], [+plural]
-ið	→ [-speaker], [+participant], [+plural]
-já	→ [-participant], [+plural]
b. <i>Yiddish</i>	
-∅	→ [+speaker], [-plural]
-st	→ [-speaker], [+participant], [-plural]
-t	→ [-speaker], [-participant], [-plural]
-n	→ [+plural] ²
-t	→ [+plural], [-speaker], [+participant]

By contrast, Danish and English, whose present tense paradigms are listed in (6), count as poor according to (3).

(6) a. <i>Danish</i>			b. <i>English</i>		
	Inf. <i>kast-e</i> ‘to throw’			Inf. <i>sing-∅</i>	
	SG	PL		SG	PL
1st	<i>kast-er</i>	<i>kast-er</i>	1st	<i>sing-∅</i>	<i>sing-∅</i>
2nd	<i>kast-er</i>	<i>kast-er</i>	2nd	<i>sing-∅</i>	<i>sing-∅</i>
3rd	<i>kast-er</i>	<i>kast-er</i>	3rd	<i>sing-s</i>	<i>sing-∅</i>

(7) a. <i>Danish</i>	
-er	→ [+finite]
b. <i>English</i>	
-s	→ [-participant], [-plural]
-∅	→ elsewhere

Now, the RAH can be reformulated as in (8).

² Note that in this characterization of the Yiddish paradigm, *-n* and *-t* are competitors for 2nd person plural, whereas only the latter surfaces as the 2nd person plural affix. We take this to result from Kiparsky’s (1973) Elsewhere Principle, which states that in such cases of competition, the most specified item wins. This also entails that an affix expressing [+speaker] takes precedence over one expressing [+participant], as the former is more specific than the latter. Note, though, that our analysis does not hinge on this principle. An alternative representation could take *-n* to be ambiguous between [+plural, +speaker] and [+plural, -participant].

(8) *The Rich Agreement Hypothesis*

A language exhibits V-to-I movement if and only if the regular paradigm manifests featural distinctions that are at least as rich as those featural distinctions manifested in the smallest pronoun inventories universally possible.

According to (8), both Icelandic and Yiddish should display V-to-I movement, a prediction that is correct. In the following examples, the (italicized) V_{fin} 's appearance to the left of an alleged vP boundary marked by a (boldfaced) frequency adverb or negation—Icelandic *sæi ekki* 'saw not' in (9a)—shows that the verb has undergone V-to-I movement. Note that the pattern V_{fin} -Neg in (9a) cannot be analyzed as *ekki* constituent-negating the object. In (9b), V_{fin} still precedes negation but *ekki* cannot constituent-negate the object. Hence, the generalization is that all finite verbs must cross vP adverbs.³

(9) *Icelandic*

a. Ég spurði hvort Jón sæi **ekki** myndina.

I asked if Jón saw not the.movie
'I asked if Jón didn't see the movie.'

b. Ég spurði hvort Jón hefði **ekki** séð myndina.

I asked if Jón had not seen the.movie
'I asked if Jón had not seen the movie.'

(10) *Yiddish*

Ikh veys nit ven di ku iz **nit** geshtanen in tsimer.

I know not when the cow is not stood in.the room
'I do not know when the cow didn't stand in the room.'

By contrast, Danish and English, whose present tense paradigms count as poor according to (3), are expected not to display V-to-I movement. Again, this is correct. Placing V_{fin} to the left of sentential negation or another vP-boundary adverb leads to an ungrammatical sentence, as evidenced by (11) and (12a).⁴

(11) *Danish*

a. *Gad vide om John fik **ikke** set filmen.

I wonder if John saw not the movie
'I wonder if John did not see the movie.'

b. *Gad vide om John fik **ofte** set filmen.

I wonder if John saw often the movie
'I wonder if John often saw the movie.'

³ The examples are all sentences with subordinate clauses in which V-to-I movement cannot be superseded by V-to-C movement in these languages—that is, embedded questions and relative clauses (for more details, see Wiklund et al. 2009, Heycock, Sorace, and Hansen 2010).

⁴ We thank Kristian Madsen, Maria Melchior, and Nomi Shir for providing, and confirming the status of, the examples in (11).

(12) *English*

- a. *I wonder if John *saw* **often** the movie.
 b. I wonder if John has often seen the movie.⁵

Since the RAH is taken to apply universally, it is expected to give rise to syntactic differences even between varieties of the same language that differ minimally in terms of richness. This is indeed the case. Take for instance Standard and Älvdalen Swedish. Whereas the first has a poor paradigm, the second still counts as rich (see (13)). In full accordance with the RAH, Standard Swedish lacks V-to-I movement (see (14a), from Julien 2007:2), but Älvdalen Swedish has it (see (14b)).⁶

(13) a. *Standard Swedish*

Inf. *bit-a* 'to bite'

	SG	PL
1st	bit-er	bit-er
2nd	bit-er	bit-er
3rd	bit-er	bit-er

b. *Älvdalen Swedish*

Inf. *kast-a* 'to throw'

	SG	PL
1st	kast-ar	kast-um
2nd	kast-ar	kast-ir
3rd	kast-ar	kast-a

(14) a. *Standard Swedish*

Min granne frågade om jag **inte ville** komma över.
 my neighbor asked if I not would come over
 'My neighbor asked if I wouldn't come over.'

b. *Älvdalen Swedish*

Eð ir biln so an *will* **int** åvå.
 it is car that he wants not have
 'It is the car that he does not want to have.'

The RAH also predicts that changes in the verbal syntax and changes in the verbal paradigm should be closely related: morphological deflection should trigger the loss of V-to-I movement. This prediction is borne out. Take, for instance, Old Swedish (see Falk 1993) and Middle English (see Roberts 1993). Both are richly inflected, as the paradigms in (15) meet the definition in (8). Both display V-to-I movement, as expected (see (16a), from Platzack 1988:227, and (16b), from Roberts 1993:250).

⁵ In English, modal and auxiliary verbs appear to the left of adverbs and negation but, as (12a) shows, English does not display V-to-I movement in general. This issue is taken up in section A.2 of the appendix.

⁶ One may wonder whether, given the lack of pronoun systems with form differences only in the plural, the existence of agreement paradigms such as that of Älvdalen Swedish would argue against a connection between pronoun features and agreement features, as one anonymous reviewer suggests. We do not think this is the case. Apart from the fact that agreement paradigms such as that of Älvdalen Swedish are typologically extremely rare, we presume that the reason why pronoun systems differ in this sense lies in the fact that featural distinctions in the pronoun system always give rise to a semantic effect (different pronouns receive different interpretations), whereas agreement systems only display uninterpretable features. In general, agreement systems allow more syncretic patterns than pronoun systems do (for instance, the 1st and 3rd person syncretism in the German plural).

- (15) a. *Old Swedish*
 Inf. *älsk-a* ‘to love’
- | | SG | PL |
|-----|---------|---------|
| 1st | älsk-ar | älsk-um |
| 2nd | älsk-ar | älsk-in |
| 3rd | älsk-ar | älsk-a |
- b. *Middle English*
 Inf. *sing-en*
- | | SG | PL |
|-----|----------|---------|
| 1st | sing-e | sing-en |
| 2nd | sing-est | sing-en |
| 3rd | sing-eð | sing-en |
- (16) a. *Old Swedish, 1290*
 æn han *sivngær ægh* thigianda messu
 if he sings not silent mass
 ‘if he does not sing silent mass’
- b. *Middle English*
 Because they come not up and offre

As previous examples illustrate, both languages underwent a process of deflection and now no longer have this verb movement.⁷

In this section, we have discussed the empirical foundation of the RAH and shown that it accounts for contrasts between languages, between varieties of the same language, and between different stages of the same language. In the next section, we will show that, contrary to what has often been assumed, the counterevidence presented against the RAH actually does not undermine it.

3 Rehabilitating the RAH: Weak Isn’t Strong Enough

The correctness of the RAH has been disputed on both empirical and theoretical grounds.

Empirically, two classes of counterexamples must be distinguished. The first class consists of language varieties that have rich agreement yet do not seem to always move the verb. These are the most serious cases, as they would falsify even the weak version of the RAH, thereby stripping the hypothesis of its content. The second class consists of language varieties that are poorly inflected yet do seem to move the verb. These potentially falsify the strong version of the RAH, making it possible to maintain a weak version: rich agreement entails V-to-I movement but no predictions are made for language varieties with poor agreement. In sections 3.1 and 3.2, we will show what these counterexamples to the weak and strong RAH look like, respectively, and how after more careful scrutiny all counterevidence disappears.

In section 3.3, we will address two theoretical arguments against the RAH. The first is that the RAH seems to imply that morphology drives the syntax, an implication at odds with more recent frameworks that take morphology to be postsyntactic. The second is that the RAH seems to require inspection of the whole paradigm in the course of the derivation. We will show that both concerns are unwarranted.

⁷ It should be pointed out, though, that verbal deflection is not always immediately followed by the loss of V-to-I movement, an issue we take up in section A.2 of the appendix.

3.1 Arguments against the Weak RAH

There are three language varieties that have featured prominently as counterexamples to the weak formulation of the RAH: Icelandic, Älvdalen Swedish, and Russian. We look first at Icelandic and Älvdalen Swedish, and then at Russian.

3.1.1 Icelandic and Älvdalen Swedish In their assessment of the strength of the RAH, Bentzen et al. (2007) argue that even the weak RAH is too strong, since some languages, albeit optionally and in particular constructions only, do not exhibit V-to-I movement, even though their paradigms are rich. The relevant constructions have a so-called verb-third (V3) order, in which the verb follows the subject and some adverb, suggesting that V-to-I movement is not obligatory.⁸ An example is given in (17), in which the finite verb follows the adverb *oft* ‘often’.

(17) *Icelandic*

Mér fannst skrýtið þegar hann oft lék hróknum.
 me found strange when he often moved rook.the
 ‘I thought it was strange when he often moved the rook.’

For Bentzen et al., such examples imply that even the weak RAH is too strong and should therefore be rejected. Garbacz (2010) makes a similar claim for Älvdalen Swedish, which also has rich agreement and in which V_{fin} can precede or follow sentential negation (14). In this section, we provide novel data and arguments demonstrating that this conclusion is wrong.

These Subj-Adv- V_{fin} orders in Icelandic are only problematic for the RAH if the finite verb stays in situ. Another logical possibility, however, is that the V-to-I movement diagnostic element (the adverb or the negation marker) appears higher than its unmarked position, either by movement or by higher base-generation. If these adverbs are for instance adjoined to IP and if the subject subsequently moves across the higher adverb to some still higher position, then the data are compatible with an analysis in which V-to-I movement takes place, as in (18).

(18) [_{FP} Subj [_{IP} Adv/Neg [_{IP} t_{Subj} V_{fin} [_{VP} t_{Subj} $t_{V_{fin}}$]]]]

For Icelandic, such a high-adverb analysis is in fact proposed by Angantýsson (2007) and Thráinsson (2009). For Angantýsson, the main reasons for adopting this analysis are that this so-called V3 order (a) is severely restricted and heavily marked, (b) requires the adverb to be stressed, and (c) requires the subject to be an unstressed pronoun.

Hence, there are two competing analyses of data like (17), one where V-to-I movement is optional and one where V-to-I movement always takes place. Apart from the arguments provided by Angantýsson (2007) and Thráinsson (2009), we conclude that the latter analysis is superior for the following empirical and theoretical reasons.

⁸ Not all embedded contexts allow V3 constructions. V3 may only occur in those contexts that do not require embedded V-to-C movement (see also footnote 3). Why embedded V-to-C movement is sometimes required and sometimes not is beyond the scope of this article, though these requirements can be surprisingly similar across languages. As one reviewer points out, Holmberg (2010), on the basis of work by Bhatt (1999), shows that embedded V-to-C movement is triggered in exactly the same contexts in Icelandic and Kashmiri.

First, empirically, speakers of Icelandic who accept so-called V3 orders also accept examples like (19) (Ásgrímur Angantýsson, pers. comm.). Here, the finite verb following the adverb at the same time precedes an object that has undergone object shift across negation. Under the standard assumption that the object shifts out of vP, V_{fin} must have subsequently moved across the object, countering Bentzen et al.'s (2007) claim that the verb is in situ in V3 orders (for additional arguments in the same direction, see Thráinsson 2009).

(19) *Icelandic*

Mér fannst skrýtið þegar hann **oft** lék hróknum **ekki** í tímahraki.
 me found strange when he often moved rook.the not in lack.of.time
 'I thought it was strange when he often didn't move the rook through lack of time.'

Note that the fact that the finite verb is able to appear to the left of negation at all (in contrast to English and standard versions of Mainland Scandinavian) is what already provides the evidence for V-to-I movement.

Second, theoretically, if so-called V3 constructions are analyzed with V_{fin} in situ, then *not* moving the verb causes the adverb to be in focus. In the alternative analysis, however, placing the adverb in a higher position causes that adverb to be in focus. In this analysis, the constituent receiving a special syntactic treatment is identical to the constituent obtaining a specific information-structural property, whereas Bentzen et al.'s (2007) analysis needs to explain how the absence of (verb) movement leads to focus assignment to the adverb.

Additionally, these so-called V3 constructions require that not only the adverb but also the subject have specific information-structural properties. For a sentence to be fully grammatical, the subject must be definite, and an unstressed pronoun gives a better result than a lexical DP. This indicates that the subject must realize old information: the more topical the subject, the more grammatical the sentence. As is fairly well-established, information-structurally, a topic needs to precede a focus (see Prince 1981, Reinhart 1981, 1995, 2006, Vallduví 1992, Lambrecht 1994, Hajičová, Partee, and Sgall 1998, Tomioka 2007, Neeleman and Van de Koot 2008). Thus, in order to be topical, the subject must move across the focused adverb, by adjoining to IP again or by moving to the specifier of a higher functional projection, presumably some TopP.

Hence, three main characteristics of these V3 constructions are accounted for under our analysis: the facts that (a) they are heavily marked, (b) the adverb must be stressed, and (c) the subject must be an unstressed pronoun.⁹ We conclude that Icelandic is only a counterexample if

⁹ Why the two instances of movement are related remains an open question, however. In fact, it is impossible to leave the subject in Spec,IP if a focused adverb is adjoined to IP, as (i) illustrates (from Angantýsson 2011:68).

- (i) *Jón segir að **ekki/oft/aldrei/alltaf** hann þurfi peninga.
 Jón says that not/often/never/always he needs money

We do not have a proper answer to this question, though we note that it also arises under Bentzen et al.'s (2007) proposal and thus is not a specific problem for our analysis.

an implausible analysis is adopted, in which V-to-I movement is taken to be optional and the marked interpretation of an adverb is a consequence of not moving the verb.

Similar V3 effects are found with sentential negation, as the following examples show:

(20) *Icelandic*

Ég veit hvaða mynd Jón *<hefur>* **ekki** *<hefur>* séð.
 I know which film Jón (has) not (has) seen
 'I know which film Jón has not seen.'

(21) *Älvdalen Swedish*

- a. Eð ir biln so an **int** will åvå.
 it is car.DEF that he not wants.to have
 'It is the car that he doesn't want to have.'
- b. Eð ir biln so an will **int** åvå.
 it is car.DEF that he wants.to not have
 'It is the car that he doesn't want to have.'

Garbacz (2010) concludes from the optionality in (21) that Älvdalen Swedish, despite being richly inflected, optionally allows the verb to remain in situ. However, the facts presented do not call for such an analysis. Instead, such constructions should be taken to show that the negation surfaces in a higher position in (21a) than in (21b).

Phrasal negative adverbs such as Älvdalen Swedish *int* are semantically flexible; positions for such adverbs in languages are therefore not syntactically fixed. In order to express sentential negation, a negative marker must outscope vP, but nothing forbids it from being generated in a higher position and taking scope from there (see Acquaviva 1997, Zeijlstra 2004, Penka 2010). Evidence for this semantic flexibility comes from the fact that negation in Älvdalen Swedish can be optionally base-generated in an even higher position, preceding the subject, as shown in (22).

(22) *Älvdalen Swedish*

- a. Eð ir biln so **int** an will åvå.
 it is car.DEF that not he wants.to have
 'It is the car that he doesn't want to have.'
- b. lett land i Europa so **int** kullå maï ar verið i
 a country in Europe that not daughter mine has been in
 'a country in Europe that my daughter hasn't been to'

If the position of negative adverbs is indeed more flexible, there is no empirical argument in favor of optional V-to-I movement in Älvdalen Swedish. Negation can be generated in at least three positions in Älvdalen Swedish, and only if it occurs in the lowest position, adjoined to vP, does it function as a diagnostic marker for V-to-I movement.

(23) (Neg) Subj (Neg) V+I (Neg) V


Since the negation marker inducing sentential negation cannot be generated in positions lower than its position adjoined to vP, the possibility of having V_{fin} -Neg orders in Älvdalen Swedish at all, as opposed to their impossibility in Standard Swedish, forms the crucial contrast showing that the former but not the latter variety displays V-to-I movement.

3.1.2 *Russian* Bailyn (2005) argues that in Russian, a language with rich agreement morphology, no V-to-I movement takes place. The reason for his conclusion is that in Russian the finite verb (in both the perfective and the imperfective) follows manner or frequency adverbs.

(24) *Russian*

- a. My **vnimatel'no** *pročitali* pravila.
 we carefully PERF.read rules
 'We have carefully read the rules.'
- b. My **často** *čitali* pravila.
 we often IMP.read rules
 'We read the rules often.'

If these adverbs are taken to indicate the vP boundary, this ordering would suggest that the verb remains in situ, as in (25a). An alternative, however, is that in Russian these adverbs must occupy a higher, vP-external position and cannot be adjoined to vP, as in (25b). The option attested in Icelandic and Älvdalen Swedish would then be the rule in Russian.

- (25) a. [_{IP} my [_{vP} **vnimatel'no** *pročitali* pravila]]
 b. [_{FP} my [_{IP} **vnimatel'no** [_{IP} *pročitali* [_{vP} t_{v_{fin}} pravila]]]]]

Under the first analysis, the adverb functions as a diagnostic for V-to-I movement, as it indicates where the vP boundary is. The conclusion would then be that Russian does not display V-to-I movement, thereby falsifying the weak RAH. Under the second analysis, the adverb is too high to function as a diagnostic and it cannot be shown whether Russian has V-to-I movement or not. The conclusion would then be that Russian neither falsifies nor confirms the weak RAH. Although Russian would already cease to be a serious counterexample to the RAH once (25b) cannot be rejected, there is actually reason to believe that the second analysis must be accepted (thus rejecting (25a)).

Evidence for high placement of adverbs in Russian, as in (25b), comes from negative sentences. As is well-known, one of the differences between Russian and the Scandinavian languages is that the negative marker in Russian occupies some head position Neg⁰ in the clausal spine. In Scandinavian, on the other hand, negation is phrasal and does not occupy a head position in the clausal spine; rather, sentential negation is an adverb that in its lowest position adjoins to vP (for extensive discussion, see Zeijlstra 2004, Penka 2010). Since it is a requirement for sentential negation that at least the entire vP must be in the scope of a negative operator, the template of Russian negative clauses must minimally contain NegP > vP. A related difference is that in Russian the negative head, being a syntactic clitic, must attach to the verb. Evidence for this head movement to Neg⁰ comes from the fact that negation moves along with the verb if the latter moves to C, as in the negative imperative and negative question in (26) (see Han 2001 and references therein); such movement would be impossible if the verb did not first have to head-adjoin to Neg⁰, as in (27).

(26) *Russian*

- a. Ne pey vodku často!
 NEG drink vodka often
 'Do not drink vodka often!'
- b. Ne p'eš li ty vodku často?
 NEG drink Q you vodka often
 'Don't you often drink vodka?'

(27) [CP [ne-V_i]_j [NegP t_j [vP t_i]]]

Now, suppose that adverbs could adjoin to vP, thus functioning as a diagnostic for V-to-I movement. Then the predicted order of a negative clause containing an adverb such as 'often' should be as in (28). Such sentences, however, are seriously degraded if not ungrammatical, as shown for both perfective and imperfective verbs. The only way to include an adverb in a sentence where the negative marker left-attaches to the finite verb is either as in (29), where the adverb adjoins to a phrase that contains the negated verb, or as in (30), where the adverb appears in clause-final position.

(28) *Russian*

- a. ??/*Ty ne pročitala vniatel'no pravila.
 you NEG PERF.read carefully rules
 'You haven't read the rules carefully.'
- b. ??/*Ty ne čitala často pravila.
 you NEG IMP.read often rules
 'You haven't read the rules often.'

(29) *Russian*

- a. Vniatel'no ty ne pročitala pravila.
 carefully you NEG PERF.read rules
 'You haven't carefully read the rules.'
- b. Často ty ne čitala pravila.
 often you NEG IMP.read rules
 'You haven't often read the rules.'

(30) *Russian*

- a. Ty ne pročitala pravila vniatel'no.
 you NEG PERF.read rules carefully
 'You haven't carefully read the rules.'
- b. Ty ne čitala pravila často.
 you NEG IMP.read rules often
 'You haven't often read the rules.'

Hence, the fact that in negative sentences V_{fin} must move out of vP for reasons entirely unrelated to V-to-I movement, combined with the observation that in those sentences the adverb cannot occur between V_{fin} and the object, shows that vP is not a proper left-adjunction site for these

adverbs.¹⁰ Since they must be adjoined higher in the structure instead (or right-adjoined), we obtain the orders in (24). Irrespective of their exact adjunction site, these adverbs cannot be used as V-to-I movement diagnostics, and Russian therefore ceases to provide an argument against the weak RAH.

3.2 Arguments against the Strong RAH

In the previous two sections, we have discussed language varieties that, despite exhibiting a rich agreement paradigm, appear not to raise the verb to I⁰. We have concluded that in these cases either (a) verb movement actually does take place but can be invisible because of optional higher placement or movement of the relevant diagnostic elements (Icelandic and Älvdalen Swedish) or (b) (absence of) V-to-I movement cannot be determined because of obligatory higher placement of the diagnostic elements (Russian). In this section, we investigate the opposite pattern: poor agreement language varieties in which the verb nevertheless seems to move to I⁰. Five language varieties have been used as evidence against the strong version of the RAH: Regional Northern Norwegian dialects, Kronoby Swedish, Faroese, Colloquial French, and Brazilian Portuguese. We will show that these varieties either do not display V-to-I movement or have been misanalyzed as being inflectionally poor. The consequence is that the weak RAH is not strong enough and that there is no argument against reinstalling the RAH in its strong form.

3.2.1 Regional Northern Norwegian and Kronoby Swedish There are Regional Northern Norwegian (ReNN) dialects that, like Standard Norwegian, have no agreement paradigm, but according to Bentzen et al. (2007) nevertheless optionally allow V_{fin} to occur to the left of most adverbs (31) (from Bentzen et al. 2007:208).

(31) *ReNN*

... ettersom nån studenta <sannsynligvis> leverte <sannsynligvis> oppgaven.
 ... as some students probably handed.in probably assignment.the
 ‘... as some students probably handed in the assignment.’

These data show, according to Bentzen et al., that in ReNN V-to-I movement takes place optionally. When the finite verb precedes adverbs, they assume the verb has moved out of vP.

One fact seriously undermines this analysis. The finite verb cannot raise across negation, as shown in (32) (from Bentzen et al. 2007:209), whereas it can in other known V-to-I movement varieties with phrasal negative markers.

¹⁰ Of course, the question arises, Why may adverbs not adjoin to vP in Russian? While we do not have a conclusive answer, we suggest that the reason lies in the fact that in Russian (in contrast to the languages discussed earlier), verbs may be prefixed with many kinds of aspectual morphology (e.g., repetitive or cumulative), which—according to a proposal by Dyakonova (2009), based in turn on a proposal by Svenonius (2004)—must be generated vP-externally. As such morphemes must always be in the scope of a frequency or manner adverb, the possibility of adjoining adverbs to vP would give rise to the reverse scope orderings. Adjoining adverbs to IP (or any other higher functional projection) would guarantee that the adverb is always in the proper scopal order. Note by the way that an analysis in which negation and aspectual affixes are prefixed to a verb that is still in its base position (and therefore cannot have moved to I⁰) is problematic given the data in (26).

(32) *ReNN*

... ettersom nå studenta <ikke> leverte < *ikke > oppgaven.
 ... as some students not handed.in not assignment.the
 '... as some students {not handed in / didn't hand in} the assignment.'

The same pattern (verb movement across sentential adverbs but not across sentential negation) is found in Kronoby Swedish (see Bentzen 2007), another language variety that has functioned as a counterexample to the RAH (see Platzack and Holmberg 1989).

In the remainder of this section, we focus on ReNN. To account for the verb movement pattern in ReNN, Bentzen et al. (2007) propose that the following clausal template underlies this variety, where negation is externally merged above AgrP:

(33) NegP > AgrP > High adverbs > TP > Low adverbs

Hence, the finite verb in ReNN may optionally move to Agr, thereby crossing high adverbs, but cannot reach a higher head position, thereby crossing over negation.

However, the assumption that sentential negation in ReNN occupies a position above the high adverbs proves to be untenable.¹¹ First, in clauses containing a high adverb, like 'probably', the negation obligatorily follows this adverb. In fact, sentential negation can even follow low adverbs like 'often' (Kristine Bentzen, pers. comm.).

(34) *ReNN*

Jeg vet hvorfor John ofte ikke vet svaret.
 I know why John often not know answer.the
 'I know why John often does not know the answer.'

This already shows that negation cannot be obligatorily placed in the NegP position in (33). More generally, the idea that negation is obligatorily (rather than optionally) base-generated higher than TP-adjoining adverbs is strongly at odds with the basic characteristic of negation in Germanic, where sentential negation may always take scope from a position at least as low as vP (i.e., in a vP adjunct position). This characteristic of Germanic is fully in line with the idea that in order to express sentential negation, the negative marker should be able to at least outscope vP (see Acquaviva 1997, Zeijlstra 2004, Penka 2010). (Recall that in Icelandic and Älvdalen Swedish as well, negation can appear in a high position, but the low vP-adjoined position is also always available.)

Now, how should the orders in (31)–(34) be accounted for? Given that the finite verb may never appear to the left of the negative marker, when sentential negation is intended, any account of ReNN that posits the finite verb in a vP-external position is untenable. We conclude, therefore,

¹¹ Note that an alternative analysis whereby the ban on verb movement across the negative marker follows from the Head Movement Constraint (Travis 1984) cannot be correct either, since finite verbs in ReNN may precede *ikke* in matrix clauses (i.e., they freely undergo V-to-C movement).

that adverbs can be base-generated in a vP-internal position and be adjoined to VP, with the exception of the negative marker *ikke*, which in order to induce sentential negation must be base-generated in a vP-external position. Thus, the underlying structure of (31) should be (35).

(35) [ettersom n n studenta_i < sannsynligvis> [_{VP} t_i *leverte* [_{VP} < sannsynligvis> [VP]]]]

The contrast between (31) and (32) now follows. Since the negative marker cannot induce semantic negation from a vP-internal position, it is correctly predicted that the finite verb may not appear to the left of the negation but can appear to the left of a low-attached *sannsynligvis* ‘probably’ by means of V-to-v movement.¹² One may wonder how a sentential adverb like ‘probably’, which outscopes vP, can be base-generated within vP. The answer is that this adverb, being a quantifier over possible worlds, can always undergo (covert) Quantifier Raising. This is in contrast to negation, which is not quantificational in nature (see Penka 2010 for argumentation) and therefore must always be interpreted in its base position.¹³

Strong additional evidence for this analysis comes from the interpretation of indefinite subjects. As Bentzen et al. (2007) observe, whenever the finite verb appears to the left of an adverb such as *sannsynligvis* ‘probably’, the subject always receives a specific interpretation, as in (36). By contrast, when the adverb precedes the finite verb, the subject is ambiguous between a specific and a nonspecific reading, as in (37).

(36) *ReNN*

- ... ettersom n n studenta levere sannsynligvis oppgaven.
 ... as some students hand.in probably assignment.the
 a. ‘... as some specific students probably hand in the assignment.’
 b. *‘... as some students or other probably hand in the assignment.’

(37) *ReNN*

- ... ettersom n n studenta sannsynligvis levere oppgaven.
 ... as some students probably hand.in assignment.the
 a. ‘... as some specific students probably hand in the assignment.’
 b. ‘... as some students or other probably hand in the assignment.’

The different interpretations in (36) and (37) follow from two facts. First, we follow Diesing (1992), who argues that the nonspecific interpretation for indefinite subjects generally follows from subject reconstruction to Spec,vP at LF. Subjects that lower to Spec,vP at LF may give rise to both a specific and a nonspecific interpretation, whereas subjects that remain in a high LF

¹² This predicts that even infinitives in ReNN can precede *sannsynligvis* ‘probably’ but not negation. This is indeed the case (see Bentzen et al. 2007).

¹³ Note that this makes the empirically testable prediction that high adverbs that can follow the finite verb in ReNN are all quantificational adverbs. We have not yet been able to test this prediction.

position give rise to specific interpretations only. Therefore, the interpretation of the sentence in (37), where the adverb precedes the finite verb, is ambiguous because the subject can reconstruct to a position under the modal adverb.

Second, we argued that in (36) the adverb is adjoined to VP. This means that even in the lower subject position, Spec,vP, the subject still c-commands the modal adverb. At LF, therefore, the subject can only take wide scope with respect to this adverb, resulting in the subject's receiving a specific interpretation only. A nonspecific interpretation of an indefinite in a modal construction is only possible if the indefinite takes narrow scope with respect to the modal (see Iatridou and Sichel 2011 and references therein). The absence of the nonspecific reading of indefinite subjects in ReNN constructions like (37) thus naturally follows from the lower adverb placement. Note that if no such adverb is present, this analysis predicts that a sentence with an indefinite subject is always ambiguous between a specific and a nonspecific interpretation, a prediction that is indeed borne out.

In Bentzen et al.'s (2007) analysis, the specific reading follows from an interaction between the indefinite subject and V_{fin} . Bentzen et al. argue that an indefinite subject receives a nonspecific interpretation in Spec,TP and a specific one in Spec,TopP. In a construction with adverb- V_{fin} order, the subject moves to Spec,TP to check the EPP (Extended Projection Principle)-feature, obtains a nonspecific interpretation, and moves on to Spec,AgrP, crossing *sannsynligvis* 'probably'. In a construction with V_{fin} -adverb order, a remnant vP containing only V_{fin} moves to Spec,TP to check T's EPP feature, and from there moves on to Spec,AgrP, crossing *sannsynligvis*. The subject can no longer move to Spec,TP and thus cannot obtain a nonspecific interpretation. It moves instead to Spec,TopP, where it receives a specific interpretation. The two derivations are given in (38).

- (38) a. [_{TopP}[_{AgrP} Subj_i [_{TP} sannsynligvis [_{TP} t_i [_{vP} leverte]]]]]
 b. [_{TopP} Subj [_{AgrP}[_{vP} leverte]_i Agr⁰ [_{TP} sannsynligvis [_{TP} t_i [_{T⁰} t_i]]]]]

The principal difference between Bentzen et al.'s analysis and ours is this. In our analysis, the specific interpretation for the indefinite subject in the V-adverb order follows directly from the interaction between the indefinite subject and the adverb, two scope-taking elements. In Bentzen et al.'s alternative, reference to the position of the verb is necessary, and the verb is not (necessarily) a scope-taking element. Hence, the different interpretations are not accounted for in any direct way and must be encoded into the (functional) structure.

To conclude, for ReNN to be a counterexample to the strong RAH, an implausible analysis must be adopted, in which V-to-I movement must be an optional process and negation must be generated higher in the structure than adverbs that it can actually follow. Our alternative states that adverbs in ReNN can be placed vP-internally, a claim that is independently supported by the interpretation of indefinite subjects in this variety.

Given this conclusion, we can now formulate a rather straightforward and strong generalization over the Germanic data, including ReNN: if and only if a variety has a rich agreement paradigm is the finite verb able to cross the phrasal negative adverb that induces sentential negation

in non-V2 environments. This is true for all the putative counterexamples: Icelandic, Älvdalen Swedish, and ReNN. Hence, phrasal negative adverbs are a more reliable diagnostic for V-to-I movement than adverbs such as ‘probably’ or ‘often’.

3.2.2 *Faroese* For Faroese, Jonas (1995) claims that speakers vary in their acceptance of orders in which the verb precedes sentential adverbs as well as negation. This is shown in (39).

(39) *Faroese*

Hetta er brævið, sum Elin (<%hefur> **ikki** <hefur>) lisið.
 this is letter.DEF that Elin (%has) not (has) read
 ‘This is the letter that Elin has not read.’

Jonas claims that speakers who allow this order have a grammar with optional V-to-I movement. Now, all speakers of Faroese have the same agreement paradigm, shown in (40a). It qualifies as poor according to our definition, since the contrasts motivate only two features, [\pm plural] and [\pm speaker]; see (40b).

(40) a. <i>Faroese</i>	b. -i → [+speaker], [-plural]
Inf. <i>kast-a</i> ‘throw’	-ir → [-speaker], [-plural]
SG	-a → [+plural]
1st <i>kast-i</i>	
2nd <i>kast-ir</i>	
3rd <i>kast-ir</i>	

Hence, speakers who allow optional V-to-I movement are unexpected, and their judgments constitute a counterexample to the strong RAH.

Heycock, Sorace, and Hansen (2010), however, show that Faroese lacks V-to-I movement in all of its varieties. In short, they demonstrate that, to the extent that Faroese speakers allow V-negation orders, these are indicative of V-to-C movement rather than V-to-I movement. They observe that V2 takes place in embedded clauses much more freely in Faroese than in the Mainland Scandinavian varieties and that Faroese resembles Icelandic in allowing V2 in complements of nonbridge verbs like ‘doubt’, ‘deny’, and ‘be proud’. As in Icelandic, there is a context in which V2 is ungrammatical—namely, in indirect questions. It is precisely in this context that V-negation orders are judged to be ungrammatical too, and rejected as much by speakers of Faroese as by speakers of Danish. Hence, when no embedded V2 can take place, no verb movement across negation is possible at all. Heycock, Sorace, and Hansen additionally observe that some Faroese speakers allow the verb to cross epistemic or frequency adverbs, and they therefore conclude that the grammar of these speakers looks very much like the grammar of ReNN.

In short, Heycock, Sorace, and Hansen conclude that there is no evidence for V-to-I movement among speakers of Faroese. What they do not observe is that this conclusion has important consequences for the hypothesized correlation between V-to-I movement and rich morphology. Since all speakers have poor agreement inflection, none of them should have V-to-I movement.

Whereas judgments of some speakers were problematic for the strong version of the RAH, it now in fact turns out that all speakers behave exactly as we expect.

3.2.3 *Colloquial French and Brazilian Portuguese* Some time ago already, Rohrbacher (1994, 1999) argued that Colloquial French is inflectionally poor, given that the *-e*, *-es*, and *-ent* affixes are phonetically identical, as shown in (41a), and since the 1st person plural pronoun *nous* and its corresponding *-ons* affix have disappeared (in Colloquial French, the former impersonal pronoun *on* is used to refer to 1st person plural). According to our definition, therefore, Colloquial French has a poor paradigm, as only two featural distinctions ([±plural] and [±addressee]) are sufficient to categorize the agreement paradigm (see (41b)). These two features would be insufficient to describe the Standard French paradigm, as an additional [±speaker] feature would be needed as well (see (42)).¹⁴

- | | |
|---|--|
| (41) a. <i>Colloquial French</i>
Inf. <i>parl-er</i> ‘speak’ | b. [e:] → [+addressee], [+plural]
[ə] → elsewhere |
| SG | PL |
| 1st (je) parl-[ə] | (on) parl-[ə] |
| 2nd (tu) parl-[ə] | (vous) parl-[e:] |
| 3rd (il) parl-[ə] | (ils) parl-[ə] |
-
- | | |
|--|--|
| (42) a. <i>Standard French</i>
Inf. <i>parl-[e]</i> ‘speak’ | b. [ø] → [+speaker], [+plural]
[e] → [+addressee], [+plural]
[ə] → elsewhere |
| SG | PL |
| 1st (je) parl-[ə] | (nous) parl-[ø] |
| 2nd (tu) parl-[ə] | (vous) parl-[e:] |
| 3rd (il) parl-[ə] | (ils) parl-[ə] |

Nevertheless, both Colloquial and Standard French display V-to-I movement.

- (43) *French*
Jean (ne) *mange pas* de pommes.
Jean not eats not of apples
‘Jean doesn’t eat apples.’

Although we agree that the agreement suffixes on the French verb constitute poor agreement according to our definition in (3), nothing in our definition requires that it be the verbal paradigm

¹⁴ This runs counter to Harley and Ritter’s (2002) assumption that the presence of [addressee] entails the presence of [participant], which would render French effectively rich. Note that, although we do not share this assumption (for reasons that become clear in section 4), nothing crucial hinges on this. If Colloquial French is rich, it is not a counterexample to the RAH, since French exhibits V-to-I movement anyway.

that must be rich. French only counts as a poor agreement language if it never exhibits rich inflectional subject agreement. This is not the case, however. As is shown in (44), French allows subject clitics to pop up in a sentence that already contains an overt (pronominal or nonpronominal) subject.

(44) *French*

- a. (Moi) je viens.
I I come
'I'm coming.'
- b. (Toi) tu viens.
you you come
'You're coming.'
- c. Hier, Jean (/) il est parti.
yesterday Jean he is left
'Yesterday, Jean/he left.'

Although traditionally the examples in (44) have been analyzed as cases of clitic left-dislocation, a growing number of scholars have shown that such subject clitics instead function as agreement markers, which appear to the left of the finite verb (e.g., Muller 1984, Hulk 1986, Roberge 1986, Auger 1992, Zribi-Hertz 1994, De Wind 1995, Ferdinand 1996, Legendre et al. 2010).

As Rohrbacher (1994, 1999) has argued, if such instances of subject doubling in Colloquial French are taken to be instances of subject-verb agreement rather than clitic left-dislocation, then Colloquial French counts as a rich agreement language again and is in fact expected to display V-to-I movement. Several independently observed facts show that Rohrbacher's conjecture is correct and that all varieties of French therefore count as rich in terms of (3). These facts involve the frequency, prosody, and distribution of subject doubling.

The first argument in favor of an agreement analysis of subject doubling is that subject doubling is an extremely frequent phenomenon in Colloquial French. According to an old estimate (Sankoff 1982), subject doubling occurs in 80% of sentences in this variety. This is unexpected if subject doubling involves the relatively infrequent phenomenon of clitic left-dislocation, but follows naturally if those doublers are agreement markers.

Second, no intonational break is required between the subject and its doubler, a fact that remains unexplained if subject doubling is an instance of clitic left-dislocation.

Third, in some colloquial varieties subject doubling occurs with indefinite subjects and negative quantifiers (see (45), from Zribi-Hertz 1994:137), whereas such constituents are generally excluded from clitic left-dislocation constructions.

(45) *Colloquial French*

- Personne il m' aime.
nobody he.3SG me.CL loves
'Nobody loves me.'

Fourth, evidence from corpus studies further strengthens the idea that these subject doublers are agreement markers. Ashby (1980), Miller (1991), Pierce (1994), and Fonseca-Greber and Waugh (2003) find that the clitic appears every time the finite verb is repeated in coordination (as in (46a)) or after a false start (as in (46b)); both (46a–b) from Fonseca-Greber and Waugh 2003:106–107), showing that their presence is obligatory.¹⁵

(46) *Colloquial French*

- a. Et après elle-la-prend et elle-la-grille.
and afterwards she-it-takes and she-it-grills
'And afterwards she takes it and grills it.'
- b. Et pis jch-j-mais jch-crois que ya une tendance.
and then I-I-but I-think that there a tendency
'And then I, but I think there's a tendency.'

Such obligatoriness of markers is a general diagnostic for subject agreement. Subject clitic left-dislocation, by contrast, is optional.¹⁶

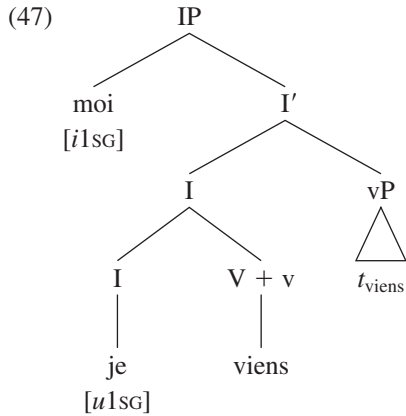
Fifth, Fonseca-Greber and Waugh (2003) report that in spoken French, 1st and 2nd person clitics especially are hardly ever left out in doubling constructions, and they conclude that the reanalysis of these clitics is as good as complete.

Sixth, Coveney (2002) and De Cat (2007) find that examples of clitic-V inversion are vanishingly rare (see Culbertson 2010 for a summary of several corpus studies), confirming that clitics are no longer independent syntactic constituents.

Given this body of evidence, one may conclude that subject clitics function as agreement markers in colloquial varieties of French. This, in turn, entails that French is a rich agreement language. It therefore should not come as a surprise that it has V-to-I movement. If that is correct, the examples in (44) actually display agreement between the real subject and the additional agreement marker. The interpretable ϕ -features on the real subject agree with a matching uninterpretable feature on the agreement marker, as is illustrated for (44a) in (47).

¹⁵ Cournane (2010) confirms that this property holds not only for Colloquial European French, but also for a number of different varieties of Quebec French, Pied Noir French, and northern Italian dialects.

¹⁶ It is important to realize that the agreement status of clitics does not necessarily entail that they obligatorily occur in all contexts. Cournane (2010) observes that, whereas subject doubling and repetition in coordination structures are properties shared by all colloquial French varieties she looked at, not all varieties can have a clitic in relative clauses and *wh*-clauses, or as a doubler of bare quantifiers, indefinites, or question words. Although the shared behavior of these varieties (doubling and repetition in coordination structures) is enough to reveal the agreement status of clitics, other factors may determine how widely they are used. It is for instance very conceivable that in initial stages after the reanalysis of the subject clitic into an agreement marker, it spells out not only ϕ -features but also definiteness, thereby inheriting a property of the previous clitic left-dislocation stage. This makes doubling of bare quantifiers, indefinites, and *wh*-DPs impossible.



Note that, if this analysis is indeed correct, it has one serious consequence: examples where only a pronominal doubler is used, such as those in (48), show that French must count as a *pro-drop* language, as the agreement marker does not necessarily agree with an overtly realized subject, again a property normally attributed to rich agreement languages.

(48) *French*

- a. *pro* je viens.
1SG come
'I'm coming.'
- b. *pro* tu viens.
2SG come
'You're coming.'
- c. *pro* il est parti.¹⁷
3SG is left
'He has left.'

Another variety amenable to the same analysis is Brazilian Portuguese (BP). As noted by Rohrbacher (1994) and others, this variety has an agreement paradigm that qualifies as poor when compared with that of European Portuguese (EP).

¹⁷ Whereas the 1st and 2nd person singular and plural pronouns *je*, *tu*, *on*, and *vous* occur in a position preceding a finite verb in 100% of the cases Fonseca-Greber and Waugh (2003) examined, percentages for 3rd person singular and plural pronouns are 91.5% and 93.6%, respectively. That is, the latter pronouns sometimes remain absent. For the purposes of our analysis, this is irrelevant. Since our definition of richness hinges on the presence of morphological person and number contrasts, a morphologically null form can provide evidence for a particular feature as much as an overt form can.

(49) a. <i>EP</i>			b. <i>BP</i>		
	Inf. <i>compr-ar</i> ‘to sell’			Inf. <i>fal-ar</i> ‘to speak’	
	SG	PL		SG	PL
1st	<i>compr-o</i>	<i>compr-amos</i>	1st	<i>fal-o</i>	<i>fal-a</i>
2nd	<i>compr-as</i>	<i>compr-am</i>	2nd	<i>fal-a</i>	<i>fal-am</i>
3rd	<i>compr-a</i>	<i>compr-am</i>	3rd	<i>fal-a</i>	<i>fal-am</i>

As can be established, two featural distinctions capture the morphological contrasts in the BP verbal paradigm ([± speaker] and [± plural]), so that this paradigm does not meet our definition of richness, whereas a third feature is needed to describe the morphological contrasts between 2nd and 3rd person in EP. Hence, the initial expectation is that BP has lost V-to-I movement. Galves (1994) and Costa (1996), however, show that in EP and BP alike, V_{fin} is able to precede or follow the same adverbs.

- (50) a. *BP/EP*
 O João (frequentemente) beija (frequentemente) a Maria.
 the João (often) kisses (often) Maria
 ‘João often kisses Maria.’
- b. *BP/EP*
 As crianças (todas) beijam (todas) a Maria.
 the children (all) kiss (all) Maria
 ‘The children all kiss Maria.’

Costa and Galves (2000) argue that in both varieties, the verb undergoes verb movement to T. Adverbs are adjoined to either vP or TP, so that V_{fin} precedes or follows them. The subject resides in a position higher than TP, which accounts for the nonobligatory adjacency between the subject and V_{fin} .

Hence, both EP and BP minimally have verb movement out of vP, it seems. On the basis of the paradigms in (49), we expect this for EP but not for BP. Interestingly, however, Duarte (1995) observes that BP differs from EP in robustly allowing subject doubling. Doubling in BP can occur in out-of-the-blue contexts (see (51a)) and in embedded contexts (see (51b)), making the lexical DP unlike left-dislocated topics.

- (51) a. *BP/*EP*
 O Edmilson, ele está?
 the Edmilson he is
 ‘Is Edmilson there?’
- b. *BP/*EP*
 Eu acho que o povo brasileiro, ele_i tem uma grave doença.
 I think that the people Brazilian he has troubles
 ‘I think that the Brazilian population has troubles.’

It will be clear that these characteristics are very reminiscent of spoken French. We tentatively conclude, pending the kind of research executed on Colloquial French, that BP is moving in the same direction and should be qualified as a rich agreement language. Hence, both EP and BP are well-behaved with respect to the strong RAH in displaying V-to-I movement.

3.3 Conceptual Problems

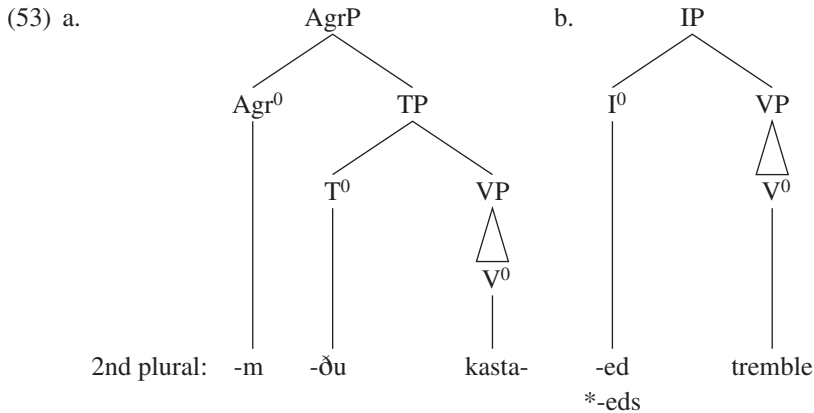
The empirical evidence against any version of the RAH has now disappeared. Apart from the empirical arguments raised against the RAH, however, Bobaljik (2003) mentions two conceptual problems for any RAH-type of approach in which richness is defined on the basis of morphological agreement distinctions within the paradigm. If such a notion of richness is to explain differences in syntactic verb movement, it requires that morphology can drive the syntax. This has two undesirable consequences. First, in the standard conception of the grammar, morphological items, including affixes, are inserted after the syntactic derivation, thus rendering it impossible for inflectional affixes to drive verb movement. Second, these proposals require reference to the paradigm as a whole, since a verb with a particular affix on it can only be identified as rich, and therefore require V-to-I movement, if the grammar has access to the whole paradigm, even in the course of the derivation.

In this section, we discuss an alternative version of the (weak) RAH that explicitly aims at solving these two conceptual problems: namely, one developed in Bobaljik 1995, Thráinsson 1996, and Bobaljik and Thráinsson 1998 (see also Vikner 1997). We will demonstrate that, despite its conceptual merits, this alternative proposal runs into two empirical problems that our own proposal does not run into. In addition, it faces a new conceptual problem related to the theory of Agree. This leads us to reject this alternative.

Bobaljik (1995), Thráinsson (1996), Bobaljik and Thráinsson (1998), and Bobaljik (2003) (henceforth, B&T) adopt the weak RAH on empirical grounds and argue for a conception of richness that refers to the cooccurrence of tense and agreement morphology. Given that morphology takes place after syntax, the only possible way to derive the correlation between richness and verb movement is by alluding to a nonparadigmatic—that is, syntagmatic—definition of richness. B&T argue that richness should be defined as the cooccurrence of different tense and agreement affixes on a single verb stem. Icelandic counts as rich, whereas English counts as poor, given the present and past tense paradigms in (52).

(52)	a. <i>Icelandic</i>		b. <i>English</i>	
	Inf. <i>kasta</i> ‘to throw’		Inf. <i>tremble</i>	
	Present	Past	Present	Past
1st SG	<i>kasta</i>	<i>kasta-ð-i</i>	<i>tremble</i>	<i>tremble-d</i>
2nd SG	<i>kasta-r</i>	<i>kasta-ð-ir</i>	<i>tremble</i>	<i>tremble-d</i>
3rd SG	<i>kasta-r</i>	<i>kasta-ð-i</i>	<i>tremble-s</i>	<i>tremble-d</i>
1st PL	<i>köst-um</i>	<i>köstu-ðu-m</i>	<i>tremble</i>	<i>tremble-d</i>
2nd PL	<i>kast-ið</i>	<i>köstu-ðu-ð</i>	<i>tremble</i>	<i>tremble-d</i>
3rd PL	<i>kast-a</i>	<i>köstu-ðu</i>	<i>tremble</i>	<i>tremble-d</i>

The Icelandic 2nd person singular forms in the present and past tense (*kastar* and *kastaðir*, respectively) show that different tense and agreement markers can be distinguished for this inflected verb: *kasta-ð-ir*. This is in contrast to English, where we observe in the 3rd person singular forms (*tremble-s* and *tremble-ed*) that the agreement affix *-s* cannot occur in the past tense (**tremble-(e)d-s*). The cooccurrence of overt tense and agreement morphology is indicative of a richer functional domain, B&T propose. Whereas Icelandic has a functional domain in which AgrP and TP occur as separate projections, English has an unsplit IP. The fact that tense and agreement morphemes do not cooccur in English then follows from the restriction that a terminal head can only be spelled out as a single morpheme. In B&T's proposal, the difference between Icelandic and English looks as shown in (53) (excluding Agr_{OP} for the moment).



According to B&T, in (53a) the agreement features in Agr⁰ are not local enough to stand in an Agree relation with V⁰, owing to the intervention of the T⁰ head. In order to establish a checking relation between the agreement features in Agr⁰ and those of V⁰, the verb must move up to at least T⁰. In English, by contrast, no intervention effect shows up, so the verb can remain in situ and still check its features with the features in I⁰.

One important property of B&T's analysis is that, although (53b) can only occur in languages in which no tense and agreement morphology cooccur, nothing excludes a language with the structure in (53a) but poor morphology. After all, nothing forces a head to be spelled out independently: two heads can be realized by one morpheme. One of the central motivations for this analysis was the conclusion that the strong RAH was untenable in the light of languages that display poor agreement but V-to-I movement. Hence, the proposal derives the weak RAH: there can be languages with poor agreement and V-to-I movement but there cannot be languages with rich agreement but no V-to-I movement. Note also that the two conceptual problems raised against other RAH proposals do not arise here. First, rich morphology does not drive the syntax but is merely a reflection of it. Second, after syntax, morphology simply picks the form from the available lexicon that most faithfully spells out the features residing in a functional head. As a richer syntax allows a richer morphology, a correlation between syntax and morphology is derived without letting the grammar access paradigmatic information during the derivation.

However, three problems arise. First, as discussed in section 3.2, the RAH turns out to be correct in its strongest, bidirectional form. This means that B&T's analysis offers a solution to a problem that in fact does not exist: if there are no languages with poor agreement and V-to-I movement, their proposal suddenly overgenerates, as it allows for a possibility that must now be excluded. Related to this, their analysis predicts the possibility that the acquisition of verb movement to the relevant head takes place prior to the acquisition of the inflection associated with that head. This point is taken up in more detail in section A.3 of the appendix.

Second, as noted by Alexiadou and Fanselow (2000), Faroese constitutes a counterexample: it has rich agreement under definition (3), but no V-to-I movement (see section 3.2.2; recall that the movement possible for some speakers of Faroese is V-to-C movement rather than V-to-I movement).

(54) a. <i>Faroese (present tense)</i> Inf. <i>kasta</i> 'to throw'	b. <i>Faroese (past tense)</i>																								
<table style="border: none; width: 100%;"> <tr> <td style="width: 50%;"></td> <td style="text-align: center;">SG</td> <td style="text-align: center;">PL</td> <td style="width: 50%;"></td> <td style="text-align: center;">SG</td> <td style="text-align: center;">PL</td> </tr> <tr> <td style="text-align: right;">1st</td> <td>kast-i</td> <td>kast-a</td> <td style="text-align: right;">1st</td> <td>kasta-ð-i</td> <td>kasta-ð-u</td> </tr> <tr> <td style="text-align: right;">2nd</td> <td>kast-ir</td> <td>kast-a</td> <td style="text-align: right;">2nd</td> <td>kasta-ð-i</td> <td>kasta-ð-u</td> </tr> <tr> <td style="text-align: right;">3rd</td> <td>kast-ir</td> <td>kast-a</td> <td style="text-align: right;">3rd</td> <td>kasta-ð-i</td> <td>kasta-ð-u</td> </tr> </table>		SG	PL		SG	PL	1st	kast-i	kast-a	1st	kasta-ð-i	kasta-ð-u	2nd	kast-ir	kast-a	2nd	kasta-ð-i	kasta-ð-u	3rd	kast-ir	kast-a	3rd	kasta-ð-i	kasta-ð-u	
	SG	PL		SG	PL																				
1st	kast-i	kast-a	1st	kasta-ð-i	kasta-ð-u																				
2nd	kast-ir	kast-a	2nd	kasta-ð-i	kasta-ð-u																				
3rd	kast-ir	kast-a	3rd	kasta-ð-i	kasta-ð-u																				

As can be observed, Faroese has distinct tense and number morphemes in the past tense. This requires a structure like the one in (53a), and V-to-I movement is predicted to arise, contrary to fact. Bobaljik (2003) acknowledges this problem and argues that the tense and agreement information is expressed by single affixes, *-ði* in the singular and *-ðu* in the plural. Under that analysis, Faroese can still be analyzed as a poorly inflected language with an unsplit IP, and V-to-I movement can remain absent.

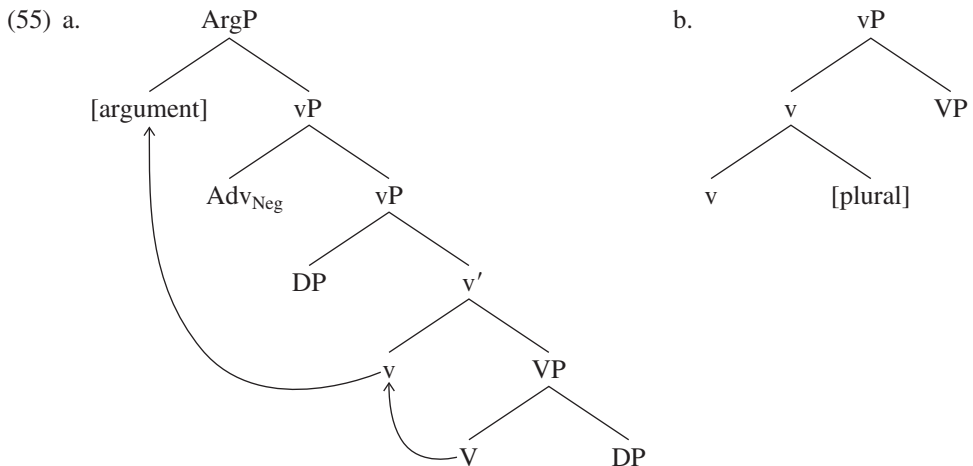
Allowing this solution, however, renders B&T's theory unfalsifiable, since by the same logic the Icelandic paradigm can be considered poor as well. In Bobaljik's analysis of Faroese, *-ð* is not a separate morpheme, so the fact that /ð/ occurs in both the singular and the plural part of the past tense paradigm is not captured by the analysis and is therefore coincidental. Along the same lines, the fact that in the Icelandic paradigms /r/ occurs in the 2nd person singular in both the present and the past tense can be taken as coincidental, too. If so, Icelandic *-ðir* can be analyzed as a single affix. This logic can be extended throughout the Icelandic paradigm, making the language effectively poor. The only way for Bobaljik to distinguish the Icelandic and Faroese paradigm in terms of richness is by means of the correlation with V-to-I movement. What is lacking is an independent algorithm that determines whether an inflectional ending is morphologically simplex or complex.

Third, a necessary ingredient for B&T's analysis is that Agree may not take place across intervening heads. Therefore, agreement can take place between I and V in (53b) but not between Agr and V in (53a). However, it is unclear how such locality constraints on agreement can be implemented in any of the current versions of Agree (see, e.g., Chomsky 1995, 2000, 2001, Pesetsky and Torrego 2004, 2007, Bošković 2007), where Agree can be applied across intervening (nonphase) heads.

To conclude, B&T's analysis faces two serious empirical problems, as well as a theoretical one (involving Agree). We realize, however, that we now commit ourselves to developing a proposal that must minimally address the conceptual problems raised against earlier versions of the RAH based on paradigmatic contrasts, and that must also comply with current proposals regarding Agree. In the next section, we show that even though it should be impossible for the grammar to have access to paradigmatic knowledge during the derivation, the conclusion that richness therefore cannot be defined paradigmatically is too strong. We also argue that even though morphology cannot drive the syntax in any direct sense, the conclusion that morphology can have no effect on the syntax is too strong as well. These conceptual problems disappear once we bring in the factor of language learnability.

4 Explaining the RAH

As we have established, verb movement to some position in the IP domain takes place if and only if a language exhibits subject agreement with respect to all those grammatical features that are minimally required to constitute pronominal subjects. In this section, we argue that only in a language with rich subject agreement can a superfeature [argument], comprising the subfeatures [plural], [participant], and [speaker], be postulated. This superfeature projects vP-externally and realizes agreement morphology. If this agreement morphology is affixal in nature, the verb must in turn move to this head position, yielding (55a). In languages with poor subject agreement, no such feature can be acquired and therefore no separate functional projection exists that realizes subject agreement morphology. Consequently, we argue that poor agreement features must be realized on v, yielding (55b).



In the analysis below, we will develop this proposal in detail, focusing on three questions: (a) why is the feature [argument] that heads Arg(ument)P only present in rich agreement languages (section 4.1), (b) what determines the structural position of ArgP (section 4.2), and (c) why is it the case that in languages with ArgP the verb moves to its head (section 4.3)?

4.1 Determining the Nature of [argument]

As just stated, we propose that languages with rich agreement contain a formal feature, [argument], whereas languages with poor agreement do not. The question, then, is how this formal feature enters such languages. Before we can answer this question, we need to determine how formal features can be acquired more generally. Here, we follow Zeijlstra (2008), who argues that grammatical doubling is what drives the acquisition of formal features. Formally, he puts it as follows:

(56) *Flexible Formal Feature Hypothesis* (FFFH, after Zeijlstra 2008:153)

- a. If and only if there are doubling effects with respect to a semantic operator Op_F in the language input can all features of F be formal features [i/uF].
- b. If there are no doubling effects with respect to a semantic operator Op_F in the language input, all features of F must be semantic features.

The reasoning behind (56) is this: since there is no way to distinguish an interpretable formal feature [iF] from a semantic feature, the only evidence that the language input can contain for a language learner to decide whether to adopt some formal feature or not is the presence of uninterpretable features [uF]. As uninterpretable features can only occur in a grammatical sentence if they are checked against matching interpretable features, the presence of agreement phenomena is the only possible cue for formal feature acquisition.¹⁸

According to the FFFH, in Faroese, for instance, the only *uninterpretable* ϕ -features present pertain to speakerhood and plurality, since these features give rise to doubling effects (see (40)). The plural marker *-a* manifests an Agree relation between its uninterpretable [u plural] feature and the interpretable [i plural] feature present on the subject. Along the same lines, the Faroese speaker will adopt a formal feature [speaker], since *-i* manifests an Agree relation between the [u speaker] feature on the verb and the [i speaker] feature on the agreeing subject. [participant] and [feminine] are features that are also part of the pronominal semantic feature inventory (e.g., to distinguish between masculine and feminine pronouns), but they never give rise to syntactic doubling (i.e., agreement) effects. Consequently, there is no evidence that these features should be part of the formal feature inventory of Faroese: there is a semantic [participant] feature, but no corresponding formal [u participant] or [i participant] feature, and [feminine] as well has no interpretable and uninterpretable counterparts. [participant] and [feminine] only play a role in the lexical semantics of the language (see Heim 2008, Sauerland 2008).

Poor agreement languages can thus never give rise to the acquisition of formal [u /ispeaker] and [u /iparticipant] and [u /iplural] features. In contrast, languages with rich agreement, by definition (3), display doubling effects with all three features: speakerhood, participanthood, and plurality are all formal features with both interpretable and uninterpretable counterparts, [u /ispeaker], [u /iparticipant], and [u /iplural].

¹⁸ Agreement should be taken here to include all kinds of syntactic agreement between matching features (including agreement with features on null subjects, if there is evidence for null subjects in the language). Only if all instances of a particular feature in a particular language are semantically active (and thus never have to be checked against another matching feature) is such a feature a semantic feature.

Thus far, it follows from the FFFH that languages counting as rich agreement languages have three formal ϕ -features at their disposal ($[u/ispeaker]$, $[u/iparticipant]$, and $[u/iplural]$), whereas languages that count as poor agreement languages do not exhibit all three. But when a learner has acquired these three features, he or she has also acquired a formal superfeature of them—namely, $[u/argument]$ —since these three features semantically constitute the single semantic class of argumenthood. The reason for this is that, as we have established, these three semantic features are the same features that minimally constitute pronominal systems across the world's languages.¹⁹ This means that in a richly inflected language, all semantic features that are necessary to constitute pronouns are also reflected in subject-verb Agree relations, whereas this is not the case in poor agreement languages.²⁰

4.2 *Determining the Structural Position of ArgP*

In the previous section, we argued that rich agreement languages have a formal feature, $[argument]$, that is absent in languages with poor agreement. In this section, we will outline the syntactic consequences of this proposal. There are two questions to be addressed: (a) why should the functional projection hosted by $[argument]$, ArgP, occupy a vP-external position in the clausal spine, and (b) why can $[argument]$ but not any of its subfeatures host such a vP-external projection?

As for question (a): ArgP is a formalization of the notion of argumenthood, which may therefore only occur in a position in the structure where arguments can be interpreted. The uninterpretable argument feature, $[uargument]$ with some $[speaker]$, $[participant]$, and/or $[plural]$ value, must be checked by its interpretable counterpart—namely, some argument (which carries an $[argument]$ feature) in its specifier position (which, depending on one's theoretical position, either is base-generated in this position or moves there). Consequently, ArgP must structurally be at least as high as the base position of the checking argument. So, if the subject checks the $[uargument]$ feature, the subject must be located in Spec,ArgP. Since the subject cannot be part of the complement of v^o , the consequence is that in languages with rich subject-verb agreement, ArgP must be vP-external. Any language with rich subject-verb agreement thus exploits a vP-external ArgP, whose uninterpretable features in the head are spelled out as agreement morphology, and whose specifier is the subject and whose complement contains vP. Although irrelevant for our purposes, the entailment is that if a language has rich object agreement, it must have a vP-internal ArgP (presumably intervening between vP and VP) with the object in its specifier (and if it has both rich subject- and rich object-verb agreement, it has two ArgPs, one vP-external and one vP-internal).

¹⁹ The reason why the semantic features $[speaker]$, $[participant]$, and $[plural]$ jointly constitute argumenthood and not, for instance, pronounhood, is that both pronominal and nonpronominal arguments are always specified for having $[speaker]$, $[participant]$, and $[plural]$ or not. Therefore, this set of features pertains to arguments in general.

²⁰ We take the assumption of superfeatures to be a more general strategy through which learners create functional categories, which can subsequently play a role in the clausal spine. Take for instance C, a syntactic position that can be filled by a verb or a complementizer. Whatever the precise nature of C is, it must be a feature that abstracts over verbs and complementizers.

As for question (b), we propose that, whereas [argument] plays the role of a functional head that can project ArgP in the clausal spine, the features [speaker], [participant], and [plural] do not and cannot. The reason is this. The major difference between a formal [argument] feature and its subfeatures ([plural], [participant], and [speaker]) is that argumenthood is a semantic operation that applies to predicates (or the other way around), whereas number, participanthood, and speakerhood do not. This means that the functional projection headed by [argument], ArgP, shares an important property with all other possible functional projections in the middle field (TP, NegP, AspP, etc.)—namely, that their relative position is semantically motivated. Tense, negation, aspectual operators, and arguments all stand in a semantic relation with predicates, denoted by a constituent minimally containing vP. This enables us to conjecture that all functional projections have a semantic function in the clausal spine (hosting semantic tense, negation, mood, and also argumenthood). If so, there cannot be a functional projection FP in the clausal spine whose semantic contribution lies outside functional application of predicates. Or, to put it more formally: a syntactic structure $FP > vP$ can only exist if the semantic function F is applicable to the denotation of vP (or the other way around), and a structure $GP > FP > vP$ can only exist if the semantic function G is applicable to the denotation of FP or vice versa. In that sense, the clausal spine is a reflection of a (nonstrict) subset of semantic functions that apply to a predicate denoted by vP. The direct consequence of this is that, since speakerhood, participanthood, and plurality do not apply to predicates, but instead apply only to arguments (i.e., they constrain the presuppositions of their potential referents), a SpeakerP, a PartP, or a NumP can be a potential functional projection only in an extended NP, never in an extended vP. Hence, the major difference is that languages exhibiting a formal feature [argument] must project this feature within the clausal spine, whereas languages that lack such a feature can never have any agreement feature hosted in a functional projection that is part of the extended vP domain.

Finally, we would like to point out that, even though our proposal of a vP-external ArgP, present in languages with rich agreement only, may be reminiscent of Agr_SP (as in Chomsky 1995), there is a fundamental difference between ArgP and Agr_SP. Agr_SP is morphologically motivated, whereas ArgP is semantically motivated. We think there is a strong conceptual argument for choosing ArgP over Agr_SP. The reason why there must be a vP-external Agr_SP has to follow from general morphological requirements. We do not know what those morphological requirements could be. ArgP, by contrast, is semantically motivated. Therefore, the fact that Arg selects a complement containing vP must be derived from a property that must be part and parcel of the semantic component. The relevant property is straightforward: namely, the fact that an argument must always be a sister of (a constituent containing) the predicate in order to be legible for semantic interpretation.²¹

²¹ Cinque (1999) already noted that the assumption of a semantically unmotivated Agr_SP is at odds with the observation that all other known functional projections in the clausal spine do have semantic import.

4.3 Deriving the Strong RAH

We now turn to the final question: why does Arg^0 trigger verb movement? Here, we hardly deviate from proposals in the literature stating that verb movement is essentially triggered by the Stray Affix Filter (Baker 1988, Lasnik 1981, 1995) or any reimplementations of it (see Rohrbacher 1994, 1999). Since—at least in the languages we have looked at—the values of Arg^0 are spelled out by an affix, or by some other agreement marker that needs to attach to the verb (see Colloquial French), Arg^0 needs to end up in a position adjacent to the verb. This becomes an issue when some constituent (e.g., an adverb or negation) intervenes between Arg^0 and v^0 .²² For those cases, the literature provides two means of ensuring adjacency: (a) by moving the verb in the syntactic component, as has been traditionally proposed (see also Lechner 2004, Matushansky 2006, Roberts 2010 for recent proposals along these lines), or (b) by moving the verb postsyntactically (see, e.g., Chomsky 2000, Boeckx and Stjepanović 2001, Zwart 2001, Platzack 2012). Since our proposal does not hinge on the correctness of either approach and is fully compatible with both, we are not forced to make a principled choice.

Finally, what happens with those instances of agreement that do not count as rich? Since only those functional projections may be part of an extended domain whose denotations semantically affect their complement, and since this is not the case with projections of subfeatures of [argument], poor agreement markers must consequently be analyzed as the realization of some feature(s) that reside in v^0 (see Rohrbacher 1994 for a similar claim). These features on v^0 then agree with the subject in its Spec,vP position in exactly the same way that subjects in Spec,ArgP agree with agreement markers that are realized in Arg^0 .

Now it follows that only in languages with rich subject agreement must the verb always move to a vP-external position, dubbed ArgP, whereas this requirement is absent in languages with poor subject agreement. This, then, derives the strong RAH.

5 V-to-Arg and V-to-T Movement

One question that emerges concerns the predictions this analysis makes for V-to-T movement. The discussion so far shows that V-to-Arg movement is fully dependent on subject agreement and that tense inflection is irrelevant (*pace* Bobaljik and Thráinsson 1998, Bobaljik 2003, Biberauer and Roberts 2010). If subject-marking affixes carrying [argument] must be base-generated in Arg^0 , the question arises, though, why tense morphemes, such as English *-ed*, should not be base-generated in T^0 and trigger V-to-T movement as well. If this were the case, our proposal would collapse.

²² Two points are in order here. First, this analysis predicts that if Arg in some language is morphophonologically realized by some phonologically independent element, verb movement is no longer required or triggered (a point brought up by Jeff Parrott, pers. comm.).

Second, when the affix or clitic in Arg^0 is already adjacent to V in the case where no adverb intervenes, more options become possible, such as Morphological Merger (Marantz 1988). Since there is no diagnostic for verb movement in these cases, there is no way of excluding this option. As a general alternative to verb movement, however, such an operation is insufficient, since adjacency between the verb and the affix/clitic is not guaranteed. This may be different in OV languages, an issue we take up in section A.1 of the appendix.

The answer is that the syntactic and semantic properties of tense morphemes require vP-internal first merger, at least in languages that exhibit so-called sequence-of-tense readings, whereas rich subject agreement must be externally merged.

The reason for this is as follows. Absolute tense operators, such as absolute past tense operators, which denote that some event takes place prior to the time of utterance,²³ must apply to fully saturated argument structures (i.e., full vPs) and therefore be hosted in a vP-external position, just like elements hosted in ArgP. Crucially though, a tense marker, such as the English past tense marker *-ed*, does not denote an absolute past tense. Rather, it denotes a relative nonfuture that in turn must be in the scope of a covert absolute past tense operator. To see this, take the following example:

(57) John said Mary was ill.

The most salient reading of (57) is the one where the saying event and the state of illness temporally overlap; that is, the illness could have existed either before the moment of saying or simultaneously with it, but it could never have started after the saying time. Such examples therefore show that English is a sequence-of-tense language, in which subordinate tense is dependent on matrix tense (e.g., Heim 1994, Ogihara 1995, 1996, von Stechow 1995, 2003, 2005, Abusch 1997, Kratzer 1998, Schlenker 1999, Sharvit 2003).

The interpretation of the subordinate tense in English depends on the interpretation of the matrix clause tense. Therefore, subordinate tense morphology cannot induce an absolute semantic tense of its own. This already suggests that verbal tense morphology does not directly encode the semantics of past tense and that, instead, semantic past tense is induced by a different, covert operator located in TP (see von Stechow 2003, 2005, Pesetsky and Torrego 2007).

That *-ed* is not an absolute past tense operator is also confirmed by (58), after von Stechow 2003.

(58) Wolfgang played tennis on every Sunday.

The only available reading of (58) is the one where in some time interval in the past, it was the case that on every Sunday Wolfgang played tennis. In this reading, the past tense operator outscopes the distributive adverbial quantifier *on every Sunday*, which in turn outscopes the lexical verb. This reading can never be derived if *-ed* is taken to denote the past tense operator itself, as it would be impossible to have this past tense operator outscope *every Sunday* from its position inside vP. However, this reading can be accounted for if *-ed* agrees with some higher covert tense operator.

Although *-ed* does not denote absolute past tense but instead agrees with some covert past tense operator, this does not mean that *-ed* is semantically vacuous. The readings of (57) are fine not only with a simultaneous reading, but also with a so-called backward shift reading, in which the illness takes place prior to the saying event. If past tense morphology were semantically vacuous, these readings would be impossible to account for. For this reason, Zeijlstra (2012)

²³ Ignoring counterfactual interpretations of past tense (see Iatridou 2000).

argues that sequence-of-tense readings are the result of (a) a semantic denotation of *-ed* as a relative nonfuture ('no later than') and (b) the fact that all past tense morphemes carry a single [*upast*] feature that is checked by an absolute Op_{PAST} in the matrix clause, as represented in (59).

(59) [$\text{TP Op}_{\text{PAST}[\textit{upast}]}$ [TP John [$\text{vP say-ed}_{[\textit{upast}]}$ [$\text{CP Mary be-ed}_{[\textit{upast}]}$ ill]]]]]

(59) then denotes that Mary's illness did not start after John's saying something about it. This saying event, in turn, does not take place after some contextually denoted time interval prior to the time of utterance. This is exactly the reading of (57) and allows both a simultaneous and a backward shift interpretation.

Now, Op_{PAST} is an absolute past in a vP-external position (TP), but *-ed* is a relative tense that only agrees with Op_{PAST} . However, since relative tenses do not apply to an entire vP as their semantic complement, but only to a verb itself (see Zeijlstra 2012 and references therein), such relative tenses must be base-generated vP-internally. The reason for this is that a relative tense replaces the tense variable of a verb by another tense variable, whereas an absolute tense operator existentially binds such a variable. The semantic content of *-ed* (i.e., that of a relative tense) thus requires it to be base-generated inside vP (attached to V).

To conclude, no V-to-T movement is required to spell out past tense morphology in sequence-of-tense languages. Hence, it is predicted that in languages exhibiting sequence-of-tense effects, tense morphology itself does not trigger V-to-T movement, a prediction that to the best of our knowledge is borne out (as all languages discussed so far are known to have sequence-of-tense effects). If in such languages a tensed verb appears in a vP-external position, it is not because the tense marker drives this movement. Rather, it is because something else drives it: for example, rich subject agreement; or another trigger (such as a requirement to attach to particular aspectual morphology, as in Slavic languages); or auxiliaryhood, which (as we argue in section A.2 of the appendix) forces English verbal auxiliaries to move out of vP.

6 Conclusion and Discussion

In this article, we have argued that there is a strong correlation between V-to-I movement (in our terms, V-to-Arg movement) and rich agreement morphology. We have shown that for the languages that have generally been part and parcel of the discussion about the RAH, the generalization holds without exception in its strong, bidirectional form. We therefore propose, in opposition to current tendencies, that there is a strong bidirectional correlation between syntax and morphology. Moreover, contrary to previous assumptions, we argue that morphology does not drive syntax directly. Rather, morphology drives syntax via acquisition: children only move the verb if they acquire the formal feature [argument] that drives this syntactic operation; the evidence for this feature, in turn, relies solely on the presence of sufficient morphological contrasts in the language, which should at least mirror the morphological contrasts found in the poorest pronoun systems attested in human language. In this sense, the distinction between poor and rich agreement languages lies in the absence or presence of a functional projection that results from the formalization of argumenthood. In the appendix, we investigate the synchronic, diachronic, and acquisitional consequences of our proposal, showing that evidence from these areas confirms it.

Appendix: Consequences

We have given an explicit account of V-to-I movement and argued that this operation is crucially related to (rich) agreement properties of a language. We focused solely on VO languages where V-to-I movement is always visible. In section A.1, we discuss what our analysis would have to say for OV and VSO languages.

Diachronically, the strong version of the RAH predicts that, once a language changes from a rich to a poor agreement language, V-to-I movement should no longer occur. In section A.2, we demonstrate that this is indeed correct but that our proposal predicts at least four pathways of syntactic change resulting from verbal deflection.

In section A.3, we discuss how acquisition evidence can be used to support the strong RAH.

A.1 Non-SVO Languages

In this section, we discuss the implementations of our proposal for languages that do not display SVO orderings. First, we discuss OV languages (section A.1.1), then we discuss VSO languages (section A.1.2).

A.1.1 OV Languages A question may arise about the consequences that our strong RAH hypothesis has for OV languages, like Dutch and German. The problem is not so much that the wrong predictions are made but that the predictions are untestable: in an OV language, ArgP (if necessary because of rich agreement) can be head-final, like the vP it dominates, so that verb movement will always be string-vacuous. In fact, one may wonder if verb movement is necessary at all. Recall that we take V-to-I movement to be triggered by the Stray Affix Filter (in any of its guises). For this filter to apply, it suffices that the verb always appears in a position string-adjacent to Arg⁰ at PF. In VO languages, this cannot be guaranteed without alluding to verb movement (because of possibly intervening adverbs), but in OV languages, if ArgP is head-final, it *is* guaranteed. So, following Bobaljik (1995), the affix can be spelled out on the verb in an OV language without the verb moving to it, since V and the affix are string-adjacent at PF, as illustrated in (60).²⁴

(60) [_{ArgP} [_{vP} [_{VP} *subject object V*] v] *affix* Arg⁰]

As a consequence, one does not need to be committed to (rightward) verb movement in OV languages with rich subject agreement, though nothing in our analysis pleads against it either. In order to stay neutral in this respect, but still have a generalization that applies to both VO and OV languages, we slightly adjust the generalization in (8) as follows:

²⁴ Note that this means that (with Bobaljik (1995)) we deviate from proposals such as those of Julien (2002) and Jayaseelan (2010), who (following Kayne (1994)) take OV-I orders to be derived from VO orders.

(61) *The Rich Agreement Hypothesis* (revised version)

A language must realize the finite verb in a position string-adjacent to Arg^0 , where Arg^0 is postulated if and only if the regular verbal paradigm manifests featural distinctions that are at least as rich as those featural distinctions manifested in the smallest pronoun inventories universally possible.

A.1.2 VSO Languages It is generally agreed that the dominant VSO order in the Celtic languages must be derived from an underlying SVO order by a verb movement operation whereby the finite verb moves across the subject. The discussion is about what type of movement is involved, V-to-I or V-to-C movement. Some hold that VSO should be derived by V-to-C movement (Déprez and Hale 1986, Hale 1989, Stowell 1989, Malone 1990, Huybregts 1991, Koeneman 2009), whereas others take the movement to be an instance of V-to-I movement (Chung and McCloskey 1987, Guilfoyle 1990, Rouveret 1990, Koopman and Sportiche 1991, McCloskey 1991). Focusing on Modern Irish, our proposal predicts that this language cannot have V-to-I movement because it lacks rich subject agreement.

Modern Irish has two finite verbal forms, a synthetic one and an analytic one. Synthetic forms are used in 1st and 2nd person singular and 1st person plural and express person and number features. Analytic forms are used elsewhere. This is shown in (62), where the synthetic forms are boldfaced.

(62) *Modern Irish*

tuig ‘understand’

	Present	Imperfect	Future
1st SG	tuigim	thuiginn	tuigfidh
2nd SG	tuigeann	thuigteá	tuigfidh
3rd SG	tuigeann	thuigeadh	tuigfidh
1st PL	tuigimid	thuigimis	tuigfidimid
2nd PL	tuigeann	thuigeadh	tuigfidh
3rd PL	tuigeann	thuigidis	tuigfidh

One might argue that the synthetic and analytic forms together yield a paradigm that would be considered rich according to our definition: the synthetic forms generate the features [speaker] and [plural], and since 1st and 2nd person endings can be distinguished from the analytic form used in 3rd person contexts, [participant] is motivated, too.

However, Irish shows a complementary distribution with respect to synthetic forms and subject pronouns, unlike pro-drop languages such as Italian. Whenever a synthetic verb form is used, a subject pronoun must be absent.²⁵ This is shown in (63).

²⁵ This complementary distribution is not absolute, and deviations from this pattern are found in Welsh, Munster Irish, and Breton. As shown in Koeneman 2009, however, these facts do not undermine the need to account for the general pattern.

(63) *Modern Irish*

- a. Chuirf-inn isteach ar an phost sin.
 put-COND.1SG in on the job that
 'I would apply for the job.'
- b. *Chuirf-inn mé isteach ar an phost sin.
 put-COND.1SG I in on the job that
 'I would apply for the job.'

There are two main analyses that capture this complementarity principle. One is to analyze the inflection on the verb as a syntactically incorporated pronoun (Anderson 1982) or a pronoun that has undergone reanalysis with the verbal stem in the postsyntactic morphological component (Diertani 2011). The other is to analyze synthetic morphology as suppletive forms that spell out the verb and the subject pronoun together using one morphological element (Doron 1988). Under either approach, synthetic forms should not be taken into account when determining whether the subject-verb morphology of Irish is poor or rich, as they are not involved in an agreement relation with another constituent. If only analytic forms should be considered, then Irish, despite appearances, is a language with poor subject agreement.

Consequently, our proposal predicts that VSO orders in languages like Irish, which count as poor agreement languages, are not the result of movement to an ArgP, since in our analysis ArgP is absent and therefore these orders must result from another type of head movement (arguably V-to-C movement, but we remain agnostic about the exact nature of it).

A.2 *Diachronic Consequences*

Diachronically, all Germanic languages counted as rich agreement languages. At the same time, all these languages displayed V-to-Arg movement. However, a substantial number of them lost their rich agreement during a process of morphological deflection.

In languages like Danish, Norwegian, Swedish, and English, at least in the standard varieties, V-to-Arg movement is lost after the loss of rich agreement (see Platzack and Holmberg 1989, Holmberg and Platzack 1991, 1995, Roberts 1993, Rohrbacher 1994, and references therein). This strong correlation between deflection and subsequent loss of V-to-Arg movement is well-predicted by our analysis (and other analyses that predict that the RAH should be defined in its strong version). However, it has been observed, as a critique of the RAH, that there can be a significant time gap between the loss of the relevant agreement inflection and the loss of V-to-I/Arg movement. Swedish becomes poor just after 1500, whereas V-to-Arg movement is lost slowly over the next century (Falk 1993). The development in Danish may have even been slower (Vikner 1997, Sundquist 2003). For English, Lightfoot (1993) and Roberts (1993) have observed a similar gap.²⁶

Such time gaps are not at all problematic, however, since the input in those stages is still paradoxical, containing both input for a poor agreement paradigm and evidence for V-to-Arg movement. Such paradoxical input can lead to two reactions, the choice being arguably due to

²⁶ Although the length of the time gap will depend on the exact definition of richness, all definitions discussed in this article will have to deal with a time gap of some length.

independent properties of the language. The first is to take the poor agreement paradigm as primary. This will subsequently lead to the loss of V-to-Arg movement. But the learner can also take the word order as primary, and then other options arise. Looking at all the examples that formerly posed a problem for the strong RAH (discussed in section 3.2), it is clear what their common denominator is diachronically: namely, reanalysis. Instead of dropping V-to-Arg movement, a learner's response to paradoxical language input can be to analyze the input in a way that is compatible with the RAH. We have shown three distinct instantiations of that: in Faroese, learners reanalyzed V-to-Arg movement as embedded V-to-C movement; in ReNN, learners reanalyzed such constructions as containing vP-internal adverbs; and in French, learners reanalyzed subject clitics as agreement markers. Evidence for the last case comes from the fact that the two relevant changes in French, the obligatory presence of subject clitics and the disappearance of *nous* in 1st person plural contexts, took place more or less in tandem (see Fonseca-Greber and Waugh 2003). If these two changes indeed occurred in parallel, they can be causally related from the perspective of our proposal: the replacement of *nous* by *on* as a subject in 1st person plural contexts is precisely the tipping point that would turn French from rich to poor, triggering the reanalysis of subject clitics.

However, one question remains open: why is it that in languages like English (that lost general V-to-Arg movement), some verbs—such as modal auxiliaries and forms of *have*, *be*, and *do*—still do seem to undergo V-to-Arg movement? In this sense, English is a general problem for any theory of verb movement. Whether a theory states that there is a correlation with rich inflection or not, it needs some additional assumption to capture the fact that in English only a subclass of the verbal heads moves or stays in situ (see Baker 1991 for discussion). Since the verbal heads that under no circumstances can be inflected are precisely the heads that always precede negation (the modal verbs), it follows that modals (and in their slipstream finite forms of *have*, *be*, and *do*) cannot undergo V-to-Arg movement. Instead, the child acquiring English is forced to postulate a functional head that, as was the case for Arg⁰, must be directly derivable from the elements occurring in that position. Such a functional head must be projected by exactly the feature that all fronted verbs share and all nonfronted verbs do not. The only possible candidate for this feature is [auxiliary]. Therefore, we conjecture that this functional head must be projected by the feature [auxiliary].²⁷

A.3 *Acquisitional Consequences*

Our proposal predicts that the acquisition of agreement distinctions is a prerequisite for the acquisition of V-to-Arg movement. In this section, we will show how acquisitional evidence can distinguish between the weak (or no) RAH and the strong RAH and how an argument can be construed in favor of the latter.

²⁷ A question that may come up is whether modals and forms of *have*, *be*, and *do* are heads spelling out Aux⁰, or whether these are heads that are base-generated below negation and move to Aux⁰ in the syntax. Both positions have been defended (see Roberts 1993 and Iatridou and Zeijlstra 2010, respectively), and nothing in our analysis hinges on a choice between them.

Note also that this analysis does not explain why nonfinite auxiliaries do not always move out of vP (as in *to not have read the book*), as Peter Ackema (pers. comm.) points out.

For Bobaljik and Thráinsson (1998) and Bobaljik (2003), proponents of the weak RAH, the child has in principle two triggers for the acquisition of a split IP and subsequent verb movement: (a) the cooccurrence of agreement and tense affixes, and (b) the fact that the verb can precede negation. Trigger (a) is an unlikely one, as children generally acquire the present tense agreement paradigm, as well as verb movement, before they acquire the past tense. Pierce (1992), for instance, shows that children acquiring French place the verb to the left of negation whenever the verb is finite (and leave infinitives inside the VP) but do this before the past tense is acquired. In an overview of verbal morphology used by children acquiring Italian, Caprin and Guasti (2009:30ff.) do not mention the use of any past tense forms by children up to 35 months (by which age verb movement is in place), although the children do use agreement-inflected forms (the present indicative and the *passato prossimo*, the compound present perfect tense) productively.

This leaves trigger (b), which is a necessary ingredient for any theory that adopts the weak, or in fact no, RAH. Whereas under the weak RAH V-to-Arg movement is in principle acquirable without morphological cues, under the strong RAH the acquisition of rich morphology is a prerequisite for the acquisition of V-to-Arg movement: without rich agreement, [argument] is not postulated and consequently no V-to-Arg movement can be triggered.

Some acquisition evidence supports the strong rather than the weak RAH—but before we get to that, we must clear up one issue. It has repeatedly been observed that the acquisition of *some* inflectional morphology (i.e., the morphological distinction between an infinitive and a noninfinitive—or in short, finiteness) and the acquisition of verb movement in general go hand in hand, suggesting that one is a prerequisite for the other. We must, however, be careful to distinguish the two canonical verb movements. For V2 languages, the correlation between V-to-C movement and inflectional morphology is robust (see, among many others, Clahsen 1984, 1988, Clahsen and Penke 1992 for German, and Blom 2003 for Dutch), but note that the acquisition of V-to-C movement hinges on finiteness or other clausal properties and not on rich agreement (at least not in our proposal) and furthermore masks the acquisition of V-to-Arg movement, which we argue *does* hinge on rich agreement. Hence, the fact that research has shown that V-to-C movement is acquired before rich agreement (see, e.g., Verris and Weissenborn 1992, Poeppel and Wexler 1993) is irrelevant for the discussion, although it is often mentioned as an argument against proposals like ours that define richness on the basis of the present tense agreement paradigm (e.g., Bobaljik 2003).

In order to establish a correlation between rich agreement and V-to-Arg movement in acquisition, we must turn to non-V2 languages.²⁸ An insightful language in this regard is spoken French.

²⁸ Another environment to look at is clause types in Germanic where V2 does not occur. Bentzen (2003) reports on one learner of ReNN who sometimes erroneously places the finite verb to the left of negation in V2-resistant clause types (adverbial clauses, relative clauses, and *wh*-clauses) before settling on the adult grammar, which only allows the verb to occur to the left of adverbs (see section 3.2.1 above). Bentzen takes this as evidence for the possibility of V-to-I movement in the absence of rich inflection. Since ReNN is also a V2 language, however, it is impossible to tell whether V_{fin}-Neg orders reflect the erroneous postulation of V-to-I movement or the erroneous postulation of V-to-C movement in contexts that do not allow it.

Recall that for this variety we adopt the view that subject clitics count as agreement markers. This predicts that the acquisition of V-to-Arg movement should go hand in hand with the acquisition of subject clitics. This prediction is indeed confirmed by Verrips and Weissenborn (1992), who show that children acquiring French go through an initial stage in which Neg- V_{fin} orders occur but V_{fin} -Neg orders are not yet attested. Crucially, the absence of V_{fin} -Neg orders at this stage correlates with the absence of subject clitics. Meisel (1990) explicitly shows that the acquisition of subject clitics coincides with the first occurrences of V_{fin} -Neg orders. Lacking from the data—but allowed by any proposal that adopts the weak or no RAH—is a stage in which V_{fin} -Neg orders occur in the absence of subject clitics, which would reflect V-to-Arg movement prior to the acquisition of rich agreement.

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