

The 'Antisymmetric' Program: Theoretical and Typological Implications ¹

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R.S.Kayne's *The Antisymmetry of Syntax* (Linguistic Inquiry Monograph 25), Cambridge, Mass.: MIT Press, 1994, Pp.xv+195

In more mature fields of inquiry, the existence of anomalies is no reason to reject a theory which provides non trivial explanations for a significant set of relevant phenomena. It may, however, decree the superiority of one theory over another when one but not the other is able to explain the anomalies away (while retaining an explanation for the same basic set of phenomena). ²

A well-known anomaly of all theories of syntax in the Sixties, Seventies and Eighties was the existence of various (unexpected) left-right asymmetries in the syntax of natural languages, both within single languages, and cross-linguistically. For example, it was known since the mid Sixties that while movement to the left (in a 'right branching' language like English) could apply over an unbounded domain, apparent movement to the right was "upward bounded" (Ross, 1967, 307).

More puzzling still was the subsequent observation that in what were then analysed as the mirror-image left branching languages of the OV type (cf. Chomsky 1964, 123, fn.9), no mirror-image unbounded movement to the right was attested either (cf. Bach 1971,161; Bresnan 1972,42ff), despite a few occasional claims to the contrary. ³

The various theories proposed, up to the Principles and Parameters theory of the

1. I thank Paola Beninca' and Richard Kayne for helpful comments.

2. For the notion of anomaly and its role in the change of scientific paradigms, cf. Kuhn (1962, chap. 6).

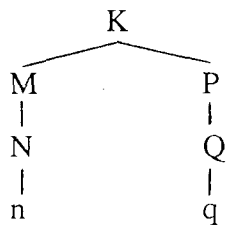
3. Cf. Satyanarayana and Subbarao (1973), Kaufman (1974), Colarusso (1979).

Eighties and early Nineties, were unable to provide an answer to these (as well as other) anomalies, due to their excessively unconstrained character.

In Kayne's *The antisymmetry of Syntax (AS)*, a drastic tightening of the theory is proposed, which, among other things, appears to be able to derive the 'anomaly' of the general left-right asymmetry of natural languages.⁴ This tightening involves a particular view of the mapping between hierarchical structure and linear order, which - Kayne suggests - used to be conceived of in an overly permissive way, with precedence entirely dissociated from hierarchical relations such as c-command. Kayne proposes interlocking the two, in such a way that the fundamental antisymmetry of linear order (not $(A>B \text{ and } B>A)$) be rigidly matched by a corresponding antisymmetry in the underlying hierarchical structure: namely, *asymmetric c-command* (not $(A \text{ c-commands } B \text{ and } B \text{ c-commands } A)$). The idea is that, given two nonterminals, X and Y, and the terminals they dominate, x and y, "if X asymmetrically c-commands Y, x precedes y" (p.33).⁵

The fact that all terminals must be ordered in a (consistent) precedence relation, and the assumption that asymmetric c-command between nonterminals maps to linear precedence between the respective terminals (formulated by Kayne in a "Linear Correspondence Axiom" (LCA) - cf. p.5f), have a number of non-trivial theoretical and empirical consequences; first and foremost, the exclusion of many hierarchical configurations which are "too symmetric", and which thus fail to determine a unique precedence relation between their terminals.

For example, the case of a phrase (K) exhaustively dominating two phrases (M and P) is ruled out for this reason:



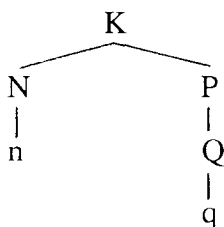
The nonterminal M asymmetrically c-commands the nonterminal Q, thus implying

4. This follows Kayne's (1984) earlier attempt to constrain the theory of phrase structure by excluding all but binary branching configurations, with the effect of reducing the possibilities made available by UG.

5. Strictly speaking, asymmetric c-command could translate into precedence or subsequence, but Kayne shows that it is precedence rather than subsequence, due to the fundamental asymmetry of time (see his discussion in § 4.3).

that M's terminal, *n*, precedes Q's terminal, *q*. On the other hand, the nonterminal P also asymmetrically c-commands the nonterminal N, thus implying that P's terminal, *q*, precedes N's terminal, *n*: a contradictory result.

A phrase (K) dominating a head (N) and another phrase (P) instead permits assigning a non-contradictory precedence relation among the respective terminals (as N alone asymmetrically c-commands Q):



This has the effect of deriving part of the basic tenet of X-bar theory that all phrases be headed (be endocentric).

2. Deriving X-bar theory

Kayne's LCA, in fact, derives most stipulated properties of X-bar theory: in addition to (1)a, just mentioned, the properties (1)b-d:

- (1) a There can be no phrase dominating two (or more) phrases (p.11)
- b There cannot be more than one head per phrase (p.8)
- c A head cannot take another head as complement (p.8)
- d A head cannot have more than one complement (p.136, fn.28) ⁶

Moreover, the adoption of a particular definition of c-command, exclusively referring

6. That a head cannot be a specifier is also derived, albeit via a further assumption ("that the highest element of a chain of heads must have a specifier" - p.31). If a head, in order to be licensed, needs to project (and discharge its theta-role(s)), it follows that the source of a head in specifier position must be a lower head position. But then the possibility arises of excluding its moving to a specifier position as a violation of Relativised Minimality (Rizzi 1990) (or "Shortest Movement"-Chomsky 1995). A closer potential landing site (the head of the phrase it adjoins to) is skipped (this still does not exclude a head becoming the specifier of itself).

to categories rather than segments ⁷, achieves the interesting related properties in (2):

- (2)
- a A specifier is an adjunct (p.17)
 - b There can at most be one adjunct/specifier per phrase (p.22)
 - c At most one head can adjoin to another head (p.20f)
 - d No non-head can adjoin to a head (p.19)
 - e Adjuncts/specifiers c-command out of the category they are adjoined to (p.18)
 - f An X' (the sister node of a specifier) cannot be moved (p.17)

Note that the identification of adjuncts with specifiers, and the prohibition against more than one adjunct/specifier per phrase, are by no means logically necessary properties of X-bar theory. It could well be that natural languages allow for phrases with multiple specifiers, and multiple adjuncts (Chomsky 1995). In fact, a definition of 'c-command' slightly different from the one assumed in AS would seem to achieve just that, while retaining most other features of Kayne's system. ⁸

It is however clear that the one-specifier/one-head theory is more restrictive (in that it gives a principled limit to the number of adjuncts/specifiers available), and hence should be preferred, it seems, if empirically adequate.

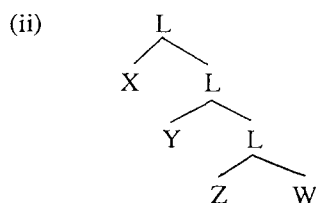
In fact, were no such limit imposed, some desirable empirical consequences of Kayne's system would seemingly be lost. Consider one example discussed in AS

7. Namely: "X c-commands Y iff X and Y are categories and X excludes [footnote omitted, G.C.] Y and every category that dominates X dominates Y" (p.16), where, as in Chomsky (1986, 9), "X excludes Y if no segment of X dominates Y".

8. Compare the AS definition of c-command given in the previous footnote with (i) below, where *segment* replaces the second mention of *category*:

- (i) "X c-commands Y iff X and Y are categories and X excludes Y and every **segment** that dominates X dominates Y".

This change ensures that the second (higher) adjunct/specifier asymmetrically c-commands the first adjunct/specifier since every segment that dominates X in (ii) dominates Y, but not viceversa:



This alternative however loses property (2)e (cf. AS 133f, fn.3), an empirically undesirable move.

(p.54).

If C° is the highest clausal head (necessarily preceding its complement), languages with final complementizers must be analysed as requiring movement of the IP complement of C° to its left, plausibly into Spec,CP. (This, incidentally, accords well with the general OV character of such languages, where the complement of V can also be taken to move leftward over V). If so, Spec,CP is no longer available for a wh-phrase to move to: a desirable consequence, as it was observed in Bach (1971,161)⁹ that interrogative wh-movement is generally absent from SOV languages.¹⁰

A system which systematically allows for multiple specifiers derives instead no such consequence, as more landing sites could in principle be available, one for the IP complement of C° , and one for wh-phrases.¹¹

Besides the theoretical advantage of deriving (hence 'explaining') the basic properties of X-bar theory, the AS system has the important theoretical consequence of introducing severe restrictions on the possible phrase structures (and derivations) admitted by UG.

3. A universal (specifier > head > complement) order and left/right asymmetries

If asymmetric c-command maps to linear precedence, as noted, adjuncts/specifiers, which asymmetrically c-command their head, necessarily precede it; analogously, heads, which asymmetrically c-command their complement, necessarily precede it; and this imposes a rigid *specifier > head > complement* order. A complement which is to the left of its head cannot be in 'complement position', but

9. Also see Greenberg's (1966) Universal 12 "If a language has dominant order VSO in declarative sentences, it always puts interrogative words or phrases first in interrogative word questions; if it has dominant order SOV in declarative sentences, there is never such an invariant rule".

10. As Kayne himself notes (p.142,fn20), the prediction is actually more delicate in a theory allowing for more than one CP, and more work is clearly needed to sharpen the contours of the 'split COMP' space. Cf. Rizzi (1995). But it seems that the tendency is robust enough to warrant the conclusion he draws.

11. For some empirical evidence apparently favoring the 'one-specifier/one-head' theory over the 'multiple specifier' theory, see Cinque (forthcoming).

must have raised to an (adjunct/specifier) position which asymmetrically c-commands (its trace and) the head. Analogously, a head which is to the left of its specifier must have raised to a head position asymmetrically c-commanding (its trace and) the specifier.

This clearly requires a radical rethinking of many traditional analyses and assumptions (a typical feature of a change of paradigm). OV languages can no longer be seen as mirror images of VO languages, but rather as VO languages whose objects have raised across their heads. Moreover, all apparent movements of X to the right of Y must be rethought of as movement of Y to the left of X, or in terms of independent 'base generation' of X to the right of Y.

Kayne shows that in most cases independent considerations are against a rightward movement analysis of "Right Node Raising" (p.67f), "Heavy NP Shift" (p.71ff), "Subject Inversion (or postposing)" in Romance (p.77f), "Right Dislocation" (p.78ff), Relative Clause (and PP) Extraposition (p.117ff), Result and Comparative Clause Extraposition (p.126ff), and in favor of either an independent base generation or stranding of the (apparently) "moved" constituent in a c-commanded position.

As anticipated above, a general consequence of the AS system is a principled account of many left/right asymmetries in natural languages. The general "upward boundedness" of all (apparent) movements to the right, which has to be stipulated in theories that allow for such movements, follows if no adjunction (hence no movement) to a *c-commanding position to the right* is permitted.¹²

From the same ban against rightward movement/adjunction also follows the mentioned absence of wh-movements to final position in OV languages (as opposed to leftward wh-movements to initial position in VO languages).

It is impressive how many standard analyses have to be reconsidered and reanalysed in the light of the AS system, with illuminating results.

In addition to the consequences already mentioned, the AS system forces the adoption of a 'promotion' analysis of relative clauses (where the relative CP is a sister of D° and the relative clause 'head' raises from inside the relative CP to Spec,CP - p.86ff), and opens up alternative analyses for possessive phrases (p.85,101ff), and adjective phrases (p.97ff), within the DP. As Kayne succinctly and aptly puts it, if one adopts the AS system, one has "the all too infrequent

12. Movement to the right to a *c-commanded* position (lowering) is also excluded, by the general Proper Binding Condition (Fiengo 1977), whether this is a primitive, or derives from some other abstract principle(s).

pleasure of seeing the theory choose the analysis" (p.132), with obvious desirable repercussions for the rational reconstruction of language acquisition.

Any attempt to discuss the many language specific and typological consequences of the AS system is clearly out of the question here. In what follows, I will limit myself to four points: first, to discussing one additional case of left/right asymmetry which appears to find an interesting account in the AS system (§ 4); secondly, to pointing out certain areas where a further tightening of the AS system may be possible (§ 5); thirdly, to discussing the AS analysis of clitics, for which I will suggest an alternative compatible with the antisymmetric program (§ 6), and finally to suggesting a possible extension of the LCA to phonology (§ 7).

4. *An additional left/right asymmetry*

One more left/right asymmetry which the AS system appears to accommodate naturally is Greenberg's (1966,87) 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."

The left/right asymmetry consists in the fact that while to the right of the N both the order Dem(onstrative) Num(eral) A(djective), and its mirror-image A Num Dem, are possible, to the left of the N only the order Dem Num A is attested.

How can we make sense of this asymmetry? A clue comes from the finer grained study of Hawkins' (1983).¹³ Hawkins points out that in prepositional languages "if the demonstrative determiner follows the noun, the adjective follows the noun; i.e. Prep \supset (NDem \supset NA)" (p.71). In other terms, we have prepositional languages displaying the orders in (3), but no prepositional language displaying the order in (4) (also see Greenberg's 1966, 86, table 6):

13. Hawkins' study is based on an expanded sample, with data from over 150 languages (compared with Greenberg's 30 language sample) for the word orders of demonstrative, numeral, adjective and noun (cf. Hawkins 1983, 9 and chap.8).

- (3) a. NDem & NA (Swahili, Fulani, Bahasa Indonesian,..)
 b. DemN & NA (Maori, Baure, Douala, Tunen,..)
 c. DemN & AN (Greek, Maya, Norwegian,..)
- (4) *NDem & AN

Likewise, considering the relative order of numerals and adjectives, Hawkins points out that in prepositional languages "if the numeral follows the noun, the adjective follows the noun; i.e. $\text{Prep} \supset (\text{NNum} \supset \text{NA})$ " (p.72). In other terms, there are prepositional languages displaying one of the orders in (5), but none displaying the order in (6):

- (5) a. NNum & NA (Swahili, Douala, Tunen,..)
 b. NumN & NA (Maori, Baure, Bahasa Indonesian,..)
 c. NumN & AN (Greek, Maya, Norwegian,..)
- (6) *NNum & AN

The pattern of attested (and unattested) word orders in (3) through (6), and Hawkins' implicational universals based on them ($\text{Prep} \supset (\text{NDem} \supset \text{NA})$ and $\text{Prep} \supset (\text{NNum} \supset \text{NA})$) appear to follow from the two simple assumptions in (7):

- (7) a. The base structure is:
 ... [_{XP} [_{XP} X [_{YP} Dem [_{YP} Y [_{WP} Num [_{WP} W [_{ZP} Adj [_{ZP} Z [_{NP} N]]]]]]]]]]]
 i.e. with demonstratives in a Spec higher than the one containing numerals, which in turn is higher than the Spec containing adjectives.¹⁴
- b. N either remains in situ or raises to one of the higher (functional) heads (W in Maori - cf. (3)b, (5)b -, Y in Douala -cf. (3)b, (5)a -, X

14. Evidence for the location of Demonstratives and Adjectives in specifier positions within the extended projection of the N is discussed in Giusti (1992, 1993) and Cinque (1994), respectively. Additional evidence for Giusti's idea that Demonstratives are in specifier position as opposed to determiners (articles) - which are in head position within the extended projection of the N - appears to come from certain typological findings of Dryer's. While, as Dryer (1989) notes, article-N order correlates with V-O order (as one would expect if the article is a head taking a projection of the N as its complement), no such correlation exists for the order Demonstrative-N (Dryer 1992, 96 and 120ff), as is also the case with other nominal modifiers (Adj-N, Numeral-N, Intensifier-Adj, etc. - Dryer 1988, 1992,95,97, and 118ff).

in Swahili -cf. (3)a, (5)a).¹⁵

This implies that whenever N precedes Num (is in Y or higher) it will a fortiori precede A; whence the theoretical impossibility of (prepositional) languages displaying the word order correlation in (6). Similarly, whenever N precedes Dem (is in X, or higher), it will a fortiori precede A; whence the theoretical impossibility of the word order correlation in (4) above.¹⁶

Consider now postpositional languages. As Hawkins notes, "[i]nstead of the expected mirror-image implication, $\text{Post} \supset (\text{DemN} \supset \text{AN})$, we find that postpositional languages obey the same implicational regularity as prepositional languages: $\text{NDem} \supset \text{NA}$ " (p.81). Analogously, NNum implies NA (p.82). In other words, while there are postpositional languages with the orders (8) and (9), there are none with the orders (10) and (11) (cf. Hawkins 1983, 81f):

- (8) a. $\text{NDem} \ \& \ \text{NA}$ (Selepet, Mojave, Diegueño,...)
- b. $\text{DemN} \ \& \ \text{NA}$ (Burmese, Kabardian, Warao,...)
- c. $\text{DemN} \ \& \ \text{AN}$ (Burushaski, Hindi, Japanese,...)

15. For an analogous proposal concerning the position of the N w.r.t. different classes of adjectives in Romance vs. Germanic, cf. Cinque (1994).

16. On the basis of (7), we should also expect the existence of prepositional languages with one of the orders in (i), and the non existence of prepositional languages with the order in (ii):

- (i) a. $\text{NDem} \ \& \ \text{NNum}$
- b. $\text{DemN} \ \& \ \text{NNum}$
- c. $\text{DemN} \ \& \ \text{NumN}$
- (ii) * $\text{NDem} \ \& \ \text{NumN}$

This word order is not explicitly discussed in Hawkins (1983). To judge from Greenberg's (1966) 30 language sample, it would seem to be largely observed (It is in 10 out of the 16 prepositional languages of the sample), although there are some counterexamples (Berber, Hebrew, Welsh, Zapotec), apparently instantiating (ii). These, however, may turn out to be spurious if demonstratives, rather than being 'base-generated' in a Spec to the left of Numerals as in (7a), are *moved* there from a lower position, and may/must remain in situ in certain languages. On the basis of Spanish, Brugè (1995), in fact argues that they are generated in a position between the rightmost AdjectiveP and the subject of the NP (cf. *El libro viejo este suyo de syntaxis* 'the book old this his of syntax'), possibly the same position hosting *-ci* of *ce-ci* 'this here' and *là* of *quello là* 'that there', in French and Italian.

Interestingly, among the apparently problematic cases in Greenberg's sample, both Welsh and Hebrew have demonstratives only in situ, in this low position within the DP (*Y pump llyfr newydd hyn gan John ar wleidyddiaeth* 'The five books new these of J. on politics' (These five new books by J. on politics) - M. Parry p.c.; and *Shloshet ha-yeladim ha-ktanim ha-elu* 'Three the-children the-small these' (These three small children) - U. Shlonsky and T. Siloni p.c.).

- (9) a. NNum & NA (Selepet, Mojave, Kabardian, Warao,...)
 b. NumN & NA (Burmese, Hixkaryana, Ubykh,...)
 c. NumN & AN (Burushaski, Hindi, Japanese,...)

(10) *NDEM & AN

(11) *NNum & AN

If postpositional (OV) languages were 'symmetric' to prepositional (VO) languages, with Spec's on the right and with rightward movement, as illustrated in (12), one would expect that DemN implied AN, thus ruling out the existence of postpositional languages with both DemN and NA. But these are attested (cf. 8b above):¹⁷

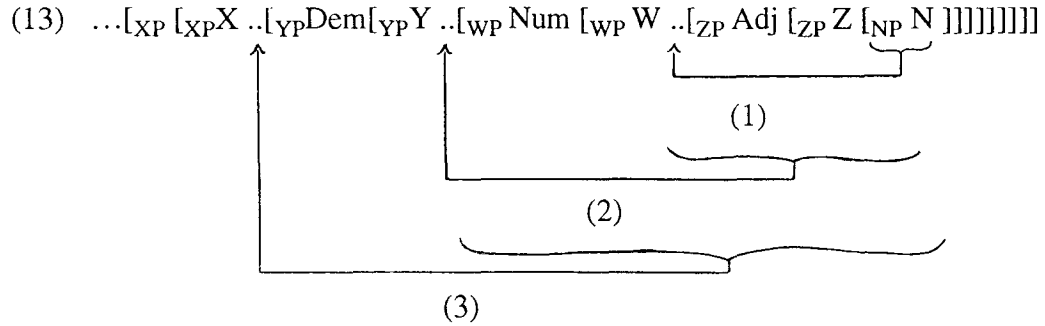
(12) $[\text{NP } \text{N}] \text{ } \underset{\uparrow}{\text{Z}} \text{ } [\text{ZP}] \text{ } \text{Adj } [\text{ZP}] \text{ } \underset{\uparrow}{\text{W}} \text{ } [\text{WP}] \text{ } \text{Num } [\text{WP}] \text{ } \underset{\uparrow}{\text{Y}} \text{ } [\text{YP}] \text{ } \text{Dem}] \text{ } \underset{\uparrow}{\text{X}} \text{ } [\text{XP}] \text{ } \text{XP}] \dots$

The AS system, in ruling out any such mirror-image structures and derivations, leaves only two general possibilities, beginning from the structure in (7)a (shared with prepositional languages).¹⁸ Either nothing moves, in which case we have the order: Dem > Num > Adj > N, as found in, e.g., Hindi - cf. Hawkins 1983, 119 - (the same order as that yielded by prepositional languages where nothing moves); or we have a number of successive leftward movements of the complements of the functional heads Z, W, Y of (7)a to Spec positions of intermediate (possibly Agreement) XPs, as shown in (13). This gives the N Adj Num Dem order possibility of Greenberg's Universal 20 displayed by postpositional OV languages like Selepet (Hawkins 1983, 119):¹⁹

17. In the 'symmetric' view, we would also expect the existence of postpositional languages with the orders Adj N Num Dem and Adj Num N Dem (with N raised to W and Y of (12), respectively). But none exist, as we should expect, given the implication holding of postpositional (and prepositional) languages, that NDEM \supset NAdj (cf. Hawkins' 1983,81, already quoted).

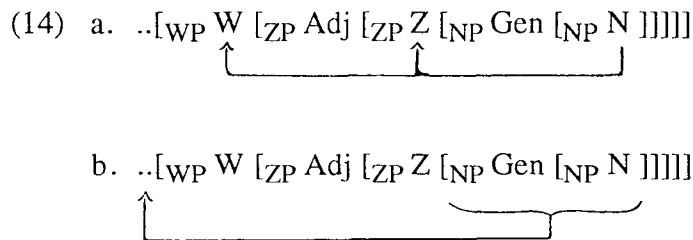
18. Whitman (1981) shows that the case of adjectives occasionally preceding the demonstrative and the numeral in head-final languages does not contradict Greenberg's finding concerning the order of pre-N Dem Num Adj, as pre-Dem adjectives can only be interpreted non-restrictively in head-final languages, just like pre-Dem relative clauses (which suggests that pre-Dem adjectives are in fact reduced relatives).

19. These (successive) leftward movements of XPs are typical of postpositional (OV) languages. Cf. the AS discussion of agglutination and final complementizers in head-final languages (p. 52ff).



Evidence apparently supporting the derivation shown in (13) is provided by the fact that one of the intermediate steps of (13) is also attested; namely the order: Dem N Adj Num found in such postpositional languages as Kabardian and Warao (Hawkins 1983,119), derived via the steps (1) and (2) of (13).²⁰

Burmese, Kokama and Ubykh, with the order Dem Num N Adj, could instead be taken to instantiate the other intermediate case, with only step (1) of (13) applied. That it is NP raising to the left of the Adj in these postpositional languages (rather than N raising, as in prepositional languages) may be indicated by the fact that in these languages the Genitive (in Spec,NP) precedes the N, whereas in prepositional languages when the adjective follows the N so does the Genitive (cf. Hawkins' 1983, 66). This follows if we have N raising across the Adjective in prepositional languages ((14)a), and NP raising across the Adjective in postpositional languages ((14)b):

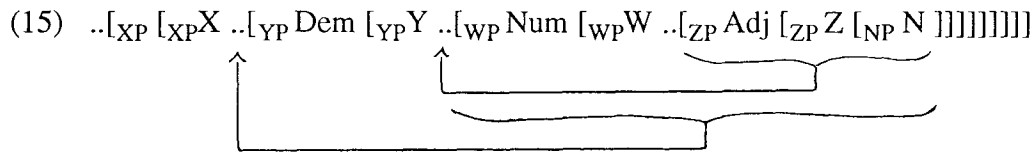


It should be noted that whereas postpositional languages have (successive)

20. It seems that step 2 (and 3) of (13) cannot apply unless step (1) has also applied. Otherwise, the unattested order Adj N Num Dem (cf. fn.16) would be derived.

The Num N Adj Dem order found in Basque (Hawkins 1983,119) would seem to be derivable via steps (1) and (3) of (13), without the application of the intermediate step (2), possibly a marked option. The same order in prepositional languages (Welsh, Hebrew, and the others cited in Rijkhoff 1990,27) should instead be interpreted as seen in fn.15 above, with the demonstrative occurring in the lower 'base generation' position. It remains to be seen whether the exceptions to Hawkins' NDem \supset NAdj that Dryer (1988,208) found in his sample are amenable to a similar account. For a case (Aghem), which appears problematic from the present perspective, cf. Hawkins (1983,119).

leftward XP movements, as seen (and, possibly, no leftward movement of just the N), prepositional languages have N raising, but crucially no leftward XP movements here. If they could move the XP complements of the functional heads W and Y, as illustrated in (15), orders should be possible which are not attested, namely Dem Adj N Num, and Num Adj N Dem:



Hawkins (1983, 118) explicitly notes that no such orders are attested in his data.²¹

In sum, in as much as it is able to derive the Dem Num A N order, as well as the N Dem Num A and the N A Num Dem orders, but is unable to derive the unattested A Num Dem N order (among others), the AS system affords a principled explanation for Greenberg's Universal 20 (with its left/right asymmetry), and Hawkins' refinements of it; a remarkable feat.

5. Possible further restrictions of the AS system

The system proposed in AS drastically limits, as seen, the possibilities made available by UG. Nonetheless, it is possibly susceptible of still further restrictions. For example the targets of many leftward movements are left open, as is the general architecture of the clause, certainly because determining their status is largely an empirical question that has barely begun to be investigated.

21. Although they are allowed by Greenberg's (1966) "any or all" clause in his Universal 20 - see Hawkins' 1983, 117ff for discussion -. Dem Num N Adj is attested (in Romance), but as a function of the movement of the N alone, not of NP, as shown by the impossibility of Dem Num [Gen N] Adj.

That postpositional, but no prepositional, languages *can* move XP complements of functional heads leftward (successively) seems to be at the basis of two more left/right asymmetries between the two types of languages - cf. Hawkins (1988), Dryer (1992, 86 and 102) -: 1) while, in postpositional languages, complementizers may be either to the left of the clause (initial), or to its right (final), in prepositional languages, they are invariably to its left (initial) (pace Chinese, which has many features of postpositional languages, such as relative clause-N, Standard-Adj, etc.); 2) while postpositional languages have either relative clauses preceding the N, or following it, prepositional languages only have relative clauses following the N (again pace Chinese).

Clearly, the predictions made by the system will be all the more precise as these questions are ultimately settled one way or the other.

If projections were not 'functionally specialised' (and labeled), and were not limited in stock, the derivation of the left/right asymmetry in wh-movement discussed above in §2 would not be straightforward. For example, the possibility must be excluded that a head be freely created, to host a wh-phrase in its specifier, above the CP in whose specifier IP has raised. If the structure of the clause is fixed once and for all, this possibility may be excluded as a matter of principle.

The existence of more than one CP does not by itself jeopardize the account of the left/right asymmetry of wh-movement, at least if the various CPs are 'functionally specialized', and, for example, IP were to raise to the Spec of a CP higher than the WH CP.²² Once again, this ultimately reduces to an empirical issue (within a more general matter of principle). The same is clearly desirable for the 'space' below C.²³

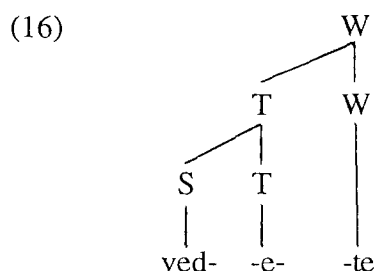
I will now turn to another apparent consequence of the AS system discussed by Kayne, suggesting a possible alternative which is still compatible with the 'antisymmetric' spirit.

6. *The adjunction site of clitics (in Romance)*

Differently from Kayne (1975, chap.2), AS takes clitics not to adjoin directly to verbs; a conclusion based on the following *reductio ad absurdum*. If the LCA extends to subword structure, a verb of the form *stem + thematic vowel + suffix* must have the thematic vowel adjoined to the suffix, the head of the word, and the stem adjoined to the thematic vowel:

22. In this case, there would be no landing site for the wh-phrase higher than the fronted IP, nor could the wh-phrase move to the WH COMP leaving its trace unbound within the IP moved higher than the wh-phrase.

23. For a specific proposal in this direction, see Cinque (forthcoming). At first sight, the 'multiple specifier' and the 'one head/one specifier' theories would seem to be equivalent, at least if one were to introduce a functional specialization, and a rigid relative order of the multiple specifiers. But the two theories can be empirically distinguished on other counts, and the facts seem to support the 'one head/one specifier' theory (cf. Cinque, forthcoming, for discussion).



A clitic could not adjoin to the nonterminal dominating the suffix nor to that dominating the thematic vowel as it would qualify as a second adjunct. It could only adjoin to the stem. By the same token, however, if the stem were preceded by a prefix (which would have to be adjoined to the stem) the clitic could only be adjoined to the prefix, not to the stem; thus giving an apparently unnatural result.

So, either the LCA does not extend to subword structure, or clitics adjoin to an (empty) functional head higher than the verb.²⁴

Since they clearly adjoin to higher heads in certain cases (e.g. *En fort bien parler* 'of-it strong well to-speak' - Kayne 1991, 654fn.18 -), taking them to always do so allows the LCA to hold of subword structure: a welcome (because restrictive) result.

This implies, then, that in a French subject clitic - verb inversion like (17) the verb is not in C, as there must be a distinct higher head, between Spec,C and the verb, to which the (object) clitic *la* is adjoined:

- (17) *Depuis quand la connais-tu?*
 'Since when her know you'
 Since when do you know her?

If it may have the desirable effect of giving an account for complex inversion (*Quand Jean est-il arrivé* 'When has J. arrived?'), and the impossibility of **Est Jean à Paris?* 'Is J. in Paris?' in French (cf. AS, p.44), this assumption does not extend as straightforwardly to other Romance constructions, where a clitic still precedes a verb which has arguably raised to C. For example, in Italian, the construction in (18), which displays the order *complementizer + subject + subjunctive verb*, has an alternative where the subjunctive verb precedes the subject and no complementizer can be present, thus suggesting that the V has raised to C. Cf. (18) and (19):²⁵

24. I am restricting attention to proclitics. For enclitics, see AS, 139 fn.19.

25. An argument of this type for V to C raising is discussed in relation to a similar construction in Rizzi (1982,83f). Here we have additional evidence that it is the verb that has raised over the subject (to C°), as the 2nd person sing. of the present subjunctive can not be a null personal pronominal, and can be a null expletive in construction with an inverted subject only marginally. See:

- (18) **(Che) tu sia convinto di questo, o no, fa poca differenza*
 'Whether (lit. 'that') you are convinced of this, or not, makes little difference'
- (19) *(*Che) sia tu convinto di questo, o no, fa poca differenza*
 'Whether you are (lit. 'Be you') convinced of this, or not, makes little difference'

Crucially, if a clitic is present it must precede the verb (in C):

- (20) *Ne sia tu convinto, o no, fa poca differenza*
 'Whether you are convinced of this, or not, makes little difference'

As a matter of fact, French presents a comparable construction:

- (21) a. *Peut-être qu'il l'a reçu*
 Maybe that he it has received
 b. *Peut-être (*que) l'a-t-il reçu*

In both cases, the order *clitic verb subject* follows automatically if the clitic is indeed adjoined to the verb in I, before its movement to C across the subject.

In the AS system, there must be a higher C to which the clitic independently moves, and a separate principle that demands that clitics always attach to a head preceding the position of the finite verb, whatever that is, I or C. Note however that in the latter analysis one could in principle expect some element to intervene between the clitic and the verb even in the COMP space (as it does in the IP space, as seen above). But no such case (as **Le peut-être a-t-il reçu* 'It maybe has he received') is attested, as far as we know, in any regional, stylistic, or ancient variety of French.

Suppose we were to conclude then that clitics can adjoin to a verb (when this has

- (i) a. *Credono che (io)/(tu)/(lui) mi/ti/si sia sbagliato*
 they think that (I)/(you)/(he) was/were/was mistaken
 b. *Credono che mi/ti/si sia sbagliato io/??tu/lui*
 they think that was/were/was mistaken I/you/he

The marginality of the variant of (i)b with *tu* thus contrasts with the perfect status (at a high stylistic level) of (19).

raised to the relevant functional category).²⁶ Would that exclude an extension of the LCA to subword structure? Not necessarily. It seems possible to retain the extension of the LCA to subword structure while at the same time permitting clitics to adjoin to verbs; namely, by having the LCA apply in the subword (morphological) component with results that are 'invisible' to the syntactic component.

This amounts to saying that a verb, even if morphologically complex ([re[at[test[s]]]]) is syntactically simplex; merely a V.

Under a "checking by raising" theory (Chomsky 1995; AS, p.140, fn.10), this conclusion is in fact almost forced, it seems. If words come fully inflected from the lexicon, should the *syntactic* category of the word be determined by its rightmost morphological element, we would never have a VP, but, directly TenseP (in a case like *reattested*); or NumberP, in a case like *reattests*, if *-s* codes number (Kayne 1989): not a fully satisfactory result.

Moreover, if the LCA were to extend to phonology, as I tentatively put forth in the next section, there would be one more reason for separating the application of the LCA to subword (morphological) and above word (syntactic) structure. For, in that case, I think, we would have little doubt about the essential irrelevance of any internal phonological structure of the word to syntax. By the same token, our view of morphological subword structure vis-à-vis syntactic structure should probably be no different.

7. *The LCA in phonology*

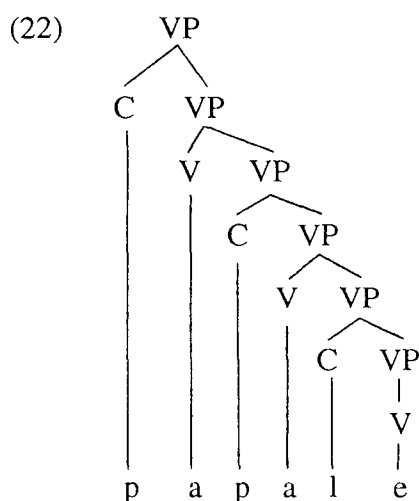
As seen, the LCA implies that the antisymmetry of linear order reflects a comparable antisymmetry in underlying hierarchical structure. In AS, Kayne considers the consequences of this idea for syntax and morphology. Suppose we took it to hold of phonology as well. That would mean that the linear order of segments should reflect a comparable antisymmetric underlying hierarchical structure. As a matter of fact, such structure is (virtually) already given if one thinks of syllable structure, which a rich tradition views in an X-bar format, with the *onset*

26. Under this view, the clitic, which I take to move as a head in the last step of its movement, after moving within a DP (cf. AS, 61), either adjoins to the relevant F°, if this is empty, or to the V which has adjoined to F°, in either case complying with the LCA.

as the Specifier of a head (the *nucleus*), which is taken to form a constituent (the *rhyme*) together with a complement (the *coda*): [syllable onset [rhyme nucleus coda]] where syllable = NucleusP, or, for simplicity, V(owel)P. Cf. Kenstowicz (1994, chap. 6 and 8), and references cited there.

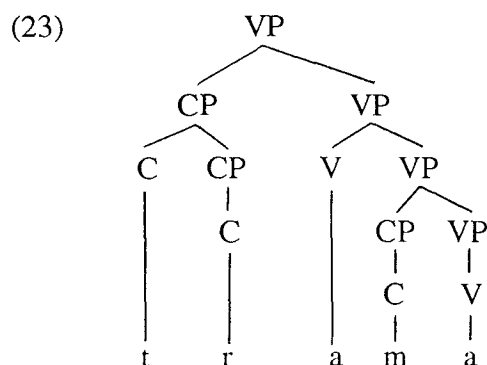
Needless to say, a proper extension of the LCA to the syllable plane requires a number of non trivial modifications of standard assumptions, whose phonological significance would have to be ascertained. That cannot be done here. Here I will limit myself to some of the implications that ensue from such an extension.

For example, to give a total linear order of all the C's and V's, the representation of a plurisyllabic word would have to look something like the tree in (22):

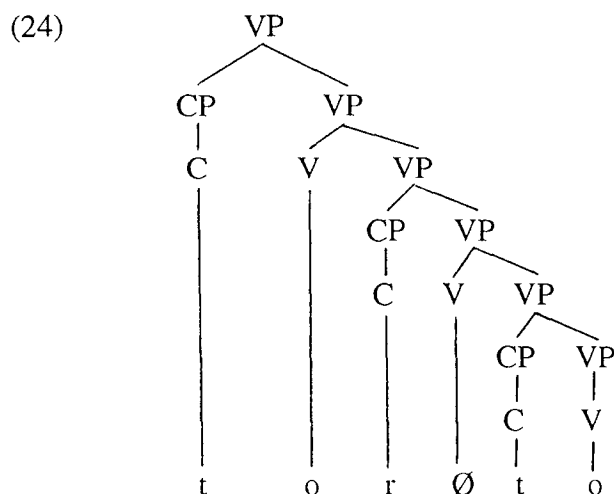


Although CV is the unmarked syllable (in some languages, the only type of syllable), departures from it, involving complex onsets and codas, are very common. For onsets, this could imply replacing C with a *nonterminal* C(onsonant)P (actually expected under the LCA) dominating C with an optional CP complement: ²⁷

27. Alternatively, complex onsets could be treated as must complex codas, as the outcome of CV.CV.. structures with empty nuclei. But this alternative would seem to lose the property that codas, but not onsets, contribute (moras) to the weight of the syllable. Cf. below.



Codas would instead have to consist of VPs with empty V's (nuclei) - cf. (24) -:



The postulation of empty nuclei is not unprecedented. It is in fact systematically employed in Government Phonology (Kaye, Lowenstamm and Vergnaud 1990, Kaye 1990, Charette 1991, and related work), where consonant clusters are indeed analysed as CV.CV.CV sequences, with general and language particular principles determining where nuclei can be empty, or must be phonetically realized (with an interesting unified analysis of such apparently independent processes as syncope, epenthesis, harmony, metathesis, etc.).

Moreover, the general format of (22)/(23)/(24) lets us see a possible way to unify the X-bar and moraic theories of the syllable, which are currently taken to be alternatives. This can apparently be achieved by taking each VP to count as a mora (with the direct consequence that codas - which are onsets of empty nucleus VPs - contribute to the weight of the syllable, a structure consisting of up to 2 (or 3) VPs, while onsets (of overt nucleus VPs) do not by themselves).

Other adjustments would be necessary if we were to follow up this extension,

which, needless to say, at this stage, can only be a promissory note.

8. *Conclusion*

Even if I have decided to focus here on a very limited number of consequences of Kayne's work, I hope I have at least given a sense of the extremely far-reaching implications of his overall theoretical program. If one were not to feel uneasy when comparing the theory of syntax with the theories of more mature sciences, one could picture Kayne's theory as our closest approximation to a revolution, which will be followed by a period of normal science trying out all of its consequences and implications (until the next revolution).

References

- Bach, E. (1971). "Questions", *Linguistic Inquiry*, 2, 153-166.
- Bresnan, J. (1972). *Theory of Complementation in English Syntax*, Ph.D. Dissertation, MIT.
- Brugè, L. (1995). "Il movimento del dimostrativo in spagnolo", ms., Università di Venezia e Padova.
- Charette, M. (1991). *Conditions on Phonological Government*, Cambridge, Cambridge University Press.
- Chomsky, N. (1964). "On the Notion 'Rule of Grammar'", in J.Fodor and J.Katz (eds.) *The Structure of Language: Readings in the Philosophy of Language*. Englewood Cliffs (N.J.), Prentice Hall, pp.119-136.
- Chomsky, N. (1986). *Barriers*, Cambridge, Mass., MIT Press.
- Chomsky, N. (1995). *The Minimalist Program*, Cambridge (Mass.), MIT Press.
- Cinque, G. (1994). "On the Evidence for Partial N-Movement in the Romance DP", in G. Cinque, J. Koster, J.-Y. Pollock, L.Rizzi and R. Zanuttini (eds.) *Paths Towards Universal Grammar. Studies in Honor of Richard S. Kayne*, Washington, Georgetown University Press, pp.85-110.
- Cinque, G. (forthcoming) *Adverbs and the Universal Hierarchy of Functional Projections*.
- Colarusso, J. (1979). "Rightward Movement, Question Formation and the Nature of Transformational Processes: the Circassian Case", *Papere zur Linguistik*, 21, 27-73.
- Dryer, M.S. (1988). "Object-Verb Order and Adjective-Noun Order: Dispelling a Myth", *Lingua*, 74, 185-217.
- Dryer, M.S. (1989). "Article-noun order", *Papers from the 25th Regional Meeting of the Chicago Linguistic Society*, pp.83-97.
- Dryer, M.S. (1992). "The Greenbergian Word Order Correlations", *Language*, 68, 81-138.
- Fiengo, R. (1977). "On Trace Theory", *Linguistic Inquiry*, 8, 35-61.
- Giusti, G. (1992). "Heads and Modifiers among Determiners. Evidence from Romanian and German", *University of Venice Working Papers in Linguistics*, 3, CLI.
- Giusti, G. (1993). *La sintassi dei determinanti*, Padova, Unipress.

- Greenberg, J. (1966). "Some Universals of Grammar with Particular Reference to the Order of Meaningful Elements", in J. Greenberg (ed.) *Universals of Language* (2nd edition), Cambridge, Mass., MIT Press, pp. 73-113.
- Hawkins, J. A. (1983). *Word Order Universals*, New York, Academic Press.
- Hawkins, J. A. (1988). "On explaining some left-right asymmetries in syntactic and morphological universals", in M. Hammond, E. Moravcsik and J. Wirth (eds.) *Studies in Syntactic Typology*, Amsterdam, Benjamins, pp.321-357.
- Kaufman, E. S. (1974). "Navajo Spatial Enclitics: A Case for Unbounded Rightward Movement", *Linguistic Inquiry*, 5, 507-533.
- Kaye, J. (1990). "'Coda' Licensing", *Phonology*, 7, 301-330.
- Kaye, J., J. Lowenstamm and J.-R. Vergnaud (1990). "Constituent Structure and Government in Phonology", *Phonology*, 7, 193-231.
- Kayne, R. S. (1975). *French Syntax*, Cambridge, Mass., MIT Press.
- Kayne, R. S. (1984). *Connectedness and Binary Branching*, Dordrecht, Foris.
- Kayne, R. S. (1989). "Notes on English Agreement", *CIEFL Bulletin*, 1, 41-67.
- Kayne, R. S. (1991). "Romance Clitics, Verb Movement and PRO", *Linguistic Inquiry*, 22, 647- 686.
- Kenstowicz, M. (1994). *Phonology in Generative Grammar*, Oxford, Blackwell.
- Kuhn, T. S. (1962). *The Structure of Scientific Revolutions*, Chicago, Chicago University Press.
- Rijkhoff, J. (1990). "Explaining Word Order in the Noun Phrase", *Linguistics*, 28, 5-42.
- Rizzi, L. (1982). *Issues in Italian Syntax*, Dordrecht, Foris.
- Rizzi, L. (1990). *Relativized Minimality*, Cambridge (Mass.), MIT Press.
- Rizzi, L. (1995). "The Fine Structure of the Left Periphery", ms., Université de Genève.
- Ross, J.R. (1967). *Constraints on Variable in Syntax*, Ph.D. Dissertation, MIT.
- Satyanarayana, P. and K. V. Subbarao (1973). "Are Rightward Movement Rules Upward Bounded?", *Studies in the Linguistic Sciences*, 3 (1), 182-192.
- Whitman, J. (1981). "The Internal Structure of NP in Verb Final Languages", *Papers from the XVII Regional Meeting of the Chicago Linguistic Society*, pp.411-418.