HEAD-FINAL EFFECTS AND THE NATURE OF MODIFICATION [1]

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ABSTRACT

In English and other languages, pre-modifiers must generally be head-final, whereas specifiers need not be, which suggests that modifiers are NOT specifiers. The theory of modification defended here rests on a unified version of Merge triggered by satisfaction of selection features under a Priority constraint and claims that the label is dynamically determined by the object containing unsatisfied features AFTER Merge or Move. 'Adjuncts' do NOT exist in it, for modification reduces to complementation. Modifiers are just additional predicates, modifieds are their complements or specifiers depending on the previous structure of the modifier, and correct scope and surface order, including head-final effects and absence thereof, follow from Kayne's LCA without stipulations like the HEAD FINAL FILTER. Empirically and conceptually, this theory compares favourably with major alternatives like Kayne's, Chomsky's, Cinque's, or Ernst's, and perhaps deserves consideration within a minimalist programme.

[Key words: modification, modifier, Merge, Head Final Filter]

1 HEAD-FINAL EFFECTS

In English and other languages, [2] certain phrases must be head-final. This is the case of APs pre-modifying nouns, as in (1).

(1) (a) a [$_{AP}$ keen] student

(b) a student [$_{AP}$ keen [$_{PP}$ on jazz]]

(c) *a [$_{AP}$ keen [$_{PP}$ on jazz]] student

The constraint responsible for such facts is known in the literature under various names, Emonds' 'Surface Recursion Restriction' and Williams' 'Head-Final Filter' (henceforth, SRR and HFF, respectively) being perhaps the best known. [3]

Although the literature on SRR/HFF has referred mostly to the core case of APs modifying nouns in (1), DP, PP, VP, and CP modifiers cannot precede nouns, either, as the examples of (2)-(6) show. [4]

(2) (a) Bill's lecture [$_{DP}$ this morning]

(b) *Bill's [$_{DP}$ this [$_{NP}$ morning]] lecture

(3) (a) a residential area [$_{PP}$ near Boston]

(b) *a [$_{PP}$ near [$_{DP}$ Boston]] residential area

(4) (a) a briefcase [$_{VP}$ containing documents]

(b) *a [$_{VP}$ containing [$_{DP}$ documents]] briefcase

(5) (a) a politician [$_{VP}$ concerned with social welfare]

(b) *a [$_{VP}$ concerned [$_{PP}$ with social welfare]] politician

(6) (a) a book [$_{CP}$ which I published in 1991]

(b) *a [$_{CP}$ which [$_{IP}$ I published in 1991]] book

Correspondingly, non-parenthetical non-head-final AdvP, DP, QP, NP, AP, PP, VP and CP modifiers usually cannot precede verbs either, as the contrasts in (7)-(13) illustrate (but see 3.3.2 on potential counterexamples).

(7) (a) He reached the same results [$_{ADVP}$ independently [$_{PP}$ of Leibniz]].

(b) *He [$_{ADVP}$ independently [$_{PP}$ of Leibniz]] reached the same results.

(8) (a) He announced the news [$_{DP}$ this morning].

(b) *He [$_{DP}$ this [$_{NP}$ morning]] announced the news.

(9) (a) He saved our marriage [$_{QP}$ several times].

(b) *He [$_{QP}$ several [$_{NP}$ times]] saved our marriage.

(10) (a) He plays tennis [$_{NP}$ Sunday morning].

(b) *He [$_{NP}$ Sunday [$_{NP}$ morning]] plays tennis.

(11) (a) He read mathematics [$_{PP}$ at Cambridge].

(b) *He [$_{PP}$ at [$_{DP}$ Cambridge]] read mathematics.

(12) (a) He left the meeting [$_{VP}$ regretting his offer].

(b) *He [$_{VP}$ regretting [$_{DP}$ his offer]] left the meeting.

(13) (a) She left her job [$_{CP}$ when she married].

(b) *She [$_{CP}$ when [$_{IP}$ she married]] left her job.

DP, QP, NP, PP and AdvP pre-modifiers of adjectives must also be head-final, as the contrasts in (14)-(18) show.

(14) (a) a book [$_{AP}$ available [$_{DP}$ this week]]

(b) *a [$_{AP}$ [$_{DP}$ this [$_{NP}$ week]] available] book

(15) (a) a book [$_{AP}$ available [$_{QP}$ several years]]

(b) *a [$_{AP}$ [$_{QP}$ several [$_{NP}$ years]] available] book

(16) (a) a book [$_{AP}$ available [$_{NP}$ Monday morning]]

(b) *a [$_{AP}$ [$_{NP}$ Monday [$_{NP}$ morning]] available] book

(17) (a) a book [$_{AP}$ available [$_{PP}$ in our library]]

(b) *an [$_{AP}$ [$_{PP}$ in [$_{DP}$ our library]] available] book

(18) (a) a book [$_{AP}$ available [$_{ADVP}$ independently [$_{PP}$ of the circumstances]]]

(b) *an [$_{AP}$ [$_{ADVP}$ independently [$_{PP}$ of the circumstances]] available] book

The HF phenomenon, thus, seems fairly systematic, but the SRR/HFF cannot be simply stated as a constraint on phrases preceding the head. As noted in Emonds (1976: 17-19, 1985: 131), subjects (i.e., specifiers of I and D, under Abney's DetP Hypothesis), as in (19), intonationally detached DP and PP specifiers of Frame, cf. Rizzi (1997), Cinque (1999), as in (20), and, as noted in Longobardi (1991), Cinque (1993: 269), and Svenonius (1994), specifiers of other functional heads, e.g., topics, as in (21), focused *wh*-phrases and NegPs, as in (22), and other focused XPs, as in (23)-(24), plainly lack HF effects.

(19) (a) [$_{NP}$ Students [$_{PP}$ of linguistics]] use the library a lot.

(b) [$_{DP}$ The [$_{NP}$ students of linguistics]] use the library a lot.

(c) [$_{PP}$ Under [$_{DP}$ the bed]] is a good place to hide.

(d) [$_{DP}$ The [$_{NP}$ students [$_{PP}$ of linguistics']]] effort is remarkable.

(20) (a) [$_{DP}$ The [$_{NP}$ day that John said]], Bill died.

(b) [$_{PP}$ On [$_{NP}$ Monday morning]], we shall attend to that.

(c) [$_{PP}$ In [$_{DP}$ Holland]], I suppose everybody speaks English.

(d) [$_{CP}$ When [$_{IP}$ I saw the house]], I did not like it.

(21) (a) [$_{NP}$ Real explanations [$_{PP}$ of the HFF]], I do not know any.

(b) [$_{DP}$ A proposal [$_{PP}$ like that]], I could hardly say 'no' to.

(c) [$_{AP}$ Happy [$_{CP}$ to work here]], he does not seem to be.

(d) [$_{PP}$ About [$_{DP}$ my private life]], I don't want to speak.

(e) [$_{CP}$ Whether [$_{IP}$ the HFF is a universal]], I do not know.

(22) (a) [$_{DP}$ Which [$_{NP}$ account of the HFF]] do you find more convincing?

(b) [$_{PP}$ In [$_{DP}$ which department]] do you work?

(c) [$_{PP}$ Under [$_{DP}$ no circumstances]] should non-members be admitted.

(d) [$_{ADVP}$ Never [$_{PP}$ in my life]] had I felt more ridiculous.

(23) (a) [$_{PP}$ At [$_{DP}$ the door]] was an impressive limousine.

(b) [$_{VP}$ Waiting [$_{PP}$ at the door]] was an impressive limousine.

(24) (a) [$_{PP}$ Up [$_{DP}$ the hill]] we trotted!

(b) [$_{PP}$ Into [$_{DP}$ the pool]] he jumped!

Clearly, then, specifiers are NOT subject to the SRR/HFF. Note, furthermore, that free right-branching is also possible in phrases which presumably start as complements but move leftwards, like the DP/QP complements of postpositions in (25), and the QP and PP 'measure phrases' in (26).

(25) (a) [$_{QP}$ all [$_{DP}$ the year]] round

(b) [$_{DP}$ the [$_{NP}$ whole night]] through

(c) [$_{QP}$ five [$_{NP}$ weeks]]ago

(d) [$_{DP}$ a [$_{NP}$ long time]] ago

(26) (a) [$_{QP}$ six [$_{NP}$ years]] old [5]

(b) [$_{PP}$ over [$_{QP}$ a mile]] long

Evidence in support of the movement analysis is that PPs like *five years ago* and *the whole night through* induce HF effects when they precede nouns or verbs, cf. **a five years ago syntax conference, *He the whole night through slept on the sofa,* as is to be expected if movement leaves a trace after *ago* and *through*.

In cases like (27), we seem to have a right-branching modifier before a noun, and from the stress patterns and the possible intervention of clear AP modifiers like *phonological*, it seems that *two-syllable phonological word* etc. are syntactically assembled phrases, not compounds.

(27) (a) a [$_{QP}$ two-syllable] (phonological) word

(b) a [$_{QP}$ three-place] predicate

(c) a [$_{QP}$ three-piece] suit

However, *two-syllable*, etc. are word-level units, as suggested by the dashes and absence of agreement between the Q and the N (cf. **a two-syllables word*). If so, *two-syllable*, etc. probably result from a lexical process to which the HFF has no chance to apply and the grammatical status of (27) is not a challenge to the generality of the filter.

Much the same can be said about a large class of base-generated right-branching modifiers which apparently violate the HFF, e.g. those in (28).

(28) (a) a [$_{AP}$ higher-than-average] (basic) salary

(b) a [$_{AP}$ hard-to-pronounce] (Czech) name

(c) an [$_{PP}$ up-to-date] (linguistic) bibliography

(d) a [$_{VP}$ do-it-yourself] job

(e) a [$_{SC}$ tongue-in-cheek] remark

Since an AP may intervene between the offending XP and the noun, and *basic salary*, *Czech name*, etc. are surely not compounds, *higher-than-average salary* etc. must be formed in the syntax, but that does not prevent *higher-than-average* etc. themselves from being formed in the lexicon (cf. Lieber 1992: 11-13, Wiese 1996), and, once formed, merged as modifiers of NPs. Hence, if we assume that the HFF is inactive in the lexicon, the fact that expressions like (28) do not obey it need not be surprising.

Finally, whether examples like (29) violate HFF depends on one's assumptions concerning the derivation and function of the NPs preceding nouns. If pre-nominal non-genitive NPs always form compounds, (29) is a lexical construction to which the HFF does not apply. Fabb (1984: 99) and Bauer (1998) have pointed out, though, that some bare NPs are attached to nouns in the syntax, since they precede other syntactically attached modifiers, but that is not applicable to the NPs in brackets in (29), cf. (30), which are not modifiers, but arguments of the noun, i.e., specifiers, and, as expected of specifiers, not subject to the HFF.

(29) (a) a [$_{NP}$ history [$_{PP}$ of science]] expert

(b) a [$_{NP}$ philosophy [$_{PP}$ of language]] specialist

(30) (a) *a history of science British expert

(b) *a philosophy of language American specialist

In sum: HF effects appear in pre-modifiers of lexical heads, so the proper generalization the HFF expresses is (31), which in current minimalist theory should presumably be considered a bare output constraint at the P interface, since order is taken to be irrelevant to narrow syntax (see Chomsky & Lasnik 1993, Chomsky 1995b, Chomsky 1999, 2000, etc.).

(31) HEAD FINAL FILTER (HFF):

Base-generated pre-modifiers must be head-final.

Although many scholars nowadays follow Cinque (1994, 1999) in considering modifiers as a class of specifiers, clearly the HFF cannot be formulated as a structural constraint on specifiers *tout court*, for core base-generated specifiers (i.e., the subject and complements) and clear derived ones (i.e., specifiers of functional categories like I, D, Top, Foc, C) are patently not subject to it, which strongly suggests that modifiers, against much current opinion, are not specifiers, although, if the reasoning in section 2 below is correct, *pace* Ernst (2002), they are not 'adjuncts', either.

As to (31) itself, although a fairly accurate empirical generalization, it is not a very plausible PF constraint, for the structural difference between specifiers and modifiers is no longer visible at PF. Yet, if the HFF is not a PF constraint, what else can it be?

Somewhat surprisingly, the HF phenomenon has attracted comparatively little attention. Emonds (1976: 18-19, 1985: 130-131) mentions most of the relevant phenomena, but offers no explanation, whereas most other authors cite, and occasionally try to explain, only the AP+N cases. Syntactic, PF, information structure-theoretic, and parsing-theoretic explanations have been proposed, unsuccessfully, in my view, although only quick critical references are possible here.

Thus, Hendrick (1978) claims that PP complements of A (for unexplained reasons) do not exist at D-S and cannot emerge at S-S either, since his rule of Complement Formation does not apply to A's.

Abney (1987: 327) derived HF effects from the hypothesis that A's f-select NPs, excluding XPs between A and its complement, but the adjective may in fact be followed by TWO complements, as in *a similar car to mine*, although only in the order A+NP+PP, and some principle (= HFF) ought to exclude *A+PP+NP.

Stowell (1981: 283), Sproat (1985: 199), Sproat & Shih (1987: 473-7), Sadler & Arnold (1994: 113-124), Bernstein (1995), and Dowty (1996: 40-41, fn. 19) all derive the HF effects in AP+N contexts from the presumed lexical (= non-syntactic) character of the A+N combination, but many pre-nominal adjectives are modified and unquestionably phrasal, as Svenonius (1994) points out, and the explanation fails.

Fabb (1984: 76-78, 98-133) predicts the HFF from the 'invisible' status of non-clausal pre-nominal AP's, whereas post-nominal ones, being clausal (hence governed by Infl, Case-marked, and 'visible') can take complements, but the distribution of clausal and non-clausal XPs does not follow from anything else in Fabb's system, and therefore that of HF effects ultimately remains unexplained, too.

Williams' (1994: 45) Directionality Parameter for Theta Assignment in predication structures with a non-phrasal functor fails to provide an explanation for parallel reasons, i.e., the distribution of phrasal and non-phrasal functors itself remains unexplained.

Uriagereka (1998: 220-221) derives the HF effects in APs from Kayne's LCA, but predicts, contrary to fact (e.g., *the resources available*), that no simple APs will ever survive after the noun, so his cannot be the full story, although the LCA seems to be crucially involved (see section 2).

Neeleman (1994: 242) believes that the HFF ultimately reduces to the checking of agreement at PF, which must occur within the same phonological phrase, and claims that modifiers can be adjoined to the phrases of the heads they modify by the rule of Modifier Adjunction (243) provided no phrasal closure intervenes. Whereas heads do not trigger closure, phrases do, and a pre-nominal adjective cannot take a complement without blocking checking (242-244). This is coherent, but incompatible with current assumptions on grammatical architecture, for PF will not have

the means to detect agreement features or determine whether an XP is a modifier of the noun instead of, say, a quantifier, or a subject.

Abeillé & Godard (2000) (henceforth, A&G) take inspiration from Sadler & Arnold's (1994) use of the feature [LEX] and derive the HF effect in pre-nominal adjectives from a Weight feature with two values, Lite and Non-Lite, to which the LP rules of HPSG can be made sensitive. Pre-nominal adjectives are Lite and must adjoin to Lite nouns, but an adjective with a complement would be Non-lite and cannot adjoin to a Lite N. However, A&G crucially assume that pre-nominal adjectives are adjoined to the head N BEFORE it takes any complement (and becomes Non-Lite), a structure that standard constituency tests like *One*-Substitution prove inadequate. If, on the contrary, a pre-nominal adjective has to adjoin to a Non-Lite phrasal nominal (N' or NP), their explanation collapses.

Finally, Liberman & Sproat (1992: 162), and specially Abney (1991a, b), and Hawkins (1994: 78-79, 284-290, 2001: 9) try to explain HF effects in parsing-theoretic terms. Abney (1991a: 277, 1991b: 217, 220-221) attributes the HF effect in APs to the ban on 'chunk interleaving', but the 'chunks' required to rule out HF cases ultimately depend on implausible assumptions (e.g., Ps must be functional categories, whereas Ds and Qs cannot be) which contradict previous reasoning in Abney (1987) and the massive literature that work triggered. According to Hawkins, any complement of A would delay parsing the NP and violate his Early

Immediate Constituents principle (or his Minimize Domain principle, in Hawkins 2001), but his flat constituent structure is untenable, and largely invalidates the calculations on which both principles rest.

In sum, various syntactic, phonological, discourse-theoretic, and parsing-theoretic approaches to the HFF have been explored, but with limited empirical coverage and, in my view, less explanatory success, so it remains as a filter of unknown status that any minimalist theory should be happy to dispense with. The primary aim of this paper is to show that, under a new approach to modification to be developed in section 2, there is nothing to explain, for the HF phenomena follow naturally from general principles of phrase structure. Its secondary, but more ambitious, aim is to defend the conceptual and empirical advantages of the present approach to modification over major alternatives like Kayne's, Cinque's, or Ernst's.

2 A THEORY OF MODIFICATION

The theoretical framework adopted here takes inspiration from Chomsky's minimalist theory, as developed in Chomsky (1995a, b, 1999, 2000, 2001), but the central idea is just that syntax largely reduces to the satisfaction of combinatory features of lexical items under extremely simple structural constraints, and in that sense it draws freely on all lexicalist approaches. Without claiming originality in almost any respect, 2.1 will specify the

versions of such broadly shared ideas that fit more comfortably in the present framework and defend a unified theory of Merge, phrase structure and modification, and 2.2 will conclude that adjuncts need not exist in the grammar, explain how the basic geometry of phrases determined by the theory of 2.1 can be exploited to account elegantly for the core facts of modification, specify certain auxiliary hypotheses needed to make the theory work as intended in special cases, and suggest a structure-dependent explanation for the HF phenomena.

2.1 *Phrase structure*

Syntax is largely a matter of satisfaction of the selection features of linguistic objects, ultimately lexical items, *via* Merge or Move (see Chomsky 1995a, b, 2000). Selection features are here understood as functions ranging over underspecified signs containing syntactic and semantic features (cf. Pollard & Sag's 1994 'synsem' objects). The presence of an unsatisfied selection feature in a syntactic object automatically converts it into a potential active node. Such a feature eventually launches a search through the derivation's working space for a suitable object that may satisfy it, and satisfaction triggers Merge. When two nodes containing unsatisfied selection features merge, only one is active, the one whose selection feature is satisfied by that specific merger. [6]

Since Merge can only satisfy one selection feature at a time and a head may contain more, satisfaction will take as many searches and mergers, and some selection features must 'wait' while others are satisfied. This implies that selection features are ranked, as assumed in various ways in all generative theories of syntax, e.g., the cancellation order in CG, the Obliqueness Hierarchies in RG, LFG, and HPSG, the Thematic Hierarchy in P&P Theory, the order of embedding of events and their characteristic arguments in lexical theories like Pinker (1989), Hale & Keyser (1993), Rappaport & Levin (1998), Alsina (1999), Hale & Keyser (2002), etc. Let us refer to this hypothetical property of Chomsky's CHL as the PRIORITY CONSTRAINT (PRIORITY, hereafter).

Priority and Merge create the asymmetry between 'complement' and 'specifier' in X-bar theory, which will be referred to here as COMPLEMENT 1 and COMPLEMENT 2, respectively (C1 and C2, hereafter).[7] Since only one syntactic object can be merged as the C1 of a head X, if X already has a C1, any new complement will have to be merged to it as a C2, and three-place predicates will obtain a second C2 slot by raising and projecting a higher Larsonian shell. Assuming Kayne's Linear Correspondence Axiom (LCA, henceforth), C2 will asymmetrically c-command and precede X and its C1.

The gradual nature of satisfaction *via* Merge poses the issue whether all selection features of a head must be satisfied in a continuous sequence. Let us call this second hypothetical property of Chomsky's CHL the

IMMEDIATE SATURATION CONSTRAINT (ISC, hereafter). Late P&P (e.g., Chomsky 1986, Sportiche 1988, Speas 1990, Chomsky & Lasnik 1993) and early minimalist theory have clearly assumed ISC, e.g., by claiming that modifiers are adjuncts, and phrases can only adjoin to maximal projections, as in Chomsky (1986) and subsequent work, or by considering selection features STRONG, as in Chomsky (1995b). ISC enforces strict locality, diminishes memory load, and presumably simplifies computation, but there is evidence that CHL is not subject to it,[8] and it will NOT be assumed here. On the contrary, when certain mergers occur, BOTH participants still contain unsatisfied selection features and are, therefore, 'unsaturated', to use widely accepted Fregean terminology. In other words, Functional Composition IS allowed in this theory of Merge (as in Chomsky 2001:18), although given other properties of Merge, Priority, and Predication Theory, no application of Merge leaves BOTH participants unsaturated AFTER the merger.

Subject to Priority, Merge applies to an unsaturated node A and a suitable goal B, deletes the selection feature +_B in A, produces a set containing the surviving features of A and B without adding anything (i.e., Inclusiveness is preserved), and makes the 'label' of EITHER A OR B project onto the resulting syntactic object (see Chomsky 1995b: 244).

Whether A or B projects its label depends on the kind of merger involved. According to Chomsky (2000: 133-134, 2001: 18), it is necessary to distinguish two types of Merge, 'Set Merge' and 'Pair Merge', with

different labelling properties. In cases of Set Merge, which is a) triggered by feature-checking needs, b) obligatory, and c) non-directional, the goal satisfies one of the selection features of the active node A, which projects its label. On the contrary, Pair Merge, which accounts for mergers of modifiers to their modifieds, is a) not triggered by feature-checking needs, b) 'optional', and c) 'directional', in the sense that an object B is MERGED TO the other, A, which, NOT being active in the merger, still projects its label.

From a minimalist perspective, however, the existence of two kinds of Merge is in itself an obvious theoretical imperfection. Ideally, Merge should be homogeneous, and the labelling asymmetry between mergers yielding complementation and modification should be derived from deeper principles which, to my knowledge, have remained unidentified.

In the version of Merge that will be developed here, the differences between Set Merge and Pair Merge become irrelevant, all Merge can be unified with the properties that Chomsky attributes to Set Merge, i.e., our MERGE is feature-driven, obligatory, and non-directional without exception, and labelling follows from the general principles that determine satisfaction of selection and other features.

The crucial assumption is that modifying heads, i.e., adjectives, adverbs, prepositions, relative complementizers, etc., are PREDICATES with their own argument-structure and selection features. Adjectives and relative complementizers select nominal projections, adverbs select (extended)

verbal ones (N.B., not full NPs or VPs, since ISC is not assumed), and prepositions may select either.

The analysis of modifiers as predicates is common in traditional grammar as in modern logic since, at least, Quine (1960) and Montague (1974), and is more or less explicitly adopted in Jackendoff (1977), Chomsky (1977), Williams (1980, 1994), Higginbotham (1985), Fabb (1990), Jackendoff (1990), Stowell (1991), Svenonius (1994), Partee (1995), Heim & Kratzer (1998), Nilssen (1998), etc., although the underlying semantic assumptions differ. According to one theory which ultimately draws on Fregean doctrine, nouns, verbs, adjectives, and prepositions are n-place predicates, their modifiers are HIGHER-ORDER predicates, and modification is Function Composition. This view is found in e.g. Quine (1960), Montague (1974), Higginbotham (1985), Fabb (1990), Williams (1994: 44-45, 91-94), Partee (1995: 325-330), and Chomsky (2001:18), among others. Another approach, inspired by Davidson's (1967) and Parson's (1990) event-based treatment of adverbial modifiers, and found in Jackendoff (1990), Larson & Segal (1995), and Heim & Kratzer (1998), among others, has it that modification is 'predicate conjunction', although Heim & Kratzer (1998: 88) somewhat misleadingly dub it 'Predicate Modification', i.e., modifier and modified are BOTH FIRST-ORDER one-place predicates, and their unsatisfied arguments are first 'theta-identified' and

then jointly ‘discharged’ in one of the canonical ways described in Higginbotham (1985: 563-565).

The logical type of modifiers is of marginal interest here, since our main concern is the syntax and the present approach works irrespectively of whether a Montagovian or a Davidsonian view is adopted, but the simplest overall grammar and syntax-semantics correspondence (e.g., in the area of non-intersective modification, see Partee 1995, Heim & Kratzer 1998) are achieved if modification is function composition.

Under such a view, the modified is a ‘subject’ of the modifier’s head and receives a theta role from it *via* Autonymous Theta Marking (see Higginbotham 1985: 564), which saturates the modifier. Since a modifier’s selection features must be satisfied just as obligatorily as those of any other head, it follows that such mergers are also driven by feature-satisfaction, and therefore OBLIGATORY. Their ‘optionality’ is a matter of perspective and indicates confusion between the principles of grammar and aspects of performance: a modifier is ‘optionally’ attached to a modified in the sense that it is not needed to satisfy the latter’s selection features, but as soon as it is extracted from the lexicon and becomes part of a derivation, ITS OWN selection features enforce satisfaction *via* Merge. Thus, traditional cases of ‘complementation’ and ‘modification’ occur depending on the node that is active (the ‘head’ vs. the ‘modifier’), but neither the nature of the triggering

factor nor the obligatoriness vs. optionality of the merger justifies positing an essential difference between Set Merge and Pair Merge.

The labelling difference that leads Chomsky to distinguish Set Merge and Pair Merge does not follow from the existence of two different operations, but from the labelling principle informally stated in (32) and the fact that, as a consequence of their argument structure, Priority, Merge, and Predication, modifiers never remain unsaturated AFTER they merge to their modifieds, whereas the latter do.

(32) LABELLING PRINCIPLE (LP) (preliminary version):

The participant that remains unsaturated after Merge projects its label.

In Chomsky's cases of Set Merge, an unsatisfied selection feature in a head X triggers the merger and the goal is an argument of X that is attached to it as a complement or specifier, our C1 and C2, respectively. Granted (32), X projects its label in such cases because its argument is saturated before or by the merger (see *infra*), whereas X remains unsaturated even AFTER the merger.

That DP and CP subjects and complements must themselves be saturated before Merge is generally assumed in minimalist approaches as a consequence of ISC. What thematically saturates a head X is its highest thematic argument, normally a subject in C2 of the highest X-shell (but a

complement in C1 if X is a one-place predicate and projects only X+C1, e.g., unaccusative verbs and adjectives). In such cases, a selection feature of the head X will be satisfied, but no selection feature of the complement will, so either DP/CP is saturated before the merger, or it will subsequently become invisible and remain unsaturated, which violates ISC and yields an ungrammatical output. In the present approach, on the contrary, ISC is not assumed, and, although in general C1 and C2 are thematically saturated before they merge to X, the unification of Merge, and the LP in (32) require one important exception: the HIGHEST complement, whether C2 or C1, of a modifier (i.e., its 'subject', under Predication) is NOT saturated, and, according to LP in (32), projects its label.

PP complements merit additional discussion, since a labelling problem may arise depending on the status of their P heads, on which there are at least four different views.

A. If they are independent two-place predicates, as in Davidson's (1980) and Parsons' (1990) analyses, their combinatory behaviour will be identical to that of modifier PPs (see *infra*), i.e., they will be thematically and referentially saturated by the verbal, nominal, or adjectival projection they take as their C2, but such Ps are not likely to be independent predicates, since they are not freely chosen and do not have their usual meanings (cf. e.g., the meaning of *with* and *on* in *comply with the rules*, *rely on you* vs. *be with Bill* or *be on the table*).

B. If they are two-place predicates but undergo function composition with their head increasing its adicity (see e.g., McConnell Ginet 1982), only the composite predicate will count as still unsaturated after the merger and project, as desired.

C. If they are one-place predicates, they will be internally saturated before the resulting PPs merge with V, N, or A to discharge an argument of the latter, i.e., they will behave like DP and CP complements. This is Jackendoff's (1983, 1990) view, and would cause no difficulty under present assumptions, but it takes his ontology to feel comfortable with it and will not be adopted here.

D. Finally, if, on account of their fixedness, presumed semantic vacuity, invisibility to c-command constraints on binding, etc., such Ps are not independent predicates at all, but syntactic 'affixes' (perhaps spell-outs of Case features determined by the lexical entries of their head verbs, nouns, or adjectives), they will not project PPs, but DPs, and, again, will behave like DP and CP complements. This view is common in Montague Grammar, Categorial Grammar, GPSG, and other Montagovian theories, seems plausible, and will be adopted here as a working assumption, although nothing essential hinges on this choice.

Thus, DP, CP and PP complements and subjects of lexical heads behave as expected for the purposes of labelling, i.e., they are thematically saturated before they merge, and, granted (32), their selectors project.

Not so the nominal or verbal complements of functional heads like D or T. The reason is that, although under the VP-Internal Subject Hypothesis (VISH hereafter, see Sportiche 1988, Speas 1990, etc.) heads must have all their THEMATIC arguments satisfied under their maximal projections, first-order NP, VP (AP, etc.) predicates still have a NON-THEMATIC R(eferent) or E(vent) argument, respectively, that must also be satisfied (see Williams 1981, 1994: 34, 51-52, or Higginbotham 1985, on the R argument of nominals, and Davidson 1980, Higginbotham 1985, Parsons 1990, etc. on the E argument of VPs). Thus, nominal and verbal projections become fully saturated only when their R or E argument is finally THETA-BOUND (see Higginbotham 1985: 560) by D and T, respectively (or by intermediate Infl-like functional heads in the much more articulated structures assumed nowadays, but no choice will be made here in this respect). Note that before that stage is reached, such predicates may become the highest arguments of adjectival and adverbial modifiers, respectively, which explains why, being complements of lexical heads, they still project their label in cases of modification, i.e., our unique exception above.

In Chomsky's cases of Pair Merge, on the contrary, BOTH HEADS, the modified's and the modifier's, are thematically unsaturated when the merger occurs (recall that ISC is not assumed), the MODIFIER is active in the merger and thereby gets its last selection feature satisfied, but only the MODIFIED remains unsaturated AFTER Merge, and, according to LP, projects its label.

That the modified remains unsaturated after merging with its modifier follows from the preceding remarks on non-thematic arguments of XPs and is supported by the evidence, cited in footnote 8 and discussed in section 3 for some crucial cases, that better distributional and semantic predictions are obtained if modifiers attach to intermediate projections. That AP, AdvP, PP, and CP modifiers, on the contrary, NEVER remain unsaturated after merging with their modifieds follows from the fact that their referential argument is discharged along with their highest thematic argument when they merge with their modifieds, the former by Theta Identification, the latter by Autonymous Theta Marking (see Higginbotham 1985: 562-564). Granted Predication Theory, only ONE argument (and, under Priority, only the LAST one) may be external, so when a modifier merges with its 'subject', whether the latter is a C1 or a C2, its head always becomes fully saturated, and, according to principle (32), never projects its label. The still unsaturated 'subject' (i.e., the modified nominal or verbal phrase) projects instead. That explains the labelling asymmetry between 'complementation' and 'modification' within a unified theory of Merge.

If the LP in (32) is all there is to labelling, an issue arises concerning why D, T and C project their labels after they merge with their NP, VP or TP complements, respectively, since all their selectional features are satisfied and they seem to be 'saturated'.

Note, however, that D, T and C are NOT necessarily saturated after merging with their C1s, for different reasons. First, although the details have not, to my knowledge, been worked out in a minimalist framework, just as VP has an additional E argument, TP (and its extended projections FocP, TopP, etc., see Rizzi 1997 and Cinque 1999) have P(roposition) or F(act) arguments (see e.g., Ernst 2002), that must still be Theta-Bound by C (or further intermediate heads). As to DPs and NON-ROOT CPs, obviously, they are not ALWAYS thematically saturated, for they may function as predicates, and in that case they need a subject. For example, after D merges with its selected NP complement to yield the predicate *the boss* in *You are the boss*, D must still satisfy its subject, which it does when the referential DP *you* becomes its C2 (under VISH), and the same applies to C when it heads a predicate CP (e.g., in *the problem is that she is married*) and to a C[wh] heading a relative clause (e.g., in *the problem which arises*), see *infra*.

However, (32) is NOT all there is to labelling. Even when such heads are selectionally saturated (i.e., in the referential uses of DPs and CPs), they still have other unsatisfied features that immediately 're-activate' them. Thus, D, T, and C contain unsatisfied PROBE features like EPP and [wh] that must be checked off *via* Move, as well as features like Case in D, [±Q] or 'subjunctive' in embedded C, and Tense, Mood and Polarity in T that must be satisfied *via* further mergers with their respective selectors.

The LP in (32) must therefore be generalized to (32') in order to allow selectionally satisfied heads to project their label when they still contain OTHER unsatisfied features.

(32') LABELLING PRINCIPLE (LP) (final version):

A head in which any feature remains unsatisfied projects its label.

If the preceding argumentation is sound, the only case where the revised LP will produce a labelling difficulty is at the root. The highest C, by definition, should not contain unsatisfied features of any kind after its complement merges with it and Move checks off its probe features, if any, and therefore the root CP should be unlabelled. Note, however, that the root is also the only point in a derivation where lack of a label can hardly matter, since, by definition, it cannot be selected or targeted by anything else. Thus, CHL may surely afford to leave such objects unlabelled, especially if the Faculty of Language or properties of the C-I systems dictate that they must nevertheless be interpreted as speech acts or whatever.

2.2 *Modification*

Under the theory of phrase structure in 2.1, modification reduces to complementation. A modifier of X is just an independent syntactic object M constructed according to its own selectional requirements, Priority, Merge,

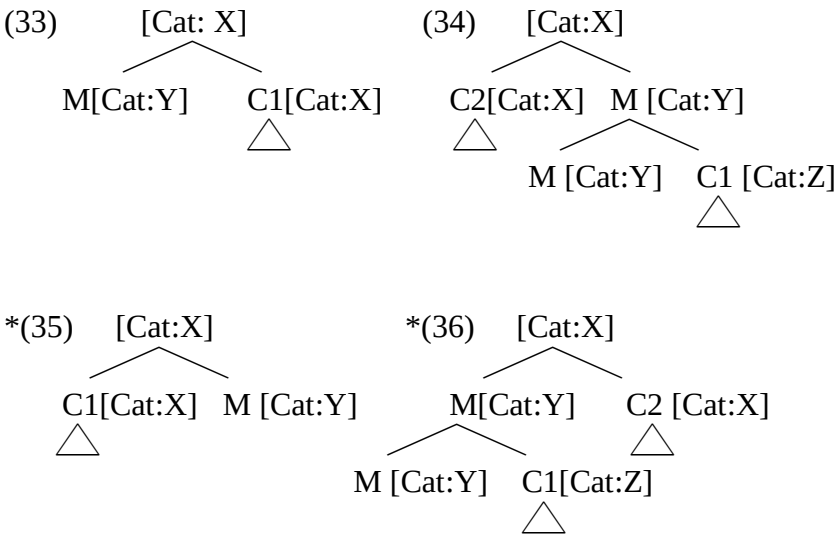
and LCA, and modification is the process by which X becomes the goal of M's head and gets merged with M as either a C1 or C2, depending on the previous derivational history of M, with a selection feature of M's head satisfied in the process.

In other words, in the present theory of phrase structure there are predicates and ranked complements (C1 and C2), but 'adjuncts' DO NOT EXIST, a welcome result if tenable, since they have never fitted in X-bar theory and major statements of the latter like Chomsky (1972, 1986) did not even provide for them. The idea that 'adjuncts' inhabit some para-syntactic space has been around since Lebeaux (1988), (1991), and Speas (1990), and, to the extent 'adjuncts' are acknowledged at all, is still the standard view (e.g., in Chomsky (2001)), but it conflicts with the speakers' robust intuition that modifiers are predicates which require their own arguments. Under the present theory, modifiers are in no sense marginal to, disconnected from, or 'late' additions to the 'main' computation. On the contrary, they are integrated into the derivation from the beginning, and in the strongest possible way: via complementation. The selection features of ALL heads must be satisfied, and modifying heads are no exception.

Crucially for present purposes, the basic geometry of phrases imposed by Merge, Priority, and the LCA must also be satisfied around EVERY head, including a modifier's. Thus, a goal G will be merged with a modifier M as M's C1 or C2 depending on the previously assembled structure of M. Since,

granted Inclusiveness, no vacuous structure is built (i.e., structure is built on demand), the first complement to be merged to M is necessarily its C1, and the second is its C2, which, under Kayne's LCA, will c-command and precede the head of M and its C1.

The basic structures and linearizations the theory allows in cases of modification, thus, are (33) and (34). On the contrary, structures like (35), and for current purposes especially (36), violate the LCA and do not occur in well-formed derivations.



In (33), M is a one-place second-order predicate, merges with its only complement C1, which discharges M's theta role via Autonymous Theta Marking and M's external (R or E) argument via Theta Identification, gets saturated, and the still unsaturated C1[Cat:X] projects. In (34), M is a two-place second-order predicate, merges with its first complement C1, which

discharges one of its theta roles as explained, remains unsaturated, merges with its C2, which saturates it, and the unsaturated 'subject' C2, projects.

Let us now quickly show how (33)-(34) apply to the core cases of modification. For attributive adjectives, independently of their argument structure (i.e., unergative, as in *active woman*, or unaccusative, as in *shiny car*), their nominal complement is invariably realized as a C1, and the relevant syntax is (33). The only way to keep the non-subject argument of an attributive adjective is to incorporate it as the first term of a compound, e.g., *tax* or *north* in (37).

(37) (a) tax-free (shop)

(b) north-bound (train)

In the case of passive participles (e.g., *automated procedure*), the nominal they select corresponds to a 'deep' object, and (33) indeed places it in C1, the canonical position for Themes.[9] As in the case of adjectives, a second argument or modifier of the pre-nominal participle can be expressed only if incorporated (cf. *computer-designed furniture, home-made pastry*).

The nominal selected by active participles (cf. *attending students*), on the contrary, is a deep 'subject' corresponding to their highest argument, but, again, the lower one(s) must be suppressed (or incorporated to the head, cf. *oil-producing countries*). Since vacuous structure is illicit, the selected

nominal is also merged as the C1 of M in (33) (note that (38) would instantiate structure (36), violating LCA).

(38) (a) *attending seminar students

(b) *producing oil countries

Adjectives and participles that merge when already accompanied by a C1, on the contrary, must take their new selected complement as a C2 and follow it, as in (34), which yields the 'predicative' construction, cf. (39) (note that (39b, d) instantiate structure (36) and cause LCA violations).

(39) (a) a student keen on jazz

(b) *a keen on jazz student

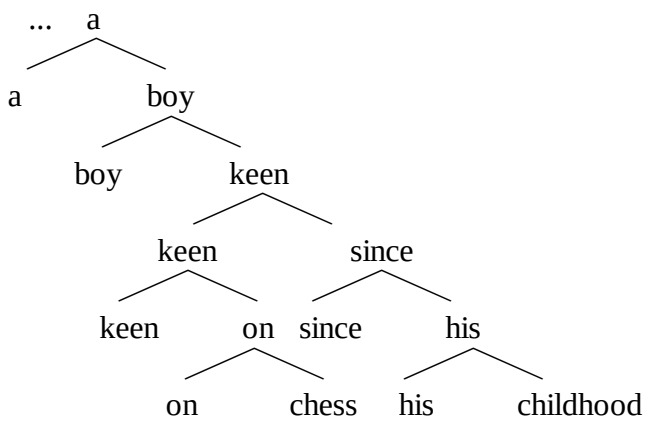
(c) a box containing his belongings

(d) *a containing his belongings box

If the modifier M is itself modified by another predicate P, M will be merged with P as a C1 or C2 depending on the previous structure of P, as determined by Priority, and LCA will do the rest. Thus, in (40),[10] *since* already has a C1 and, therefore, treats *keen on chess* as its C2 and precedes it, and *keen on chess* itself already contains a C1, and, when Merge satisfies the second selection feature of *keen*, *boy* becomes its C2, which canonically

precedes the adjective and its C1. Note that *since his childhood*, not being an argument of *keen*, does NOT become its C2. On the contrary, it is *keen on chess* that becomes the C2 of *since*. As a consequence, *keen* remains unsaturated after the merger, but its own C2 is still available to be occupied by a proper argument, in this case the unsaturated nominal *boy*, whose R argument is theta-bound by the D *a*.

(40)



PPs modifying nominal projections are headed by two-place prepositions with selection features requiring certain kinds of complements as their C1 and C2. By the time they are attached to the modified nominal, Priority has forced them to take a C1 and the modified nominal must be attached as a C2, so structure (33) is straightforwardly applicable to them. It follows, correctly, that PP modifiers never precede their nominal modifieds.

At first sight, relative clauses (RCs, henceforth) present a technical difficulty for the present approach in that, whereas AP, participial, and PP modifiers of nominals have an obvious C2 gap in their syntactic structure

for the modified nominal to fill, RCs are CPs often with an overt XP in Spec C, which makes it implausible to treat the modified nominal as the C2 of their C, as the present approach would seem to require.

RCs are interpreted as one-place second-order predicates because their head C[wh] is a two-place second-order predicate of type <t, <<e,t><e,t>>> which takes the IP (or extended projection thereof) as its C1 and yields a one-place second-order predicate, which itself takes the unsaturated antecedent nominal as its C2 and produces a predicate of type <e,t>, a complex nominal which projects and is eventually saturated by a D *via* Theta Binding, as explained.

Note, however, that the *wh*-XP is NOT an argument of C[wh]. What makes RCs different from other modifiers is the fact that they are headed by a C that contains a PROBE feature, the strong [wh]. Since strong features do not 'wait', the *wh*-XP must land in the CHECKING DOMAIN of C[wh] (C2, for phrasal elements) to check its probe immediately after C[wh] and its IP (C1) merge, which 'interrupts' the saturation of C[wh]. As Chomsky (1995b) claims, no phrase moves to satisfy selection features of its own or any other head, and *Wh*-Movement is no exception. The *wh*-XP is always saturated by Merge *in situ*, but the selection features of the attractor need not be saturated either before OR AFTER the moved XP lands in its C2. In this case, when Move checks strong [wh], C[wh] must already have a C1 (with a copy of *wh*-XP), but the higher argument of C[wh] remains unsatisfied after the *wh*-

XP lands in its C2. Since the C2 closes the C-shell, C[wh] must raise to project a new C-shell which supplies a new C2 position for its highest argument, the nominal projection. In sum, the nominal antecedent does, after all, eventually merge in C2 of C[wh], only that it is the C2 of an ADDITIONAL C-shell at the top of the RC.

As to adverbial modification, for reasons briefly summarized in Higginbotham (1989) and Larson & Segal (1995: 468-70), modern syntacticians like Cinque (1999) and Ernst (2002) have adopted the view, initially in Davidson (1967) and then in Higginbotham (1985, 1989), Parsons (1990) and others, that VP-adverbs are predicates of the underlying E(vent) arguments of verbs, and, correspondingly, higher adverbs are predicates of propositional, fact, or speech-act arguments associated with their extended projections (see Parsons 1990 and Ernst 2002). However, Davidsonian semantics is compatible with almost any syntax (including one that produces 'flat' structure), and coexists just as happily with syntactic treatments of adverbials as additional complements (e.g., McConnell-Ginet 1982, Larson 1988), adjuncts (e.g., Ernst 2002), specifiers of *ad hoc* functional heads (e.g., Cinque 1999), or even predicates of such heads (e.g., in Nilsen 1998), the main alternatives still in competition (see 4 for a summary evaluation).

The present theory simply assumes with Jackendoff's, Cinque's and Ernst's that different kinds of modifying adverbials select different verbal

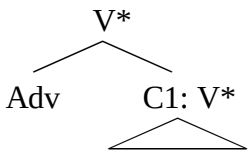
projections as their C1 or C2 depending on their previously assembled structure, as determined by their argument structure, Priority, Merge, and the LCA. It works whether adverbials are first-order predicates (the Davidsonian view), or higher-type predicates (the Montagovian view), and need not choose between them, although, in consonance with our earlier view of nominal modification, the latter is assumed here.

Modulo the different categories (VP, AspP, ModP, TP, ...CP) and semantic types of the modified constituents (i.e., states, achievements, accomplishments, activities, propositions, facts, or speech acts), as revealed by a long tradition of research on adverbials and event structures including Jackendoff (1972), Bellert (1977), McConnell-Ginet (1982), Higginbotham (1985, 1989), Larson (1988), Travis (1988), Parsons (1990), Cinque (1999) and Ernst (2002), among many others, whose empirical findings are assumed here, selection and the general phrase structure principles above account for the syntactic and semantic behaviour of adverbial modifiers. As systematic illustration is obviously impossible in a paper this size, and to make this discussion parallel to that of nominal modifiers, only the syntactic properties of the two core cases of VP-adverbial modification will be presented here, although section 3 offers some additional, if still selective, discussion.

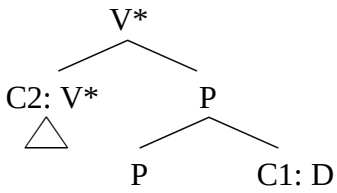
With a few exceptions that will be accounted for in section 3.3 below, Adv heads, on the one hand, and adverbs accompanied by PP complements

(e.g., *independently of the circumstances, crucially for present purposes*) and all adverbial PPs, on the other, must appear in the configurations (41) (= 33) and (42) (= 34), respectively.

(41)



(42)

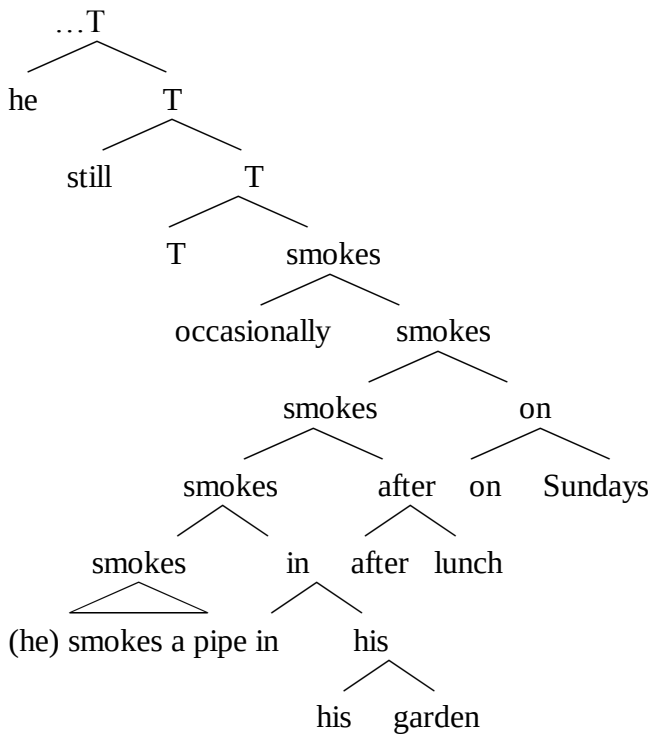


In (41) and (42), *V stands for the corresponding verbal projection, i.e., a low or intermediate VP-shell, with or without previous modification, a full (but still unsaturated) VP, or an extended projection thereof, e.g., Voice', AsP', Mod', T', etc. As Ernst (2002) observes, the semantic types of verbal projections can be freely raised (state > event > proposition > fact > speech act), although not lowered, and, correspondingly, adverbials can appear attached to different syntactic nodes and vary their scope accordingly (see Travis 1988 on an earlier similar idea involving feature inheritance).

Tree (43) presents an example of multiple modification in which the trivial adverbs *still* and (non-focused) *occasionally* precede V*, according to (41), whereas all the non-trivial PPs obey (42) and follow it. Note that, provided no type-conflict arises between the selectional features of the

prepositions and their verbal sisters, the PP modifiers can be attached in different orders. In each case, the RIGHTMOST PP will be structurally higher and take its verbal 'subject' with all its previous modifiers as its C2 and, given the LCA, follow it, but, crucially, without ceasing to also minimally c-command (and take scope over) it. Subject to the same type-matching constraint, the pre-verbal adverb *occasionally* will alternatively take scope over the verbal projection with or without one or more of its post-modifiers. Standard scope facts follow in a natural way.

(43)



Thus, under not implausible syntactic assumptions, modification can be handled by an optimal theory of phrase structure which reduces it to

complementation, ultimately to the satisfaction of selectional features under Priority, Merge, and the LCA. Several nice consequences follow.

The nicest one, of course, is that 'adjuncts' disappear from the grammar, but the structure-dependent basis for the semantic difference between arguments and modifiers does not, since complements and predicates remain structurally different.

Secondly, the present approach offers an interesting solution to a long-standing puzzle in the area of modification, i.e., the conflict between the standard assumptions of a) maximality of non-heads, b) locality of argument satisfaction (e.g., the VISH of Sportiche 1988, etc., the Lexical Clause Hypothesis of Speas 1990), and c) the need to interpret modifiers as one-place predicates. According to a) and b), modifiers must contain their own internal subjects, but, if they do, they are *ipso facto* thematically saturated and cannot be interpreted as predicates, as c) requires. Traditional treatments, especially of post-modifiers, like Stowell (1983), Fabb (1984: 107-108), Hornstein & Lightfoot (1987), Bowers (1993), etc., ignore (c) and satisfy assumptions (a) and (b) by resorting to artificial PRO's and Control Theory, but pre-modifiers pose exactly the same difficulty, and nevertheless PRO solves only part of the problem, for suitable controllers are not always available, and, even when they are, often yield the wrong semantics (e.g., the interpretation of PRO as controlled by she in *She died PRO in 1997* produces nonsense). Alternatively, scholars forget about (a) and (b), and

satisfy (c) by adopting Predication Theory, but, of course, disregarding the fact that 'maximal' means different things for complements and modifiers and 'local' means 'dominated by XP' in one case but 'minimally c-commanded by XP' in the other (see Escribano 1998 for discussion). The present theory of modification complies with assumptions (b), since selection is always locally satisfied in C1 or C2 of X, and (c), since it accounts for the fact that modifiers are monadic predicates, and offers a principled explanation of why assumption (a) is right for complements but cannot be right for predicates if (b) and (c) are in the grammar.

Finally, a third, equally nice, consequence of the present theory of modification is that, under plausible syntactic assumptions, all the HF effects and absence thereof discussed in section 1 follow automatically, making the SRR/HFF redundant, as shown in section 3. Major theories of modification like Larson's, Kayne's, Cinque's, or Ernst's, on the contrary, have essentially nothing to contribute to the explanation of the HF phenomenon, which might count in favour of the present approach.

3. A NEW ACCOUNT OF HEAD-FINAL EFFECTS

3.1 *Straightforward HF cases*

Assuming the theory of modification above, the HF effects observed in section 1 follow without invoking any special constraint. In the core

examples, why it is so is obvious: modifiers with no other complements apart from their modifieds are predicted to treat the latter as their C1s and precede them, whereas modifiers already containing a C1 will treat their modifieds as C2s and, granted Kayne's LCA, follow them, a correct prediction in the great majority of cases (but see 3.3).

For example, in (1) above, repeated here as (44) for the reader's convenience, if *keen* has no PP complement, *student* is attached as its C1 and follows it, as in (44a). On the contrary, if *keen* already has a C1, *student* is attached to it as a C2 and precedes it.

(44) (a) a keen student

(b) a student [$_{AP}$ keen [$_{PP}$ on jazz]]

(c) *a [$_{AP}$ keen [$_{PP}$ on jazz]] student

(d) *a keen student [$_{PP}$ on jazz]

(e) *a student [$_{AP}$ [$_{PP}$ on jazz] keen]

(f) *an [$_{NP}$ [$_{AP}$ [$_{PP}$ on jazz] [$_{AP}$ keen student]]

It follows that (44c), which violates LCA, will never occur, for a C2 will always asymmetrically c-command and precede the head and its complement, i.e., *student* will surface to the left of *keen on jazz*, as in (44b). For (44c) to surface, it would be necessary to base-generate the structure underlying (44b) and then raise *keen on jazz* into a higher slot, but that is

unmotivated under Economy, for the PHI features of the adjective have already been checked and deleted (cf. Chomsky 1999) under agreement with the nominal (recall that C2 is a 'specifier' and agrees with its head). Furthermore, under present assumptions raising is impossible, for *keen on jazz* is neither a head nor a maximal projection, and is invisible to Move under minimalist assumptions (cf. Chomsky 1995b).[11] The 'split' AP version in (44d) is also easily excluded: it cannot be a primary structure derived by Merge, because if the second argument (*student)* is satisfied before the first (*on jazz)* Priority is violated, and then, of course, *on jazz* asymmetrically c-commands *keen* and its complement, and, given the LCA, the resulting surface string would still be (44f), itself containing an LCA violation, like (44e), but not (44d). Neither can (44d) arise from (44b) *via* Move, for the already mentioned Economy and Visibility reasons.

Equally satisfactory consequences follow if the pre-nominal AP contains an adjunct instead of a complement, as in (45), from Bernstein (1995), with an interesting difference: a split version of the AP (45c) may be allowed in this case, as Bernstein notes.

(45) (a) a man [$_{AP}$ fat [$_{PP}$ around the waist]]

(b) *a [$_{AP}$ fat [$_{PP}$ around the waist]] man

(c) a fat man [$_{PP}$ around the waist]

(d) *a man [$_{AP}$ [$_{PP}$ around the waist] fat]

(e) *an [$_{AP}$ [$_{PP}$ around the waist] [$_{AP}$ fat man]]

According to the theory in 2, (45a) will be correctly derived, but (45b, d, e) violate LCA, and should have to arise from the initial structure (45a) by gratuitous raising of *fat around the waist* or *around the waist* into some higher specifier, in violation of Economy and Visibility. Note, however, that the 'split' AP in (45c) will be base-generated, correctly, as a matter of fact, for *around the waist* is a MODIFIER of *fat* (cf. **a man around the waist*), which takes *man* as its C1 before *around* in its turn takes *fat man* as its C2. Thus, only (45a) and (45c) can surface, as desired.[12]

Of course, PPs, participles with complements, or CPs pre-modifying nouns, as in (2b)-(6b) above, are also correctly excluded under the assumptions in 2: since the modifying head already has a C1, the nominal must be attached to it as its C2, and as such asymmetrically c-commands and precedes it, as desired. The offending examples of (2b)-(6b) all violate LCA if base-generated, and Economy/Visibility if Move has raised the modifier, for there is no trigger and, again, the modifier, being neither a head nor a maximal projection, ought to be invisible to Move.

Equally predictable are HF effects in pre-verbal AdvPs in cases like (7b): if *independently* has a PP complement when it is merged to the verbal projection, it must take the latter as a C2 and follow it according to the LCA. Again, for (7b) to occur, it would be necessary to raise the AdvP, but

there is no trigger, so such movement would violate Economy, and the phrase is non-maximal, and should be invisible to Move. Parallel reasoning accounts for all the non-trivial pre-verbal modifiers of (8b)-(13b) above.

The present theory naturally extends to the modifiers of APs and AdvPs, not treated in detail here. Gradable adjectives and adverbs are typically modified by adverbs like *very, hardly*, etc., which, having no other complement, take them as their C1s and precede them, as predicted (cf. *very keen, very rarely, *keen very, *rarely very*), or by PPs expressing degree, which, having their own C1, take them as their C2s and follow them (cf. *noisy in the extreme*, *cheeky beyond forbearance*, **in the extreme noisy*, **beyond forbearance cheeky,* etc.). More generally, APs may themselves be modified by circumstantial stage-level PPs which take them as their respective C2s and follow them, as predicted (cf. *keen on chess since his childhood*, in (40) above). On the contrary, right-branching pre-modifiers of adjectives, as in (14b)-(18b), violate the LCA if base-generated, or must be illicitly derived by Move, and in either case are straightforwardly excluded for reasons already explained.

All observed HF effects, in sum, follow nicely from the theory of modification in 2, which makes SRR/HFF redundant, as desired. So does the absence of HF effects in specifiers, as shown in 3.2. The apparent counterexamples to the theory, non-branching APs and ADVPs which still

follow their modifieds and branching PPs that precede them, will be discussed and ultimately dismissed as irrelevant in section 3.3.

3.2 *Absence of HF effects in specifiers*

The apparent exceptions to the HFF identified above occur in specifiers, both base-generated and derived, one reason to question current analyses of modifiers as specifiers.

In BASE-GENERATED C2s, i.e., subjects (and some objects) of lexical heads, there is free right-branching recursion, but this follows cleanly from the theory above: the head of a C2 of X, by definition, cannot take X as its C1 or C2, so whether it has its own C1 is perfectly immaterial: right-branching on complements does not violate any principle of the theory.

Right-branching is also allowed in C2s derived when Move intervenes to satisfy non-selectional features (e.g., EPP, [wh], Case) of T, Foc, Frame, Top, C,…(see Rizzi 1997, Cinque 1999). In such cases, a right-branching XP may freely land in the C2 (= Checking Domain) of an appropriate head, but nothing should prevent this, since the head of the moved phrase is NOT taking the matrix projection as either a C1 or a C2 at all, and the fact that it has a previous C1 is completely irrelevant. This immediately explains the absence of HF effects in the DERIVED specifiers of functional projections.

If cases of post-position like *all the year round*, *five weeks ago*, etc. (cf. (25)) are analysed, as suggested above, in terms of raising of the DP or

QP into Spec P, the absence of HF effects in the DPs and QPs should not be surprising, since they are also derived via Move, and, again, it is the DP or QP that are (derived) complements of the prepositions *round*, *ago*, not the other way round, so the Q *all*, *five*, etc. can not establish a head-C1 or head-C2 relation with the prepositional projection and no principle is violated if they are right-branching.

As to right-branching measure phrases preceding adjectives (e.g. *[$_{QP}$ six [$_{NP}$ years]] old*, cf. (26)), they may or may not result from movement as Abney (1987) and Corver (1997) claim, but that is irrelevant for present concerns, and for the same reasons: the heads Q (or P, in *over a mile long*) are not in a head-C1 relation with the AP, anyway, so the presence of a C1 inside QP or PP is immaterial. AP cannot become a C2 of Q or P either, and therefore must follow PP or QP, according to present assumptions. Parallel reasoning allows for right-branching QPs preceding Degs, as in e.g., *[$_{QP}$ three [$_{NP}$ years]] older than Bill*, etc. independently of how they be derived (see Corver 1997).

On right-branching modifiers like *two-syllable*, *three-place*, etc. in cases like *two-syllable word* (cf. (27)), the present theory says nothing beyond the lexical analysis at the end of section 1, but note that the quantifiers *two*, etc., bear no predicate-like relation to the head *word*, only the compound *two-syllable* does. The intervention of the noun *syllable* is irrelevant, as the internal structure of the compound is invisible to syntax, so

the nominal *word* is merged to the compound as a C1 and follows it (cf. **a word two-syllable*), as the theory predicts. If another modifier previously attached to the nominal head intervenes, as in *a two-syllable phonological word*, the same rules apply, i.e., *phonological* takes *word* as a C1 and precedes it, and *phonological word* in its turn is merged with the compound modifier as a C1, and follows it, exactly the observable surface order.

As regards examples like (28) (cf. *a [$_{AP}$ higher-than-average] (basic) salary*, etc.), again, the present approach does not yield much to add to the remarks in 1. Their semi-lexicalized character apparently makes their inner structure (optionally?) invisible to syntax. Thus, when such adjectives are attached to nominal projections, the latter may be treated as C1s and follow them, if the internal structure of the AP is not computed, or as C2s, if it is. In the latter case, the C1s of the adjectives are treated as proper syntactic phrases and the dashes are removed in the conventional spelling (cf. *a basic salary higher than average*). However, that alternation is possible only when the degree of lexicalization is low. When the modifier is highly lexicalized, as in *up-to-date bibliography* or *tongue-in-cheek remark*, its internal structure is definitely invisible, the nominal is obligatorily treated as a C1 and follows the adjective, cf. (46), and the dashes interestingly tend to remain in the conventional spelling.

(46) (a) an up-to-date bibliography

(b) *a bibliography up to date

(c) a tongue-in-cheek remark

(d) *a remark tongue in cheek

Finally, as to examples like (29) (e.g., *a [$_{NP}$ history of science] expert*, *a [$_{NP}$ philosophy of language] specialist*, etc.), the right-branching NPs can be analysed either as first terms of compounds or as initial C1s of the head noun raised into its C2 position (see Gutiérrez-Reixach & Mallén 2001). The former, and traditional, analysis seems preferable, since it directly explains why full DPs do not alternate with the NPs (cf. **a the French Revolution expert*), but the choice is irrelevant for present purposes, for under either analysis we expect the right-branching NP to be allowed: if the pre-nominal NP forms a base-generated compound, because its right-branching structure will be invisible to syntax and its own head cannot take the noun as either a C1 or a C2, and, if it is a syntactic C2 derived by Move, again, because the right-branching NPs are arguments, not modifiers of the noun, and they are derived C2s of the noun, not the converse, so the fact that their heads contain a PP complement of their own does not interfere with the satisfaction of Priority and the LCA with respect to the merger of the NP and its head and such examples are correctly predicted to be well-formed.

In sum: although one might surely quibble over some of the details, the fact that both base-generated and derived specifiers have free right-

branching, whereas pre-modifiers do not, a) is not an exception, but exactly what we should expect given the nature of the phrase structure principles involved and strongly suggests that modifiers are very different from specifiers, and b), as claimed above, the selectional properties of lexical items and general principles of phrase structure do all the interesting work making the SRR/HFF unnecessary. QED.

3.3 *Potential counterexamples*

The theory above accounts for HF effects because it predicts that a) non-branching modifiers will treat their modifieds as C1s and precede them, whereas b) right-branching ones will treat them as their C2s and follow them. Such predictions are very accurate on the whole, but there are possible minor exceptions to both to which we now turn.

3.3.1 *Non-branching post-modifiers*

Some simple adjectives can follow nouns apparently instantiating the forbidden structure (34) above. We quickly review the main cases. A trivial one is the occurrence of Latinate adjectives in *heir apparent*, *notary public*, *Asia Minor*, *D flat*, etc. (see Quirk & al. 1985: 418-419, Huddleston & Pullum 2002: 560). These are obviously restricted phenomena with a clear diachronic explanation, and do not seriously challenge the present theory. Since nothing can intervene between the noun and the adjective, nowadays

the latter might even have become invisible to syntactic computation, i.e., *Poet Laureate, attorney general*, etc. could behave as simple lexical heads.

Secondly, *a-* adjectives like *ablaze, afloat, aware*, etc. nearly always occur post-nominally (see Quirk & al. 1985: 408-409, Huddleston & Pullum 2002: 559). From a diachronic point of view, of course, this is not really an exception to the present theory, either, since *ablaze* etc. derive from earlier PPs and these must follow their modifieds as shown above. However, some *a-* adjectives may also occasionally precede nouns, especially when themselves pre-modified, in accordance with what the present theory predicts, so an (admittedly tentative) explanation is that perhaps their categorial status is still indeterminate (PP/A) and explains their mixed distribution. Note that, conversely, former participles like *opposite* still precede their nominal heads when adjectival (cf. *the opposite view*) but have shifted into the P class and may in that capacity follow nouns, although probably with empty complements (cf. *the house opposite* <*x*>).

Thirdly, *proper* is obligatorily post-nominal when it means 'as strictly defined', as in *the city of London proper*, etc. (see Quirk & al. 1985: 418, Huddleston & Pullum 2002: 445, 560), but this, too, is clearly idiomatic, diachronically a calque from Latin *sensu proprio*, and, on the other hand, given its interpretation, the adjective might well hide a PP with an empty P *in* and an empty N like *sense*). In either case, it can hardly pose a serious challenge to the present theory.

An apparently flagrant exception to prediction a) is the post-nominal occurrence of simple adjectives in *-able* like *visible, available, navigable*, etc., and participles like *present, absent, interested*, etc., when they express temporary states of affairs, i.e., 'stage-level' predicates in Kratzer's sense (see Bolinger 1967, James 1979, Quirk & al. 1985: 418-419, Kratzer 1995, Huddleston & Pullum 2002: 445).

However, there are both syntactic and semantic reasons to suspect that such post-nominal adjectives contain more structure than meets the eye. Stowell (1991) claims that stage-level predicates are derived from their individual-level homonyms *via* the construction of additional structure. If that is correct, there is a hidden AP-shell in the C1 of *available*, etc., and the nominal is in the C2 of the higher A head, and precedes it, as the theory predicts. Note that in *the stars visible*, *the people present*, etc., the hearer must reconstruct from the context an appropriate time or place deictic which, if explicit, would correspond to a modifier of the adjective (i.e., *visible* <at time t/from place p>, *present* <at place p/time t>, etc.). Thus, such 'simple' post-modifying adjectives might even hide an empty temporal or locative phrase, and in that case not be counterexamples at all. Finally, since *-able* adjectives derive from transitive verbs, it is reasonable to assume that their nominal head is base-generated as their C1, as in *the available resources*, but it can raise into A's C2 leaving a trace behind in C1, which makes the post-nominal adjective phrasal. The raising option might

correlate with the permanent/non-permanent interpretation of pre- and post-nominal adjectives, respectively, and with the related unfocused vs. focused status of the adjective (see below on the Focus Last principle). There are, therefore, several plausible arguments in defence of the view that the C1 of A contains unpronounced material in such cases, which reconciles them with the present theory.

In sum, such apparently 'simple' adjectival post-modifiers are either idiomatic or phrasal and do not constitute serious counterexamples to prediction a) above.

A potentially more serious objection comes from the position of manner adverbials like *well, hard, fast, clockwise,* and a few others like *early, late, northwards, southwards,* which seem structurally trivial (single words, in principle) but must still follow the verb, cf. (47), as both Cinque (1999) and Ernst (2002) observe, although without explaining the phenomenon. Such adverbs also apparently occur in the configuration (34) above, which our theory predicts to be ill-formed, so either the structure is not really (34) or the theory has to be modified to accommodate such exceptions.

(47) (a) He drives fast/well.

(b) *He fast/well drives.

(c) He secured the windows well

(d) *He well secured the windows.

As a matter of fact, several different situations must be distinguished, though. In cases like (48) such post-verbal simple adverbs are obligatory and presumably selected by the respective heads, i.e., they might well be C1s, which would immediately explain why they always follow the verb (but see an alternative explanation *infra*).

(48) (a) They treated us well.

(b) He worded his reply carefully.

(c) He lives here.

(d) He lives well.

A second group are perhaps not syntactically obligatory, but they still are informationally required, as the structures violate Gricean conditions without them, cf. (49).

(49) (a) This car runs well.

(b) *This car runs.

This phenomenon is comparable to the well-known need for an adverbial (or informationally equivalent element) with attributive past

participles, as in *a well-written book*, *a Diesel-powered car* (cf. **a written book*, **a powered car*, etc.). These might be cases of obligatory focus on the adverb, which makes the predicate worth stating, and are further discussed below in a broader context.

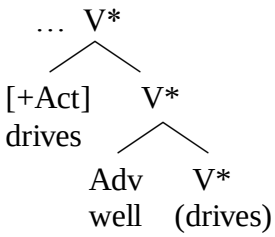
However, there is a third group of cases in which the adverb is really optional and cannot be a complement, and yet it must follow, as in (50).

(50) (a) He drives well.

(b) *He well drives.

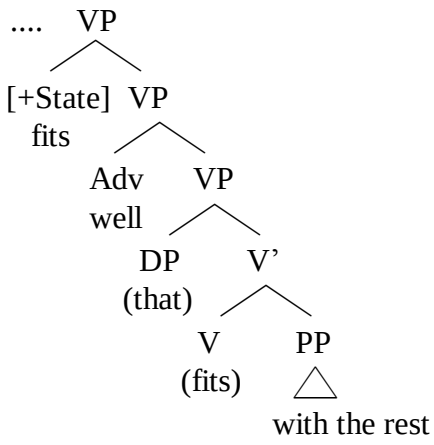
There are at least two alternative, not necessarily exclusive, approaches to the explanation of such phenomena. One is syntactic: those cases need not be counterexamples to the present theory if both unergatives and transitives derive from a phonologically empty transitive [+Act] head (with the broad meaning of *do*) and a verbal projection as its complement. The latter can then be pre-modified by the manner adverb, as in (51), and the surface order can arise *via* raising and incorporation of the verbal root to [+Act] (see e.g., Hale & Keyser 1993, 2002 for a similar approach). That leaves the manner adverb behind the verb on the surface, as desired, and makes such examples consistent with the theory of modification above.

(51)



Further evidence in favour of base-generating *well* pre-verbally as a modifier of the lower verbal projection is its internal position with state predicates like *fit*, *go*, etc. in examples like *that fits well with the rest*, which can be straightforwardly derived starting from a canonical structure like (52), where *well* takes the VP as its C1 as predicted, and raising the verb into a higher [+State] head leaving the adverb below.[13]

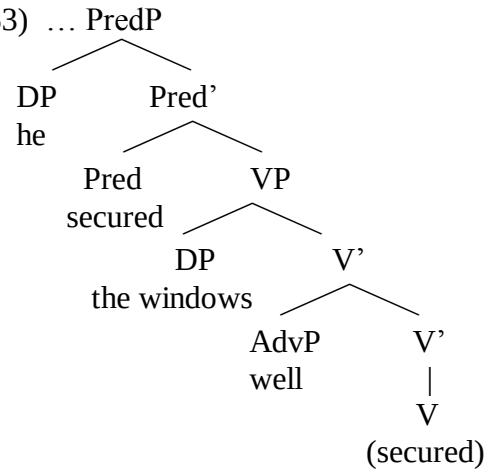
(52)



Even when *well*, *hard*, etc. surface behind an object, as in *He secured the windows well*, that fact does not necessarily constitute a counterexample to the present theory, for we need not yet conclude that the adverb is base-generated in VP-final position. Bowers (1993, 2001) accounts for such facts

neatly by assuming structures like (53), where a) the adverb is adjoined on either side of V', b) objects are V specifiers, c) subjects are Pred specifiers, and d) the verb obligatorily raises to adjoin to the functional head Pred, leaving object and adverb below.

(53)

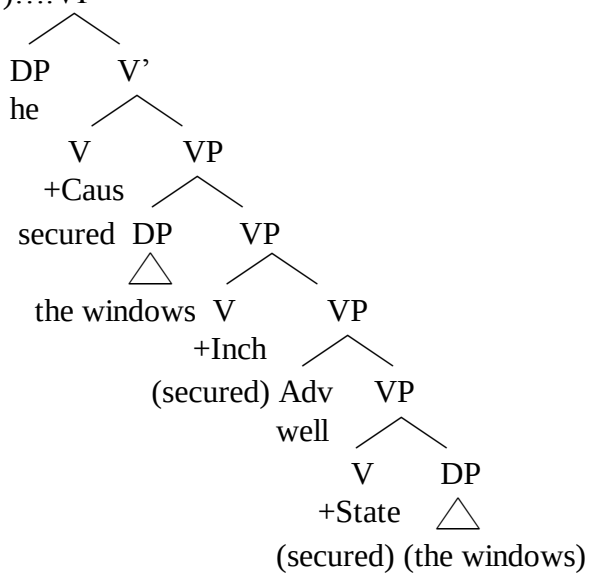


Under Bowers's approach, however, a) the object must be a specifier even when the complement position is empty, for, if it is merged as a complement, the adverb pre-verbally attached to V' incorrectly surfaces between the verb and its object, a forbidden configuration (cf. **He secured well the windows*), and b) the adverb may freely precede or follow V'. The former assumption is incompatible with bare phrase structure, and the latter violates the present theory of modification, so a new account is needed.

Note, however, that, adapting to the present theory event-based analyses like Pinker (1989), Rappaport & Levin (1998), Alsina (1999), etc., we can alternatively assign to such examples the structure in (54), which is

compatible with the present theory of modification, and the correct surface order can be obtained *via* raising of the verb and its Theme into a higher shell driven by the need to assign/receive a new thematic role, respectively.

(54)….VP



Ernst (2002: 224-5) observes that degree of perfection adverbs like *poorly*, *perfectly*, etc. may precede some VPs, but must follow others. Given structures like (54), the theory explains why they follow, but not why they can alternatively precede the verb, since the verb raises well above the base position of the adverb. Ernst further notes that such adverbs may precede VPs that do not imply a change of state of their Theme (e.g., *understand* in *He perfectly understood the reasons for our decision*), but not those that do (e.g., *build* in **Joe poorly built the house*), and concludes that a structural difference should exist in correspondence to the semantic one, although he does not pursue the matter further.

Again, a purely structural explanation compatible with the present theory is available if VPs have complex event structures. Ernst's strongly transitive verbs are accomplishment predicates, which there is by now widespread consensus (see e.g. Pinker 1989, Hale & Keyser 1993, Baker 1997, Rappaport & Levin 1998, Alsina 1999, etc.) have a complex event structure like (54), where the adverb canonically takes the lowest VP-shell as its C1, as the present theory predicts, the object raises from it into the next higher VP-shell to assume the role of Theme of the inchoative sub-event, and this is finally embedded as the complement of the causative head, into which the verb further raises to license the agentive subject. The Theta Criterion must be reformulated in all such approaches, but such a derivation explains the surface appearance of *poorly* in *John built this house poorly* in a way consistent with the present theory, and seems supported by the pre-verbal position of the adverb when neither the verb nor the object move, as in *a poorly built house*.

However, the optional pre-verbal position of such adverbs with state predicates like *match, correspond*, etc. which Ernst notes as a problem for Bowers' approach is equally problematic, in principle, for the event-based one explored here. Of course, a way to account for such examples is to assume that state predicates have the simplest event structure, i.e., a single VP-shell, that the adverb canonically takes it as its C1, and therefore precedes it, and that nothing moves. In that case, *perfectly* is surely expected

before *match*, etc., but now its alternative, and more common, post-verbal position in *That colour matches your eyes perfectly* can no longer be explained in terms of raising of the verb and its object, since there is now no higher VP-shell for them to raise into. If the explanation above is to hold, then, the structure for *match*, must be like that of *fit* in (52), but then *perfectly* cannot be generated with the low VP as its C1, for in that case we would expect ***that matches perfectly your eyes* to be well-formed, and it is not.

Note, however, that *perfectly* could still take the HIGHER VP-shell as its C1 in such cases. If so, Ernst's alternation poses no problem whatsoever to the present theory of modification: the pre- and post-verbal position of *perfectly* would depend on whether the adverb takes the higher or the lower VP-shell as its C1, respectively. In the latter case, the raising of the Theme and the verb into the higher shell leaves the adverb in final position, but in the former such raising is impossible, since no further structure is available, and the adverb surfaces in its base-generated position before the VP. Since the fact that adverbs may be base-generated in several alternative positions is well-established (see e.g. Jackendoff 1972, Travis 1988, Ernst 2002), such an explanation is possible, and, if correct, such apparent counterexamples to the present theory turn out not to be counterexamples at all.

Since many other simple adverbs alternatively appear in pre- and post-verbal position, an issue arises as to whether ALL their post-verbal

occurrences can be explained away as in the preceding paragraphs. When the adverbs have two different readings, process-oriented when post-verbal, and event- or subject-oriented when pre-verbal (see Jackendoff 1972, Cinque 1999, Ernst 2002), we may confidently assume that they modify two different VP-shells. Such cases are directly accounted for by the present theory provided complex event structures are adopted, as explained. In their manner readings, the adverbs take the lowest VP-Shell as their C1 and obligatory raising of the object and the verb into the higher VP-shell leaves them in final position, as above. On the contrary, in their non-manner readings, they canonically take the higher (+Active, or +Causative) VP-shell as their C1, nothing but the subject can raise above them, and the adverbs surface in pre-verbal position. However, certain time-related (e.g., *soon, now, then*), aspectual (e.g., *already, yet, again*), and quantificational adverbs (e.g., *once, twice, rarely, often, sometimes,* etc.) alternate in pre- and post-verbal position WITHOUT perceptible changes in their interpretation (see Cinque 1999, Ernst 2002), and the fact that they may surface AFTER obviously post-verbal PP modifiers (e.g., *yet* after *at that pub* in *We have never eaten at that pub yet*) clearly shows that they cannot have started as heads taking a verbal projection as their C1.

Therefore, the simple theory of modification proposed above must be slightly complicated after all, presumably because the principles of phrase structure interact with those of Information Structure (Focus) and the

associated aspects of PF (prosodic prominence). Obviously, dealing with Focus adequately in this paper is impossible (see Lambrecht 1994 for a convenient overview, and Zubizarreta 1998 for relevant discussion in a minimalist framework), but the generalization of interest here is just (55).

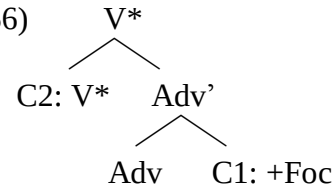
(55) Focused adverbs merge their verbal complement as a C2 and follow it.

In right-branching languages like English, maximal weight, maximal prosodic prominence, and unmarked focus are strongly associated with phrase-final position,[14] so a focused adverb can be expected to follow its verbal complement if Focus Last, Weight, or similar principles proposed in the literature can override the principles that regulate phrase structure.

Alternatively, focus interpretation (and prosodic prominence) could derive from hidden structure, i.e., the apparently simple adverb could in fact be phrasal, just as simple post-nominal adjectives presumably are. One way to implement that idea is to assume that Focus is an obligatory lexical item present in ALL derivations. Granted Inclusiveness, Focus must minimally be a lexical feature, but since it turns out to have consequences not only at L, but also at P, it may best be conceived of as a full, if underspecified, lexical item (see e.g., Krifka 1998: 97-98 on Focus as an early property assigned BEFORE Move). If that is correct, a set containing any lexical item (e.g., the adverb, in the case at hand) and Focus would presumably count as phrasal

and force the verbal projection to merge as a C2. The structure could be (56), with Focus in C1 of the Adv, or Focus could be attached as a syntactic affix to any category (the adverb in this case), make its head subject to Focus Last, and trigger raising of C1 into the C2 position (see Zubizarreta 1998, Krifka 1998, Cinque 1999, etc., on 'deaccenting', 'marginalization', and 'defocussing' as correlates of, and therefore potential triggers for, movement).

(56)



In sum: under somewhat speculative, but hopefully not unreasonable, syntactic assumptions, non-branching post-modifiers may even not really exist, and, if so, the theory of modification above need not be weakened at all on their account, but, even if they do exist, they can be accounted for in terms of interactions of phrase structure with standard Focus/Weight principles currently assumed in much of the literature and do not seriously threaten the present approach.

3.3.2 *Right-branching pre-modifiers*

As to prediction b), that modifiers with internal complements will take their modifieds as C2s and follow them, it is overwhelmingly correct, as shown

above, but certain PPs may still pre-modify adjectives, verbs, and perhaps other lexical categories (e.g., nouns, quantifiers). There are at least two different cases to be briefly considered.

As Ernst notes, cases like *in fact*, *above all*, *by no means*, *in no sense*, etc. in such examples as (57) are idiomatic and, if so, they need not worry us here, for the PP structure, if it exists in the lexicon, is invisible to syntax, i.e., *in fact*, etc. are computed as syntactic heads like *actually, hardly, etc.* Thus, *fact, all, no means*, *no sense*, etc. do not occupy the C1 position, which remains available to the VP or AP that follows.

(57) (a) The company has [$_{ADV}$ in no sense] excluded the unions.

(b) This country [$_{ADV}$ above all] needs good administrators.

(c) a [$_{ADV}$ by no means] irresponsible action

Perhaps more problematic is Ernst's observation (2002: 172-173) that in formal or journalistic styles certain PPs (mostly, but not exclusively, of time, frequency, or duration) are allowed pre-verbally, as in (58), provided they are short and 'Lite' enough in comparison with the VP that follows.

(58) (a) Democratic leaders [$_{PP}$ from the start] expected a trap.

(b) The distributor [$_{PP}$ at this stage] has two options.

(c) We can [$_{PP}$ for the time being] identify a QP as any NP that begins with $_{PP}$ a quantifier.

As an anonymous JL reviewer observes, there are comparable PPs pre-modifying APs, as in (59a), and we may add AdvPs, NPs, PPs, QPs and DegPs, cf. (59b)-(59f).

(59) (a) an [$_{PP}$ up to now] unavailable book

(b) a [$_{PP}$ for many years] satisfactorily sustained partnership

(c) the [$_{PP}$ since this morning] new CEO of Nissan Corporation

(d) He behaves [$_{PP}$ in all relevant respects] like an Englishman.

(e) It costs [$_{PP}$ at least] fifty pounds a bottle.

(f) Bill is [$_{PP}$ in no sense] more clever than his wife.

Ernst accounts for cases like (58) in terms of Weight Theory, holding at PF, but, as he observes (2002: 174, 486 fn. 30), heaviness is a matter of degree, and relative to the weight of the following VP and to the register or style in force. With such hedges, the upshot is that no definite predictions can be derived from Weight Theory. In (60a), for example, *for a very long time* is longer and heavier (in terms of number of syllables) than *with a knife* in (60b), and the following VP *been taboo here* is considerably lighter than the VP in (60b), and yet (60b) is much worse than (60a).

(60) (a) That has [$_{PP}$ for a very long time] been taboo here.

(b) *He [$_{PP}$ with a knife] removed all the dirt from the lid first.

The relevant factor, though, may well not be heaviness *per se*, which is a more-less matter, but the more categorical semantic, informational, and correspondingly prosodic profile of constituents. Such preverbal PPs, just as lexicalized ones like *at least, of course, in no sense,* etc., can easily turn into parentheticals, but if they do not, they must be integrated into the same phonological phrase in which the following head is (see Neeleman 1994, Inkelas & Zec 1995, Selkirk 1995, Truckenbrodt 1999) and cannot bear the stress pattern an ordinary PP would. Those phonological properties suggest that the internal C1 of such PPs is invisible to syntax (and prosodic phonology), and therefore does not displace the VP from its canonical C1 position. Such P+DP strings, in other words, also seem to behave syntactically and phonologically as if they were simple adverb heads (cf. *from the start* vs. *always, at this stage* vs. *now, for the time being* vs. *provisionally,* etc.). That explains the contrast between the acceptable adverb-like PP in (60a) (cf. *for a very long time* vs. *long*) and the unacceptable referential PP in (60b). In other words, the relevant syntactic structure in such cases is probably not (36), but (33), and in that case they are consistent with the present theory after all. This phenomenon is surely related to the right-branching observed in semi-lexicalized pre-modifiers

like *[higher-than-average] salary*, etc. already discussed. Such expressions, too, lack the usual stress in their PPs, form a single prosodic chunk with the following XP, and syntactically count as complex heads.

In sum, all base-generated right-branching pre-modifiers present phonological properties suggesting that special lexical principles intervene to create complex heads. Their right branches, therefore, are not syntactic C1s, and do not constitute genuine counterexamples to the present theory.

4. THE PRESENT THEORY AND ITS MAJOR ALTERNATIVES COMPARED

As both Chomsky (1995: 382, fn. 22) and Ernst (2002: 1) honestly admit, modification is still largely *terra incognita*. In the last decade or so, the traditional adjunction analyses in Stockwell et al. (1973), Bowers (1975), Emonds (1976), Jackendoff (1977), Chomsky (1981), Stowell (1981), Andrews (1982, 1983), Chomsky (1986), Speas (1990), Bowers (1993), Svenonius (1994), Bowers (2001), Ernst (2002), etc. have been questioned by mainstream P&P-minimalist syntacticians like Larson (1988), Kayne (1994), Cinque (1994, 1999), etc., largely in an attempt to constrain UG and tidy up the theory of phrase structure. However, cancelling the structural distinction between complements and adjuncts is a questionable move for a structure-dependent theory of grammar to make unless the parallel semantic

distinction between arguments and modifiers is also cancelled, and, even if that conceptual objection is ignored, all major Larsonian and Kaynean or Cinquean proposals to reduce adjuncts to complements or specifiers face serious difficulties, as Borsley (1997) and Ernst (2002: 175-202) observe.

Ernst's own adjunction theory avoids the rigid structure and proliferation of questionable heads that encumber Cinque's account, provides robust flexible constituent structures in which adverbials can directly take the right scope, dispenses with most movement, along with the stipulations and economy problems it induces, and seems conceptually 'right', in that it rests mostly on the selectional properties of lexical items and general syntactic machinery. However, it is conceptually too rich[15] and clearly stipulative in certain crucial respects. Its main flaw is that the properties of contentfulness, overtness, selectedness, heaviness, and PF conditioning of Ernst's C-Complex do not correlate with structural positions in a natural way and must ultimately be arbitrarily acknowledged or ignored in specific phrases to bring them under C-Dir or F-Dir, as the case may be, and make the theory work as intended.

The present theory builds on, and shares, the empirical advantages of adjunction theories and is in certain respects similar to Nilsen's (1998) theory of modifiers as predicates. Like Ernst's, it is a lexicalist-semanticist approach which rests fundamentally on argument structure and the satisfaction of selection features of lexical items. However, it is structurally

more flexible than Ernst's, since it crucially allows for modifiers attached to VP-shells also WITHIN the VP, with favourable predictions concerning their order and scope, as shown in section 3.3. Also, like Ernst's and Nilsen's (1998) theories, the present one generates the robust 'concentric' constituent structures that syntactic tests indicate exist,[16] directly assigns to modifiers the right scope without LF movement, attaches post-modifiers directly as such avoiding Light Predicate Raising, its *ad hoc* constraints, and Cinque's Economy problems in justifying movements, and, assuming Ernst's free type-raising for heads, licenses alternative structures for modifiers selecting complements of the same type depending on which are attached first, thereby capturing scope ambiguities.

Where the present proposal radically differs from all its major competitors is in its economy of means, for note what sweeping simplifications are achieved at virtually *no* theoretical cost:

1) 'Adjuncts' disappear, along with a host of conceptual problems, including Chomsky's disjunctive Merge.

2) The proliferation of *ad hoc* functional heads and specifiers to act as hosts and landing sites in theories like Chomsky's (1995:333) or Cinque's (1999) is avoided, as well as the *ad hoc* post-verbal functional heads that take modifiers as their complements in Nilsen's (1998).

3) Ernst's Directionality Principles, and the stipulations they force him to introduce, can be eliminated, and Cinque's Light Predicate Raising is not

needed to account for surface order, either, since modifiers are correctly ordered when they merge with their modifieds.

4) The LF Adjunct Raising rule of Larsonian theories like Chomsky's is not needed to restore the right scope to modifiers either, since these are directly generated with the correct scope as soon as they merge.

5) The problematic *ad hoc* constraints on such movements that Ernst (2002: 178ff.) denounces, of course, can also be eliminated.

6) It is not necessary to invoke questionable triggering features to justify movement, or admit that movement is gratuitous, and the Economy problems that Kayne's and Cinque's approaches face in that respect disappear.

7) Satisfaction of the all the arguments of modifiers is strictly local, i.e., in C1 or C2, without invoking *ad hoc* PROs or relaxing the XP-Internal Subject Hypothesis.

8) Modifiers are predicted to be unsaturated, and their interpretation as monadic predicates preserves a clear structure-dependent basis.

9) By abandoning ISC and avoiding to attach all adverbials above the VP as in Cinque (1999) or Ernst (2002), or all below, as in Larson (1988) or Chomsky (1995b), the predictable incompatibilities that would otherwise arise between co-occurring adverbials of different types and different sub-events within complex VPs do not arise. Note that in *they jailed him for life in ten minutes,* the two PPs must select different sub-events (see Dowty

1979) and cannot be interchanged (cf. **they jailed him in ten minutes for life*), but there is no way to constrain the derivation appropriately if ALL PPs must be above, or all below, the full VP.

10) Last, but not least, the present theory interacts with Kayne's LCA with the nice consequence that Head-Final effects and absence thereof follow directly without *ad hoc* filters like Williams' HFF or Emonds' SRR.

Thus, by reducing modification to complementation, in a sense we are 'having our cake and eating it', for phrase structure is minimal (i.e., satisfaction of selection features via Merge subject to Priority and LCA), and adjunction is completely eliminated, but the correct scope of modifiers is directly obtained, surface order remains tightly dependent on hierarchical structure (*via* LCA), and the HF effects follow without stipulation.

In sum, the principles invoked in section 2 are simple and arguably achieve a substantial unification in English modification and phrase structure, in general. With moderate additional assumptions concerning the checking of agreement and Move, the present account of modification can easily be extended to Romance languages, and a parallel explanation of their own HF effects will follow. As to Russian, Bulgarian, Greek, etc., which seem to tolerate right-branching pre-modifiers, a movement account is the obvious choice, but additional phonological and information-theoretic assumptions will be necessary which have not been investigated in detail. The author, of course, is painfully aware that proposals of this calibre have

profound implications and should be tested on a much broader empirical basis, but, lacking the necessary expertise, he must leave that more ambitious task to be addressed by others who have it and may consider the present approach worth exploring.

REFERENCES

Abeillé, A. & Godard, D. (2000). French word order and lexical weight. In Borsley, R. D. (ed.), Syntactic categories. New York: Academic Press. 1-27.

Abney, S. P. (1987). The English noun phrase in its sentential aspects. Ph.D. dissertation, MIT.

Abney, S. P. (1991a). Parsing by chunks. In Berwick, R. W., Abney, S. P. & Tenny, C., (eds.), Principle-based parsing. Dordrecht: Kluwer Academic Publishers. 257-278.

Abney, S. P. (1991b). Syntactic affixation and performance structures. In Leffel, K. & Bouchard, D., (eds.) Views on phrase structure. Dordrecht: Kluwer Academic Publishers. 215-227.

Alsina, A. (1999). On the representation of event structure. In Mohanan, T. & Wee, L. (eds.), Grammatical semantics. Stanford: CSLI. 77-122.

Andrews, A. (1982). A note on the constituent structure of adverbials and auxiliaries. Linguistic Inquiry **13**. 313-317.

Andrews, A. (1983). A note on the constituent structure of modifiers. Linguistic Inquiry **14**. 695-697.

Baker, C. L. (1995). English syntax (2nd ed.). Cambridge, MA: MIT Press.

Baker, M. (1997). Thematic roles and syntactic structure. In Haegeman, L. (ed.), Elements of grammar. Dordrecht: Kluwer. 73-137.

Bauer, L. (1998). When is a sequence of two nouns a compound? Journal of English Language and Linguistics **2**. 65-86.

Bellert, I. (1977). On semantic and distributional properties of sentential adverbs. Linguistic Inquiry **8**. 337-351.

Bernstein, J. B. (1995). Adjectives and their complements. Unpublished LSA paper.

Bolinger, D. (1967). Adjectives in English: attribution and predication. Lingua **18**. 1-34.

Bowers, J. (1975). Adjectives and adverbs in English. Foundations of Language **13**. 529-562.

Bowers, J. (1993). The syntax of predication. Linguistic Inquiry **24**. 591-656.

Bowers, J. (2001). Predication. In Baltin, M. & Collins, C. eds., The handbook of contemporary syntactic theory. Oxford: Blackwell. 299-333.

Büring, D. & Hartmann, K. (1997). Doing the right thing. The Linguistic Review **14**. 1-42.

Chomsky, N. (1972). Remarks on nominalization. In Chomsky, N., Studies on generative grammar. The Hague: Mouton. 11-61.

Chomsky, N. (1981). Lectures on government and binding. Dordrecht: Foris.

Chomsky, N. (1986). Barriers. Cambridge, MA: MIT Press.

Chomsky, N. (1995a). Bare phrase structure. In Webelhuth, G. (ed.), Government and binding theory and the minimalist program. Oxford: Blackwell. 383-439.

Chomsky, N. (1995b). The minimalist program. Cambridge, MA: MIT Press.

Chomsky, N. (1999). Derivation by phase. MIT Working Papers in Linguistics 18.

Chomsky, N. (2000). Minimalist inquiries. In Martin, R. et al. (eds.), Step by step. Cambridge, MA: MIT Press. 89-155.

Chomsky, N. (2001). Beyond explanatory adequacy. MIT Working Papers in Linguistics **21**. 1-28.

Chomsky, N. & Lasnik, H. (1993). The theory of principles and parameters. In Jacobs, J. et al. (eds.) Syntax: an international handbook of contemporary research. Berlin: W. de Gruyter. 506-569. Also in Chomsky, N. (1995b). 13-127.

Cinque, G. (1993). A null theory of phrase and compound stress. Linguistic Inquiry **24**. 239-297.

Cinque, G. (1994). On the evidence for partial N-movement in the Romance noun phrase. In Cinque, G. et al. (eds.), Paths towards universal grammar. Washington D.C.: Georgetown University Press. 85-110.

Cinque, G. (1999). Adverbs and functional heads. Oxford: Oxford University Press.

Collins, C. (1999). Eliminating labels. Cuadernos de Lingüística **VI**. 9-36. Now also in MIT Working Papers in Linguistics **21**. 29-56.

Corver, N. (1997). Much support as a last resort. Linguistic Inquiry **28**. 119-164.

Davidson, D. (1980). The logical form of action sentences. In Davidson, D., Essays on actions and events. Oxford: Oxford University Press. 105-122.

Dowty, D. (1979). Word meaning in Montague Grammar. Dordrecht: Reidel.

Dowty, D. (1996). Toward a minimalist theory of syntactic structure. In Bunt, H. & Van Horck, A. (eds.), Discontinuous constituency. Berlin: Mouton de Gruyter. 11-62.

Emonds, J. (1976). A transformational approach to English syntax. New York: Academic Press.

Emonds, J. (1985). A unified theory of syntactic categories. Dordrecht: Foris.

Ernst, T. (2002). The syntax of adjuncts. Cambridge: Cambridge University Press.

Escribano, J. L. G. (1998). Minimalism, move and the internal subject hypothesis. Syntaxis **1**. 93-112.

Escribano, J. L. G. (2002a). Split APs. Submitted to Transactions of the Philological Society.

Escribano, J. L. G. (2002b). On relative clauses. To appear in Revista Canaria de Estudios Ingleses **47**.

Fabb, N. (1984). On syntactic affixation. Ph.D. dissertation, MIT.

Fabb, N. (1990). The difference between English restrictive and non-restrictive relative clauses. Journal of Linguistics **26**. 57-78.

Gazdar, G., Pullum, G. K., Sag, I. A. & Klein, E. (1985). Generalized phrase structure grammar. Oxford: Blackwell.

Grimshaw, J. (1990). Argument Structure. Cambridge, MA: MIT Press.

Grimshaw, J. & Samek-Lodovici, V. (1998). Optimal subjects and subject universals. In Barbosa, P. et al. (eds.), Is the best good enough? Cambridge, MA: MIT Press. 193-219.

Gutiérrez-Rexach, J. & Mallén, E. (2001). NP movement and adjective position in the DP phases. Unpublished Ms.

Haegeman, L. & Guéron, J. (1999). English grammar. A generative perspective. Oxford: Blackwell.

Hale, K. & Keyser, S. J. (1993). On argument structure and the lexical expression of syntactic relations. In Hale, K. & Keyser, S. J. (eds.), The view from building 20. Cambridge, MA.: MIT Press. 53-109.

Hale, K. & Keyser, S. J. (2002). Prolegomenon to a theory of argument structure. Cambridge, MA: MIT Press.

Hawkins, J. A. (1994). A performance theory of order and constituency. Cambridge: Cambridge University Press.

Hawkins, J. A. (2001). Why are categories adjacent? Journal of Linguistics **37**. 1-34.

Heim, I. & Kratzer, A. (1998). Semantics in generative grammar. Oxford: Blackwell.

Hendrick, R. (1978). The phrase structure of adjectives and comparatives. Linguistic Analysis **4**. 255-299.

Herburger, E. (2000). What Counts. Focus and Quantification. Cambridge, MA: MIT Press.

Higginbotham, J. D. (1985). On semantics. Linguistic Inquiry **16**. 547-594.

Higginbotham, J. D. (1989). Elucidations of meaning. Linguistics and Philosophy **12**. 465-517.

Hornstein, N. & Lightfoot, D. (1981). Introduction. In Hornstein, N. & Lightfoot, D. (eds.), Explanation in linguistics. London: Longman. 9-31.

Hornstein, N. & Lightfoot, D. (1987). Predication and PRO. Language **63**. 23-52.

Huddleston, R. & Pullum, G. K. (2002). The Cambridge grammar of the English language. Cambridge: Cambridge University Press.

Inkelas. S. & Zec, D. (1995). The syntax-phonology interface. In Goldsmith, J. (ed.), The handbook of phonological theory. Oxford: Blackwell. 535-549.

Jackendoff, R. (1972). Semantic interpretation in generative grammar. Cambridge, MA: MIT Press.

Jackendoff, R. (1977). X-Bar syntax. A theory of phrase structure. Cambridge, MA.: MIT Press.

Jackendoff, R. (1983). Semantics and cognition. Cambridge, MA: MIT Press.

Jackendoff, R. (1990). Semantic structures. Cambridge, MA: MIT Press.

James, D. (1979). Two semantic constraints on the occurrence of adjectives and participles after the noun in English. Linguistics **17**. 687-705.

Kayne, R. (1994). The antisymmetry of syntax. Cambridge, MA: MIT Press.

Kratzer, A. (1995). Stage-level and individual-level predicates. In Carlson, G. N. & Pelletier, F. J. (eds.), The generic book. Chicago & London: The University of Chicago Press. 125-175.

Krifka, M. (1998). Scope inversion under the rise-fall contour in German. Linguistic Inquiry **29**. 75-112.

Lambrecht, K. (1994). Information structure and sentence form. Cambridge: Cambridge University Press.

Larson, R. K. (1988). On the double object construction. Linguistic Inquiry **19**. 335-391.

Larson, R. K. & Segal, G. (1995). Knowledge of meaning. Cambridge, MA: MIT Press.

Lebeaux, D. (1988). Language acquisition and the form of the grammar. Ph.D. dissertation, UMass.

Lebeaux, D. (1991). Relative clauses, licensing and the derivation. In Rothstein, S. (ed.), Perspectives on phrase structure. New York: Academic Press. 209-239.

Levin, B. & Rappaport Hovav, M. (1986). The formation of adjectival passives. Linguistic Inquiry **17**. 623-661.

Liberman, M. & Sproat, R. (1992). The stress and structure of modified noun phrases in English. In Sag, I. & Szabolcsi, A. (eds.), Lexical matters. Chicago: CSLI-University of Chicago Press. 131-182.

Lieber, R. (1992). Deconstructing morphology. Chicago: The University of Chicago Press.

Lobeck, A. (1995). Ellipsis. Oxford: Oxford University Press.

Longobardi, G. (1991). Extraction from NP and the proper notion of head government. In Giorgi, A. & Longobardi, G., The syntax of noun phrases. Cambridge: Cambridge University Press. 57-112.

Longobardi, G. (1994). Reference and proper names. Linguistic Inquiry **25**. 609-666.

McCawley, J. D. (1998). The syntactic phenomena of English (2nd. ed.) Chicago: University of Chicago Press.

McConnell-Ginet, S. (1982). Adverbs and logical form: a linguistically realistic theory. Language **58**. 144-184.

Montague, R. (1974). Formal philosophy. New Haven & London: Yale University Press.

Neeleman, A. (1994). Complex predicates. Utrecht: LED.

Nilsen, O. (1998). The syntax of circumstantial adverbials. Ms. University of Tromsö.

Parsons, T. (1990). Events in the semantics of English. A study in subatomic semantics. Cambridge, MA: MIT Press.

Partee, B. H. (1995). Lexical semantics and compositionality. In Gleitman, L. & Liberman, M., (eds.) Language. An invitation to cognitive science, vol. 1. (2nd ed.). Cambridge, MA: MIT Press. 311-360.

Pesetsky, D. (1995). Zero syntax. Cambridge, MA: MIT Press.

Pinker, S. (1989). Learnability and cognition. Cambridge, MA: MIT Press.

Platzack, C. (1982). Transitive adjectives in Swedish: a phenomenon with implications for the theory of abstract case. The Linguistic Review **2**. 39-56.

Pollard, C. & Sag, I. (1994). Head-driven phrase structure grammar. Stanford: CSLI, Chicago: The University of Chicago Press.

Quine, W. van O. (1960). Word and object. Cambridge, MA: MIT Press.

Quirk, R., Greenbaum, S., Leech, G. & Svartvik, J. (1985). A Comprehensive grammar of the English language. London: Longman.

Radford, A. (1981). Transformational syntax. Cambridge: Cambridge University Press.

Radford, A. (1988). Transformational grammar. Cambridge: Cambridge University Press.

Rappaport-Hovav, M. & Levin, B. (1998). Building verb meanings. In Butt, M. & Geuder, W. (eds.), The projection of arguments. Stanford, CA: CSLI. 97-134.

Rizzi, L. (1997). The fine structure of the left periphery. In Haegeman, L. (ed.), Elements of grammar. Dordrecht: Kluwer. 281-337.

Rochemont, M. S. & Culicover, P. W. (1990). English focus constructions and the theory of grammar. Cambridge: Cambridge University Press.

Sadler, L. & Arnold, D. J. (1994). Pre-nominal adjectives and the phrasal/lexical distinction. Journal of Linguistics **30**. 187-226.

Selkirk, E. O. (1984). Phonology and Syntax. Cambridge, MA: MIT Press.

Selkirk, E. (1995). Sentence prosody: intonation, stress and phrasing. In Goldsmith, J. (ed.), The handbook of phonological theory. Oxford: Blackwell. 550-570.

Speas, M. (1990). Phrase structure in natural language. Dordrecht: Kluwer.

Sportiche, D. (1988). A theory of floating quantifiers and its corollaries for constituent structure. Linguistic Inquiry **19**. 425-449.

Sproat, R. (1985). On deriving the lexicon**.** Ph.D. dissertation, MIT

Sproat, R. & Shih, C. (1987). Pre-nominal adjectival ordering in English and Mandarin. Proceedings of the North Eastern Linguistic Society **18**. 465-489.

Stockwell, R. P., Schachter, P. & Partee, B. (1973). The major syntactic structures of English. New York: Holt.

Stowell, T. (1981). Origins of phrase Structure. Ph.D. dissertation, MIT.

Stowell, T. (1983). Subjects across categories. The Linguistic Review **2**. 285-312.

Stowell, T. (1991a). The alignment of arguments in adjective phrases. In Rothstein, S. (ed.), Perspectives on phrase structure. New York: Academic Press. 105-135.

Stowell, T. (1991b). Determiners in NP and DP. In Leffel, K. & Bouchard, D. (eds.), Views on phrase structure. Dordrecht: Reidel. 37-56.

Stroïk, T. (1996). Minimalism, scope and VP structure. London: Sage Publications.

Svenonius, P. (1994). The structural location of the attributive adjective. In Duncan, E., Farkas, D. & Spaelti, P. (eds.), Proceedings of the Twelfth West Coast Conference on Formal Linguistics. Stanford, CA: CSLI. 439-454.

Travis, L. (1988). The syntax of adverbs. McGill Working Papers in Linguistics, special issue on Comparative German Syntax. 280-310.

Truckenbrodt, H. (1999). On the relation between syntactic phrases and phonological phrases. Linguistic Inquiry **30**: 219-256.

Uriagereka, J. (1998). Rhyme and reason. Cambridge, MA: MIT Press.

Wiese, R. (1996). Phrasal compounds and the theory of word syntax. Linguistic Inquiry **27**. 183-193.

Williams, E. (1980). Predication. Linguistic Inquiry **11**. 203-238.

Williams, E. (1981). Argument structure and morphology. The Linguistic Review **1**. 81-114.

Williams, E. (1982). Another argument that passive is transformational. Linguistic Inquiry **13**. 160-163.

Williams, E. (1994). Thematic structure in syntax. Cambridge, MA: MIT Press.

Zagona, K. (1988). Verb phrase syntax. Dordrecht: Kluwer.

Zubizarreta, M. L. (1998). Prosody, focus and word order. Cambridge, MA: MIT Press.

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FOOTNOTES

[1] I wish to express my deepest gratitude to the Editor and the anonymous referees of JL for important criticism and suggestions that have considerably changed the original manuscript. The Editor's perceptiveness, in particular, has revealed important obscurities in the original proposal and his criticism has gently induced me to find technically more precise solutions to several key problems. For the remaining defects, responsibility is exclusively mine.

[2] Comparable phenomena have been reported in German by Williams (1982) and Svenonius (1994), in Scandinavian by Platzack (1982), in Dutch by Neeleman (1994), and in French by Abeillé & Godard (2000), and certainly exist in Italian and Spanish. Languages which tolerate non-head final pre-nominal APs include Russian, Greek and Bulgarian.

[3] See Emonds (1976: 19), Williams (1982: 160), Fabb (1984: 130-1), Emonds (1985: 15, 130-131), Sproat (1985: 199), Levin & Rappaport (1986: 644), Longobardi (1991: 95-100), Cinque (1993: 268-269), Williams (1994: 39-40), Neeleman (1994: 233-245), Bernstein (1995), and Uriagereka (1998: 220-221) for representative statements on the HFF.

[4] The labelling of syntactic categories is intended to be as non-controversial as possible, but nothing hinges on it. A participial modifier, for example,

might be an IP instead of a VP, but only the existence of internal right-branching is relevant to the present argument.

[5] Corver (1997), following Abney (1987), suggests treating *long*, *old*, etc. as transitive adjectives taking 'measure phrases' as their complements and deriving the surface order *via* raising of the QP into the specifier of a higher Deg. For present purposes, it follows that there will be a trace left behind the adjective and an HF effect if the AP modifies a noun, and, indeed, there is, cf. the syntactically derived **a six years old girl*, *vs*. the compound in *a six-year old girl*.

[6] Of course other features may make a syntactic object active, e.g., PROBE features of functional heads, but these determine Move, a different operation in the present framework. Chomsky's (2000) treatment of Merge as a component of Move is NOT adopted here, since the Merge component of Chomsky's Move is not triggered by the satisfaction of selection features.

[7] This terminological change is not arbitrary. The concept of 'specifier' had little content in Chomsky's (1972) initial formulation of X-bar theory, gained some while it remained strongly associated with the subject function under the VP-Internal Subject Hypothesis of Sportiche (1988), etc., and became empty again as soon as Larsonian-Kaynean-Cinquean analyses generalized and not only subjects, but also objects and modifiers, were

allowed to occupy specifier positions. See discussion in Svenonius (1994) and Escribano (1998).

[8] According to a traditional view found in Stockwell et al. (1973), Emonds (1976), Jackendoff (1977), Chomsky (1981), Hornstein & Lightfoot (1981), Stowell (1981), Radford (1981, 1988), Andrews (1982, 1983), Gazdar et al. (1985), Chomsky & Lasnik (1993), Baker (1995), McCawley (1998), Bowers (1993, 2001), etc., English modifiers can also be attached to intermediate projections. Under Larsonian analyses, such projections are technically XPs, and modifiers can be said to attach only to XPs, but they are not 'saturated' projections, and yet, as we shall see in section 3, crucial predictions depend on modifiers' being merged to them.

[9] An anonymous JL reviewer observes, following Williams (1982), that in cases like **the promised people* even a bare participle suffices to cause an HFF violation, whereas *the promised land* is well-formed. However, the contrast follows from the fact that the Theme is obligatory with *promise*, whereas the Goal is not (note that *I promised him* must be interpreted as elliptical, whereas *I promised to do it* need not). According to present assumptions, in *the promised land* the Theme *land* is straightforwardly attached to the participle as its C1, there is no trace involved, no HF effect is expected, and the structure is correct, but the Beneficiary cannot be realized if the participle precedes the NP, cf. **the promised the Jews land*, an LCA

violation under present assumptions, just as **the promised land the Jews*, and **the promised land to the Jews* are LCA violations. Of course, when the Goal is realized as a PP, the Theme, higher than the Goal, must be attached as a C2 preceding the participle, which explains why *the land promised to the Jews* is well-formed, whereas **the promised to the Jews land* and **the promised land to the Jews* are not (both are LCA violations).

[10] For perspicuity's sake, in (40) and succeeding diagrammes the sets that correspond to phrases are informally represented by their 'labels' only, as in Chomsky (1995b: 246). Nevertheless, when pre-minimalist analyses are discussed, to generalize discussion in the text and footnotes, and to generalize and simplify the diagrammes themselves, traditional category symbols (NP, VP, etc.) will also be freely used instead.

[11] It follows, correctly, that the AP cannot be topicalized, *wh*-fronted, etc., cf. **Keen on jazz, I know a student, *How keen on jazz do you know a student?, *Keen on what do you know a student?*

[12] The derivation of (45c) is not generally available to adjectives accompanied by modifiers. The circumstances under which AP-splitting succeeds are far from clear. It is usually disallowed if the PP or CP is an internal argument, as in **a keen student on jazz* (which, of course, follows from present assumptions, as shown), but allowed with symmetrical predicates like *similar* (cf. *a similar car to mine*), against present

assumptions (unless *similar* has raised into a higher A-shell, as is likely, see Escribano 2002a). If the adjective itself has a modifier, splitting is often possible, as Bernstein (1995) observes, but by no means in all cases. Part of the story is semantic, for splitting seems easier if the adjective denotes an individual-level property (see Kratzer 1995), cf. *a fat man around the waist* vs. **a brilliant face around the nose*, but other factors intervene, such as the possible interpretation of the PP as a modifier of the noun or of higher constituents containing the whole NP. The problem is too big and murky to be addressed here as a marginal issue, but see Escribano (2002a).

[13] This is Bowers's approach (see Bowers 1993, 2001). Theories like Kayne (1994) and Cinque (1999) would presumably invoke obligatory Light Predicate Raising in comparable cases, but there is no easily defensible trigger for such a movement. Ernst's alternative is to generate *well* post-verbally as a VP-adjunct and obligatorily extrapose the PP complement, but, again, a trigger is needed, and that analysis is incompatible with the LCA, which we want to keep.

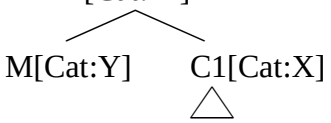
[14] This is Behaghel's 'Gesetz der wachsenden Glieder'. Similar principles of End Focus, End Weight, Focus Last, AlignFocus, etc., are proposed in Selkirk (1984), Quirk et al. (1985: 1356-1362), Rochemont & Culicover (1990), Cinque (1993:257-258), Lambrecht (1994:16), Selkirk (1995), Büring & Hartmann (1997), Krifka (1998:95), Grimshaw & Samek-

Lodovici (1998: 209-215), Zubizarreta (1998:21, 45, 77), Cinque (1999), Herburger (2000: 47), Huddleston & Pullum (2002: 1372), Ernst (2002: 441), and many others.

[15] It requires adjunction, elaborate feature specification of heads and dependents, different semantic composition rules applicable to different stretches of clausal projections, directionality constraints, overlapping information- and weight-theoretic constraints, movement, and minor rules. Just the summary formulation of the principles invoked by Ernst occupies no less than four pages (440-443) of his book.

[16] Standard syntactic tests like simple coordination, *Do-So*-substitution, and ellipsis suggest concentric layering in the English VP, and coordination, *One*-pronominalization and ellipsis suggest comparable layering in the DP. See Emonds (1976), Jackendoff (1977), Radford (1981), Hornstein & Lightfoot (1981), Andrews (1982, 1983), Radford (1988), Zagona (1988), Baker (1995), Lobeck (1995), Pesetsky (1995), Stroïk (1996), McCawley (1998), Haegeman & Guéron (1999), and Ernst (2002), among many others, for discussion of layering in English phrase structure.

(33)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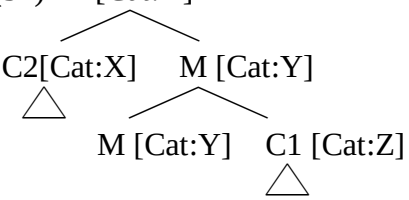
(34)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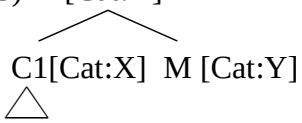
C1 [Cat:Z]

*(35)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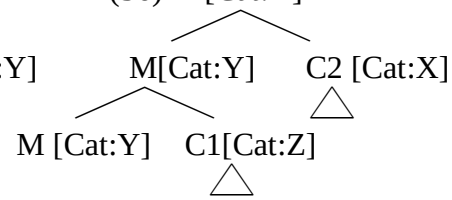
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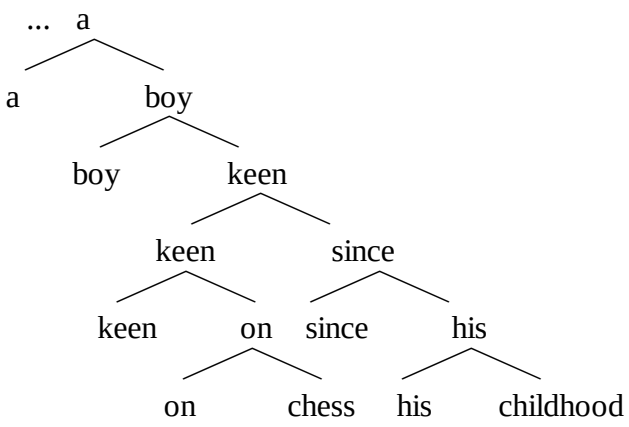
(40)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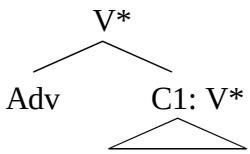
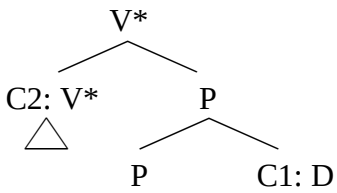
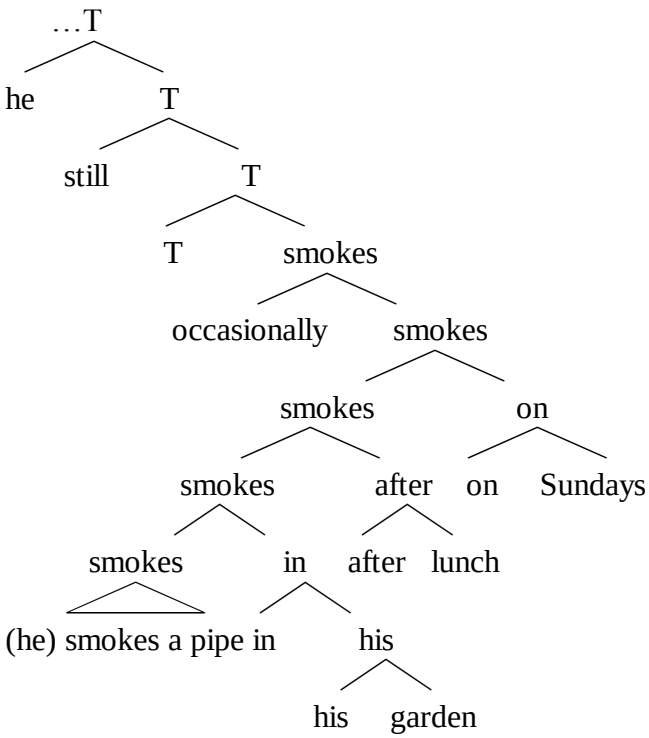
(41)



(42)



(43)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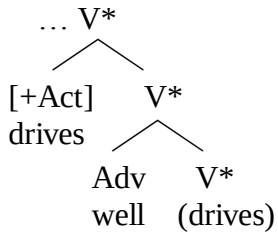
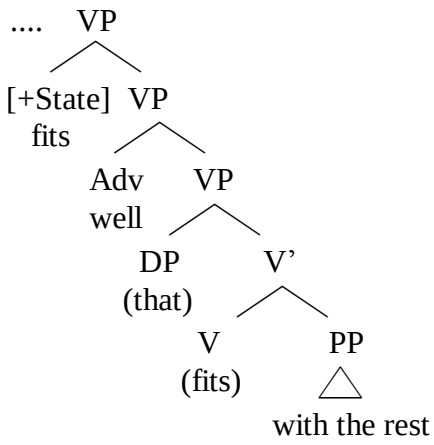
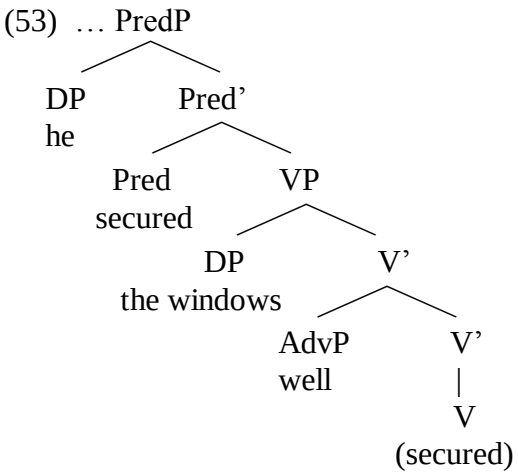


(52)



(53) 
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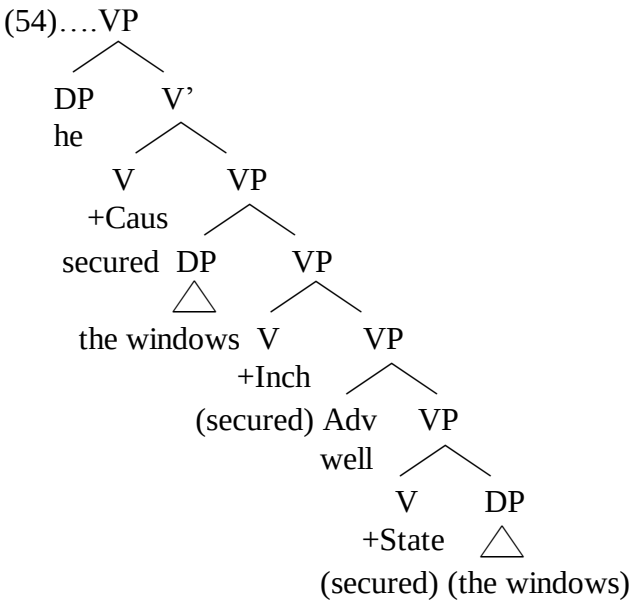
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