

# A microparametric approach to the head-initial/head-final parameter

Guglielmo Cinque

(October 2016)

**Abstract:** The fact that even the most rigid head-final and head-initial languages show inconsistencies and, more crucially, that the very languages which come closest to the ideal types (the “rigid” SOV and the VOS languages) are apparently a minority among the languages of the world, makes it plausible to explore the possibility of a microparametric approach for what is often taken to be one of the prototypical examples of macroparameter, the ‘head-initial/head-final parameter’. From this perspective, the features responsible for the different types of movement (attraction) of the constituents of the unique structure of Merge from which all canonical orders derive are determined by lexical specifications of different generality: from those present on a single lexical item, to those present on lexical items belonging to a specific subclass of a certain category, or to every subclass of a certain category, or to every subclass of two or more, or all, categories, (always) with certain exceptions.<sup>1</sup>

**1. Introduction.** An influential conjecture concerning parameters, subsequent to the macro-parametric approach of Government and Binding theory (Chomsky 1981, 6ff and passim), is that they can possibly be “restricted to formal features [of functional categories] with no interpretation at the interface” (Chomsky 1995, 6) (also see Borer 1984 and Fukui 1986). This conjecture has opened the way to a microparametric approach to differences among languages, as well as to differences between related words within one and the same language (Kayne 2005, §1.2). It also prompted the idea that macroparameters may possibly be reinterpreted as the concerted action of some number of microparameters (Legate 2002, Kayne 2005, Adger, Harbour and Watkins 2009, Rizzi 2009, among others), even though the question remains open to some extent (see Baker 2008; and Roberts 2012 for an attempt at reconciling the two approaches).

Here I want to explore the possibility of analyzing what is often considered a prototypical macroparameter (the head-initial/head-final parameter) in microparametric terms, “generalizing to the worst case” (to use Richard Montague’s expression) of lexically encoded instructions.<sup>2</sup> This is

---

<sup>1</sup> I wish to thank Klaus Abels, Daniel Büring, Richard Kayne, Ad Neeleman, Massimo Piattelli Palmarini, Ian Roberts, Luigi Rizzi and Jan-Wouter Zwart for discussions on aspects of this analysis, as well as the audiences of the CamCos5 Conference in Cambridge (5-7 May 2016), and of my classes at Tel Aviv University (May-June 2016), especially Alex Grosu, Julia Horvath, Roni Katzir and Tal Siloni. I also wish to thank Mark Baker and an anonymous reviewer for their detailed comments on a previous draft of the paper.

<sup>2</sup> An important precedent of the microparametric approach to word order typology explored here is Webelhuth’s (1992) restrictive notion of possible parameter of natural language, modulo internal Merge in place of specification of direction: “if no lexical entry can refer to feature F, then no parameter can refer to F” (Webelhuth 1992, 31), which amounts to saying that the “parameters of natural language are nothing but generalized versions of lexical statements” (Webelhuth 1992, 30), only differing in the number of categories to which they apply (in English, for example, to a single adjectival degree modifier, *enough* (*long enough* vs. *very/too/quite/etc. long*), or to all adjectival measure

rendered plausible by at least two considerations: 1) the fact that no language is totally consistent (Smith 1981,39) and that even the most rigid head-final and head-initial languages display a number of inconsistencies, and, more importantly, 2) the fact (actually, a paradox) that the languages which come closest to the ideal types (the “rigid” SOV and the VOS languages) are apparently a minority among the languages of the world (cf. Dryer 1992,fn.17 and section 4 below).

Before addressing the question of how to express the word order parameter(s) in microparametric terms (section 4), I will consider some general issues of the head-final and head-initial orders.

In Cinque (2009b, 2013a) I had suggested that we should try to reconstruct the two *ideal* head-final and head-initial orders that transpire from the most rigid SOV and VOS languages, even if each of these may depart from such ideal orders in one or more ways (see section 4.1 below for relevant evidence and references). The reason for taking this position is threefold: first, because fairly clear patterns, or at least clear tendencies pointing to such patterns, are recognizable, as already observed in the works of Greenberg (1963), Vennemann (1973), Lehmann (1978), Hawkins (1983) and Dryer (1992); second, because the reconstruction of such ideal orders and, in particular, the way in which they are derived may constitute a ‘metric’ on the basis of which one can measure the distance of each language from a ‘standard’, and in principle determine the place that each language occupies in the space of admitted variation (the fact that the ‘standard’ may be perfectly instantiated by no single language should not matter)<sup>3</sup>; third, because the Merge structure and derivational options admitted by UG may provide a plausible account of acquisition in that they allow the child to reconstruct on the basis of the primary linguistic data the language particular options that derive his/her language (see section 4.4 below).

Of course, a full reconstruction of the ideal head-final and head-initial orders is out of the question here, as was in Cinque (2013a) (see the Appendix there, as well as Lehmann 1978, Dryer 1992, and Primus 2001,856 for partial lists of the correlation pairs of each ideal order, still a long way from representing the *total* orders of the clause and its major phrases in the two ideal language types). In any event the basic generalizations are discernible and they raise the question of how they should be derived.<sup>4</sup>

---

modifiers (*two feet (too) long/high/etc.*)). On the lexical locus of parameters as instructions for syntactic actions see the discussion in Rizzi (2014).

<sup>3</sup> Deviations from the uniform application of the derivational mechanism that yields the ideal head-initial and head-final orders not only characterize, say, “how head-final language X is”, but, more crucially, set specific restrictions on what variations are admitted and what variations are excluded (say the order Numeral Adjective Demonstrative Noun in the DP of a head-final language or the order C ASP<sub>progressive</sub> T<sub>past</sub> V in the clause of a head-initial language).

<sup>4</sup> Section 2. draws from Cinque (2013a). Section 3. refines the derivational account proposed there.

## 2. The two ideal types.

### 2.1 The head-final type.

The generalization concerning the ideal head-final word order type appears to be that **all higher (functional) heads follow the lexical V/N/etc. in an order which is the reverse of the order of Merge, and phrasal specifiers (arguments, circumstantials, and modifiers) precede V/N/etc. in their order of Merge.** See (1)a, and (2)a, followed by some illustrative examples:<sup>5</sup>

(1)a. AdvP DP AdvP/PP V Asp° T° C°

b. **Japanese** (SOV – Endo Yoshio, p.c.)

Watasi-wa [kare-ga osoraku sore-o zyoozuni okona-e-ru to] it-ta.  
I-Top [he-Nom probably it-Acc well do-Mod-Present COMP] say-Past  
'I said that probably he can do it well'

c. **Evenki** (Tungusic, SOV – Nedyalkov 1997,256)

Nunqan ulle-ve tulile lo:van-d'e-ngne-re-n  
She meat-ACC outdoors hang-IMPRF-HAB-PAST-AGR  
'She usually hangs meat outdoors for some time (for drying)'

d. **Maranungku** (Australian, Daly, SOV – Tryon 1970,46)

yer ngeti tyapat me tu  
tomorrow I sit.swim PROG FUT  
'Tomorrow I shall be swimming'

---

<sup>5</sup> A particularly striking case is provided by Kiowa, which shows a mirroring effect around the axis of the verb, with preverbal evidential, epistemic, negation and aspectual (phrasal) particles co-occurring with (head) suffixes of the corresponding type in the reverse order after the verb (see Adger, Harbour and Watkins 2009, Chapter 3).

For the time being I will keep to the tradition that takes complementizers, tense and aspect morphemes, determiners, Case markers, etc. (whether free or bound), to be heads, and arguments, circumstantials, adverbial and adjectival modifiers, etc. to be phrases. If Kayne (2016) is right in arguing that all heads are silent and that all overt elements are phrases, some other way will have to be found to draw the distinctions reported in 2.1 and 2.2. One possibility that I explore later is to think that what are traditionally assumed to be heads are XPs which, differently from argumental, circumstantial and adverbial phrases, share with lexical V(P)s or N(P)s the property of selecting for (attracting) a specific complement category (see below). In fact, we shall see that the movements involved in deriving the two ideal orders are possibly best formulated in term of a generalized attraction of phrases.

(2)a. DemP RC NumP AP\* N PL° D° Case<sup>o6</sup>

b. **Wolaytta** (West Cushitic, SOV – Lamberti and Sottile 1997,215)

he [taa- w kuttuw<sup>a</sup> ehida] iccash<sup>u</sup> adussa laagge-t-I  
 those me-dat chicken having-brought five tall friend-PL-NOM  
 ‘those five tall friends who brought me a chicken’

c. **Mangghuer** (Mongolic, SOV - Slater 2003,99)

bi [ tuerghang kong ge =ni ] ala ge-ba  
 Isg. [ fat person det.indef ACC ] kill do-subj:perf  
 ‘I have killed a fat person’

d. **Tsez** (Northeast Caucasian, SOV – Polinsky 2015,41)

yisi Tolstoy-ä cäx-ru(-ni) lena y-exora t’ek  
 DEM Tolstoy-ERG write-PST.PTCP-DEF five II-long book.ABS.II  
 ‘these five long books written by Tolstoy’

## 2.2 The “head-initial” type.

The generalization concerning the ideal head-initial word order type appears to be that **all higher (functional) heads precede V/N/etc. in their order of Merge, and phrasal specifiers (arguments, circumstantials, and modifiers) follow V/N/etc., in an order which is the reverse of their order of Merge**. See (3)a and (4)a, with some representative examples:

(3)a. C° T° Asp° V PP/AdvP DP AdvP<sup>7</sup>

b. **Malagasy** (Malayo-Polynesian,VOS - Rackowski and Travis 2000,125)

Tsy manasa intsony mihitsy ny lamba Rakoto  
 Neg Pres.AT.wash no longer at all det clothes Rakoto  
 ‘Rakoto does not wash at all any longer the clothes’

<sup>6</sup> AP\* stands for one or more APs. Mallinson and Blake (1981,377) and Dryer (1988) point out that the often-claimed correlation between SOV order and adjective-N order is spurious, but see Cinque (2013a,fn.5) for discussion.

<sup>7</sup> On the general order in (3)a, see sections 1 and 2 of Rackowski and Travis (2000) on Malagasy (VOS) and Niuean (VSO), respectively: “there [...] seems to be a correlation between preverbal elements which appear in their hierarchical order and postverbal elements which are in the reverse order” (p.127). On what appears preverbally in “verb initial languages” see the first part of Greenberg’s (1963) Universal 16: “In languages with dominant order VSO, an inflected auxiliary always precedes the main verb.”. Carnie and Guilfoyle’s (2000b,10) also state that a trait of VSO languages is represented by “preverbal tense, mood/aspect, question, and negation particles”. Also see the Konstanz Universals Archive, no. 501 and 1553, Dryer (1992a,§4.3 and §4.5) and Hendrick (2000). On the phrasal, rather than head, status of the verbal, adjectival, nominal, prepositional predicate following the preverbal particles in a number of V-initial languages, see Massam (2000,§2), Lee (2000), and Cole and Hermon (2008).

- c. **Chol** (Mayan, VOS - Coon 2010,241, from Vázquez Alvarez 2009,19)

Tyi k-sub-u [che` mi i-bajb-eñ ts'i` aj-Wǎn].

PRFV A1-say-TV COMP IMPF A3-hit-D.NML dog CL-Juan

‘I said that Juan hits the dog.’

- d. **Sakun (Sukur)** (Chadic, VOS – Thomas 2014,88)

a dǎ-r kərá=j nə dʒíf Lawu

PFV hit-EXT dog=REL with stick Lawu

‘Lawu hit the dog with the stick.’

- (4)a. Case° D° PL° N AP\* NumP RC DemP<sup>8</sup>

- b. **Tukang Besi** (Malayo-Polynesian, VOS - Donohue 1999,307, adapted from ex. (20))

[na wowine mandawulu dua-mia [umala te pandola]<sub>RC</sub> [meatu'e ai]<sub>Dem</sub>]<sub>KP</sub>

NOM woman beautiful two-CLF [fetch.SI art eggplant] REF-that ANA

‘those two beautiful women who were bringing eggplants’

- c. **Sakun (Sukur)** (Chadic, VOS – Thomas 2014,84)

jím mǎ-dʒamak-ǎn xá=j pǎka kí tʃitʃíji ná

stone HAB-big.PL-NOM PL=REL collect 2PL DEM TOP

‘These big stones that you collect..’

- d. **Tongan** (Oceanic, VSO/VOS - Ball 2009,116; also see Macdonald 2014,§1.1)

Na'e kamata [langa 'e Sione 'a e ngaahi fale].

Pst begin build erg (name) Case<sub>abs</sub> D PL house

‘Sione began building the houses.’

**2.3 The over-arching generalization.** The property which both the ideal head-final and head-initial word orders have in common is that whatever precedes the V/N/etc. reflects the order of Merge, and whatever follows is in the mirror image of the order of Merge (cf. Baker 1985). This, again, is an idealization based on the most rigid head-final and head-initial languages. The mirror-image order found postverbally and postnominally is however only the prevalent order, other, non-mirror-image, orders being possible (see Cinque 2005b, 2013a, Koopman 2015b, and references cited there).

<sup>8</sup> On the order **article (D°)** > **N** in all VOS languages (except Toba Batak), in his sample, see Keenan (1978,G15,p.298), and more generally in head-initial languages Dryer (1989b,1992,§4.6). On the order **PL** > **N** in VO languages, see Dryer (1989a, 1992,§4.7).

### 3. Deriving the two ideal word order types.

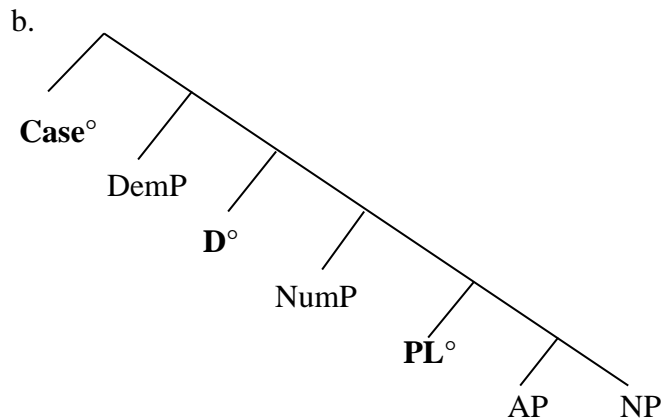
As in Cinque (2013a), I take the two ideal (mirror-image) word order types to be epiphenomenal. They are the product of the consistent application of two different movement options (types of attraction) to one and the same structure of Merge, common to all languages. This common structure presumably reflects the relative semantic scope of the elements involved, though it remains to be seen whether the statement of their hierarchy in the extended projections of V, N, etc. can be expunged from narrow syntax and blamed in toto on the conceptual-intentional interface. Even if their hierarchy plausibly complies with the semantic scope of the elements involved, two caveats must be taken into account before concluding that it is of no syntactic concern. First, within a single clause the hierarchy of functional projections appears to be generally strict, even though in the semantics nothing precludes reversing their scope as we see whenever two clauses are involved (Cinque 1999, §6.3). A second possible reason why the encoding of such functional elements should not be eliminated from narrow syntax is the fact that our conceptual-intentional module contains many more concepts than those that receive a grammatical expression in the languages of the world (cf. Cinque 2006, 6, and especially 2013b). This means that the inventory of functional/grammatical concepts must presumably be encoded somewhere in UG, possibly in its (functional) lexicon. The striking fact concerning the ideal head-final and head-initial orders reconstructible from the most polarized SOV and VOS languages is the segregation of the heads, which appear on one side of V, N, etc., and of the phrases, which appear on the opposite side (but see fn.5, and below, for a possible phrasal interpretation of traditional heads). Given that a symmetrical merger of heads and phrases, to the left and to the right of V, N, etc., would still need to be supplemented by movement for some of the attested orders (e.g., V Tense Aspect or N Dem Num A), as even the proponents of symmetrical Merge concede (cf. Abels and Neeleman 2012), and given the redundancy that this implies in so far as under symmetrical Merge some of the orders would be derivable by both Merge *and* Move, I will assume here that only movement (attraction) is involved in deriving the different orders (including those that are not consistently head-final nor consistently head-initial).<sup>9</sup> Concerning the two prevalent orders of the demonstrative, the (cardinal) numeral, the adjective(s) and the noun, i.e. the mirror-image orders N A Num Dem and Dem Num A N, in Cinque (2005b) I had assumed that only the former involves movement (raising of the NP plus *whose-picture* or ‘progressive’ pied-piping). In the case of the Dem Num A N order I had instead assumed that no movement was involved in their derivation, given that this order directly reflects the underlying

---

<sup>9</sup> Abels and Neeleman (2012) take the fact that the possible symmetric merger of phrases to the left or to the right of a head are more numerous than those that have to be derived by movement to suggest that learners disprefer movement and posit it only when they have to. Here I stick to a uniform movement derivation for all orders under antisymmetry.

order of Merge of these elements in all languages; but this was wrong, as the N in many languages with such an order is followed by bound or free morphemes expressing gender, number, (diminution,) definiteness and/or Case (cf. (5)a - Svenonius 2008, Myler 2013, Cinque 2013a), which arguably originate as head morphemes interspersed in the base structure with the phrasal modifiers that precede the noun (as shown in (5)b):<sup>10</sup>

(5)a. DemP NumP AP N PL° D° Case°



See, for example, the cases of the Tupí-Guaraní languages Kokama ((6)a.) and Nheengatú ((6)b.), which are all SOV, Dem Num (A) N PL languages<sup>11</sup>, or those of the South Caucasian language Laz

<sup>10</sup> Also see Koopman and Szabolcsi's (2000,24f) arguments that the 'direct' order of verbal complexes in Hungarian, not just the 'inverse' one, must be derived by movement. As implicit in (5)b I take demonstratives, (cardinal) numerals and adjectives to constitute phrases (for demonstratives see Giusti 1994 and Leu 2015,Chapter 2; for cardinals Kayne 2003b,fn.11, 2006, and for adjectives Cinque 2010a), and, as I said, for the time being I take Case morphemes, Determiners and Number morphemes (whether free or bound) to be heads (but see fn.5).

<sup>11</sup> This order is the exact mirror image of the head-initial PL N A Num Dem order of Yoruba (Niger-Congo - SVO - Dryer 1989,§2.4 and Oládíyò Ajibóyè, p.c.), and Mwotlap (Oceanic - SVO - Crowley 2002,§2.6), which will also necessitate a refinement of the movement account of the N A Num Dem order of Cinque (2005b). For the relative order of determiner, number and diminutive free morphemes when they co-occur, see for example head-initial Teop (Oceanic - SVO - Mosel (with Thiesen) 2007,§7.6) (and their partial mirror image in head-final Kokama – (6)a.):

- (i) a maa si mono iana  
       D PL DIM parcel fish  
       'little fish parcels'

If Case is also present, as in Tongan (ex. (4)d. above and Macdonald 2014,§1.1), it appears to precede article and number (in head-initial languages): CASE D PL N. The head-final mirror-image order N PL D CASE is rarely found as in head-final languages D and Case are often in complementary distribution (for reasons that remain to be fully understood). But see the case of Mangghuer in (7)b, Eastern Burushaski in (7)c., and the examples of N D CASE in the Tibeto-Burman languages Japhug rGyalrong (Jacques 2010,144) and Nar (Noonan 2003,346).

((7)a.), of the Mongolic language Mangghuer ((7)b.), and of the language isolate Burushaski ((7)c.), which are all SOV and Dem Num A N (PL) D Case languages:

(6)a. ca+ yawara kira +nu (Kokama - Cabral 1995,336)

1(FS)+ dog DIM PL  
'my little dogs'

b. mukũĩ tayera ita (Nheengatú - da Cruz 2011,147)

two daughter PL  
'two daughters'

(7)a. ham oxorza-lepe-şi (Laz - Kutscher 2001,36)

Dem woman-PL-GEN  
'of these women'

b. bi [ tuerghang kong ge =ni ] ala ge-ba (Mangghuer - Slater 2003,99)

Isg. [ fat person det.indef ACC ] kill do-subj:perf  
'I have killed a fat person'

c. hín mapéer-an-e (Burushaski - Yoshioka 2012,141)

one aged-indefDet-ERG  
'one old man'

I take this to mean that the NP must move up even in this type of languages to the left of these heads (if they are free morphemes or agglutinative morphemes that can be “suspended”), or move up to the corresponding projections to check the relevant features (if they are inflectional morphemes).

In Cinque (2013a) I suggested that this can be achieved if the NP raises via *picture-of-whom* or ‘regressive’ pied-piping. I will now sketch what I take the derivations for the ideal, consistent head-final and consistent head-initial orders to be. Since the more rigid SOV and VOS languages appear to be essentially harmonic across the different extended projections, I will exemplify with the extended projection of the VP, the clause, and the extended projection of the NP, coming back later to the general question of cross-category harmony, and the possible parameters of variation.

The reason to consider the two orders as derived from a common hierarchy is that irrespective of the different orders of the same elements in the two types of languages (see (8)a-a’ and (8)b-b’) we would like to express the fact that the relative position and scope of these elements is the same, as represented in (9)a. and b.



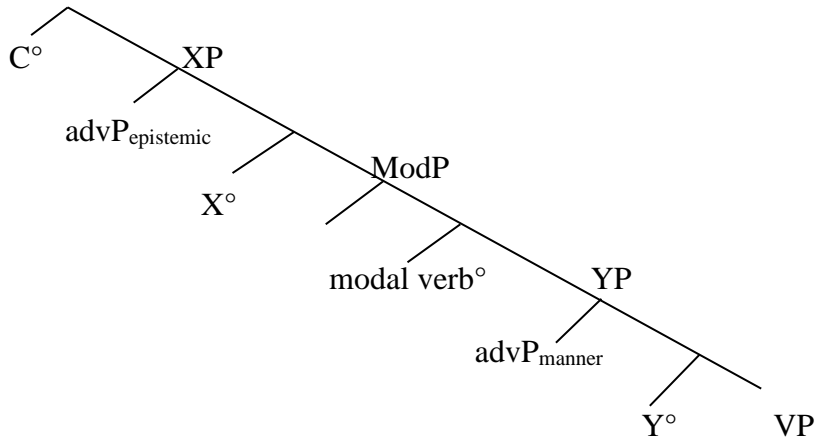
(8) head-final

- a. AdvP<sub>epistemic</sub> AdvP<sub>manner</sub> V Mod<sup>o</sup> C<sup>o</sup>  
 b. NumP AP<sub>manner</sub> N PL<sup>o</sup> D<sup>o</sup>

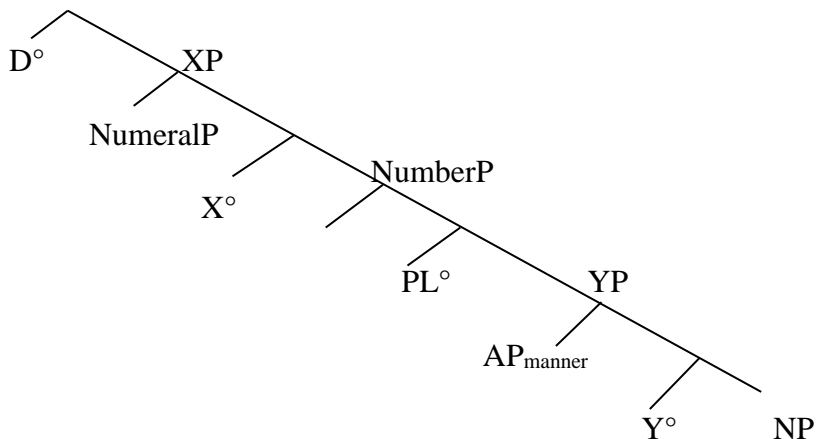
head-initial

- a'. C<sup>o</sup> Mod<sup>o</sup> V AdvP<sub>manner</sub> AdvP<sub>epistemic</sub>  
 b'. D<sup>o</sup> PL<sup>o</sup> N AP<sub>manner</sub> NumP

(9)a.CP



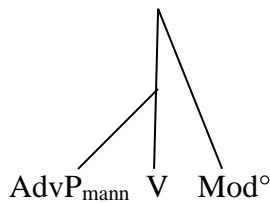
b. DP



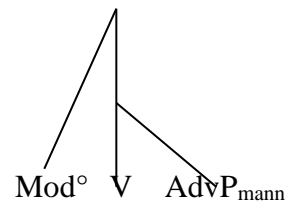
I thus take neither of the two orders in (8)a-a' and (8)b-b' to be more primitive than the other, but to derive from a common structure by blindly applying attraction, in the way illustrated below, of the verbal and nominal projections in either of two ways: regressive pied piping, for head-final languages, and progressive pied piping for head-initial ones.

While a symmetrical generation of the elements could easily capture the identical scope relations of (8)a-a' and (8)b-b' (cf. the simplified structures in (10)), a symmetrical generation could not capture the scope relations of certain other orders without violating the “No-Tangling” principle - see the case of (11).

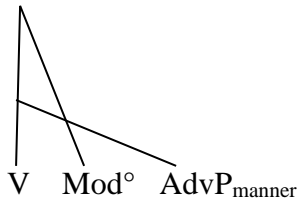
(10)a. head-final



b. head-initial



(11)a.



- b. khun doong phoo **phaasa** thai **dai nit-nooi** (Thai – Simpson 1998, cited in Duffield 1999,118)  
 you must suffice **speak** Thai **can a little**  
 ‘You must be able to speak a little Thai.’

For (11), movement of VP, in (9)a., above Mod° and AdvP<sub>manner</sub> in one fell swoop seems to be the only option (but then movement may also derive what could be merged symmetrically, thus avoiding the redundancy of deriving some orders by both movement and base generation).<sup>12</sup>

I take (9)a-b above to be antisymmetric Spec > head > complement structures (Kayne 1994) terminating in (or rather originating from) a non branching VP/NP, with complements of V and N merged in specifier positions above VP/NP, to the effect that nothing is merged directly with V or N (to their right), for reasons discussed in Cinque (2009a).<sup>13</sup>

In Cinque (1999), I took AdvPs corresponding to a modal or other functional head to be sitting in the Spec of that head, but this has proven problematic for head-final languages (or constructions), where the AdvP and its head can be separated by material which raises in between them, as in (12):

<sup>12</sup> I assume that local reordering of morphemes (as in Distributed Morphology) should ideally be avoided. Also see Koopman (2015a,b) for arguments that the same ‘computational engine’ (phrasal movement within an antisymmetric Merge structure) underlies both narrow syntax and word formation.

<sup>13</sup> Namely, to capture the pervasive left-right asymmetry of natural languages. This will also require a different way to distinguish ‘(subcategorized) complements’ from ‘non-complements’. For some discussion see Cinque (2004,note 19, and relative text).

The present proposal shares with Haider (1992,2013,Chapter 3) and Barbiers (2000) the idea that the Merge structure of clauses originates from V and is strictly right branching, though it differs from them in assuming that movement is involved in deriving both head-initial and head-final languages, in the ways sketched below.

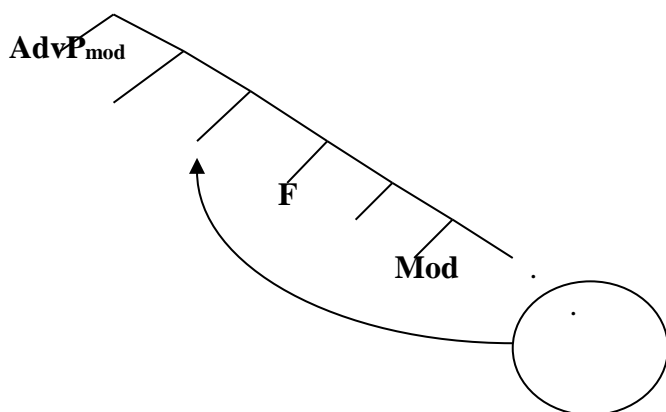
(12) Er wird *notwendigerweise* [ein Buch schreiben] *müssen* (um die Position zu erhalten)

He will necessarily a book to.write have to (to get the job)

‘He will necessarily have to write a book (to get the job).’

This suggests that the correspondence between a head and the matching advP must rather be stated in terms of a “space” made out of more than one projection. One way to retain the basic insight is to assume paired functional projections separated by an empty (silent) projection hosting moved constituents, arguably needed, as I discuss later, to derive the canonical word order of languages:<sup>14</sup>

(13)



One of the paired projections represents the core functional notion and the other a non core, adverbial, modification of the same functional notion. Languages may differ in whether they lexicalize just the core functional projection, just the adverbial functional projection, or both. In the present context, whether order is already present in narrow syntax (Kayne 1994) or is introduced in the mapping to PF (Chomsky 1995, §4.8; 2008, 7) is not crucial. What is crucial, given the LCA (also taken by Chomsky 2007, 10 to determine linearization “in the mapping to the SM

<sup>14</sup> This resembles Nash and Rouveret’s (1997) notion of proxy category and Biberauer, Holmberg and Roberts’s (2014, §4.3.1) caret feature (which they postulate just for the derivation of head-final languages) with “no semantic content, and no connection to phonological or morphological properties beyond simply causing movement” (p.209). Quite clearly, the canonical word order(s) of a language must be distinguished from information related (A- and A’-) movements, which have an effect on interpretation (Cf. Chomsky’s 2008, 7 idea that linearization “plays no role in core syntax and semantics.”).

The functional sequence may also have to be modified to make room for Williams’ (2003, 174) “subcycles”, in specifier position, for recursion of adjuncts (as well as for ‘side’ functional sequences within the main one – see Cinque 2015), though I cannot dwell on that here.

interface”), is that underlying the two linear orders there are two different hierarchical structures built derivationally in narrow syntax.<sup>15</sup>

Let us consider the simplified structures of Merge in (9)a-b to tentatively sketch the kind of consistent types of attractions which appear to lead to the two ideal head-final and head-initial orders.<sup>16</sup> As noted, actual languages (very possibly, all languages) depart from these ideal types to varying degrees, which are arguably a function of different combinations of the very same types of attraction (see below).

To briefly give ahead the basic idea, the different assumptions involved in the derivation of the two hierarchies (ultimately *orders* under the LCA) are the following (illustrated below with examples from the head-final and head-initial types):<sup>17</sup>

(14)a. every projection containing overt material activates a silent functional head which attracts verbal, or nominal, XPs with regressive (*picture-of-whom*) or a progressive (*whose-picture*) pied-piping.<sup>18</sup>

---

<sup>15</sup> Pair Merge, which introduces linear order in narrow syntax (Chomsky 2000) (and which under the Strong Minimalist Thesis should perhaps be dispensed with – cf. Chomsky 2013,40ff, Oseki 2015) would in any event arguably overgenerate by deriving also unattested word orders.

<sup>16</sup> It is not important here to review the evidence for the richer ordered sequences of elements in the clause and in each of the other phrases discussed in the recent literature. See, for example, the sequencing of different types of complementizers (Rizzi 1997; Benincà and Munaro 2010), that of Mood, Modal, Tense, Aspect and Voice elements in the clause (Cinque 1999, 2006), that of the different functional (including adjectival) projections in the nominal phrase (Scott 2002, Svenonius 2008, Cinque 2005b, 2010), and the prepositional phrase (Cinque 2010b and Rizzi and Cinque 2016).

<sup>17</sup> These will be based for simplicity on traditional X-bar representations, where only the higher segment will be labeled: [<sub>FP</sub> XP [ F ]]. As far as I can see, the Merge and Move derivations to be proposed are compatible with Kayne’s (2016) idea that heads are necessarily silent, and with a system adopting just Merge and Labeling, as that presented in Chomsky (2013) and Rizzi (2015).

<sup>18</sup> Here I assume a version of the traditional notion of pied piping (Ross 1967, §4.3), “whereby some particular movement operation T, designated to displace an element A, ends up moving some constituent B that properly contains A.” (Horvath forthcoming, section 1). There are essentially two types. In one, A, the constituent bearing the feature that is attracted, is the highest specifier of B, the larger constituent that moves (*whose-picture* or *progressive pied piping*). In the other, A, the constituent bearing the feature that is attracted, is the lowest complement of B, the larger constituent that moves (*pictures-of-whom* or *regressive pied-piping*). It is sometimes assumed that the larger constituent B inherits, by upward percolation, the feature of A that is responsible for the attraction. Later we will see that the former is possibly more marked than the latter. Later, I also consider a third (apparently even more marked) type of attraction: that of the nucleus (VP or NP) *without pied piping*, which yields such “less popular” (Greenberg 1963,87) orders as N Dem Num A (and V Mood Tense Aspect - Cinque 2014,238f). Pied piping is generally optional (unless required to

- b. a non core projection (say, an AdvP<sub>epist</sub>) activates a silent head which attracts the corresponding core projection (ModP<sub>epist</sub>).<sup>19</sup>
- c. then the next higher core projection is merged, which activates a silent head that attracts the core projection it selects for.
- d. in turn the selected projection activates a silent head which attracts its selector.
- e. at this point, the AdvP projection corresponding to the raised core projection is merged, and the actions b., c., d., e. start over again.

Let us then consider the two cases in turn (needless to say, at this stage, any proposal can only be programmatic in character, and tentative).

### 3.1 The ideal “head-final” type.

Recall the generalization concerning the ideal head-final word order type: **all higher (functional) ‘heads’ follow the lexical V/N/etc. in an order which is the reverse of the order of Merge, and phrasal specifiers (arguments, circumstantials, and modifiers) precede V/N/etc. in their order of Merge (see the simplified (8)a.,a’. and b.,b’.).**

The mode of attraction determined by the overt elements in the ideal “head-final” type is regressive (*pictures-of-whom*) pied-piping. Starting from a Merge structure like (9)a., the order in (8)a. can be achieved as indicated in (15).<sup>20</sup> AdvP<sub>manner</sub>, which, following Lees’ and Chomsky’s “generalization that relates Manner Adverbials to passivization” (Chomsky 1965,218note28), I assume to be the adverbial functional projection paired with VoiceP containing VP) activates a silent head (F<sub>1</sub>) which attracts (in the regressive pied piping mode) its core functional projection, VoiceP (cf. (14)b.).

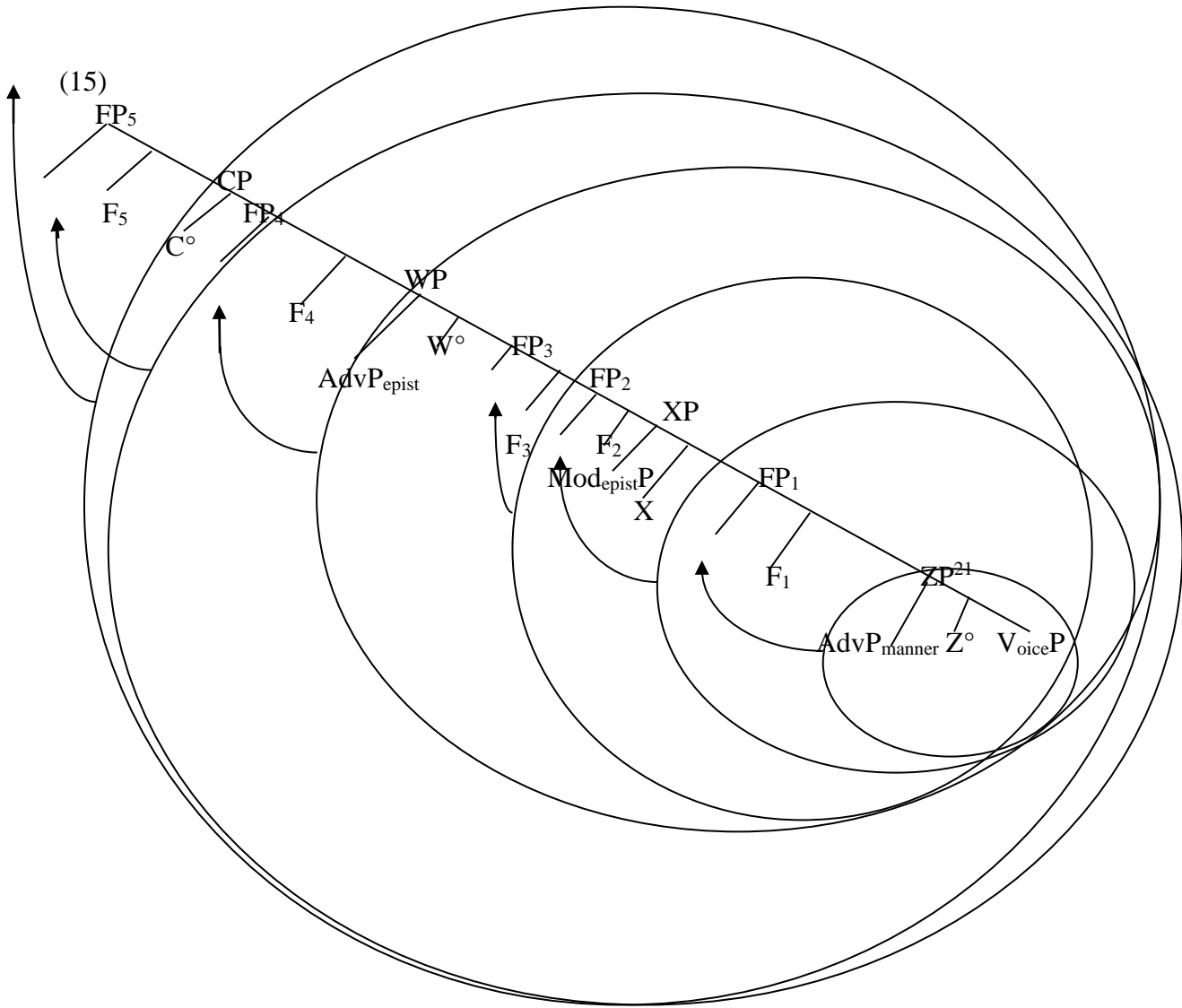
---

prevent some violation, e.g. of the Left Branch Constraint). In the derivation of all orders except the “less popular” ones just mentioned it is however obligatory; something that remains to be understood. See fn.31 below for some discussion. For insightful discussion on classical pied piping and more recent alternative formulations which do away with feature percolation, see Horvath (forthcoming).

<sup>19</sup> *Core* functional projection, in the sense used above, comprise in the clause the projections of aspectual verbs, auxiliaries, modals, tense, complementizers and, in the nominal extended projection, the projections of number, diminutive, determiner, Case. After being merged at the appropriate level (and moved to their licensing positions) DP and PP non core projections also activate a silent head which attracts their complement.

<sup>20</sup> This generalizes the derivation of agglutinative morphology in head-final languages sketched in Kayne (1994,§5.5):  

$$\dots X [_{YP} \dots Y ZP] \dots \rightarrow \dots X [_{YP} ZP Y t] \dots \rightarrow [_{YP} ZP Y t_{ZP}] X t_{YP}$$



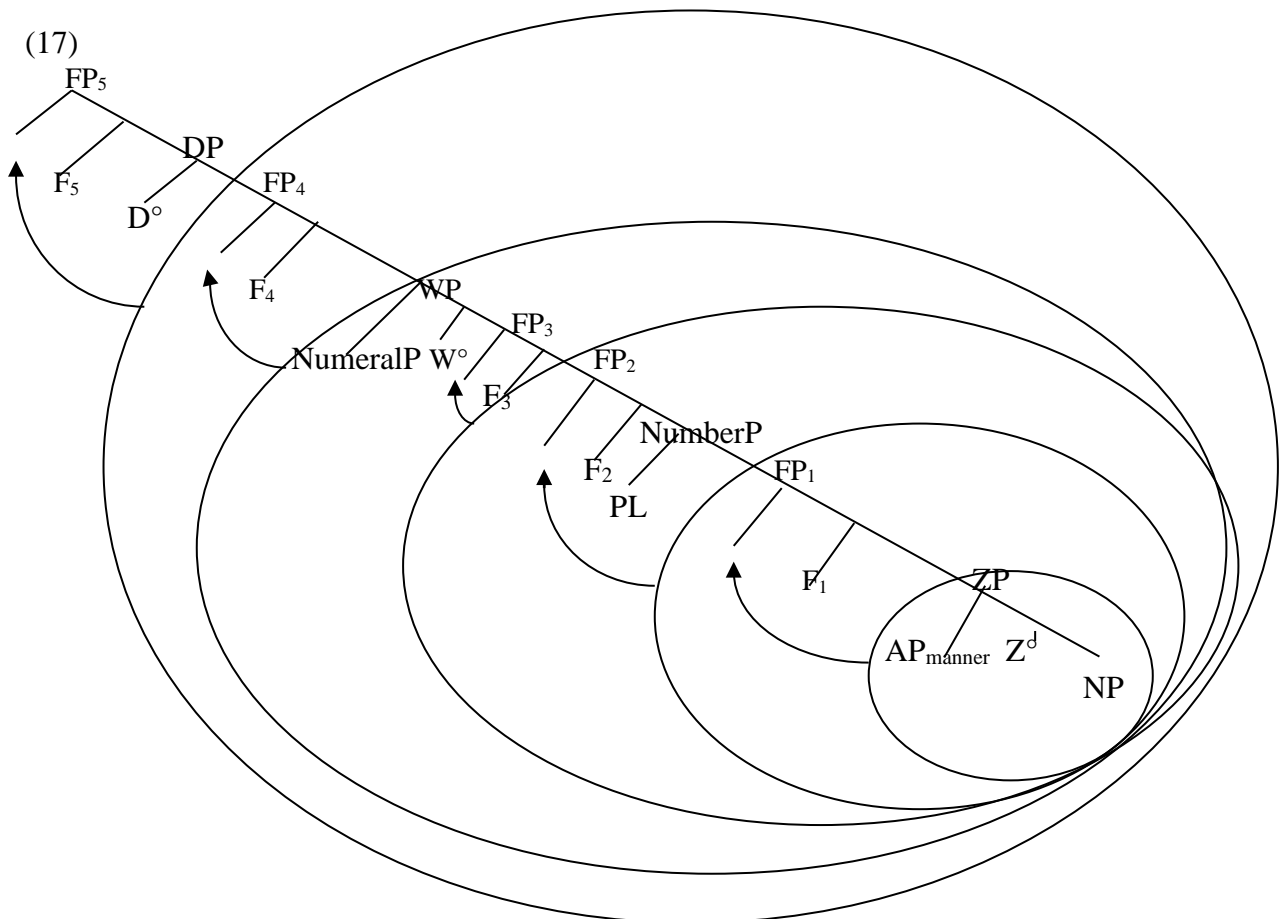
This step is followed by the merger of the next higher core projection, here, for simplicity,  $\text{Mod}_{\text{epist}}\text{P}$ , which activates a silent head that attracts (in the regressive pied piping mode) the core projection it selects for  $\text{VoiceP}$  (cf. (14)c.). In the next step the selected projection,  $\text{VoiceP}$ , activates a silent head which attracts (in the regressive pied piping mode) its selector,  $\text{Mod}_{\text{epist}}\text{P}$  (cf. (14)d.) (its rationale will be clearer with the head-initial case reviewed below). At this point, the non core projection corresponding to the raised core projection,  $\text{Mod}_{\text{epist}}\text{P}$  (i.e.,  $\text{AdvP}_{\text{epist}}$ ) is merged, which activates a silent head that attracts (in the regressive pied piping mode) its core projection,  $\text{ModP}_{\text{epist}}$ . After that the next higher core projection,  $\text{CP}$ , is merged, and the actions (14)c.,d.,e. start over again, giving under the LCA the linear order:  **$\text{AdvP}_{\text{epistemic}}$   $\text{AdvP}_{\text{manner}}$   $\text{VP}$  modal verb°  $\text{C}^\circ$** , with segregation of the modifier phrases (in their order or Merge) to the left of  $\text{V}$ , and of the ‘heads’

<sup>21</sup> I assume manner adverbs to be in the adverbial projection related to the core  $\text{Voice}$  projection, following Lees’ and Chomsky’s “generalization that relates Manner Adverbials to passivization” (Chomsky 1965,218note28) (i.e., “the restriction of passivization to Verbs that take Manner Adverbs freely” (Chomsky 1965,104).

(or rather the corresponding phrasal projections) to the right of V. Cf. the Japanese example in (1)b., repeated here as (16):

- (16) Watasi-wa [kare-ga **osoraku** sore-o **zyoozuni okona-e-ru to**] it-ta.  
 I-Top [he-Nom probably it-Acc well do-Mod-Present that] say-Past  
 ‘I said that probably he can do it well’

The derivation of the ideal head-final nominal phrase follows comparable lines. Once NP is attracted via regressive pied piping to Spec,FP<sub>1</sub>, dragging along ZP, the next core projection, NumberP, is merged; this activates a silent head which attracts (in the regressive pied piping mode) the core projection it selects for, NP, which in turn activates a silent head which attracts its selector, NumberP; and so on:



Cf. the Wolaytta example (2)b, repeated here as (18), with Case<sup>o</sup> replacing D<sup>o</sup>:

- (18) he [taa- w kuttuw<sup>a</sup> ehida] **iccash<sup>u</sup> adussa laagge-t-I**  
 those me-dat chicken having-brought **five tall friend-PL-NOM**  
 ‘those five tall friends who brought me a chicken’

Subject, object, and circumstantial DPs, when present, raise to higher licensing positions (Spec of Case) which activate a silent head that attracts (in the regressive pied piping mode) the phrase subjacent to them.<sup>22</sup> They thus surface in the same relative order in which there were merged, which is arguably the order in (19) (cf. Schweikert 2005a and Takamine 2010):<sup>23</sup>

(19) DP<sub>time</sub> DP<sub>location</sub> .. DP<sub>instrument</sub> .. DP<sub>manner</sub>... DP<sub>agent</sub> DP<sub>goal</sub> DP<sub>theme</sub> V

### 3.2 The “head-initial” type.

Recall the generalization concerning the “head-initial” word order type: **all higher (functional) heads precede V/N/etc. in their order of Merge, and phrasal specifiers (arguments, circumstantials, and modifiers) follow V/N/etc. in an order which is the reverse of their order of Merge. (see the simplified (8)a’. and b’, repeated here as (20)a-b).**

(20)a. C° Mod° V AdvP<sub>manner</sub> AdvP<sub>epistemic</sub>

b. D° PL° N AP<sub>manner</sub> NumP

Let’s consider first the order in (20)a. This can be achieved, as shown in (21)a.-d. First the overt advP<sub>manner</sub> activates a silent head that attracts with (vacuous) progressive pied piping VoiceP (containing VP) to its Spec. After that the next core projection, ModP<sub>epist.</sub>, is merged, which

<sup>22</sup> In case a DP has to be licensed by a P, I will assume that it, rather than the remnant (as in head-initial languages), raises to Spec,P, after raising to Spec,K to check its Case. See Cinque (2013a, §2.4.2)

Particularly telling in this regard is the distribution of PPs in nominal phrases of head-initial and head-final languages. In Cinque (2005b, fn.34; also see Cinque 2010, chapter 6, note 14)), it is observed that prepositional phrases are final in the DP of head-initial languages, while postpositional phrases are initial in the DP of head-final languages (which appears to betray the higher merger of P, as in Kayne 2000, obscured in head-initial languages by the movement of the remnant).

(i)a **PP** Dem Num A N (Armenian, Hindi, Malayalam, Tatar, Turkish, etc.) vs.

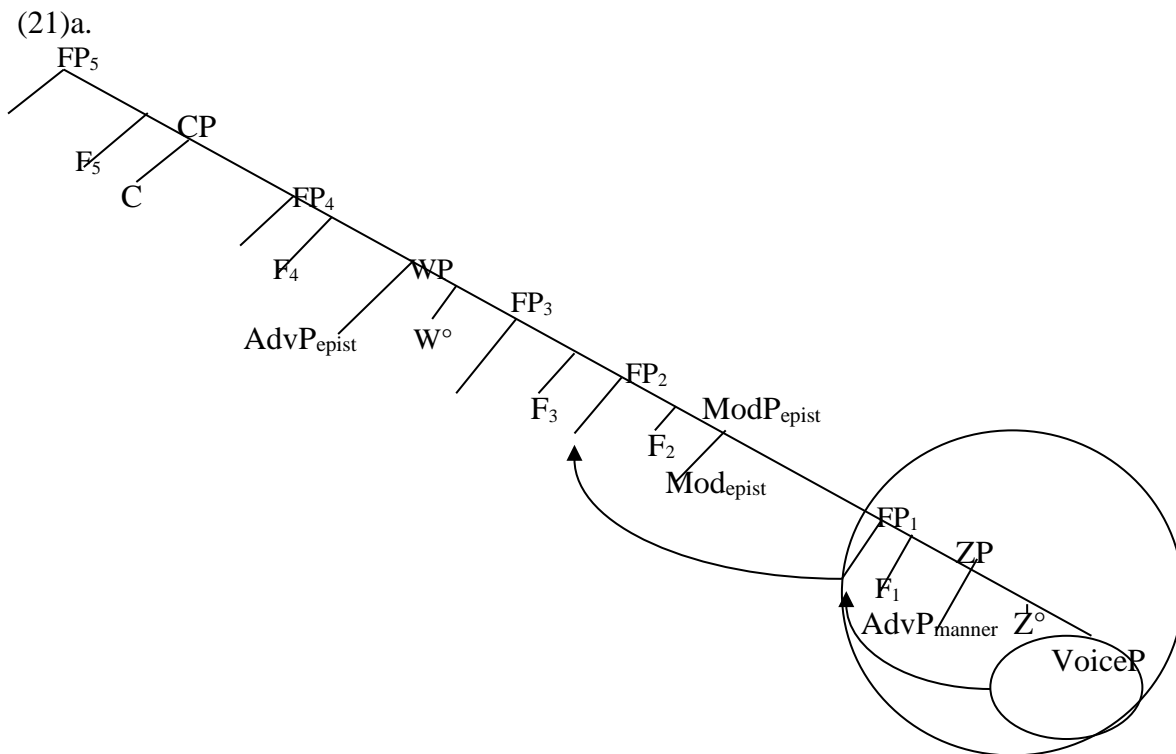
b N A Num Dem **PP** (Gungbe – Enoch Aboh, p.c.)/N Dem Num A **PP** (Kĩĩtharaka - Muriungi 2006,36)/Dem Num A N **PP** (English, Bulgarian)

For recent discussion see Atlamaz (2016) and, for a non movement approach which aims at capturing the same generalizations, Adger (2013).

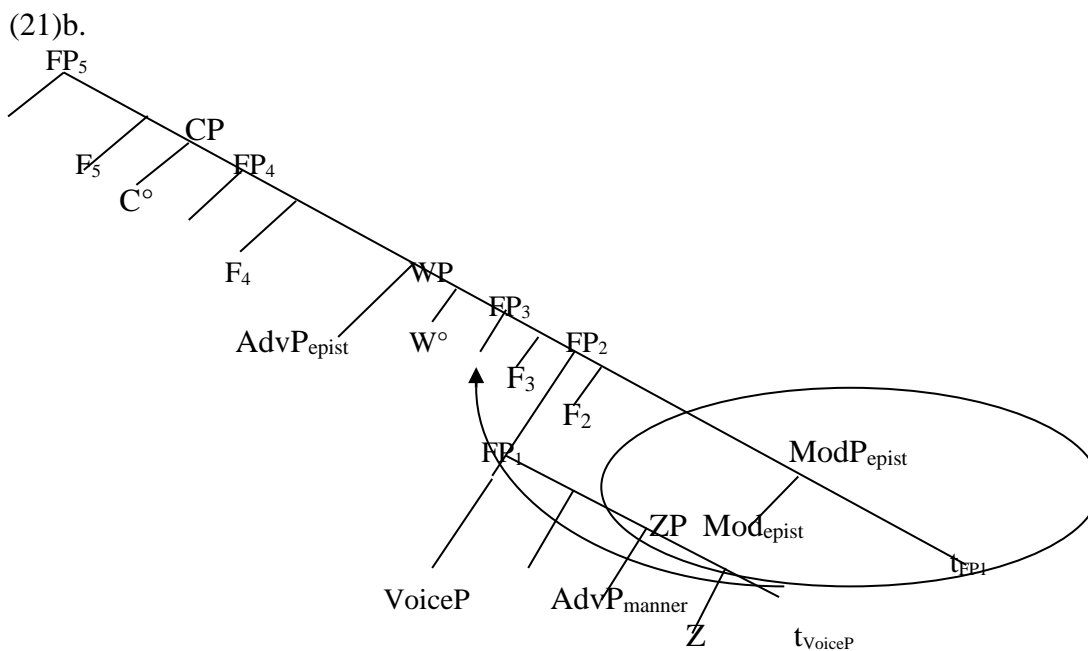
<sup>23</sup> Order preservation may ultimately be a consequence of Relativized Minimality. See Krapova and Cinque (2008, §7) and references cited there of the analogous order preservation with multiple *wh*-phrases in Bulgarian, which develops certain suggestions of Chomsky’s and Rizzi’s. Also see Haegeman (1993) on scrambling in West Flemish, which preserves the order of Merge of SU, IO and DO within a single clause.



activates a silent head that attracts (in the progressive pied piping mode) the core projection it selects for, here VoiceP.



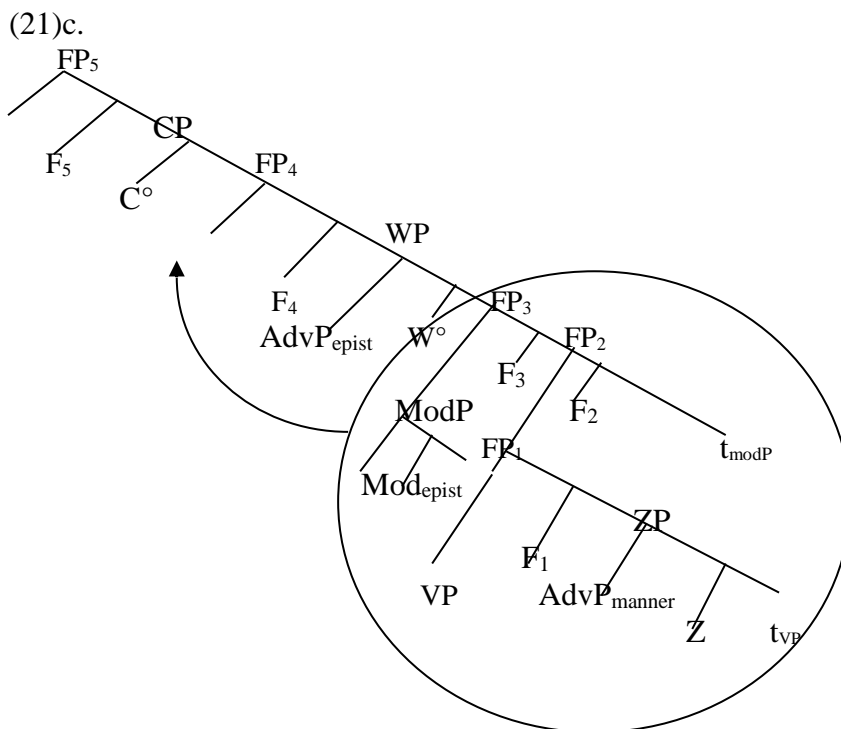
At this point the selected projection, VoiceP, activates a silent head,  $F_3$ , which attracts its selector,  $\text{ModP}_{\text{epist}}$ , as shown in (21)b.:



This generalizes Kayne's (1999, 2003a, §4.5) derivation of the infinitival complementation of (functional) verbs like *try* in English, which restores the original hierarchical relation between the functional and the lexical verb (also see Koopman and Szabolcsi 2000):

- a try leave (merger of K) →
- b K try leave (movement of InfinP to Spec,K) →
- c leave<sub>i</sub> K try t<sub>i</sub> (merger of P/C) →
- d to leave<sub>i</sub> K try t<sub>i</sub> (movement of VP to Spec,P/C) →
- e [ try t<sub>i</sub> ]<sub>j</sub> to leave<sub>i</sub> K t<sub>j</sub>

In (21)b. it is the modal verb, rather than *try*, that is crossed over by its complement, after which it moves above it restoring the order of Merge of the two. After that the adverbial non core projection AdvP<sub>epistemic</sub> is merged, which activates a silent head that attracts (in the progressive pied piping mode) its core projection ModP<sub>epist.</sub> (see (21)c.).

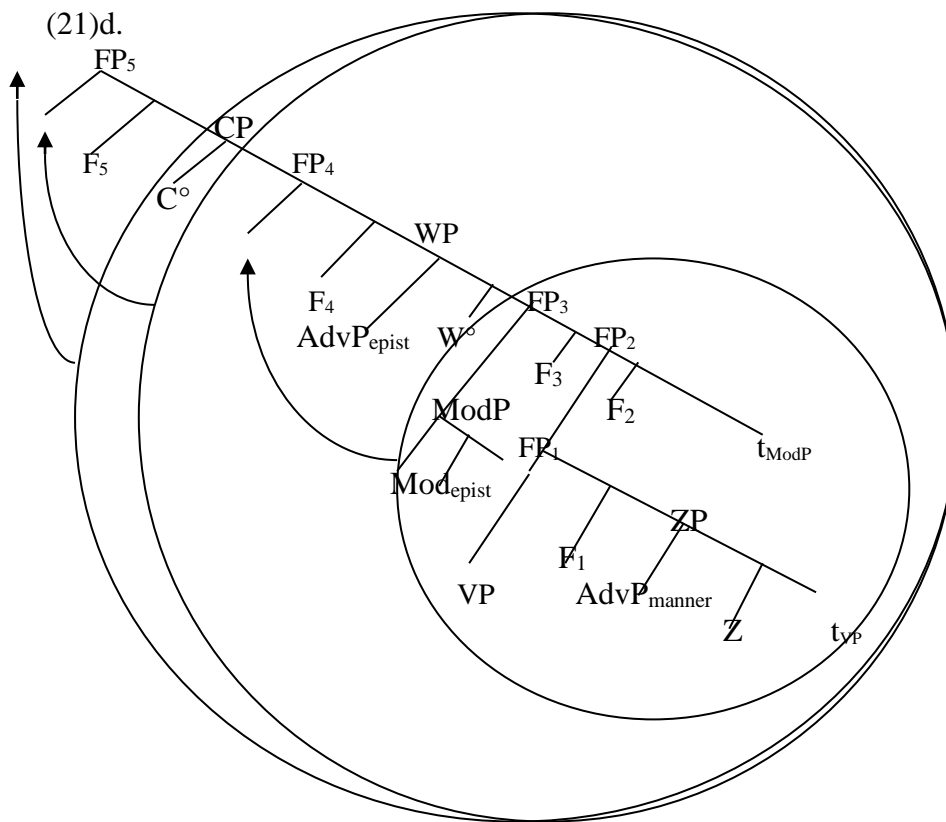


The order up to this point is Mod<sub>epist</sub> V advP<sub>manner</sub> advP<sub>epistemic</sub>, which closely corresponds to the order of elements in the VSO language Peñoles Mixtec below (modulo PAST for ModP<sub>epist.</sub>):<sup>24</sup>

<sup>24</sup> If the attraction of a higher verbal projection obtains without pied piping (an option that is also available in some language – cf. fn.18 and section 4) the illusion is created that a head may cross over another head in apparent violation of the ‘Head Movement Constraint’. This may be welcome for those languages (like Bulgarian) which appear to move an auxiliary over a higher one, in so called “Long Head Movement”, presumably to an  $\bar{A}$ -position ((i)) (cf. Embick and Izvorski 1994):

ní šitu ba?a na?i-d (cf. Daly 1973,15)  
 PAST plow well probably-he  
 ‘He probably plowed well’

Next, CP is merged, which activates a silent head that attracts (in the progressive pied-piping mode) its selectee, ModP<sub>epist</sub>, which in turn activates a silent head that attracts the selector, thus restoring the original hierarchical relation between C and Mod<sub>epist</sub> (see (21)d.).



- 
- (i) Bil<sub>i</sub> sãm t<sub>i</sub> kupil knigata  
 been am.I bought book.the  
 ‘I have allegedly bought the book’

The movement of the second auxiliary (phrase), *bil* ‘been’, in (i), is one of the ways in which one can satisfy the requirement that the clitic auxiliary *sãm* not be in first position (other options consist in having another phrase precede it, with different pragmatic effects (cf. Lambova 2004, Chapter 5), as in (ii)).

- (ii)a. Az sãm bil kupil knigata  
 b. kupil sãm bil knigata  
 c. knigata sãm bil kupil  
 ‘I have allegedly bought the book’

This yields the overall order C Mod<sub>epist</sub> VP AdvP<sub>manner</sub> AdvP<sub>epistemic</sub>, which appears to be the order of consistent head-initial languages.

The derivation of head-initial nominal phrases proceeds similarly, yielding the overall order D PL N AP<sub>manner</sub> NumeralP, which closely corresponds to the order of elements in the nominal phrase of, for example, VSO Tahitian (Oceanic):

(22) te mau ‘ānani para (Pearce 2012,85)<sup>25</sup>

Art PL orange ripe  
‘the ripe oranges’

Subject, complements, and circumstantial DPs, which I take to be merged above VP/NP in the order seen in (19) above (DP<sub>time</sub> DP<sub>location</sub> .. DP<sub>instrument</sub> .. DP<sub>manner</sub> DP<sub>agent</sub> DP<sub>goal</sub> DP<sub>theme</sub> V°), in head-initial languages surface in the reverse order, shown in (23), owing to the roll-up derivation (after raising to higher licensing positions):<sup>26</sup>

(23) V° DP<sub>theme</sub> DP<sub>goal</sub> DP<sub>agent</sub> DP<sub>manner</sub> .. DP<sub>instrument</sub> .. DP<sub>location</sub> DP<sub>time</sub>

The order in (23) is again tentatively reconstructed from the order of arguments and circumstantials in more rigid verb-initial languages (see, for example, Massam 2000,98 on Niuean and Sells 2000,124 on Pangasinan).<sup>27</sup> There may be more than one (specialized) licensing position for each DP, as shown by the Malagasy example in (24), from Rackowski and Travis (2000, §1.3), where the object DP can occur in different places among the adverbs (depending on the position it reaches before the reversal operated by the raising of the (extended) VP with progressive pied piping). These different positions may correlate with distinct semantic interpretations (cf. Diesing 1992).

(24) Tsy manasa tsara foana <ny lamba> intsony <ny lamba> mihitsy <ny lamba> Rakoto  
NEG PRES.AT.wash well always <DET clothes> anymore <DET clothes> at.all <DET clothes> R.  
‘Rakoto does not wash at all any longer always well the clothes’

<sup>25</sup> Numerals in Tahitian follow adjectives. Cf. Ruhlen (2008,1316).

<sup>26</sup> It is interesting to note that virtually the same order/hierarchy of (17) appears to hold DP-internally in English complex nominals (Rae 2009) and, modulo the mirror-image order, with Romance relational adjectives (Bortolotto 2015), pointing to deep seated scope relations among these arguments and circumstantials.

<sup>27</sup> To judge from Schweikert (2005b) and Takamine (2010) circumstantial PPs are actually merged in specific points within the sequence of the adverbs (... DP<sub>temporal</sub> AdvP<sub>3</sub> AdvP<sub>2</sub> DP<sub>locative</sub> AdvP<sub>1</sub> DP<sub>manner</sub> V°).

My tentative conclusion then is that heads can indeed be silent across the board (as in Kayne 2016), and that the apparent segregation of the traditional functional heads on one side of VP/NP and of argumental, circumstantial and adverbial phrases on the other, can be achieved by distinguishing core functional projections (what we were used to call heads) from non core projections.

### 3.3 The ideal orders, cross-category harmony, and actual orders.

As mentioned several times, the derivations just reviewed yield the (reconstructed) ideal head-final and head-initial orders through successive attractions of the verbal and nominal projections via *uniform* regressive or progressive pied pipings. However, the bewildering variation in (canonical) word orders found in the languages of the world clearly involves different departures from these simple derivations (a daunting task to address).

Within the present perspective, a quite common 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 (in fact, quite strictly so) and in the PP (it is postpositional), but head-initial in the nominal extended projection:

(25) Bargam (Papuan (Trans-New Guinea) – Hepner 2006)

- a. AdvP Subj PP Obj V (head-final)
- b. N AP NumP DemP (head-initial)

Many Mayan languages, like Tzutujil in (26), show the reverse situation, being head-initial in the verbal extended projection and head-final in the nominal one:

(26) Tzutujil (Mayan (Qichean) VOS – Dayley 1985)

- a. V Obj Subj AdvP PP (head-initial)
- b. DemP NumP AP N (head-final)

Yet, some clear tendencies of different strength are observable.

#### 3.3.1 Harmony of heads within the same extended projection is rather strongly obeyed.

As apparent from Dryer (1992) (also see Biberauer, Holmberg and Roberts 2014, §3), modal verbs, auxiliaries and subordinating conjunctions are predominantly verb patterners. They predominantly

follow the verb in OV languages and predominantly precede the verb in VO languages. See (27),(28) and (29), from Dryer (1992,94,100, and 103):

(27)a. **OV and V modal (want): 29**

b. **VO and modal (want) V: 42**

c. OV and modal (want) V: 10

d. VO and V modal (want): 4

(28)a. **OV and VAux: 36**

b. **VO and AuxV: 28**

c. OV and AuxV: 3

d. VO and VAux: 4

(29)a. **OV and IP Sub: 38**

b. **VO and Sub IP: 59**

c. OV and Sub IP: 17

d. VO and IP Sub: 1

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

In the nominal extended projection (see (30), from the larger sample of Cinque (in preparation)), the consistent a. and b. cases are much more numerous than the disharmonic ones (from c. to p.).

(30)a. **N A Num Dem: 462 languages; 120 genera**

b. **Dem Num A N: 339 languages; 106 genera**

c. Dem N A Num: 143 languages; 70 genera

d. Dem Num N A: 133 languages; 53 genera

e. Num N A Dem: 198 languages; 49 genera

f. N A Dem Num: 85 languages; 31 genera

g. N Num A Dem: 50 languages; 28 genera

h. Dem N Num A: 41 languages; 25 genera

i. Dem A N Num: 40 languages; 24 genera

l. N Dem Num A: 57 languages; 20 genera

m. Num A N Dem: 46 languages; 19 genera

n. N Dem A Num: 26 languages; 18 genera

- o. A N Num Dem: 26 languages; 11 genera
- p. A N Dem Num: 16 languages; 6 genera

To judge from Dryer (1992,123) (see 31), the position of AdvP and PP modifiers with respect to the verb in the clause also tends to be harmonic:

(31)a. **PP-V and Adv-V: 42 genera**

**b. V-PP and V-Adv: 36 genera**

c. PP-V and V-Adv: 1 genus

d. V-PP and Adv-P: 6 genera

**3.3.3 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-categorical 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 fairly robust. See the figures in (32) and (33):

(32)a. **OV and OP: 427 languages**

**b. VO and PO: 417 languages**

c. VO and OP: 38 languages

d. OV and PO: 10 languages

(33)a. **O V and Gen N: 434**

**b. V O and N Gen: 352**

c. V O and Gen N: 113

d. O V and N Gen: 30

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 as their canonical order).<sup>28</sup>

### **3.3.4 Harmony across different extended projections is instead much weaker (if present at all) when heads and their modifiers are considered.**

Compare for example the order of P and its complements and the order of the N and its genitive objects 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” ((34)) or “order of numeral and noun” ((35)), as well as (25) and (26) from Bargam and Tzutujil above:

(34)a. OV and AN: 201 languages

b. VO and NA: 404 languages

c. OV and NA: 287 language

d. VO and AN: 100 languages

(35)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 pervue of the headedness parameters; this is because within the nominal extended projections they largely follow the relevant headedness parameter, as evident from (30). 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 (36) from WALS Online:

(36)a. OV and Degree word-Adjective: 114

b. VO and Adjective-Degree word: 102

---

<sup>28</sup> Also see Greenberg's (1963) Universal 22 on the order of adjective and (the adjunct) [marker + standard]. Characteristically languages with postpositions have [standard + marker] > adjective ('that than clear(er)') while languages with prepositions have adjective > [marker + standard] ('(more) clear than that').



c. VO and Degree word-Adjective: 81

d. OV and Adjective-Degree word: 63

Nonetheless, cases of disharmony obtain even within the same extended projection; in the verbal extended projection, with auxiliaries, modals and complementizers. See section 4, below, for some examples, and the general discussion in Biberauer, Holmberg and Roberts (2014), where it is however noted that some orders are never, or very rarely, found (e.g.(38), as opposed to (37)):

(37)a. Aux [ O V]

b. C [ O V (Aux)]

(38)a. (\*)[V O] Aux

b. (\*)[(Aux) V O] C

They propose that such cases as (38) fall under their Final over Final Constraint (FOFC), itself arguably following from more general principles. Even if there turned out to exist genuine exceptions to the FOFC<sup>29</sup>, the generalization holds quite clearly and must be captured.

In the present context, another way to understand the FOFC is in terms of the more marked character of regressive pied piping as opposed to progressive pied piping<sup>30</sup>, to the effect that change

---

<sup>29</sup> See the apparent SVOAux orders of Kokama-Kokamilla (Tupí-Guaraní) ((i), from Vallejos Yopán 2010,§7.3.3.1)

(i) tsa=mama    tseneta kanata    ukua=tsuri    penu=yaki=ka  
1SG.F=mama turn.on fire HAB=PAST.AUX 3PL=head=LOC

‘My mother used to turn on the light close to our heads’

and the case of an apparent final complementizer in the head-initial Southern Khoisan language East !Xóõ, mentioned in fn.31 and section 2.7 in Cinque (2013a).

<sup>30</sup> This is shown by the contrast between regressive and progressive pied piping in (English) embedded ((ii)) vs. matrix ((i)) contexts mentioned below, the skewing toward progressive pied piping shown by the higher number of VO languages wrt OV languages (if one adds together the number of SVO, VSO and VOS languages, and that of SOV, OVS, and OSV in WALS – cf. (iii) below and the percentages of these types in Tomlin 1979, Mallinson and Blake 1981 and Cysouw 2008, reported in Cinque 2013a,§2.8), as well as by the higher number of genera of N A Num Dem languages in (28) above (which also, putatively, involves progressive pied piping) vs. Dem Num A N languages (putatively involving regressive pied piping).

(i)a. Whose pictures did you see?

b. Pictures of whom did you see?

(ii)a. I wonder whose pictures you saw.

b. \*I wonder pictures of whom you saw.

of pied piping from the more marked *regressive* type to the less marked *progressive* type (Aux [ O V], C [ O V (Aux)]) is an admitted departure, while the reverse ([V O] Aux), [(Aux) V O] C ] is not (or is highly disfavored).

In the nominal extended projection, disharmony is observable in the 12 attested orders of nominal modifiers other than the consistent head-final Dem Num A N and head-initial N A Num Dem (see (30) above).

Another, less common, departure from the uniform attractions leading to the ideal head-final and head-initial orders is attraction without pied piping, where the VP or NP moves by itself, without dragging along other material (cf. the notion of ‘complexity filter’ of Koopman and Szabolcsi 2000 and Koopman 2014).<sup>31</sup> In the nominal extended projection this yields, as noted, the “less popular” (Greenberg 1963,87) order (39)a; in the verbal extended projection V-medial Italian ‘head-final’ order of certain postverbal adverbs ((39)b) rather than the ‘head-initial’ mirror-image one of Malagasy ((39)c).

(39)a. N Dem Num A (Greenberg 1963,87)

b. V > mica > più > sempre > completamente > bene (Italian - Cinque 1999,Chapt 1)  
‘negation’ > ‘anymore’ > ‘always’ > ‘completely’ > ‘well’

c. V > tsara > tanteraka > foana > intsony > mihisty (Malagasy - Rackowski and Travis 2000,§1)  
‘well’ > ‘completely’ > ‘always’ > anymore > ‘negation’

V2 may be another case (in both head-initial and head-final languages).<sup>32</sup> Other deviations from the ideal orders are (briefly) discussed in Cinque (2013a,§2.6).<sup>33</sup> In any case, as already noted, the

---

(iii) SOV	SVO	VSO	VOS	OVS	OSV
497	435	85	26	9	4

As Luigi Rizzi observed (p.c.) the pictures-of-whom or *regressive pied-piping* involves a more complex upward percolation than the *whose-picture* or *progressive pied piping* (which can be thought of as a result of independent relations: Spec,Head agreement and projection).

<sup>31</sup> The unmarked character of pied piping as opposed to the marked character of the variant without it may possibly find a natural account in Chomsky’s (2013) and Rizzi’s (2015) labeling algorithms. If attraction by non core projections of their core projections and attraction by core projections of their selectees involve feature sharing then unmovability (freezing) of the attracted projection is expected if only maximal projection can move (Rizzi 2015), as the attracted projection is not maximal. Long movement of VP/NP without pied piping must instead not involve feature sharing, with the consequence that VP must keep raising to allow labeling of the projection that hosted it.

<sup>32</sup> Actually no single V2 parameter may exist, but rather a number of microparameters (cf. Westergaard 2009).

<sup>33</sup> A more complex set of departures from the ideal head-final order is provided by Germanic varieties, which display different orders of lexical verbs, modals and auxiliaries, combined with an order of argument and adverbial modifiers

reconstruction of the two ideal orders and their derivation via progressive and regressive pied piping, beyond their possible general value, may constitute a useful ‘metric’ to locate each language in the space of admitted variation (by considering how many departures from a uniform application of regressive or progressive pied piping they involve). The range and limits of this variation remain to be discovered.

#### **4. A micro-parametric approach to word order variation:**

##### **4.1 Two puzzles: the inconsistencies of the most rigid types and their minority status.**

As noted, the derivation of the ideal head-final and head-initial word orders sketched above involves an absolute uniformity of the pied piping features lexically determined by each overt projection. However, the actual situation departs from such an ideal picture in two important respects. First, even the most rigid head-final and head-initial languages display a number of inconsistencies; secondly, the very languages which come closest to the ideal types (the “rigid” SOV and the VOS languages) are apparently a minority among the languages of the world, which suggests that an absolutely uniform distribution of pied piping features within and across categories is rare.

Concerning the first aspect, for example, it is observed in the literature that even Japanese, Korean and Tamil, which many authors consider the most rigid head-final languages (cf., e.g., Polinsky 2012), display some non head-final properties, with Japanese and Korean allowing quantifiers and numeral plus classifiers to occur postnominally before a closing case morpheme (Siegel and Bender 2004; Joo 2013)<sup>34</sup>, and Tamil allowing postnominal universal quantifiers (Annamalai and Steever 1998, 118).<sup>35</sup>

Greenberg’s (1963, 79) “rigid” subtype of SOV languages, i.e. his group 23.III/Po/GN/AN (p.109), contains additional SOV languages, which also manifest inconsistencies (possibly more numerous

---

that reflects their unique order of Merge (for discussion of the attested orders of verb clusters see, among others, Haegeman and Riemsdijk 1986, Koopman and Szabolcsi 2000, Wurmbrand 2004, Barbiers 2005, Hinterhölzl 2006, Svenonius 2007, Abels 2015). This possibly requires different attractions of the lexical verb, the modals and the auxiliaries with regressive and/or progressive pied piping interspersed with successive evacuation of arguments and adverbials possibly along the lines proposed in Koopman and Szabolcsi (2000), Koopman (2002, 2015b) and Jayaseelan (2010).

<sup>34</sup> Also see Cinque (2013a, fn11) for further references to apparently inconsistent properties of Japanese, and Koopman (2015b, §3.1.4.1) on the unexpected NP-*man* (‘only’)-Case vs. NP-P-*man* in Korean.

<sup>35</sup> Other postverbal material in Tamil (and head-final languages, more generally) seems instead to involve marked, discourse-related, non canonical orders (focalization, right dislocation, afterthoughts – see Herring 1994, Öztürk 2013a, and references cited there), and may thus not constitute a real disharmony.

than those displayed by Japanese, Korean and Tamil): **Hindi and Bengali**, with initial complementizers (Singh 1977,204 and Bayer 1999,2001), postverbal negative adverbs (Hindi: Bhatt 2007) and postverbal complement clauses (Bhatt and Dayal 2007,291), **Modern Armenian** with different postverbal constituents (Dum-Tragut 2009,§3.5), **Burmese** with postnominal adjectives and numerals (Jones 1970,5; Soe 1999,39), **Yukaghir** with postverbal ‘informationally given’ subjects (Maslova 2003,Chapter 9,§1.5.1), **Ainu**, with predominant prefixation (Bugueva forthcoming) and Noun Numeral (in addition to Numeral Noun) (Tamura 2000,190), **Sidamo**, with initial coordinating disjunctions (Teferra 2014,§3.7 and §5.5)<sup>36</sup>, **Nama** with possible postnominal possessives and postverbal objects (Witzlack-Makarevich 2006,§3.3), **Burushaski**, with initial complementizers and postverbal complement clauses (Munshi 2006, §4.4.2), **Harari** with prepositions (in addition to postpositions) (Tosco 1998,357), **Newari** with postnominal quantifiers and some postverbal constituents (Genetti 2007,Chapter 11,§2 and Chapter 14,§4), **Maidu** with alternative VSO orders (Siewierska 1998, endnote 23), **Navaho**, with certain initial subordinators (‘if’), and postverbal adverbs (Speas 1990,278), **Abkhaz**, with postnominal adjectives and quantifiers (Hewitt 1989,59f and 236f), **Quechua**, with certain postverbal infinitival complements and certain postverbal adjuncts (cf.Cole 1982,39ff,113), **Altaic** (Turkic, Mongolic and Tungusic) with various inconsistencies<sup>37</sup>, like **Paleo-Siberian** (Chukotko-Kamchatkan, Nivkh)<sup>38</sup>, and **Finno-Ugric**<sup>39</sup> (for the Ethiopian languages, Chamir, Bedaue, the North Caucasian language Khinalug, and the Papuan language Marind-Anim cited by Greenberg, I could not find relevant information). Comparable inconsistencies are also found in the most rigid **head-initial** languages, VOS (and VSO) languages.<sup>40</sup> These also display a number of inconsistencies. **Malagasy** (VOS) with preverbal topic and focus phrases (Flegg 2003; Koopman 2015,§4.3.2.1), **Anejom** (VOS) with prenominal indefinite quantifiers (Lynch 1982,§2.5.1), **Fijian** (VOS), with pre-nominal numerals and

---

<sup>36</sup> See Zwart (2005) and references cited there for the relation between OV and ‘final’ conjunctions and VO and ‘initial’ conjunctions, even though in Zwart’s (2009) enlarged sample of 214 languages, head-final languages with initial coordinating conjunctions/disjunctions outnumber head-final languages with final ones 47 to 10.

<sup>37</sup> **Turkish** with postverbal constituents (Kural 1997) and postnominal (as well as pre-nominal) relative clauses, **Mongolian** with postverbal constituents (Öztürk 2013b), as well as one common N > proper N order (Poppe 1951,111) and N-Poss alongside Poss-N (Ruhlen 2008,792), **Manchu** with certain postverbal adverbs (Gorelova 1997,105).

<sup>38</sup> Cf. **Chukchi**, with N A Num Dem orders alongside Dem Num A N orders (Dunn 1999,§9.2), and **Nivkh**, with numerals up to five in postnominal position (Gruzdeva 1998,24).

<sup>39</sup> **Finnish** and Northern **Saami** display initial complementizers (cf. Biberauer,Holmberg and Roberts 2014,194), as do **Hungarian** and **Estonian**; Eastern **Khanty** can have preverbal modals (Filchenko 2007,446), **Nenets** postnominal finite relative clauses (Nikolaeva 2014, Chapter 13), **Enets** some postverbal adverbials (Künnap 1999,32).

<sup>40</sup> According to Polinsky (2012,§2), in addition to Malagasy, these are Tongan, Irish and most Mayan languages.

certain pre-adjectival degree adverbs (Dixon 1988,144 and §8.3.6), **Seediq** (VOS) with postverbal adverbial subordinators (Holmer 1996,60) and postverbal aspect particles (Holmer 2005,177), **Tongan** (VOS/VSO) with N Dem A Num and N A Dem Num orders (MacDonald 2014,3 and 12f), **Irish** (VSO) with pre-nominal numerals, **Yucatec Maya** (and many other VOS/VSO Mayan languages), with pre-nominal Dem Num A modifiers (Vapnarsky 2011,1421).

Concerning the second respect in which languages appear to depart from the ideal head-final/head-initial orders, we noted above that the languages that come closest to the ideal orders (the rigid SOV and the VOS languages) are a minority among the head-final and the head-initial languages, respectively.<sup>41</sup>

This makes it plausible to explore a microparametric approach to the derivation of word order, which may simultaneously accommodate the lexical idiosyncrasies, the subregularities and the tendencies which are observable in the languages of the world. The proposal I would like to put forth below, after considering the two kinds of lexical attractions, bears some similarity with Roberts's (2012) idea of 'macro', 'meso', 'micro' and 'nano' parameters, and Baker's (2008) intermediate position between macro- and micro-parameters in his fn.2, but will be cast in purely lexical terms.<sup>42</sup> In the next two sections I briefly review cases where the mode of attraction appears to be determined by the attractor (section 4.2), and cases where it appears to be determined by the attractee (section 4.3), where the attractors and attractees are single lexical items or lexical items belonging to successively larger classes. Section 4.4 will then consider the implications of the micro-parametric approach for acquisition and for word order typology.

## 4.2 Cases of attraction determined by the attractor

These cases will be arranged along a scale of successively larger generalizations.<sup>43</sup>

---

<sup>41</sup> The VOS languages, in Hammarström's sample of 5230 languages (cf. Hammarström 2015) are around 3.3% of the totality of languages; the VSO languages reach 9.5%. The SVO languages, which are often quite inconsistent, but still display more head-initial than head-final properties (cf. Dryer 1991), and should thus be classified broadly as (non rigid) head-initial, reach 40.2%, while the SOV languages reach 43.3% (in terms of families SOV however is much more represented). There are unfortunately no figures for the "rigid" ones among the SOV languages, but the almost absolutely consistent ones are very likely also a minority among the SOV languages (possibly just as VOS languages are with respect to the totality of VO languages). See for example the proportion between final and initial coordinating conjunctions in head-final languages reported in fn.36 from Zwart (2005,2009).

<sup>42</sup> My proposal also differs from theirs in not taking head-initial orders to be unmarked vis-à-vis head-final ones, and in assuming attraction plus pied piping to be involved in both head-final and head-initial languages.

<sup>43</sup> On the role of generalizations (and related exceptions) in language acquisition see Yang (2005,2015).

**a) Single lexical item:**<sup>44</sup>

In English the adjectival modifier *enough*, which has to follow the adjectives that it modifies (e.g. *good enough*) (Maling 1983, §1.4; Webelhuth 1992, 23f; Kayne 2005, §3.6; and references cited there), may be taken to be endowed with a [progressive pied-piping] feature (which it transmits to the silent head that it activates). This will make the AP, its core projection, move above it. The other elements belonging to the same class of adjectival modifiers (*very*, *quite*, *too*, etc.), which have to precede the adjectives that they modify (*very good*, *quite good*, etc.), may instead be taken to be endowed with a [regressive pied-piping] feature, with the effect of not inverting the order of Merge.<sup>45</sup>

The same appears to be true of certain direct modification adjectives in Italian.<sup>46</sup> *Vecchio* ‘old’ in the sense of ‘long-standing’ is only pre-nominal (hence, in the present context, endowed with a [regressive pied-piping] feature which does not cause the NP to raise above it - see (40)a). *Medio* ‘average’ is instead only postnominal (hence endowed with a [progressive pied-piping] feature which causes the NP to raise above it - see (40)b):

(40)a. *un vecchio amico*

‘a friend of long-standing’ (\**un amico vecchio*)

b. *l’italiano medio*

‘the average Italian’ (\**il medio italiano*)

**b) single adjectival subclass:**

Cypriot Maronite Arabic colour adjectives of Arabic origin necessarily follow the NP while those of Greek origin may either follow or precede. See (41), from Panayidou (2013, 179f):

(41)a. (tin-i) varka      χabra (with [progressive pied-piping]) (\**tin-i χabra varka*)

---

<sup>44</sup> A domain where in many languages (especially SVO ones – cf. Cinque 2011) single lexical items appear to have to be marked with either [progressive pied-piping] or [regressive pied piping] features is that of the order of proper nouns and common nouns (which correlates with the head-initial/head-final types, as noted in Greenberg 1963, 89f).

<sup>45</sup> The *enough* which modifies nouns and prepositions appears instead to impose a [regressive pied-piping] feature to the silent head it activates as it (preferably) precedes NPs and PPs (cf. Maling 1983, §1.4).

<sup>46</sup> ‘Direct modification’ adjectives are attributive adjectives which either cannot have a relative clause source because they are non-predicative or if they can also have a predicative usage are not necessarily derived through a reduced relative clause but modify the NP much as adverbPs modify the VP. Some of their subclasses, in Italian, are necessarily post-nominal (classificatory, provenance, etc.), others can appear both pre- and post-nominally (size, age, value, etc.). Cf. Cinque (2010).

- (give-me) paper.def.f red.def.f  
 ‘(Give me) the red book/paper’
- b. (tin-i) li-prasini varka (with [regressive 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 Croatian origin) has to precede the noun (thus imposing a [regressive pied-piping] feature), while the adjective *taljan* (of Romance origin) has to follow the noun (thus imposing a [progressive pied-piping] feature).<sup>47</sup>

- (42)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 (43)a), in contrast with size adjectives, which can either be pre- or post-nominal. See (43)b):<sup>48</sup>

- (43)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’

### c) single category within an extended projection

Farsi adjectives are all postnominal (except those in the superlative form - cf. Kayne 2008, note 15 and reference cited there). This can be achieved, in the spirit of Webelhuth (1992,§1.6), if all lexical items that contain the [+Adj] categorial feature are marked as imposing a [progressive pied piping] feature (the pre-nominal 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 2010,124n13).

<sup>47</sup> The fact that their origin may ultimately be responsible for the different pied piping features of the different adjectival classes in Cypriot Maronite Arabic and Istro-Romanian is irrelevant. A child has to determine the feature responsible for the correct order without necessarily knowing from which grammars the adjectives were borrowed.

<sup>48</sup> Also see the case of classifying adjectives in Polish, the only class of adjectives that can be postnominal, thus apparently triggering overt raising of the NP (Rutkowski and Progovac 2005).

#### d) All categories within a particular extended projection

In the Kwa language Gungbe adjectives, numerals, demonstratives, and other nominal modifiers are all post-nominal (Aboh 2004, Chapter 3). In the present context, this means that all lexical items of any of the nominal modifier classes are marked as imposing a [progressive pied piping] feature.

#### e) All categories within all extended projections

All lexical items (whatever their categorial label) of Japanese would instead be marked as imposing a [regressive pied piping] feature (thus yielding virtual “cross-category” harmony, with the exception of numerals which can also be post-nominal, possibly with a discourse-related difference with respect to pre-nominal ones – cf. Kim 1995).

So far, we have observed cases in which the [regressive pied piping] or the [progressive pied piping] feature appears to be imposed by the attractor.

As mentioned above, there seem to be reasons to also endow the attractee with the same type of features, as there are cases where it is the attractee which apparently determines the kind of attraction involved. This implies that the features of the attractee and those of the attractor must match for the derivation not to crash.<sup>49</sup>

### 4.3 Cases of attraction determined by the attractee.

In Swedish, **adjectives** taking a DP complement fall into three classes (Platzack 2014, §4): 1) those, like *bekant* ‘known to’, *kär* ‘dear’, *värdig* ‘worthy of’, *likgiltig* ‘indifferent to’, etc., which can only follow their DP complement (see (44)); 2) those, like *kvitt* ‘be/get rid of’ *lik* ‘like’ *värd* ‘worth’, etc., which can only precede their DP complement (see (45)) and 3) those, like *trogen* ‘true to’, *underlägsen* ‘inferior to’, *överlägsen* ‘superior to’, etc., which can either precede or follow their DP complement (see (46)):

(44)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’

---

<sup>49</sup> That both attractor and attractee may share features is also suggested in Rizzi (2015, §6).



(45)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 got rid of his pains’

(46)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 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 XP)<sup>50</sup>, in the first case, the adjective must be endowed with a [regressive pied piping] feature; in the second with a [-pied piping] feature<sup>51</sup>; and in the third with either a [regressive pied piping] or a [-pied piping] feature (alternatively, left unspecified).

---

<sup>50</sup> Raising further, above any adverbial modifiers of the adjective, as shown in (i), from Platzack (2014,§5):

(i) Han var [sina motståndare<sub>i</sub> mycket t<sub>i</sub> överlägsen].

he was his.REFL opponents very superior

‘He was quite superior to his opponents’

The same is true of Quechua (Cole 1982,74f) and German (Riemsdijk 1983), whose case marked complements invariably precede the adjective.

<sup>51</sup> That the AP is plausibly attracted in this case without pied piping (the third case of attraction mentioned above) may be indicated by the fact that whenever an adjective takes two DP complements (like *skyldig* ‘owing’), attraction is possible (in fact necessary) above just the lower one (cf. (i)a.), or above both, in the direct, not the mirror, order (cf.

(i)b.) (Platzack 2014,§2):

(i)a. Han var sin son skyldig en ursäkt.

He was his.REFL son owing an excuse

b. Han var skyldig sin son en ursäkt.

He was owing his.REFL son an excuse

Modulo phrasal instead of head movement, this is similar to what Platzack (2014) proposes. Also see Platzack (2014,§1) for arguments that the DP complement is not preceded by a silent preposition, and Platzack (1982).

**Nouns** in certain languages also appear to determine the mode of attraction. In Yugambeh-Bundjalung (Bandjalang) (Pama-Nyungan, Australia) adjectives “follow nouns denoting humans, but precede those denoting trees and neuters.” (Sharpe 2005,98):<sup>52</sup>

(47) **N<sub>+hum</sub> AP or AP N<sub>-hum</sub>**

This would seem to suggest that in this case it is a feature of the N that determines the mode of pied piping attraction to the Spec,FP above the adjective (whether it is progressive or regressive pied piping, yielding N<sub>+hum</sub> AP or AP N<sub>-hum</sub>). As noted above, the AP must have a feature matching that feature.

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

(48)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 attraction.<sup>53</sup> 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 [progressive pied piping], or a [-pied piping] feature ((49)a), and *pour* a postposition (i.e., endowed with a [regressive pied piping] feature ((49)b):

(49)a. **d** sa:b

of sand

---

<sup>52</sup> Also see the case of Vanimo (Papuan), which has the order N Num A Dem with human nouns and either the same order or the alternative order N A Num Dem with non-human nouns (Ross 1980,§2.1).

<sup>53</sup> I am not concerned here with axial part (or relator) “prepositions” (like ‘under’, ‘behind’, ‘next to’, etc.), which can follow the DP even in head-initial languages, possibly in correlation with the position of the genitive (for discussion see Cinque 2010b and references cited there).

- b. bi:bi: **pour**  
 baby for  
 “for the baby”

In other languages the DP complement can, indifferently, precede or follow the same adposition, which we consequently take to be endowed with either a [progressive] or a [regressive pied piping] feature. See, for example, the case of German, (50) (Haider 2014, §2):<sup>54</sup>

- (50)a. **nach** meiner Meinung  
 b. meiner Meinung **nach**  
 "in my opinion"

Also **modals, auxiliaries and complementizers** in the extended projection of the VP appear to be able to determine the mode of pied piping attraction.

In Vietnamese the deontic modal precedes the lexical verb while the ability modal follows:

- (51)a. Co ấy se không **phải** gap em. (Duffield 1999,97)  
 PRN DEM FUT NEG **must** meet PRN  
 ‘She will not have to meet with you.’  
 b. Co ấy se không gap em được. (Duffield 1999,97)  
 PRN DEM FUT NEG **meet** PRN **can**  
 ‘She will not be able to meet with me.’

In Persian Farsi, “the perfect auxiliary *budan* (“to be”) must appear after the main verb. On the other hand, the future tense auxiliary, used in formal contexts, is expressed by adding the auxiliary verb *xastan* (“to want”), inflected for person and number immediately before the verb stem” (Goldberg 2002, §6.1). See (52)a-b:<sup>55</sup>

- (52)a. (man) rafte **budam**  
 (I) go.PART be-PAST.PERF.1.sg  
 “I had gone”

<sup>54</sup> These are often called ‘ambipositions’, among other terms. See Libert (2006) for discussion and distinctions to be made.

<sup>55</sup> I thank Alireza Soleimani for corrections in these examples and glosses.

- b. (man) **xâham** raft  
 (I) FUT-1.sg go  
 “I will go.”

As for complementizers, in one and the same language, Bangla, one complementizer (of nominal origin), *je* (which we take it to be endowed with a [progressive pied piping] feature), precedes its complement clause (cf. (53)a), and another (of verbal origin), *bole* (which we take to be endowed with a [regressive pied piping] feature), follows it (cf. (53)b):

- (53)a. Chele-Ta Sune-che [je [or baba aS-be]] (Bayer 1996,255)  
 Boy-CL 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 (Bayer 1996,255)  
 Boy-CL his father come-will COMP hear-Pst3  
 “The boy heard that his father will come”

All of this seems to suggest that both modifiers and nouns, adjectives, prepositions, auxiliaries, modals, complementizers (hence, by inheritance, their maximal projections) must be endowed with a [regressive pied piping] or [progressive pied piping] feature, as it is them in some cases that determine the mode of attraction. This suggests, as noted, generalizing the endowment of such features to both the attractor and the attractee, whose attraction features will have then to match those of the attractor so that attraction can take place in the ordinary way.

Differently from such categories, it would seem that single verbs cannot be endowed with a special pied piping feature, for, as Webelhuth (1992,49) observed, they take their complements on the same side so that no verb can differ from any other verb in the direction in which it takes a complement.<sup>56</sup> 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.

---

<sup>56</sup> In old Swedish one could have OVinf with objects whose D is not filled and VO otherwise (Holmberg and Platzack 2005,449f), but here the difference depends on the object (whose associated FP may consequently be marked with a [progressive pied piping] feature or a [regressive pied piping] feature), not on the verb.

#### 4.4 Reconciling the microparametric approach with the tendencies for intra- and cross-category harmony and with the acquisition problem.

Any microparametric lexical approach to word order parameters will however have to ensure certain types of (intra-category and cross-category) harmony, since otherwise, as noted in Baker (2008,360), languages should distribute in a continuum of every possible combination of word order properties if each lexical item could differ from all others *ad libitum*. But we have seen that there are clear tendencies; in particular that there is a much stronger cross-category harmony when heads and their complements are involved (V/O and P/O) than there is when heads and their modifiers are (V/AdvP and N/AP), and again a stronger intra-category harmony in the extended projection of a certain lexical head when heads (V, Modal, Aux; N PL Art) rather than modifiers (V AdvP<sub>1</sub> AdvP<sub>2</sub>; N AP, RelC) are involved.<sup>57</sup> These partial harmonies can perhaps be captured even in a microparametric approach if lexical specifications can be the result of certain generalizations, ultimately encoded in the lexicon. The special word order behavior of a single lexical item (*enough* in English) is a limiting case. More common are larger generalizations (all adjectives belonging to a certain subclass, say provenance adjectives). This means, for example, that in the lexicon of Italian all such adjectives will be endowed with the [progressive pied piping] feature. Larger generalizations (like the Persian Farsi case) would be governed by the same logic: in this case, the lexical category adjective (hence all of its members) would be endowed with a [progressive pied piping] feature, and the same mechanism would apply to larger generalizations, like the case of all nominal modifiers in Gungbe (which would be lexically endowed with a [progressive pied piping] feature).<sup>58</sup>

The conjecture that word order may be governed by lexical specifications of a successively larger type (from a single lexical item to subclasses of a lexical category, to an entire lexical category, to two or more, or all, lexical categories) relates immediately to the problem of acquisition. It is possible that this is guided by a default assumption that once the lexical category is attracted in one of the two modes (progressive or regressive pied piping) the default expectation is that it (or any other category of the same verbal or nominal type) will continue to be attracted in the same mode, **up to disconfirmation**. This may even lead (in few cases, as seen) to almost perfect cross-category harmony if the default expectation of a uniform attribution of the pied piping feature is not contradicted by the primary linguistic data.<sup>59</sup> Ultimately, the language internal generalizations will

---

<sup>57</sup> Cf. Dryer (1992,fn17).

<sup>58</sup> This comes close to the intermediate position (between micro- and macro-parametric approaches) that Baker (2008) discusses in his footnote 2. Still, it can be cast, it seems to me, as a lexical rather than a general grammatical property.

<sup>59</sup> For similar ideas, within a somewhat different system, see Biberauer, Holmberg and Roberts (2008, 2014).

be fixed, down to the most minute details (say, titles, which in English are attracted via the progressive pied piping mode (*Lady Windermere, Sir John, professor Chomsky, Mount Auburn,* etc.) while common nouns are attracted either via regressive pied piping (*Auburn mountain, Ormond road* ) or progressive pied piping (*letter ‘k’, Cape Canaveral,* etc.), or both ((*the Mississippi river/river Mississippi*)).

## References

- Abels, Klaus. 2003. *Successive Cyclicity, Anti-locality, and Adposition Stranding*. Ph.D. Dissertation, University of Connecticut.
- Abels, Klaus. 2015. The fundamental left-right asymmetry in the Germanic verb cluster. Ms., University College, London.
- Abels, Klaus, and Ad Neeleman. 2012. Linear Asymmetries and the LCA. *Syntax* 15.25-74
- Aboh, Enoch Oladé. 2004. *The Morphosyntax of Complement-Head Sequences. Clause Structure and Word Order Patterns in Kwa*. New York: Oxford University Press.
- Adger, David. 2013. *A Syntax of Substance*. Cambridge, Mass.: The MIT Press.
- Adger, David, Daniel Harbour and Laurel J. Watkins. 2009. *Mirrors and Microparameters. Phrase Structure Beyond Free Word Order*. Cambridge: Cambridge University Press.
- Atlamaz, Ümit. 2016. Merging Modifiers of an NP before its Arguments. In K.-m. Kim et al., eds., *Proceedings of the 33<sup>rd</sup> West Coast Conference on Formal Linguistics*. 47-56. Somerville, Mass.: Cascadia. <http://www.lingref.com/cpp/wccfl/33/paper3224.pdf>
- Baker, Mark C. 1985. The Mirror Principle and Morphosyntactic Explanation. *Linguistic Inquiry* 16. 373-415
- Baker, Mark C. 2008. The macroparameter in a microparametric world. In T. Biberauer, ed., *The Limits of Syntactic Variation*. 351-373. Amsterdam: Benjamins.
- Bakker, Peter. 1997. *A Language of Our Own. The Genesis of Michif. The Mixed Cree-French Language of the Canadian Métis*. New York: Oxford University Press.
- Ball, Douglas L. 2009. *Clause structure and argument realization in Tongan*. Ph.D. Dissertation, Stanford University.
- Barbiers, Sjef. 2000. The right periphery in SOV languages: English and Dutch. In P. Svenonius, ed., *The Derivation of VO and OV*. 181 - 218. Amsterdam: Benjamins.
- Barbiers, Sjef. 2005. Word order variation in three-verb clusters and the division of labour between generative linguistics and sociolinguistics. In L. Cornips and K.P. Corrigan, eds., *Syntax and variation: reconciling the biological and the social*. 233-264. Amsterdam: Benjamins.
- Barnes, Malone. 2000. El tuyuca. In M.S. González de Pérez, ed., *Lenguas indígenas de Colombia. Una visión descriptiva*. 437-452. Santafé de Bogotá: Instituto Caro y Cuervo.

- Bayer, Josef. 1999. Final complementizers in hybrid languages. *Journal of Linguistics* 35:233-271
- Bayer, Josef. 2001. Two Grammars in One: Sentential Complements and Complementizers in Bengali and other South Asian Languages. In P.Bhaskararao and K.V.Subbarao, eds., *The Yearbook of South Asian Languages and Linguistics*. 11-36. New Delhi, Sage Publications.
- Benincà, Paola and Nicola Munaro. 2010. *Mapping CPs. The Cartography of Syntactic Structures, Vol.5*. New York: Oxford University Press.
- Bhatt, Rajesh. 2007. Little or Nothing. Unpublished paper. University of Massachusetts at Amherst.
- Bhatt, Rajesh and Veneeta Dayal. 2007. Rightward Scrambling as Rightward Remnant Movement. *Linguistic Inquiry* 38:287-30.
- Biberauer, Theresa, Anders Holmberg and Ian Roberts. 2008. Disharmonic Word-Order Systems and the Final-Over-Final-Constraint (FOFC). In A.Bisetto and F.E.Barbieri, eds., *Proceedings of the XXXIII Incontro di Grammatica Generativa*. 86-105.  
[http://amsacta.unibo.it/2397/1/PROCEEDINGS\\_IGG33.pdf](http://amsacta.unibo.it/2397/1/PROCEEDINGS_IGG33.pdf)
- Biberauer, Theresa, Anders Holmberg and Ian Roberts. 2014. A syntactic universal and its consequences. *Linguistic Inquiry* 45:169-225
- Borer, Hagit. 1984. *Parametric syntax: case studies in Semitic and Romance languages*. Dordrecht: Foris.
- Bortolotto, Laura. 2015. *The Syntax of Relational Adjectives in Romance*. Ph.D. Dissertation, Ca' Foscari University, Venice.
- Bugaeva, Anna. Forthcoming. Noun-Modifying Clause Constructions in Ainu. In Y.Matsumoto, B.Comrie and P.Sells, eds., *Noun-Modifying Clause Constructions in Languages of Eurasia: Reshaping theoretical and geographical boundaries*. Amsterdam: Benjamins.
- Cabral, A. C. Ana Suelly. 1995. *Contact-induced language change in the Western Amazon: the non-genetic origin of the Kokama language*. Ph.D. Dissertation, University of Pittsburgh.  
[http://etnolinguistica.wdfiles.com/local--files/tese:cabral-1995/cabral\\_kokama1995.pdf](http://etnolinguistica.wdfiles.com/local--files/tese:cabral-1995/cabral_kokama1995.pdf)
- Carnie, Andrew and Eithne Guilfoyle. 2000. "Introduction". In Carnie, A and E. Guilfoyle, eds., *The Syntax of Verb Initial Languages*. 3-11. New York: Oxford University Press.
- Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.
- Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 2000. Minimalist Inquiries: The Framework. In R.Martin, D.Michaels and J. Uriagereka, eds, *Step by step: Essays on Minimalist Syntax in Honor of Howard Lasnik*. 89–155. Cambridge, MA: MIT Press
- Chomsky, Noam. 2007. Approaching UG from below. In U.Sauerland and H.-M.Gärtner, eds., *Interfaces \_ recursion \_ language?*. 1–29. Berlin: Mouton de Gruyter.
- Chomsky, Noam. 2008. On phases. In R.Freidin, C.Otero, and M.L.Zubizarreta, eds., *Foundational issues in linguistic theory: Essays in honor of Jean-Roger Vergnaud*. 133–165. Cambridge, MA: MIT Press.
- Chomsky, Noam. 2013. Problems of Projection. *Lingua* 130:33-49

- Cinque, Guglielmo. 1999. *Adverbs and Functional Heads. A Cross-linguistic Perspective*. New York: Oxford University Press.
- Cinque, Guglielmo. 2004. Issues in Adverbial Syntax. *Lingua* 114.683-710
- Cinque, Guglielmo. 2005. Deriving Greenberg's Universal 20 and Its Exceptions. *Linguistic Inquiry* 36:315-332 <http://lear.unive.it/jspui/bitstream/11707/82/1/Greenberg-LI.pdf>
- Cinque, Guglielmo. 2006. *Restructuring and Functional Heads. The Cartography of Syntactic Structures, Vol.4*. New York: Oxford University Press.
- Cinque, Guglielmo. 2009a. The Fundamental Left-Right Asymmetry of Natural Languages. In S.Scalise, E.Magni, A.Bisetto, eds., *Universals of Language Today*. 165-184. Dordrecht: Springer.  
<http://lear.unive.it/jspui/bitstream/11707/99/1/CINQUE%201.pdf>
- Cinque, Guglielmo. 2009b. Some Observations on Disharmonic Word Orders. Paper given at the conference "Theoretical Approaches to Disharmonic Word Orders", Newcastle, May 30- June 1 2009.
- Cinque, Guglielmo. 2010a. *The Syntax of Adjectives. A Comparative Study*. Cambridge, Mass.: MIT Press.
- Cinque, Guglielmo. 2010b. Mapping Spatial PPs: an introduction. In G.Cinque and L.Rizzi, eds., *Mapping Spatial PPs. The Cartography of Syntactic Structures, vol.6*. 3-25. New York and Oxford: Oxford University Press. (reprinted in G.C. *Typological Studies. Word Order and Relative Clauses*. 86-95. London: Routledge).  
<http://lear.unive.it/jspui/bitstream/11707/142/1/Mapping%20Spatial%20PPs.pdf>
- Cinque, Guglielmo. 2011. Greenberg's Universal 23 and SVO Languages. In M.Frascarelli, ed., *Structures and Meanings: Cross-theoretical perspectives*. 75-80. Paris/Roma: L'Harmattan (reprinted in G.C. *Typological Studies. Word Order and Relative Clauses*. 110-113. London: Routledge).  
<http://lear.unive.it/jspui/bitstream/11707/139/2/Universal%2023.Cinque.x.Fest.Puglielli.pdf>
- Cinque, Guglielmo. 2013a. Word Order Typology. A Change of Perspective. In Biberauer, T. M. Sheehan, eds., *Theoretical Approaches to Disharmonic Word Orders*. 47-73. Oxford: Oxford University Press. (reprinted in G.C. *Typological Studies. Word Order and Relative Clauses*. 13-33. London: Routledge).  
[http://lear.unive.it/jspui/bitstream/11707/154/2/TADWO\\_Cinque.13.08.10.pdf](http://lear.unive.it/jspui/bitstream/11707/154/2/TADWO_Cinque.13.08.10.pdf)
- Cinque, Guglielmo. 2013b. Cognition, Universal Grammar, and typological generalizations. *Lingua* 130:50-65 <http://lear.unive.it/jspui/bitstream/11707/153/2/LINGUACognition%26UG.pdf>
- Cinque, Guglielmo. 2014. Again on Tense, Aspect, Mood Morpheme Order and the "Mirror Principle". In P.Svenonius, ed., *Functional Structure from Top to Toe. The Cartography of Syntactic Structures, Volume 9*. 232-265. New York: Oxford University Press.  
<http://lear.unive.it/jspui/bitstream/11707/157/2/TAM.Order%26MirrorP.pdf>
- Cinque, Guglielmo. 2015. A note on 'other'. In E.Brandner, A.Czypionka, C.Freitag and A.Trotzke, eds., *Charting the Landscape of Linguistics. Webschrift for Josef Bayer*. 22-27. Konstanz: Universität Konstanz.  
<http://ling.uni-konstanz.de/pages/WebschriftBayer/2015/title.html>
- Cinque, Guglielmo (in preparation) On the movement account of Greenberg's Universal 20: Refinements and Replies.



- Cinque, Guglielmo and Luigi Rizzi 2010. The Cartography of Syntactic Structures. In B.Heine and H.Narrog, eds., *Oxford Handbook of Linguistic Analysis*. 51-65. Oxford: Oxford University Press.  
<http://lear.unive.it/jspui/bitstream/11707/119/1/Cinque-Rizzi.pdf>
- Cole, Peter. 1982. *Imbabura Quechua*. Amsterdam: North Holland.
- Cole, Peter and Gabriela Hermon. 2008. VP raising in a VOS language. *Syntax* 11:144-197
- Crowley, Terry. 2002. Mwotlap. In J.Lynch, M.Ross and T.Crowley, eds., *The Oceanic languages*. 587-598. Richmond: Curzon Press.
- Comrie, Bernard. 1980. Morphology and word order reconstruction: Problems and prospects. In J.Fisiak, ed., *Historical morphology*. 83–96. Den Haag: Mouton.
- Coon, Jessica. 2010. *Complementation in Chol (Mayan): a theory of split ergativity*. Ph.D. Dissertation, MIT. <http://ling.auf.net/lingbuzz/001072>
- Cysouw, Michael. 2008. Linear Order as a Predictor of Word Order Regularities. *Advances in Complex Systems* 11:415–420 [http://cysouw.de/home/articles\\_files/cysouwLINEARORDER.pdf](http://cysouw.de/home/articles_files/cysouwLINEARORDER.pdf)
- da Cruz, Aline. 2011. *Fonologia e Gramática do Nheengatú. A língua geral falada pelos povos Baré, Warekena e Baniwa*. Ph.D. Dissertation, Vrije Universiteit Amsterdam.
- Daly, John P. 1973. *A generative syntax of Peñoles Mixtec*. Norman (Okl.): University of Oklahoma and Summer Institute of Linguistics.
- Dayley, Jon P. 1985. *Tzutujil Grammar*. Berkeley: University of California Press.
- Diesing, Molly. 1992. *Indefinites*. Cambridge, Mass.: MIT Press.
- Dixon, R.M.W. 1988. *A Grammar of Boumaa Fijian*. Chicago: Chicago University Press.
- Dörfer, Gerhard. 1957. Der Numerus nach Zahlwörtern in Mandschu. *Studia Altaica: Festschrift für Nicholas Poppe zum 60 Geburtstag*. 46-50. Wiesbaden: Harrassowitz.
- Donohue, Mark. 1999. *A grammar of Tukang Besi*. Berlin: Mouton de Gruyter.
- Dryer, Matthew S. 1988. Object-verb order and adjective-noun order: dispelling a myth. *Lingua* 74:77-109
- Dryer, Matthew S. 1989a. Plural Words. *Linguistics* 27:865-895
- Dryer, Matthew S. 1989b. Article-Noun Order. In *Papers from the 25th Regional Meeting of the Chicago Linguistic Society*. 83-97. Chicago: Chicago Linguistic Society.
- Dryer, Matthew S. 1991. SVO Languages and the OV/VO Typology. *Journal of Linguistics* 27. 443-482
- Dryer, Matthew S. 1992. The greenbergian word order correlations. *Language* 68:81-138  
<http://linguistics.buffalo.edu/people/faculty/dryer/dryer/wordOrder.htm>
- Duffield, Nigel. 1999. Final modals, adverbs and antisymmetry in Vietnamese. *Revue québécoise de linguistique* 27.92-129
- Dum-Tragut, Jasmine. 2009. *Armenian. Modern Eastern Armenian*. Amsterdam: Benjamins.
- Dunn, Michael John. 1999. *A grammar of Chukchi*. Ph.D. Dissertation, Australian National University.
- Embick, David and Roumyana Izvorski. 1994. On Long Head Movement in Bulgarian. In J. Fuller, H. Han, and D. Parkinson, eds., *ESCOL '94*. 104–115. DMLL Publications, Cornell University.

- Erguvanlı, Eser Emine. 1984. *The Function of Word Order in Turkish Grammar*. Berkeley: University of California Press.
- Filchenko, Andrey Yuri. 2007. *A Grammar of Eastern Khanty*. Ph.D. Dissertation, Rice University.
- Flegg, Jill H. 2003. Topics and Clitic Left Dislocation in Malagasy. Paper presented at AFLA X.  
[http://westernlinguistics.ca/afla/meetings/alfla10/abstracts/flegg\\_topics\\_and\\_clitic\\_left\\_dislocation\\_in\\_malagasy.pdf](http://westernlinguistics.ca/afla/meetings/alfla10/abstracts/flegg_topics_and_clitic_left_dislocation_in_malagasy.pdf)
- Fukui, Naoki. 1986. *A Theory of Category Projection and its Application*. Ph.D. Dissertation, MIT.
- Genetti, Carol. 2007. *A Grammar of Dolakha Newar*. Berlin: Mouton de Gruyter.
- Giusti, Giuliana. 1994. Enclitic articles and double definiteness: A comparative analysis of nominal structure in Romance and Germanic. *The Linguistic Review* 11.241-255
- Göksel, Aslı. 2013. Flexible word order and anchors of the clause. *SOAS Working Papers in Linguistics* 16.3-25
- Goldberg, Adele. 2002. Persian Auxiliaries. Ms., Princeton University.  
<https://www.princeton.edu/~adele/papers/Papers>
- Gorelova, Liliya M. 1997. Manchu-Chinese Syntactical Parallels. *Acta Orientalia Hungarica*. L.99-106
- Greenberg, J. 1963. Some universals of grammar with particular reference to the order of meaningful elements. In J. Greenberg, ed., *Universals of language*. 73-113. Cambridge MA: MIT Press.
- Gruzdeva, Ekaterina. 1998. *Nivkh*. München: Lincom Europa.
- Guntsetseg, Dolgor. 2008. Differential Object Marking in Mongolian. In F. Schäfer, ed., *SinSpeC Working papers of the SFB 732 "Incremental specification in Context"* 1: 53-69.  
[http://elib.uni-stuttgart.de/opus/volltexte/2008/3544/pdf/SinSpeC1\\_volume.pdf](http://elib.uni-stuttgart.de/opus/volltexte/2008/3544/pdf/SinSpeC1_volume.pdf)
- Haegeman, Liliane. 1993. The morphology and distribution of object clitics in West Flemish. *Studia Linguistica* 47.57-94
- Haegeman, Liliane and Henk van Riemsdijk. 1986. Verb Projection Raising, scope, and the typology of rules affecting verbs. *Linguistic Inquiry* 17.417-466
- Haider, Hubert. 1992. Branching and Discharge. *Working Papers of the SFB 340, #23* (Universität Stuttgart) (reprinted in P.Coopman, M.Everaert and J.Grimshaw, eds., *Lexical Specifications and Insertion*. 135-164. Amsterdam: Benjamins).
- Haider, Hubert. 2013. *Symmetry Breaking in Syntax*. Cambridge: Cambridge University Press.
- Haider, Hubert. 2014. Head directionality - in syntax and morphology. To appear in A.Fábregas, J.Mateu, M.Putnam, eds., *The Handbook of Parameters*. Bloomsbury Academic.  
[http://www.uni-salzburg.at/fileadmin/multimedia/Linguistik/documents/2014-Directionality-revised\\_abridged.pdf](http://www.uni-salzburg.at/fileadmin/multimedia/Linguistik/documents/2014-Directionality-revised_abridged.pdf)
- Hammarström, Harald. 2015. The basic Word Order Typology: An Exhaustive Study. Slides of a paper presented in Leipzig on March 3 2015.  
[http://www.eva.mpg.de/fileadmin/content\\_files/linguistics/conferences/2015-diversity-linguistics/Hammarstroem\\_slides.pdf](http://www.eva.mpg.de/fileadmin/content_files/linguistics/conferences/2015-diversity-linguistics/Hammarstroem_slides.pdf)

- Hawkins, J.A. 1983. *Word Order Universals*. New York: Academic Press.
- Hendrick, Randall. 2000. Celtic Initials. In Carnie, A and E. Guilfoyle, eds., *The Syntax of Verb Initial Languages*. 13-37. New York: Oxford University Press.
- Hepner, Mark. 2006. *Bargam Grammar Sketch*. Ukarumpa, Papua New Guinea: Summer Institute of Linguistics. [http://www.sil.org/pacific/png/pubs/49645/Bargam\\_Grammar\\_Sketch.pdf](http://www.sil.org/pacific/png/pubs/49645/Bargam_Grammar_Sketch.pdf)
- Herring, Susan C. 1994. Afterthoughts, Antitopics, and Emphasis: The Syntacticization of Postverbal Position in Tamil. In M. Butt, T. Holloway King and G. Ramchand, eds., *Theoretical Perspectives on Word Order in South Asian Languages*. 119-152. Stanford, CA.: CSLI Publications.
- Hewitt, B. G. (in collaboration with Z. K. Khiba) 1989. *Abkhaz*. London: Routledge.
- Hinterhölzl, Roland. 2006. *Scrambling, Remnant Movement, and Restructuring in West Germanic*. New York: Oxford University Press.
- Holmer, Arthur. 1996. *A parametric grammar of Seediq*. Lund: Lund University Press.
- Holmer, Arthur. 2005. Antisymmetry and final particles in a Formosan VOS language. In A. Carnie, H. Harley, S. A. Dooley, eds., *Verb First. On the Syntax of verb-initial languages*. 175-201. Amsterdam: Benjamins.
- Horvath, Julia. Forthcoming. Pied Piping. To appear in the new edition of SynCom.
- Jacques, Guillaume. 2010. The inverse in Japhug Rgyalrong. *Language and Linguistics* 11.127- 157.
- Jayaseelan, K.A. 2010. Stacking, Stranding, and Pied-Piping: A Proposal about Word Order. *Syntax* 13.298-330
- Jones, Robert B. 1970. Classifier constructions in Southeast Asia. *Journal of the American Oriental Society* 90.1-12
- Joo, Kum-Jeong. 2013. Universal 20 and Word-Order Variation in Korean. *Working Papers in Linguistics: University of Hawai'i at Mānoa* 44(2).3-10 <http://www.ling.hawaii.edu/research/WorkingPapers/wp-KumJeongJoo.pdf>
- Julien, Marit. 2002. *Syntactic Heads and Word Formation*. New York: Oxford University Press.
- Kashaeva, Goljihan. 2012. The Tatar IP-field. *Generative Grammar in Geneva* 8.77-94 [http://www.unige.ch/lettres/linge/syntaxe/journal/Volume8/5\\_Kashaeva\\_2012.pdf](http://www.unige.ch/lettres/linge/syntaxe/journal/Volume8/5_Kashaeva_2012.pdf)
- Kayne, Richard S. 1994. *The Antisymmetry of Syntax*. Cambridge, MA: MIT Press.
- Kayne, Richard S. 1999. Prepositional Complementizers as Attractors. *Probus* 11.39-73 (reprinted in Kayne 2000, *Parameters and Universals*. New York: Oxford University Press, pp. 282-313).
- Kayne, Richard S. 2000. A Note on Prepositions, Complementizers, and Word Order Universals. In R. S. Kayne *Parameters and Universals*. 314-326. New York: Oxford University Press.
- Kayne, Richard S. 2003a. Antisymmetry and Japanese. *English Linguistics* 20.1-40 (reprinted in Kayne 2005, *Movement and Silence*. New York: Oxford University Press, pp. 215-240).
- Kayne, Richard S. 2003b. Silent Years, Silent Hours. In L.-O. Delsing et al., eds., *Grammar in Focus. Festschrift for Christer Platzack. Vol.2*. 209-226. Lund: Lund University (reprinted in R. S. Kayne 2005 *Movement and Silence*, 241-260. New York: Oxford University Press).

- Kayne, Richard S. 2005. Some notes on comparative syntax, with special reference to English and French. In G. Cinque and R.S. Kayne, eds., *The Oxford Handbook of Comparative Syntax*. 3–69. New York: Oxford University Press.
- Kayne, Richard S. 2006. A Note on the Syntax of Numerical Bases. In Y. Suzuki, ed., *In Search of the Essence of Language Science: Festschrift for Professor Heizo Nakajima on the Occasion of his Sixtieth Birthday*. 21–41. Tokyo: Hituzi Syobo (reprinted in R.S. Kayne 2010 *Comparisons and Contrasts*. New York: Oxford University Press, pp.57–72).  
<http://linguistics.as.nyu.edu/docs/IO/2652/Kayne0705NumericalBases.pdf>
- Kayne, Richard S. 2008. Some Preliminary Comparative Remarks on French and Italian Definite Articles. In R. Freidin, C.P. Otero and M.L. Zubizarreta, eds., *Foundational Issues in Linguistic Theory. Essays in Honor of Jean-Roger Vergnaud*. 291–321. Cambridge, Mass.: MIT Press. (reprinted in R.S. Kayne 2010 *Comparisons and Contrasts*. New York: Oxford University Press, pp.3–28).  
<http://linguistics.as.nyu.edu/docs/IO/2652/Kayne1004DefiniteArticles.pdf>
- Kayne, Richard S. 2016. The Silence of Heads. *Studies in Chinese Linguistics* 37.1–37  
<http://www.degruyter.com/downloadpdf/j/scl.2016.37.issue-1/scl-2016-0001/scl-2016-0001.xml>
- Keenan, Edward L. 1978. The syntax of subject final languages. In W.P. Lehmann, ed., *Syntactic typology: studies in the phenomenology of language*. 267–327. Austin: University of Texas Press.
- Kilian-Hatz, Christa. 2008. *A grammar of modern Khwe (central Khoisan)*. Köln: Köppe.
- Kim, Alan Hyun-Oak. 1995. Word Order at the noun phrase level in Japanese. Quantifier constructions and discourse functions. In P. Downing and M. Noonan, eds., *Word Order in Discourse*. 199–246. Amsterdam: Benjamins.
- Koopman, Hilda. 2002. Derivations and complexity filters. Ms.  
[http://www.linguistics.ucla.edu/people/koopman/fr/derivations%20and\\_filters\\_final.PDF](http://www.linguistics.ucla.edu/people/koopman/fr/derivations%20and_filters_final.PDF)
- Koopman, Hilda. 2014. Recursion restrictions: Where grammars count. In T. Roeper and M. Speas, eds., *Recursion: Complexity in Cognition*. 17–38. Dordrecht: Springer. <http://ling.auf.net/lingBuzz/001463>
- Koopman, Hilda. 2015a. A Note on Huave morpheme ordering: Local dislocation or (generalized) U20? Ms., UCLA.
- Koopman, Hilda. 2015b. Generalized U20 and Morpheme Order. Ms, UCLA.
- Koopman, Hilda and Anna Szabolcsi. 2000. *Verbal Complexes*. Cambridge, MA: MIT Press.
- Krapova, Iliyana and Guglielmo Cinque. 2008. On the Order of *wh*-Phrases in Bulgarian Multiple *wh*-Fronting. In G. Zybatow et al., eds., *Formal Description of Slavic Languages: the Fifth Conference, Leipzig 2003*. 318–336. Frankfurt am Main: Peter Lang.
- Künnap, Ago. 1999. *Enets*. München: Lincom Europa.
- Kural, Murat. 1997. Postverbal constituents in Turkish and the Linear Correspondence Axiom. *Linguistic Inquiry* 28:498–519
- Kutscher, Silvia. 2001. *Nomen und nominales Syntagma im Lasischen. Eine descriptive Analyse des Dialekts von Ardeşen*. München: Lincom Europa.

- Lamberti, Marcello and Roberto Sottile. 1997. *The Wolaytta language*. Köln: Köppe.
- Lamova, Mariana. 2003. On Information Structure and Clausal Architecture: Evidence from Bulgarian. Ph.D. Dissertation, University of Connecticut, Storrs.
- Lee, Felicia. 2000. VP Remnant Movement and VSO in Quiaviní Zapotec. In A.Carnie and E.Guilfoyle, eds., *The Syntax of Verb Initial Languages*. 143-162. New York: Oxford University Press.
- Legate, Julie Anne. 2002. *Warlpiri: Theoretical Implications*. Ph.D. Dissertation, MIT.
- Lehmann, Winfred P. 1978. The Great Underlying Ground Plans. In W.P.Lehmann, ed., *Syntactic Typology: Studies in the Phenomenology of Language*. 3-56. Austin: University of Texas Press.  
<http://www.utexas.edu/cola/centers/lrc/books/type00.html>
- Leu, Thomas. 2015. *The Architecture of Determiners*. New York: Oxford University Press.
- Libert, Alan. 2006. *Ambipositions*. München: Lincom Europa.
- Lynch, John. 1982. Anejom Grammar Sketch. *Papers in Linguistics of Melanesia* 4.93-154
- Macdonald, Catherine Marie. 2014. *Functional Projections and Non-Local Relations in Tongan Nominal Phrases*. Ph.D. Dissertation, University of Toronto. <https://tspace.library.utoronto.ca/handle/1807/68305>
- Maling, Joan. 1983. Transitive Adjectives: A Case of Categorical Reanalysis. In F.Heny and B.Richards, eds., *Linguistic Categories: Auxiliaries and Related Puzzles. Volume One: Categories*. 253-289. Dordrecht: Reidel.
- Mallinson, Graham and Barry J. Blake. 1981. *Language Typology: Cross-linguistic Studies in Syntax*. Amsterdam: North Holland.
- Maslova, Elena. 2003. *A Grammar of Kolyma Yukaghir*. Berlin: Mouton de Gruyter.
- Massam, Diane. 2000. VSO and VOS. Aspects of Niuean Word Order. In A.Carnie and E.Guilfoyle, eds., *The Syntax of Verb Initial Languages*. 97-116. New York: Oxford University Press.
- Mosel, Ulrike (with Yvonne Thiesen). 2007. *The Teop sketch grammar*. Ms., University of Kiel.  
[http://www.linguistik.uni-kiel.de/Teop\\_Sketch\\_Grammar\\_May07.pdf](http://www.linguistik.uni-kiel.de/Teop_Sketch_Grammar_May07.pdf)
- Munshi, Sadaf. 2006. *Jammu and Kashmir Burushaski: Language, Language Contact and Change*. Ph.D. Dissertation, University of Texas at Austin.  
<https://repositories.lib.utexas.edu/bitstream/handle/2152/2777/munshis96677.pdf?sequence=2>
- Muriungi, Peter. 2006. Categorizing Adpositions in Kĩtharaka. In P. Svenonius and M. Pantcheva, eds., *Adpositions*. Special issue of *Nordlyd: Tromsø Working Papers in Linguistics* 33(1): 26–48.  
<http://www.ub.uit.no/munin/nordlyd>
- Myler, Neil. 2013. Linearization and post-synatctic operations in the Quechua DP. In T.Biberauer and I.Roberts, eds., *Challenges to Linearization*. 171-209. Berlin: Mouton de Gruyter.
- Nash, Lea and Alain Rouveret. 1997. Proxy categories in Phrase Structure Theory. *Proceedings of NELS 27*. 287-304
- Nedyalkov, Igor. 1997. *Evenki*. London: Routledge.
- Nikolaeva, Irina. 2014. *A grammar of Tundra Nenets*. Berlin: Mouton de Gruyter.
- Nikolaeva, Irina, and Maria Tolskaya. 2001. *A Grammar of Udihe*. Berlin: Mouton de Gruyter.



- Noonan, Michael. 2003. Nar-Phu. In R.LaPolla and G.Thurgood (eds.), *The Sino-Tibetan Languages*. 336-352. Richmond, England: Curzon Press.
- Oseki, Yohei. 2015. Eliminating Pair-Merge. In U.Steindl et al., eds., *Proceedings of West Coast Conference on Formal Linguistics* 32:303-312
- Öztürk, Balkiz. 2013a. Postverbal Constituents in SOV Languages. In T.Biberauer and M.Sheehan, eds., *Theoretical Approaches to Disaharmonic Word Orders*. 270-305. Oxford: Oxford University Press.
- Öztürk, Balkiz. 2013b. Rightward Movement, EPP and specifiers. Evidence from Uyghur and Khalka. In G.Weibelhut, M.Sailer and H.Walker, eds., *Rightward Movement in a Comparative Perspective*. 175-211. Amsterdam: Benjamins.
- Panayidou, Fryni. 2013. *(In)flexibility in Adjective Ordering*. Ph.D. Dissertation, Queen Mary College, London. <http://linguistics.sllf.qmul.ac.uk/sites/default/files/30-QMOPAL-Panayidou.pdf>
- Pearce, Elizabeth. 2012. Number within the DP: A view from Oceanic. In L.Brugè, A.Cardinaletti, G.Giusti, N.Munaro and C.Poletto, eds., *Functional Heads*. 81-91. New York: Oxford University Press.
- Platzack, Christer. 1982. Transitive Adjectives in Swedish. A Phenomeon with Implications for the Theory of Abstract Case. *The Linguistic Review* 2.39-56
- Platzack, Christer. 2014. Predicative Adjectives with NP Complement(s): A case of Optional Head Movement. In K.Helgesson, H.Landqvist, B.Lyngfelt, J.Nilsson and C.Norrby, eds., *Fint språk/ Good Language, Festschrift till Lars-Gunnar Andersson*. 129-142. Göteborg: Meijerbergs arkiv för svensk ordforskning.
- Polinsky, Maria. 2012. Headedness again. *UCLA Working Papers in Linguistics* 17.348-359  
[http://www.linguistics.ucla.edu/faciliti/wpl/issues/wpl17/papers/40\\_polinsky.pdf](http://www.linguistics.ucla.edu/faciliti/wpl/issues/wpl17/papers/40_polinsky.pdf)
- Polinsky, Maria. 2015. *Tsez Syntax: A Description*. Ms., Harvard University.  
[file:///C:/Users/utente/Downloads/polinsky\\_15\\_Tsez-Syntax-A.7%20\(1\).pdf](file:///C:/Users/utente/Downloads/polinsky_15_Tsez-Syntax-A.7%20(1).pdf)
- Poppe, Nicholas N. 1951. *Khalkha-mongolische Grammatik, mit Bibliographie, Sprachproben und Glossar*. Wiesbaden: Steiner Verlag.
- Primus, Beatrice. 2001. Word Order Typology. In M. Haspelmath, E.König, W.Oesterreicher and W.Raible, eds., *Language Typology and Language Universals*. Vol 2. 855-873. Berlin: Mouton de Gruyter.
- Rackowski, Andrea and Lisa Travis. 2000. V-initial Languages. X or XP Movement and Adverbial Placement. In A.Carnie and E.Guilfoyle, eds., *The Syntax of Verb Initial Languages*. 117-141. New York: Oxford University Press.
- Rae, Megan. 2009. *Ordering restrictions of modifiers in complex nominals*. Ph.D. Dissertation, Ca' Foscari University, Venice. <http://lear.unive.it:8080/jspui/handle/11707/331>
- Riemsdijk, Henk van. 1983. The Case of German Adjectives. In F.Heny and B.Richards, eds., *Linguistic Categories: Auxiliaries and Related Puzzles. Volume One: Categories*. 223-252. Dordrecht: Reidel.
- Rizzi, Luigi. 1997. The fine structure of the left periphery. In L.Haegeman, ed., *Elements of Grammar: A Handbook of Generative Syntax*. pp. 281–337. Dordrecht: Kluwer.

- Rizzi, Luigi. 2009. Some elements of syntactic computation. In D.Bickerton and E.Szathmáry, eds., *Biological Foundations and Origin of Syntax*. 63-88. Cambridge, Mass.: MIT Press.
- Rizzi, Luigi. 2014. On the Elements of Syntactic Variation. In C. Picallo et al., eds., *Linguistic Variation in the Minimalist Framework*. Oxford: Oxford University Press.
- Rizzi, Luigi. 2015. Labeling, maximality and the head-phrase distinction. Ms., University of Geneva and Università di Siena.
- Rizzi, Luigi and Guglielmo Cinque. 2016. Functional Categories and Syntactic Theory. *Annual Review of Linguistics* 2. 2:15.1–15.25 <http://lear.unive.it/jspui/bitstream/11707/5564/1/RizziCinqueAnnualRevLing.pdf>
- Roberts, Ian. 2012. On the nature of syntactic parameters: A programme for research. In C.Galves, S.Cyrino, R.Lopez and J.Avelar, eds., *Parameter Theory and Linguistic Change*. 319–334. Oxford: Oxford University Press.
- Ross, John Robert. 1967. *Constraints on Variables in Syntax*. Ph.D. Dissertation, MIT.
- Ross, Malcolm. 1980. Some Elements of Vanimö, a New Guinea Tone Language. *Papers in New Guinea Linguistics* 20.77-109
- Ruhlen, Merritt. 2008. *Language Database* (starling.rinet.ru/typology.pdf)
- Sapir, Edward. 1949<sup>2</sup>. *Language. An Introduction to the Study of Speech*. New York: Harcourt, Brace and Co.
- Rutkowski, Paweł and Ljiljana Progovac. 2005. Classification Projection in Polish and Serbian: The Position and Shape of Classifying Adjectives. In S.Franks, F.Y.Gladney and M.Tasseva-Kurktchieva, eds., *Formal Approaches to Slavic Linguistics: The South Carolina Meeting 2004*. 289-299. Ann Arbor: Michigan Slavic Publications.
- Schweikert, Walter. 2005a. *The Order of Prepositional Phrases in the Structure of the Clause*. Amsterdam: Benjamins.
- Schweikert, Walter. 2005b. The position of prepositional modifiers in the adverbial space. *Rivista di grammatica generativa* 30:115-134 <http://lear.unive.it:8080/jspui/handle/11707/404>
- Scott, Gary-John. 2002. Stacked Adjectival Modification and the Structure of Nominal Phrases. In G.Cinque, ed., *Functional Structure in DP and IP. The Cartography of Syntactic Structures, Vol.1*. 91-120. New York: Oxford University Press.
- Sells, Peter. 2000. Raising and the Order of Clausal Constituents in the Philippine Languages. In I.Paul, V.Phillips, L.Travis, eds., *Formal Issues in Austronesian Linguistics*. 117-143. Dordrecht: Kluwer.
- Sharpe, Margaret C. 2005. *Grammar and texts of the Yugambeh-Bundjalung dialect chain in Eastern Australia*. München: Lincom Europa.
- Shimizu, Kiyoshi. 1983. *The Zing dialect of Mumuye: a descriptive grammar with a Mumuye-English dictionary and an English-Mumuye index*. Hamburg: Buske.
- Siegel, Melanie and Emily M. Bender. 2004. “Head-initial” Constructions in Japanese. In S.Müller, ed., *Proceedings of the HPSG04 Conference*. Stanford: CSLI. <http://cslipublications.stanford.edu/HPSG/5/siegel-bender.pdf>

- Siewierska, Anna. 1998. Variation in major constituent order. In A.Siewierska, ed., *Constituent order in the languages of Europe*. 475-551. Berlin: Mouton de Gruyter.
- Simpson, Andrew and Arunima Choudhury. 2015. The Nonuniform Syntax of Postverbal Elements in SOV Languages: Hindi, Bangla, and the Rightward Scrambling Debate. *Linguistic Inquiry* 46: 533–551
- Singh, Rajendra. 1977. Hindi: COMP-initial or COMP-final. *Montreal Working Papers in Linguistics*, 9.203-207
- Smith, Neil V. 1981. Consistency, markedness and language change: on the notion of ‘consistent language’. *Journal of Linguistics* 17:39-54.
- Soe, Myint. 1999. *A grammar of Burmese*. Ph.D. Dissertation, University of Oregon.
- Speas, Margaret J. 1990. *Phrase Structure in Natural Language*. Dordrecht: Reidel.
- Svenonius, Peter. 2007. 1 ... 3–2. In G.Ramchand and C.Reiss, eds., *The Oxford Handbook of Linguistic Interfaces*. Oxford: Oxford University Press.
2008. The position of adjectives and other phrasal modifiers in the decomposition of DP. In L.McNally and C.Kennedy, eds., *Adjectives and Adverbs.Syntax, Semantics, and Discourse*. 16-42. Oxford: Oxford University Press.
- Takamine, Kaori. 2010. *The postpositional hierarchy and its mapping to clause structure in Japanese*. Ph.D. Dissertation, University of Tromsø. <http://www.ub.uit.no/munin/bitstream/10037/2465/2/thesis.pdf>
- Tamura, Suzuko. 2000. *The Ainu language*. Tokyo: Sanseido.
- Testelec, Yakov G. 1998. Word Order in Daghestanian Languages. In A.Siewierska, ed., *Constituent Order in the Languages of Europe*. 257-280. Berlin: Mouton de Gruyter.
- Thomas, Michael F. 2014. *A Grammar of Sakun (Sukur)*. Ph.D. Dissertation, University of Colorado. [http://scholar.colorado.edu/cgi/viewcontent.cgi?article=1004&context=ling\\_gradetds](http://scholar.colorado.edu/cgi/viewcontent.cgi?article=1004&context=ling_gradetds)
- Thompson, Chad L. 2000. Iconicity and Word Order in Koyukon Athabaskan. In T.B.Fernald and P.R.Platero, eds., *The Athabaskan languages: perspectives on a native American language family*. Oxford: Oxford University Press.
- Tomlin, Russell S. 1986. *Basic Word Order. Functional Principles*. London: Croom Helm.
- Tosco, Mauro. 1998. A parsing view of inconsistent word order: Articles in Tigre and its relatives. *Linguistic Typology* 2.355-380
- Tryon, Darrell T. 1970. *An introduction to Maranungku (Northern Australia)*. Canberra: The Australian National University.
- Vallejos Yopán, Rosa. 2010. *A Grammar of Kokama-Kokamilla*. Ph.D. Dissertation, University of Oregon.
- Vapnarsky, Valentina. 2011. Le yukatek. In E.Bonvini, J.Busuttil and A.Peyraube, eds., *Dictionnaire des Langues*. 1419-1425. Paris: Presses Universitaires de France.
- Vázquez Alvarez, Juan J. 2009. Dos tipos de cláusulas no finitas en chól. Ms., University of Texas at Austin.
- Vennemann, Theo. 1973. Explanation in Syntax. In J.P.Kimball, ed., *Syntax and Semantics. Volume 2*. 1-50. New York: Seminar Press.



- Webelhuth, Gert. 1992. *Principles and Parameters of Syntactic Saturation*. New York: Oxford University Press.
- Westergaard, Marit. 2009. *The Acquisition of Word Order. Micro-cues, information structure, and economy*. Amsterdam: Benjamins.
- Witzlack-Makarevich, Alena. 2006. *Aspects of Information Structure in Richtersveld Nama*. M.A. Thesis, Universität Leipzig. [http://www.uni-leipzig.de/~witzlack/MA\\_final.pdf](http://www.uni-leipzig.de/~witzlack/MA_final.pdf)
- Wurmbrand, Susi. 2004. West Germanic verb clusters: The empirical domain. In K.É.Kiss and H. van Riemsdijk, eds., *Verb clusters: A study of Hungarian, German, and Dutch*. 43-85. Amsterdam: Benjamins.
- Yang, Charles. 2005. On Productivity. *Linguistic Variation Yearbook* 5.333-370
- Yang, Charles. 2015. Negative knowledge from positive evidence. *Language* 91.938-953
- Yasugi, Yoshiho. 1995. *Native Middle American Languages. An Areal-Typological Perspective*. Osaka: National Museum of Ethnology. [http://ir.minpaku.ac.jp/dspace/bitstream/10502/740/1/SES39\\_001.pdf](http://ir.minpaku.ac.jp/dspace/bitstream/10502/740/1/SES39_001.pdf)
- Yoshioka, Noboru. 2012. *A reference grammar of Eastern Burushaski*. Ph.D. Dissertation, Tokyo University of Foreign Studies. <http://repository.tufs.ac.jp/handle/10108/72148>
- Zegrean, Iulia. 2012a. *Balkan Romance: Aspects on the Syntax of Istro-Romanian*. Ph.D. Dissertation. Ca' Foscari University, Venice. <http://lear.unive.it/handle/10278/2984>
- Zegrean, Iulia. 2012b. On the Functional Layer of Modified Nouns in Istro-Romanian. In K.K. Grohmann, A.Shelkovaya and D.Zoumbalides, eds., *Linguists of Tomorrow: Selected Papers from the 1st Cyprus Postgraduate Conference in Theoretical and Applied Linguistics*. 232-259. Newcastle upon Tyne: Cambridge Scholars Publishing.
- Zwart, Jan-Wouter. 2005. Some notes on coordination in head-final languages. *Linguistics in the Netherlands* 2005: 231-242
- Zwart, Jan-Wouter. 2009. Relevance of typology to minimalist inquiry. *Lingua* 119.1589–1606