One law for the rich and another for the poor: The Rich Agreement Hypothesis rehabilitated

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Abstract

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, has since the 1980s functioned as an indication for a tight connection between syntax and morphology. In recent years, the Rich Agreement Hypothesis received a lot of bad press, both on empirical and theoretical grounds. In this article, we demonstrate that all the empirical arguments against this hypothesis are seriously flawed and that it therefore must be rehabilitated in its strongest form. Moreover, we argue that the correlation between syntax and morphology is not direct (morphology does not drive syntax) but results from 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. More concretely, we demonstrate that only if language learners can infer that argumenthood is grammaticalized in their target language are they able to postulate a particular functional projection in the extended *v*P to which the finite verb must move. Finally, we show that this explanation of the Rich Agreement Hypothesis makes correct predictions with respect to language variation, change and acquisition.

Keywords: V-to-I movement, (rich) agreement, syntax-morphology relation, argumenthood, learnability.

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 (henceforth RAH), has since the 1980s been an important argument in favor of a direct connection between syntax and morphology (Kosmeijer 1986; Pollock 1989; Platzack & Holmberg 1989; Holmberg & Platzack 1991, 1995; Roberts 1993; Rohrbacher 1994, Vikner 1995, 1997; Bobaljik 1995; Bobaljik & Thráinsson 1998 and others). In more recent years, 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 and 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 and Garbacz 2010 for Älvdalen Swedish).

Theoretically, under lexicalist approaches (cf. Chomsky 1995), the tight connection between rich agreement and V-to-I movement has been taken as a strong

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argument in favor of the idea that morphology drives syntax (cf. Rohrbacher 1994; Vikner 1995; Koeneman 2000). However, in more current models of grammar, morphological insertion is said to take place after the syntactic computation (cf. 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 (cf. for instance Bentzen et al.2007 for a recent assessment). The other has been to cast doubt on the strength of the generalization by assuming that the RAH only applies in a uni-directional fashion (cf. Thráinsson 1996 Bobaljik & Thráinsson 1998). Generally speaking, examples showing that V-to-I 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, this at least allows one to maintain a weak version of the RAH: if the language has rich agreement, it must have V-to-I movement but no prediction is made for languages without rich agreement (cf. also Rohrbacher 1994; Vikner 1995; Koeneman 2000).

The abandonment of the RAH does no longer presuppose any correlation between morphology and syntax and is thus fully in line with recent ideas on post-syntactic spell-out of morphology. However, as Bobaljik (1995), Thráinsson (1996) and Bobaljik & Thráinsson (1998) have pointed out, the idea that morphological insertion takes place after syntax does not entail that any correlation between morphology and syntax becomes unstatable. For them, rich inflection may motivate 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 form. The reasons for this are twofold.

First, we demonstrate that all the empirical arguments provided hitherto with the aim of showing that the RAH is (at least partially) incorrect are at best incomplete and quite often just wrong. Secondly, we argue with Bobaljik and Thráinsson that morphological richness reflects a rich(er) functional structure. Contrary to Bobaljik and Thráinsson, though, we argue that rich morphology does not merly reflect but also determines functional structure: rich morphology forms 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.

Let us provide our proposal in a nutshell. V-to-I parametrization, 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 constitutes the poorest pronominal systems in the world's known languages (Greenberg's universal 42). In terms of a featural system, all languages in the world show at least the distinctions [±speaker], [±participant] and [±plural] in their pronominal systems (cf. Greenberg 1963, Harley & Ritter 2002, Cysouw 2003). Thus, if a verbal paradigm contains affixes with the same featural distinctions, this can be taken as evidence that these affixes are argumental in nature and base-generated as a separate head. By contrast, if in a verbal paradigm these featural distinctions are not represented, there is no evidence for the language learner 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 such a language in the first place. Therefore, the structural

difference between languages with rich agreement and poor agreement is that only the former but not the latter type have a functional position standardly referred to as I°. 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 reimplementation of it.

This article is set up as follows. In section 2, we provide our definition of richness and the basic foundation of the RAH. In section 3, we discuss the counter-examples to the RAH and conclude that none of the discussed examples show that the RAH in its strong form is wrong. It ends with an evaluation of an alternative definition of richness (by Bobaljik & Thráinsson 1998), which we shows runs into problems. The correlation between rich agreement and verb movement is explained in section 4, as well as the consequences of our proposal for V-to-T movement. Section 5 argues that diachronically the loss of agreement inflection, and the subsequent need for a child to adapt its grammar, does not have one possible outcome (namely the loss of V-to-I movement) but four, each one of which is attested in the sample of languages discussed. In addition, it provides acquisitional evidence for the correctness of the strong RAH. Section 6, finally, concludes and looks ahead.

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 (cf. Roberts 1993, Rohrbacher 1994, Holmberg & Platzack 1995 and Koeneman 2000 for concrete implementations).

In this article we propose a motivation for defining richness in terms of the number of morphological contrasts in a paradigm by directly linking the building blocks of verbal paradigms to the building blocks of pronoun inventories. We start from the observation that even the most minimal pronominal systems in the world have at least forms distinguishing between (i) speaker and non-speaker (ii) participant and non-participant and (iii) plural and non-plural (cf. Greenberg 1963, Harley & Ritter 2002). An example of such a minimal system is Kuman, spoken in Papuan New Guinea (cf. Cysouw 2003):

(1)   Kuman

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

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

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

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[2] Although we use features the [±speaker], [±participant] and [±plural] with binary values to describe pronoun inventories, we are not necessarily committed to exactly these distinctions. For our purposes, what is crucial is that what minimally underlies pronominal systems, also minimally underlies regular verbal paradigms of languages displaying V-to-I movement.

In this article, we propose that this 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 iff agreement involves at least the same featural distinctions as those manifested in the smallest (subject) pronoun inventories universally possible.

Let us provide some examples (the data in this section are mostly from Rohrbacher 1994). According to (3), the Icelandic and Yiddish paradigms, displayed in (4), count as rich, since a proper formal description of these paradigms requires the three featural distinctions that were also necessary to describe the Kuman pronoun inventory, as is shown in (5).

(4)   a.   Icelandic   b.   Yiddish
               inf. *seg-ja* ('to say')   inf. *loyf-n* ('to run')
               SG   PL   SG   PL
        1st   seg-i   seg-jum   1st   loyf-ø   loyf-n
        2nd   seg-ir   seg-ið   2nd   loyf-st   loyf-t
        3rd   seg-ir   seg-ja   3rd   loyf-t   loyf-n

(5)   a.   Icelandic:
               -i   →   [+speaker], [-plural]
               -ir   →   [-speaker], [-plural]
               -jum   →   [+speaker], [+plural]
               -ið   →   [-speaker], [+participant], [+plural]
               -já   →   [-participant], [+plural]

        b.   Yiddish:
               -ø   →   [+speaker], [-plural]
               -st   →   [-speaker], [+participant], [-plural]
               -t   →   [-speaker], [-participant], [-plural]
               -n   →   [+plural][3]
               -t   →   [+plural], [-speaker], [+participant]

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

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[3] Note that in this characterization of the Yiddish paradigm both *–n* and *–t* are competitors for 2nd person plural, whereas only the latter surfaces as 2nd person plural affix. We take this to result from Kiparsky's *elsewhere principle* (Kiparsky 1973), which states that in such cases of competition the most specified item wins. 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].

(6) a. Danish   b. English
         inf. *kast-e* ('to throw')   inf. *sing-ø*
         SG   PL   SG   PL
    1st kast-er   kast-er   1st   sing-ø   sing-ø
    2nd kast-er   kast-er   2nd   sing-ø   sing-ø
    3rd kast-er   kast-er   3rd   sing-s   sing-ø

(7) a. Danish
         -er → [+fin]
     b. English
         -s → [-participant], [-plural]
         -ø → elsewhere.

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

(8) *The Rich Agreement Hypothesis* (preliminary version)
     A language exhibits V-to-I movement iff 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, indicated by the (italicized) V_{fin}'s appearance to the left of
alleged *v*P boundaries marked by (boldfaced) frequency adverbs or negation, as shown
below:[4]

(9) a. Ég spurði hvort Jón *hefði* **ekki** séð myndina   *Icelandic*
         I asked if   John had   not   seen the.movie
         'I asked if John had not seen the movie.'
     b. Ikh veys nit ven di ku *iz* **nit** geshtanen in tsimer   *Yiddish*
         I know not when the cow is often stood   in.the room
         'I do not know when the cow often stood 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 *v*P-boundary adverb leads to an
ungrammatical sentence, as evidenced by (10).

(10) a. *Dette er brevet, som Tove *har* **ikke** læst   *Danish*
         that   is the letter that Tove has not read
         'That is the letter that Tove has not read.'
     b. *I wonder if John *saw* **often** the movie.   *English*

Since the RAH is taken to apply universally, it is expected to even give rise to
syntactic differences between varieties of one and the same language that minimally
differ in terms if richness. This is indeed the case. Take for instance Standard and
Älvdalen Swedish. Whereas the first has a poor paradigm, the second variety still
counts as rich (see (11)). In full accordance with the RAH, Standard Swedish lacks V-

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[4] The examples are all with subordinate clauses in which V-to-I movement cannot be superseded by V-to-C movement in these languages, i.e. embedded questions and relative clauses (cf. Wiklund et al. 2009 and Heycock et al. 2010 for more details).

to-I movement (cf. (12)b, from Julien 2007), but Älvdalen Swedish does not do so, as shown in (12)b.

(11)   a.   Standard Swedish   b.   Älvdalen Swedish
              inf. *bit-a* ('to bite')   inf. *kast-a* ('to throw')
              SG   PL   SG   PL
       1st   bit-er   bit-er   1st   kast-ar   kast-um
       2nd   bit-er   bit-er   2nd   kast-ar   kast-ir
       3rd   bit-er   bit-er   3rd   kast-ar   kast-a

(12)   a.   Min granne   frågade om jag **inte** *ville* komma över *Standard Swedish*
              My neighbor asked   if   I   not would come   over
              'My neighbor asked if I wouldn't come over.'
       b.   Eð ir biln so an *will*   **int** åvå   *Älvdalen Swedish*
              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 at some point trigger the loss of V-to-I movement. This prediction is confirmed by diachronic data. Take, for instance, Old Swedish (cf. Falk 1993) and Middle English (cf. Roberts 1993). Both are richly inflected, since the paradigms in (13) meet the definition in (8). Both also display V-to-I movement, as expected (see (14)).

(13)   a.   Old Swedish   b.   Middle English
              inf. *älsk-a*   inf. *sing-en*
              SG   PL   SG   PL
       1st   älsk-ar   älsk-um   1st   sing-e   sing-en
       2nd   älsk-ar   älsk-in   2nd   sing-est   sing-en
       3rd   älsk-ar   älsk-a   3rd   sing-eð   sing-en

(14)   a.   æn han *sivngær* **ægh** thigianda messu   *Old Swedish, 1290*
              if   he   sings   not silent   mass
       b.   By thy thanks I *set* **not** a straw   *Middle English*

As we have already seen, both languages underwent a process of deflection and now no longer have this verb movement.

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

3 Rehabilitating the RAH: weak isn't strong enough

The correctness of the RAH has been disputed both on empirical and theoretical grounds. Already in Rohrbacher (1994, 1999), it was argued that Colloquial French is inflectionally poor, given that the *-e*, *-es* and *–ent* affixes are phonologically identical.

Nevertheless, Colloquial French displays V-to-I movement (16). The same was argued by Jonas (1995) for Faroese, where optional V-to-I movement is accepted by a percentage of Faroese speakers (see (17)) in spite of its status as poor. Finally, there are Regional Northern Norwegian Dialects (ReNN) that according to Bentzen et al. (2007) have no agreement paradigm, like standard Norwegian, but nevertheless optionally allow V_{fin} to occur to the left of most adverbs (18).

(15) a. Colloquial French[5]   b. Faroese I & II
          inf. *parl-er*   inf. *kast-a*

	SG	PL			SG	PL
1st	parl-e	parl-e		1st	kast-i	kast-a
2nd	parl-es	parl-ez		2nd	kast-ir	kast-a
3rd	parl-e	parl-ent		3rd	kast-ir	kast-a

(16) Jean (ne) *mange* **pas** des pommes.   *French*
      Jean eats not apples

(17) Hetta er brævið, sum Elin <*%hevur*> **ikki** <*hevur*> lisið   *Faroese*
      This is letter-def that Elin (%has)   not (has)   read
      'This is the letter that Elin has not read'.

(18) …ettersom nån studenta <**sannsynligvis**> *leverte*   *ReNN*
      … as   some students probably   handed.in
      <**sannsynligvis**> oppgaven
      probably assignment.the
      '… as some students probably handed in the assignment'

Examples as in (16)-(18) have been taken to indicate that the RAH is wrong in its strongest form. Even though scholars still accepted the correlation between rich inflection and V-to-I movement, it was disputed that poor inflection would block V-to-I movement (cf. for instance Vikner 1995, Koeneman 2000). The version of the RAH that only applies uni-directionally (if a language has rich inflectional morphology it exhibits V-to-I movement) is known as the weak RAH (the older version being renamed the strong RAH).

        However, in a recent article, Bentzen et al. (2007) have argued that even the weak RAH is incorrect. For them, constructions as in (19) show that in certain Icelandic constructions V-to-I movement can be absent. Garbacz (2010) makes a similar claim for Älvdalen Swedish (20). As we saw, both these varieties are richly inflected according to (3).

(19) Mér fannst skrýtið þegar hann **oft** *lék* hróknum   *Icelandic*
      I found   strange when he   often moved rook.the
      'I thought it was strange when he often moved the rook'

(20) a. Eð ir biln   so an **int** *will*   åvå.   *Älvdalen Swedish*
          it is car.def. that he not wants-to have
          'It is the car that he doesn't want to have.'

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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.'

For Bentzen et al. these examples imply that even the weak RAH is still too strong and the RAH should therefore be rejected.

In the same vein, Bailyn (2005) argues that in Russian, a language with rich agreement morphology, no V-to-I movement takes place. The reason for this conclusion is that the finite verb follows manner or frequency adverbs:

(21) a. My **vnimatel'no** *procitali* pravila   *Russian*
          we carefully read rules
          'We have carefully read the rules'
      b. My **často** *čitali* pravila
          We often read rules
          'We read the rules often

If these adverbs are taken to indicate the *v*P boundary, this would suggest that in non-negative clauses the verb remains in situ.

Apart from these empirical arguments against the RAH, which we will critically evaluate and reject in the next subsections, two conceptual problems arise concerning the notion of morphological richness and its effects on syntax. As argued by Bobaljik (2003), proposals that use a definition of richness based on the number of paradigmatic distinctions all seem to entail that morphology drives syntax.

First of all, 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.

Theories that adopt a post-syntactic view on morphology, by contrast, do not require reference to a paradigm: morphology simply picks the form from the available lexicon that most faithfully spells out the features residing in a functional head. For this reason, Bobaljik (1995), Thráinsson (1996) and Bobaljik & Thráinsson (1998), who on empirical grounds adopt the correctness of the weak RAH, argue that an alternative conception of richness is superior, namely one that refers to the co-occurrence of tense and agreement morphology, as it allows for a correlation between syntax and morphology without letting the grammar access paradigmatic information.

In sections 3.1 and 3.2, we first go over the data that are problematic for the RAH, showing that after more careful scrutiny all counterevidence disappears. Then, we will turn to the conceptual arguments in 3.3, showing that, contrary to what previously has been assumed, notions of richness based on inspection of the whole paradigm do not require the grammar to have access to it in the course of the derivation. Consequently, all arguments against the RAH in terms of paradigmatic richness evaporate.

3.1 Arguments against the weak RAH

In this section, we discuss the three counter-examples to the weak version of the RAH that have appeared in the literature on V-to-I movement in turn, and conclude that closer scrutiny dissolves their problematic status.

3.1.1 Icelandic V3 orders
In a recent assessment of the strength of the RAH, Bentzen et al. (2007) have argued that even the weak RAH is too strong, since some languages, albeit optionally and in some particular constructions only, do not exhibit V-to-I movement, even though the paradigms in these languages are rich (see (19)-(20)). In this subsection we provide novel data and arguments that demonstrate that this conclusion is wrong.

The first argument makes use of the marked status of so-called "V3 orders", SU-ADV-V_{finite} in Icelandic and SU-NEG-V_{finite} in Icelandic and Älvdalen Swedish. These orders are only problematic for the RAH if the finite verb stays in situ. Another logical possibility, however, is that the V-to-I diagnostic (the adverb and the negation marker respectively) appears higher than its unmarked position, either by movement or higher base-generation. If so, the data are perfectly compatible with an analysis in which V-to-I takes place, as in (22).

(22)   [SU ADV/NEG [$_{IP}$ V_{finite} [$_{vP}$ $t_{Vfinite}$]]]

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

Hence, there are two competing analyses of the data in (19)-(20), one with optional V-to-I movement and one where V-to-I movement always takes place. Apart from the arguments provided by Angantýsson (2007) and Thráinsson (2009), we argue that the latter analysis is superior for the following two additional reasons.

First, if so-called V3 constructions are analyzed as V_{fin} in situ, then *not* moving anything provides the marked word order and the unmarked word order is derived by moving the verb. This is the reverse of the pattern we usually find with optional movement operation: optionally moving a constituent provides a marked information-structural/pragmatic effect (cf. Biberauer & Richards 2006). Fronting of a constituent to Spec,CP typically turns that constituent into a (contrastive) focus or topic phrase. Scrambling and object shift typically affect constituents that need to be interpreted as topics (see Neeleman & Reinhart 1998 for discussion). If we take the Icelandic sentences to involve marked placement of the adverb, we expect a semantic and/or information-structural effect, and we expect it on the adverb, not on the finite verb. In addition, the fact that the subject must be unstressed and not introduce a new referent follows from the adverb already being in focus.

Second, speakers of Icelandic who accept "V3 orders" also accept examples as in (23) (Ásgrímur Angantýsson, p.c.). 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, the latter must have subsequently moved across the object, countering Bentzen et al.'s claim that the verb is in situ in V3 orders. (cf. Thráinsson 2009 for further argumentation along these lines).

(23)   Mér fannst skrýtið þegar hann oft   lék   hróknum ekki
         I   found strange when he   often moved rook.the   not
         'I thought it was strange when he often didn't move the rook'

Finally, 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 provides the evidence for V-to-I movement. These facts strongly point into the direction of some operation that moves adverbs to a higher position.

3.1.2 High negation in Icelandic and Älvdalen Swedish
Similar V3 effects are found with sentential negation. Some examples are provided for Icelandic in (24) and repeated for Älvdalen Swedish in 0:

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

(25)   a.   Eð ir biln   so an **int** *will*   åvå.   *Älvdalen Swedish*
                 it   is car.def. that he not wants-to have
         b.   Eð ir biln   so an *will*   **int** åvå.
                 it   is car.def. that he wants-to not have

Garbacz (2010) concludes from the contrast in 0 that Älvdalen Swedish optionally allows the verb to remain in situ, despite being richly inflected. 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 (25)b than in (25)a.

        Evidence for this comes from the fact that negation in this language can be optionally base-generated in an even higher position, preceding the subject. This is shown in (26).

(26)   Eð ir biln   so **int** an *will*   åvå.
         it is car.def. that not he wants-to have

Since it has to be independently assumed that negation can be inserted in a higher position in the first place, it is predicted that negation may appear in intermediate positions too. In fact, it would even require additional assumptions to rule out this possibility. Consequently, there is no empirical argument in favour of optional V-to-I movement in Älvdalen Swedish.

        Negation can thus be generated in at least three positions in Älvdalen Swedish, and only if it occurs in the lowest position, adjoined to *v*P, does it functions as a diagnostic marker for V-to-I movement.

(27)   (**NEG**)   SU   (**NEG**)   V+I   (**NEG**)   V

Note that in order to function as a sentential negation the negation marker cannot be generated in lower positions than in its position adjoined to *v*P (cf. Aquaviva 1997, Zeijlstra 2004, Penka 2010). Therefore, the possibility of having V_{finite}-NEG orders in

Älvdalen Swedish at all, as opposed to Standard Swedish, forms the crucial contrast showing that the former but not the latter variety displays V-to-I movement.

3.1.3 Russian
Another argument that has been presented against the weak RAH comes from Russian (as well as other Slavonic languages) that - despite being rich - normally spells out finite verbs to the right of manner or frequency adverbs, and that would therefore form an argument against movement of V_{fin} out of vP (28) (cf. Schoorlemmer 1995, Bailyn 1995, 2005).[6]

(28)   a.   My bistro   pročitali pravila   *Russian*
            We quickly read   rules
            'We quickly read the rules'
       b.   My často čitali pravila
            We often read rules
            'We read the rules often

As Dyakonova (2009) has pointed out, however, the idea that finite verbs do not undergo raising out of vP is irreconcilable with another fact about Russian, namely that Russian finite verbs can be prefixed by particular cumulative and repetitive aspectual morphology:

(29)   bit   na-bit   po-na-bit
       'to break'   'to break a lot of something'   'to break a lot of
                                                              something, one by one'

Since such aspectual morphemes quantify over event variables, and therefore must take the entire vP as their semantic complement, such aspectual morphemes must be base-generated in some functional projections higher than vP.[7] Yet, at the same time, such vP-external aspect morphemes, prefixed on the finite verb, must appear to the right of adverbs such as *bistro* ('quickly'), as shown in (30).

(30)   On   <bistro> po- na-   vy- dum- yva- 1 $^{??/*}$bistro>
       He.NOM quickly ASP$_{rep}$-ASP$_{cum}$-out-think-2IMPF-PST.MASC quickly
       vsjakih nebylic[8]
       various tales.GEN
       'He quickly thought out a lot of various tales at multiple times.'

For this reason, Dyakonova (2009), basing herself on Svenonius (2004), argues that Russian adverbs are base-generated in a position higher than vP and Asp$_{cum/rep}$P. This

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[6] We would like to thank Vadim Kimmelman and Mark Schmalz for discussing and providing the Russian data.
[7] One might alternatively argue that the aspectual morphology resides somewhere in vP and undergoes an Agree relation with some aspectual operator in a vP-external position. However, such an analysis cannot be right as this would require evidence for language learners that the aspectual morphemes themselves lack semantic content and such evidence is lacking. As far as we know, no Russian data form a cue for the uninterpretability of such aspectual morphology.
[8] In this example, the adverb *často* ('often') cannot be included at either position, since *často* requires imperfective aspect and the finite verb prefixed by *po-* or *na-* can only have perfective morphology (Kimmelman p.c.).

suggests the following template for Russian word order, in which adverbs cannot be adjoined to vP.

(31)   Adv > Asp$_{cum/rep}$P > *Adv > vP

Hence, the ungrammaticality of the V$_{finite}$-Adv order follows from V$_{finite}$ being in Asp$_{cum/rep}$° together with a ban on adverbial adjunction to vP. Now, as (32) shows, the position of V$_{finite}$ with respect to the adverb does not alter if no aspectual morphology appears in the clause.

(32)   On   <bistro> vy- dum- yva- 1   <$^{??/*}$ bistro>
        He.NOM quickly   out-think-2IMPF-PST.MASC quickly
        vsjakie nebylicy
        various tales.ACC
        'He quickly thought out various tales.'

Under the assumption that Asp$_{cum}$P/Asp$_{rep}$P are absent from the structure when these aspects are not morphologically encoded (much like NegP is absent in a positive clause), the Russian clausal spine must contain an additional functional projection, XP, to which adverbs can be adjoined whenever Asp$_{cum}$P/Asp$_{rep}$P are absent (compare (33) to (31)). If XP did not exist, then adverbs would have to be adjoined to vP when the aspect phrases are absent. This, we know from (30), is not an option in Russian.

(33)   Adv > XP > *Adv > vP

The null hypothesis, in full compliance with the RAH, therefore is that this XP is IP and that Russian finite verbs thus undergo V-to-I movement after all:
        Additional evidence for this analysis comes from the location of adverbs in 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 Neg° in the clausal spine, whereas the Scandinavian negative adverbs do not do so; Scandinavian negative adverbs are (at least) adjoined to vP (cf. Zeijlstra 2004 for extensive discussion). Since sentential negation must outscope the entire vP, the template of Russian negative clauses must contain at least NegP > vP. Now, suppose that adverbs could adjoin to vP. Then the unmarked order of a negative clause with an adverb 'often' would be (34), but this example is at best very marginal, showing again that adverbs cannot adjoin to vP. The only possible order to include an adverb in a sentence where the negative marker left-attaches to the finite verb is either (35)a or (35)b (ignoring possible subject fronting).

(34) $^{??/*}$Ty ne   pročitala často pravila
        You NEG read   often rules
        'You haven't read the rules carefully'

(35)   a.   Často ty ne   čitala pravila
              Often you NEG read   rules
              'You often haven't read the rules '
        b.   Ty ne   čitala pravila často
              You NEG read rules   often
              'You haven't read the rules often '

As expected under the hypothesis that adverbs cannot be adjoined to *v*P, the adverbs must be base-generated in a position higher than the negative verb (35)a, which yields the scopal order *often > negation*. In order to reverse the scopal order to yield the more salient reading *negation > often*, the adverb must be extraposed, as in (35)b.

To conclude, the syntax of Russian adverb placement and aspectual morpho-syntax shows that in Russian adverbs must be adjoined to some higher *v*P-external functional projection. This blurs all the previously raised evidence against the validity of the RAH from Russian. By contrast, all the Russian data appear to speak in favor of the RAH. The only way to refute the validity of the RAH for Russian is by proving that XP cannot be IP.

3.1.4 Concluding remarks

In section 3.1, we have reviewed the existing arguments against the weak version of the RAH. The data from Icelandic and Älvdalen Swedish displaying so-called V3 orders (i.e. orders in which V_{fin} follows the element taken to indicate the left edge of the *v*P) have been taken to show that V-to-I is not obligatory. We have shown, however, that Icelandic is only a counter-example if 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. In the alternative analysis, V-to-I is obligatory and the marked reading a direct consequence of fronting the adverb. Hence, the verb is not exceptionally low but rather the classical V-to-I diagnostic markers exceptionally high. For Älvdalen Swedish, this claim is independently supported for sentential negation by the fact that this element can even precede the subject. Since negative adverbs can be (exceptionally) base-generated in a higher position, neither variety poses any counterevidence to the (weak) RAH, but in fact strong support for it. For Russian, it was shown that V_{fin} appears in a *v*P-external position and still follows frequency and manner adverbs, indicating that these elements cannot be adjoined to *v*P. This leads to an analysis of Russian that is fully compatible with the RAH.

Since, the major pieces of counterevidence presented in the literature against the weak RAH prove to be incorrect, it can be safely concluded that at least the weak RAH still stands strong. In the next section, we show that such a weak RAH is not strong enough and that the arguments against the strong version do not hold up. The consequence is that the RAH must be reinstalled in its strong form.

3.2 Arguments against the strong RAH

In the previous two sections, we have discussed varieties that despite exhibiting a rich agreement paradigm appear not to raise the verb to I°. We have concluded that in these cases verbal movement actually does take place but can be invisible due to higher placement or movement of the relevant diagnostics. In this section, we investigate the opposite pattern displayed by poor agreement varieties in which the verb seems to nevertheless move to I°. We will show that these varieties either do not display V-to-I movement or have been misanalysed as being inflectionally poor.

First, we discuss and falsify some arguments provided by Bentzen et al.(2007) for Regional Northern Norwegian (ReNN) and Jonas (1995) for Faroese, who claim that these languages at least optionally display V-to-I movement. Second, we discuss Colloquial French, a poor variety according to the definition in (3) that shows all the

characteristics of V-to-I movement, and conclude, with Rohrbacher (1994), that it nevertheless counts as a language with rich agreement under the definition in (3).

3.2.1 Regional Northern Norwegian

As discussed in section 2 and repeated below, ReNN is a variety that despite its poor verbal inflectional paradigm allows the finite verb to appear to the left of sentential adverbs (data from Bentzen et al. 2007: 208):

(36)   …ettersom nån   studenta {**sannsynligvis**} *leverte*   {**sannsynligvis**}
        … as   some students   probably   handed.in probably
        oppgaven
        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 may take place optionally. In cases where the finite verb precedes adverbs , they assume that the verb has moved out of *v*P.

Two aspects seriously undermine this analysis. First, in all other known cases of V-to-I movement, this movement always takes place obligatorily. Hence in order to account for the ReNN cases a different type of V-to-I movement is now introduced. Hence, ReNN can be taken as a counter-example to the correlation between V-to-I movement and rich agreement morphology, but only if we also change the nature of the movement from obligatory to optional. Second, and even more importantly, the finite verb cannot cross negation, as shown by the following examples (from Bentzen et al.), again in contrast with other known V-to-I movement varieties.[9]

(37)   … ettersom nån 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'

In order to account for this fact, Bentzen et al. propose that the following clausal template underlies ReNN, where negation is externally merged above AgrP:

(38)   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.[10] First, in clauses containing a high adverb, such as 'probably', the negation obligatorily follows such an adverb. In fact, sentential negation can even follow low adverbs like 'often' (Kristine Bentzen, p.c.):

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[9] The same pattern (verb movement across sentential adverbs but not across sentential negation) is found in Kronoby Swedish (cf. Benzen, to appear), another language variety that has functioned as a counter-example to the RAH in the literature (cf. Platzack & Holmberg 1989).

[10] Note that an alternative analysis where the ban on verbal movement across the negative marker follows as a result of 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).

(39) 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 (38). 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 characteristics of negation in Germanic, where sentential negation may always take scope from a position at least as low as *v*P (i.e. in a *v*P adjunct position). These characteristics of Germanic are fully in line with the idea that in order to express sentential negation, the negative marker should be able to at least outscope *v*P (cf. Acquaviva 1997, Zeijlstra 20004, Penka 2010). (Recall that also in Icelandic and Älvdalen Swedish negation can appear in a high position, but the low *v*P-adjoined position is always available as well.)

The question now rises as to how the orderings in (36)-(37) should be accounted for. Given the fact that the finite verb may never appear to the left of the negative marker, whilst expressing sentential negation, any account of ReNN that posits the finite verb in a *v*P-external position is untenable. We conclude, therefore, that adverbs can be base-generated in a *v*P-internal position and be adjoined to VP, with the exception of the negative marker *ikke*, which in order to induce sentential negation must be based in a *v*P-external position. Thus, the underlying structure of (36) is as follows:

(40) [ettersom nån studenta$_i$ <**sannsynligvis**> [$_{vP}$ t$_i$ *leverte* [$_{VP}$ <**sannsynligvis**> [VP]]]

The contrast between (36) and (37) now follows. Since the negative marker cannot induce semantic negation from a *v*P-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.[11] One may wonder how a sentential adverb like 'probably', which outscopes *v*P, can be base-generated within *v*P. The answer is that this adverb, being a quantifier over possible worlds, can always undergo (covert) QR. This is in contrast to negation, which is not quantificational in nature (cf. Penka 2010 for argumentation) and therefore must always be interpreted in its base position.

Strong additional evidence for this analysis comes from the interpretation of indefinite subjects. As Bentzen et al. observe, whenever the finite verb appears to the left of adverbs such as *sannsynligvis* 'probably', the subject always receives a specific interpretation (41). By contrast, when the adverb precedes the finite verb, the subject is ambiguous between a specific and a non-specific reading (41).

(41) …ettersom nån studenta levere sannsynligvis opgaven
 as some studentes hand.in probably assignment.the
 i. '…as some specific students probably hand in the assignment.'
 ii. *'…as some students or other probably hand in the assignment

---

[11] This predicts that even infinitives in ReNN can precede *sannsynligvis* 'probably' but not negation. This is indeed the case (cf. Bentzen et al. 2007).

(42) …ettersom nån   studenta sannsynligvis levere   opgaven
        as   some studentes probably   hand.in assignment.the
    i.   '…as some specific students probably hand in the assignment.'
    ii. '…as some students or other probably hand in the assignment.'

How do the different interpretations in (41) and (42) follow? We assume along the lines of Diesing (1992) that the non-specific 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 non-specific interpretation, whereas subjects that remain at a high LF position give rise to specific interpretations only. Therefore, the interpretation of the sentence in (42), where the adverb precedes the finite verb, is ambiguous because the subject can reconstruct to a position under the modal adverb. However, we argued that in (41) 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 must take wide–scope with respect to this adverb, resulting in the subject receiving a specific interpretation only. The absence of the non-specific reading of indefinite subjects in ReNN constructions like (42) thus naturally follows from the lower adverb placement.

In Bentzen et al.'s analysis the specific reading follows from an interaction of the indefinite subject and the finite verb. They argue that an indefinite subject gets a non-specific interpretation in spec,TP and a specific interpretation in spec,TopP. In a construction with adverb-V ordering, the subject moves to spec,TP to check the EPP-feature, obtains a non-specific interpretation and moves on to spec,AgrP, crossing *sannsynligvis*. In a construction with V-adverb ordering, a remnant vP containing only the finite verb 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 therefore cannot obtain a non-specific interpretation. It moves instead to spec,TopP, where it receives a specific interpretation. These two derivations are illustrated below.

(43) a.   [$_{TopP}$ [$_{AgrP}$ subject$_i$ [$_{TP}$ sannsynligvis [$_{TP}$ t$_i$ [$_{vP}$ leverte]]]]
      b.   [$_{TopP}$ subject   [$_{AgrP}$ [$_{vP}$ leverte]$_i$ Agr°[$_{TP}$ sannsynligvis [$_{TP}$ t$_i$ [T° t$_i$]]

The principal difference between Bentzen et al.'s and our analysis is the following. In our analysis, the specific interpretation for the indefinite subject in the V-adverb order follows directly from the interaction of 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 counter-example to the strong RAH, a very 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, one can now formulate a rather straightforward and strong generalization over the Germanic data, including ReNN: If a variety has a rich agreement paradigm, the finite verb is able to cross the negative adverb that induces sentential negation. This was true for all the counter-examples; 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', as also appeared to be the case for Russian. Applying this more reliable diagnostic, it can be safely concluded that the strong version of the RAH makes all the right predictions for the varieties discussed above.

3.2.2 Faroese

For Faroese, it was claimed by Jonas (1995) that at least some varieties allow the verb to precede sentential adverbs as well as negation and that such varieties should be considered as having optional V-to-I movement. This is shown in (44):

(44) Taþ var ovæntaþ   at   dreingirnir $<^{\%}voru>$ **als   ikki** $<voru>$ ósamdir
      it   was unexpected that boys-the   (were) at-all not   were disagreed
      'It was unexpected that the boys did not disagree at all.'

Since all Faroese varieties have a verbal agreement paradigm that qualifies as poor, this would form a counter-example against the strong version of the RAH.

Heycock et al. (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-adverb and V-negation orders, these are indicative of V-to-C movement rather than V-to-I movement. They observe that verb second takes place in embedded clauses much more freely than in the Mainland Scandinavian varieties and that it resembles Icelandic in allowing V2 in complements of non-bridge verbs like *doubt*, *deny* and *be proud*. Like for Icelandic, there are contexts in which verb second is ungrammatical, namely in indirect questions. It is precisely in these contexts that V-negation orders are judged to be ungrammatical too, and rejected as much as Danish speakers do. Hence, when no embedded V2 can take place, no verb movement across negation is possible at all. They 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 one of ReNN.

Heycock et al. therefore conclude that there is no evidence for V-to-I movement in any variety 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 both varieties have poor agreement inflection, we expect neither variety to have V-to-I movement. Whereas one variety of Faroese used to be a counter-example to the strong version of the RAH, it now in fact turns out to behave exactly as expected.

3.2.3 French

A well-known potential counter-example against the RAH concerns Colloquial French. The verbal agreement paradigm in this variety, as opposed to the one in Standard French, counts as poor according to the definition in (3), as already discussed at the start of section 3. Yet, every variety of French exhibits V-to-I agreement, as V_{fin} obligatorily precedes the negative adverbial *pas*.

(45) Jean n'   aime pas Marie
      Jean neg.cl. loves neg Marie

However, note that nothing in our definition in (3) requires that it is the verbal paradigm that must be rich. French only counts as a poor agreement language if it never exhibits rich inflectional subject agreement. However, this is very unlikely to be

the case. As is shown in (46), French allows subject clitics to pop up in a sentence that already contains an overt (pronominal or non-pronominal) subject.

(46) 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, John   he is left
          'Yesterday, John/he left'

Although, traditionally, the examples in (46) have been analyzed as cases of clitic-left-dislocation, a growing number of scholars have shown that such subject clitics rather function as agreement markers, which appear to the left of the finite verb (Muller 1984; Roberge 1986; Hulk 1986; Auger 1992; Zribi-Hertz 1993; De Wind 1995; Ferdinand 1996 Legendre et al. 2004 and others).

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.

In this section, we demonstrate that several independently observed facts show that Rohrbacher's original conjecture is correct and that therefore all varieties of French count as rich in terms of (3). These facts involve the frequency of subject doubling constructions, the prosody of subject doubling constructions and the distribution of subject doubling constructions. These arguments will be evaluated below.

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 estimation (Sankoff 1982) subject doubling occurs in 80% of the sentences. 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, whereas such constituents are generally excluded from clitic-left dislocation constructions (as illustrated below for English).

(47) a. Personne i(l)   m'   aime (Zribi-Hertz 1993)
          Nobody he.3sg me-cl. loves
          'Nobody loves me'
      b. *Nobody/someone, he 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 & Waugh (2002) find that the clitic appears every time the finite

verb is repeated in coordination (48)a or after a false start (48)b from Fonseca-Greber & Waugh), showing their obligatory presence.[12]

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

Such obligatoriness of markers is a general diagnostic for subject agreement. Subject clitic-left dislocation, by contrast, is optional. [13]

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

Sixth, Coveney (2002) and De Cat (2007b) find that examples of clitic-verb inversion are vanishingly rare (cf. Culbertson 2010 for a summary of several corpus studies), confirming that clitics are not independent syntactic constituents anymore.

Given this huge body of evidence, one cannot but conclude that subject clitics function as agreement markers in colloquial versions of French. This entails that French is a rich agreement language. It therefore should not come as a surprise that this language has V-to-I movement. If that is correct, the examples in (46) actually display agreement between the real subject and the additional agreement marker. The interpretable phi-features on the real subject agree with a matching uninterpretable feature on the agreement marker, as is illustrated for (46)a below:

(49)   Moi   je   viens
        [i1SG] [u1SG]
            └_____┘

Note that, if this analysis is indeed correct, it has one serious consequence: examples where only a pronominal doubler is used, such as the ones in (50), show that French must count as a *pro-drop* language, as the agreement markers does not necessarily agree with an overtly realized subject, again a property normally attributed to rich agreement languages.

(50)   a.   Pro je viens
             I come
             'I'm coming'

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[12] Cournane (2010) confirms that this property not only holds for Colloquial European French, but also applies to a number of different varieties of Quebec French, Pied Noir French and North Italian dialects.

[13] It is important to realize that the agreement status of clitics does not necessarily entail that the agreement marker is obligatory in all contexts. Cournane (2010) observes that, whereas subject doubling and repetition in coordination structures is a property 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 not only spells out phi-features but also definiteness, thereby inheriting a property of the previous clitic-left-dislocation stage. This makes doubling of bare quantifiers, indefinite and WH-DPs impossible.

b. Pro tu viens
you come
'You're coming'

c. Pro il est parti[14]
Yesterday, John he is left
'Yesterday he left'

Another variety amenable to the same analysis is Brazilian Portuguese (BP).[15]As noted by e.g. Rohrbacher (1994), this variety has an agreement paradigm that qualifies as poor when compared to European Portuguese (EP):

(51) a. European Portuguese   b. Brazilian Portuguese
          Inf. compr-ar 'to sell'   Inf. fal-ar 'to speak'

	SG	PL		SG	PL
1st	compr-o	compr-amos	1st	fal-o	fal-a
2nd	compr-as	compr-am	2nd	fal-a	fal-am
3rd	compr-a	compr-am	3rd	fal-a	fal-am

As can be established, two features suffice to capture the distinctions in the BP paradigm ([±speaker] and [±plural]), so that it 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 Brazilian Portuguese has lost V-to-I movement.[16] Galves (1994) and Costa (1996), however, show that in EP and BP alike V_{fin} is able to precede or follow the same adverbs:[17]

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[14] Whereas *je*, *tu*, *on* and *vous* occur in a position preceding a finite in 100% of the cases, according to Fonseca-Greber & Waugh (2002), the percentages for 3rd singular and plural person pronouns are 91.5% and 93.6%, respectively. This means that the latter pronouns sometimes remain absent. For the purposes of our analysis, this is irrelevant. Our definition of richness hinges on the presence of morphological person and number contrasts, where a morphological null form can provide evidence for a particular feature as much as an overt form can.

[15] Since the Romance languages are in general richly inflected, we expect V-to-I movement to take place. As far as we know, this claim is completely uncontroversial. See for details Pollock (1989) for French, Belletti (1990) for Italian, Suñer (1994) and Zagona (2002) for Spanish and Ambar (1992) and Costa (2004) for European Portuguese, among many others. Like in Russian, negation is a syntactic head in Romance, cliticizing to the head and therefore never crossed by V_{fin}. Note, however, that for the negation head to cliticize to V_{fin}, the latter must first cross the former. Since V_{fin} appears to the left of the same diagnostics in positive and negative clauses (lower adverbs and floating quantifiers), we conclude that V_{fin} always moves out of the *v*P.

[16] There are two contrasts between EP and BP that initially seem to support this view: (i) BP lacks VSO orders, which EP allows, and (ii) EP has enclitics where BP has proclitics. Under the assumption that in EP V_{fin} crosses vP-internal subjects and vP-external clitics, the facts in BP follow under the assumption that V_{fin} stays within vP. However, neither of these diagnostics turns out to be very telling. Mexican Spanish, for instance, does not allow VSO orders, although it has rich inflection and agreement-related verb movement (cf. Gutierrez-Bravo 2005), showing that the loss of VSO can be an unrelated development. Second, as spoken French already shows, V-to-I movement can co-occur with proclisis, showing that there is no strong correlation between verb movement and enclisis to begin with. In fact, EP also has proclitis, namely in embedded clauses (cf. Rouveret 1989), which under the hypothesized proposal would entail that EP only has V-to-I movement in main but not in embedded clauses.

[17] Some variation seems to exist with *sempre* 'always'. Sonia Cyrino (p.c.) only accepts the Adv-V_{fin} order in BP, whereas Rafael Nonato (p.c.) accepts both Adv-V_{fin} and V_{fin}-Adv.

(52) a.   O João <frequentemente> beija <frequentemente> a Maria. (EP/BP)
               the João (often)   kisses (often)   Maria
               'Joao often kisses Maria.'

      b.   As crianças <todas> beijam <todas> a Maria.
               the children (all)   kiss   (all)   Maria

Costa & Galves (2000) argue that in both varieties the verb undergoes short 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 non-obligatory adjacency between subject and V_{fin}.

      Hence, both EP and BP have verb movement out of vP, it seems. On the basis of the paradigms in (51), 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 (53) and in an embedded context (53), making the lexical DP unlike left-dislocated topics:

(53) a.   O Edmilson, ele está?   (BP/*EP)
               Edmilson   he is?
               'Is Edmilson there?'

      b.   Eu acho que o   povo   brasileiro$_i$ ele$_i$ tem uma grave doença.   (BP/*EP)
               I   think that the people brazilian he has troubles
               'I think that the Brazilian population has troubles.'

It will be clear that these observations are very reminiscent of spoken French. We therefore tentatively conclude, pending the kind of research that was executed on spoken French, that BP is moving into 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 An alternative definition of richness?

So far, we have established that richness of agreement inflection and V-to-I movement indeed strongly correlate. In addition, we have shown that notorious counter-examples to both the strong and weak version of the RAH disappear under closer scrutiny of the data. What we have not done yet is show that our particular definition of richness makes the correct predictions, as opposed to other definitions of richness. This is important given the existence of another prominent definition in the literature, proposed in Bobaljik (1995), Bobaljik & Jonas (1996), Thráinsson (1996), Vikner (1997) Bobaljik & Thráinsson (1998) and Bobaljik (2003). We take Bobaljik & Thráinsson (1998) as the canonical example of this approach.

      The central idea behind the alternative hypothesis is that it is problematic to correlate richness in paradigmatic terms with the application of syntactic operations, as it requires the syntactic derivation to have access to paradigmatic knowledge. For this reason, Bobaljik & Thráinsson argue that the only possible way to derive the correlation between richness and verb movement is by alluding to a non-paradigmatic, i.e. syntagmatic definition of richness. They argue that richness should be defined as the co-occurrence of different tense and agreement affixes on a single verb stem. Icelandic counts as rich, given the present and past tense paradigms given below, in contrast to English .

(54) a.   Icelandic   b.   English
          Inf. *kasta* 'to throw'   inf. *tremble*

	Present	past	Present	past
1st SG	kasta	kasta-ð-i	tremble	tremble-d
2nd SG	kasta-r	kasta-ð-ir	tremble	tremble-d
3rd SG	kasta-r	kasta-ð-i	tremble-s	tremble-d
1st PL	köst-um	köstu-ðu-m	tremble	tremble-d
2nd PL	kast-ið	köstu-ðu-ð	tremble	tremble-d
3rd PL	kast-a	köstu-ðu	tremble	tremble-d

The Icelandic 2nd person singular in the present and past tense (*kastar* and *kastaðir* respectively), shows that different tense and agreement markers can be distinguished for this inflected verb: *kasta-ð-ir*. This is in contrast to e.g. English, where we observe in the 3rd person singular (*tremble-s* and *tremble-ed*) that the agreement affix –*s* does not occur in the past tense (**tremble-(e)d-s*), showing that English lacks separate tense and agreement affixes. The co-occurrence of overt tense and agreement morphology is indicative of a richer functional domain, Bobaljik & Thráinsson 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 co-occur in English then follows from the restriction that a terminal head can only be spelled out as a single morpheme. The difference between Icelandic and English for them looks as follows:

(55)   a.   AgrP   b.   IP

2nd plural: -*m*   -*ðu*   *kasta-*   -*ed*   *tremble*
                                                 *-*eds*
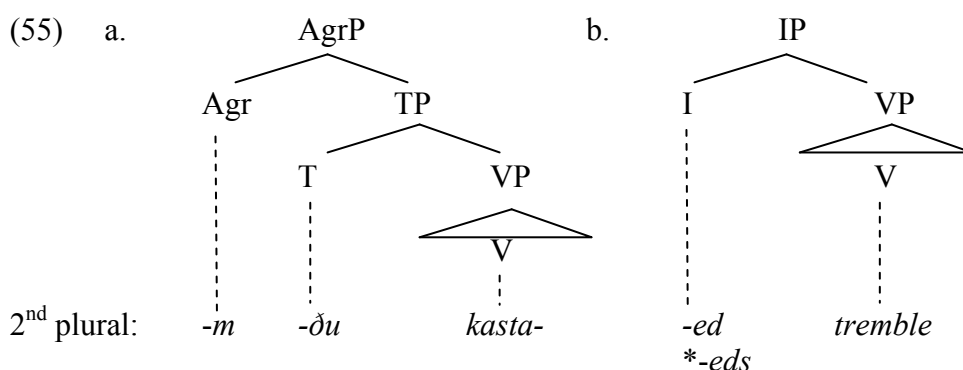
According to Bobaljik & Thráinsson, in (55)a, the agreement features in Agr° are not local enough to stand in an Agree relation with V°, due to the intervention of the T°-projection. In order to establish a checking relation between the agreement features in Agr° and those of V°, the verb therefore has to move up to at least T°. 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 Agr°.

     One important property of their analysis is that, although (55)b can only occur in languages in which no tense and agreement morphology co-occur, nothing excludes a language with the structure in (55)a but poor morphology: nothing forces a head to be spelled out. One of the central motivations that prompted 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 not the other way round.

     However, at least four problems arise. First, as discussed in 3.2, the RAH turns out to be correct in its strongest, bi-directional form. This means that Bobaljik &

Thráinsson's analysis offers a solution to a problem that does not exist: if there are no languages with poor agreement and V-to-I movement, their proposal suddenly overgenerates, since it allows for a possibility that must now be excluded. Related to this, they predict the possibility of an acquisition stage in which verb movement to the relevant functional head is acquired before the inflection associated with that head is acquired. We will discuss this point in more detail in section 5.4.

Second, Faroese constitutes a counter-example, as noted by Alexiadou & Fanselow (2000), as it has rich agreement under this definition but, as we saw, no V-to-I movement (recall that the movement occurring in one variety of Faroese is V-to-C movement rather than V-to-I movement).

(56)	a.	Faroese (present tense)		b.	Faroese (past tense)	
		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 as in (55)a 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. However, allowing this solution renders the theory unfalsifiable, as by the same logic the Icelandic paradigm can be considered poor as well. In his analysis of Faroese, *–ð* is not a separate morpheme, so the fact that /ð/ occurs in both the singular and plural part of the past tense paradigm is not captured by the analysis and 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 criterion for Bobaljik & Thráinsson to distinguish the Icelandic and Faroese paradigm in terms of richness is to capture 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 Bobaljik & Thráinsson's analysis is that AGREE may not take place across intervening heads. Therefore, agreement can take place between I and V in (55)b but not between Agr and V in (55)a. However, it is unclear how such locality constraints on agreement can be implemented in any of the current versions of AGREE (cf. Chomsky 1995, 2000, 2001; Pesetsky & Torrego 2004, 2007; Boskovic 2007, a.o.), where AGREE can be applied across intervening (non-phase) heads.

To conclude, Bobaljik & Thráinsson's analysis faces several serious problems, both empirical and theoretical, that do not arise in our own proposal. Moreover, although we accept that 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, as we will show in the next section.

4 Explaining the RAH

As has been established in the sections above, verbal 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 subject pronouns. The exact landing site of the verb is defined as a position that is at least *v*P-external, diagnosed by verb raising across the position marked by those adverbs that may adjoin to *v*P but may not adjoin to a lower position, such as negative adverbs in the Germanic languages.

(57)

```
              XP
             /  \
           X°    vP
          /     /  \
     AdvNeg    vP
             /    \
           DP      v'
                  /  \
                 v    VP
                     /  \
                    V    DP
```
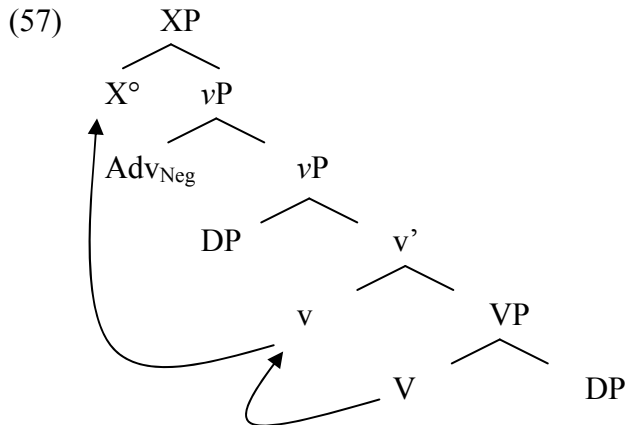
This leads to the following three questions: (i) what is the nature of the position X° to which the verb moves; (ii) why is it the case that richly inflected verbs must move to this position X°; and (iii) why can it only move to this position X° if its grammar exhibits rich agreement.

Let's start with the first question. The features that constitute verbal agreement are [±speaker], [±participant] and [±plural] (or any other set of features that formally encode the attested morphological contrasts). This entails that the content of X° must be directly derivable from these features. Since these features are identical to the features that minimally constitute pronouns, we propose that X° syntactically encodes argumenthood: $X = Arg^o$.

The idea that XP is a position where [argument] features are projected may at first glance look similar to the Agr$_S$P (as in Chomsky 1995), but differs from it in at least once crucial respect. The main motivation for postulating an Agr$_S$P was that it is the place where subject morphology appears to be hosted in the tree. However, the question as to why the clausal spine should contain such an Agr$_S$P remained unanswered. For argumenthood, though, it is in full compliance with the idea that for semantic reasons *v* and its complement must merge with another argument. Such an argument could either be placed and hosted in Spec,vP or be merged inside a designated position of its own: ArgP (ignoring the question whether such arguments should always be merged in Spec,*v*P). In this sense, ArgP, or to be more precise, the presence of [argument] features, is nothing but the grammaticalization of the semantic notion of argumenthood. ArgP shares with all other known functional projections in the middle field (TP, IP, AspP) that they host elements that semantically apply to *v*P or higher.

Note that the conjecture that the features underlying rich subject morphology originate in ArgP has two consequences.

First, the fact that Arg° is a position associated with the notion of subjecthood

does not have to follow from its feature specification but from the position of Arg° in the clause. Since Arg° will function as a probe looking for a goal in its complement, its association with subjecthood follows from the fact that Arg° always targets the highest argument in *v*P (an agent in a transitive structure and a theme in an unacccusative construction, etcetera).[18]

(58)   a.   [$_{ArgP}$ DP$_{1[iARG]}$ Arg°$_{[uARG]}$ [$_{vP}$ ~~DP$_{1[iARG]}$~~ *v*° [$_{VP}$ DP$_2$]]]   transitives

        b.   [$_{ArgP}$ DP$_{[iARG]}$ Arg°$_{[uARG]}$ [$_{vP}$ *v*° [$_{VP}$ ~~DP$_{[iARG]}$~~]]]   unaccusatives

There are in principle two options for generating Arg°: as a sister to VP and as a sister to *v*P. Note that if the first option is chosen the closest argument that Arg° can probe is some internal argument. This would derive object agreement, which for the languages under discussion is the wrong result. The only option left is therefore to generate Arg° as a sister to *v*P.

      Second, since all functional projections that may appear in the clausal spine are elements with semantic functions that takes *v*P or some extended projection of it as their complement, it also follows that poor subject morphology cannot originate in a *v*P-external position. Take for instance English, which exhibits only [number] and [participant] features. Since neither NumP or ParticipantP could functionally apply to *v*P or any higher projection, such projections may never become extended projections of *v*P. Consequently, only rich subject morphology may originate in a *v*P-external position and poor morphology, whose underlying features must be part of *v*, have to be spelled out directly on the finite verb and cannot trigger any subsequent movement.

      Let us now turn to the second question: why does Arg° 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) or any reimplementations of it (cf. Rohrbacher 1994, 1999). Since at least in those languages we have looked at the values of Arg° are spelled out by an affix, or any other agreement marker that needs to attach to the verb (see Colloquial French), Arg° needs to end up in an adjacency relation with the verb. Since syntactic affix lowering is not allowed by any current theory of movement (movement must always be upwards), the only way to do so, is by attracting the verb to Arg°. Note that in order to circumvent a look-ahead problem, it must be encoded in the syntax that the verb must move before the affix is inserted. Consequently, Arg° must carry a verbal feature that needs to be checked off by the raised verb.[19]

      This leaves us to the final question: why can't verbs move to a position Arg° in absence of rich agreement? The most straightforward answer would be: Arg° can only exist in languages with rich agreement. This entails that rich agreement is the only possible and necessary cue for the acquisition of an Arg°. In order to see this, let us first take as a starting point the assumption that in order to acquire Arg° the corresponding feature [argument] must be acquired. So the question is: how can such a feature be acquired?

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[18] Assuming a separate functional head above *v*P where agreement features get spelled out is of course a prima facie very similar to the more traditional AgrSP. However, whereas the latter is only empirically motivated (AgrP appears to be the syntactic locus of subject verb morphology), ArgP by contrast captures the similarity of the features that make up pronouns and agreement affixes in the most direct way. The only difference is that one bundle of features will be interpreted at LF, whereas the other will not be, a distinction we will return to.

[19] A prediction that this analysis makes is that if the morpho-phonological realization of Arg in some language is by some phonologically independent element, verb movement is no longer required or triggered (a point brought up by Jeff Parrott, p.c.).

In order to answer this question, we follow Zeijlstra (2008), who argues that grammatical doubling is what drives the acquisition of formal features. Formally, he puts it as in (59):

(59)   *Flexible Formal Feature Hypothesis* (FFFH, Zeijlstra 2008):
   a.   If and only if there are doubling effects with respect to a semantic operator OP_F in the language input, all features of F are 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 are semantic features.

According to this FFFH, in English, the only *formal* phi-features present in the English grammar would be [±participant] and [±plural], since these features give rise to doubling effects (e.g. the 3rd person singular marker -*s* establishes an agreement relation between its [-participant] and [-plural] features and those present on the subject). [±speaker] or [±feminine] are features that also play a role in the pronominal feature inventory (e.g. to distinguish *I* from *you* or *he* from *she*), but never give rise to any syntactic doubling (i.e. agreement) effects. Consequently, there is no evidence that these features should be part of the formal feature inventory of English. They only play a role in the lexical semantics of the language (cf. Heim 2008, Sauerland 2008).

If this approach to the acquisition of formal features is correct, then it follows that [argument] can only be acquired if all features that constitute [argument] give rise to doubling effects. In other words, a language learner can only acquire [argument] if its target grammar exhibits doubling (i.e. agreement) effects with respect to [±speaker] [±participant] as well as [±plural]. This, by the definition in (3), is exactly what rich agreement amounts to.

Thus, in order to acquire the feature [argument], which projects the *v*P-external functional head Arg°, rich agreement is a necessary condition. Since the morpho-syntactic properties of the agreement markers realized in Arg° trigger the verb to move to this position too, it is established that in rich agreement languages only, the verb moves to Arg°. Thus the existence of the RAH is predicted by this analysis.

In the next section, we will discuss the most prominent synchronic and diachronic consequences that this proposal makes.

5 Consequences

So far, 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 languages. This immediately raises the question: what about V-to-T movement? At first sight, the proposed analysis seems to predict that languages with overt tense markers, should also trigger V-to-T movement, contrary to fact. Section 5.1 explains why tense morphology is not expected to correlate with verb movement.

Above, we focused solely on VO languages where V-to-I movement is always visible. In section 5.2, we discuss how our analysis works for OV 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 5.3, we demonstrate that this is indeed correct but that our proposal predicts four pathways of syntactic change resulting from verbal deflection.

In section 5.4, finally, we discuss how acquisition evidence can be used to support the strong RAH.

5.1 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 and that tense inflection is irrelevant (pace Bobaljik & Thrainsson 1998, 2003; Biberauer & Roberts 2006). If subject-marking affixes carrying [ARG] must be base-generated in Arg°, the question arises, though, why tense morphemes, such as English -ed, should not be base-generated in T° and trigger V-to-T movement as well. If so, our proposal collapses.

The answer to this question is that the syntactic and semantic properties of tense morphemes do not require vP-external first merger, whereas rich subject agreement must be externally merged. We saw earlier that if subject agreement markers would be base-generated in a lower position, it would never be guaranteed that they could agree with the subject only. Moreover, the Spec,ArgP position is also the position where subjects can either be base-generated or be fronted to after merger in vP. The set of features that subject markers consist of are a full subset of the set of features that true subjects consist of.

The situation is different with tense markers, however. Tense operators, such as past tense operators, 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. But, crucially, a tense marker, such as English past tense marker -ed, does not straightforwardly denote past tense. In terms of their semantic and featural content, they are distinct from tense operators. To see this, take the following data:

(60)   a.   John said Mary was ill
           b.   Jan zei dat Marie ziek was   Dutch
                  John said that Mary ill   was
                  'John said Mary was ill'

The most salient readings of the examples above are the ones where the saying event and the state of illness temporally overlap. These examples therefore show that English and Dutch are so-called Sequence of Tense languages where subordinate tense is dependent on matrix tense (Abusch 1997; Heim 1994; Ogihara 1995, 1996; von Stechow 1995, 2003, 2005; Kratzer 1998; Schlenker 1999 and Sharvit 2003, a.o.). In (60), Mary's illness may take place either prior to or simultaneous with John's reporting of it.

The interpretation of the subordinate tense in English/Dutch follows from the interpretation of matrix clause tense. Subordinate *was* does not 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 (cf. Von Stechow 2003, 2005; Pesetsky & Torrego 2007).

The correctness of this analysis is also confirmed by (61):

(61)   Wolfgang played tennis on every Sunday

The only available reading of (61) 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 within *v*P.

Following Zeijlstra (to appear), Sequence of Tense is taken to be the result of (i) the semantic denotation of *-ed* as a relative non-future ("no later than") and 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 (62) below.

(62)   [$_{TP}$ OP$_{PAST[iPAST]}$ [$_{TP}$ John [$_{vP}$ say-ed$_{[uPAST]}$ [$_{CP}$ Mary be-ed$_{[uPAST]}$ ill]]]]]

(62) then denotes that Mary's illness did not start to take place later than in a time interval John was saying something about it. This saying event, in turn, does not take place at a later stage than some contextually denoted time-interval prior to the time of utterance. This is the exact reading of (61).

Crucially, OP$_{PAST}$ is an absolute past in a *v*P-external position (TP), whereas *-ed* is a relative tense that only agrees with OP$_{PAST}$. Given the fact that relative tenses do not take an entire *v*P as their semantic complement, but only the verb itself, there is neither a semantic nor a syntactic necessity to base-generate *-ed* *v*P-externally.

To conclude, no V-to-T movement is required to spell-out past tense morphology in SoT languages. Hence it is predicted that in languages exhibiting Sequence of Tense, tense morphology does not trigger V-to-T movement, a prediction that to the best of our knowledge is borne out.

5.2 OV languages

A question may arise as to 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 the fact that the predictions are untestable: In an OV-language, ArgP (if necessary because of rich agreement) can be head-final, like the *v*P 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 argue that affixes giving rise to the postulation of [argument] must be base-generated in Arg°. Their position leads the child to postulate a [v]-feature in Arg° that will trigger verb movement (i.e. the syntactic consequence of the Stray Affix Filter is a formal [v]-feature in Arg°). The result is that the verb will move to Arg° and the affixes can be spelled out on the verb, as required. Bobaljik (1995), however, argues that in an OV-language the affix can be spelled out on the verb without the verb moving to it, since V and the affix are string-adjacent at PF, as illustrated in (63):

(63)   [$_{ArgP}$ [$_{vP}$ [$_{VP}$ *subject   object   V*] $\underline{v}$] *affix* Arg°]

A consequence of this analysis is that our generalization about V-to-Arg movement has to be slightly adjusted. The generalization in (3) is readjusted as in (64):

(64)   *The Rich Agreement Hypothesis* (definite version)
         A language must realize the finite verb in a position string-adjacent to Arg°, where Arg° is postulated iff 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.

5.3 Diachronic consequences

Diachronically, all Germanic languages counted as rich agreement languages. At the same time, all these languages displayed V-to-I movement as well. In that sense, they also nicely fitted in the RAH pattern. However, a substantial number of them lost their rich agreement during a process of morphological deflection. Deflection of verbal agreement over time under our analysis leads to a paradox for language learners who acquire the language in the era of verbal deflection. Since rich agreement is lacking, the language learner, on the one hand, can no longer acquire the feature [argument] (as the cue for that feature has disappeared) and consequently the projection to which the verb used to move has become unacquirable. Yet, on the other hand, the language learner is still confronted with massive evidence of V-to-Arg movement in the language input. Under our analysis (and opposed to all weak versions of the RAH, including Bobaljik & Thráinsson's proposal), V-to-Arg movement itself cannot function as a cue to postulate the [argument] feature that projects the relevant Arg° head.

In order to solve this paradox, four possible diachronic solutions suggest themselves: (i) V-to-Arg movement disappears in spite of the massive presence of V-to-Arg movement in the language input; (ii) V-to-Arg movement is reanalyzed as a different type of head movement (e.g. V-to-C movement); (iii) diagnostics for V-to-Arg movement (such as *v*P-boundary adverbs) get lowered (i.e. will be base-generated in a lower position), so that V-to-Arg movement is only apparent; and (iv) morphological evidence for V-to-Arg movement shows up elsewhere in the grammar so that the movement can be retained. In the following four subsections, it will be shown that each diachronic pathway has been attested, thus proving the validity of the conclusion that V-to-Arg movement by itself really cannot act as a cue for V-to-Arg movement.

5.3.1 Drop of V-to-Arg movement
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 (cf. Roberts 1993, Platzack & Holmberg 1989; Holmberg & Platzack 1991, 1995; Rohrbacher 1994, and references therein). This strong correlation between deflection and subsequent loss 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): the cue for the movement was gone. However, two questions remain open.

First, why is it that in languages like English (that lost general V-to-Arg movement), still some verbs do seem to undergo V-to-Arg movement, such as modal auxiliaries, and forms of *have*, *be* and *do*? English, in this sense, 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/stays in situ (cf. 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 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, like was the case for Arg°, must be directly derivable from the elements occurring in that position. Such a functional head must be projected by exactly that feature that all fronted verbs share and all non-fronted verbs do not. The only possible candidate for this feature is [auxiliary]. Therefore, this functional head must be Aux°.[20]

The second question concerns what happens with those instances of agreement that no longer count as rich. For instance, 3rd person singular –*s* in English still reflects [-participant] and [-plural], but cannot be projected in an Arg° anymore for the reasons explained in section 4. This affix must be reanalyzed as a feature that resides in a *v*° (cf. Rohrbacher 1994 for a similar claim).

To summarize, the drop of V-to-Arg movement in languages such as Danish and English, as well as the remaining spell-out of poor inflection and syntactic differences between auxiliaries and lexical verbs in English, can all be naturally captured as a direct and predicted consequence of the loss of rich inflection.

5.3.2 V-to-Arg is reanalyzed as V-to-C movement

Faroese also underwent a change from a rich agreement to a poor agreement language and consequently V-to-Arg movement disappeared. However, as opposed to the languages discussed in the previous section, Faroese also allowed V2 in embedded clauses, albeit in a very restricted sense (only under bridge verbs, cf. Heycock et al. 2010 for details). Therefore, not every subordinate clause, previously exhibiting V-to-Arg movement, was doomed to leave the verb in situ. Alternatively, the verb could remain in a higher C position.

Since Faroese allowed for an alternative reanalysis of V-to-Arg movement (namely as V-to-C movement), two possible pathways of diachronic change opened up. Either, language learners could give up V-to-Arg movement after deflection, or language learners could retain verbal movement, but had to liberate the conditions under which embedded verb second can take place, so that previous instances of V-to-Arg movement could be reanalyzed as V-to-C movement.

These two possible pathways of diachronic change are reflected in contemporary Faroese: whereas some varieties only allow restricted embedded V2 and leave the verb in situ in all other subordinate clauses, other varieties allow V-to-C movement less restrictedly: they also allow it under non-bridge verbs like *doubt*, *deny* and *be proud* but not in embedded questions, basically what is attested in Icelandic. The current variation with respect to verb movement that is attested amongst regional varieties of Faroese thus naturally follows.

5.3.3 V-to-Arg movement is reanalyzed as *v*P-internal word order variation

The diachronic trajectories outlined above are not the only possible pathways of diachronic change that may open up after the emergence of verbal deflection. When the learner of a deflected language is still confronted with data in which the finite verb appears to the left of a verb movement diagnostic, in principle s/he may either reanalyze the structural position of the finite verb or reanalyze the position of the verb movement diagnostic. The first is what has happened in one variety of Faroese, where V-to-Arg movement got reanalyzed as V-to-C movement.

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

In ReNN, the second possibility emerged. Rather than postulating a different higher target position for the finite verb, the learner reassigned a subclass of the verb movement diagnostics to a *v*P-internal position. Under the assumption that nothing principled forbids sentential adverbs to be adjoined to VP rather than *v*P (cf. Nilsen 2003), as long as some mechanism ensures that they take scope from the proper position at LF, V-to-*v* movement suffices to give rise to a V-adverb order. Evidence for this difference between Faroese and ReNN comes from the fact that in ReNN verb movement across negation is forbidden (as opposed to the Faroese varieties).

5.3.4 V-to-Arg movement is retained

If the input no longer provides evidence for rich agreement but still provides data that are compatible with a V-to-Arg analysis, the learner can resolve the paradox by retaining V-to-Arg movement on the basis of morphological richness that is present elsewhere in the grammar. This is what we observe in spoken/colloquial French and Brazilian Portuguese. Although verbal suffixes have seriously eroded and can no longer be used as a basis for the postulation of V-to-Arg movement, the movement can be maintained if subject clitics become reanalyzed as agreement markers. As we have shown in section 3.2.3, the evidence for the agreement status of these clitics is robust.

Fonseca-Greber & Waugh (2002) note that there are two processes in colloquial French that are simultaneously nearing completion. One is the obligatory presence of subject clitics and the other is the disappearance of the use of *nous* in 1st person plural contexts. From the perspective of our proposal, these two processes are causally related: the replacement of *nous* as a subject in 1st person plural contexts by *on* is exactly what turns colloquial French from a rich into a poor agreement language. Compare the following two paradigms, in which the agreement affixes are realized in their phonetic form.

(65) a. Standard French   b. Colloquial French
          inf. parl-[e]   inf. parl-[e]

          SG   PL   SG   PL
    1st   parl-[ə]   parl-[õ]   1st   parl-[ə]   parl-[ə]
    2nd   parl-[ə]   parl-[e]   2nd   parl-[ə]   parl-[e]
    3rd   parl-[ə]   parl-[ə]   3rd   parl-[ə]   parl-[ə]

    [õ]   → [+speaker, +plural]   [e]   → [+participant, +plural]
    [e]   → [+participant, +plural]   [ə]   → elsewhere
    [ə]   → elsewhere

Replacement of *nous* by *on* makes the feature [±speaker] unacquirable. As a consequence, the language becomes poor and Arg° can no longer be postulated on the basis of verbal affixes. Hence, under the assumption that subject clitics are used as the trigger for postulation of Arg° and consequently for V-to-Arg movement, it is predicted that the reanalysis of clitics as agreement markers and their obligatory occurrence, correlate with the disappearance of *nous*.

5.3.5 Concluding remarks

What we have seen above is that the exact four diachronic pathways that are predicted to be available after the emergence of verbal deflection in rich agreement languages with V-to-Arg, are indeed attested. Hence, our proposed analysis does not only make correct predictions in synchronic terms (as shown in section 2 and 3) but is also

backed by strong diachronic evidence. Note that most other analyses of the correlation between rich agreement and verbal movement (both analyses that take the RAH to be uni-directional and those that claim that no such correlation exist) do not predict the attested diachronic facts.

It has been observed, as a critique on 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-I is lost slowly over the next century (Falk 1993). The development in Danish may have even been slower (Vikner 1997). For English, Lightfoot (1993) and Roberts (1993) have observed a similar gap. Given the existence of several diachronic pathways after deflection rather than just one (only loss of V-to-Arg movement), such time gaps are, however, not at all unexpected. Such diachronic transition phases are very common in language change and the fact that the loss of verbal inflectional is not always immediately followed by the loss of V-to-I/Arg movement does not undermine the RAH. Under our proposal, it may very well be the case that language learners first reanalyze V-to-Arg movement as another type of movement, before it is finally dropped. Note in this respect that Falk adds up the counts of Subject-V_{fin}-Adv orders in all types of embedded clauses, making it hard to see if Swedish has gone through an embedded V-to-C phase, like we see for varieties of Faroese today. In English, the diachronic development is further complicated by the rise of an auxiliary paradigm and *do*-support (cf. Rohrbacher 1999 for details). Only if in a particular phase of the language V-to-Arg movement was undoubtedly present in full absence of rich subject agreement can it be concluded that such a phase falsifies the RAH.

5.4 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) and strong RAH and argue that an argument can be construed in favor of the latter.

For Bobaljik & Thrainsson (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: (i) the co-occurrence of agreement and tense affixes (ii) the fact that the verb can precede negation. The first trigger 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 French children 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 Italian children, Caprin & Guasti (2009; p. 30 ff.)) do not mention the use of any past tense forms by children up to 35 months (by which verb movement is in place), although they do use agreement-inflected forms (the present indicative and the *passato prossimo* (the compound present perfect tense)) productively. For this reason, these acquisition data are also problematic for proposals that postulate a correlation between V-to-Arg movement and rich tense morphology, such as Biberauer & Roberts (2006). This leaves us with trigger (ii), 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 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: without rich agreement Arg° is not postulated and consequently no V-to-Arg can be triggered.

Some acquisition evidence supports the strong rather than the weak RAH but before we get to that, we must clear one issue. It has been repeatedly observed that the acquisition of *some* inflectional morphology (i.e. the morphological distinction between an infinitive and a non-infinitive, 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 (cf. Clahsen 1984, 1988; Clahsen & Penke 1992 for German; Blom 2003 for Dutch, among many others), but note that the acquisition of V-to-C movement (i) hinges on finiteness or other clausal properties and not on rich agreement (at least not in our proposal) and (ii) 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 (cf. Poeppel & Wexler 1993; Verrips & Weissenborn 1992, among others) 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.[21] An insightful language in this regard is spoken French. 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 & Weissenborn (1992), who show that French children 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_{finite}-Neg orders occur in the absence of subject clitics, which would reflect V-to-Arg movement prior to the acquisition of rich agreement.

To conclude, proposals that deny the RAH or adopt the weak version of it must allow a (partial) disconnection between acquisition of V-to-Arg and the acquisition of agreement. This predicts an acquisition stage that does not seem to occur, but we immediately acknowledge that more detailed research is required to settle this issue. It is important to spell out what exactly is required.[22]

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

[22] The absence of an acquisition stage in which V-to-Arg takes place without any agreement occurring on the verb fully complies with our expectation, but the occurrence of such a stage would not immediately falsify our proposal. After all, it is possible that children have fully analyzed and comprehended the agreement system before they can fully produce it: comprehension can precede production of morphology (cf. Polišenská 2010 for explicit evidence). Likewise, it may be conceivable that children have acquired the past tense before they use past tense morphology, in which case the evidence against Bobaljik & Thráinsson's proposal is weakened. Before such research on the comprehension of morphology is completed, acquisition evidence for or against any position may at most be indicative but never convincing.

6 Conclusion and discussion

In this paper, 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 show 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, bi-directional form. We therefore propose, in opposition to standard assumptions, that there is a strong bi-directional correlation between syntax and morphology ("morphology drives syntax"). However, contrary to previous assumptions, we argue that morphology does not drive syntax directly but via acquisition: children only move the verb if they acquire the formal argument features that drive this syntactic operation, where the evidence for these features crucially relies on the presence of sufficient morphological contrasts in the language.

Since the definition for richness of subject agreement is similar to the definition of the poorest pronoun systems attested in human language, we furthermore argue that the distinction between poor and rich agreement languages lies in the absence or presence of a functional projection that results from the grammaticalization of argumenthood.

Finally, we investigated the diachronic and acquisitional consequences of our proposal, showing that evidence from these areas supports and sometimes even confirms the proposal.

There are two consequences, however, that go beyond the scope of the present paper and serve to direct future research. The first concerns the methodology we employed and the second concerns typology. Let us look at each in turn.

First, research into the RAH has always been problematized by the discussion about the validity of the diagnostics. Although the position of sentential negation and adverbs has generally proven to be a very useful tool, it is crucial to realize that not every diagnostic works equally well in every language. We have shown that this methodological issue arises in Icelandic, Älvdalen Swedish, ReNN and Russian, for instance, where verb movement diagnostics appear exceptionally high or low in the structure. We argued that, if one takes the exceptional cases to be the norm, one ends up with implausible analyses for these language varieties. The hypothesis that these languages are well-behaved with respect to the RAH leads to analyses that are internally consistent and motivated by independent evidence.

What counts as a good indicator of verb movement has to be found out on the basis of careful analyses of the data per language. The generalization we reach about the methodology is that the most reliable diagnostics are those elements that, given their semantics, cannot be base-generated inside the vP: sentential negation and certain aspectual operators. Although sentential adverbs are good diagnostics in most languages, there is always the possibility that they are generated outside IP/ArgP or inside vP. Future research must show whether this hypothesis about the reliability of diagnostics can be confirmed on a larger scale.

Second, our proposal makes the claim that the strong RAH holds universally, but the scope of our research is typologically limited. It must be recognized, however, that it has taken scholars more than 25 years now to establish whether it holds for the Germanic languages alone, the reason being that the data and their interpretation have turned out not to be as straightforward as initially envisaged. We now believe, however, that the time is right to test the strong RAH on a typologically large scale to see if it must be accepted, adjusted or rejected in the face of the world's languages.

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