

Hierarchy-order relations in the Germanic verb cluster and in the noun phrase

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Abstract

On the basis of some new and some old data this article claims that the hierarchy-order relations that characterize neutral word order within the noun phrase, as discussed in Cinque, 2005, and the hierarchy-order relations that characterize neutral word order within the Germanic verb cluster are identical. If true, this can hardly be an accident. The article therefore suggests a straightforward generalization of Abels and Neeleman's 2012 reformulation of Cinque's theory from the noun phrase to the verb cluster and considers various consequences.

The main consequence is a further strengthening of the universals concerning movement and the possible hierarchy-order relations formulated in Abels and Neeleman, 2012; Cinque, 2005.

1 Introduction

Syntactic theory should characterize, among other things, what possible relations there may hold between hierarchical structure and linear order.

In this paper I pose the question of the hierarchy/order relations in the Germanic verb cluster. Order within the verbal cluster is notable for its variation across languages and dialects, across construction types within a given language, and even within apparently synonymous constructions. A lot of work has focused on constructing theories that can account for variation within the cluster. My main aim here instead is to suggest a generalization concerning the invariants found in the verbal cluster. The main claim is that order-hierarchy relations in the verbal cluster very closely track the order-hierarchy relations found across-languages in the nominal

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domain (Abels and Neeleman, 2012; Cinque, 2005; Dryer, 2009) and should be accounted for in the same terms.

While evidence about linear order of elements is direct, evidence about the hierarchical structure of elements is only indirect. Such evidence may come from distributional constituency diagnostics, scope, and what are traditionally called government relations. In the domain I am concerned with, scope directly reflects the underlying hierarchical structure. An additional very reliable diagnostic for the underlying hierarchical relations between non-finite verbs are the morphological forms these verbs take; verbs select for specific forms of their non-finite verbal complements. Since Bech, 1955, 1957 this is called *status government* in the literature on German. It should be noted that this is not always an unequivocal guide to underlying structure, as the *Skandalkonstruktion* (Vogel, 2009) illustrates starkly. Using these two criteria as our guide, we can map out what appears to be the constituent structure of verbal clusters.

The paper is structured as follows. In the first section, I summarize the analysis of hierarchy-order relations in the noun phrase from Abels and Neeleman, 2009, 2012. I then show how it carries over empirically and theoretically to three- and four-membered verb-clusters in Germanic.

2 Greenberg’s Universal 20 and its exceptions

An important early generalization concerning word order in the noun phrase was formulated by Greenberg, 1963, whose universal 20 (p. 87) states that “[w]hen any or all of the items (demonstrative, numeral, and descriptive adjective) precede the noun, they are always found in that order. If they follow, the order is either the same or its exact opposite.” On the basis of careful typological work (by himself, Hawkins, Rijkhoff, Lu, Dryer, and others), Cinque, 2005 argues that of the $4!=24$ logically possible orders of demonstrative, (descriptive) adjective, numeral, and noun, only fourteen are attested as unmarked word orders in some natural language. If Cinque’s characterization of the data is correct, Greenberg’s original formulation is both too permissive and too restrictive (at least on the interpretation proposed by Hawkins). Table 1 summarizes Cinque’s findings in tabular form. The table is organized as follows: Shaded cells in the table represent unattested word orders, all other cells contain attested orders.¹

Cinque, 2005 bases his account of this pattern on Kayne’s 1994 Linear Correspondence Axiom. Abels and Neeleman, 2009, 2012 review the proposal and suggest that the assumption of a fixed specifier-head and head-complement order plays no role. They show that the following assumptions allow the 14 attested hierarchy order relations found in the noun phrase and exclude the 10 unattested ones.

¹Dryer, 2009 comes to a somewhat different evaluation of the situation. This will be discussed below.

	I Noun final	II Noun third	III Noun second	IV Noun first
a.	Dem Num A N	Dem Num N A	Dem N Num A	N Dem Num A
b.	Dem A Num N	Dem A N Num	Dem N A Num	N Dem A Num
c.	Num A Dem N	Num A N Dem	Num N A Dem	N Num A Dem
d.	A Num Dem N	A Num N Dem	A N Num Dem	N A Num Dem
e.	A Dem Num N	A Dem N Num	A N Dem Num	N A Dem Num
f.	Num Dem A N	Num Dem N A	Num N Dem A	N Num Dem A

Table 1: Typology of unmarked word order in the noun phrase according to Cinque, 2005

- (1) a. The underlying hierarchy of Dem, Num, A, and N in the extended nominal projection is Dem>Num>A>N, where > indicates c-command;
 b. all (relevant) movements move a subtree containing N;²
 c. all movements target a c-commanding position;
 d. all movements are to the left.

Given these assumptions, eight of the fourteen attested linear strings can be base generated, simply by allowing cross-linguistic variation in the linearization of sister nodes in the hierarchical structure described by (1-a).

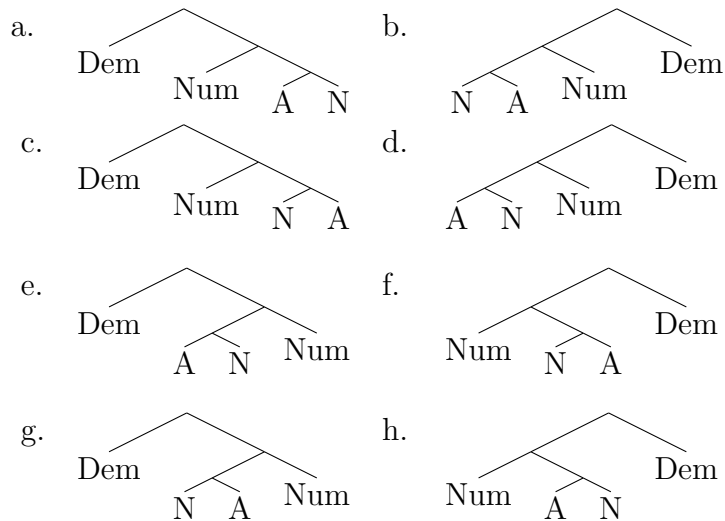


Figure 1: Base-generable structures according to (1)

In the trees in figure 1, the non-terminals in the extended projection of the noun are left unlabeled and the demonstrative, numeral and adjective

²See Georgi and Müller, 2010 for discussion and a possible derivation of this restriction.

are not introduced by dedicated functional heads. The reader is referred to Abels and Neeleman, 2012 for discussion of these questions.

The remaining six attested orders are derived by leftward movement of a constituent containing the noun, as shown in figure 2.

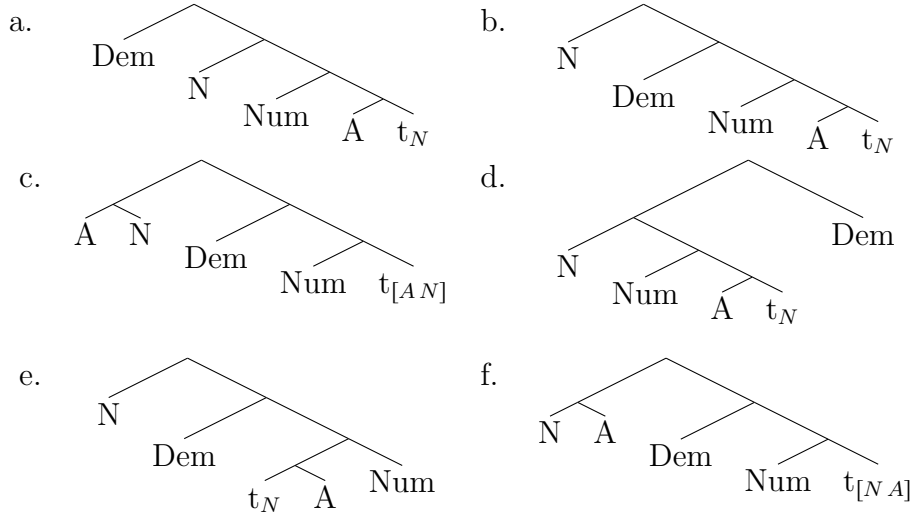


Figure 2: Movement-derived structures according to (1)

There are other derivations involving movement, but these do not yield additional linear strings. For example, (1-III-b) can be base-generated (as above) or derived from (1-II-b) by short movement of N, as in figure 3.

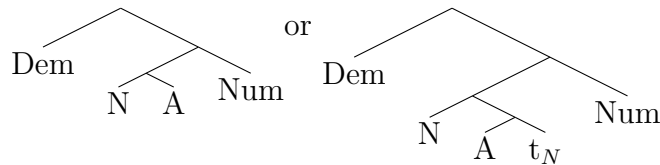


Figure 3: Multiple structures for a single string

The ungrammaticality of the ten unattested orders falls out in the following way. Since movement is uniformly leftward and must affect constituents containing the noun, noun-final orders must be base-generated. But among the base-generated structures, all of which are given in 1, only (1-a) is noun-final. Therefore, any permutation of Dem, Num, and A is ruled out in noun-final structures. We therefore have an account of why the shaded cells in column I of table 1 are unattested.

The reasoning just given carries over to all prenominal material. Since movement always involves the noun, moving one nominal modifier across a second implies that the noun will also precede that second modifier; therefore, movement cannot change the order of prenominal modifiers. This accounts for the shaded cells in column II of table 1.

Finally, the shaded cells in columns III and IV of table 1 ((1-III-f) and (1-IV-f)) are excluded because their derivation can only satisfy the constraints in (1) if a non-constituent is moved. Given that any constituent

that contains N and Num also contains A, there is no way of shifting Num and N to a position preceding Dem without taking A along.

There is a linear asymmetry induced by movement. To capture the pattern only movement of constituents containing N must be allowed and this movement must be upward-and-leftward.

3 Verb clusters

In the case of the NP there are no direct scope arguments supporting Dem, Num, A, N as the underlying hierarchy. The reason for this is that in principle all of the nominal satellites mentioned could be represented as intersective modifiers. The situation is in some sense more transparent for verb clusters. Verbs with modal meanings and other verbs expressing propositional attitudes clearly enter into scope relations. I take such scope relations to reflect underlying hierarchical relations directly. There is also selection for the morphological shape of the complement, whether the complement appears as a bare infinitive, an infinitive with *zu*, or a participle (Bech's 'status government'). These two sources of evidence usually agree. When they don't, interpretation is used as a guide to underlying hierarchical structure.

3.1 Two- and three-membered clusters

For two-membered clusters of verbs, the hierarchically lower verb may either precede the higher verb or follow it. Which of the two options is chosen depends not only on the language but also on the nature of the embedded and the embedding verb. For example Seiler, 2004 reports that in two verb clusters the order where the hierarchically higher verb precedes the lower verb is preferred in the West of the German speaking parts of Switzerland when the higher verb is an auxiliary (*have paid* is preferred over *paid have*), a modal (*wants marry* is preferred over *marry wants*), or a main verb (*learn drive* is preferred over *drive learn*). But as you travel east, the preferred order switches first for the main verb auxiliary combination, then additionally for the main verb modal combination, and finally in the East for all three.

I will follow tradition and treat verbal particles as part of the verb cluster. Of course, particles show the same kind of variation in linear order that we find with other members of the cluster. In the Germanic VO varieties, particles generally follow the verb while they precede the verb in the OV varieties. As in the cases from Swiss German mentioned in the previous paragraph, there is a certain amount of variation not just by language and dialect but also by construction. Thus, the particle usually follows the verb in Swedish. In the passive however, it precedes it, (2).

- (2) Swedish Svenonius, 2005
- a. Vi hällde i mjölken.
we poured in milk.the
We poured in the milk.

- b. Mjölken blev ihälld.
milk.the became in.poured
The milk was poured in.

The syntax of three-membered clusters has by now been researched very thoroughly. There is general agreement that of the six logically possible orders of three elements, only five are attested as neutral orders in the cluster (see Wurmbrand, 2006 for extensive discussion). This is depicted in table 2. The shaded cell again represents an unattested order.

	I 3 final	II 3 medial	III 3 first
a.	1 2 3	1 3 2	3 1 2
b.	2 1 3	2 3 1	3 2 1

Table 2: Typology of unmarked word order in three-membered verb clusters

It will be useful to consider the idealizations underlying the table.

There is one construction that shows all five orders in a cross-dialectal perspective: The combination of auxiliary, modal, and main verb in that hierarchical order (for short Aux>Mod>V). Barbiers, 2005 reports that the translation of Standard Dutch (3) into dialectal variants of Dutch, elicited as part of the SAND project, produced 2-3-1 and 3-2-1 variants in substantial numbers. The 1-3-2 order shows up in small numbers, but with a consistent geographical pattern, according to Barbiers, and he assumes that it is a possible Dutch pattern for this combination of modals and auxiliaries. The remaining two patterns (2-1-3 and 3-1-2) are virtually absent in the dialects studied in the SAND project. Seiler, 2004 reports Swiss German data for the same type of sentences, (4), and finds the orders 1-2-3 and 3-1-2 to be clearly attested in his sample. Patocka, 1997, p. 278 reports that for sentences of the type in (5) three possible orders in the Bavarian dialects of Austria: 1-3-2, 3-1-2, and 1-2-3. Standard German also has 1-3-2 as an unmarked order for Aux>Mod>V structures. None of these authors report the 2-1-3 pattern to be possible.

(3) Dutch

Vertel maar niet wie zij had kunnen roepen.
tell just not who she had can.INF call.INF
Just don't say who she could have called. Barbiers, 2005, 237
ex. 3

(4) Swiss German

S Telefon hät grad glüütet, won=i han welle gaa
the phone has just rung when=I have wanted go
The phone just started to ring when I wanted to leave. Seiler,
2004, 372 ex. 6a

- (5) dass er hat arbeiten müssen
 that he has work must
 that he has had to work Patocka, 1997, p. 278

These findings are consistent with Wurmbrand's (2004) assessment of the situation. For Aux>Mod>V clusters she reports 1-2-3 order for Dutch and Swiss German, 1-3-2 orders for Standard German, the Allemanic Vorarlberg dialect, and certain Swiss German speakers, 3-1-2 orders for various German and Swiss German dialects, as well as the Allemanic Vorarlberg dialect, 2-3-1 orders for Afrikaans and, under certain circumstances West Flemish, 3-2-1 orders for some German dialects and the Allemanic Vorarlberg dialect, and no 2-1-3 orders.

Nevertheless, the table does reflect substantial idealizations. First of all, the shaded order is not entirely unattested even for Aux>Mod>V clusters like (6), from Schmid and Vogel, 2004. The type of sentence studied in Schmid and Vogel, 2004 is slightly different from the ones above in that the auxiliary 'werden'– *will* selects an infinitival complement while above we were dealing with perfect auxiliaries, which select perfect participles.

- (6) German
 Maria glaubt, dass sie das Lied singen müssen wird.
 Maria believes that she the song sing must will
 Maria believes that she will have to sing the song. Schmid and
 Vogel, 2004, 236 ex. 1

Schmid and Vogel, 2004 report the 2-1-3 order in (different) focus affected contexts for Rheiderländer Platt (Low German) and for St. Gallen (Swiss German). They also attest it in Meran (Southern Tyrolean) but do not discuss the conditions under which it occurs there. If the table nevertheless claims that the order does not occur, this is to be understood as the claim that the order is not the only order or the/a neutral order from the perspective of information structure.

There are other reported instances of the 2-1-3 order as well. They, too, have to be set aside to maintain the claim of the table. Zwart, 2007 gives the Luxemburgish example in (7) and the Swiss German example (8).³

- (7) Luxemburgish
 ob=s de hollänesch geléiert hues schwätz-en
 whether=2ndSG you Dutch learned have speak-INF
 whether you learned to speak Dutch Zwart, 2007, 80 ex. 18
 attributed to Bruch, 1973, p. 95

- (8) Zurich German
 wil er en ghöört hät choo.
 because he him heard has come
 because he has heard him come Lötscher, 1978, 3 note 2 ex.

³Zwart, 2007 also suggests that the 2-1-3 order might appear in Samatimeric, a Danube Swabian variety. The evidence for this is only indirect, as the available grammar, Mileck, 1997, does not contain relevant examples.

(ib)

Both varieties also allow the so-called *third construction*. On standard assumptions, the third construction is not viewed syntactically as an instance of verb clustering but is usually seen to involve clause-level verbal complementation (though see Wöllstein-Leisten, 2001 for a different position). Zwart makes the reasonable move to set the the examples above aside, since it is impossible to decide by simple inspection whether they involve verbal clustering or the third construction. In other words, he suggests treating these examples as involving clause-level complementation instead of clustering.

We also find 2-1-3 orders in Frisian. Here it is probably less controversial that clause level embedding is involved than in the Luxemburgish and Zurich German examples above, because of the presence of the infinitive marker 'te'– *to*, whose cognates are absent in the Luxemburgish and Zurich German examples. However, it has long been recognized that this marker in West Germanic is not indicative of the presence or absence of clause-level structure (see Wurmbrand, 2001).

(9) Frisian

dat er miende my dat boek ferbiede te kinnen
that he was of the opinion me that book forbid to be able
te lêzen
to read
that he believed to be able to prohibit me from reading that
book
Haan, 2010, 212 ex. 44c

I agree with much of the literature then that the 2-1-3 order is unavailable as an unmarked order in three-element clusters. The table reflects this.

The discussion so far has concentrated on explaining why I excluded 2-1-3 from the attested neutral cluster orders. A comment regarding the 2-3-1 order is necessary, too. Compared to the other four attested orders, 2-3-1 is rare (Svenonius, 2007 stresses this point). However, unlike the 2-1-3 order discussed above, the 2-3-1 order does occur as the unmarked (and in fact obligatory) order in a number of constructions and languages. Robbers, 1997 reports that in Afrikaans the 2-3-1 order is obligatory in Aux>Mod>V clusters, (10). The same order is also obligatory if the modal is replaced by one of a class of so-called *linking verbs* in Afrikaans, (11).

(10) Afrikaans

dat Jan kon werk het
that Jan could work has
that Jan could have worked Robbers, 1997, 57 ex. 32a

(11) Afrikaans

- a. dat ek vir haar (ge)-leer lees het
that I OM her PTCP-teach read have
that I taught her how to read Robbers, 1997, 59 ex. 37b
- b. sweetpakke wat in 1970 ophou maak is
training-suits that in 1970 stop make is

training suits that were stopped being made in 1970 Robbers, 1997, 62 note 16 ex. ib, originally from Ponelis, 1979, p. 420

According to Wurmbrand, 2004, if the auxiliary is non-finite, the 2-3-1 order is also obligatory in West Flemish under the same circumstances, (12).

(12) West Flemish

da Valére willen Marie dienen boek geven eet
that Valére want Marie that book give has
that Valére has wanted to give that book to Marie Haegeman,
1998, 260 ex. 1a

Barbiers, 2005 notes that 2-3-1 order occurs both in the Netherlands and in Belgium, where it is “the only option in the majority of dialects” (Barbiers, 2005, p. 243).⁴

Despite the fact that it is somewhat less widely used across constructions and dialects than the other four attested orders, we must conclude (contra e.g.) that the 2-3-1 order is real.

Let me return to the issue of verbal particles again. By and large they behave like members of the cluster. This is shown in (13). It is uncontroversial that the four orders given here are the unmarked orders in various languages and dialects. The 2-3-1 and 2-1-3 orders appear to be entirely absent with verbal particles. Relative to table 2, the two unattested orders for particles have a different status. 2-1-3 is not expected to be attested. 2-3-1- is unexpectedly unattested. Despite this gap, I will treat particles as regular members of the cluster. The rarity of 2-3-1 orders and their complete absence when the lowest member is the particle form part of a larger pattern, to which I return at the very end of this article.

- | | | | |
|------|----|--|-------|
| (13) | a. | Norwegian | 1-2-3 |
| | | at han har spist opp | |
| | | that he has eaten up | |
| | b. | Dutch (SAND) | 1-3-2 |
| | | Jan had het heele brood wel wille op eten | |
| | | Jan has the whole bread surely wanted up eat | |
| | | Jan has surely wanted to eat up the entire loaf. | |
| | c. | Fijnaart-Dutch (SAND) | 3-1-2 |
| | | Jan had et heele brood wel op wille ete | |
| | | Jan has the whole bread surely up wanted eat | |
| | | Jan has surely wanted to eat up the entire loaf. | |
| | d. | German | 3-2-1 |

⁴Lötscher, 1978, 3 note 2 ex. ic gives an example with 2-3-1 order from Zurich German, (i), but as we saw this order alternates with the 2-1-3 order and I will disregard it here, despite the fact that we are probably not dealing with clausal embedding here.

- (i) Zurich German Lötscher, 1978, 3 note 2 ex. ic
- wil er en ghööre choo hä
because he him heard come had
because he had heard him come

- | | | |
|----|---|-------|
| e. | ...dass er wohl das ganze Brot auf-essen will | |
| | that he surely the whole bread up-eat wants | |
| f. | Unattested | 2-3-1 |
| g. | Unattested | 2-1-3 |

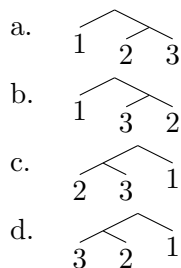
With the caveats and idealizations just discussed in mind, table 2 summarizes the facts of three-membered verb clusters. Given these idealizations, the hierarchy-order relations in the verb cluster align precisely with the pattern found in the noun phrase. This is so, because for any three-membered subset of the four elements considered in Cinque's typology of the noun phrase, of the six possible orders only five are attested. The unattested one is invariably—and for obvious reasons given the theory—the 2-1-3 order.

This observation leads to the hypothesis, formulated in terms of Abels and Neeleman's (2012) interpretation of Cinque's (2005) findings: The range of permissible cluster orders can be characterized as follows.

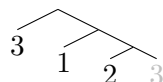
- (14) Given a set of verbal elements (1...n) that are part of a single clausal domain, with $1 > 2 > \dots > n$, where $>$ denotes underlying c-command, permissible cluster orders are the non-movement derived orders and, where movement occurs
- all (relevant) movements move a subtree containing the lowest verbal element;
 - all movements target a c-commanding position;
 - all movements are to the left.

In a three-element cluster, this allows four base-generated, (15), and one movement derived order, (16). The order 2-1-3 cannot be derived.⁵

- (15) Base generable orders



- (16) Movement derived order



If this is the correct way of looking at verb clusters, we derive the strong expectation that in four-element clusters all and only those orders will be found that are derivable in this way. In other words, when we look at four-

⁵Wurmbrand, 2003 makes a similar suggestion. For her, (15) are derived by the postsyntactic re-ordering operation “flip” while (16) is derived by syntactic movement. Wurmbrand's system is less restrictive, though, since she is at pains to rule in the 2-1-3 order as derived through syntactic movement and on a par with the 3-1-2 order. In the current system, based on (14), the 3-1-2 order is a possible unmarked cluster order but the 2-1-3 order is not.

element clusters, we should see abstractly the same pattern that we find in the noun phrase. The next section discusses this expectation.

3.2 Four-element clusters

The hypothesis formulated in (14) gives rise to the expectation that in four-element clusters we will find the distribution shown in. Shaded cells represent orders that are expected to be absent, clear cells represent orders expected to be attestable. The table is simply an abstract version of 1.

	I 4 final	II 4 third	III 4 second	IV 4 first
a.	1 2 3 4	1 2 4 3	1 4 2 3	4 1 2 3
b.	1 3 2 4	1 3 4 2	1 4 3 2	4 1 3 2
c.	2 3 1 4	2 3 4 1	2 4 3 1	4 2 3 1
d.	3 2 1 4	3 2 4 1	3 4 2 1	4 3 2 1
e.	3 1 2 4	3 1 4 2	3 4 1 2	4 3 1 2
f.	2 1 3 4	2 1 4 3	2 4 1 3	4 2 1 3

Table 3: Predicted typology of word order in four-membered clusters

In the realm of four-element clusters the range of possible combinations of modals, auxiliaries, linking verbs, main verbs, and particles is rather large. Systematic informant work from dialect atlas projects of the type that I could draw on above has not been carried out with four-membered clusters. Actual attestations of such examples are fairly rare. Unfortunately, these factors conspire in making the data for four-membered clusters much more patchy and, in a sense, anecdotal than the data from three-membered clusters.

There is one exception regarding the rarity of four-membered clusters. If we consider particles as full members of the cluster, as I have assumed and argued we should, then attestations are much easier to come by. It is also easier for informants to judge examples with two auxiliaries or modals and a particle verb than with three auxiliaries or modals. Below I set structures with particles as the lowest member of the cluster and those without particles side by side. It should be noted though that the inclusion of particles is not necessary in the sense that all structures attested with particles are also attested without them.

Despite the difficulty in obtaining relevant data, a trawl through the existing literature turns up information that is surprisingly consistent with the hypothesis pursued here. Indeed, the expectations are borne out rather dramatically, as the following examples show. The examples are simply listed here with annotations of what the order is, what language or dialect the example comes from and from which source. Unless noted, I have no reason to doubt that the order given is the or at least one of the neutral orders for the given dialect for the given construction.

- (17) 1-2-3-4
- English
- a. John must have been caught.
b. John must have looked up the number.
- Dutch
- c. dat die ijver zou moeten worden aangemoedigd
that this diligence would must become encouraged
that this kind of diligence would have to be encouraged Geerts
et al., 1984, p. 600
- d. Ik denk dat hij dat zal hebben laten liggen
I think that he that will have let lie
I think that he will have let it lie (forgotten it) somewhere
Geerts et al., 1984, p. 609
- e. Denkt u dat hij kan zijn gaan kijken
think you that he can be go look
Do you think that he might have gone to look? Geerts et al.,
1984, p. 610
- (18) 1-2-4-3
- Dutch
- a. dat die ijver zou moeten aangemoedigd worden
that this dilligence would must encouraged become
that this kind of diligence would have to be encouraged Geerts
et al., 1984, p. 600
- b. dat ik Marie wil kunnen op-bellen
that I Marie want can.INF up-ringINF
that I want to be able to ring up Marie Koopman and
Szabolcsi, 2000, 160, ex. 43a
- Swiss German
- c. dass ein so erfahrener Kommissar diesen Fall schon längst
that a so experience detective this case already long
hätte sollen lösen können
had should solve can
that so experienced a detective should have been able to solve
this case long ago Wurmbrand, 2004, 85, table 16
- d. das er ... wil chöne vor-singe
that he ... wants can before-sing
that he wants to be able to sing Schönenberger, 1995, 382 ex.
76b
- (19) 1-3-4-2
- West Flemish
- a. dan ze toch moesten [[willen Marie dienen boek geven]
that they yet should want Mary this book give
een]
have
that they still should have wanted to give Mary that book

Haegeman, 1998, p. 277

Regional Dutch

- b. Ik denk dat hij dat zal laten liggen hebben
I think that he that will let lie have
I think that he will have let that lie somewhere. Geerts
et al., 1984, p. 609

(20)

2-3-4-1

Afrikaans

- a. dat hy die brame gaan loop pluk het
that he the blackberries go walk pick has
that he was going to pick the blackberries based on Robbers,
1997, 60 ex. 38a
- b. dat hy Jan vir haar die tuinblomme laat leer ken
that he Jan OM her the garden-flowers let₂ teach₃ know₄
het
has₁
that he had John let her learn to know the garden flowers
based on Robbers, 1997, 61 ex. 38b

(21)

1-4-2-3

Dutch

- a. dat die ijver zou aangemoedigd moeten werden
that this diligence would encouraged must become
that this kind of diligence would have to be encouraged.
Geerts et al., 1984, p. 600
- b. dat Jan het boek moet uit hebben gelezen
that Jan the book must out have read
That Jan must have finished the book. Wurmbrand, 2006,
306 ex. 68a

(22)

1-4-3-2

Standard German

- a. dass er das hätte liegen lassen sollen
that he it had.SBJV lie let should
that he should have let it lie
- b. dass er wird vor-singen können
that he will before-sing can
that he will be able to sing

Stellingwerfs

- c. dat hi'j dat zol daon hebben kund
that he that would do.PTCP have.INF couldPTCP
that he could have done that Zwart, 1994, p. 9 attributed to
Bloemhoff, 1979

(23)

2-4-3-1

West Flemish

... has wanted to be able to fight Schönenberger, 1995, 383
ex. 80d

(27) 4-1-3-2

Tyrolean

- a. damit unser Lager von einer Lawine nicht getroffen hätte
 so that our camp by a avalanche not hit had
 werden können
 become could
 so that our camp could not have been hit by an avalanche
 Besten and Edmondson, 1983, p. 182 attributed to R. Messner
 in a TV interview

(28) 4-2-3-1

Afrikaans

- a. dat hy hom weg laat gaan het
 that he him away let go has
 that he let him leave based on Robbers, 1997, p. 61 ex. 40a⁶

German

- b. ...dass eine Pariserin namens Dimanche sich ein gewaltiges
 ...that a Parisian named Dimanche REFL an enormous
 Stirnhorn operativ entfernt haben lassen
 forehead horn operatively remove.PTCP have.INF let.INF
 soll
 should.3rdSG
 ...that a Parisian named Dimanche supposedly had an enormous
 horn on her forehead removed by an operation based on
 Vogel, 2009, 309 ex. 2, attributed to Reis, 1979, who attributes
 it to Der Spiegel 4/1975, S. 94⁷

(29) 4-3-2-1

Stellingwerfs

- a. dat hi’j dat daon hebben kund had
 that he that do have could had
 that he had been able to have done it Zwart, 1994, p. 4

Standard German

- b. dass das Lied gesungen worden sein muss
 that the song sungbecome be must
 that the song must have been sung
c. dass er vor-singen können will
 that he PRT-sing can wants
 that he wants to be able to sing

⁶The example appears to require a contrastive interpretation on the particle, in which case it should be excluded from consideration.

⁷This is an example of what Vogel, 2009 calls “Skandalkonstruktion.” The semantic relations indicate a 4-2-3-1 order here, but the morphology suggests 4-3-2-1. See Vogel, 2009; Wurmbrand, to appear for discussion.

(30)

4-3-1-2

Austrian

- a. wie man kochen lernen hat müssen
how one cook learn had must
how one had to learn to cook http://www.kulturwoche.at/index.php?option=com_content&task=view&id=2425&Itemid=1 accessed July 18, 2011

Vorarlberg

- b. vor-lesen hat können
PRT-read has can
has been able to read out loud based on Wurmbrand 2004, p. 56

Giessen German

- c. das müsst woanders hin-gehängt sein worden
that must elsewhere prt-hung be become
that should have been hung up elsewhere Maurer, 1926, p. 42

Central Bavarian

- d. weil er sich untersuchen lassen hat wollen
because he self examine let has want
because he has wanted to get (himself) examined Besten and Edmondson, 1983, p. 182 attributed to W. Mayerthaler

As is easily verified then, the expected orders are pretty much all attested. As far as the orders are concerned that are not expected, I have not seen relevant mention of the following six orders at all: 2-3-1-4, 3-2-1-4, 3-1-4-2, 3-2-4-1, 2-4-1-3, 4-2-1-3. The remaining four orders have been discussed: 1-3-2-4 and 3-1-2-4 for West Frisian (Haan, 2010) and 2-1-3-4 and 2-1-4-3 for Swiss German (Schönenberger and Penner, 1995, 384-80f). Haan, 2010 explicitly claims that we are dealing with the third construction here, which I took to be a criterion for exclusion above.

In the discussion of three-membered clusters above, I followed Zwart, 2007 and set aside the otherwise unexpected 2-1-3 order in Zurich German, on the assumption that these orders probably represent clausal embedding. We should put aside the unexpected Swiss German orders from Schönenberger and Penner, 1995 for the same reason. Overall the expectations derived from the hypothesis in (14) are strongly confirmed.

As mentioned at the beginning of this section, the data used here are not controlled in the same way as the data used for the dialect atlas projects. The constructions that show up in the examples above differ from each other substantially. As also mentioned at the outset, this is not surprising, given that the range of possible four-member clusters is vast and that the data come from a broad range of different sources. Arguably, the broad range of constructions that we see here does not threaten the conclusion that I would like to draw. We saw above in the discussion of three-membered clusters that the conclusions concerning the overall typology of possible hierarchy-order relations (i.e., the absence of the 2-1-3 order) that we could draw from the controlled data collected for syntactic atlases matched exactly the conclusions that Wurmbrand, 2004, 2006 reached on the basis of a review

of the literature. The convergence of the results suggests that pooling data from different sources and across different constructions is a valid method.

A look at Barbiers, 2005 teaches us a second lesson. In the dialects studied for the SAND project, three-membered Mod>Mod>V and Mod>Aux>V clusters are never realized with the 2-1-3 or 2-3-1 orders. When the hierarchical relation of auxiliary and modal are switched, the 2-1-3 order remains unattested, the 2-3-1 order appears, and the 1-3-2 order disappears. In the SAND database, then, there are two constructions with four possible orders each, five altogether, but there was no single construction which showed all and only the five orders. Was it licit to conclude from this that all but the 2-1-3 order represent possible hierarchy-order relations in the cluster? The answer is yes. We know this because, as explained above, for Mod>Aux>V clusters we are fortunate enough to know that the order missing in the dialects sampled for SAND shows up in the Bavarian dialects studied by Patocka, 1997.

The data on four-membered clusters exemplified above is certainly more fragmentary and less systematic, but if we accept that superimposing the range of possible orders from different constructions to arrive at the full picture is licit, then the data in this section plausibly demonstrates the true range of cluster orders.⁸

The table summarizes the data reported above. What is important to note is that the hierarchy-order-relations that are easily attested and that occur in a broad range of dialects and constructions match those that Cinque finds to be frequent in the typological data regarding the noun phrase. Those hierarchy-order-relations that are typologically rare in the noun phrase are restricted to few dialects and/or constructions. From this perspective it is probably not an accident that the one gap in the paradigm corresponds to an extremely rare order in the noun phrase.

Overall we have a striking parallelism that is unlikely to be accidental and that should be explained by a common mechanism regulating the hierarchy order relations in the domain of the noun phrase and in the verbal cluster. The proposal made above has exactly this shape, since it simply generalizes Cinque's and Abels and Neeleman's accounts from the NP to the verb cluster.

The facts surveyed above strengthen the arguments for that account over the more permissive theory presented in Dryer, 2009. According to Dryer, three orders that Cinque claimed to be impossible as neutral orders in the NP actually do occur: Num-N-Dem-A, N-Num-Dem-A, Dem-A-Num-N. Abels and Neeleman suggest that the correct reaction to these facts—if they can be substantiated by further work—is not to relax the system of possible hierarchy-order-relations, as Dryer does, but rather to allow numerals in the relevant languages to be merged below adjectives, which turns Dem-A-Num-N into a second possible noun final (or in Cinque's system base-) order. This option is under available because a purely intersective semantics can be given to both descriptive adjectives and numerals. Such hierarchi-

⁸Obviously, it would be desirable to have more systematic cross-dialectal data on this question, but for the moment it is simply not available.

⁹I count this as unattested with the relevant proviso discussed in the text above.

	Order	NP		Verb cluster	
		attested	frequency	attested	example
a.	1 2 3 4	yes	very high	yes	(17)
b.	1 3 2 4	no		no ⁹	
c.	2 3 1 4	no		no	
d.	3 2 1 4	no		no	
e.	3 1 2 4	no		no ⁹	
f.	2 1 3 4	no		no ⁹	
g.	1 2 4 3	yes	high	yes	(18)
h.	1 3 4 2	yes	very low	yes	(19)
i.	2 3 4 1	yes	very low	yes	(20)
j.	3 2 4 1	no		no	
k.	3 1 4 2	no		no	
l.	2 1 4 3	no		no ⁹	
m.	1 4 2 3	yes	very low	yes	(21)
n.	1 4 3 2	yes	high	yes	(22)
o.	2 4 3 1	yes	low	yes	(23)
p.	3 4 2 1	yes	very low	no	–
q.	3 4 1 2	yes	very low	yes	(25)
r.	2 4 1 3	no		no	
s.	4 1 2 3	yes	low	yes	(26)
t.	4 1 3 2	yes	very low	yes	(27)
u.	4 2 3 1	yes	low	yes	(28)
v.	4 3 2 1	yes	very high	yes	(29)
w.	4 3 1 2	yes	low	yes	(30)
x.	4 2 1 3	no		no	

Table 4: Typology of orders in NP and verb clusters

cal reshuffling without associated meaning shifts is not possible in the verb cluster, because of the meaning of modal and aspectual verbs. We therefore expect the verb cluster to conform better to Cinque's less permissive description of the NP. This seems to be true.

The facts exemplified above also shed light on a second question of considerable interest. Many researchers have tried to argue for or against the superiority of left-branching over right-branching structures for clusters (or vice versa) or for the superiority of leftward movement over rightward movement (or vice versa). See Wurmbrand, 2006 for discussion and copious references. If the interpretation of the facts given here is correct, then a clear winner emerges in the debate about the directionality of movement: Only a leftward movement provides a principled understanding of the cross-dialectal and cross-constructural facts.¹⁰

The assumptions that derived the ordering possibilities for three-membered clusters also derives these possibilities for four-membered ones:

- (31) Given a set of verbal elements (1...n) that are part of a single clausal domain, with $1 > 2 > \dots > n$, where $>$ denotes underlying c-command, permissible cluster orders are the non-movement derived orders and, where movement occurs
- a. all (relevant) movements move a subtree containing the lowest verbal element;
 - b. all movements target a c-commanding position;
 - c. all movements are to the left.

The statements in (31) suggest a generalization to cover the nominal and verbal cases. Cinque, 2005 had claimed that to derive the neutral orders in the noun phrase, only subtrees containing the noun move. The noun is of course the lexical head of the DP, which forms its extended projection in the sense of Grimshaw, 2000, 2005. Similarly, the lexical verb is the head of its extended projection, the clause. The generalization across the two cases can be formulated as follows: all (relevant) movements move a constituent containing the lexical head of the local extended projection.

Notice that, in order to integrate verbal particles into this system, we need to assume that particles are the lowest verbal element in the sense of (31-a). Given the considerations of the last paragraph we would need to claim that the particle is the head of the extended projection forming the clause. The assumption that that particles are lower than the main verb seems unproblematic, as most analyses of verbal particles already make that assumption anyway. The claim that particles should count as verbal and indeed the head of the clause is bound to be more controversial. Clearly, if we do count them as the head, then their behavior can be integrated into the system fairly easily but not otherwise. I take it that this is a reasonably

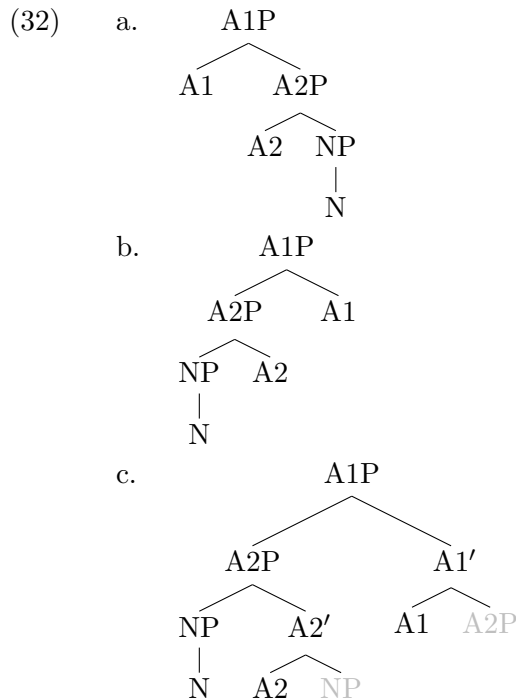
¹⁰Whether a winner also emerges concerning the left- vs. right- vs. mixed-branching debate depends on one's evaluation of the arguments given in Abels and Neeleman, 2012. This is not the right place to rehash that debate.

The conclusions hold strictly for verb clusters. Multi-clausal structures might well involve rightward extraposition or remnant movement, the equivalent of rightward extraposition in a system that allows only leftward movement.

strong argument for actually treating them as both verbal and the head of the clause.

The generalization from the nominal to the verbal domain also has consequences for the question of what is driving the movement of the lexical head. In the case of the noun phrase it seemed reasonable to suggest that the noun moves so that nominal modifiers can be in a local relation with it and enter into agreement relations with it. This hypothesis is based on the phenomenon of concord between the noun, modifying adjectives, numerals, and determiners found in many languages. The notion that concord is the relevant factor is questioned in Abels and Neeleman, 2012, where it is observed that expected correlations (or implications) between word order and the availability of concord do not hold in a cross-linguistic perspective. Nevins, 2011 considers Catalan data that, according to him, support the idea that syntactic movement has a bearing on the morphological expression of agreement features.

The facts, in brief, are the following. In the Catalan dialect discussed by Nevins, the concordial number marker 's'– PL is obligatory on postnominal adjectives. On prenominal ones it is obligatory in all phonological contexts except interconsonantly C_C, where it is optional. Based on interactions between scope and order, Nevins shows that prenominal adjectives take scope from left to right, while postnominally they take scope from right to left. The structure he assumes for prenominal adjectives is (32-a). For postnominal adjectives, he considers the two alternatives in (32-b) and (32-c).



Nevins claims that the pre-/post-nominal asymmetry can be captured naturally if (32-c) is assumed but not if (32-b) is assumed, i.e., Nevins claims that the facts argue for the superiority of Cinque's 2005 LCA-based account of word order in the noun phrase over Abels and Neeleman's. The reasoning goes as follows. It is clear that in the syntax proper full concord

relation must obtain between the noun and the adjective no matter what the ultimate relative linear order of the two is. This is necessary to account for the obligatoriness in general of concord with both pre- and postnominal adjectives. In order to capture the one exception to obligatory concord, phonological information in the form of segmental context and syntactic information in the form of relative order between the adjective and the noun must be available. A system that assumes (32-a) and (32-c) provides both types of information in a natural way. In particular, the syntactic aspects of the exception to obligatory concord can be captured by making the language specific assumption that plural concord on A may be dropped interconsonantly, except when the specifier of A is filled. A system that assumes (32-a) and (32-b) does not provide sufficient syntactic information to capture the pre-/post-nominal asymmetry, Nevins claims. This is so because for Abels and Neeleman, 2012 the two trees in (33-a) and (33-b) are identical as far as narrow syntax is concerned, therefore, they cannot be used to distinguish the two cases.

A number of comments are in order here. First, as mentioned in the previous paragraph, we must assume that syntactically full concord is always established. This is so, because syntax proper is blind to phonological, in particular segmental, content. Indeed, in realizational models of morphology like Distributed Morphology (Halle and Marantz, 1993) the phonology is inaccessible to the syntax for architectural reasons. Furthermore, the description of the phonological context in which concord may be dropped (C..C) implies that the order of elements has been established. This last point is important, because (32-a) and (32-b) are identical only as long as linear order is not established. At the point where both phonological content and linear order are available, (32-a) and (32-b) are no longer identical. At that point a full description of these trees will include the information that A1 and A2 precede their respective sisters in (32-a) and that they follow them in (32-b). This bit of information, apparently overlooked by Nevins, allows us to formulate the exceptional suppression of concord as follows: Plural concord on A may be dropped interconsonantly, except when the adjective follows its sister.¹¹

It follows that the facts considered by Nevins provide no argument for a roll-up derivation of postnominal adjectives as opposed to a base-generation analysis ((32-c) over (32-b)). Nor do they provide an argument for treating concord/agreement as a syntactic trigger of movement in the NP. Recall that, under Nevins's account, full syntactic concord/agreement has to happen regardless. In light of the facts from verb-clusters discussed in this paper, these are welcome conclusion, as clustering verbs (at least in the languages discussed here) do not show any signs of morphological concord or agreement with the most-deeply embedded verbal head.¹² I leave the

¹¹Both Nevins's and the current formulations are probably too simplistic in the way they handle modifiers and complements of adjectives, but the idea should be clear enough: When the adjective is on a right branch with respect to extended projection line of the noun, concord is obligatory, when it is on a left branch, concord is optional interconsonantly.

¹²Morphological dependencies in the cluster are usually conceived of on the model of government (Bech's 1955; 1957 "status government"). Wurmbrand, 2011, to appear proposes that an updated version of status government which allows government not only from base merged

question of what determines the order in the cluster in a given language and construction open.

4 Conclusions

This paper provides an argument that the system for deriving the range of hierarchy/order relations proposed in Abels and Neeleman, 2012; Cinque, 2005 can be straightforwardly extended from the noun phrase to the verbal cluster. I thus agree fully with Cinque’s 2009 claim that some fundamental linear asymmetry of language is involved. This conclusion was already suggested by the old observation that in three-membered clusters the 2-1-3 order does not occur as an unmarked order. The data from four-membered clusters lend further strong support to this conclusion.

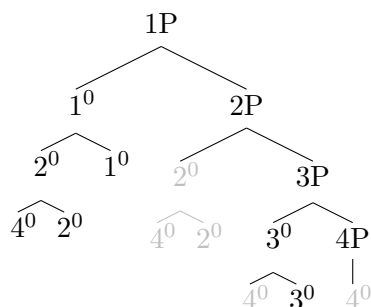
The system explains the asymmetry in cluster orders by ruling out rightward movement.¹³ To the extent that it is successful, the current analysis thus provides a new argument against deriving cluster order via rightward movement operations. As noted in Wurmbrand, 2006, providing convincing empirical arguments that bear on the directionality question has proven difficult to date. With the present paper, I hope to have filled this gap.

The paper also shows that the tools provided by a head movement analysis of cluster formation are inappropriate. I take the traditional view of head movement to include the assumptions that (a) the head movement constraint holds, that (b) the moving element forms a constituent with the target of movement to the exclusion of the launching site/trace of head movement (i.e., head movement leads to head adjunction), and that (c) excorporation of the moving head from the target is impossible. If we are to give a successful account of 1-4-2-3, 3-4-1-2, 4-1-2-3, 4-1-3-2, 4-2-3-1, and 4-3-1-2 orders, i.e., those orders not base-generable in Abels and Neeleman’s 2012 system, either (a) or (c) or both must be dropped. This is so because in each of these structures the moved constituent (4, 3-4, or 4-3 as the case may be) must either skip the immediately higher head or excorporate from it to derive the surface order. With this in mind, we see that (b) cannot be maintained either, otherwise the unattested orders 4-2-1-3 and 2-4-1-3 could be derived as in (33). I only give the two possible derivations for the 4-2-3-1 order.

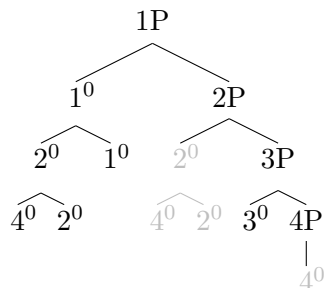
- (33) a. Structures for 4-2-1-3
 (i) with excorporation:

positions but also from movement derived ones. Wurmbrand calls this relation “reverse agree”. Under reverse agree the unvalued features of a lower head are valued by those on a higher head. This reverses the commonly assumed direction of feature transmission under agree, whereby unvalued features on a higher head are valued by an element lower down in the structure.

¹³More precisely, the system rules out all instances of gap-filler orders in the derivation of unmarked word order within the cluster whether such an order is derived directly by rightward movement or indirectly through remnant movement.



(ii) with a violation of the head movement constraint:



The structures for the 2-4-1-3 order would be identical except that 4^0 undergoes rightward instead of leftward adjunction to 2^0 . Rightward head adjunction cannot be excluded under a head-movement account of cluster orders, since it is required to capture the 3-4-1-2 order.

A further interesting conclusion arises from the fact that (nearly) all theoretically expected orders can be attested in a range of closely related languages. This fact suggests that no broad macro-parameters are at play. Cluster orders thus provide a welcome laboratory case. They allow us to study the micro-parametric conditioning factors involved in determining which orders will be allowed by the grammar under what conditions. In this respect, the study of cluster orders in Germanic promises to yield more useful and reliable results than studying word order in the noun phrase in a large typologically diverse set of languages, simply because the range of overall variation, which adds to the noise in the data, is much smaller within Germanic.

There are two main directions for further work. First, it would obviously be desirable to document and study four element clusters in a more controlled way than the haphazard collection of examples culled from the literature and presented here allows. Such a more systematic and extensive database would allow studying the syntactic, morphological, and prosodic factors entering the possibility of a given order in some but not in other dialects.¹⁴

A second related question that should be studied are the striking implicational relations that hold across dialects and apparently within constructions. Thus Wurmbrand, 2004, 2006 points out that if a dialect allows the auxiliary to precede the participle in some construction, then that dialect also allows modals to precede infinitives in some construction. And

¹⁴The relevance of morphology has recently been emphasized by Zwart, 2007. The potential relevance of prosody was pointed out by Maurer, 1926.

if a language allows modals to follow infinities in some construction, then that language also allows auxiliaries to follow participles.¹⁵ A similar pair of implications holds for the relative order of verb and particle on the one hand and auxiliary and participle on the other: If a language allows the verb to precede its particle, then it also allows the auxiliary to precede the participle; and if a language allows the auxiliary to follow the participle, then that language also allows the verb to follow the particle.¹⁶

These generalizations apparently apply not only to languages and dialects but also to particular constructions: In a given clause, if the particle follows the verb, then the participle follows the auxiliary. And if the participle follows the auxiliary, then the infinitive follows the modal. Similarly for the other direction. To appreciate the difference between a language wide and a construction specific formulation, consider a hypothetical dialect where for each of the three pairs (verb-particle, auxiliary-participle, and modal-infinitive) both orders are possible. Such a dialect is consistent with the implications formulated above.¹⁷ Yet, if the implications also hold at the level of particular constructions, any such dialect would still disallow structures in which the participle simultaneously precedes the auxiliary and the particle follows the verb.

In other words, in an Aux>V>Particle construction, the 2-3-1 order is ruled out by the above implications formulated over constructions rather than dialects. Indeed, we saw above that this order is unattested in the structure in question. Similarly, application of the implications to constructions rather than dialects leads to the expectation that in Mod>Aux>V clusters the 2-3-1 order is ruled out. However, when the hierarchical relations between modal and auxiliary are reversed, 2-3-1 becomes consistent with the generalizations. Indeed, it is precisely this type of structure where the 2-3-1 order is found in many Belgian dialects of Dutch (see above).

There is currently no explanation for these facts. A standard assumption in the literature on clusters (see for a clear exposition Bobaljik, 2004) is that when an element precedes the embedding head it is in some sense to be made precise “small” and when it follows it is “big.” As Bobaljik shows, this intuition informs virtually all of the relevant literature. It is tempting to set up a size hierarchy between the elements that enter into the implications just discussed, whereby particles would be “smaller” than participles, which in turn would be “smaller” than infinitives. Fleshing out this idea and testing it will have to await another occasion though.

¹⁵The two implications have the flavour of a contraposition but are actually stronger than the contraposition.

¹⁶By transitivity we derive a third set of implications relating the order of verb-particle pairs to the order of modal-auxiliary pairs, of course.

¹⁷I will simply take the union of the Germanic dialects to represent that hypothetical dialect for illustrative purposes. The point of this is to show how the implications rule out certain orders in certain constructions no matter what else is assumed. Since violating constructions do not appear to exist, we may assume that the generalizations applied to constructions represent real facts that need to be studied and ultimately understood.

References

- Abels, Klaus and Ad Neeleman (2009). “Universal 20 without the LCA”. In: *Merging Features: Computation, Interpretation and Acquisition*. Ed. by Josep M Brucart, Anna Gavarrò, and Jaume Solà. Oxford: Oxford University Press, pp. 60–79.
- (2012). “Linear asymmetries and the LCA”. In: *Syntax* 15.
- Barbiers, Sjef (2005). “Word order variation in three-verb clusters and the division of labour between generative linguistics and sociolinguistics”. In: *Syntax and variation : reconciling the biological and the social*. Ed. by Leonie Cornips and Karen P Corrigan. Philadelphia, PA: John Benjamins, pp. 233–264.
- Bech, Gunnar (1955). *Studien über das detusche verbum infinitum, 1. Band*. Vol. 35. Historisk-filologiske Meddelelser 2. København: Det Kongelige Danske Videnskabernes Selskab.
- (1957). *Studien über das detusche verbum infinitum, 2. Band*. Vol. 36. Historisk-filologiske Meddelelser 6. København: Det Kongelige Danske Videnskabernes Selskab.
- Besten, Hans den and Jerold Edmondson (1983). “The verbal complex in continental West Germanic”. In: *On the Formal Syntax of West-germania*. Ed. by Werner Abraham. Amsterdam: John Benjamins, pp. 155–216.
- Bloemhoff, Henk (1979). “Heranalyse van een Stellingwerper Oppervlaktestructuur”. In: *Us Werk* 28, pp. 31–38.
- Bobaljik, Jonathan D (2004). “Clustering Theories”. In: *Verb Clusters: A Study of Hungarian and Dutch*. Ed. by Katalin e Kiss and Henk van Riemsdijk. Philadelphia: John Benjamins, pp. 121–145.
- Bruch, Robert (1973). *Luxemburger Grammatik in volkstümlichem Abriss*. Éditions de la Section de Linguistique de l’Institut gr.-d.
- Cinque, Guglielmo (2005). “Deriving Greenberg’s Universal 20 and its Exceptions”. In: *Linguistic Inquiry* 36 (3), pp. 315–332.
- (2009). “The Fundamental Left-Right Asymmetry of Natural Languages”. In: *Universals of Language Today*. Ed. by Sergio Scalise, Elisabetta Magni, and Antonietta Bisetto. Dordrecht: Springer, pp. 165–184.
- Dryer, Matthew S. (1992). “The Greenbergian word order correlations”. In: *Language* 68.1, pp. 81–138.
- (2009). “On the order of demonstrative, numeral, adjective, and noun: an alternative to Cinque”. In: *Conference on Theoretical Approaches to Disharmonic Word Orders*. Newcastle.
- Geerts, G et al., eds. (1984). *Algemene Nederlandse Spraakkunst*. Groningen, Leuven: Wolters.
- Georgi, Doreen and Gereon Müller (2010). “Noun phrase structure by reprojection”. In: *Syntax* 13.1, pp. 1–36.
- Greenberg, Joseph (1963). “Some universals of grammar with particular reference to the order of meaningful elements”. In: *Universals of*

- language*. Ed. by Joseph Greenberg. Cambridge, MA: MIT Press, pp. 73–113.
- Grimshaw, Jane (2000). “Locality and Extended Projection”. In: *Lexical Specification and Insertion*. Ed. by Peter Coopmans, Martin Everaert, and Jane Grimshaw. Amsterdam: John Benjamins, pp. 115–135.
- (2005). *Words and Structure*. CSLI lecture notes 151. Stanford, CA: CSLI.
- Haan, Germen de (2010). “The third construction in Frisian”. In: *Studies in West Frisian Grammar*. Ed. by Jarich Hoekstra, Willem Visser, and Goffe Jensma. Vol. 161. Linguistik Aktuell. Amsterdam & Philadelphia: John Benjamins Publishing Company. Chap. 9, pp. 199–214.
- Haegeman, Liliane (Dec. 1998). “V-Positions and the Middle Field in West Flemish”. In: *Syntax* 1.3, pp. 259–299.
- Halle, Morris and Alec Marantz (1993). “Distributed Morphology and the Pieces of Inflection”. In: *The View from Building 20*. Ed. by Kenneth Hale and Samuel Jay Keyser. Cambridge, Massachusetts: MIT Press, pp. 111–176.
- Hawkins, John A. (1983). *Word Order Universals*. Quantitative Analyses of Linguistic Structure. New York; London: Academic Press.
- Kayne, Richard (1994). *The antisymmetry of syntax*. Cambridge, MA.: MIT Press.
- Koopman, Hilda and Anna Szabolcsi (2000). *Verbal Complexes*. Cambridge, MA: MIT Press.
- Lötscher, Andres (1978). “Zur Verbstellung im Zürichdeutschen und in anderen Varianten des Deutschen”. In: *Zeitschrift für Dialektologie und Linguistics* 45, pp. 1–29.
- Lu, Bingfu (1998). “Left-Right Asymmetries of Word Order Variation: A Functional Explanation”. PhD thesis. University of Southern California.
- Maurer, Friedrich (1926). *Untersuchungen über die deutsche Verbstellung in ihrer geschichtlichen Entwicklung*. Heidelberg: Winter.
- Mileck, Joseph (1997). *Samatimerisch: Phonetik Grammatik Lexikographie: Geschichte der Mundart der deutschen Gemeinde Sankt-martin am nördlichen Rand des rumänischen Banats*. New York: Peter Lang.
- Nevins, Andrew (2011). “Convergent evidence for rolling up Catalan adjectives”. In: *Linguistic Inquiry* 42.2, pp. 339–345.
- Patocka, Franz (1997). *Satzgliedstellung in den bairischen Dialekten Österreichs*. Frankfurt a. M: Peter Lang.
- Ponelis, F. A. (1979). *Afrikaanse Sintaksis*. Pretoria: J.L. Van Schaik.
- Reis, Marga (1979). “Ansätze zu einer realistischen Grammatik”. In: *Befund und Bedeutung. Zum Verhältnis von Empirie und Interpre-*

- tation in Sprach- und Literaturwissenschaft*. Ed. by Klaus Grubmüller et al. Tübingen: Niemeyer, pp. 1–21.
- Rijkhoff, Jan (2002). *The Noun Phrase*. Oxford University Press.
- Robbers, Karin (1997). “Non-finite verbal complements in Afrikaans”. PhD thesis. Amsterdam: University of Amsterdam.
- Schmid, Tanja and Ralf Vogel (2004). “Dialectal Variation in German 3-Verb Clusters: A Surface-Oriented Optimality Theoretic Account”. In: *Journal of Comparative Germanic Linguistics* 7, pp. 235–274.
- Schönenberger, Manuela (1995). “Constituent Order in the VP : Verb Raising and Verb Projection Raising”. In: *Topics in Swiss German Syntax*. Ed. by Zvi Penner. Berlin: Peter Lang, pp. 347–411.
- Schönenberger, Manuela and Zvi Penner (1995). “Cross-Dialectal Variation in Swiss German: Doubling Verbs, Verb Projection Raising, Barrierhood, and LF Movement”. In: *Studies in Comparative Germanic Syntax*. Ed. by Hubert Haider, Susan Olsen, and Sten Vikner. Dordrecht: The Netherlands: Kluwer Academic Publishers, pp. 285–306.
- Seiler, Guido (2004). “On three types of dialect variation, and their implications for linguistic theory. Evidence from verb clusters in Swiss German dialects”. In: *Dialectology meets typology : dialect grammar from a cross-linguistic perspective*. Ed. by Bernd Kortmann. Vol. 153. Trends in Linguistics. Berlin: Mouton de Gruyter, pp. 367–399.
- Stroop, Jan (1983). “System in gesproken werkwoordsgroepen”. In: *Nederlands dialectonderzoek, artikelen uit de periode 1927-1982*. Amsterdam: Huis an de drie grachten, p. 1983.
- Svenonius, Peter (2005). *The Verb-Particle Alternation in the Scandinavian Languages*. Ms. University of Tromsø.
- (2007). “1...3-2”. In: *The Oxford handbook of linguistic interfaces*. Ed. by Gillian Ramchand and Charles Reiss. Oxford; New York: Oxford University Press, pp. 239–288.
- Vogel, Ralf (2009). “Skandal im Verbkomplex: Betrachtungen zur scheinbar inkorrekten Morphologie in infiniten Verbkomplexen des Deutschen”. In: *Zeitschrift für Sprachwissenschaft* 28.2, pp. 307–346.
- Wöllstein-Leisten (2001). *Die Syntax der dritten Konstruktion : Eine repräsentationelle Analyse zur Monosententialität von ‘zu’-Infinitive im Deutschen*. Tübingen: Stauffenburg.
- Wurmbrand, Susanne (2001). *Infinitives. Restructuring and Clause Structure*. Studies in Generative Grammar 55. Berlin and New York: Mouton de Gruyter.
- (2003). “Syntactic vs. post-syntactic movement”. In: *Proceedings of the 2003 Annual Meeting of the Canadian Linguistic Association*. Ed. by Sohpie Burelle and Stanca Somerfalean. CLA, pp. 284–295.

- Wurmbrand, Susanne (2004). “West Germanic verb clusters: The empirical domain”. In: *Verb Clusters: A Study of Hungarian, German and Dutch*. Ed. by Katalin E. Kiss. John Benjamins, pp. 43–85.
- (2006). “Verb Clusters, Verb Raising, and Restructuring”. In: *The Blackwell Companion to Syntax*. Ed. by Martin Everaert and Henk van Riemsdijk. Vol. 5. Blackwell. Chap. 75, pp. 229–343.
- (June 2011). *On Agree and Merge*. University of Connecticut, Course notes for “Problems in Syntax”.
- (to appear). “Parasitic Participles in Germanic: Evidence for the Theory of Verb Clusters”. In: *Taal en Tongval*.
- Zwart, C. Jan Wouter (1994). “Shortest move vs. fewest steps”. In: *Groninger Arbeiten zur Germanistischen Linguistik* 37, pp. 277–290.
- (2007). “Some notes on the origin and distribution of the IPP-effect”. In: *Groninger Arbeiten zu germanistischen Linguistik* 45, pp. 77–99.