

4 Extending the Analysis to the Clause

4.1 Verbal Subprojections and Their Word Orders

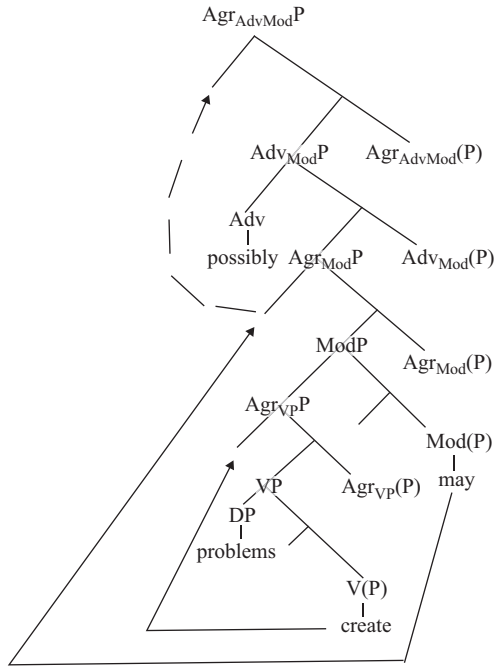
As already apparent from the discussion in chapter 3 of Dutch reason, manner, and directional PPs, the same general picture is found with the elements that compose the verbal extended projection, the clause, though a detailed calculation of their possible and impossible orders is out of the question here, because the clause hierarchical structure is richer than that of nominals and our knowledge of the structure's precise constituency is even poorer. What I present here is only an extremely simplified picture of this articulation and of the derivations that lead to different orders, just to illustrate the logic of the matter. Here too, as in previous chapters, I take the different orders to derive from a unique hierarchy(/order) via the different ways the Heads of the clausal subprojections, and just these, move. Section 4.5 briefly considers the possible lexical determinants of the different types of movement.

Like the nominal extended projection, the verbal extended projection is also made up of a number of subprojections headed by verbal, aspectual, modal, tense, and so on, Heads (Cinque 1999), a very tiny fragment of which is given in (1). The Head of each subprojection targets the specifier of an associated AgrP, which is there to host its movement. This in turn is paired with a

corresponding adverbial modifier projection (see (1)). Languages vary as to whether they overtly realize the Head or the corresponding associated AdvP or both (as is the case with English alethic modality in (1)).

(1) a. (this) <may> possibly <may> create problems.

b.



The modal in English moves without pied piping. The first movement to the specifier of its AgrP is obligatory. The second, above the associated adverb, is optional. English active finite or participial V(P)s pied pipe the direct object obligatorily above the lowest adverbs (*well*, *early* (*on*), . . .) (see (2)) and optionally above the next higher one (*completely*) (see (3)).¹

- (2) a. *She (has) well/early on understood the problem.
- b. She (has) understood the problem well/early on.
- c. *She (has) understood well/early on the problem.

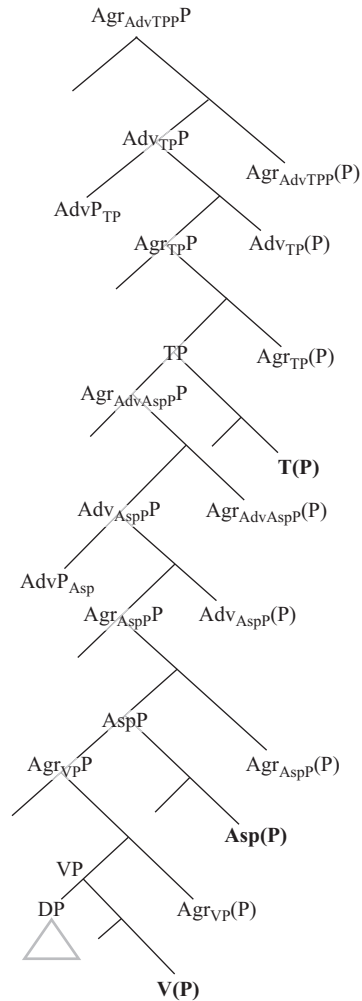
- (3) a. She (has) completely understood the problem.
- b. She (has) understood the problem completely.
- c. *She (has) understood completely the problem.²

When passive they raise to a lower head, Voice, obligatorily crossing over *early (on)* in (4) but not necessarily over the higher *well* and *completely* in (5).

- (4) The problem had been <*early on> understood <early on>.
- (5) The problem had been <understood> completely/very well <understood>.

Some subprojections of the clause are given in (6). As already stated, this is only a very tiny fragment of the overall clausal projection, which can be taken as neutral between a purely hierarchical and a hierarchical/linear representation.³

(6)



For clarity we may start from the characteristic word orders of the more rigid head-initial and the more rigid head-final languages (cf. Cinque [2017: section 2], in particular concerning the segregation of the Heads on one side of the $V(P)$ and of the arguments and modifiers on the other side). The terms (rigid)

head-initial and head-final should not be taken to suggest that VOS or SOV languages (or, for that matter, VSO and SVO) constitute uniform “types” of languages. See Cinque (2013b: 50fn8), Chung (2017), Clemens and Polinsky (2017) and references cited there on head-initial languages, and Cinque (2017) and references cited there on head-final ones. Be that as it may, one should not be disturbed by the possibility that each language is different from every other language of its own type (in addition to being different from those belonging to other types). The hope of deriving the orders of all languages from the same hierarchical organization of the clause via the same basic principles is not lost if the differences are a consequence of slightly different combinations of the few movement options admitted by Universal Grammar (UG). See section 4.3 for a brief illustration of other possible derivations of VOS/VSO, SVO, and SOV languages.

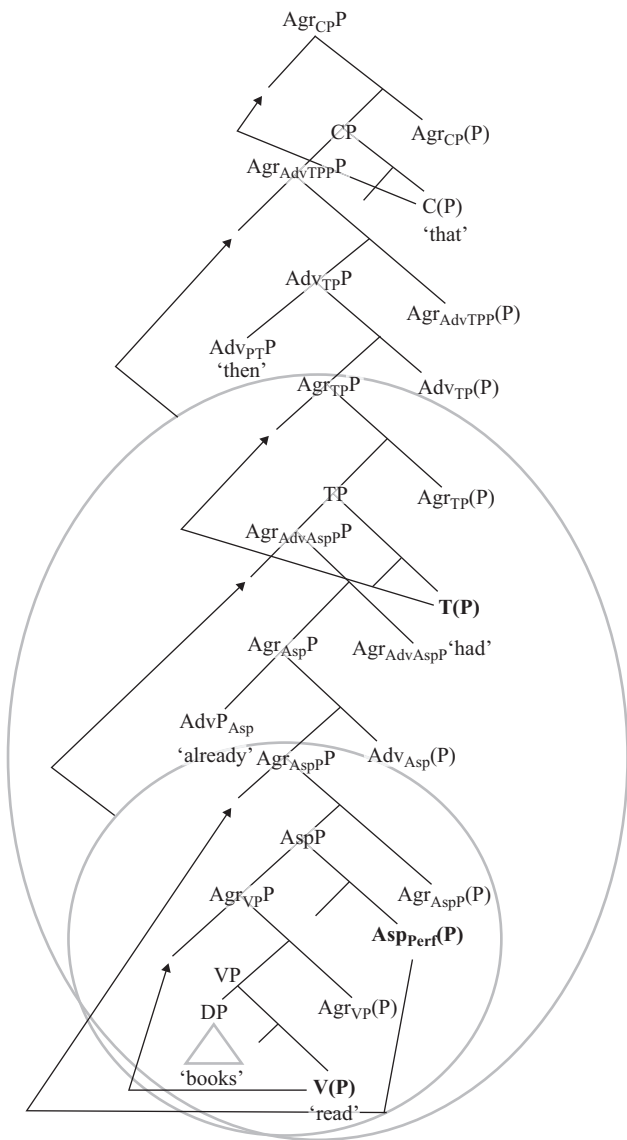
The templates in (7) and (8) are simplified representations of the order of the main Heads and argument/modifier phrases that characterize the more rigid head-initial and head-final languages, respectively, with three illustrative examples each:

- (7) C(P) T(P) Asp(P) V(P) DP PP AdvP⁴
- a. Chol (Mayan, VOS [Coon 2010: 241])
 Tyi k-sub-u [che` mi i-bajb-eñ ts'i` aj-Wän]
 PRFV ERG1-say-TV [COMP IMPF ERG3-hit-NMLZ
 dog CLF-Juan]
 ‘I said that Juan hits the dog.’
 - b. Sakun (Sukur) (Chadic, VOS [Thomas 2014: 88])
 a dá-r kərá=j nə dʒif Lawu
 PRFVhit-EXT dog=REL with stick Lawu
 ‘Lawu hit the dog with the stick.’
 - c. Seediq (Austronesian, Formosan, VOS [Lin 2005: 116])
 ye uxe dheya wada gmeeguy di
 Yes/No Neg. 3PL Aux_{Past} steal Part
 ‘Have/Had they stolen (the basket of pears)?’

- (8) AdvP PP DP V(P) Asp(P) T(P) C(P)
- a. Japanese (SOV [Endo Yoshio, pers.comm., July 15, 2015])
Watasi-wa [kare-ga osoraku sore-o zyoozuni
okona-e-ru to] it-ta
I-TOP [he-NOM probably it-ACC well do-Mod-
PRESCOMP] say-PST
‘I said that probably he can do it well’
- b. Tangsa (Tibeto-Burman, SOV [Boro 2017: 326])
ibá k^hi?hî dà me? nɿ? c^hi t-a^ʔ
that deer leg ABL tread DUR PST-3
‘(They) trod with deer legs (to leave deer foot marks on
the ground).’
- c. Maranungku (Australian, Daly, SOV [Tryon 1970: 46])
yer ngeti tyapat me tu
tomorrow I sit.swim PROG FUT
‘Tomorrow I shall be swimming’

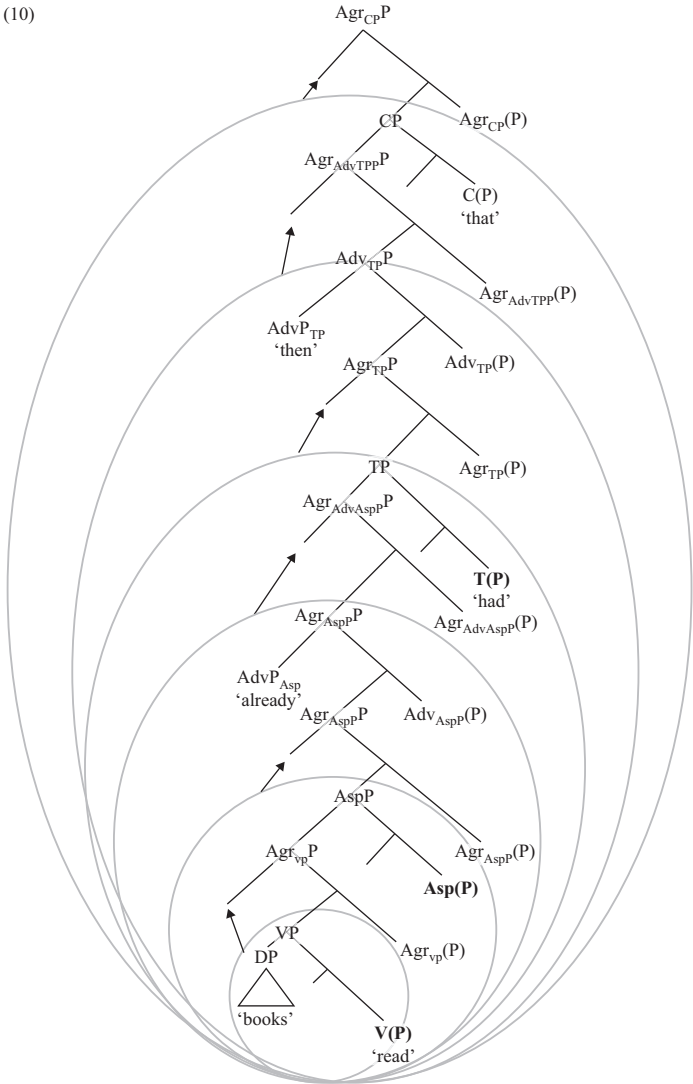
Asp(P), T(P), and C(P) heading their projections (as minimal phrases) are, as noted, an abbreviation for more numerous aspectual, tense, and complementizer categories (see Cinque 1999; Rizzi 1997; Rizzi and Bocci 2017), as are the AdvP PP DP arguments/modifiers indicated, but this will do to illustrate the derivations responsible for the ultimate order of (7) (see, for example, (9), with English glosses), and (8) (see, for example, (10), again with English glosses):

(9)



The derivation in (9) yields under the LCA the order ‘that’ ‘had’ ‘read’ ‘books’ ‘already’ ‘then’.

(10)



The derivation in (10) yields under the LCA the order ‘then’ ‘already’ ‘books’ ‘read’ ‘had’ ‘that’. The cases of head-final Tangsa in (8b) and Maranungku in (8c) are cases in which the clausal Heads of Tense and Aspect are independent morphemes following the V, but in other head-final languages the corresponding Aspect and Tense Heads are morphemes bound to the verb, as in the Japanese example (8a). In such cases one should determine whether they are inflectional suffixes arguably making up a lexical word with the verb or retain a relatively independent status, making up a “syntactic word” (for lack of a better term) with the verb. Particularly relevant in this respect is Jaklin Kornfilt’s work (1996; 2012) on Turkish, which apparently displays both types of suffixes. As Kornfilt shows, the two types of suffixes can be told apart by their ability/inability to participate in “suspended affixation” (whereby only the last conjunct in a coordination bears a certain word-final suffix that distributes over all conjuncts). While the reportive past suffix *-miş* can be suspended, the homophonous perfect participle suffix *-miş* cannot. See the contrast between (11a) and (11b) (from Kornfilt 2012: 189fn7):

- (11) a. Ali her gün [[havyar ye-r-], [şampanya iç-er-]]-miş
Ali every day [[caviar eat-AOR]- [champagne drink-AOR]- REP.PST
‘Ali reportedly eats/used to eat caviar (and) (reportedly) drinks/used to drink champagne every day.’
- b. *[[kok-] ve [çürü-]]-müş balık
smell- and rot-PART fish
‘smelly and rotted fish’

Kornfilt shows however that the suspendable suffixes are really nonsuspendable at all. They are suffixed to a silent auxiliary (which in certain cases can be overt) (Kornfilt 1996). This suggests that they are after all the same type of affix. This is not very different (modulo the head-final linearization of the coordinated

structure in Turkish to the left of the suspended (auxiliary)-suffix from the “suspended” auxiliary + suffix in such Italian cases as (12), where the coordinated structure is to the right of the suspended auxiliary-suffix (with the auxiliary necessarily spelled out):⁶

- (12) Loro ha-nno [[mangia-to] e [bevu-to]]
they have-3PL eat-PST.PART and drink-PST.PART
‘They have eaten and drunk.’

In other terms, “all suffixes that can be successfully ‘suspended’ are *syntactically* merged projection heads” (Kornfilt 2012: 190). This carries over to many head-final languages with agglutinative morphology, such as Korean and Japanese (see Yoon 1994; Takano 2004; Koopman 2005; Kornfilt 2012; Fenger 2020).⁷

The consistent application in each of the subprojections belonging to a certain extended projection of the *whose-pictures* pied piping mode and of the *pictures-of-whom* pied piping mode yields the more rigid head-initial VOS languages and the more rigid head-final SOV languages, respectively.

As noted in Cinque (2013b: 51fn11; 2017: section 4) even the most rigid head-initial languages (including Malagasy) and the most rigid head-final languages (including Japanese) display some inconsistencies, and, more strikingly, they appear to be a minority of the languages of the world. These are two puzzles that remain to be understood.⁸

Most languages display nonfully consistent derivations (i.e., they are not harmonic across their different phrases). Section 3.2 briefly discussed some of the nonharmonic orders found in the nominal extended projection, and section 4.3 will address the same question with respect to the clause (the verbal extended projection). Nonetheless there appear to be some clear word order correlations uncovered in the typological literature since Greenberg (1963) that have to be taken into account and will be

discussed in the next section. Section 4.4 will instead address the particular challenge for the present movement account of word order represented by the Germanic verb clusters.

4.2 The (Partial) Correlations of Head-Initial and Head-Final Languages

The word order variation found in the languages of the world clearly involves different departures from the simple derivations seen so far.

Within the present perspective, one type of departure from such uniform derivations resides in the presence of opposite values in the mode of pied piping for the verbal and the nominal extended projections. For example the Trans-New Guinea language Bargam (like several other Papuan languages) is head-final in the verbal extended projection (quite strictly so [Hepner 2006: chapter 5]) and in the PP (which is rigidly postpositional), but head-initial in the nominal extended projection (Hepner 2006: section 4.1):⁹

- (13) Bargam (Papuan [Trans-New Guinea] SOV)
- a. AdvP Subj PP Obj V (head-final)
 - b. N AP NumP DemP (head-initial)

Many Mayan languages, like Tzutujil in (14), show the reverse situation, being head-initial in the verbal extended projection and head-final in the nominal one (Dayley 1981: sections 8.2.3 and 8.1.1):

- (14) Tzutujil (Mayan [Qichean] VOS)
- a. V Obj Subj AdvP PP (head-initial)
 - b. DemP NumP AP N (head-final)

Yet, clear tendencies of different strength are observable. Harmony of heads within the same extended projection is rather strongly obeyed. As apparent from Dryer (1992) (also see Biberauer

et al. 2014: section 3), modal verbs, auxiliaries and subordinating conjunctions are predominantly verb patterners. They predominantly follow the lexical verb in OV languages and predominantly precede the lexical verb in VO languages. See (15) (with modal = ‘want’), (16), and (17), all from Dryer (1992: 94, 100, 103):

- (15) a. OV and V modal: 29 genera
b. VO and modal V: 42 genera
c. OV and modal V: 10 genera
d. VO and V modal: 4 genera
- (16) a. OV and VAux: 36 genera
b. VO and AuxV: 28 genera
c. OV and AuxV: 3 genera
d. VO and VAux: 4 genera
- (17) a. OV and IP Subordinator: 38 genera
b. VO and Subordinator IP: 59 genera
c. OV and Subordinator IP: 17 genera
d. VO and IP Subordinator: 1 genus

Harmony of modifiers within the same extended projection is also fairly strongly obeyed.

To judge from Dryer (1992: 123) (see (18)), the position of AdvP and PP modifiers with respect to the verb in the clause also tends to be harmonic:

- (18) a. PPV and AdvV: 42 genera
b. VPP and VAdv: 36 genera
c. PPV and VAdv: 1 genus
d. VPP and AdvP: 6 genera

Harmony across different extended projections seems to be more strongly obeyed by heads with respect to their complements than by heads with respect to their modifiers.

For example, if one composes the features “order of object and verb” and “order of adposition and NP” or those of “order of

object and verb” and “order of genitive and noun” in the interactive tool of the World Atlas of Language Structures (WALS Online), the cross-categorial harmony between the extended projections of VP and PP and VP and NP with respect to heads and their complements (to the extent that N GEN includes genitive complements of the noun in addition to genitive subjects) appears to be fairly robust. See the figures in (19) and (20):

- (19) a. OV and OP: 427 languages
- b. VO and PO: 417 languages
- c. VO and OP: 38 languages
- d. OV and PO: 10 languages

- (20) a. OV and GEN N: 434 languages
- b. VO and N GEN: 352 languages
- c. VO and GEN N: 113 languages
- d. OV and N GEN: 30 languages

And even if no comparable composition of the feature “order of object and verb” with “order of adjective and complement” is available from WALS, it seems not too far-fetched to hypothesize that a similar harmony obtains (at least to judge from a number of OV languages, which have PP/DP A as their canonical order, and, conversely, from a number of VO languages, which have A PP/DP as their canonical order).

Harmony across different extended projections is instead much weaker (if present at all) when heads and their modifiers are considered. Compare the order of P and its complement and the order of the N and its genitive object just reviewed (which align fairly well with the order of the verb and its complements), with the figures in WALS Online for the composition of the features “order of object and verb” and “order of adjective and noun” (see (21)) or “order of numeral and noun” (see (22)) (as well as the cases of Bargam and Tzutujil in (13) and (14)):

- (21) a. OV and AN: 201 languages
b. VO and NA: 404 languages
c. OV and NA: 287 language
d. VO and AN: 100 languages
- (22) a. OV and Num N: 180 languages
b. VO and N Num: 246 languages
c. OV and N Num: 230 language
d. VO and Num N: 208 languages

Note that it would not do to assume that nominal modifiers are adjuncts, rather than specifiers, and as such are outside the purview of the headedness parameters; this is because within the nominal extended projections they largely follow the relevant headedness parameter, as shown by the fact that (6a) of chapter 3 is the predominant order of more rigid head-initial languages and (6b) is the predominant order of more rigid head-final ones.

Similarly for adjectives (in predicate position), whose order with respect to their PP complements appears to show more cross-category harmony than their order with respect to modifiers. For example, the combination of OV and VO with the order of degree word and adjective shows only rather weak cross-category harmony. See (4) of chapter 3, repeated here as (23):

- (23) a. OV and degree word-adjective: 114 languages
b. VO and adjective-degree word: 102 languages
c. VO and degree word-adjective: 81 languages
d. OV and adjective-degree word: 63 languages

4.3 'Nonharmonic' Derivations in the Clause

As noted, VOS and SOV, or for that matter VSO and SVO, languages do not constitute uniform types. For each, many subtypes appear to exist (possibly one for each language).¹⁰ For example in the more rigid VOS language Malagasy DPs/PPs and AdvPs

appear to precede the subject in the inverse order (V > direct object DP [DP_{DO}] > indirect object DP [DP_{IO}] > manner AdverbP > frequency AdverbP > subject DP).¹¹ This suggests that in Malagasy the VP moves around the complement DPs and AdverbPs, merged above it, via the *whose-pictures* pied piping mode, with the ultimate effect of reversing their order entirely (see (25) and (i) of note 12).¹² Other Austronesian VOS languages, like Toba Batak (Keenan 1978; Cole and Hermon 2008), and, marginally, Seediq (Holmer 2005: section 3.1), display an order in which PPs and AdverbPs follow the subject (VOSX). Also those VOS languages where VOS alternates with VSO differ as to whether adverbials and PPs precede the subject or follow it. All of these differences may suggest that the VP raises above different chunks of the clause (above just a low indefinite NP object, or also above a higher DP object, or even above a higher PP or adverbial, or Topic XP) pied piping them above the subject (as a function of attracting features located at different heights).¹³ Also see Clemens and Polinsky (2017: section 3.2.1). Other languages that alternate VOS with VSO (like Maori and Tongan) differ from VSO-only languages (like Irish and Arabic) concerning the order of topic and focus constituents (Polinsky 1997). Needless to say, each language should be looked at individually to sort out the types of derivations that yield its canonical orders (hopefully via different combinations of the very same options allowed by UG, including attraction of different projections dominating the V(P)).

Many languages display orders that mix the two types of pied piping, or movement with pied piping (in one of the two modes) and movement without pied piping. This is typical of head-medial (SVO) languages, but also of many SOV languages. For example Hindi and other Indo-Aryan languages, as already noted, have initial complementizers (C AdvP DP/PP V Asp T), thus applying the *pictures-of-whom* pied piping mode in the most deeply embedded subprojections and the *whose-pictures* pied piping one

in the highest CP subprojection. For the very rare opposite case see section 5.3.

Some SVO languages, like Italian, appear to have movement of V(P) + object over the lower adverbs without pied piping (thus not reversing their order, which then corresponds to the preverbal order of the same adverbs in OV languages). This contrasts with rigid head-initial VO languages like Malagasy, where the order of the same lower adverbs is the mirror image of that of Italian. See (24) and (25), and Rackowski (1998), Cinque (1999), Pearson (2000), and Sabel (2011) for discussion.¹⁴

(24) Rakoto non lava i vestiti più sempre bene
(cf. Cinque 1999: section 1.1)

R Neg washes the clothes anymore always well
'Rakoto does not wash clothes anymore always well.'

(25) Tsy manasa lamba tsara foana intsony Rakoto
(cf. Rackowski 1998: section 4.3)

Neg wash clothes well always anymore R.
'Rakoto does not wash clothes anymore always well.'

Pearson (2000) calls the Italian order (in (24)) *direct* and that of Malagasy (in (25)) *inverse*. The direct order is reminiscent of the N Dem Num A order of the nominal extended projection of certain languages, where the N(P) alone raises above the demonstrative successive cyclically (hence not reversing the order of the modifiers). It is also reminiscent of the order of PPs in the German Verb Second main clauses when it is the finite lexical V(P) that raises to CP without pied piping ($[_{CP} C PP_1 PP_2 PP_3 V] \rightarrow [_{CP} V_i PP_1 PP_2 PP_3 t_i]$ [see Schweikert 2005: chapter 6, and Hinterhölzl 2020 for recent discussion]).

4.4 A Note on Germanic Verb Clusters

German and other Germanic languages pose a particular puzzle for any approach to linearization. Quite apart from their V2

character, they have verb clusters in embedded clauses that display virtually the same pattern as Greenberg's Universal 20, as pointed out in Abels (2011, 2013, 2016a).¹⁵ See especially Abels's (2016a) insightful discussion, showing that the Universal 20 pattern is displayed by a subset of restructuring (clause-mate) predicates (auxiliaries, modals, causative 'let') that are merged together with the main verb (or a verbal particle, if one is present), which behaves as the Head of the entire verbal cluster (in the digit representation 1-2-3-4 the highest number, 4, represents the main verb/verbal particle, corresponding to the noun in Greenberg's Universal 20). What is puzzling is that the adverbial modifiers, the DPs and PPs, are in the direct head-final order irrespective of the different orders within the verb cluster (as if the main verb, or verbal particle, the modals, and the auxiliaries moved in an independent plane, ultimately raising as one complex Head in the *pictures-of-whom* pied piping, which preserves the Merge order of their AdverbP, DP, and PP dependents).¹⁶

The syntax of Germanic verb clusters thus raises a challenge to the movement approach developed so far, much as it does to nonmovement approaches, as these do not contemplate separate planes of derivation. Here I sketch a possible solution that involves a minimal departure from the set of assumptions adopted here, pending a more principled analysis.

To keep things manageable I will consider the possible orders in clusters composed of three (rather than four) elements: (i) an auxiliary, (ii) a modal, and (iii) a main verb (perhaps the most researched triplet). On the basis of a vast documentation of Germanic varieties Wurmbrand (2004, 2017: section 2.2), and Barbiers (2005: 238) for Dutch varieties, show that of the six possible orders of the three elements only five are attested, which Abels (2011: section 3.1, 2016a: section 3) claims are those instantiating the Universal 20 pattern.¹⁷ As just noted, the modal > auxiliary > main verb order (2-1-3) "is completely absent as a neutral order" (Abels 2016a: 197), just as the order A > Dem > N order

(2-1-3) is absent as a neutral order in the subset of the Universal 20 elements represented by demonstratives, adjectives, and the noun (see Cinque 2005). Compare the case of the theoretically possible Germanic clusters in (26a)—(26f) with the case of the theoretically possible Dem A N orders within the extended nominal projection in (26a')—(26f').

(26) a.	V	Mod	Aux	a'. N	A	Num
	3	2	1	3	2	1
b.	Aux	Mod	V	b'. Num	A	N
	1	2	3	1	2	3
c.	Aux	V	Mod	c'. Num	N	A
	1	3	2	1	3	2
d.	Mod	V	Aux	d'. A	N	Num
	2	3	1	2	3	1
e.	V	Aux	Mod	e'. N	Num	A
	3	1	2	3	1	2
f.	*Mod	Aux	V	f'. *A	Num	N
	2	1	3	2	1	3

Here, unlike the Universal 20 DemonstrativeP, (cardinal) NumericalP, and AdjectiveP, which are modifiers, the elements involved are all Heads of a subprojection of the clause, with the main verb Head of the entire extended projection and cluster. Being a Head each can move, either by itself or by pied piping some larger constituent containing it in one of the two possible modes of pied piping. Interestingly the resulting pattern turns out to be the same as that of Universal 20.¹⁸

The generalization hinted at (earlier in this section) that the adverbial modifiers, the DPs, and the PPs are in the direct head-final order (e.g. 'he' > 'probably' > ('to us') > 'the letter' > 'carefully' > [verb cluster]) irrespective of the five different orders attested for the verbal elements in the Germanic cluster suggests that the cluster eventually moves as a single Head with the

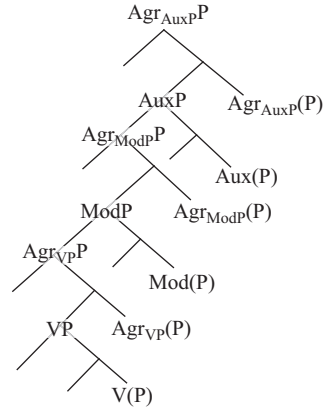
pictures-of-whom pied piping mode, which does not alter the direct order of the arguments and modifiers of the clause.

The problem in the present account is how to derive the different orders of the elements of the cluster while keeping the order of the dependents, or “satellites,” constant.

The possibility that I tentatively explore here is a particular implementation of Abels’ (2016a) idea that the derivation of the order of the verbal Heads in a cluster takes place separately, essentially subject to the same conditions on movement that derive the Universal 20 pattern (albeit, I assume, without multidimensional representations, in line with Chomsky 2019: 267–268; 2021: 20).¹⁹

In the spirit, if not the details, of Barbiers’s (2005) derivation of verb clusters, I assume that in the workspace Aux(P), Mod(P), and the V(P) are assembled in a hierarchy that respects their relative scope (see (27)), with an agreement phrase on top of each such projection to host the movement of the Head. Each Head moves in one of the available ways (with *whose-pictures* pied piping, *pictures-of-whom* pied piping, or without pied piping) to form the five possible clusters (out of six) (see (28)) before building up the clause containing their respective dependents (see (29)).²⁰ If Kayne (2016) is right every overt Head may be selected by a (necessarily silent) X-bar head, which is not indicated in (27). Unlike him, but still in compliance with Antisymmetry, I also assumed that what is selected by a Head is merged in its specifier, with the Head moving across it in the *whose-pictures* pied piping mode in head-initial languages. As in section 2.1 and section 3.1n1, the (bare) phrasal nature of the Heads of (27) is suggested by the fact that they target in their movement a specifier position.²¹

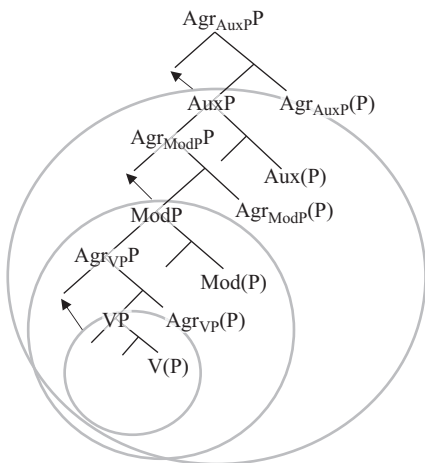
(27)



Let's consider how the five attested orders of the cluster composed of V(P) Mod(P) and Aux(P) (see (26a)–(26e)) are derived by movement (see (28)–(32)), and how the sixth order (i.e., (26f)) fails to be derived.

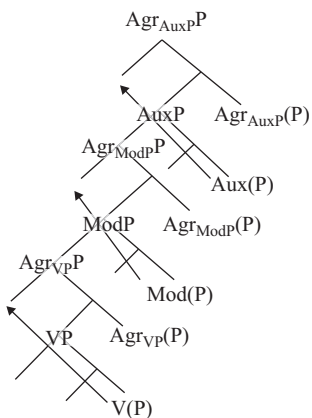
I take each Head to obligatorily move to the specifier of its AgrP. If each moves there with the *pictures-of-whom* pied piping (see (28)), the order under the LCA will be V(P) Mod(P) Aux(P) (3-2-1), as Agr_VP comes to asymmetrically c-command Mod(P), so that everything dominated by it precedes Mod(P), and Agr_ModP asymmetrically c-commands Aux(P), so that everything dominated by it (including V(P) > Mod(P)) precedes Aux(P).²²

(28)



On the other hand if each Head moves with (vacuous) *whose-pictures* pied piping to the specifier of its AgrP (see (29)), the order under the LCA will be Aux(P) Mod(P) V(P) (1-2-3). This is because Mod(P) comes to asymmetrically c-command Agr_{VP}P and Aux(P) comes to asymmetrically c-command Agr_{ModP}P.

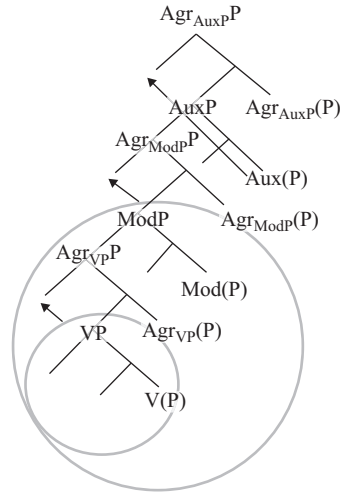
(29)



The order Aux(P) V(P) Mod(P) (1-3-2) is instead obtained if V(P) and Mod(P) move to the specifier of their AgrP via the

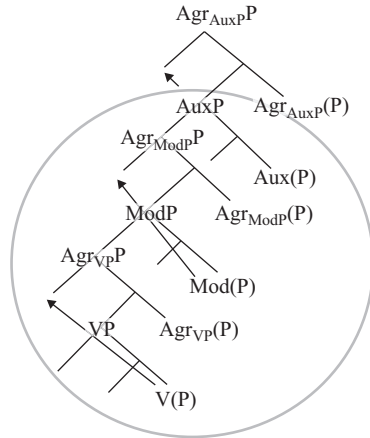
pictures-of-whom pied piping while Aux(P) moves to the specifier of its AgrP via the (vacuous) *whose-pictures* pied piping. See (30):

(30)



The order Mod(P) V(P) Aux(P) (2-3-1) is obtained if V(P) and Mod(P) move via the (vacuous) *whose-pictures* pied piping mode to the specifier of their respective AgrP, and Aux(P) moves to the specifier of its AgrP via the *pictures-of-whom* pied piping, as shown in (31). This is because Mod(P) will asymmetrically c-command Agr_{VP}P, giving rise in Agr_{ModP}P to the partial order Mod(P) V(P), which will precede Aux(P) as Agr_{ModP}P asymmetrically c-commands Aux(P). Its relative rarity compared with the other attested orders (Svenonius 2007; Abels 2013) is tentatively attributed in section 5.3 to its involving a change in its derivation from the less marked *whose-pictures* pied piping mode to the more marked *pictures-of-whom* pied piping mode, a general determinant of the rarest word orders.

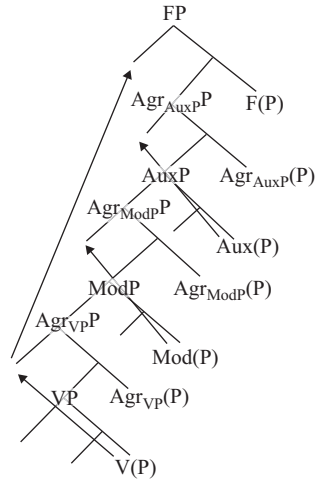
(31)



The final attested order of the cluster is V(P) Aux(P) Mod(P) (3-1-2).²³ This order is reminiscent of the order N Num A of (26e') (and the full N Dem Num A order of Greenberg's Universal 20). Recall from section 3.4 how this order was obtained within a configuration that contains the other Heads of the nominal extended projection (PL(P), D(P), and K(P)), with the Head of the entire projection, N(P), incorporating them in its raising to the top of the extended projection (see in particular the derivation in (16) of chapter 3).

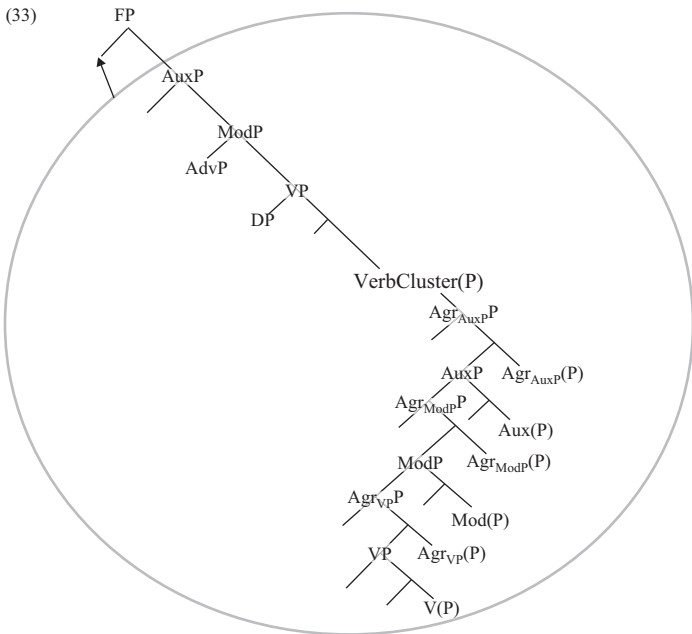
What I would then like to propose is the essentially parallel derivation in (32), in which the Head of the entire extended verbal projection, V(P), raises to the top of its extended projection (except that here V(P) does not incorporate [a silent copy of] them in its raising to the top).

(32)



The order Mod(P) Aux(P) V(P) (2-1-3) (see (26f)) is instead underivable. If Mod(P) raised to the specifier of Agr_{ModP}, coming to asymmetrically c-command Agr_{VP}P and Aux(P) (thus ultimately preceding both), there would still be no way for Aux(P) to come to asymmetrically c-command V(P) so as to intervene between Mod(P) and V(P).

Extending to dependents other than DPs (e.g., PPs and AdvPs) Neeleman and Weerman's (1993: section 4) idea that the selectees of a verb cluster are derived from the selectees of its parts I will tentatively assume that given that the V(P) is the most deeply embedded category (under reconstruction), it will be the first to license its dependents, followed by the Modal(P) and the Aux(P). Raising of the verb cluster to Spec,FP via the *pictures-of-whom* piping, as shown in (33), will preserve the hierarchy/order of the dependents.



In V2 constructions only the finite verb will raise to Spec,CP in main clauses.

I believe that once verb clusters are set aside (treated separately, perhaps as in the preceding text, from run-of-the-mill verbs embedding IP/CP complements) AdverbPs, PPs, DPs, and V(P)s can still be taken to be merged together in fixed positions within a single hierarchy.²⁴

The evidence discussed in Bobaljik (1999), Svenonius (2002), Nilsen (2003), Zwart (2007b), and Abels (2016a: 191) that DPs, PPs, AdverbPs, and verbs belong to separate tiers, ultimately conflated like different decks of cards shuffled together, is, I think, not warranted, quite apart from its conceptual unattractiveness.

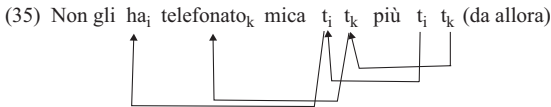
The first apparent paradox discussed by Bobaljik (1999) concerns the rigidity of adverb order (say, in Italian, *mica* ‘presuppositional NEG’ > *più* ‘any longer’) and the rigidity of the order

of finite auxiliaries and participles (say, in Italian, *ha* ‘has’ > *telefonato* ‘called’). Now, the fact that the auxiliary and the participle can both follow or precede one or both of the two adverbs, as apparent from (34), would seem to lead to a violation of the Head-Movement Constraint, because one verb would appear to be crossing over the trace of the other.²⁵

- (34) a. Mica più gli ha_i telefonato_k (da allora)
b. Mica gli ha_i più t_i telefonato_k (da allora)
c. Mica gli ha_i telefonato_k più t_i t_k (da allora)
d. Non gli ha_i mica t_i telefonato_k più t_i t_k (da allora)
e. Non gli ha_i telefonato_k mica t_i t_k più t_i t_k (da allora)
 ‘(S)he has no longer called him (since then).’

The second paradox discussed by Bobaljik concerns the rigid order of adverbs and the equally rigid order of DPs, once we abstract away from topicalization and focalization: namely, $DP_{\text{Subject}} > DP_{\text{BareIndirectObject}} > DP_{\text{directObject}}$. Given that the DPs can be found interspersed among the adverbs while retaining their relative order, it would seem difficult to accommodate adverbs and DPs in unique merge positions within a single hierarchy. Bobaljik adds that this could even be taken to suggest that it is the DPs that occupy fixed positions while adverbs achieve their relative freedom via movement, rather than vice versa, concluding that “it is clearly impossible to maintain that the internal ordering of adverbs, that of heads and arguments, and the ordering of the groups with respect to each other, all follow directly from a single phrase-structure representation. Any such account must be supplemented minimally by displacements that may violate strict locality constraints (i.e., crossing paths must be tolerated), in tandem with an independent stipulation to preserve the original word order” (6). But this is precisely what Relativized Minimality enforces if one adopts Chomsky’s insight that links of a chain do not count as interveners (see Krapova and Cinque 2008: section VII; Chomsky 2013: 44fn33; Rizzi 2017: 255–256, 2018: 354;

Shlonsky and Rizzi 2018: 50).²⁶ Under this assumption (34e) involves the derivation in (35), which incurs in no locality violation, as each movement crosses only one link of a chain, not a full chain, ensuring at the same time preservation of the original order:²⁷



If we take into consideration the proneness to displacement of V(P)s and DPs and, after Pollock (1989), the essential immobility of AdvPs (except for limited and recognizable cases of movement to CP or NegP positions [Rizzi 2004; Garzonio and Poletto 2012; Cuonzo 2019]), the fact that the same order of DPs ($DP_{\text{Subject}} > DP_{\text{BareIndirectObject}} > DP_{\text{directObject}}$) is found before or after a certain adverb is simply due to the possibility of moving the DPs in compliance with the just mentioned version of Relativized Minimality.

There is thus no reason to abandon the idea that the maximal extended projection of the V(P), the clause, is one *single* hierarchy of DPs, PPs, AdverbPs, and verbal functional heads merged in fixed positions; in fact, there is every reason to adopt it and to reject “a multi-dimensional theory of phrase-structure in which the principles ordering adverbs occupy a different plane than those ordering verbal elements and arguments” (Bobaljik 1999: 6).²⁸ After their merger within the maximal extended projection of the V(P), DPs, PPs, and verbal heads may raise to different positions interspersed among the AdverbPs (with possible semantic effects).²⁹

And the same holds of the clause’s major phrases.

4.5 Determinants of the Pied Piping and No Pied Piping Modes³⁰

In the derivational approach I've sketched movement of the Heads with consistent *whose-pictures* pied piping gives rise to the (ideal) head-initial type and movement of the Heads with consistent *pictures-of-whom* pied piping to the (ideal) head-final one, even if the most consistent (“rigid”) head-initial and head-final languages are, as noted, a tiny minority (and possibly never totally consistent). The majority of languages appear to mix the three modes of movement (no pied piping, *whose-pictures* pied piping, and *pictures-of-whom* pied piping), both across different phrasal extended projections and (less frequently) even within a single one, as noted in sections 4.2 and 4.3 (also see section 5.3). What determines the type of pied piping with which each Head moves seems quite generally to be the modifiers of the Head's projection, with different degrees of generality (suggesting the appropriateness of a micro-parametric approach to word order [Cinque 2017]). Fewer times it is the Head itself of the projection that determines the type of pied piping that it undergoes (except perhaps for verbs). Pending a more principled account, here I utilize for clarity the terms [*whose-pictures* pied piping] feature, [*pictures-of-whom* pied piping] feature, and [-pied piping] feature.

4.5.1 Cases of Movement Determined by the Modifier

These cases will be arranged along a scale of successively larger generalizations.³¹

4.5.1.1 *Single lexical item*³²

In English the adjectival degree modifier *enough*, which has to follow the adjectives that it modifies (e.g., *good enough*) (Maling 1983: section 1.4; Webelhuth 1992: 23–24f; Kayne 2005b: section 3.6; and references cited in these works),³³ may be taken to be endowed with a [*whose-pictures* pied-piping] feature that

forces the A(P), the Head of the projection, to move above it.³⁴ The other elements belonging to the same class of adjectival modifiers (e.g., *very*, *quite*, *so*, *too*), which have to precede the adjectives that they modify (e.g., *very good*, *quite good*, *so good*), may instead be taken to be endowed with a [*pictures-of-whom* pied-piping] feature that forces the A(P) to drag the modifier along in its raising without inverting their relative order.

The same appears to be true of certain direct modification adjectives in Italian.³⁵ *Vecchio* ‘old’ in the sense of ‘long-standing’ is only prenominal (hence, in the present context, endowed with a [*pictures-of-whom* pied-piping] feature that does not cause the N(P) to raise above it; see (36a)). *Medio* ‘average’ is instead only postnominal (hence endowed with a [*whose-pictures* pied-piping] feature that causes the N(P) to raise above it; see (36b):

- (36) a. *un vecchio amico* (**un amico vecchio*)
‘a friend of long-standing’
b. *l’italiano medio* (**il medio italiano*)
‘the average Italian’

4.5.1.2 *Single adjectival subclass*

Cypriot Maronite Arabic color adjectives of Arabic origin necessarily follow the NP while those of Greek origin may either follow or precede the N(P). See (37), from Panayidou (2013: 179–180):

- (37) a. (tin-i) *varka* *χabra* (with *whose-pictures*
pied-piping) (**tin-i χabra varka*)
(give-me) paper.DEF.F red.DEF
‘(Give me) the red book/paper.’
b. (tin-i) *li-prasini varka* (with *pictures-of-whom* pied-
piping) (but also *varka li-prasini*)
(give-me) the-green.f paper.DEF.F
‘(Give me) the green book/paper’

Istro-Romanian (Zegrean 2012: 93) presents a minimal pair of the same general type. The provenance adjective *taljanski* (of Slavic origin) has to precede the noun (thus imposing a [*pictures-of-whom*

pied-piping] movement of the N(P)), while the adjective *taljan* (of Romance origin) has to follow the noun (thus imposing a [whose-pictures pied-piping] movement of the N(P)).³⁶

- (38) a. ur taljanski fečor (*ur fečor taljanski)
b. ur fečor taljan (*ur taljan fečor)
'an Italian boy'

Another case is provided by Italian provenance adjectives, which are only postnominal (see (39a)), in contrast with size adjectives, which can either be pre- or postnominal. See (39b)).³⁷

- (39) a. l'invasione romana della Tracia (*la romana invasione della Tracia)
'the Roman invasion of Thrace'
b. l'enorme cupola di S.Pietro/la cupola enorme di S.Pietro
'the enormous cupola of S.P.'s'

4.5.1.3 *Single category within an extended projection*³⁸

Farsi adjectives are all postnominal (except those in the superlative form [cf. Kayne 2008b, note 15]). This can be achieved, in the spirit of Webelhuth (1992: section 1.6), if all lexical items that contain the [+Adj] categorial feature are marked as imposing a [whose-pictures pied piping] movement of the N(P) (the prenominal position of superlative adjectives being instead a function of the movement of the adjective to a high position within the extended nominal phrase [cf. Cinque 2010b: 124n13]).³⁹

*All modifiers within a particular extended projection*⁴⁰

In the Niger-Congo (Defoid) Bantu language Yorùbá, adjectives, numerals, and demonstratives are all post-nominal in “the mirror image of English modifier sequences” (Ajíbóyè 2005: 18). See (40):

- (40) a. àwọn ajá dúdú dúdú méje wòn-yí (263)
PL dog black black(=black.PL) seven Dem-PL
'these seven black dogs'

- b. ešin funfun n'lá dáradára méjo (cf. 18)
horse white big nice eight
'eight nice big white horses'

In the present context, this means that all lexical items of any of the nominal modifier classes force a [*whose-pictures* pied piping] movement of the N(P). Bulgarian or German adjectives, numerals, and demonstratives, which are all necessarily prenominal, instead force the N(P) to move with the *pictures-of-whom* pied piping mode.

4.5.1.4 All categories within all extended projections⁴¹

All modifiers (whatever their categorial label) of Japanese would instead be marked as imposing a [*pictures-of-whom* pied piping] movement on their Head (thus yielding virtual “cross-category” harmony, with the exception of numerals that can also be postnominal, possibly with a discourse-related difference with respect to prenominal ones [see Kim 1995]).

So far, we have observed cases in which the [*pictures-of-whom* pied piping] or the [*whose-pictures* pied piping] feature appears to be imposed by the modifier.

As mentioned earlier, there are reasons to endow also the modified category with the same type of features, in those cases where it is the modified category that apparently determines the kind of movement. This implies that the features of the modifier and those of the modified category must match for the derivation not to crash.⁴²

4.5.2 Cases of Pied Piping Mode Determined by the Head (the Modified Category)

In Swedish, adjectives taking a DP complement fall into three classes (Platzack 2014: section 4): (i) those that can only follow their DP complement, such as *bekant* ‘known to’, *kär* ‘dear’, *värdig* ‘worthy of’, *likgiltig* ‘indifferent to’, and so on (see (41)); (ii) those that can only precede their DP complement, such as *kvitt*

‘be rid of’ *lik* ‘like’ *värd* ‘worth’, and so on (see (42)); and (iii) those that can either precede or follow their DP complement, such as *trogen* ‘true to’, *underlägsen* ‘inferior to’, *överlägsen* ‘superior to’, and so on (see (43)):

- (41) a. Hon var honom likgiltig.
She was him indifferent
b. Hon var likgiltig *(för) honom.
She was indifferent to him
‘She was indifferent to him’
- (42) a. Han är kvitt sina plågor.
He is rid-of his.REFL pains
b. *Han är sina plågor kvitt.
He is his.REFL pains rid-of
‘He is rid of his pains’
- (43) a. Hunden är sin husse trogen
The dog is his master faithful
b. Hunden är trogen sin husse
The dog is faithful his master
‘The dog is faithful to his master’

Assuming, as we have done throughout, that nothing is merged below/to the right of a lexical category (with the consequence that any complement will be merged in the Spec of a projection above the lexical X(P)),⁴³ in (41), the adjective must be endowed with a [*pictures-of-whom* pied piping] feature; in (42) with a [-pied piping] feature;⁴⁴ and in (43) with either a [*pictures-of-whom* pied piping] or a [-pied piping] feature.

In certain languages Nouns also appear to determine the mode of pied piping. Especially in SVO languages, where variation is substantive, single common nouns appear to determine their order with respect to their modifying proper noun. So, for example, in English the common noun *cape* typically precedes the

proper name of the cape (e.g., *Cape Cod*, *Cape Canaveral*, *Cape Horn*), while the common noun *road* typically follows the proper name of the road (e.g., *Abingdon road*, *Portobello road*, *Kensington road*).⁴⁵ Thus *cape* must be marked with a [*whose-pictures* pied-piping] feature, and the common noun *road* with a [*pictures-of-whom* pied piping] feature. Some (like *river*) appear to avail themselves of both possibilities: *the Mississippi river/ the river Mississippi*.⁴⁶

In Yugambeh-Bundjalung (Bandjalang) (Pama-Nyungan, Australia) adjectives “follow nouns denoting humans, but precede those denoting trees and neuters” (N_{+hum} AP and AP N_{-hum} [Sharpe 2005: 98]).⁴⁷ This would seem to suggest that also in this case it is a feature of the N(P) that determines the mode of pied piping (whether it is of the *whose-pictures* or of the *pictures-of-whom* type, yielding N_{+hum} AP or AP N_{-hum}). As I’ve noted previously, the AP must have a feature matching the feature of the N(P).

Similarly, in Tuyuca (Tucanoan, South America) “numerals precede inanimate nouns and follow animate nouns” (Barnes 2000: 446; my translation), suggesting once again that it is the noun that dictates the type of pied piping involved:

- (44) a. sika-‘ga ‘dii-ga
one-CLF ball-CLF
‘one ball’
b. ĩbĩ-‘ã iti’a-rã
man-PL three-PL
‘three men’

A comparable situation is found with adpositions, which in certain languages also appear to determine, depending on the particular adposition, the mode of movement.⁴⁸ See, for example, the case of Michif (Mixed [French-Cree] language [Bakker 1997: 112]), where *d* ‘of’ is a preposition (i.e., endowed with a

before the verb stem” (Goldberg 2002: section 6.1). See (48a) and (48b):⁵⁰

- (48) a. (man) rafte budan
(I) go.PART be-PAST.PERF.1.sg
‘I had gone’
b. (man) xâham raft
(I) FUT-1.sg go
‘I will go.’

As for complementizers, within the same language, Bangla, one complementizer (of nominal origin), *je* (which we take to be endowed with a [*whose-pictures* pied piping] feature), precedes its complement clause (cf. (49a)), and another (of verbal origin), *bole* (which we take to be endowed with a [*pictures-of-whom* pied piping] feature), follows it (cf. (49b)):

- (49) a. Chele-Ta Sune-che [je [or baba aS-be]] (Bayer 1996: 255)
boy-CLF hear-PST3 COMP his father come-will
‘The boy heard that his father will come’
b. Chele-Ta [[or baba aS-be] bole] Sune-che (ibid.)
boy-CLF his father come-will COMP hear-PST3
‘The boy heard that his father will come’

All of this seems to suggest that modifiers as well as nouns, adjectives, prepositions, auxiliaries, modals, and complementizers (hence, by inheritance, their maximal projections) must be endowed with either a [*pictures-of-whom* pied piping] feature or a [*whose-pictures* pied piping] feature (or a [-pied piping] feature), because it is them in some cases that determine the type of movement. This suggests generalizing the endowment of such features to either the modifier or the modified category, whose movement features then will have to match.

Differently from such categories, it would seem that single verbs cannot be endowed with a special pied piping feature, for,

as Webelhuth (1992: 49) observes, all of them take their complements on the same side. In other words no verb can apparently differ from any other verb in the direction in which it takes a complement.⁵¹ This, however, remains to be ascertained at a cross-linguistic level because all other categories, as seen, seem to be able to be endowed lexically with one such pied piping feature.

This is a section of [doi:10.7551/mitpress/14681.001.0001](https://doi.org/10.7551/mitpress/14681.001.0001)

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Citation:

On Linearization: Toward a Restrictive Theory

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DOI: [10.7551/mitpress/14681.001.0001](https://doi.org/10.7551/mitpress/14681.001.0001)

ISBN (electronic): 9780262372862

Publisher: The MIT Press

Published: 2023

The open access edition of this book was made possible by generous funding and support from MIT Press Direct to Open



The MIT Press

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The MIT Press would like to thank the anonymous peer reviewers who provided comments on drafts of this book. The generous work of academic experts is essential for establishing the authority and quality of our publications. We acknowledge with gratitude the contributions of these otherwise uncredited readers.

This book was set in Times New Roman by Westchester Publishing Services.

Library of Congress Cataloging-in-Publication Data

Names: Cinque, Guglielmo, author.

Title: On linearization : toward a restrictive theory / Guglielmo Cinque.

Description: Cambridge, Massachusetts : The MIT Press, 2023. |

Series: Linguistic inquiry monographs | Includes bibliographical references and index.

Identifiers: LCCN 2022016358 | ISBN 9780262544955 (paperback) |

ISBN 9780262372879 (epub) | ISBN 9780262372862 (pdf)

Subjects: LCSH: Grammar, Comparative and general—Word order.

Classification: LCC P295 .C55 2023 | DDC 415—dc23/eng/20220502

LC record available at <https://lccn.loc.gov/2022016358>