

# Word Order Typology. A Change of Perspective.\*

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## 1. Introduction.

In much work stemming from Greenberg (1963), the order of the direct object w.r.t. the verb has been claimed to correlate (to varying degrees) with the relative order of many other pairs of elements, among which those in (1):

(1)	VO	OV
a.	P > DP (Prepositional Phrases)	DP > P (Postpositional Phrases)
b.	Aux > V	V > Aux
c.	copula > predicate	predicate > copula
d.	V > manner adverb	manner adverb > V
e.	(more) A (than) ‘Standard of Comparison’	‘Standard of Comparison’ (than) A (more)
f.	A > PP	PP > A
g.	V > complement/adjunct PP	adjunct/complement PP > V

Despite the feeling that we are confronting some *great underlying ground-plan*, to borrow one of Sapir’s (1949<sup>2</sup>, 144) expressions, and despite the numerous attempts to uncover the principle(s) governing it<sup>1</sup>, the concomitant demand of empirical accuracy with respect to actual languages has reduced all of the correlations proposed to the state of mere tendencies. In particular, with the increase of the number of languages studied, the neat mirror-image picture emerging from some of the works mentioned in note 1 has come to be drastically redressed.<sup>2</sup>

As shown in Dryer (1991, 1992a, 2007), virtually all *bidirectional* correlations, like those in (1), have exceptions. For example, the existence of OV languages with prepositions, and VO languages with postpositions (Dryer 1991, 448, and 452; 2007, 87f) is an exception to (1)a.<sup>3</sup>

Mande languages (Kastenholz 2003, Nikitina 2009) and some Chibchan languages (Ngäbére – Young and Givón 1990), with the order **SAuxOVX**, are an exception to (1)b, as is **VSO** Island

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<sup>1</sup> Cf. Greenberg’s (1963) *modifier > modified* vs. *modified > modifier tendency* (as well as his notion of *harmonic relations*) (p.100); Lehmann’s (1973) *Fundamental Principle of Placement*; Vennemann’s (1973) *Principle of natural serialization*; Sanders’ (1975) *Invariant ordering hypothesis*; Antinucci’s (1977, chapter 1) *Principle of left- vs. rightward linearization*; Keenan’s (1978b, 188) *Serialization and Dissimilation Principles*; Hawkins’ (1983) *Principle of Cross-Category Harmony*; Chomsky’s (1964, 123, fn. 9; 1995, 35) and Dryer’s (1992a) *left vs. right branching*; Dryer’s (2007) and others’ “*head-finality*” vs. “*head-initiality*”.

<sup>2</sup> Greenberg’s (1963) decision to resort to finer distinctions than VO vs. OV (such as VSO, SVO, rigid SOV and non-rigid SOV), and Hawkins’ formulation of complex implicational statements (e.g., Postp ⊃ (NAdj ⊃ NGen), of the type of Greenberg’s Universal 5) were attempts to achieve exceptionless universals by narrowing down the number of languages to be checked for conformity to some statement. These too, however, have turned out to have exceptions. See Dryer (2007, §9) for an exception to Greenberg’s Universal 5, which was given as absolute, and Payne (1985), Campbell, Bubenik and Saxon (1988), Dryer (1997, 141) and LaPolla (2002, §2) for exceptions to Hawkins’s (1983) absolute complex implicational universals. Despite their non-universality and their more restricted scope, such complex implicational universals may nonetheless provide important clues as to which harmonic properties are more stable, and which more prone to be relaxed.

<sup>3</sup> Also see the Konstanz Universals Archive, no. 55, Whitman (2008, 238), and references cited there. Postpositions are even attested in a number of VSO languages: Guajajara, Nomatsiguenga, and Yagua (Payne 1985, 465, Campbell, Bubenik and Saxon 1988, 212ff), Cora and Tepehuán (Pickett 1983, 549).

Carib (Northern Maipuran - Heine 1993,133, note 4) with inflected auxiliaries following the main verb.<sup>4</sup> OV Ngäbéré, with the copula preceding the predicate, is also an exception to (1)c, as is VO Wembawemba (Pama-Nyungan) with the copula following the predicate (Dryer 1992a,94). Angami, an OV Tibeto-Burman language, with manner adverbs following the V (Ghiridar 1980,85, cited in Dryer 2007,§2.2; Patnaik 1996,72) is an exception to (1)d. Chinese (VO with Standard >Adjective) is an exception to (1)e. And so on. Even the second type of correlations, *unidirectional* ones, like that in (2),<sup>5</sup> are not exempt from exceptions. Mandarin, Cantonese, Hakka, Bai (Sinitic), Amis (Formosan - Austronesian) (Dryer 2005a), and Asia Minor Greek (Campbell, Bubenik and Saxon 1988,215), are VO and RelN.

(2) N(P) and Relative clause (Dryer 1992a,86; Cinque 2005a)

a  $VO \supset NRel$

b  $RelN \supset OV$

Finally, other word order pairs have seemingly turned out to be *no correlation pairs* at all; for example, those in (3):

(3)a Adjectives wrt N (Dryer 1988a, 1992a,§3.1)

b Numerals wrt N (Dryer 2007,§7.3)

c Demonstratives wrt N (Dryer 1992a,§3.2, 2007,§7.2)

d Intensifiers wrt Adjectives (Dryer 1992a,§3.3, 2007,§7.6; Patnaik 1996,70)

e Negative particles wrt Verbs (Dahl 1979, Dryer 1988b,1992a,§3.4,2007,§7.4; LaPolla 2002,209)

f Tense/aspect particles wrt Verbs (Dryer 1992a,§3.5, 2007,§7.5)

So, this viewpoint (which strives for absolute formulations that may capture the underlying ground-plan and avoid at the same time being falsified by actual languages) leads at best to the scarcely enlightening picture of the three cases just seen (non exceptionless bidirectional correlations, non exceptionless unidirectional correlations, and no correlations at all); in other words, to at most statistical tendencies (however important they may be).

## 2. A change of perspective.

We may wonder whether something would change if we reversed this perspective; not by asking what the *predominant* correlates of OV and VO orders in actual languages are, but by asking what precisely the harmonic word order types are that we can theoretically reconstruct, and to what extent each language (or subset of languages) departs from them.

<sup>4</sup> To judge from Taylor (1952,162) the order is V Aux O. Also see the Konstanz Universals Archive (<http://typo.uni-konstanz.de/archive/>), no. 501, where it is reported that “the only VO language in Dryer's sample from Australia-New Guinea area has V Aux order”. Greenberg (1963, Appendix I and note 15) gives Guaraní as SVO and as having postverbal auxiliaries (although they may be particles, intervening between the V and the object-Tonhauser 2006, 273).

<sup>5</sup> (2) cannot be strengthened to a bidirectional correlation, by adding  $NRel \supset VO$  and  $OV \supset RelN$ , because OV languages distribute evenly between RelN and NRel (Dryer 2005a gives 111 languages as OV and RelN and 95 languages as OV and NRel). Similarly, the implications in (i)a-b concerning complement (and adverbial) clauses and subordinators cannot be strengthened to a bidirectional correlation by adding those in (ii)a-b as [IP C] V and V [C IP] are equally represented in OV languages (Dryer 1980; Hawkins 1990,225,256; Dryer 1992a, §§4.3 and 4.5,1992b; Diessel 2001; Kayne 2005a,227):

(i)a  $VO \supset C\ IP$       b  $IP\ C \supset OV$

(ii)a  $C\ IP \supset VO$       b  $OV \supset IP\ C$

Exceptions to (i) are mentioned below in note 31 and in section 7.

This change of perspective entails viewing the “harmonic” orders as abstract and exceptionless, and independent of actual languages, though no less real<sup>6</sup> (below I will suggest that these harmonic orders should not be regarded as primitives, but rather as derived from a universal structure of Merge reflecting the relative scope relations of the elements involved, via two distinct movement options, with actual languages departing to varying degrees from the “ideal” derivations). This way of looking at things has a number of implications, some apparently undesirable (under the strongest interpretation):

(4)a Every word order pair belongs to one or the other of the harmonic word order types. In other words, **there are no non-correlation pairs**.

b Each correlation pair is related **bidirectionally** to every other correlation pair of its harmonic type ( $\text{Dem N} \supset \text{DP P}$  and  $\text{DP P} \supset \text{Dem N}$ .  $\text{Dem N} \supset \text{V Aux}$  and  $\text{V Aux} \supset \text{Dem N}$ , etc.). In other words, **there are no merely unidirectional correlations**.

c It should in principle be possible to measure the distance of a certain language (or group of languages) from one of the abstract harmonic types (how much it “leaks”, in another of Sapir’s expressions<sup>7</sup>), thus leading to a finer-grained typology than just VO and OV.<sup>8</sup>

d More interestingly, perhaps, such measuring should lead one to try and determine which correlation pairs are more stable and which more prone to be relaxed, possibly along a markedness scale, which in turn should correlate with the number of the languages belonging to that (sub)type (though it is not to be excluded that each language will ultimately represent a subtype of its own, of some higher order (sub)type).<sup>9</sup>

<sup>6</sup> This perspective is closer to Vennemann’s later (1976) interpretation of his Natural Serialization Principle than to his earlier one (1973). For discussion of the evolution of Vennemann’s thought, see Hawkins’s (1983, §2.3 to §2.6).

<sup>7</sup> “[...] no language is tyrannically consistent. All grammars leak.” (Sapir 1949<sup>2</sup>,40).

<sup>8</sup> The word order types are indefinitely more numerous than the VO/OV types, depending on the number of properties and subproperties taken into consideration. For example, in Greenberg’s (1963) larger sample of 142 languages, the 4 word order properties chosen (VSO/SVO/SOV; Pr/Po; NG/GN; NA/AN) yield as attested 11 VO types (with different proportions of languages). See his Appendix II. More VO types have in the meantime been documented (see, for example, Campbell, Bubenik and Saxon 1988), and undoubtedly many more types would have to be countenanced if the number of word order properties considered were to be augmented (Cf. Siewierska 1988,20 for discussion of this point). The SVO variant of VO differs in certain respects from the V-initial variant of VO (i.e. VSO and VOS). But even the SVO type is not at all homogeneous. In addition to the different subtypes in Greenberg’s (1963,109) Appendix II, one finds extensive variation in virtually every word order pair. For example, in the relatively minor word order pair of proper noun/common noun, Bulgarian, Chinese, English, Greek, Italian, and Norwegian all differ in the way they linearize the various combinations of common nouns (“year”, “hour”, “month”, “title”, “street”, “island”, “mountain”, “river”, etc.) and proper nouns (with Bulgarian, Chinese, and Norwegian displaying more “head-final” orders than German). See Cinque (2009b).

A comparable non-homogeneity is found in the other orders: VSO (see Kaplan 1991, Lancioni 1995, Polinsky 1997, Tallerman 1998,628, Broadwell 2005, Macaulay 2005, Otsuka 2005, Roberts 2005,157), VOS (see Polinsky 1997, Aldridge 2006, Holmer 2006,103, among others), and SOV (cf. Greenberg’s 1963 five classes of SOV languages in his Appendix II). Given the different subtypes existing in each of these orders, and presumably in languages with OVS and OSV orders (see Campbell, Bubenik, and Saxon 1988), to the limit one type for each language, unqualified reference to VO and OV is bound to lead to at most statistical tendencies, as noted.

Such tendencies can be seen as intermediate levels of generalization between the abstract level of the “ideal” harmonic types and the level characterizing the typological properties of each single language.

<sup>9</sup> To the effect that possibly no language will prove to be fully “harmonic”, or “consistent”. Cf. Sapir’s comment in note 7, as well as Smith (1981,40), Kroch (2001,706), and Kayne (1994,xv; 2005a,220).

To take one illustrative example from the literature, Table 1, from Hawkins (1979,645) (adapted from Mallinson and Blake 1981,416), shows that there is a decline in the number of attested languages (in Hawkins' sample) the more the language deviates from the word order type:<sup>10</sup>

SOV	Postposition	AN	GN	(consistent)	80 languages
SOV	Postposition	NA	GN	(one deviation)	50 languages
SOV	Postposition	NA	NG	(two deviations)	11 languages

**Table 1**

If we take this general perspective, then the first task should consist in determining precisely what the abstract harmonic orders are.

### 3.The two abstract harmonic orders.

A complete reconstruction of the two abstract harmonic orders is out of the question here. I will present a fragment of these orders merely to illustrate the logic of the approach. The harmonic orders can to a large extent be gathered from the correlations pairs attributed in the literature to OV and VO languages (in the Appendix, I list a number of such pairs, with an indication of their source, forcing, as noted, their bidirectionality even when this flies in the face of the empirical data, as with the order of noun and adjective in "head-final" languages). These orders should be seen as ideal mirror-image orders drawn from the most polarized language types (rigid SOV and rigid VOS languages, which are the best approximations to the ideal orders, but mostly still not quite coincident with the ideal orders).<sup>11</sup>

What renders the task more difficult is the fact that correlations pairs, though important, do not suffice to reconstruct the "ideal" harmonic orders. They fall short of giving the *total* order of functional heads, arguments, circumstantials and modifiers of the clause, and of the other major phrases in "head-initial" and "head-final" languages.<sup>12</sup> Exclusive focus on correlation pairs can even mislead one into attributing to the same type word order types that should be kept distinct. To take one example, if one considers only the orders of *pairs* of elements like NA/AN, NNum/NumN, NDem/DemN, without considering their *total* order, one is led to put three languages like Lalo (Tibeto-Burman – Björverud 1998,116ff), which has N A Dem Num, Luo (Nilotic – Heine 1981),

<sup>10</sup> It is not really important if samples larger than Hawkins's were to redress, or even subvert, some of the figures of table 1 (see for example the figures of these correlations in Dryer's 1988; 1992a, §3.1; 2005b). What matters here is the spirit of the approach suggested by Hawkins.

<sup>11</sup> Even Japanese, one of the most "rigid" SOV languages, displays some non "head-final" characteristics. For example, one postnominal numeral classifier modification (see (i), and Tsunoda 1990, Choi 2005 for the same property in Korean), head-medial complex numbers (Bender 2002), and the arguably initial heads *wa* and *ga* (Kayne 1994,143, 2005,220; Whitman 2001,§2):

(i) Neko ni hiki wo kau (Siegel and Bender 2004, §3.1.4)

cat two NUMCL ACC raise

`(I) am raising two cats.'

Japanese also has one *common noun* > *proper noun* order which is typical of "head-initial" languages (Cinque 2009b): *number* > *name of number* instead of *name of number* > *number*: bangoo roku (number six) (example provided by Yoshio Endo, p.c.). Lehmann (1978b,400) and Smith (1981,40) mention additional non "head-final" characteristics of Japanese.

A fairly rigid VOS language like Seediq (Formosan - Austronesian) also displays some non "head-initial" characteristics (among which a final subordinator: *han* 'when/while' - Holmer 1996,59f; see the example (43)a below).

<sup>12</sup> This is one aspect of traditional word order typology which appears particularly wanting. Among the rare exceptions which consider more than just pairs of elements are, for the nominal phrase, Greenberg's (1963) Universals 18 and 20 on the order of demonstratives, numerals, adjectives and noun, Hetzron (1978), Plank (2006), and Lahiri and Plank (2009,§7.2) on the order of various classes of adjectives, and, for the clause, Boisson's (1981) discussion of the relative order of Manner, Location and Time adverbials. Needless to say, the elements to be taken into considerations for the clause and the other phrases are considerably more numerous.

which has N Num A Dem, and Gungbe (Niger-Congo - Aboh 2004, chapter 3), which has N A Num Dem, in one and the same class, as all of them are: NA, NNum, NDem. Yet, while the order found in Gungbe is the overwhelmingly prevalent postnominal order of these elements, the orders found in Lalo and Luo are quite rare in the languages of the world (cf. Cinque 2005b, 319f). Thus one runs the risk of not singling out the correct subtypes and of misrepresenting the number of languages belonging to each. Cases like this, where attention is limited to lists of word order pairs of elements, rather than to the complete sequence of these elements in each phrase, are unfortunately the norm. For the two abstract harmonic types I will use the widespread terms of “head-initial” and “head-final” even though these are, strictly speaking, misnomers; in many cases it is a projection of a head rather than a head which is initial or final. This appears to be the case with the Head of a relative clause, which may (arguably, must) contain more than just the head N (cf. Kayne 1994, 154fn.13; 2005, 119f; Cinque 2005a, note 11)):

(5) The [two or three recently arrived sick immigrants] that each doctor had to visit

And the same may be true of the verb in relation to subordinate clauses. It too can, possibly must, head a phrase containing more than just the lexical V:

(6)a He [convinced us] that he was the right person  
     c They [doubt (it)] that you will go  
     b I [went home] before they arrived

Nonetheless, as we will see, phrases containing the lexical nucleus (NP, VP, ...) and the (X-bar) functional heads of the extended projections of the lexical nucleus align similarly.

### 3.1 The “head-initial” type.

The generalization concerning the harmonic “head-initial” word order type appears to be that **all higher (functional) heads precede VP/NP in their order of Merge, and phrasal specifiers (arguments, circumstantials, and modifiers) follow, in an order which is the reverse of their order of Merge**. See (7) and (8), which contain some suggestive examples (I postpone consideration of arguments and circumstantials):

(7)a C° T° Asp° V(P) AdvP<sub>3</sub> AdvP<sub>2</sub> AdvP<sub>1</sub><sup>13</sup>  
     b **Tsy** manasa tsara foana intsony mihitsy Rakoto<sup>14</sup>  
        **Neg Pres.AT.** wash well always no longer at all Rakoto  
        ‘Rakoto does not wash at all any longer always well’  
     c **Mae** hi **wedi** bod **yn** socian am dridiau (Welsh - Celtic, VSO - Cf. Tallerman 1998, 31)  
        **be:PRS 3FSG PFV** be **PROG** soak for three.days  
        ‘It’s already been soaking for three days’

<sup>13</sup> 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.”, and Carnie and Guilfoyle’s (2000b, 10) claim 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, etc. predicate following the preverbal particles in a number of V-initial languages, see Massam (2000, §2), Lee (2000), Cole and Hermon (2008).

<sup>14</sup> Malagasy (Austronesian, VOS, cf. Rackowski and Travis 2000, §1). Also see Koopman (2005) on Maasai V adv S O.

d. **Ñjé** Adé **yòò máa** wá ní ìròlẹ́? (Yoruba - Niger-Congo – SVO, O. Ajíbóyè, p.c.)

Q Ade FUT HAB come in evening

‘Will Ade be coming in the evenings?’

e. **ye uxe** dheya **wada** gmeeguy di? (Seediq -Austronesian, Formosan, VOS - Lin 2005,116)

Yes/No Neg. 3pl Aux<sub>Past</sub> steal AF Part

‘Have/Had they stolen (the basket of pears)?’

(8)a Art° PL° N(P) AP<sub>2</sub> AP<sub>1</sub> NumP DemP<sup>15</sup>

b **àwon** okùnrin méta yĩ (Yoruba - Niger-Congo, SVO - Dryer 1989a,875)<sup>16</sup>

PL man three this

‘these three men’

c **ea pi** kaarloo neey

(Yapese - Austronesian, VSO - Dryer 1989:868)

ART PL car this

‘these cars’

### 3.2 The “head-final” type.

The generalization concerning the “head-final” word order type is that **all higher (functional) heads follow the lexical VP/NP in an order which is the reverse of the order of Merge, and phrasal specifiers (arguments, circumstantials, and modifiers) precede VP/NP in their order of Merge**:

(9)a AdvP<sub>1</sub> AdvP<sub>2</sub> AdvP<sub>3</sub> V° Asp° T° C°

b[ngasā shia natu][yingtung-tunga] ke pai **nuam hī** (Siyin Chin-Tibeto-Burman, SOV- Dryer 2007,120)

fish fish PURP early.in.morning I go **want** IND

‘I want to go out early in the morning to fish’

c yer ngeti tyapat **me tu**

(Maranungku – Australian, Daly, SOV – Tryon 1970,46)

tomorrow I sit swim **PROG FUT**

‘Tomorrow I shall be swimming’

(10) DemP NumP AP<sub>1</sub> AP<sub>2</sub> N° PL° Art°

[ Kí tu?lu **tem ci** ] nuŋ (Ao - Tibeto-Burman, SOV - Gurubasave Gowda 1975,65)

house big **PL the** in

‘in the big houses’

**3.3 The over-arching generalization.** The property which both the “head-initial” and the “head-final” word orders have in common is that whatever precedes the VP/NP reflects the order of Merge, and whatever follows is in the mirror-image of the order of Merge. In actual languages the mirror-image order found postverbally and postnominally is in fact just the prevalent order (for reasons discussed in Cinque 2005b, 2009). Also see Kiss (2008).

### 4. Deriving the two abstract harmonic types.

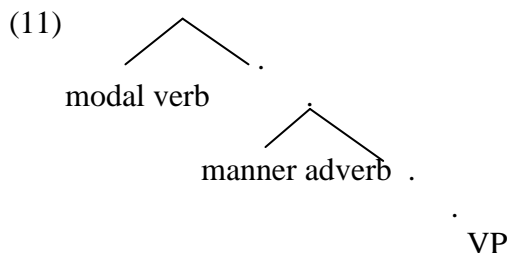
As I said, I take the two abstract (mirror-image) harmonic types to be epiphenomenal. They are the product of the application of two different sets of movement options to one and the same structure

<sup>15</sup> On the order **article** > N in all VOS languages (except Toba Batak), in his sample, see Keenan’s (1978a,G15,p.298). On the order **PL** > N in VO languages, see Dryer (1989a, 1992a, §4.7).

<sup>16</sup> Yoruba postnominal modifiers are a mirror image of (English) prenominal ones: [N A<sub>color</sub> A<sub>size</sub> A<sub>value</sub> Num Dem]. See Ajíbóyè (2005,258).

of Merge, common to all languages, which, as noted, presumably reflects the relative scope of the elements involved.<sup>17</sup>

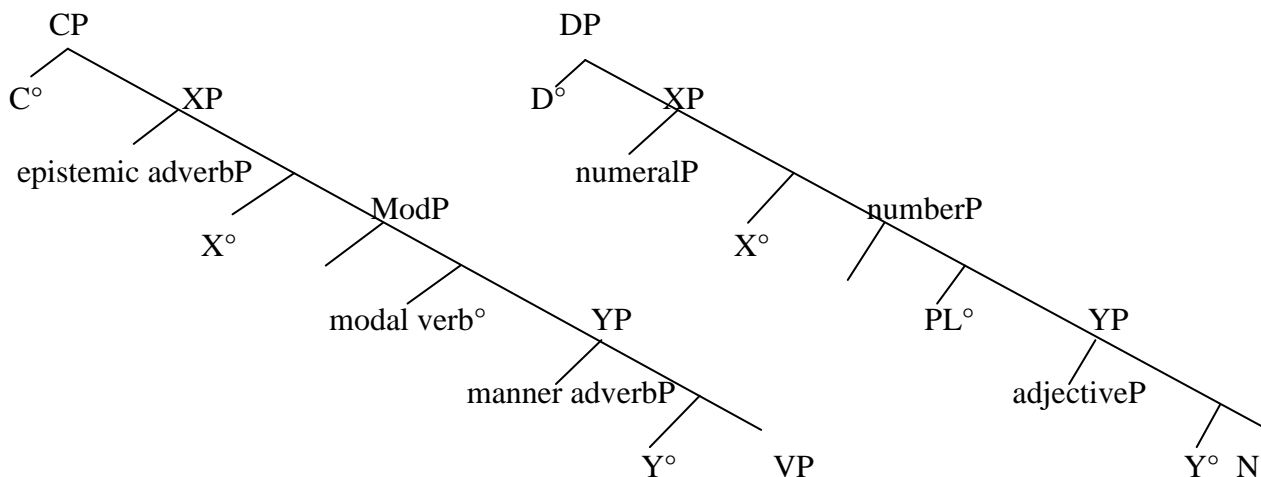
If we want to capture the fact that manner adverbs take scope over the lexical verb whether they precede it (typically in “head-final” languages) or follow it (typically in “head-initial” languages), and that modal (functional) verbs also take scope over the lexical verb (and the manner adverb), whether they come after (typically in “head-final” languages) or before (typically in “head-initial” languages) ( $\text{Adv}_{\text{manner}}$  V Mod in “head-final” languages vs. Mod V  $\text{Adv}_{\text{manner}}$  in “head-initial” languages), neither of the two orders can be taken to be more primitive than the other. Rather, both have to derive from a common structure of Merge that reflects the relative scope of the elements involved, via two different sets of movements:



For the sake of illustration, let me take two very small fragments of the unique structures of Merge of the extended projection of VP (the clause) ((12)a), and of that of NP ((12)b):

(12)a.

b.



I take these 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

<sup>17</sup> A reviewer raised the question whether this is a departure from the position I took in Cinque (1999, chapter 6), where it was claimed that the order of functional projections is part of UG (narrow syntax) and cannot be simply reduced to semantics (understood as the conceptual-intentional interface). That the hierarchical arrangement of the functional heads of the extended projection of VP (the clause), of NP, AP, etc., is compatible with the relative scope of the elements involved was actually assumed in Cinque (1999) too, with one proviso. What should not be given up is the encoding of such heads and projections in narrow syntax, for the simple reason that many more things exist in our conceptual-intentional module than those that receive a grammatical expression in the languages of the world (in UG). As noted there (p.136), the rigid ordering of the functional projections of the clause can apparently be reversed only if one operates across two clauses. Also see Cinque (2006,6), Cinque and Rizzi (2010,65).

specifier positions above VP/NP, to the effect that nothing is merged to the right of V or N, for reasons discussed in Cinque (2009a).<sup>18</sup> (I come back to complements and circumstantials).

It is not really important here to recall the evidence for quite rich ordered sequences of elements in the clause and in each of the other phrases. 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 (heads and adverbial phrases) in the clause (Cinque 1999, 2006), and that of the different functional (including adjectival) projections in the nominal phrase (Scott 2002, Svenonius 2008, Cinque 2005b, 2010).

Having said that, let me return to the overly simplified structures of Merge in (12)a-b to tentatively sketch the kind of consistent types of movements which seem to lead to the two ideal “harmonic” types. As noted, actual languages will depart from these to varying degrees, something that remains to be investigated in detail (and is likely to disclose a lot more variation among languages).<sup>19</sup>

To briefly give ahead the basic idea, the movement is initiated by the nucleus (VP, NP, etc., “the initial engine”), and is taken over by each higher functional head endowed with the same categorial feature, so it seems (in the case of VP: auxiliaries, modals, aspectual verbs, certain particles, complementizers,...). If the raising takes place via pied piping of the *whose*-picture type (Cinque 2005b), we have the “head-initial” order; if it takes place via pied piping of the picture-of-*whom* type, we have the “head-final” order.

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

#### 4.1 The “head-initial” type.

Recall the generalization concerning the “head-initial” word order type: **all higher (functional) heads precede VP/NP in their order of Merge, and phrasal specifiers (arguments, circumstantials, and modifiers) follow, in an order which is the reverse of their order of Merge.** See (7)a and (8)a, repeated here (I postpone consideration of arguments and circumstantials):

(7)a C° T° Asp° V(P) AdvP<sub>3</sub> AdvP<sub>2</sub> AdvP<sub>1</sub>

(8)a Art° PL° N(P) AP<sub>2</sub> AP<sub>1</sub> NumP DemP

The orders in (7) and (8) can be achieved if the VP/NP rolls up around the first phrasal specifier (is attracted to the Spec of a functional head above the phrasal specifier – see (13)a), after which it continues with pied piping of the *whose*-picture type (cf. Cinque 2005b) around additional phrasal specifiers, if any (thus reversing their order of Merge). When the VP/NP crosses over a head endowed with the same categorial feature (an auxiliary, a modal, or (certain) tense/mood/aspect particles in the clause, (plural) number in the DP), it is the latter that becomes the “engine” of the movement.<sup>20</sup>

(13)a.

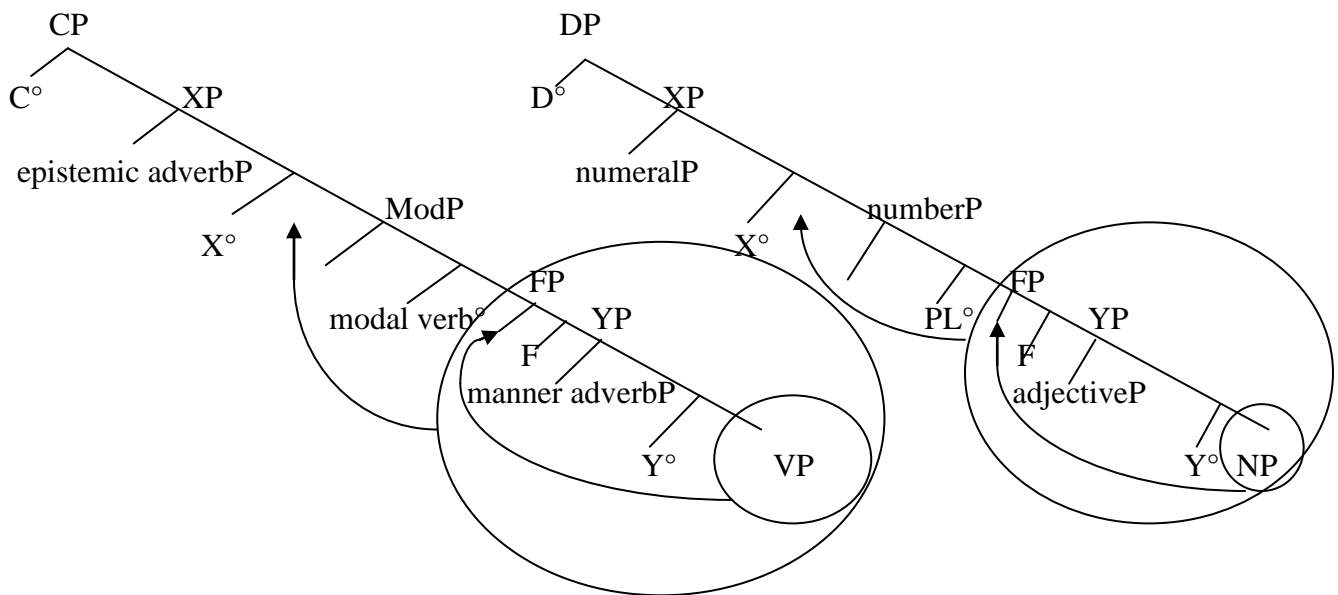
b.

<sup>18</sup> Also see Barbiers (2000) and Kayne (2005a, 215).

<sup>19</sup> I mention just one example from the distribution of attributive adjectives, for which, as noted, there is suggestive evidence that they enter a strict order (see in particular Scott 2002, 114; Cinque 2010). Again, to consider just a subset of these adjectives, the “head-final” order appears to be ‘other’ > quality > size > age > color > nationality > N, and the “head-initial” order its mirror image. Yet, many languages show mixed orders; for example, Welsh (in Willis’s 2006 description), with N A<sub>size</sub> A<sub>color</sub> A<sub>nationality</sub> A<sub>age</sub> A<sub>quality</sub> ‘other’, or, to judge from Kuiper and Oram (1991, 277), Diuxi-Tilantongo Mixtec, with N > color > size > shape, recalling the type of derivations discussed in Cinque (2005b).

<sup>20</sup> For a possible motivation for such movements, see §5 below.

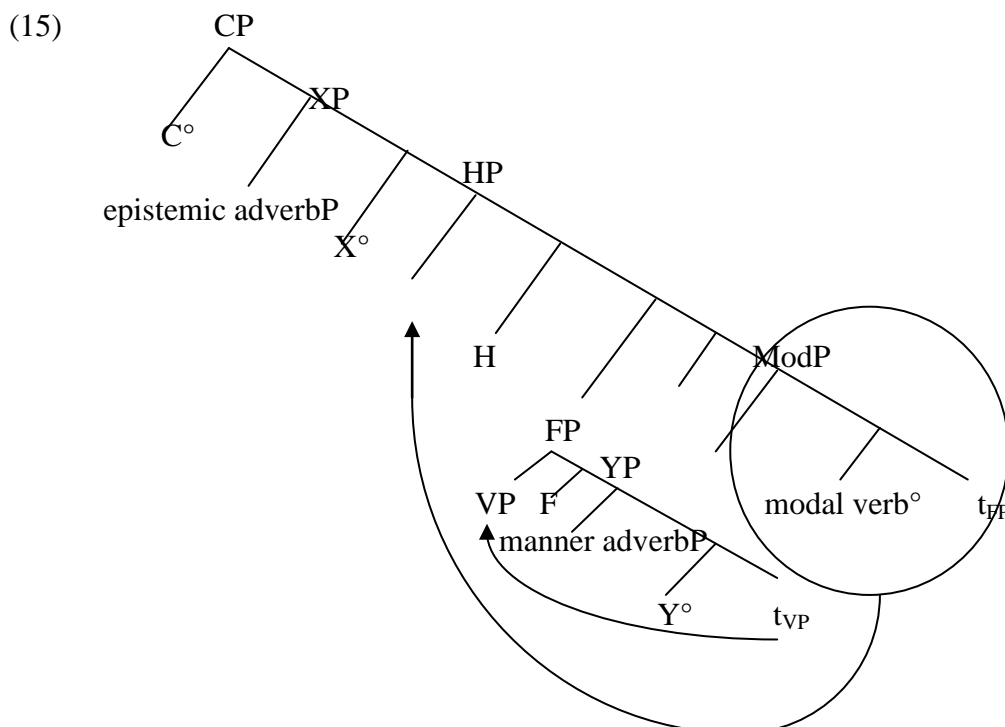




For “head-initial” languages, I will assume, after Kayne (2005, §9.4.5) (also see Koopman and Szabolcsi 2000, Jayeseelan 2010, to appear), that aspectual verbs (but also modals, auxiliaries, and (certain) particles) are crossed over by their complement, after which the insertion of a (possibly covert) complementizer-like preposition attracts the remnant (with the effect of restoring the initial linear order), as shown in (14):

- (14)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>

Applied to (13)a, this gives (15):



As noted, if raising continues (in the *whose*-picture mode), it is the higher ModP that becomes the “engine” of movement, pied piping HP around epistemic adverbP. This yields the overall order C° modal verb° lexical verb manner adverbP epistemic adverbP, which appears to be the order of many verb-initial languages. Cf. the sentence in (16), from VSO Peñoles Mixtec:<sup>21</sup>

- (16) ní šitu ba?a na?i-dě (Daly 1973,15)  
 COMPLETIVE plow well probably-he  
 ‘He probably plowed well’

Subject, complements, and circumstantial DPs, which I take to be merged above VP/NP in the following (partial) hierarchy 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> VP (cf. Cinque 2002; Schweikert 2005a,b; Takamine 2010), and which raise to higher licensing positions, also surface, in “head-initial” languages, in the reverse order (owing to the roll-up derivation):

- (17) V(P) 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>

This is a special case of what we have seen in (13). Here it is to the Spec of a functional head above the licensing position targeted by each DP that the (extended) VP is moved, with pied piping of the *whose*-picture type.

The order in (17) is again tentatively reconstructed from the order of arguments and circumstantials in verb-initial languages (see, for example, Massam 2000,98 on Niuean and Sells 2000,124 on Pangasinan).<sup>22</sup> There may be more than one (specialized) licensing position for each DP, as shown by the Malagasy case in (18), from Rackowski and Travis (2000, §1.3), where the object DP may 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 pied piping of the *whose picture*-type). On the position of subjects wrt adverbs, see §6.1 below.

- (18) 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’

In case a DP has to be licensed also by a (functional) P I will assume, following Kayne (2000,2005), that the P is merged not with the DP directly, but above the licensing (Case) position targeted by the DP; a merger that causes, in “head-initial” languages, attraction of the remnant. See the illustrative derivation in (19) (similarly for IPs and complementizers – see (20)):

- (19)a [...[DP...VP]] (insertion of the licenser and attraction of DP) →  
 b [DP<sub>i</sub> [K°...[ t<sub>i</sub>...VP]]] (insertion of P and attraction of the remnant) →  
 c [[ t<sub>i</sub>...VP]<sub>k</sub> [P [DP<sub>i</sub> [K°...t<sub>k</sub>]]]]

<sup>21</sup> This kind of derivation allows the raising of verbal heads as phrases. This may be welcome for those languages (like Bulgarian) which can move an auxiliary over a higher one, in so called “Long Head Movement”, with no apparent violation of the Head Movement Constraint:

(i) Bili sām t<sub>i</sub> kupil knigata  
 been am bought the book  
 ‘I have allegedly bought the book’

<sup>22</sup> To judge from Schweikert (2005b) and Takamine (2010) circumstantial PPs are actually merged in specific points within the sequence of the adverbs (V(P) ...DP<sub>manner</sub> AdvP<sub>3</sub> ... DP<sub>locative</sub> AdvP<sub>2</sub> AdvP<sub>1</sub> DP<sub>temporal</sub>).

- (20)a [...[IP...VP]] (insertion of the licenser and attraction of IP) →  
 b [IP<sub>i</sub> [K° [...t<sub>i</sub>...VP]]] (insertion of C and attraction of the remnant) →  
 c [...t<sub>i</sub>...VP]<sub>k</sub> [C [IP<sub>i</sub> [K° t<sub>k</sub> ]]]

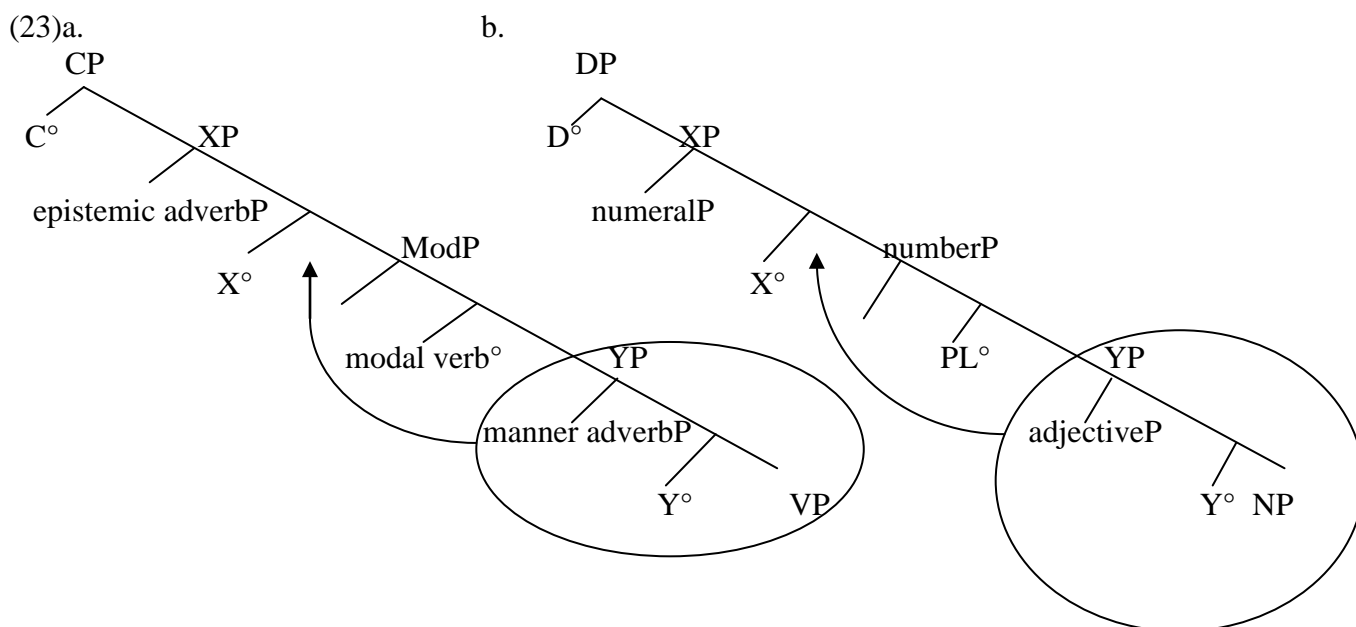
#### 4.2 The “head-final” type.

Recall the generalization concerning the “head-final” word order type, which has **all higher (functional) heads following the lexical VP/NP in an order which is the reverse of the order of Merge, and phrasal specifiers (arguments, circumstantials, and modifiers) preceding VP/NP in their order of Merge**:

(21) AdvP<sub>1</sub> AdvP<sub>2</sub> AdvP<sub>3</sub> V° Asp° T° C°

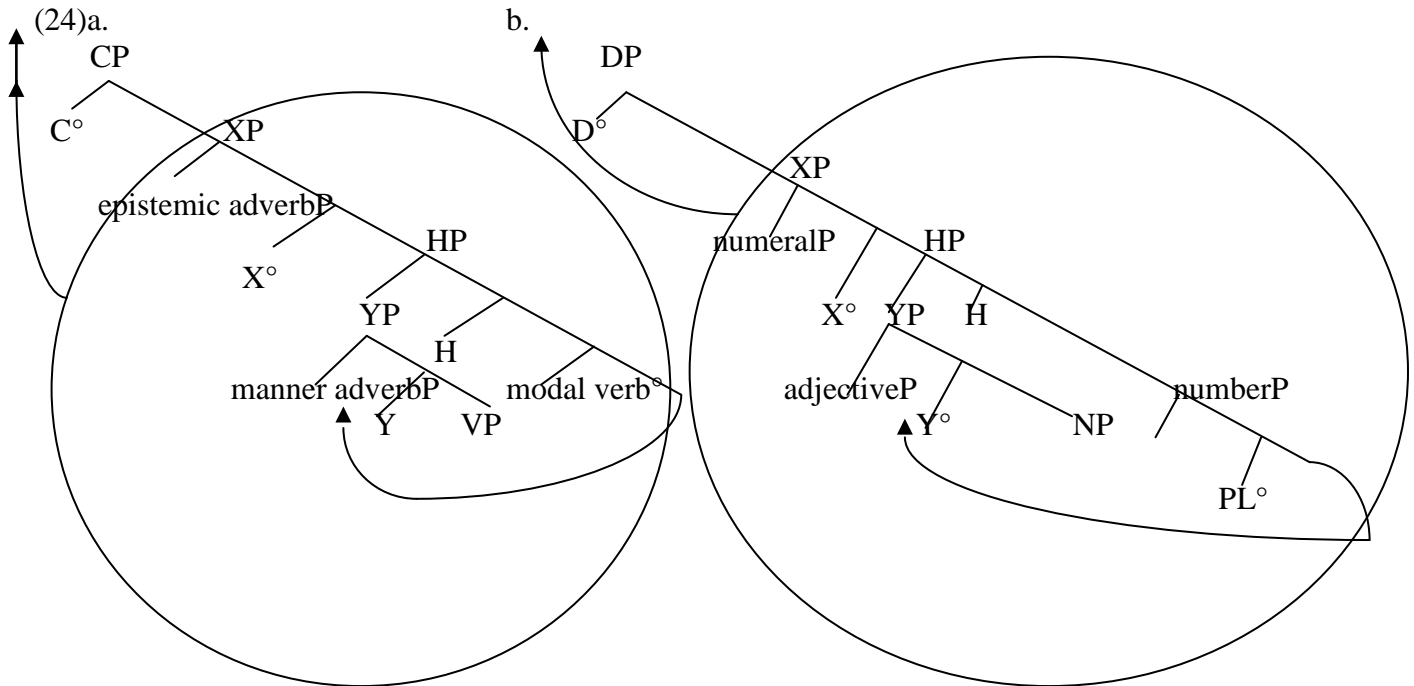
(22) DemP NumP AP<sub>1</sub> AP<sub>2</sub> N° PL° Art°

This can be achieved if (an extended projection of) VP/NP rolls up around the first auxiliary, modal, or particle head (i.e. is attracted to the Spec of a functional head above them), with pied piping of the picture-of-*whom* type (cf. Kayne 1994, §5.5; Cinque 1999, §3.2; Julien 2002, chapter 2). See (23)a-b:



After that, if raising resumes, it is the head that is crossed over by the extended projection of VP/NP which becomes the “engine” of movement, pied piping all the rest (in the picture-of-*whom* mode). See (24)a-b.<sup>23</sup>

<sup>23</sup> In Cinque (2005b) I took the order Dem Num A N not to involve movement; but if the view taken here is correct that both the “head-initial” and the “head-final” orders are derived by movement from a common structure of Merge ([Dem [Num [A [N]]]]), then even Dem Num A N must involve raising of NP with pied piping of the picture-of-*whom* type. This is in fact supported by the fact, noted in Svenonius (2008, §2.5.1) for Norwegian, and in Myler (2009) for Quechua, that while the order of specifiers is Dem Num A N the N is followed by affixes marking plurality and definiteness. This would not be easily understandable if no movement were involved, given that these heads are interspersed among the Dem Num A specifiers, but it becomes understandable under the analysis adopted here, where



Subject, object, and circumstantial DPs, when present, raise to higher licensing positions, and surface in the same relative order in which there were merged:<sup>24</sup>

(25)  $DP_{time} DP_{location} \dots DP_{instrument} \dots DP_{manner} \dots DP_{agent} DP_{goal} DP_{theme} V^\circ$

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 (26) (again the same possibly holds of C’s. See (27)):<sup>25</sup>

(26)a [...[DP...VP]] (insertion of the licenser and attraction of DP) →  
 b [ $DP_i$  [K...[  $t_i$ ...VP]]] (insertion of P and attraction of DP) →  
 c [ $DP_i$  [P [  $t_i$  [K...[  $t_i$ ...VP]]]]]

(27)a [...[IP...VP]] (insertion of the licenser and attraction of IP) →  
 b [ $IP_i$  [K [... $t_i$ ...VP]]] (insertion of C and attraction of IP) →  
 c [ $IP_i$  [C [  $t_i$  [K [... $t_i$ ...VP]]]]]

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

the plural head and the determiner head are crossed over by the NP which pied pipes all the specifiers in the picture-of-*whom* mode (Svenonius and Myler themselves develop very similar analyses).

<sup>24</sup> Order preservation may ultimately be a consequence of Relativized Minimality. See the discussion in Krapova and Cinque (2008,§7) of the analogous order preservation with multiple *wh*-phrases in Bulgarian, which develops certain suggestions of Chomsky’s and Rizzi’s.

<sup>25</sup> The fact that Case morphology typically follows the DP (DP-K-P) rather than the P (DP-P-K) (Kayne 2005a, §9.4.4) can be made compatible with (26) if the DP is merged with Case morphology, which is then checked in Spec,K. The movement of DP from Spec,K to Spec,P is not in contrast with Kayne’s (2005b,§5.6) ban on raising the complement of X to Spec,X. Here it is a subpart of the complement of X that raises.

postpositional phrases are initial in the DP of “head-final” languages (which appears to betray the higher merger of P, obscured in “head-initial” languages by the movement of the remnant):

- (28)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** (Kîtharaka - Muriungi 2006,36)/Dem Num A N **PP** (English, Bulgarian)

## 5. The movement trigger: a speculation

An important question, whose answer remains to be established, is what the force is that is responsible for such movements. In Cinque (2005b,325f; 2010, chapter 6, note 4) I conjectured that the movement of the lexical nucleus of DPs, the NP (and its extensions through pied piping), could be due to the need for its extended projection to inherit the nominal feature of the nucleus, thus fully qualifying as nominal. I will tentatively hold to that conjecture (which directly extends to VP and its extended projection CP). We can think of this as effected by merging above each phrase of the extended projection of the NP/VP that is not marked categorially a functional head,  $F^0$ , whose Spec ultimately comes to have such a nominal, verbal, etc., feature by movement of phrases endowed with such a feature.

## 6. Deviations from the “ideal” derivations.

### 6.1 Some attested deviations from the ideal derivation for “head-initial” languages.

(a) Within VOS languages there appears to be variation as to how high subjects raise. “[A]ll postverbal adverbs are presubject in Malagasy, whereas some of them are postsubject in Seediq” (Holmer 2006,103); in other words subjects do not raise in Seediq higher than all the adverbs (which are also in the reverse order) (Holmer 2006, note 50), so that subjects do not end up last in the clause after raising of the remnant to their left:<sup>26</sup>

- (29)a Malagasy: V AdvP<sub>3</sub> <O> AdvP<sub>2</sub> <O> AdvP<sub>1</sub> <O> S  
 b Seediq: V AdvP<sub>3</sub> <O> AdvP<sub>2</sub> <O> S AdvP<sub>1</sub>

(b) Certain “head-initial” languages (Italian) do not reverse the order of AdvPs, thus yielding  $C^0 T^0 Asp^0 V AdvP_1 AdvP_2 AdvP_3$  instead of (7)a (cf. Cinque 1999, chapters 1 and 2). In other words, the VP (containing just the V) appears to raise by itself (up to a certain point), without pied-piping any other material (thus giving the impression of head-movement).<sup>27</sup>

- (30) Non è stato lavato mica più sempre bene  
 Not is been washed at all any longer always well  
 ‘It wasn’t washed any longer always well’

<sup>26</sup> In many V-initial Formosan languages some classes of “adverbs” precede the lexical V(P). But this may not be a deviation from the harmonic derivation for “head-initial” languages if they are actually (functional verbal) heads, as argued for in a number of works. See, for example, Holmer (1996, §3.3.3.3, 2006), Liu (2003), Tsai and Chang (2003), Hsiao (2004), Wu (2006), Chang (2006, 2009), Li (2007), and Yu (2008). For a similar situation in VSO Maasai, see Koopman 2005.

<sup>27</sup> Aspect and Tense auxiliaries can also raise on their own as (remnant) phrases, if the derivations sketched above prove correct (thus again mimicking head-movement). In this connection Holmer (1996,111f) provides interesting evidence based on the syntax of clitics that a verbal head in VOS Seediq (inflected Vs, tense particles, negation) moves to CP if this is not filled by a complementizer (and no other higher verbal head is present). This evidence is compatible, as far as I can tell, with the verbal heads moving as remnant phrases. In other V-initial languages the verbal heads apparently do not raise to C. See Roberts (2005,§1.2) and references cited there.

(c) Certain “head-initial” languages show the order: V DP P

- (31)a Savîli ááni váík ímai [giñ-ooñí-ga viitári] (Northern Tepehuan, VSO – Uto-Aztecan)<sup>28</sup>  
 bought I three squash [my-wife-POSSD for]  
 ‘I bought three squash for my wife’

Thinking of Kayne (2000, 2005), I take such cases to involve the derivation of postpositions as in “head-final” languages (cf. (26)) plus the (more marked) merger of a higher (silent) P, which causes the remnant to raise to its Spec (as indicated in (32) with English glosses):

- (32)a I [my-wife-POSSD] [three squash] [bought] raising of VP [bought] →  
 b [bought] I [my-wife-POSSD] [three squash] t Merge of ‘for’ and attraction of [my-wife-POSSD] →  
 c [my-wife-POSSD] for [bought] I t [three squash] t Merge of silent P and attraction of the remnant →  
 d [bought] I t [three squash] t P [my-wife-POSSD] for

In a number of languages the two attracting P heads are both pronounced. See the case of the Iranian languages in (33):

- (33)a Lîstika bi navê “Rojnivîska Dînekî” **ji aliyê** Gogol **ve** hatiye nivîsandin (Kurmanji Kurdish)<sup>29</sup>  
 The play named “Rojnivîska Dînekî” **by** Gogol **by** was written  
 b **bi wan re** (Kurmanji Kurdish –Thackston 2006a,19)  
 with *them* with ‘with them’  
 c **lagal min’ â** (Sorani Kurdish - Thackston 2006b,20)  
 with me with ‘with me’

## 6.2 Some attested deviations from the “ideal” derivation for “head-final” languages.

(a) In certain “head-final” languages (Hindi – Mahajan 1989,225) the lexical V and the auxiliaries can be separated by the negation and (certain) adverbs (which suggests that the raising of the projection hosting the lexical verb may target a position above some AdvPs).

(b) In certain “head-final” languages the raising is not total, with the effect that some of the highest heads remain initial (for example, in Punjabi (Indo-Aryan), the Yes/No Question head *kii* is only

<sup>28</sup> From Dryer (2007,88). Other Uto-Aztecan VSO languages where the object of the adposition may precede it (‘DP with’; ‘DP from’) are Papago (Tohono O’odham – Saxton 1982,189), and Cora (Casad 1984,238).

The same V DP P order is found in certain OV languages. See (i), from Wan (Mande - Nikitina 2009, §3.2):

(i) ã zō [blè yā]<sub>PP</sub> [kōŋ gó]<sub>PP</sub>  
 they came [quickness with] [village in]  
 ‘They quickly came to the village’

Like Mande are some Nilo-Saharan languages (Ngiti – Lojenga 1994,304).

<sup>29</sup> “It is possible to express the doer of the action by using a complex circumposition **ji aliyê.....ve** in front of the helping verb. This is really only used in more formal styles of written Kurdish.”

([www.lingfil.uu.se/kurser/detaljschema/vt09/kurmanji\\_naetkurslesson\\_9.doc](http://www.lingfil.uu.se/kurser/detaljschema/vt09/kurmanji_naetkurslesson_9.doc))

“Certain prepositions, in particular the prepositions *ba* ‘in, at,’ *da* ‘to, in, into’ and *la* ‘by, to, in, at’ and ‘from,’ occur as circumpositions that envelop the complement” (Thackston 2006b,20).

Also see the circumposition: *az . . . dâ* “from” in Ardestani (an Iranian language, cited in

<http://www.iranica.com/newsite/index.isc?Article=http://www.iranica.com/newsite/articles/v2f4/v2f4a027.html>).

initial – Davison 2007,180; as are the illocutionary force markers of SOV Nama (Khoisan)-  
<http://celaeno.phonetics.cornell.edu/khoisan/nama/nama.htm>))

(c) In certain “head-final” languages there is attraction of phrases to the Spec of a (silent) C head followed by merger of another (overt) C head that fails to attract the same phrases or the remnant:

- (34)[**kan** [ kalēsa gale]] C namtičča an arge (Galla (Oromo)-Mallinson and Blake 1981,289)  
 Rel yesterday arrived(finite) man-def I saw  
 ‘I saw the man that arrived yesterday’

### 6.3. Unattested (or rare) deviations from the ideal derivations.

While there are various deviations from the ideal orders, as noted, it seems that some types of deviations are never (or almost never) found. So, for example, as Steele (1978,42) points out, (35)d is apparently unattested<sup>30</sup>, in contrast to the attested “harmonic” orders (35)a-b and the attested disharmonic order (35)c (also see Dryer 1996,1059; Kayne 2005a, §9.3.2; and the Konstanz Universals Archive, no.’s 1382 and 1553):

- (35)a Aux [V O]  
 b [O V] Aux  
 c Aux [O V]  
 d \*[V O] Aux

Similarly, as observed in Dryer (1992a,§4.3, 2009,§5), (36)a-c are all attested, but (36)d is seemingly never found (at least with complement CPs):<sup>31</sup>

- (36)a C [V O]  
 b [O V] C  
 c C [O V]  
 d \*[V O] C

These and similar patterns have been brought in Holmberg (2000), Biberauer, Holmberg and Roberts (2008a,b,2009,2010) under a general constraint, the Final-over-Final-Constraint (FOFC). They correctly observe that the constraint is rigidly operative within the extended projection of a certain category, V or N (namely with heads sharing the same categorial feature), but is not as rigidly operative across the extended projections of different categories.

<sup>30</sup> “No language with SVO or VSO basic order will have a clause final auxiliary”. The cases reported in the literature mentioned above in §1 appear to have a postverbal, but not clause final, auxiliary.

<sup>31</sup> See Dryer’s (2009,199) table (i), and the references in note 5 above:

(i)	Africa	Eurasia	SEAsia&Oc	Aus-NewGui	NAmer	SAmer	Total	#Lgs
a. OV&FinalComp	2	5	3	1	2	1	14	27
b. OV&InitComp	6	4	1	3	0	0	14	22
c. VO&FinalComp	0	0	0	0	0	0	0	0
d. VO&InitComp	23	9	13	4	10	4	63	140

One language apparently instantiating (i)c (i.e. (34)d) is however East !Xóõ (Khoisan). Güldemann (2004,7), reports a sentence from Traill (1994,17) which exemplifies this order (confirming in personal communication that the language indeed is an exception to the supposed universal SVO → initial complementizer):

- (ii) *n̄ n̄ bà ʔán s̄án /nā-e !nūle t̄e*  
 1S ? ?IPFV wish:1S see-3 country.3 COMP  
 ‘I want to see the country’

Whether the FOFC is an absolute constraint, or only a very strong tendency, (in either case an important finding) is a point that remains to be ascertained (see the discussion of certain apparent counterexamples in Biberauer, Holmberg and Roberts 2008a,b, 2009 and Sheehan 2009, and the VO languages with final complementizers mentioned in note 31 and below in section 7). Be it as it may, it would in any event be interesting to derive it from the general properties of the theory which tries to derive the word order types (here the two sets of movement options for “head-initial” and “head-final” languages).<sup>32</sup> Let’s consider (35) as an example. (35)a and b are straightforwardly derived by applying consistently the movement options sketched above for the ideal “head-initial” and “head-final” languages (cf. (37) and (38), respectively):

(37) derivation for [Aux [ V O ]]:

- a [<sub>VP</sub> V] (merger of F and DP<sub>object</sub>) →
- b [<sub>FP</sub> DP<sub>object</sub> F [<sub>VP</sub> V]] (merger of F’ and raising of VP to Spec,F’) →
- c [<sub>FP</sub> [<sub>VP</sub> V] F’ [<sub>FP</sub> DP<sub>object</sub> F t<sub>VP</sub> ] ] (merger of Aux and raising of VP plus pied piping of the *whose-picture* type across Aux) →
- d [[<sub>FP</sub> [<sub>VP</sub> V] F’ [DP<sub>object</sub> F t<sub>VP</sub> ]]] [ Aux t ] (merger of F’’ and raising of the remnant [ Aux t ]) →
- e [ [ Aux t ] F’’ [[<sub>FP</sub> [<sub>VP</sub> V] F’ [DP<sub>object</sub> F t<sub>VP</sub> ]]] t

(38) derivation for [ O V ] Aux:

- a [<sub>VP</sub> V] (merger of F and DP<sub>object</sub>) →
- b [<sub>FP</sub> DP<sub>object</sub> F [<sub>VP</sub> V] ] (merger of Aux and raising of VP plus pied piping of the *picture-of-whom* type to a Spec higher than C) →
- c [[<sub>FP</sub> DP<sub>object</sub> F [<sub>VP</sub> V]]] [ Aux t ]

(35)c can also be derived as in (38) by merging Aux but not applying raising of VP (plus pied piping of the *picture-of-whom* type) across Aux (i.e., by a *non-total* application of the consistent movement options for “head-final” languages).

The derivation of (35)d ([ V O ] Aux) requires instead a movement option for the derivation of “head-initial” languages (the raising of VP around the DP<sub>object</sub>) followed by the raising of VP around Aux without the further raising of the remnant [ Aux t ] as in “head-final” languages. Possibly, this hybrid is not available (or is extremely costly), thus accounting for the non existence (or the exceedingly rare existence) of this order.

## 7. The apparently anomalous behavior of particles.

Particles are generally regarded as bad harmonic patterners (Dahl 1979, Dryer 1992a, §§3.4 and 3.5, 2007, §7.5, Biberauer, Holmberg and Roberts 2009, §§2.1, 2.2, 3.3). Although in some languages they behave as run-of-the mill functional heads like the initial question and tense and aspect particles of “head-initial” languages or the final particles of “head-final” ones (non distinct from inflected auxiliaries), in other languages they appear to pattern differently. The reasons for this may be various. In some cases they may be categorially adverbs (AdvPs), like the invariant negation particles *pas* of French or *mica* of Italian. This seems to be the case, for example, of the postverbal particles of VSO Guajajara (Tupi-Guaraní), discussed in Newton (2007), the basic meanings of which indeed are adverbial: ‘in vain’, ‘still’ ‘unfortunate/successful action’, etc. In other cases, despite being invariant free functional head morphemes, they might behave differently from the corresponding auxiliaries (i.e. dummy verbs sustaining the corresponding functional bound

<sup>32</sup> Biberauer, Holmberg and Roberts (2008a,b,2009,2010) also propose deriving it from a constraint on the EPP features triggering movement.



morphemes) for principled reasons. If it is correct to take the trigger of movement in both “head-initial” and “head-final” languages to be the need to mark the extended projection of a VP, or NP, with verbal or nominal features (cf. §5 above), only those particles that have such a feature will behave like verbal or nominal heads (which is possibly the case of the preverbal particles of VSO Semitic, Celtic and Austronesian languages). But those that do not have such a feature will essentially behave like non-heads, requiring movement of (extended projections of) the VP, or NP to acquire such a feature. This might be the case of some of the particles discussed in the literature as “bad patterners” (like the final modal *được* of SVO Vietnamese– see (39)a; or the final aspect particle *di* of VOS Seediq – see (39)b):

- (39)a Tôi [không ăn thịt] **được** (Duffield 1998: ex.10a)  
 I NEG eat meat **CAN**  
 ‘I can’t eat meat.’  
 b Wada msange ciga bubu mu **di** (Holmer 2005,177)  
 PST ACT-rest yesterday mother 1SG.GEN **PERF**  
 ‘Yesterday my mother rested (i.e. refrained from work)’

Even more problematic is the case of VO Xârâcùù and Tinrin (Melanesian - Austronesian) with two postverbal particles in the direct (rather than the reverse) order of Merge. See (40)a and b:<sup>33</sup>

- (40)a ke xâpârî **kae na** mûduè-nâ? (Xârâcùù - Moyse-Faurie 1995,157)  
 2sg see **Q PAST** brother-1sg  
 ‘Have you seen my brother?’  
 b wiri tramwâ **ghai nrâ** (Tinrin - Osumi 1995,204)  
 2pl know **Q PAST**  
 ‘Did you know?’

Such cases may involve raising of (an extended projection of) the VP “engine” above higher Tense and Mood heads, as shown in (41) for (40)b (with English glosses):

- (41)a Q PAST [<sub>FP</sub> 2pl know ] (raising of FP above C) →  
 b [<sub>FP</sub> 2pl know ] Q PAST t

A similar case is represented by the final subordinators of SVO East !Xóõ of note 31, of VSO Guajajara (Tupi-Guaraní – Dryer 1992b,§2) and of VOS Seediq (Formosan, Austronesian – Holmer 1996) and Chol (Mayan – Coon 2010). See, for example, (43)a-b, from Seediq and Chol, respectively:

- (42)a i-muty [chächäk-**bä**] (Coon 2010,fn.18)  
 Gen.3ps-chicken [red-**RelSub**]  
 ‘Her chicken that is red’  
 b [Menaq ku hini **han**] sluhe kari seediq rmabang malu (Holmer 1996,60)  
 [stay.AF 1s.n. here **when**] learn.AF language people more good  
 ‘While I am staying here, I had better learn Seediq’

<sup>33</sup> For further discussion, and other problematic cases see Cinque (forthcoming).

I take such cases to involve a subordinator that attracts the IP to its Spec (as in “head-final” languages – cf. (27) above), followed by merger of a higher (silent) head, which may ((42)a) or not ((42)b) cause the remnant to raise to its Spec (as in the OV Oromo case seen in (34) above). There appear to be languages where the two heads are both pronounced, with the higher C attracting material to its Spec ((43)) or not ((44)):

- (43)a tuisi tuʔi **ke** hu hamut bwika-**kai** (Yaqui – Dryer 1980,fn.7)  
 very good **comp** this woman sing-**subord**  
 ‘It is very good that this woman sings’  
 b [[ chele **je** poR-be] **bole**] ami mon-e kor-i ni (Bayer 1996,263f)  
 boy **comp** study-Fut3 **comp** I mind-loc do-1 neg-pst  
 ‘I haven’t thought that the boy will study’

- (44) [se mi-wi’é a] mí-kò fi’e (Fanti – Welmers 1946,72)  
**when** 1sg-finish **when** 1sg-go home  
 ‘When I’m finished, I go home’

## 8. Conclusions.

In the preceding sections I have suggested that we should take a different look at word order typology and that, to paraphrase Weinberg (1976), we should give a higher degree of reality to the two reconstructed harmonic types than to the observable tendencies shown by actual languages. I have also suggested that the two harmonic types should be seen as deriving from a common structure of Merge (reflecting the scope properties of the various elements involved) via two consistent movement options. In view of the fact that most (perhaps all) languages deviate from such consistent derivations to different degrees (and, as a consequence, in different proportions), the question arises how to capture the range of admitted variation, the frequency rate of the subtypes actually attested, and how the languages deviating from the ideal orders are acquired.

These are empirical questions that remain to be studied. I only hint here at possible ways one could go to address them, starting with the acquisition problem. If we accept that the structure of Merge and the movement options that derive the two abstract orders are given by UG, then positive evidence from the primary data should be sufficient for the child to compute any deviations from the consistent application of such movement options. If so, even languages deviating more substantially from the two ideal word order types should, perhaps, not be more difficult to acquire. Concerning variation, it would seem that intra-category variation is more constrained (cf. the “FOFC” generalization discussed above) than cross-category variation (where, for example, DP can be “head-initial” while IP and CP is “head-final”, as in a number of SOV languages. Nonetheless, even cross-category alignment seems to be tendentially harmonious. This is the fundamental finding of Hawkins (1983), whose Principle of Cross-Category Harmony asserts “that there is a quantifiable preference for the ratio of preposed to postposed operators within one phrasal category (i.e., NP, VP/S, AdjP, AdpP) to generalize to the others” (p.134).

The different attested subtypes of languages, formed by different combinations of “consistent” and “inconsistent” movements of the derivations that yield the ideal harmonic types differ in the number of languages they contain, presumably as a function of the number and quality of the deviations from the ideal derivations; a calculation that remains to be done.

The points that I have tried to stress are:

- (a) Virtually every single correlation pair is violated in some language.
- (b) Possibly there are no fully harmonic languages.

- (c) If we try to formulate word order generalizations holding of actual languages we can at most get statistically significant tendencies.
- (d) Such tendencies are nonetheless important as they allow us to glimpse the existence of two (abstract) consistent word order types.
- (e) Limitation to (lists of) correlation pairs fails short of giving a full description of the two abstract order types and may be misleading.
- (f) We should take seriously the task of reconstructing in detail these two consistent word order types, and try to derive them from a unique structure of Merge via two distinct sets of movements.
- (g) This should provide a basis for measuring the distance of each word order subtype (to the limit, of each language) from the consistent word order types.
- (h) The attested tendencies can also help us single out what word orders are more stable or more prone to be relaxed.
- (i) The costs associated with relaxing a certain word order can perhaps account for language frequencies (recall Hawkins' table 1 above).
- (j) There are innumerable more word order types than SOV, SVO, VSO, VOS, OVS, OSV, the number being a function of the number of single word order pairs which can differ. With 26 correlation pairs (certainly a tiny fraction of the total correlation pairs) the number of existing types risks being, if not  $2^{26}$  (= 67.108.864), extremely high:
  - (i) Languages with "head-initial" correlation pairs except for DP P instead of P DP
  - (ii) Languages with "head-initial" correlation pairs except for DP P instead of P DP and V Aux instead of Aux V
  - (iii) Languages with "head-initial" correlation pairs except for DP P instead of P DP, V Aux instead of Aux V, and Num N instead of N Num
  - (iv)...
  - (v)...
  - etc.

Many more questions remain to be answered.<sup>34</sup> One I want to mention, venturing an answer, is: Why are there more SOV languages than VOS languages, if these are the best approximations to the two word order types?

If SVO languages are essentially derived via a non-total application of the same sets of movements that derive VOS languages, in the sense that (projections containing) the VP do not raise all the way up as they do in VOS languages, one can expect the same non-total application of the relevant movements to be found in SOV languages. Here, however, the non-total application of the movements is not as visible, as it also yields an SOV order (cf. SOV languages with *initial* higher functional heads). The correct computation then would have to refer to the number of SOV languages compared to the number of VOS(/VSO) **plus** SVO languages; which seems roughly right. See the frequencies in the samples of Ruhlen (1975), Tomlin (1979), Mallinson and Blake (1981), as reported in Tomlin (1986, 19f), and those of Cysouw (2008):<sup>35</sup>

<sup>34</sup> I am not able to evaluate some recent work by a team of physicists, mathematicians and linguists claiming that "each language in the world fluctuates between these two structures ["head-initial" and "head-final", G.C.] like the Ising model for finite lattice." (Itoh and Ueda 2004, 333). Also see Ueda and Itoh (2002) and Tsunoda, Ueda and Itoh (1995).

<sup>35</sup> Also see the language numbers given in WALS:

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

This distribution of "head-final" and "head-initial" languages, close to fifty-fifty, makes it plausible to take the currently existing languages to be a fairly representative sample (for word order) of all possible languages (despite the often noted fact that the currently existing ones are a tiny fraction of all the languages that were and are no longer spoken, that will be spoken in the future, and that will never be spoken).

	SOV	SVO	VSO	VOS	OVS	OSV
Ruhlen (1975):	51.5%	35.6%	10.5%	2.1%	0.0%	0.2%
Tomlin (1979):	45.8%	41.5%	11.0%	1.5%	0.3%	0.0%
Mallinson and Blake (1981):	41.0%	35.0%	9.0%	2.0%	1.1%	1.0%
Cysouw (2008):	47.1%	41.2%	8.0%	2.4%	0.8%	0.4%

If correct, this conjecture raises the further question why the non-total application of the movements deriving the ideal harmonic types should be less marked (yielding a larger number of languages) than the total one.

## Appendix

This is a partial list of 26 regularized word order pairs correlating with “head-initiality” and “head-finality”:<sup>36</sup>

“head-initial”	“head-final”
a) V > DP (VO)	DP > V (OV)
b) Aux > V(P)	V(P) > Aux <sup>37</sup>
c) Copula > Predicate	Predicate > Copula <sup>38</sup>
d) modal/functional V > V(P)	V(P) > modal/functional V <sup>39</sup>
e) tense/aspect/negative particle > V(P)	V(P) > tense/aspect/negative particle <sup>40</sup>
f) Art > N(P)	N(P) > Art <sup>41</sup>
g) PL > N(P)	N(P) > PL <sup>42</sup>
h) V(P) > PP/NP <sub>adjunct</sub>	PP/NP <sub>adjunct</sub> > V(P) <sup>43</sup>
i) V(P) > CP	CP > V(P) <sup>44</sup>
j) P > DP (Prepositional Phrase)	DP > P (Postpositional Phrase) <sup>45</sup>
k) C > argument IP	argument IP > C <sup>46</sup>
l) Yes/No Q marker > IP	IP > Yes/No Q marker <sup>47</sup>

<sup>36</sup> Recall that these orders are to a large extent reconstructed from the most polarized types (rigid SOV and rigid VOS languages), abstracting away from the exceptions noted in the literature.

<sup>37</sup> Cf. Greenberg’s (1963) Universal 16.

<sup>38</sup> Cf. Dryer (1992a, §2.5), and section 1 above.

<sup>39</sup> Cf. Greenberg’s (1963) Universal 15, and Dryer (1992a, §2.6).

<sup>40</sup> For the possible relevance of particles in word order generalizations, despite the problems noted in the literature, see the discussion in section 7 above.

<sup>41</sup> Cf. Dryer (1989b, 1992a, §4.6, 2007, §5.7).

<sup>42</sup> Cf. Dryer (1989a, 1992a, §4.7).

<sup>43</sup> Cf. Dryer (1992a, §2.3; 2007, §5.2).

<sup>44</sup> Cf. Greenberg’s (1963) Universal 13.

<sup>45</sup> Cf. Greenberg’s (1963) Universals 3 and 4.

<sup>46</sup> Cf. Dryer (1992a, §4.3; 2009, §5).

<sup>47</sup> Cf. Greenberg’s (1963) Universal 9 (“With well more than chance frequency, when question particles or affixes are specified in position by reference to the sentence as a whole, if initial, such elements are found in prepositional languages, and, if final, in postpositional”), and Dryer (1992a, §4.4). The same is presumably true of other illocutionary force markers (declarative, imperative, etc.). See the case of the initial declarative marker in N|uu (SVO Khoisan – Collins 2004), and the final declarative, interrogative, imperative and optative markers in Sheko (SOV Omotic – Hellenthal 2007).

- m) Subordinator > adverbial IP
- n) marker > Standard ('than John')
- o) A > [(marker)Standard]  
(&, more generally, A > PP)
- p) A > degree word
- q) N > Gen
- r) PP-complements of a N are final in the DP
- s) common noun > proper noun
- t) V > DP > resultative > ODepictive > SDepictive
- u) V Manner (Loc Time) (or Time Loc Manner)
- v) ascending order of temporal/locative phrases

- adverbial IP > Subordinator<sup>48</sup>
- Standard > marker ('John than')<sup>49</sup>
- [Standard (marker)] > A<sup>50</sup>
- (&, more generally, PP > A)
- degree word > A<sup>51</sup>
- Gen > N<sup>52</sup>
- PP-complements of a N are initial in the DP<sup>53</sup>
- proper noun > common noun<sup>54</sup>
- SDepictive > ODepictive > DP > resultative > V<sup>55</sup>
- (Time Loc) Manner V<sup>56</sup>
- descending order of temporal/locative phrases<sup>57</sup>

<sup>48</sup> Cf. Dryer (1992a, §4.5; 1992b), Diessel (2001).

<sup>49</sup> Cf. Greenberg's (1963) Universal 22.

<sup>50</sup> Cf. Greenberg's (1963) Universal 22, and Lehmann (1978a, 16f).

<sup>51</sup> Cf. Greenberg's (1963) Universal 21: "If some or all adverbs follow the adjective they modify, then the language is one in which the qualifying adjective follows the noun and the verb precedes its nominal object as the dominant order". This finds to some extent confirmation in the WALS database. Its interactive tool for combining features shows some preference for the "harmonic" correlations (A > degree word and VO: 102 languages; degree word > A and OV: 114 languages) in opposition to the "disharmonic" ones (degree word > A and VO: 81 languages; and A > degree word and OV: 63 languages).

<sup>52</sup> Cf. Dryer (1992a, §2.1).

<sup>53</sup> Recall the discussion at the end of section 4.2 above.

<sup>54</sup> Cf. Greenberg (1963, 89), Lehmann (1978a, §1.3), Bennett (1979), and Cinque (2009b).

<sup>55</sup> Compare (i)-(ii) with (iii)-(iv):

- (i) a. The smith beat the metal *flat cold*. (Simpson 1983) (V > DP > resultative > ODepictive)  
b. \*The smith beat the metal cold flat.
- (ii) a. He<sub>i</sub> ate the fish<sub>j</sub> *raw drunk*<sub>i</sub> (Haider 1997) ((V > DP > ODepictive > SDepictive)  
b. \*He<sub>i</sub> ate the fish<sub>j</sub> drunk<sub>i</sub> raw<sub>j</sub>
- (iii) a. Er hat das Fleisch *roh in Stücke* geschnitten (cf. Haider 1997, 10) (DP > ODepictive > resultative > V)  
he has the meat raw to pieces cut  
'He has cut the meat to pieces raw'  
b. \*Er hat das Fleisch *in Stücke roh* geschnitten
- (iv) a. Daß manchmal einer *betrunken* Fisch *roh* ißt.. (cf. Haider 1997, 29) (SDepictive > DP > ODepictive > V)  
That sometimes someone drunk fish raw eats..  
'That sometimes someone eats fish raw drunk..'

Also see Koizumi (1994) and Williams (2008).

<sup>56</sup> Cf., among others, Bartsch and Vennemann (1972, §6.2), Boisson (1981), Subbarao (1984, 18), Patnaik (1996), Haider (2000), Cinque (2002), Schweikert (2005a, b), Hinterhölzl (2009), Takamine (2010). All classes of adverbs precede the V in rigid SOV languages (cf. Greenberg's 1963 Universal 7). Interestingly, in a corpus study of German adverbs and adverbial PPs, Dean (1974) finds that the VO order of these elements (V > Manner > Location > Time) is only possible (alongside the OV order: Time > Location > Manner > V) in main clauses where the finite verb is in second position and no participle, infinitive, or separable prefix is found in final position. Otherwise only the OV order is possible. This seems to me to suggest that the VO order (V > Manner > Location > Time) is a function of the movement (plus pied-piping of the *whose*-picture type) of the entire VP raising to second position.

<sup>57</sup> See for example how the sequence of temporal phrases in the complex temporal phrase 'At 8 o'clock pm of the fifteenth of January 2002' is rendered in a "head-initial" language like Italian ((i)a) and in a "head-final" language like Hindi ((i)b) from Subbarao (1984, 18; 2008, 57) (as noted there, Japanese and Telugu pattern with Hindi):

- (i) a. alle (ore) 8 (di sera) del (giorno) quindici (del mese) di gennaio del(l'anno) 2002  
at (hours) 8 (of evening) of the (day) 15 (of the month) of January of (the year) 2002  
b. 2002 samvatsaram janawari nela lō padihēnō tārīkhu rātri-ki enimidi gaṇṭala-ki  
2002 year January month in fifteenth date night-to eight hours-dat

A similar pattern is found with complex locative phrases. Compare Hindi (ii) with its English translation:

- (ii) banaaras me wifwanaat<sup>h</sup> mandir ke dwaar par (Subbarao 2008, 58)  
Benaras in Vishwanath temple of gate on  
'At the gate of the temple of Khasi Vishwanath in Benaras'

w) NP(XP) > Rel Cl  
 x) N > A  
 y) N > Dem  
 z) N > Num

Rel Cl > NP(XP)<sup>58</sup>  
 A > N<sup>59</sup>  
 Dem > N<sup>60</sup>  
 Num > N<sup>61</sup>

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<sup>58</sup> See the discussion around (2) above, Cinque (2005a), and references cited there.

<sup>59</sup> Or, more accurately, [projections of N] > AP and AP > [projections of N]. Concerning their order w.r.t N in relation to the basic word order of the language, the WALS interactive tool for combining features gives for VSO languages 56 languages (24 genera) with NA order vs. 16 languages (13 genera) with AN order (thus largely confirming Greenberg's statistical Universal 17: "With overwhelmingly more than chance frequency, languages with dominant order VSO have the adjective after the noun"), and for VOS languages 14 languages (9 genera) with NA order vs. 7 languages (7 genera) with AN order. Thus "head-initial" languages predominantly have NA order, with certain well-known exceptions, like the Mayan languages (Campbell, Bubenik and Saxon 1988, 213). I take AN to be the abstract order for "head-final" languages despite the fact that SOV languages are predominantly NA (the WALS interactive tool gives for them 223 languages (113 genera) with NA order vs. 56 languages (25 genera) with AN order. Also see Dryer 1988a, 1992a, 2007). The reason for taking this counterevidential position is that clausal modifiers (adverbs) in "head-final" languages seem to systematically precede the head they modify. Needless to say, the high inconsistency of the adjective position in actual languages needs to be understood. Perhaps, the skewing for NA order even in "head-final" languages is tied to the existence of a relative clause source for adjectives, not always easily distinguishable from the purely attributive one (cf. Cinque's 2010 discussion), for we know that virtually half of the SOV languages have postnominal relative clauses. Relevant in this connection may be Mallison and Blake's (1981, 383) observation that "[s]ome of the examples of NA among SOV languages may reflect the verbal origin of the 'adjectives'", and Greenberg's (1963) Universal 19 ("When the general rule is that the descriptive adjective follows, there may be a minority of adjectives which usually precede,..."). But the whole question needs to be looked into more carefully.

<sup>60</sup> The WALS interactive tool for combining features gives a clear predominance of Dem N for OV languages and N Dem for VO languages.

<sup>61</sup> The WALS interactive tool for combining features give a predominance of NNum for VO languages, but it also gives a predominance of NNum for OV languages; a potential problem.

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