

The Fundamental Left-Right Asymmetry of Natural Languages*

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Abstract The article discusses a pervasive left-right asymmetry found in the order of modifiers and functional heads associated with distinct lexical heads. In each case, it is shown that one and the same pattern is involved. The account proposed for such an asymmetry is based on a unique underlying structure for each head and the modifiers and functional heads associated with it, in interaction with independent conditions on phrasal movement.

Keywords Word order · left right asymmetry · phrasal movement

In both the typological and generative literature various left-right asymmetries of natural languages have been discussed; among these, the rightward skewing shown by the location of sentential complements with respect to the verb (Dryer 1980, Hawkins 1988, Section 2.2); the similar rightward skewing of relative clauses with respect to their Head (Hawkins 1988, Section 2.1; Cinque 2005b); the cross-linguistic preference of suffixing over prefixing (Cutler, Hawkins, and Gilligan 1988, Hawkins 1988, Section 2.3, Hawkins and Gilligan 1988); the existence of “unbounded leftward movement” vs. the (virtual) inexistence of “unbounded rightward movement” (Bach 1971, 160f; Bresnan 1972, 42ff; Kayne 1994, 54; Cinque 1996; Hawkins 1998); and the left-right asymmetries in quantifier scope interactions mentioned in Lu (1998, 10fn3).

Here I would like to discuss yet another pervasive left-right asymmetry of natural languages: that found in the ordering of functional modifiers and heads to the left and to the right of a lexical head.

The first glimpse of such an asymmetry is to be found in one of Greenberg’s universals, his Universal 20:

“When any or all of the items (demonstrative, numeral, and descriptive adjective) precede the noun, they are always found in that order. If they follow, the order is either the same or its exact opposite.” (Greenberg 1963, 87)

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The left-right asymmetry implicit in Greenberg's formulation appears more clearly when all the modifiers are on the same side of the noun, as is the case in (1). What we find is that to the left of the noun only one order is possible, while to its right two orders are possible (either the same one or its mirror image).¹

Order of Demonstratives, numerals, and adjectives (Greenberg 1963, Cinque 1996,2005a)

- | | | |
|-------|--------------------|--------------------------|
| (1) a | Dem > Num > A > N | (English, Malayalam,...) |
| b | *A > Num > Dem > N | 0 |
| c | N > Dem > Num > A | (Abu', Kikuyu,...) |
| d | N > A > Num > Dem | (Gungbe, Thai,...) |

This is not an isolated property of such modifiers. The same pattern is found with the order of attributive adjectives (2), with the order of adverbs (3), with the order of circumstantial PPs (4), with the order of locative and directional prepositions (5), with the order of Mood, Tense, and Aspect morphemes (6), with the order of auxiliaries (and restructuring verbs) (7), etc.

Consider first the order of attributive adjectives. Restricting ourselves, for convenience, just to adjectives of size, color and nationality among the substantial number of existing classes (see Scott 2002, and references cited there), we find that their order is fixed (if we control for the independent relative clause source of attributive adjectives – see Cinque forthcoming for discussion).

Order of attributive adjectives (not derived from RCs): (Hetzron 1978; Sproat and Shih 1991; Cinque 1994, forthcoming; Plank 2006)

- | | | |
|-------|--|---|
| (2) a | A _{size} > A _{color} > A _{nationality} > N | (English, Serbo-Croatian...) |
| b | *A _{nationality} > A _{color} > A _{size} > N | 0 |
| c | N > A _{size} > A _{color} > A _{nationality} | (Welsh, Irish, Maltese...) ² |
| d | N > A _{nationality} > A _{color} > A _{size} | (Indonesian, Yoruba,...) |

Similarly, if we take some selection of the many different classes of adverbs that are found within the clause (say, the terminative aspect adverb *no longer*, the completive aspect adverb *completely*, and *always*), we find the same thing:

¹ This is in fact a simplification, which however does not affect the thrust of the argument. While the prenominal order is Dem > Num > Adj without exceptions (or virtually so), more possibilities than the two Dem > Num > Adj and Adj > Num > Dem are actually attested postnominally (see (17) below, and Cinque 2005a for an illustration of how they can be derived by different leftward movements).

² While the relative order of postnominal adjectives of Size, Color, and Nationality in Welsh is the same as the order of the same adjectives in prenominal position in English (cf. Sproat and Shih 1991, Rouveret 1994, Plank 2006), other adjectives (among which quality, age, the functional adjective *other* and demonstratives) show a (postnominal) order which is the mirror image of the English order (see Willis 2006): N A_{size} A_{color} A_{nationality} A_{age} A_{quality} "other" Dem. If movement of the NP (or phrases containing the NP) rather than head movement is responsible for DP internal orders (Cinque 2005a and forthcoming), this mixture of direct and mirror-image orders of nominal modifiers can be reconciled (pace Willis 2006) with a unique, universal, base structure.

Order of adverbs: (Cinque 1999, 42f, Rakowski and Travis 2000, Pearson 2000)

- (3) a Adv_{no longer} > Adv_{always} > Adv_{completely} > V (English, Chinese,...)
 b *Adv_{completely} > Adv_{always} > Adv_{no longer} > V 0
 c V > Adv_{no longer} > Adv_{always} > Adv_{completely} ((main clause) German, Italian...)
 d V > Adv_{completely} > Adv_{always} > Adv_{no longer} (Malagasy, Niuean,...)

This is also what we find with the relative order of circumstantial PPs. If we limit ourselves to Time, Place and Manner PPs, whose order has been investigated from a cross-linguistic perspective by Boisson (1981), and Lu (n.d.) (also see Cinque 2002, Hinterhölzl 2002, Schweikert 2005), we find the same pattern:³

Order of circumstantial PPs

- (4) a Time > Place > Manner V (Basque, Nambikuara,.. – Lu n.d.,
Kroeker 2001, 3)
 b *Manner > Place > Time > V 0
 c V > Time > Place > Manner (V/2 clause German)
 d V > Manner > Place > Time (Vietnamese, Yoruba – Lu n.d.)

A similar pattern is apparently found (in those languages in which they overtly combine) with the order of locative ('at') and directional ('to', 'from') prepositions:⁴

Order of directional and locative prepositions

- (5) a P_{Dir} P_{Loc} NP (Romanian: *Ion vine de la școală* '(lit.) Ion comes from at school (from school)' – Zegrean 2007, 79)
 b *P_{Loc} P_{Dir} NP 0
 c NP P_{Dir} P_{Loc} (Iatmul (Papuan): *gay-at-ba* '(lit.) house-to-at (to the house)' – Staalsen 1965, 21)
 d NP P_{Loc} P_{Dir} (Jero (Tibeto-Burman): *thalu=na=k* 'where=LOC=SOURCE (from where)' – Opgenort 2005, 92)

This is also what we find with the order of (speech act) Mood, Tense, and Aspect with respect to the V (see Bybee 1985, Foley and Van Valin 1984, Cinque 1999, 2007, and the text below):

Order of (speech act) Mood, Tense, and Aspect morphemes

- (6) a Mood Tense Aspect V (Nama, Yoruba,...)
 b *Aspect Tense Mood V 0
 c V Mood Tense Aspect (Comox,...)
 d V Aspect Tense Mood (Korean, Malayalam,...)

³ On the interference of focus on the canonical order of circumstantial PPs and possible diagnostics for the canonical order, see Cinque (2002), Schweikert (2005).

⁴ The other two possible orders of the three elements P_{Dir} P_{Loc} NP are also attested: P_{Dir} NP P_{Loc} in Taba (Austronesian - Bowden n.d. *ap-po bbuk li* '(lit.) to-down book at' (onto the book)), and P_{Loc} NP P_{Dir} in Zina Kotoko (Chadic-Tourneux 2003: 294 *'à jì kàskú kí* 'LOC inside market toward' (toward the market)).

If one considers the relative order of auxiliary and restructuring (or clause union) verbs (Cinque 2006) with respect to each other and to the lexical verb, one finds a similar pattern. See Koopman and Szabolcsi (2000), Nilsen and Vinokurova (2000), Wurmbrand (2004), Barbiers (2005), and Svenonius (2006):

Order of auxiliary (restructuring) verbs

- (7) a Aux₁ Aux₂ Aux₃ V (Italian, English,...)
 b *Aux₃ Aux₂ Aux₁ V 0
 c V Aux₁ Aux₂ Aux₃ (Hungarian, West Flemish,...)
 d V Aux₃ Aux₂ Aux₁ (Hungarian, German,...)

The same pattern is also found within a single language, with respect to the ordering of certain elements. To take one example, Terzi (1999) notes that in front of the verb in Modern Greek only the order in which the dative clitic precedes the accusative clitic is admitted, while after the V either order of the two clitics is possible (see (8)):

Order of (dative and accusative) clitics in Modern Greek (Terzi 1999, 86)

- (8) a mou to edoses
 me_{dat} it_{Acc} gave.2sg
 'you gave it to me'
 b *to mou edoses
 it_{Acc} me_{dat} gave.2sg
 c Dos' mou to
 give me_{dat} it_{Acc}
 'give it to me!'
 d Dos' to mou
 give it_{Acc} me_{dat}
 'give it to me!'

All of the cases seen above instantiate exactly the same pattern:

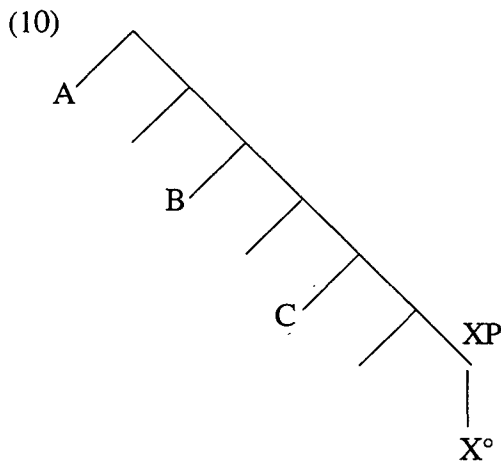
- (9) a AB(C)X°
 b *(C)BA X°
 c X° AB(C)
 d X° (C)BA

Clearly, this cannot be an accident. It is equally clear that these orders are not independent of one another. One feels in fact that they are the *same* order at a more abstract level, for they are either literally the same, modulo their pre- or post-head location ((9)a and c), or the mirror image of each other on the two sides of the head ((9)a and d). It would thus seem desirable to express this more abstract identity by deriving them from a unique structure.

Sometimes it is assumed that this more abstract identity is expressed by a principle which determines the relative distance of each class of elements from the head, thus accounting for what are possibly the two most common orders of each of the

above cases, (9)a (ABC X°) and (9)d (X° CBA), and for the non existence of the order (9)b (CBA X°). But, if one takes this line, one can only state the principle as a tendency given that the fourth order, (9)c (X° ABC), even if it is generally rarer, plainly violates it.

The principle (whatever it ultimately follows from) can however be stated as an absolute principle, rather than just a tendency, if we are willing to abandon the symmetrical view underlying the above account (as in fact Kayne's 1994 antisymmetry principle would have us do), and to adopt a more abstract, asymmetrical, view, whereby there is only one order/structure available for all languages (10), and whatever word order difference there is among them is a function of independently motivated types of movement of the lexical core XP.



We know that certain phrases in certain languages can, or must, appear displaced; for example (single) interrogative *wh*-phrases in English must be displaced to sentence initial position (as in (11), below). And we know that languages vary with respect to whether they displace them or not. In some languages (e.g., Indonesian - see (12)) *wh*-phrases remain *in situ*. We also know that depending on certain conditions movement can affect just the phrase bearing the feature triggering the movement - here the *wh*-feature - (as in (11)), or a larger phrase containing the phrase bearing the relevant feature (as in (13)); what Ross (1967) called Pied Piping:

(11) [*Who*] did you see ?



(12) Siti mau apa? (Cole, Hermon and Tjung 2005, 553)

Siti want what

'What does Siti want?'

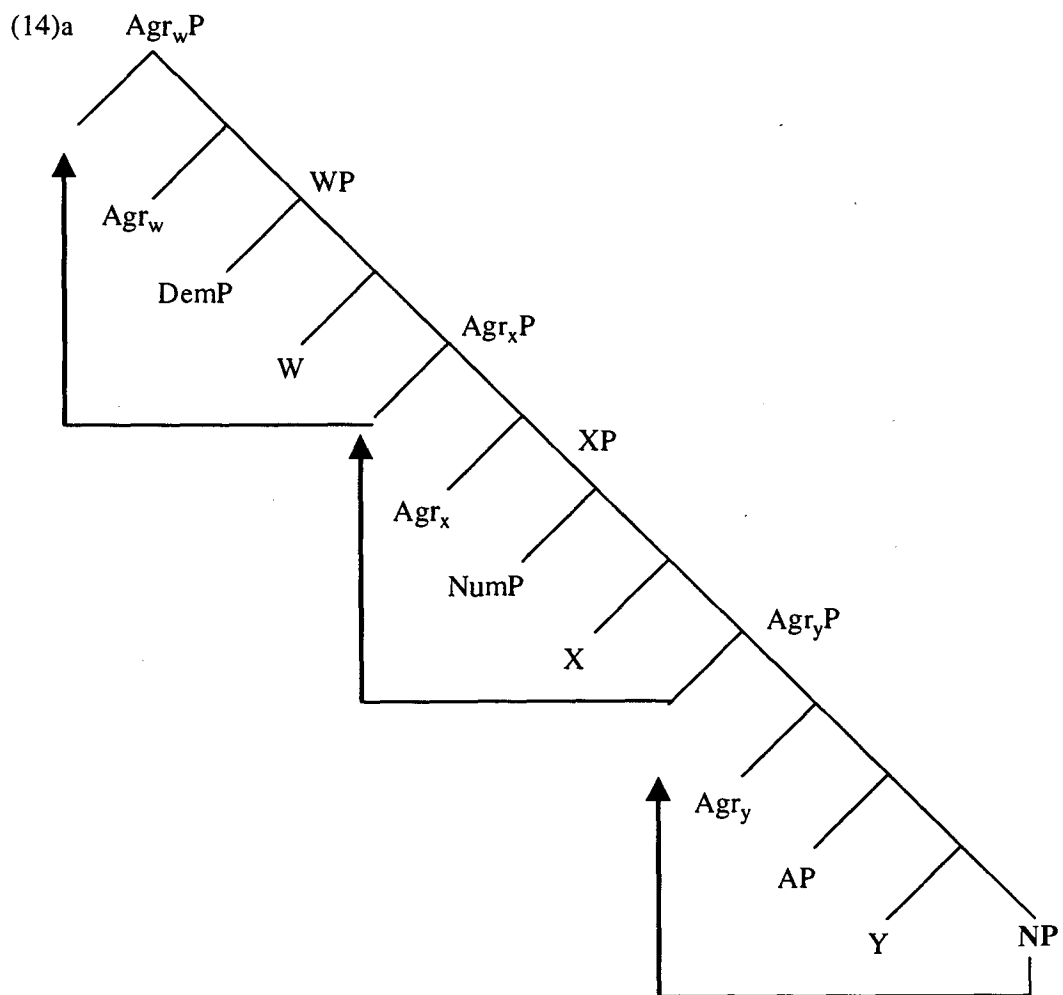
(13) [[*Whose*] pictures] did you see ?



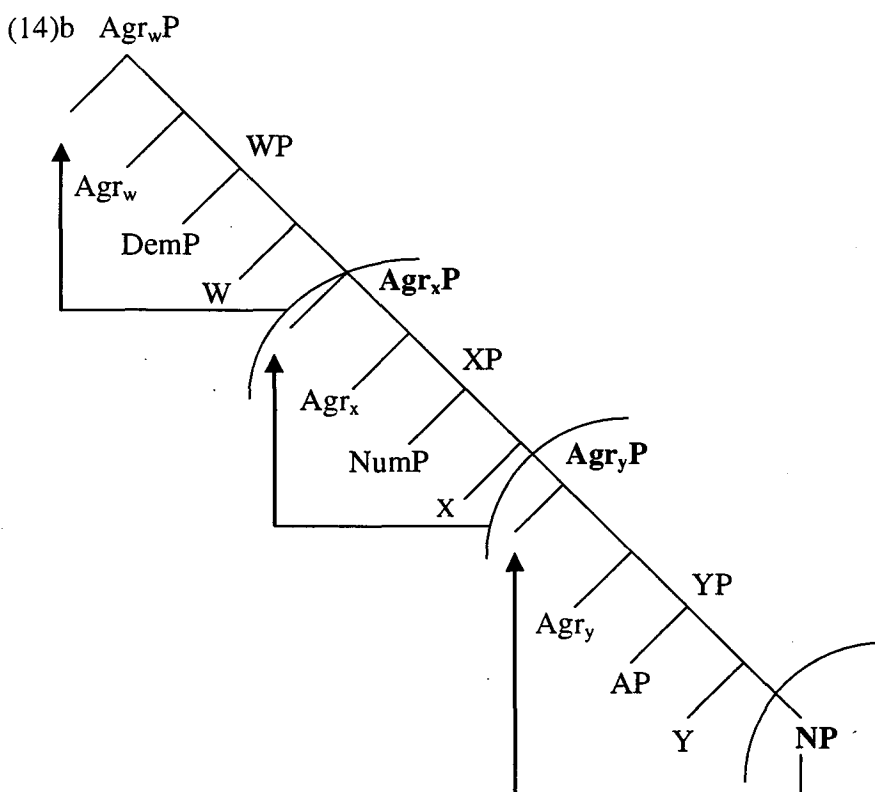
In Cinque (1996, 2003, 2005a) I suggested that precisely these two independent parameters (whether the relevant phrase remains in situ or moves; and, if it moves, whether it moves by itself, or by pied piping each time the immediately dominating phrase) can account for the three attested orders of Dem Num A N ((1)a,c,d) and for the principled absence of the fourth ((1)b).

The phrase bearing the relevant feature triggering the movement (a nominal feature) is in this case NP.

If NP does not move, we get (1)a. If NP moves by itself (all the way up), as shown in (14a), we get (1)c. If it moves (all the way up) each time pied piping the immediately dominating phrase, as in (14b), we get (1)d. (1)b cannot be derived because the NP has not moved and the base structure has the modifiers in the wrong order. Crucially AP, NumP, or DemP cannot move by themselves just as phrases not bearing the *wh*-feature cannot move by themselves to the sentence initial *+wh*-position.⁵



⁵ In certain languages, (at most) one of these elements, if it bears a focus feature, can apparently move to an initial focus position— see fn.21 below for relevant references.



Note that if the principle governing the degree of proximity of each modifier to the head is stated on the “base level” (10), before movement takes place which disrupts the original order of elements, it can be stated as an absolute principle forcing AP to be merged closer to the head than NumP, and NumP closer to the head than DemP.

This logic extends to the other instances of the same pattern seen above.

This is however a simplification. The orders that it accounts for are the orders in (1)a,c,d, repeated here as (15)a–c, and, taking partial movement into account (i.e., when the NP does not move all the way up), the orders in (16)a–c:

- (15) a Dem Num A N
 b N Dem Num A
 c N A Num Dem

- (16) a Dem Num N A
 b Dem N Num A
 c Dem N A Num

But, of the 24 mathematically possible orders of the four elements Dem, Num, A and N, more than the six indicated in (15) and (16) are attested, as is apparent from the table in (17), from Cinque (2005a), which documents 14 orders as attested (although in the same article I suggested that one ((17)r) may be spurious, with the position of A really being the position of reduced relative clauses).⁶

⁶ The references in the footnotes that follow are those given in Cinque (2005a), with some additions.

(17)

a.	✓	Dem	Num	A	N	(very many languages) ⁷
b.	✓	Dem	Num	N	A	(many languages) ⁸
c.	✓	Dem	N	Num	A	(very few languages) ⁹
d.	✓	N	Dem	Num	A	(few languages) ¹⁰
e.	*	Num	Dem	A	N	(∅ – Greenberg 1963; Hawkins 1983)
f.	*	Num	Dem	N	A	(∅ – Greenberg 1963; Hawkins 1983)
g.	*	Num	N	Dem	A	(∅ – cf. Lu 1998, 183)
h.	*	N	Num	Dem	A	(∅ – cf. Greenberg 1963; Lu 1998, 162)
i.	*	A	Dem	Num	N	(∅ – Greenberg 1963; Hawkins 1983)
l.	*	A	Dem	N	Num	(∅ – Greenberg 1963; Hawkins 1983)
m.	✓	A	N	Dem	Num	(very few languages) ¹¹
n.	✓	N	A	Dem	Num	(few languages) ¹²

⁷ Rijkhoff (1998, 357) states that the “order [Dem Num A N] is by far the most common both inside and (to a lesser extent) outside Europe”, listing on p. 342f many languages of the Afro-Asiatic, Altaic, Caucasian, Indo-European, and Uralic families. More languages with this order are listed in Hawkins (1983, 119), Rijkhoff (1990, 32; 2002, 112, 270, fn.10, 310, 328, 330f), and Croft and Deligianni (2001, 7). It is also found in Amerindian (e.g., Comox – Harris 1977, 129) and Australian (e.g. Tiwi – Osborne 1974, 73) languages.

⁸ According to Rijkhoff (1998, 357) “[t]he order [Dem Num N A] is [...] rather frequent in Europe”. Outside Europe it is documented, among other languages, in Yao (Jones 1970), Khasi (Nagaraja 1985, 14ff), Madak (Lee 1994, Section 1.1), Burushaski, Guaraní (Rijkhoff 2002, 328), Abkhaz, Farsi, Kiowa, Mam (Croft and Deligianni 2001), Kristang, Kriyol, Tok Pisin and Cape Verdian, Mauritian, and Seychelles Creoles (Haddican 2002).

⁹ This order is documented in Sampur and Camus (Heine 1981) (but see Rijkhoff 2002, 274f), in Maasai (Koopman 2003), and in Wappo (Thompson, Park, Li, 2006, 8). According to Croft and Deligianni (2001, 7), it is also a possible alternative order (of the Dem N A Num order) in Hualapai and Lahu.

¹⁰ Greenberg (1963, 87) states that the N Dem Num A is “[a] less popular alternative” to N A Num Dem, citing Kikuyu as one example. Other languages displaying this order are: Elmolo (Heine 1980), Turkana, Rendille (Heine 1981) Noni (or Noonni – Hyman 1981, 31; Lux and Lux 1996, 10), Nkore-Kiga (Lu 1998, 162fn59, 165), Nomaándé (Wilkendorf n.d., 11), Abu’ (Lynch 1998, 171), Arbore (Hayward 1984, 212), Bai and Moro (Dryer 2007, 20 and 43), and the Kuliak (Nilo-Saharan) languages Ik and So (Serzisko 1989, 391). This is also the order given by Lawton (1993, 150) for Kiriwina (Kiliwila).

¹¹ It is found in Koiari (which also has the order N A Dem Num with most adjectives – Dutton 1996, 60ff), and in Bai (Wiersma 2003, 669). According to Dryer (2000, 20), Bai also has N Dem Num A as an alternative order. [A N]-def Num is also an alternative order of the unmarked Dem Num A N order of Icelandic (Sigurðsson 1993, 194; Vangsnes et al. 2004). The possibility of this order in Koiari, and Bai (and of the order A N Num Dem in Gude and Sango – see below) indicates that the last sentence of Hawkins’ (1983, 119–120) revision of Greenberg’s Universal 20 (“In no case does the adjective precede the head when the demonstrative or numeral follow.”) may be too strong. Greenberg’s (1963) Universal 18 was less categorical (“When the descriptive adjective precedes the noun, the demonstrative, and the numeral, with overwhelmingly more than chance frequency, do likewise”). This was because of the existence, noted by Greenberg, of “a small number of instances (e.g., Efik) in which the demonstrative follows while the adjective precedes” (p. 86). Cf. also Dryer (2000, 34).

¹² This order is found in Lalo (Björverud 1998, 116ff), Lisu (Bradley 2003, 228f), Akha (Hansson 2003, 241), Aghem (Hyman et al. 1979, 27), Maranunggu (Tryon 1974, 154), Kenyang (Ramirez 1998, 28), Port Sandwich (Crowley 2002, 653), Koiari (Dutton 1996, 60ff), which also has the order A N Dem Num with certain adjectives, Lingala (Haddican 2002), Hocank, which also has the alternative order N A Num Dem (Helmbrecht 2004, 13). Croft and Deligianni (2001) also assign to this order Babungo and, more tentatively, Woleaian.

o.	*	Dem	A	Num	N	(Ø – Greenberg 1963; Hawkins 1983) ¹³
p.	✓	Dem	A	N	Num	(very few languages) ¹⁴
q.	✓	Dem	N	A	Num	(many languages) ¹⁵
r.	✓	N	Dem	A	Num	(possibly spurious)
s.	*	Num	A	Dem	N	(Ø – Greenberg 1963; Hawkins 1983)
t.	✓	Num	A	N	Dem	(very few languages) ¹⁶
u.	✓	Num	N	A	Dem	(few languages) ¹⁷
v.	✓	N	Num	A	Dem	(few languages) ¹⁸
w.	*	A	Num	Dem	N	(Ø – Greenberg 1963; Hawkins 1983)
x.	*	A	Num	N	Dem	(Ø – Greenberg 1963; Hawkins 1983)
y.	✓	A	N	Num	Dem	(very few languages) ¹⁹
z.	✓	N	A	Num	Dem	(very many languages) ²⁰

¹³ A potential counterexample, pointed out to me by Matthew Dryer (p.c.), is provided by Dhivehi (Maldivian), for which Cain (2000, 78), and Cain and Gair (2000, 33) give Dem A Num N as the canonical order. Whether this exception is a real counterexample or can be explained away by assuming that Dhivehi lacks direct modification (i.e., non relative clause derived) adjectives entirely, and exploits the possibility of introducing them as the predicate of a (prenominal) reduced relative clause (like possibly in (17)r, as noted) will be left open here.

¹⁴ According to Hawkins (1983, 119), Lu (1998, 165), and Rijkhoff (1998, 358; 2002, 331), this order is not attested. However, Kölver (1978, 285) documents it in Newari (also see Dryer's (2000, 39) example (79)), Lapolla (2003, 676) in Dulong, Mazaudon (2003, 297) in Tamang, Gair and Paolillo (1997, 29f) in Sinhala, and Valenzuela (2002, 28f) in Shipibo-Konibo. Bhattacharya (1998) and Croft and Deligianni (2001) give it as an alternative order for the Dem Num A N order in, respectively, Bangla (where it leads to a specific interpretation of the DP) and Syrian Arabic.

¹⁵ Among the languages that instantiate this order are Kabardian and Warao (Hawkins 1983, 119; Colarusso 1992, 63), Burmese, Lolo, Maru, Rāwang (Jones 1970), Manange (Genetti and Hildebrandt 2004, 75), Ladakhi (Koshal 1979, 108), Epena Pedee (Harms 1994, Chapter 4), Miya (Schuh 1998, 277), Gambian Mandinka (Rijkhoff 1998, 356), Cuna (Quesada 1999, 232), Kaki Ae (Clifton 1995, 46), Pech (Holt 1999, 62ff), Tunen (Mous 1997, 124). It is an alternative order of N A Num Dem in Kunama (Bender 1996, 41), and of Dem N Num A in Hualapai and Lahu (Croft and Deligianni 2001, 7).

¹⁶ According to Hawkins (1983, 119) and Lu (1998, 165) this order is not attested. However, Rijkhoff (2002, 328) reports Berbice Dutch Creole as instantiating it. Haddican (2002) documents the same order for the Creole language Bislama. Lynch (2002, 769f, 781, 809) gives it as the order of Xârâcùù, Iaaï, and Puluwatese. To judge from Siewierska and Uhlřřová (1997, 132f), Polish and Russian also have this order as an alternative order to Dem Num A N.

¹⁷ This order appears documented in a number of Mon-Khmer languages (Dryer 2001), in Basque (Rijkhoff 2002, 328), Celtic, Easter Island, Hebrew, Indonesian, Hmong, Jacalteco, Miao (cf. Hawkins 1983, 119, Lu 1998, 162; Harriehausen 1990, 144), in Nung (Saul and Freiberger Wilson 1980, 14), in Vietnamese (Nguyen 2004) in Wolof (Sy 2003), in Sisiqa (Ross 2002a, 459f); and in a number of Creoles (Haddican 2002). It is also displayed by the Australian language Watjarri (Douglas 1981, 241).

¹⁸ According to Lu (1998, 162) this order is not attested. However, Heine (1981), as noted, documents it in three languages: Gabra, Logoli and Luo (on Luo, also see Chiao 1998). Noonan (1992, 154) documents it in Lango. Ross (2002a, 132) and Tryon (2002, 576) give it as the order of Kele, and Buma, respectively. Croft and Deligianni (2001) give it as an alternative order in Manam.


¹⁹ According to Hawkins (1983, 119) and Lu (1998, 165), this order is not attested. However, Thornell (1997, 71) and Haddican (2002) give it as the order of Sango and Rijkhoff (1998, 356, 358; 2002, 332, fn.19) mentions (dubitably) the possible existence of two other languages with this order: Gude and Zande.

²⁰ Cambodian, Javanese, Karen, Khmu, Palaung, Shan, Thai (Rijkhoff 1990, 32), Enga (Lynch 1998, 171), Dagaare (Bodomo 1993), Ewe (Essegbey 1993), Gungbe (Aboh et al. 2004),

All of the attested orders, and none of the unattested ones, can be derived, it seems, by slightly refining our earlier assumptions.

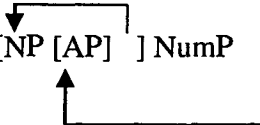
Note that in addition to the Pied Piping of the *[[whose] pictures]* type, which drags along constituents to the right of the phrase triggering movement, there is also a Pied piping of the *[pictures [of whom]]* type, which drags along constituents to the left of the phrase triggering movement:

(18) *[pictures [of whom]] did you see* ?




This means that in addition to movements like the one in (19)a, giving the order N A Num, one can also expect to find movements like the one in (19)b, giving the order A N Num:

(19)a ..[NP [AP]] NumP



b [AP [NP]] NumP



As I suggested in (2005a), all of the attested orders (and none of the unattested ones) can be derived if we revise our earlier assumptions in the way indicated in (20):

- (20) a. Base order: [... [WP DemP ... [XP NumP ... [YP AP [NP N]]]]]
- b. Parameters of movement:
- i) No movement (unmarked), or
 - ii) NP movement plus Pied-piping of the *whose pictures*-type (unmarked), or
 - iii) NP movement without Pied-piping (marked), or
 - iv) NP movement plus Pied-piping of the *pictures of whom*-type (more marked still)
 - v) *total* (unmarked) vs. *partial* (marked) movement of the NP with or without Pied-piping (in other words, the NP raises all the way up, or just partially, around its modifiers).
 - vi) Neither head movement nor movement of a phrase not containing the NP are possible (except perhaps for a single focus-related movement to a DP initial position).²¹

Labu and Ponapean (Lynch 1998, 121), Mao Naga (Giridhar 1994, 452) Selepet, Yoruba (Hawkins 1983, 119), West Greenlandic (which also has N A Dem Num as an alternative order) (Rijkhoff 2002, 326); Amele, Igbo, Kusaeian, Manam (Croft and Deligianni 2001), Fa d'Ambu, Nubi (Haddican 2002), Kugu Nganhcara (Smith and Johnson 2000, 388), Cabécar (Quesada 1999, 232), Kunama (Bender 1996, 41), Māori (Pearce 2002).

²¹ On the possible, marked, preposing of APs to DP initial position (often for focusing purposes), see Corbett (1979), Giusti (1996), and Rijkhoff (1998, 352f; 2002, 267, 272). One additional parameter is the *obligatory* vs. *optional* application of movement. For example, the alternative orders

The “marked”, “unmarked”, “more marked”, etc., values attached to each parameter of movement (some of which appear to be independently motivated – see Cinque 2005a) were meant to account, at least in part, for the different numbers of languages that appear to instantiate the different orders (although no precise statistics were carried out).

I review here the derivation of some of the orders in (17) (for a systematic review of all of the orders see Cinque 2005a).

- a. (Dem Num A N) is derived if nothing moves (no marked option: very many languages).
- d. (N Dem Num A) is derived if NP moves three notches, around A, Num, and Dem (i.e. all the way up) without Pied-piping (one marked option: few languages).
- e. (Num Dem A N) cannot be derived. NP has not moved, and the modifiers to its left are in the wrong order of Merge.
- m. (A N Dem Num) has a well-formed, though marked, derivation with raising of NP plus Pied-piping of the *pictures of whom*-type of the lowest modifier (A) around Num, followed by raising (of [A N]) without Pied-piping around Dem (two marked options: very few languages)
- n. (N A Dem Num) has a derivation with NP raising past A, followed by Pied-piping of the *whose pictures*-type past Num, followed by raising (of [N A]) without Pied-piping (marked) past Dem (one marked option: few languages).
- p. (Dem A N Num) has a derivation with partial (marked) raising of NP plus Pied-piping of the *pictures of whom*-type of [A N] (marked) around Num (two marked options: very few languages)
- t. (Num A N Dem) has a derivation with partial (marked) raising of NP plus Pied-piping of the *pictures of whom*-type of A and Num ([Num A N]) (marked) around Dem (two marked options: very few languages).

The question that arises is whether exactly the same fine-grained variation that we find with the order of Dem Num A and N is also found with the order of the other elements reviewed in (3)–(7). I think it is.

In Cinque (2007), I documented it for the relative orders of (speech act) Mood, Tense, Aspect and V. The order of these elements is often taken to be governed by a principle that determines the degree of proximity to the V of Mood, Tense, and Aspect morphemes (Aspect being closer to V than Tense, which in turn is closer to V than speech act Mood – see Gerdt’s 1982, 193fn4 “Satellite Principle”, Bybee’s 1985 “Principle of Relevance”, Foley and Van Valin 1984 “Principle of Scope Assignment”, and Baker’s 1985 “Mirror Principle”).

Q Dem Num N A, Q Dem N A Num, Q N A Num Dem, N A Num Dem Q of Standard Arabic (cf. Fassi Fehri 1999) point to the obligatory character of movement of the NP around the adjectives followed by optional movements (plus Pied-piping of the *whose picture*-type) around numerals, demonstratives and universal quantifiers.

These principles account for the two prevailing orders of such elements ((21)a–b), but, as shown in table (22), the actual orders attested are thirteen, five of which (c.,d.,m.,n.,v.) do not conform to the proposed principles.²²

- (21) a. Mood Tense Aspect V
 b. V Aspect Tense Mood

(22)

a.	✓	Mood	Tns	Asp	v ²³	
b.	✓	Mood	Tns	v	Asp ²⁴	
c.	✓	Mood	v	Tns	Asp ²⁵	
d.	✓	v	Mood	Tns	Asp ²⁶	
e.	*	Tns	Mood	Asp	v	(Ø)
f.	*	Tns	Mood	v	Asp	(Ø)
g.	*	Tns	v	Mood	Asp	(Ø)
h.	*	v	Tns	Mood	Asp	(Ø)
i.	*	Asp	Mood	Tns	v	(Ø) ²⁷
l.	*	Asp	Mood	v	Tns	(Ø)
m.	✓	Asp	v	Mood	Tns ²⁸	
n.	✓	v	Asp	Mood	Tns ²⁹	

²² Sources documenting the attested orders are given in the footnotes that follow. See Cinque (2007) for examples illustrating the various orders, and discussion on some apparent exceptions.

²³ This order is attested in Khoisan (e.g., Nama: <http://instruct1.cit.cornell.edu/courses/ling700/nama.htm>, and /Xam <http://instruct1.cit.cornell.edu/courses/ling700/xam.htm>); in a number of Oceanic (Austronesian) languages ('Ala'ala - Ross 2002c, 353 and 359; Nabukelevu - Pawley and Sayaba 1982, 68 and 85; Samoan - Cinque 1999, 160); in Yoruba (Niger-Congo - Ọládiípò Ajíbóyè, p.c.); and in some South American Indian languages (Apinajé (Macro-Jê) - Cunha de Oliveira 2003, 255f, 265), and Canela-Crahô (Cariban - cf. Cinque 1999, 162 and references cited there).

²⁴ In addition to Nama (which also instantiates the order in (22)a), and Njuu (Khoisan - Collins 2004, 188), other languages instantiating this order are Easter Island (Austronesian - Chapin 1978, 153, 168), Hmong Njua (Sino-Tibetan - Harriehausen 1990, 57, 226); and Nabukelevu (with postverbal progressive aspect markers - Pawley and Sayaba 1982, 53ff).

²⁵ This order is found in, among other languages, Kharia (Munda-Biligiri 1965, 59, 98), Ngarinjin (Kimberley, North Western Australia - Coate and Coate 1970, 43, 75), and Tümpisa Shoshone (Uto-Aztecan - Dayley 1989, 325, 348).

²⁶ This order appears instantiated in Comox (Central Coast Salish - Harris 1977, 139), and, to judge from Aikhenvald (2006, 179, 190) (at least for some combinations of Mood, Tense and Aspect) in Tariana (North Arawak).

²⁷ St'át'imcets (Matthewson 2003, 69) apparently shows the order imperfect > interrogative > past > V, but the interrogative particle is a second position particle, with the imperfect particle possibly moved to first position from a lower one (see the discussion in Cinque 2007).

²⁸ This order appears to be instantiated in Xârâcùù (Moyse-Faurie 1995, 117, 157), and Tinrin (Osumi 1995, 188, 204), two Melanesian (Austronesian) languages of New Caledonia, and in Sooke (Coast Salish - Efrat 1969, 43, 189).

²⁹ This order is instantiated in Kanoê (a language isolate of Brasil) with Past tense (Bacelar 2004, 222, 226), in Lummi (Coast Salish - Steele 1981, 60; and Jelinek and Demers 1997, 310f), and in Lotha (Tibeto-Burman - Acharya 1983, 158).

o.	*	Mood	Asp	Tns	V	(Ø)
p.	✓	Mood	Asp	V	Tns ³⁰	
q.	✓	Mood	V	Asp	Tns ³¹	
r.	*	V	Mood	Asp	Tns	(Ø)
s.	*	Tns	Asp	Mood	V	(Ø)
t.	✓	Tns	Asp	V	Mood ³²	
u.	✓	Tns	V	Asp	Mood ³³	
v.	✓	V	Tns	Asp	Mood ³⁴	
w.	*	Asp	Tns	Mood	V	(Ø)
x.	*	Asp	Tns	V	Mood	(Ø)
y.	✓	Asp	V	Tns	Mood ³⁵	
z.	✓	V	Asp	Tns	Mood ³⁶	

The same parameters (with VP in place of NP) that we saw in (20) appear to provide an account of the attested and unattested orders of Mood, Tense and Aspect with respect to the verb.

³⁰ This order is documented in Gunwinggu, a North Australian language of Arnhem Land (Oates 1964, 49, 53, 82), and in Nevome (Uto-Aztecán - Shaul 1986, 25, 85). It also appears to be instantiated in Slave (Athapaskan - Rice 1989, 420, 588, 1003).

³¹ This order is documented in, among other languages, Santali (Munda - Gosh 1994, 106, 152), Northern Pomo (Hokan - O'Connor 1992, 47, 269), Iatmul (Papuan - Staalsen 1972, 49, 50, 57), and in the Australian languages Gidabal (Geytenbeek and Geytenbeek 1971, 45) and Pitjantjatjara (Glass and Hackett 1970, 32 and 74).

³² This order appears to be instantiated in a number of Austronesian languages, among which Loniu (Hamel 1994, 149) and Tigak (Beaumont 1979, 35 and 78ff). It is also displayed by Kom (Benue-Congo - Chia 1976), Blackfoot (Algonquian - Frantz et al. 1991), Sm'algyax (Penutian - Mulder 1994, 80, 178), and Cogtse Gyarong (Tibeto-Burman - Nagano 2003, 476f).

³³ This order appears to be instantiated in a number of Oceanic (Austronesian) languages, among which Kairiru (Ross 2002b, 211, 214), Kaulong (Ross 2002d, 400, 409), and Urak Lawoi' (Hogan 1999, 38, 40).

³⁴ Fernandez (1967, 30 and 44) explicitly claims that this is the order of tense, aspect, and interrogative mood suffixes in Remo (Munda-Khmer). The same order is apparently attested in the Niger-Congo languages Mundang (Adamawa - Elders 2000, 387, 389) and Noon (West Atlantic - Soukka 2000, 181, 200), and in Creek (Muskogean - Martin 2000, 388). It is also documented in a number of Tibeto-Burman languages (e.g., Limbu - Van Driem (1987, 90); and Apatani - Abraham 1985, 95, 103).

³⁵ This order is instantiated in a number of (non-Austronesian) Papuan languages of New Guinea: Amanab (Minch 1991, 10, 17ff, 60), Namia (Feldpausch and Feldpausch 1992, 55), Nend (Harris 1990, 139 and 154), Yagaria (Renck 1975, 101); in the Austronesian languages Urak Lawoi' (Hogan 1999, 7f and 19), in Diegueño (Hokan - Langdon 1970, 147 and 186), in Slave (Athapaskan - Rice 1989, 1114, 1131). This order is also found with free morphemes in Tondi Songway Kiini (Nilo-Saharan - Heath 2005, 175, 182), and Mina (Chadic - Frajzyngier and Johnston 2005, 183, 200).

³⁶ This is by far the most frequent order. It is typical of Altaic, Caucasian, Dravidian, Eskimo-Aleut, Manchu-Tungusic, Tibeto-Burman, and Papuan languages, and it is also found in many Amerindian, and Indo-European, languages.

Barbiers (2005) shows that much the same holds for the orders of two auxiliary/modal verbs and the lexical verb attested in the dialects of Dutch.

What remains to be seen is whether the rest of the patterns of (3)–(7) also show the same variation displayed by Dem Num A N and Mood Tense Aspect V. If they do, there will not only be evidence for the existence of the left-right asymmetry discussed here, but also some plausibility to the idea that such asymmetry should be accounted for in terms of a unique hierarchical structure shared by all languages, with extant differences stemming from the limited (and independently motivated) ways phrases can move. This is because such an account can discriminate precisely between the actually attested orders and the unattested ones.

A more general implication of this analysis, if correct, is that the lexical head is the lowest head of the projection (the one starting the syntactic computation), and that constituents found to the right of the lexical head are not base-generated there, but come to be there as a consequence of the head moving leftward past them, merged in pre-head position. Only if we assume that can we provide a unique structure underlying all attested word order variations in terms of independently motivated types of movement.

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