

Head movement and morphological strength

Jan-Wouter Zwart

University of Groningen

Summary

In the Principles and Parameters framework of Generative Grammar, the various positions occupied by the verb have been identified as functional heads hosting inflectional material (affixes or features), which may or may not attract the verb. This gave rise to a hypothesis, the Rich Agreement Hypothesis (RAH), according to which the verb has to move to the relevant functional head when the corresponding inflectional paradigm counts as ‘rich’ (e.g. Rohrbacher 1999).

The RAH is motivated by synchronic and diachronic variation among closely related languages (mostly of the Germanic family) suggesting a correspondence between verb movement and rich agreement. Research into this correspondence was initially marred by the absence of a fundamental definition of ‘richness’ and by the observation of counterexamples, both synchronically (dialects not conforming to the pattern) and diachronically (a significant time gap between the erosion of verbal inflection and the disappearance of verb movement). Also, the research was based on a limited group of related languages and dialects. This led to the conclusion that there was at best a weak correlation between verb movement and richness of morphology (Bobaljik 2003).

Recently, the RAH has been revived in its strong form, proposing a fundamental definition of richness (Koenenman and Zeijlstra 2014) and testing the RAH against a typologically more diverse sample of the languages of the world (Tvica 2017). While this represents significant progress, several problems remain, with certain (current and past) varieties of North Germanic

not conforming to the expected pattern, and the typological survey yielding mixed or unclear results. A further problem is that other Germanic languages (Dutch, German, Frisian) vary as to the richness of their morphology, but show identical verb placement patterns.

This state of affairs, especially in light of recent minimalist proposals relocating both inflectional morphology and verb movement outside syntax proper (to a component in the model of grammar interfacing between narrow syntax and phonetic realization, Chomsky 2001), suggests that we need a more fundamental understanding of the relation between morphology and syntax before any relation between head movement and morphological strength can be reliably ascertained.

Keywords

inflection, head movement, Rich Agreement Hypothesis, morphology-syntax relation, verb movement, agreement

1. The Rich Agreement Hypothesis

In the Principles and Parameters framework of Generative Grammar (roughly 1980-1991), the various positions occupied by the verb have been identified as functional heads, leading to a standard model of the structure of the clause, punctuated by head positions to which verbs could move. To explain these movements, and especially the variation observed, the concept of *strength* was introduced as a property of functional heads (or of the features residing in these functional heads).¹ The idea was that a strong functional head would attract the verb, whereas a weak functional head would fail to do so, at least in Surface Structure (i.e. overt syntax).²

If verb movement is caused by the strength of a functional head, what causes a functional head to be strong? This turned out to be a complicated question, with choices constrained or informed by views on the relation between morphology and syntax (section 5). But ultimately, a hypothesis emerged (the *Rich Agreement Hypothesis* or RAH) according to which ‘richness’ of an inflectional subject-agreement paradigm reflects the strength of the relevant functional head, and hence determines the presence or absence of verb movement.³

The idea of a Rich Agreement Hypothesis immediately presents several questions: a) how is ‘rich’ defined?, b) is the correlation between rich agreement and verb movement strong (i.e. movement if *and only if* rich agreement) or weak (i.e. if rich agreement, then movement), and c) what is the rationale underlying a correlation between rich agreement and verb movement? These questions are taken up in sections 3-5, but to sketch the history of the research, it should first be noted that considerable fine-tuning went into the definition of ‘rich agreement’ before a satisfactory level of empirical coverage could be attained (see Vikner 1997:192f and Tvica 2017: ch. 2, for a survey); in fact, a principled definition of richness was not formulated until Koenenman and Zeijlstra (2014:576). Secondly, it should be noted that initially researchers appeared to converge on the untenability of any strong version of the RAH (see Bobaljik 2003),

again until the strong RAH was forcefully revived in Koenenman and Zeijlstra (2014) and Tvica (2017).

This article discusses the various versions of the RAH as it took shape in the past decades (section 3), the recent revival of the RAH in its strong form (section 4), and the assumptions on the relation between morphology and syntax underlying presumed correlations between verb movement and morphological strength/richness (section 5). We start with a brief presentation of the relevant facts from (mostly) Germanic languages (section 2).⁴

2. Verb movement patterns

The following facts should be understood against the backdrop of some common assumptions about clause structure held from around 1980 on.

On these assumptions, the verb is generated as the head of a verb phrase (VP), along with its object, which is the verb's complement (either to the left or to the right of the verb, but crucially adjacent to the verb unless either is moved out of the VP). It was also generally assumed that the subject is generated in the specifier position of VP, even if it typically moves out of the VP to the structural subject position.⁵

In addition to VP, the clause structure involves TP, a functional projection headed by T(ense), which takes VP as its complement, and the subject as its specifier.⁶ T is the head of the clause.⁷ Importantly for what follows, the boundary between VP and TP was taken to be marked by adverbs, including negation markers, providing clear diagnostics for verb movement and noun phrase movement out of VP.

Clausal embedding typically requires the presence of a further functional head, C(omplementizer), which developed out of the generic COMP-position proposed in earlier work as a category hosting fronted material (including the verb in verb-second constructions).⁸ C takes TP as its complement, and has its own specifier position for fronted phrases (A'-movement).⁹

The structure just discussed is illustrated in 1.

(1) FIGURE ONE

With this structure in mind, consider the following contrast between Danish 2 and Icelandic 3 (Platzack 1986:209).¹⁰

(2) ... at han ikke **køb-te** bog-en (Danish)
 COMP 3SG.M NEG buy-PST book-DEF
 '... that he did not buy the book.'

(3) ... að hann **keyp-ti** ekki bók-ina (Icelandic)
 COMP 3SG.M.NOM buy-PST.3SG NEG book-DEF.F.ACC
 '... that he did not buy the book.'

Since we assume that the negative adverb *ikke/ekki* marks the VP-boundary, the facts show that the finite verb stays inside VP in Danish, but moves out of the VP in Icelandic (presumably to T, if C is occupied by the complementizer *að*, but see note 11). The examples show:

(4) Closely related languages may vary in the position of the finite verb.

It should be kept in mind that in main clauses, the verb moves out of the VP in both Danish and Icelandic:

(5) Han **køb-te** ikke bog-en (Danish)
3SG.M buy-PAST NEG book-DEF
'He did not buy the book.'

(6) Hann **keypti** ekki bók-ina (Icelandic)
3SG.M.NOM buy-PST.3SG NEG book-DEF.F.ACC
'He did not buy the book.'

This verb movement in main clauses is ascribed to a special rule, *verb-second*, which forces the finite verb into the position following the first clausal constituent. Verb-second typically applies to main clauses only, although some languages (like Icelandic and Yiddish) have generalized verb-second across all clause types.

The standard analysis of Germanic verb-second at the time (going back to the analysis of Dutch and German in Koster 1975 and Den Besten 1977) involved a structure of the clause without T, such that all fronting operations inevitably targeted COMP (later C). Applied to Scandinavian, this led to an analysis of 5-6 where the finite verb is in COMP/C, and not in T as in embedded clauses in Icelandic (3)(e.g. Platzack 1986:211-213). This introduced a distinction between V-to-T movement (parameterized, as illustrated in 2-3) and V-to-C movement (uniform, as illustrated in 5-6).¹¹

The synchronic variation illustrated in 2-3 is also found when we compare different stages of a single language. Thus, the finite verb *sivngær* ‘sings’ appears to the left of the negation marker *ægh* in the Old Swedish example in 7 (Platzack 1988:230).¹²

- (7) ... æn han **sivng-ær** *ægh* thigianda messu (Old Swedish, 1290)
if 3SG.M sing-SG NEG silent mass
‘... if he does not sing Silent Mass.’

So we conclude:¹³

- (8) Diachronic stages of the same language may vary in the position of the finite verb.

Finally, less closely related languages such as French and English show a similar variation in the position of the finite verb (Pollock 1989):

- (9) Jean **embrasse** *souvent* Marie (French)
John kiss:3SG often Mary
‘John *often* **kisses** Mary.’

Using the familiar diagnostics (the position of the verb to the left or to the right of adverbials), we conclude that French finite verbs move out of the VP, while English finite verbs stay inside VP.¹⁴ Thus:

- (10) Less closely related languages may also vary in the position of the finite verb.

The Rich Agreement Hypothesis is an attempt to provide a single explanation, rooted in morphology, for the variation observed in 4, 8, and 10.

The subject agreement paradigm is clearly richer in Icelandic than in Danish:

(11) *Subject agreement paradigms: Scandinavian (present tense)*¹⁵

- a. Icelandic: (i) SG and PL endings are different for all three persons
- (ii) first and second person endings are different for both numbers
- (iii) second and third person endings are different for PL number
- b. Danish: endings are the same for all persons and numbers

Earlier stages of Danish (and Swedish and Norwegian) had richer agreement paradigms (initially the same as Icelandic, later impoverished to reflect only a distinction in number, e.g. Vikner 1997:206).¹⁶

Likewise, subject agreement is richer in French than in English:

(12) *Subject agreement paradigms: French vs. English (present tense)*¹⁷

- a. French: (i) SG and PL endings are different for all three persons
- (ii) all three person endings are different for PL number
- (iii) the second person ending is different for SG number
- b. English: only 3SG has an ending

So in all cases where we see the position of the verb varying from language to language (understood both synchronically and diachronically), subject-verb agreement is richer in the language variety in which the verb moves out of the VP. Hence:

(13) *Rich Agreement Hypothesis* (RAH)

A language has verb movement to T if (and only if) it has rich agreement

It remains to determine, then, how exactly 'rich' is to be defined (section 3), whether the generalization in 13 is correct, either in its strong or weak interpretation (section 4), and lastly, how a correlation like 13 might be explained or conceptually motivated (section 5).

3. The definition of 'rich' agreement

It is fair to say that the definition of 'rich' in the context of the Rich Agreement Hypothesis 13 was initially established *a posteriori*: after gaining the initial impression that verb movement was related to paradigm structure, the search was on for the key factor distinguishing rich from poor agreement, based on what was already known about the distribution of verb movement in a very limited range of languages (essentially Germanic VO-languages).¹⁸

This culminated in the following descriptive generalization (Rohrbacher 1999:116, where Infl = T):¹⁹

(14) *Paradigm-Verb raising correlate*

A language has V-to-Infl raising if and only if in at least one number of one tense of the regular verb paradigm(s), the person features [1st] and [2nd] are both distinctively marked.

This generalization does the trick: it makes the desired distinction between a language like Icelandic, which has verb movement and rich agreement, and a language like Danish, which

lacks verb movement and does not distinctively mark 1st and 2nd person (see note 15). It also separates diachronic stages of the Mainland Scandinavian languages, where earlier stages still marked 1st and 2nd person distinctively in the plural (see note 16) and showed verb movement. Finally, the line between English and French is also drawn correctly, as French marks 1st and 2nd person distinctively in the past tense plural (see Vikner 1997:197).²⁰ As Rohrbacher (1999:117f) points out, the definition in 14 even covers certain finer distinctions not mentioned here before, such as the distinction between the Swedish Älvdalsmål dialect (rich agreement and verb movement, cf. note 13) and the Norwegian Hallingdal dialect (no verb movement, and only number marking, essentially like Middle Danish as illustrated in note 16; see Trosterud 1989).

But 14 is remarkably particular, and seems to owe its exact formulation to fact rather than principle, leaving one to wonder whether the world could have been different.²¹ A more principled formulation of the Rich Agreement Hypothesis was proposed in Koenenman and Zeijlstra (2014:576). Koenenman and Zeijlstra note that personal pronoun paradigms minimally display three oppositions: speaker vs. nonspeaker, participant vs. nonparticipant, and singular vs. plural (going back to Greenberg 1963:96).²² Their proposal is that an agreement paradigm is rich when it minimally replicates these three oppositions (Koenenman and Zeijlstra 2014:574):²³

(15) *Rich Agreement*

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

The Rich Agreement Hypothesis (RAH) then states that a language displays verb movement to T if and only if its verbal agreement is rich in the sense of 15.

On the definition of 15, the RAH covers the known cases as well as Rohrbacher's: distinctive marking of first and second person expresses the required speaker and participant oppositions, and we find these in Icelandic, Old Danish, and French, but not in modern Danish, Middle Danish, and English. The value of 15, then, lies not in its empirical coverage (for which see section 4), but in its being grounded in the typology of pronominal feature expression.

In assessing the relation between verb movement and morphological strength (rich agreement), then, we will take 15 as our starting point.

4. Descriptive adequacy of the Rich Agreement Hypothesis

4.1 *Weak vs. strong interpretation*

Both the Paradigm-Verb raising correlate 14 and the Rich Agreement Hypothesis 15 are biconditional, meaning that rich agreement forces verb movement, and less rich agreement excludes verb movement. Bobaljik (2003) argues that the facts support only a weak interpretation of the agreement/movement correlation, meaning that rich agreement forces verb movement, but verb movement is not necessarily excluded when agreement is poor.

The weak interpretation of the movement/agreement correlation is supported by a range of observations from regional and diachronic varieties of mostly Northern Germanic languages. For example, Swedish dialects spoken in northern Finland (Northern Ostrobothnian, Bentzen 2008) and Norwegian dialects spoken in the Tromsø area (Regional Northern Norwegian, Bentzen et al 2007) show no subject agreement, yet the verb appears to the left of certain adverbs (Bentzen 2008, ex. 9a):²⁴

(16) Jag förstår int (Kronoby Swedish)

1SG.NOM understand NEG

för vad han tvätter så tökäلت sin bil

for what 3SG.ACC clean so often 3SG.M.POSS car

‘I don’t understand why he cleans his car so often.’

This is not possible under a strong interpretation of the RAH, but consistent with a weak interpretation (where no predictions follow from the absence of rich agreement).

In these dialects, the embedded verb cannot move past other, ‘higher’ adverbs, including negation (Bentzen 2008, ex. 9b):²⁵

(17) * Jag minns för vad Anna drats alder mjölts (Kronoby Swedish)

1SG.NOM recall for what Anna drink never milk

‘I remember why Anna never drank milk.’

This fact has been taken to show that the verb movement in 16 is in fact not V-to-T movement, but a shorter movement (Koeneman and Zeijlstra 2014:586).²⁶ If so, the strong interpretation of the RAH can still be entertained, albeit at the cost of further narrowing down the range of movements covered by it.

The weak interpretation of the RAH is also supported by the observation of a significant time gap between the loss of inflectional morphology and the loss of verb movement (e.g. Roberts 1999:292). To take Danish as an example, where we have seen that verb inflection had

become poor by 1350 (see note 16), verb movement in relevant constructions (preceding both adverbs and negation, and not allowing an analysis in terms of embedded verb-second) can be shown to disappear only gradually, with verb movement numbers staying between 35% and 50% throughout the 16th century, and not dipping below 10% before 1650 (Heycock and Sundquist 2017:178).

In response to these observations, which are not contested, Koenenman and Zeijlstra (2014:606-607) argue that children who acquire verb movement in the absence of rich morphology in the primary linguistic data, reinterpret either the verb movement as not targeting T, or the agreement as being rich after all (as a resolution of what they describe as ‘paradoxical’ input).²⁷ But as Heycock and Sundquist (2017) note, none of these escape routes seem to apply to the situation of Danish. Moreover, a strong interpretation of the RAH excludes any model of a grammatical system in which verb movement to T occurs in the absence of rich verbal agreement, and the diachronic data strongly suggest that we do need such a model to describe certain natural language data.

A further problem to the strong interpretation of the RAH is posed by the situation in Faroese, a Northern Germanic language historically closely related to Icelandic, but politically associated with Denmark and hence under pressure from Modern Danish. By Koenenman and Zeijlstra’s definition, verbal agreement in Faroese is poor, identifying only number and first person (Lockwood 1964:76).²⁸ Initial reports on Faroese suggested that speakers produce embedded verb movement to T optionally (Jonas 1995). After correcting for possible cases of embedded verb-second, the proper generalization appeared to be that Faroese lacks embedded verb-movement to T, as predicted by the RAH (Heycock et al 2010). However, a follow-up study suggests that embedded verb-movement to T is still residually present, at least significantly more so than in Danish (Heycock et al 2011). If so, present-day Faroese may be at the tail end of a diachronic change completed several centuries earlier in the Mainland

Scandinavian languages, posing the same problem to the strong interpretation of the RAH as the earlier stages of Mainland Scandinavian.

4.2 Rich agreement without verb movement

Of the Continental West-Germanic languages, only Yiddish is typically included in discussions of the relation between verb movement and morphological richness. Yiddish subject agreement is rich (showing special forms for 1SG and 2SG and a singular-plural opposition), and the verb precedes the relevant adverbs in both main and embedded clauses (Vikner 1997:138):²⁹

(18) Es iz nisht tsu dervart-n az (Yiddish)

EXPL be:3SG NEG INF expect-INF COMP

dos yingl **zol** oyfn weg ze-n a kats

DEF boy AUX:SG on.the road see-INF INDF cat

‘It is not to be expected that the boy will see a cat on the way.’

Yiddish is like Icelandic in not restricting verb movement in embedded clauses (cf. 3).³⁰ Since Yiddish verbal agreement is rich, this is predicted by the RAH.

The other Continental West-Germanic languages Dutch, German and Frisian behave more like Mainland Scandinavian: the finite verb moves to the second position in main clauses, but stays inside the verb phrase in embedded clauses (except when the embedded clause shows main clause characteristics, which we will ignore here):

argued by Zwart (1994b), all other known lexical phrases and functional projections in languages like Dutch and German can be shown to be head-initial, leaving the VP the odd man out. It is unclear why the structure of TP should be patterned after VP and not after all the other projections.

Moreover, as argued by Zwart (1991, 1993, 1997), following Travis (1984), the position of T in languages like Dutch can be deduced from the position of the verb in subject-initial main clauses, on the plausible assumption that the subject occupies the structural subject position specifier of TP in unmarked situations.³³ As can be seen in 19a, this would locate T to the left of the verb phrase, of which the boundary is marked by the negation marker, as always.

On this analysis, verb-second is a more flexible operation: it positions the finite verb to the immediate right of the first constituent, regardless the position of the first constituent in terms of clausal cartography (i.e. specifier of CP or TP). Koenenman and Zeijlstra (2014) may still be right that this type of operation, verb-second, is different from V-to-T movement, in that it is not triggered by morphology, and may even be a postsyntactic operation (as argued by Chomsky 2001). This takes care of the fact that the Continental West-Germanic languages display verb movement in main clauses (cf. 19a), regardless of the richness of their verbal agreement. But the converse, general absence of verb movement in embedded clauses (cf. 19b), regardless of the richness of verbal agreement, remains deeply problematic for the RAH.

4.3 Typological evidence

Following the literature, our discussion of the relation between morphological richness and verb movement has so far been limited to a restricted number of closely related languages. Recently, however, the Rich Agreement Hypothesis (as understood in Koenenman and Zeijlstra 2014) has been put to the test in a typological survey (Tvica 2017).

Tvica considers both poor agreement languages (which should not show verb movement) and rich agreement languages (which should), and concludes that “the evidence consistently supports the RAH” (2017:279). Space prevents me from doing full justice to the many careful analyses found in Tvica’s dissertation. Here I intend to highlight merely a number of observations that are relevant to the current discussion.

Of the thirteen poor agreement languages treated by Tvica, only three (N|uuki, Martuthunira, and Haitian Creole) appear to show no verb movement whatsoever.³⁴ Of the remaining ten, eight show the word order pattern in (20), with the verb and the object adjacent to each other, but appearing to the left of certain adverbs.

(20) (*)ADV ... V+O ... ADV

Assuming, as before, that adverbs mark the verb phrase boundary, it would seem to be the case that these languages feature VP-movement.³⁵ Since we know that phrasal movement creates a freezing effect, not allowing further subextraction of any of its subparts (Ross 1967:295), we cannot exclude that the absence of verb movement is the function of verb phrase movement, and hence unrelated to richness of agreement.³⁶ If so, the facts of this set of languages should not be further considered as supportive of the RAH, as the absence of head movement can be explained independently.

The remaining two languages in Tvica’s poor agreement set are Hawaiian and Kadiwéu. Hawaiian sentences show a VSO word order, which Tvica, following the literature, takes to be the result of remnant VP-movement (i.e. the verb is fronted as part of a VP, out of which other elements, most notably the object, have been removed). If so, Hawaiian is another VP-movement language, and should be discarded as irrelevant to the RAH. Kadiwéu, on the other hand, is not a VP-movement language, but as I understand its data (from Sandolo

1997:63f), the language shows rich agreement without verb movement, presenting a counterexample to the RAH.

The problem with verbal morphology in Kadiwéu is that it presents two slots for person markers, one initial and one post-stem (marked bold in 21)(Sandolo 1997:63):³⁷

- (21) **j**-aqape-t-**e**-gi (Kadiwéu)
1SG-meet-REL-3SG-GOAL
'I meet him.'

Tvica (2017:136) argues that person markers in both slots are clitics rather than agreement markers, as they are associated with thematic markers (such as *gi* in 21). But Sandolo (1997:43) designates only the postverbal indirect object markers as clitics, and the preverbal person markers as regular agreement markers.³⁸ Since these initial markers distinguish for first and second person and number, agreement should be counted as rich on the definition of Koenenman and Zeijlstra (2014), and the absence of verb movement that Tvica observes is problematic for the RAH.

Of the eleven rich agreement languages considered by Tvica (not including Kadiwéu), six are claimed to involve V-to-T movement, three are claimed to lack V-to-T movement, and two are inconclusive.³⁹ In the three languages that lack V-to-T movement (Hausa, Tiwi, Wari'), subject agreement is not realized on the verb, so no verb movement as a function of rich agreement is expected.⁴⁰ However, the possibility of alternative realization of subject agreement, i.e. not on the verb, does raise questions about the rationale of verb movement as a function of agreement, for which see section 5.

In this context, it is remarkable that Wolof can also realize subject agreement on a separate element from the verb, as illustrated in 22b. Crucially, verb movement (shown by the

nonadjacency of the verb and the direct object) takes place regardless the location of subject agreement (compare 22a and 22b).

- (22) a. **lekk-naa** *ndànk* jën wa (Wolof)
eat-1SG slowly fish DEF
'I ate the fish slowly.'
- b. *di-naa* **lekk** *ndànk* jën wa
AUX-1SG eat slowly fish DEF
'I will eat the fish slowly.'

Here the verb movement is apparently independent of richness of agreement, posing a problem for the RAH (Tvica 2017:236).

It remains to be seen to what extent the RAH is supported by the facts from Kaqchikel. Kaqchikel has several possible word orders, and Tvica (2017:227) argues that both verb movement and VP-movement are needed to derive the complete range. This is somewhat problematic, since one would expect the RAH to force verb movement all the time in case of rich agreement. More seriously, it seems entirely possible to derive all word orders by a combination of noun phrase movements and (remnant) VP-movement.⁴¹ If so, Kaqchikel is a rich agreement language without verb movement, unexpected under the RAH.

All in all it seems that only three of the rich agreement languages (Aeyoro, Egyptian Arabic, and Finnish) show the behavior expected under the RAH, not an unexpected score in the absence of any correlation between head movement and morphological strength.⁴²

The typological research, then, raises many interesting questions, but I believe it is fair to conclude that more investigations are needed to allow us to determine the validity of the RAH

beyond the limited range of languages usually studied in this context, as well as a deeper probing of the fundamental assumptions underlying the various analyses (see section 5).

4.4 Discussion and conclusion

This section has identified a range of problems for the Rich Agreement Hypothesis (RAH), as understood by Koenenman and Zeijlstra (2014), correlating verb movement and rich subject agreement.

First, the existence of Germanic dialects with verb movement (outside of verb-second contexts) and poor subject agreement argues for a weak interpretation of the RAH, which allows verb movement to take place for reasons other than richness of subject agreement.

Second, the existence of Germanic dialects without verb movement (outside of verb-second contexts) and either rich (German/Frisian) or poor (Dutch) subject agreement is incompatible with any interpretation of the RAH. This problem is raised by a plausible analysis of the clause structure in the relevant languages where TP is head-initial, and its head T is occupied by the verb in subject-initial main clauses, but not in embedded clauses (Travis 1984, Zwart 1993), leading proponents of the RAH to reject this analysis without appropriate discussion.

Third, the typological evaluation of the RAH across languages with rich and poor agreement fails to provide unequivocal support for the RAH. In particular, when languages which arguably show verb phrase movement are taken out of the equation, sample size of both types of languages is seriously compromised.

For a proper understanding of the relation between head movement and morphological strength, we need to probe beyond mere statistical cooccurrence. For example, it does not suffice to observe that Mainland Scandinavian languages lost both verb movement and subject agreement in the course of their long history. What needs to be established is by what

mechanism these languages came to undergo these drastic changes. Arguably, language contact was a major factor in the development, with the coastal areas of Denmark and Sweden heavily involved in North and Baltic Sea trade in the context of the Hanseatic League. We know that language contact situations may give rise to simplification as a result of imperfect learning (see Thomason and Kaufman 1988 for much relevant discussion). The correlation we observe in the Scandinavian languages between verb movement and richness of agreement may be the outcome of a centuries-long process in which both instances of simplification (loss of verb movement and loss of agreement) had a similar cause (language contact), without one necessarily causing the other. From this historic perspective, a gap of several centuries between the dates of the two instances of simplification is not problematic, given a situation of prolonged language contact.

5. Conceptual issues

In contemplating the Rich Agreement Hypothesis, we should also ask why movement and morphology should be related in this particular way. In other words, can a correlation between head movement and morphological strength be explained as something inevitable within the theory of grammar?⁴³

Inflectional morphemes (including abstract morphemes) and verbal roots were identified as separate syntactic categories from the earliest stages of generative grammar.⁴⁴ That is, they were introduced by rewrite rules and could be manipulated by transformations (e.g. Chomsky 1957:39, 113). This carried over into the Principles and Parameters framework, with the only innovation that inflectional elements were conceived as functional heads (Infl, T, Agr) projecting their own phrase (cf. Figure 1) in accordance with the rules of X'-theory (Stowell

1981, Chomsky 1986). Reordering of verbs and affixes was done by head movement, already a familiar concept (e.g. Emonds 1976:213) that now became a subcase of ‘Move α ’ (Chomsky 1981:5) and assumed the status of a separate research topic (e.g. Koopman 1984, Travis 1984).⁴⁵

Essentially two types of explanation for verb movement/affix movement were proposed. The first explanation was in terms of a filter that required inflectional affixes to be combined with a lexical stem at S-structure (Lasnik 1981:162, Baker 1988:140), essentially a restatement of the problem.⁴⁶ Another explanation capitalized on the emerging notion that inflectional elements play a key role in various syntactic licensing processes proposed in the Principles and Parameters framework (such as theta-role and Case assignment), and that the feature settings of these inflectional elements are the locus of parametric variation (Borer 1984). This led to the idea that verb movement to T takes place in order to enable T to license the subject (e.g. Koopman 1984:140) or to allow theta-role assignment by the verb to proceed (e.g. Pollock 1989:385). On this explanation, head movement ties in with the intricate fabric of syntactic licensing mechanisms developed in the Principles and Parameters framework.

Both explanations leave a choice as to whether the verb moves up to the inflectional affix, or the affix moves down to the verb. The licensing approach might hypothesize that the beneficial effect of verb movement occurs only if agreement is rich/strong (e.g. Chomsky 1991:423).⁴⁷ But the filtering approach has no way of capturing the perceived connection with richness of subject-verb agreement: the filter would apply as soon as the paradigm involves a single inflectional morpheme.

Both Rohrbacher’s original rich agreement hypothesis and Koenenman and Zeijlstra’s rehabilitation of it are cast within a filtering approach (Rohrbacher 1999:132f, Koenenman and Zeijlstra 2014:601). The idea is that the functional head associated with subject agreement is projected if and only if the verbal paradigm allows us to conclude that the inflectional

morphology is sufficiently referential (i.e. refers unambiguously to speaker, participant, etc.). In weak agreement languages, then, the relevant functional head will not be projected, no morphemes will be generated there, and the filter prohibiting stray affixes will not have any effect.

A conceptual problem with this approach is that a consistent view of the relation between syntax and morphology is abandoned: depending on the richness of verbal agreement, our analysis of a language will either be strong lexicalist (in the case of poor morphology, with verbs generated in fully inflected form and no stray affix problem) or weak lexicalist (in the case of rich morphology, with verbs and inflectional affixes generated separately, and the stray affix filter forcing verb movement). This is problematic since the question of the relation between syntax and morphology ideally calls for a consistent view, not one that varies with the data at hand.

In early minimalism, the starting point that inflectional morphemes and lexical stems are generated separately was abandoned (Chomsky 1992:139).⁴⁸ Instead, inflected verbs are generated in fully inflected form, with a set of matching features being generated in Infl/Agr/T. It was then hypothesized that these features need to be checked by the verb. Parameterization was done by declaring the features in the functional heads strong or weak, with strong features triggering verb movement in overt syntax (Chomsky 1992:43). A natural implementation of the Rich Agreement Hypothesis in this model would be to say that the strength of an inflectional feature is reflected in the richness of the relevant verbal paradigm (but I have not seen this interpretation developed).⁴⁹

But in later minimalism, this strong lexicalist view of the relation between morphology and syntax was also abandoned, in favor of a model in which the core syntactic component manipulates only features (not morphemes), and morphology is relegated to a postsyntactic component where the features associated with syntactic terminals are realized by fully

inflected forms taken from the morphological paradigms residing in the lexicon.⁵⁰ These paradigms may be more or less rich, involving more or less underspecification, while the features present in syntax are essentially universal and show no variation in terms of richness. Within this model, it is not easy to see how syntactic operations can be conditioned by richness of morphology, jeopardizing any theoretical basis for the RAH.⁵¹

In the model of grammar entertained in this later version of minimalism, a compelling case can be made that head movement is a postsyntactic linearization effect (Chomsky 2001:37f, Zwart 2017).⁵² This calls for a new conceptualization of the triggers for verb movement, such as has been proposed for verb-second in Zwart (2005). Assuming binary Merge, syntax produces a nested set of pairs of elements, and verb-second can be described as the requirement that the left edge of the second member of the top pair be marked by (features carried by) the verb. It might be proposed that poor inflectional morphology disqualifies the verb for performing this edge-marking function, but note that verb-second has always been regarded as a process for which richness of morphology is irrelevant.

It remains to be seen, then, whether a different mechanism, based on richness of agreement, but relevant to postsyntactic linearization, can be identified to account for the variation between Icelandic and Mainland Scandinavian that gave rise to the formulation of the Rich Agreement Hypothesis in the first place. Possibly not—which would suggest that the proposed relation between head movement and morphological strength fails to live up to its intuitive appeal for explaining the distribution of finite verbs across the languages of the world.

References

Bach, Emmon. 1962. The order of elements in a transformational grammar of German.

Language 38, 263-269.

Baker, Mark C. 1988. *Incorporation: a theory of grammatical function changing*. Chicago:

The University of Chicago Press.

Bauche, Henri. 1951. *Le langage populaire: grammaire, syntaxe et dictionnaire du français tel qu'on le parle dans le peuple de Paris, avec tous les termes d'argot usuel*. Paris: Payot.

Bayer, Josef. 1984. COMP in Bavarian syntax. *The Linguistic Review* 3, 209-274.

Bentzen, Kristine. 2008. Kronoby revisited: verb movement in Northern Ostrobothnian embedded non-V2 contexts. Ms, Tromsø University.

<https://studylib.net/doc/7780890/>

Bentzen, Kristine, Gunnar Hrafn Hrafnbjargarson, Thorbjörg Hróarsdóttir, and Anna-Lena Wiklund. 2007. Rethinking Scandinavian verb movement. *Journal of Comparative Germanic Syntax* 10, 203-233.

Bobaljik, Jonathan David. 2003. Realizing Germanic inflection: why morphology does not drive syntax. *Journal of Comparative Germanic Linguistics* 6, 129-176.

Bobaljik, Jonathan David and Höskuldur Thráinsson. 1998. Two heads aren't always better than one. *Syntax* 1, 37-71.

Borer, Hagit. 1984. *Parametric syntax*. Foris: Dordrecht.

Chomsky, Noam. 1957. *Syntactic structures*. The Hague: Mouton.

Chomsky, Noam. 1981. *Lectures on government and binding*. Dordrecht: Foris.

Chomsky, Noam. 1986. *Barriers*. Cambridge: MIT Press.

Chomsky, Noam. 1991. Some notes on economy of representation and derivation. In Robert Freidin, ed., *Principles and parameters in comparative grammar*, 417-454. Cambridge: MIT Press.

Chomsky, Noam. 1992. A minimalist program for linguistic theory. *MIT Occasional Papers in Linguistics* 1.

Chomsky, Noam. 1995. *The minimalist program*. Cambridge: MIT Press.

Chomsky, Noam. 2001. Derivation by phase. In Michael Kenstowicz, ed., *Ken Hale: a life in language*, 1-52. Cambridge: MIT Press.

Chomsky, Noam. 2004. Beyond explanatory adequacy. In Adriana Belletti, ed., *Structures and beyond*, 104-131. New York: Oxford University Press.

Cinque, Guglielmo. 1999. *Adverbs and functional heads*. New York: Oxford University Press.

De Haan, Germen and Fred Weerman. 1986. Finiteness and verb fronting in Frisian. In Hubert Haider and Martin Prinzhorn, eds., *Verb Second phenomena in Germanic languages*, 77-110. Dordrecht: Foris.

Den Besten, Hans. 1977. On the interaction of root transformations and lexical deletive rules. Ms., MIT and University of Amsterdam.

Den Besten, Hans and Jerrold Edmondson. 1981. The verbal complex in Continental West Germanic. *Groninger Arbeiten zur germanistischen Linguistik* 19, 11-61.

Emonds, Joseph E. 1976. *A transformational approach to English syntax: root, structure-preserving, and local transformations*. New York: Academic Press.

Foley, William A. 1986. *The Papuan languages of New Guinea*. Cambridge: Cambridge University Press.

Greenberg, Joseph H. 1963. Some universals of grammar with particular reference to the order of meaningful elements. In Joseph H. Greenberg, ed., *Universals of language*, 73-113. Cambridge: MIT Press.

Halle, Morris and Alec Marantz. 1993. Distributed Morphology and the pieces of inflection. In Ken Hale and Samuel J. Keyser, eds., *The view from Building 20: essays in linguistics in honor of Sylvain Bromberger*, 111-176. Cambridge: MIT Press.

Heycock, Caroline, Antonella Sorace and Zakaris Svabo Hansen. 2010. V-to-I and V2 in subordinate clauses: an investigation of Faroese in relation to Icelandic and Danish. *Journal of Comparative Germanic Linguistics* 13, 61-97.

Heycock, Caroline, Antonella Sorace, Zakaris Svabo Hansen, Sten Vikner, and Frances Wilson. 2011. Residual V-to-I in Faroese and its lack in Danish: detecting the final changes of a syntactic change. *Working Papers in Scandinavian Syntax* 87, 137-165.

Heycock, Caroline and John D. Sundquist. 2017. Don't rush to rehabilitate: a remark on Koenenman and Zeijlstra 2014. *Linguistic Inquiry* 48, 173-179.

Hoekstra, Eric and Jan-Wouter Zwart. 1994. De structuur van de CP: functionele projecties voor topics en vraagwoorden in het Nederlands. *Spektator* 23, 191-212.

Holmberg, Anders and Christer Platzack. 1991. On the role of inflection in Scandinavian syntax. In Werner Abraham, Wim Kosmeijer and Eric Reuland, eds., *Issues in Germanic syntax*, 93-118.

Jackendoff, Ray S. 1972. *Semantic interpretation in Generative Grammar*. Cambridge: MIT Press.

Jonas, Dianne. 1995. *Clausal structure and verbal syntax of Scandinavian and English*. Doctoral dissertation, Harvard University.

Kayne, Richard S. 1989. Facets of Romance past participle agreement. In Paola Benincà, ed., *Dialect variation in the theory of grammar*, 86-103. Dordrecht: Foris.

Koenenman, Olaf and Hedde Zeijlstra. 2014. The Rich Agreement Hypothesis rehabilitated. *Linguistic Inquiry* 45, 571-615.

Koopman, Hilda. 1984. *The syntax of verbs: from verb movement rules in the Kru languages to Universal Grammar*. Dordrecht: Foris.

Koster, Jan. 1975. Dutch as an SOV language. *Linguistic Analysis* 1, 111-136.

Koster, Jan. 1986. The relation between prodrop, scrambling and verb movements. *Groningen Papers in Theoretical and Applied Linguistics*, TTT-series 1.

Koster, Jan. 2000. Pied-piping and the word orders of English and Dutch. *Proceedings of NELS* 30, 415-426.

Lasnik, Howard. 1981. Restricting the theory of transformations: a case study. In Norbert Hornstein and David Lightfoot, eds., *Explanations in linguistics: the logical problem of language acquisition*, 152-173. London: Longman.

Levander, Lars. 1909. *Älvdalsmålet i Dalarna: ordböjning och syntax*. Stockholm: P.A. Norstedt & Söner.

Lieber, Rochelle. 1980. *On the organization of the Lexicon*. Doctoral dissertation, Massachusetts Institute of Technology.

Lockwood, William B. 1964. *An introduction to Modern Faroese*. Copenhagen: Munksgaard.

Matthews, Peter H. 1993. *Grammatical theory in the United States from Bloomfield to Chomsky*. Cambridge: Cambridge University Press.

Müller, Gereon and Wolfgang Sternefeld. 1993. Improper movement and unambiguous binding. *Linguistic Inquiry* 24, 461-507.

Paardekooper, P.C. 1961. Persoonsvorm en voegwoord. *De Nieuwe Taalgids* 54, 296-301.

Pesetsky, David. 1982. *Paths and categories*. Doctoral dissertation, Massachusetts Institute of Technology.

Platzack, Christer. 1986. COMP, INFL, and Germanic word order. In Lars Hellan and Kirsti Koch Christensen, eds., *Topics in Scandinavian syntax*, 185-234. Dordrecht: Reidel.

Platzack, Christer. 1988. The emergence of a word order difference in Scandinavian subordinate clauses. *McGill Working Papers in Linguistics: Special issue on Comparative Germanic Syntax*, 215-238.

Platzack, Christer and Anders Holmberg. 1989. The role of AGR and finiteness in Germanic VO-languages. *Working Papers in Scandinavian Syntax* 43, 51-76.

Pollock, Jean-Yves. 1989. Verb movement, Universal Grammar, and the structure of IP. *Linguistic Inquiry* 20, 365-424.

Rizzi, Luigi. 1997. The fine structure of the left periphery. In Liliane Haegeman, ed., *Elements of grammar*, 281-337. Dordrecht: Kluwer.

Roberts, Ian. 1985. Agreement parameters and the development of English modal auxiliaries. *Natural Language and Linguistic Theory* 3, 21-58.

Roberts, Ian. 1999. Verb movement and markedness. In Michel DeGraff, ed., *Language creation and language change: creolization, diachrony, and development*, 287-327. Cambridge: MIT Press.

Rohrbacher, Bernhard Wolfgang. 1999. *Morphology-driven syntax: a theory of V to I raising and pro-drop*. Amsterdam: John Benjamins.

Ross, John R. 1967. *Constraints on variables in syntax*. Doctoral dissertation, Massachusetts Institute of Technology.

Sandolo, Filomena. 1997. *A grammar of Kadiwéu with special reference to the polysynthesis parameter*. Doctoral dissertation, Massachusetts Institute of Technology.

Stowell, Timothy A. 1981. *Origins of phrase structure*. Doctoral dissertation, Massachusetts Institute of Technology.

Thomason, Sarah Grey and Terrence Kaufman. 1988. *Language contact, creolization, and genetic linguistics*. Berkeley: University of California Press.

Thráinsson, Höskuldur. 2007. *The syntax of Icelandic*. Cambridge: Cambridge University Press.

Travis, Lisa. 1984. *Parameters and effects of word order variation*. Doctoral dissertation, Massachusetts Institute of Technology.

Trosterud, Trond. 1989. The Null Subject Parameter and the new Mainland Scandinavian word order: a possible counterexample from Norwegian. *Papers from the 11th Scandinavian Conference of Linguistics*, 87-100. Joensuu: University of Joensuu.

Tvica, Seid. 2017. *Agreement and verb movement: the Rich Agreement Hypothesis from a typological perspective*. Doctoral dissertation, University of Amsterdam.

Vikner, Sten. 1991. *Verb movement and expletive subjects in the Germanic languages*. New York: Oxford University Press.

Vikner, Sten. 1997. V^o-to-I^o movement and inflection for person in all tenses. In Liliane Haegeman, ed., *The new comparative syntax*, 189-213.

Weerman, Fred. 1989. *The V2 conspiracy*. Dordrecht: Foris.

Zwart, Jan-Wouter. 1991. Clitics in Dutch: evidence for the position of INFL. *Groninger Arbeiten zur germanistischen Linguistik* 33, 71-92.

Zwart, Jan-Wouter. 1993. *Dutch syntax: a minimalist approach*. Doctoral dissertation, University of Groningen.

Zwart, Jan-Wouter. 1994a. Het ontstaan van I' en C'. *Gramma/TTT* 3, 55-70.

Zwart, Jan-Wouter. 1994b. Dutch is head-initial. *The Linguistic Review* 11, 377-406.

Zwart, Jan-Wouter. 1997. *Morphosyntax of verb movement*. Dordrecht: Kluwer.

Zwart, Jan-Wouter. 2005. Verb second as a function of Merge. In Marcel den Dikken and Christina M. Tortora, eds., *The function of function words and functional categories*, 11-40. Amsterdam: John Benjamins.

Zwart, Jan-Wouter. 2017. An argument against the syntactic nature of verb movement. In Laura R. Bailey and Michelle Sheehan, eds., *Order and structure in syntax vol. 1: word order and syntactic structure*, 29-47. Berlin: Language Science Press.

Notes

1. See e.g. Koster (1986:13) and more famously Chomsky (1991:422), who proposed substituting “strong/weak” AGR for Pollock’s (1989:365) “transparent/opaque” AGR (AGR referring to the agreement features). Parameterization in terms of strength of features carried over into early minimalism (Chomsky 1992:44, 1995:232, and e.g. Zwart 1993:91), before the development of the probe-goal mechanism of Agree (see note 2).

2. The meta-feature of ‘strength’ was abandoned as the Minimalist framework developed, and the function of the strong/weak opposition was essentially replaced by a different meta-feature, *interpretability*, the setting of which would trigger the mechanism of Agree (i.e. feature valuation as a function of c-command), but not verb movement per se, which was (somewhat controversially) proposed by Chomsky (2001) to take place not in syntax but in an interface component responsible for the externalization of syntactic structure (formerly called ‘PF’).

3. The main point of reference here is Rohrbacher (1999), based on his 1994 University of Amherst dissertation. I believe that the connection with paradigm structure was first suggested in Platzack and Holmberg (1989: 54,72), building on earlier proposals found in e.g. Roberts (1985:32) and Holmberg and Platzack (1991:89, presented in 1988), where the key factor was taken to be the presence or absence of AGR, not the richness of the agreement paradigm.

4. The discussion will be limited to verb movement, as similar questions in the domain of noun movement have hardly been broached, as far as I am aware.

5. We abstract away from a further structuring of the VP into VP (‘big VP’) and vP (‘little vP’), the latter headed by ‘little v’, which is the verbal element that brings in agentivity and causativity, and exists only in transitive verb phrases, at least in nondefective form (see Chomsky 1995:315).

6. TP (also known as IP, for Inflection Phrase) may be split (as discussed in Pollock 1989 and Chomsky 1991) into one TP and one or more agreement phrases (AgrP, following Kayne 1989). Split TP provides additional specifier positions which could be occupied by shifted objects (scrambling) and multiple subjects, as in transitive expletive constructions. In minimalism, agreement phrases have become deprecated (Chomsky 1995:349f), with multiple specifiers of vP (see note 5) and TP providing the required landing sites for moved categories. Throughout this article, T can be read as ‘Infl’ or ‘Agr’ as well.

7. As proposed by Stowell (1981:67) and Pesetsky (1982:252), apparently following a suggestion by Ken Hale (see Zwart 1994a note 8).

8. That the verb in verb-second constructions occupied the complementizer position was shown by Paardekooper (1961), and later by Koster (1975) and Den Besten (1977). Strictly speaking this could only be shown for verb-second constructions that involve subject-verb inversion.

9. Chomsky (1986:3). CP, too, could be shown to involve multiple layers (Müller and Sternefeld 1993, Hoekstra and Zwart 1994, Rizzi 1997).

10. Both Danish and Icelandic are languages from the North Germanic (Scandinavian) group, one of two extant groups of Germanic languages (next to West Germanic, which includes English, Dutch, German, Yiddish and Frisian). Swedish and Norwegian show the same verb placement as Danish.

11. The question what triggers V-to-C movement was never answered satisfactorily (see Vikner 1991 for a survey), but the consensus remained that V-to-C movement is qualitatively different from V-to-T movement, and discussion of the relation of verb movement and morphological strength invariably abstracts away from V-to-C movement (e.g. Rohrbacher

1999:28, Koenenman and Zeijlstra 2014:576 note 3). This raises the question of how to tell V-to-C and V-to-T movements apart. A telltale sign of V-to-C movement is subject-verb inversion, a feature of topicalization in all Germanic languages except English. The classic analysis of verb second in Den Besten (1977) generalizes the V-to-C movement in inversion (*XVS*) constructions to subject-initial (*SVX*) constructions, forcing for subject-initial constructions an additional movement of the subject to Spec,CP (this generalization is not adopted in more flexible approaches, such as Travis 1984 and Zwart 1993, making the additional subject movement unnecessary). Note that topicalization *cum* inversion is also possible in Icelandic embedded clauses, suggesting an additional C-position in the complement of *að*, which would entail, on the strength of Den Besten (1977), that the verb is in C in 3 as well, eroding much of the initial evidence for the RAH in the domain of Germanic.

12. Recall that Modern Swedish is like Modern Danish in this regard (note 10). Modern Danish/Swedish do allow verb movement in embedded clauses under certain conditions (identified by De Haan and Weerman 1986 on the basis of similar facts from Frisian), but not in conditional clauses, relative clauses and embedded questions. The Old Swedish example (7), involving a conditional clause, is therefore significant.

13. The same variation predictably shows up in a comparison of Modern Swedish with conservative dialects of Swedish, such als Älvdalsmål (Platzack 1988:233, referring to Levander 1909).

14. Auxiliaries in English do appear to the left of adverbs/negation, a crucial observation in the analysis of Pollock (1989) and Chomsky (1991), which is somewhat problematic in many analysis, and also for the Rich Agreement Hypothesis (cf. Rohrbacher 1999:184, Koenenman and Zeijlstra 2014:607). Interestingly, the verb and the object may both appear to the left of

(some) adverbs, as in *John kissed Mary often*, suggesting to Cinque (1999:225) and Koster (2000) that the syntax of English involves (short) VP-movement to the left.

15. Examples: forms of Icelandic *horfa* ‘look’ in the present indicative are 1SG *horfi*, 2/3SG *horfir*, 1PL *horfum*, 2PL *horfið*, 3PL *horfa* (Thráinsson 2007:8), while Danish *høre* ‘hear’ has just the single form *hører* for all persons and numbers (Vikner 1997:191).

16. Old Danish (c1050) *døma* ‘judge’ had in the present tense 1SG *dømi*, 2/3SG *dømir*, 1PL *dømun*, 2PL *dømið*, 3PL *døma*, while Middle Danish (c1350) *dømæ* ‘judge’ had just SG *domær* vs. PL *domæ* (Vikner 1997:206).

17. Statements about French refer to the written language. In spoken French, endings are the same (in fact, zero) for all three persons in SG and for 3PL, leaving special endings for 1PL and 2PL only. Thus (spoken French in brackets), for *donner* ‘give’: 1/3SG *donne* [dɔ̃n], 2SG *donnes* [dɔ̃n], 1PL *donnons* [dɔ̃n], 2PL *donnez* [dɔ̃ne], 3PL *donnent* [dɔ̃n]. But the 1PL pronoun *nous* is typically replaced by impersonal *on*, triggering 3SG agreement [dɔ̃n], rendering spoken French inflectionally poor on most definitions (Bauche 1951:102).

18. The Continental West-Germanic languages Dutch, Frisian and German (all OV-languages) were considered irrelevant, as they either lacked T altogether (e.g. Bayer 1984:241, Weerman 1989:99), or had T positioned to the right of VP (e.g. Den Besten and Edmondson 1981:22, going back to Bach 1962:266). Since VP was supposed to be head-final in OV-languages, this would cause V and T to be adjacent, and it would be impossible to detect verb movement (Rohrbacher 1999:42). See section 4.

19. Rohrbacher (1999:116-117) understands ‘distinctive marking’ to mean that the forms bearing the 1st/2nd person feature are distinct from the forms lacking those features, including the infinitive.

20. In the present tense in French, 1st and 2nd person are also marked in the plural, but 2nd person is not marked distinctively from the infinitive *donner* [dɔne] (cf. note 17).

21. See Vikner (1997) for pertinent critique. Vikner proposes a slightly less particular definition of rich agreement, according to which a language has rich agreement when it has inflection for person in all tenses. As Vikner (1997:208) admits, both definitions raise questions as to the learnability of the verb movement-agreement correlation in the course of first language acquisition.

22. ‘Participant’ subsumes 1st and 2nd person. An example of this minimal pronoun paradigm is Kuman, which shows the following pronoun inventory: 1SG *na*, 1PL *no*, 2 *ene*, 3 *ye* (Foley 1986:70).

23. Other than Rohrbacher (1999) and Vikner (1997), Koenenman and Zeijlstra (2014:576) propose that richness be decided on the basis of ‘the most regular paradigm’, typically the present tense indicative.

24. In this particular construction, with a negative matrix clause, an analysis in terms of embedded verb-second can be excluded (cf. De Haan and Weerman 1986:84).

25. For the distinction between high and low adverbs, see Jackendoff (1972) and Cinque (1999).

26. Koenenman and Zeijlstra (2014:586) argue that the shorter verb movement needed to account for 17 targets ‘little v’ (cf. note 5). On this analysis, the lower adverbs that the verb may cross must be merged inside the verb phrase, eroding one of the key diagnostics for verb movement out of the verb phrase.

27. As an example of reinterpretation of agreement, Koenenman and Zeijlstra (2014) argue that in French, clitics were reinterpreted as subject agreement markers to counteract the erosion of the verbal agreement paradigm. Note that Infl is called ‘Arg’ in Koenenman and Zeijlstra (2014).

28. Thus for *kasta* ‘throw’: 1SG *kasti*, 2/3SG *kastir*, PL *kasta*. In the past tense paradigm a dental past tense marker appears, and agreement is reduced to a singular/plural opposition: SG *kastaði*, PL *kastaðu*.

29. Thus for *hern* ‘hear’: 1SG *her*, 2SG *herst*, 3SG/2PL *hert*, 1/3PL *hern* (Vikner 1997:191).

30. Note that (18) has a negative matrix clause, so that the verb movement in the embedded clause cannot be analysed as a case of verb-second.

31. Thus German *kaufen* ‘buy’: 1SG *kaufe*, 2SG *kaufst*, 3SG/2PL *kauft*, 1/3PL *kaufen*; Frisian *pakke* ‘take’: 1SG *pak*, 2SG *pakst*, 3SG *pakt*, PL *pakke*; Dutch *pakken* ‘take’: 1SG *pak*, 2/3SG *pakt*, PL *pakken* [pakə].

32. The idea that adjacency of V and T suffices necessitates a redefinition of the Rich Agreement Hypothesis, according to which rich agreement requires the verb to be string adjacent to Infl (Koenenman and Zeijlstra 2014:605).

33. In the traditional analysis of verb-second, the verb moves to C in main clauses, and the subject moves to the specifier position of CP in subject-initial main clauses. The subject movement in that analysis is unmotivated, and should therefore not be postulated without further evidence.

34. These thirteen languages are: Bilua, Haitian Creole, Hatam, Hawaiian, Hmong Njua, Igbo, Kadiwéu, Martuthunira, N|uuki, Pwo Karen, Quiegolani Zapotec, Thai and Vietnamese.

35. The relevant languages are: Bilua, Hatam, Igbo, Vietnamese, Quiégolani Zapotec, and Hmong Njua, Pwo Karen and Thai. The latter three languages do not allow adverbs to the left of the V+O complex, the others do. Of course one could assume that clause-final adverbs are right-adjoined to VP, but that would further undermine the diagnostics of verb movement based on adverb positions which is crucial to the RAH to begin with.

36. Moreover, we might consider the possibility that poverty of agreement in these cases is the *result* of VP-movement, if (as seems reasonable) a verb contained in a moving VP is a less suitable candidate for realizing subject agreement. However, the rich agreement languages in Tica's sample Wari', Lango and Kaqchikel arguably also involve VP-movement.

37. The relative element REL marks the beginning of a post-stem clitic string (Sandolo 1997:118).

38. The initial person markers co-occur with full noun phrases, one of the hallmarks of agreement in Tica's diagnostics section (2017:79). The verb-initial slot for person markers is filled according to the following person/case hierarchy: 1PL object > 2 subject > 1SG object > 1 subject > 3, irrespective of thematic roles (Sandolo 1997:47). A marker *-d-* appears when the verb-initial person marker is associated with the semantic role THEME (i.e. it is the object of a transitive clause, or the subject of an unaccusative/passive/reflexive clause). I believe it is possible to analyse this *d*-marker as a regulatory device, not unlike inverse markers, associating grammatical functions with thematic roles. On the other hand, the postverbal thematic markers cooccurring with postverbal person markers (clitics), seem to function more like adpositions (Sandolo 1997:63).

39. The languages are: Ayoreo, Bukiyip, Egyptian Arabic, Finnish, Kaqchiquel and Wolof (V-to-Infl movement), Hausa, Tiwi and Wari' (no V-to-T movement), and Lango and Moro

(inconclusive). It should be noted, though, that Bukiyip is also inconclusive, in that the sources used by Tvica do not allow us to conclude whether the (few) postverbal adverbs appear before or after the direct object (Tvica 2017:185).

40. Of these three languages, Tvica argues that Wari' has VP-movement, while Hausa and Tiwi show no movement at all.

41. A crucial observation about Kaqchikel word order appears to be that definite noun phrases must not precede indefinite noun phrases (Tvica 2017:226). Assuming that both subjects and objects are generated inside the verb phrase, this fact follows if definite noun phrases are triggered to move out of the verb phrase, after which remnant movement takes the verb and any noun phrases remaining inside the verb phrase to the left of the definite noun phrase(s). As Tvica points out, SVO constructions in Kaqchikel show more flexibility in adverb placement, but he takes these to be derived by further operations, suggesting we should abstract away from the complications these constructions bring (Tvica 2017:227).

42. Moro and Lango are deemed inconclusive for different reasons: Moro arguably has verb movement, but this is apparently related to aspectual features, not to subject agreement, and Lango adverbs always follow the verb+object combination, rendering them useless for diagnosing verb movement (but again, a VP-movement analysis suggests itself).

43. I have found that the question of the relation between head movement and morphological strength is more generally considered in terms of plausibility, but here intuitions vary and it is in fact not inconceivable that the correlation would be the inverse from what the Rich Agreement Hypothesis states (i.e. that verb movement is necessary to come to the rescue of a weak inflectional category, but not needed with a strong inflectional category). We need to look beyond plausibility, therefore.

44. In this respect, generative grammar was a direct continuation of the theory of morphology in (postbloomfieldian) American structuralism (Matthews 1993:87). This view of the relation between syntax and morphology, where inflectional affixes are generated separately from lexical stems (unlike derivational affixes, which form part of stems), came to be known as ‘weak lexicalism’.

45. Chomsky (1981:55) initially suggested that the union of verbs with their affixes could take place at PF, a precursor to his later suggestion that head movement is postsyntactic (Chomsky 2001:37).

46. Baker (1988:139) presents the filter (his ‘Stray Affix Filter’) in the context of a theory of morphological subcategorization (cf. Lieber 1980), but the proposed explanation remains teleological. See Koopman (1984:149-150) for some pertinent critique.

47. Again, the logic is not entirely compelling, as it might equally well be the case that only weak/poor agreement needs support from a lexical verb.

48. In a weak lexicalist approach, lowering from T to V leaves a trace that cannot be governed by the moved category, requiring covert movement of the V-T complex back up to T to eliminate the trace (Chomsky 1991:426), in violation of the emerging ideal of derivational economy. This then motivated the adoption of a ‘strong lexicalist’ view of the relation between morphology and syntax (Chomsky MIT class lectures, Fall 1991).

49. But note that the functional head is supposed to host both N-features (for licensing noun phrases) and V-features (for licensing the verb)(Chomsky 1992:42). The Rich Agreement Hypothesis essentially claims a connection between the number of opposed N-feature values (person, number) and the structure of the verbal paradigm. But verb movement is triggered by

the need to license V-features, and has nothing to do with N-features, unless a relation between the two is stipulated.

50. E.g. Chomsky (2004). This view of the relation between morphology and syntax is due mostly to Halle and Marantz (1993), see also Zwart (1997:161f).

51. Bobaljik and Thráinsson (1998) present a version of the hypothesis relating head movement to morphological strength that is consistent with a view of inflectional morphology as being postsyntactic, in which the presence of inflectional functional heads co-varies with the richness of inflectional morphology. This analysis proposes a locality requirement between V and the functional head, such that the presence of additional functional heads requires the verb to move up. As pointed out by Bobaljik (2003), this approach is not inconsistent with a weak interpretation of the RAH, given the possibility of zero morphology associated with the projected functional heads.

52. Chomsky (2001) argues for the postsyntactic nature of verb movement from the observation that verb movement seems to lack semantic effects; Zwart (2017) argues from the observation that periphrastic tense forms must be created postsyntactically just like inflectional verb forms, and since the auxiliaries featuring in the periphrastic tense undergo verb movement, verb movement cannot take place in Narrow Syntax.

FIGURE ONE

