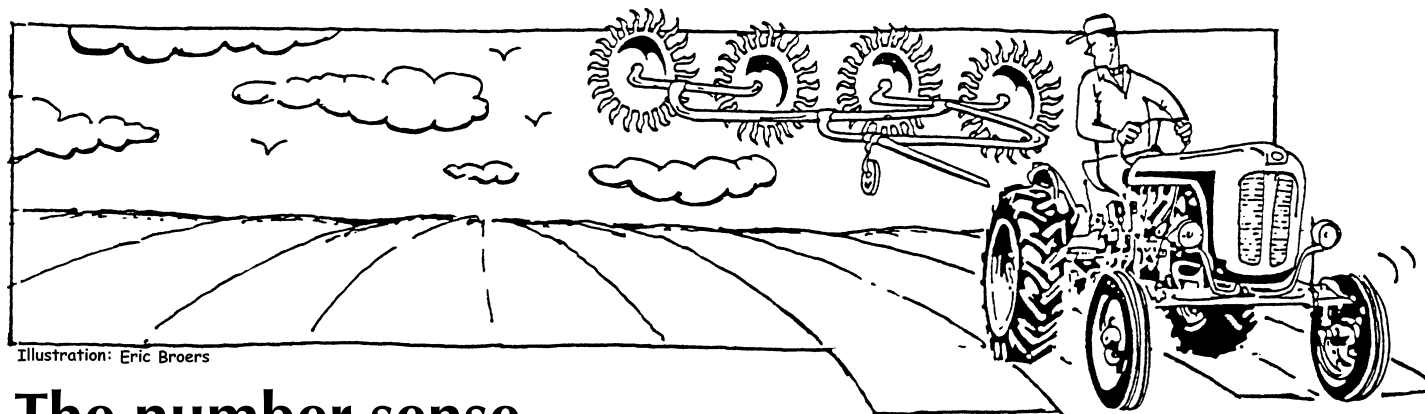# IN THIS ISSUE

Illustration: Eric Broers

The number sense
How the mind creates mathematics

by *Stanislas Dehaene*

1997. Oxford University Press, New York. xii + 274 pp. With index. ISBN: 0-19-511004-8. US$25 (hb.)

> "The *Homo sapiens* brain is to formal calculation what the wing of the prehistoric bird *Archaeopteryx* was to flying: a clumsy organ, functional but far from optimal."   p. 134

The title of Dehaene's book is so similar to Steven Pinker's *The language instinct. How the mind creates language* (1994, Morrow, New York) that it is bound to intrigue anyone who is sympathetic towards the basic arguments for Chomsky's linguistic innateness hypothesis laid out in Pinker's book. The **differences** between the titles may be more interesting, though: not so much Dehaene's use of the word *sense* where Pinker has *instinct*, as the fact that in Pinker's title, the word *language* occurs twice, while Dehaene uses *number* in the main title and *mathematics* in the subtitle. Does the word *creates* denote the same process in both titles? Does the mind "create" mathematics in the same way it does language?

The number sense is a very accessible and pleasantly written book on all aspects of the relation between humans and numbers: numerosity in other animals, numerosity and simple calculations in babies, the history of the expression of number in language, the history of number notation, the neural circuitry necessary for doing arithmatics and calculations, the localization in the brain,

arithmatic savants, the mathematical order of the universe, and so on and so forth. Dehaene writes about all these interesting topics with an enthusiasm which is very contagious (I don't think I have ever seen so many exclamation marks in a popular science book).

Some of the numerous issues related to number which Dehaene discusses touch on language, in one way or another. For instance, Dehaene explains the well-known phenomenon that people generally switch to their native language as soon as they start calculating. The explanation is quite simple. It turns out that when calculating we don't actually do very much real time calculating: for many tasks we heavily rely on our memory, such as for several simple algorithms (carryovers), as well as the multiplication tables we learned by rote in school. We learn these tables verbatim, which has the consequence of tying them to language — a **particular** language. And every time we dig up the arithmetic tables from our memory, we go back to the language we learned them in.

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BUGGER OFF

My ears are clogged up! I'm only yawning ...

... so that I can hear you better!

artist: Eric Broers

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Dissertations reviewed

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Ian Roberts, *Comparative syntax*. 1997. x+307 pp. With index. London: Arnold. ISBN: 0 340 59286 9 (pb.), 0 340 67659 0 (hb.). Price: GBP 16.99 (pb.), 45.00 (hb.).

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DISTRIBUTED MORPHOLOGY

Heidi Harley & Rolf Noyer

Whenever a major revision to the architecture of UG is proposed, it takes some time for sufficient work to accumulate to allow evaluation of the viability of the proposal, as well as for its broad outlines to become familiar to those not immediately involved in the investigation. The introduction of Distributed Morphology (henceforth DM) in the early 1990s, by Morris Halle and Alec Marantz, is a case in point. In the four-year period since the first paper outlining the framework appeared, a reasonably substantial body of work has appeared, addressing some of the key issues raised by the revision. The goal of this article is to introduce the motivation and core assumptions for the framework, and at the same time provide some pointers to the recent work which revises and refines the basic DM proposal and increases its empirical coverage. Since the particular issues we discuss cover such a broad range of territory, we do not attempt to provide complete summaries of individual papers, nor, for the most part, do we attempt to relate the discussion of particular issues to the much broader range of work that has been done in the general arena. What we hope to do is allow some insight into (and foster some discussion of) the attitude that DM takes on specific issues, with some illustrative empirical examples.

This article is organized as follows. Section 1 sketches the layout of the grammar and discusses the division of labor between its components. The "distributed" of Distributed Morphology refers to the separation of properties which in other theories are collected in the lexicon, and in section 1 we elaborate on the motivation for this separation and its particulars. Section 2 explicates the mechanics of Spell-Out, giving examples of competition among phonological forms from Dutch, introducing the notion of f-morpheme and l-morpheme and distinguishing allomorphy from suppletion with examples from English. Section 3 discusses the operations which are available in the Morphology component, addressing in turn Morphological Merger, Impoverishment and Fission, with examples from Latin, Serbo-Croatian, Norwegian and Tamazight Berber. We also provide an illustration of the contrast between a "piece-based" theory such as DM and process-based morphological theories. Section 4 treats the relationship of the syntax to the morphology, Separationism and its limitations, the ways in which a mismatch between syntactic terminal nodes and morphosyntactic features may arise, and the distinct types of syntax/morphology mismatches conventionally classified as cliticization. We conclude in Section 5 with an agenda for future research.

1. The structure of the grammar

There are three core properties which distinguish Distributed Morphology from other morphological theories: Late Insertion, Underspecification, and Syntactic Hierarchical Structure All the Way Down. The grammar, still of the classic Y-type, is sketched in (1).

Unlike the theory of *LGB* (Chomsky 1981) and its Lexicalist descendants, in DM the syntax proper does not manipulate anything resembling lexical items, but rather, generates structures by combining morphosyntactic features (via Move and Merge) selected from the inventory available, subject to the principles and parameters governing such combination.

Late Insertion refers to the hypothesis that the phonological expression of syntactic terminals is in all cases provided in the mapping to Phonological Form. In other words, syntactic categories are purely abstract, having no phonological content. Only after syntax are phonological expressions, called **Vocabulary Items**, inserted in a process called Spell-Out. It is further worth noting that this hypothesis is stronger than the simple assertion that terminals have no phonological content: as we will see below, there is essentially **no** pre-syntactic differentiation (other than, perhaps, indexing) between two terminal nodes which have identical feature content but will eventually be spelled out with distinct Vocabulary Items such as *dog* and *cat*.

Underspecification of Vocabulary Items means that phonological expressions need not be fully specified for the syntactic positions where they can be inserted. Hence there is no need for the phonological pieces of a word to supply the morphosyntactic features of that word; rather, Vocabulary Items are in many instances default signals, inserted where no more specific form is available.

Syntactic Hierarchical Structure All the Way Down entails that elements within syntax and within morphology enter into the same types of constituent structures (such as can be diagrammed through binary branching trees). DM is piece-based in the sense that the elements of both syntax and of morphology are understood as discrete constituents instead of as (the results of) morphophonological processes.

1.1. The Lexicalist Hypothesis and DM

There is no lexicon in DM in the sense familiar from generative grammar of the 1970s and 1980s. In other words, DM unequivocally rejects the Lexicalist Hypothesis. The jobs assigned to the Lexicon component in earlier theories are **distributed** through various other components. For linguists committed to the Lexicalist Hypothesis, this aspect of DM may be the most difficult to accept, but it is nevertheless a central tenet of the theory. (For discussion of this issue from a Lexicalist viewpoint, see Zwicky & Pullum 1992.)

The fullest exposition of the anti-Lexicalist stance in DM is found in Marantz (1997a). There, Marantz argues against the notion of a generative lexicon, adopted in such representative examples of the Lexicalist Hypothesis as Selkirk (1982) or DiSciullo and Williams (1987), using arguments from the very paper which is usually taken to be the source of the Lexicalist Hypothesis, Chomsky's (1970) 'Remarks on Nominalization'. Marantz points out that it is crucial for Chomsky's argument that, for instance, a process like causativization of an inchoative root is **syntactic**, not lexical. Chomsky argues that roots like *grow* or *amuse* must be inserted in a causative syntax, in order to derive their causative forms. If their causative forms were lexically derived, nothing should prevent the realization of the causativized stem in a nominal syntax, which the poorness of **John's growth of tomatoes* indicates is impossible. Other lexicalist assumptions about the nature of lexical representations, Marantz notes, are simply unproven: no demonstration has been made of correspondence between a phonological "word" and a privileged type of unanalyzable meaning in the semantics or status as a terminal node in the syntax, and counterexamples to any simplistic assertion of such a correspondence are easy to find.

Because there is no lexicon in DM, the term "lexical item" has no significance in the theory, nor can anything be said to "happen in the lexicon", and neither can anything be said to be "lexical" or "lexicalized". Because of the great many tasks which the lexicon was supposed to perform, the terms "lexical" and "lexicalized" are in fact ambiguous. (For a discussion of terminology, see Aronoff 1994.) Here we note a few of the more usual assumptions about lexicalization, and indicate their status in the DM model:

I   Lexical(ized) = Idiomatized. Because the lexicon was supposed to be a storehouse for sound-meaning correspondences, if an expression is conventionally said to be "lexicalized" the intended meaning may be that the expression is listed with a specialized meaning.

(1)

List A → **Morphosyntactic features:**
[Det]   [1st]   [CAUSE]   [+pst]
[Root]   [pl]
         etc...

Syntactic Operations
(Merge, Move, Copy)

Morphological Operations   Logical Form

Phonological Form
(Insertion of Vocabulary Items,
Readjustment, phonological rules)

List B →

Vocabulary Items
/dog/: [Root] [+count] [+animate] ...
/-s/: [Num] [pl] ...
/did/: [pst] ...
etc...

Conceptual Interface
("Meaning")

List C →

Encyclopedia
(non-linguistic knowledge)
dog: four legs, canine, pet, sometimes bites
etc... chases balls, in environment "let sleeping ___s
lie", refers to discourse entity who is better left alone...

cat: four legs, feline, purrs, scratches, in
environment "the ___ out of the bag" refers
to a secret ... etc...

In DM such an expression is an **idiom** and requires an **encyclopedia entry** (see 1.4). There is no "word-sized" unit which has a special status with respect to the idiomatization process; morphemes smaller than word-size may have particular interpretations in particular environments, while expressions consisting of many words which obviously have a complex internal syntax may equally be idiomatized.

II Lexical(ized) = Not constructed by syntax. The internal structure of expressions is demonstrably not always a product of syntactic operations. In DM structure is produced both in syntax and after syntax in the Morphology component (labeled Morphological Operations above). Nevertheless, because of Syntactic Hierarchical Structure all the Way Down, operations within Morphology still manipulate what are essentially syntactic structural relations. The syntactic component produces a representation whose terminal elements are morphosyntactic features, which is then subject to operations such as Merger Under Adjacency, Fission or Fusion, accounting for non-isomorphic mappings from syntactic terminals to morphophonological constituents.

III Lexical(ized) = Not subject to exceptionless phonological processes, i.e., part of "lexical" phonology in the theory of Lexical Phonology and Morphology (Kiparsky 1982 et seq.). In DM the distinction between two types of phonology — "lexical" and "postlexical" — is abandoned. All phonology occurs in a single post-syntactic module. While Lexical Phonology and Morphology produced many important insights, DM denies that these results require an architecture of grammar which divides phonology into a pre-syntactic and post-syntactic module (see also Sproat 1985). Rather, post-syntactic phonology itself may have a complex internal structure (Halle & Vergnaud 1987).

1.2. The status of Vocabulary Items and the lexical/functional distinction

In DM, the term **morpheme** properly refers to a syntactic (or morphological) terminal node and its content, not to the phonological expression of that terminal, which is provided as part of a Vocabulary Item. Morphemes are thus the atoms of morphosyntactic representation. The content of a morpheme active in syntax consists of syntactico-semantic features drawn from the set made available by Universal Grammar.

A Vocabulary Item is, properly speaking, a relation between a phonological string or "piece" and information about where that piece may be inserted. Vocabulary Items provide the set of phonological signals available in a language for the expression of abstract morphemes. The set of all Vocabulary Items is called the Vocabulary.

(2)
Vocabulary Item schema
signal ⟷ context of insertion

Example Vocabulary Items
a. /i/ ⟷ [___, +plural]
    A Russian affix (Halle 1997)
b. /n/ ⟷ [___, +participant +speaker, plural]
    A clitic in Barceloni Catalan (Harris 1997a)
c. /y-/ ⟷ elsewhere
    An affix in the Ugaritic prefix conjugation (Noyer 1997)
d. Ø ⟷ 2 plu
    A subpart of a clitic in Iberian Spanish (Harris 1994)
e. /kæt/ ⟷ [$_{DP}$ D [$_{LP}$ ___]]
    Root inserted in a nominal environment (Harley & Noyer 1998a)

Note that the phonological content of a Vocabulary Item may be any phonological string, including zero or Ø. The featural content or context of insertion may be similarly devoid of information: in such cases we speak of the default or "elsewhere" Vocabulary Item. Note that the two do not necessarily coincide — that is, a null phonological affix in a given paradigm is not necessarily the default Vocabulary Item. For example, the zero plural affix inserted in the context of marked

English nouns like *sheep* is not the English default plural.

In early work in DM, Halle (1992) proposed a distinction between concrete morphemes, whose phonological expression was fixed, and abstract morphemes, whose phonological expression was delayed until after syntax. More current work in DM, however, endorses Late Insertion of all phonological expression, so Halle's earlier concrete vs. abstract distinction has been largely abandoned.

Harley & Noyer (1998a) propose an alternative to the concrete vs. abstract distinction; they suggest that morphemes are of two basic kinds: **f-morphemes** and **l-morphemes**, corresponding approximately to the conventional division between functional and lexical categories, or closed-class and open-class categories.

F-morphemes are defined as morphemes for which there is no choice as to Vocabulary insertion: the spell-out of an f-morpheme is deterministic. In other words, f-morphemes are those whose content (as defined by syntactic and semantic features made available by Universal Grammar) suffices to determine a unique phonological expression. One prediction is that Vocabulary Items conventionally classified as "closed-class" should either express purely grammatical properties or else have meanings determined solely by universal cognitive categories (see 2.3 for further discussion).

In contrast, an l-morpheme is defined as one for which there is a choice in spell-out: an l-morpheme is filled by a Vocabulary Item which may denote a language-specific concept. For example, in an l-morpheme whose syntactic position would traditionally define it as a noun, any of the Vocabulary Items *dog, cat, fish, mouse, table* etc. might be inserted. Note that because the conventional categorial labels noun, verb, adjective etc. are by hypothesis not present in syntax (l-morphemes being acategorial), the widely adopted hypothesis that Prosodic Domain construction should be oblivious to such distinctions (Selkirk 1986; Chen 1987) follows automatically.

1.3. The syntactic determination of lexical categories

The conjecture we have just alluded to, which we will term the L-Morpheme Hypothesis, (Marantz 1997a; Embick 1997, 1998a, 1998b; Harley 1995; Harley & Noyer 1998a, 1998b; Alexiadou 1998), contends that the traditional terms for sentence elements, such as noun, verb, and adjective, have no universal significance and are essentially derivative from more basic morpheme types (see also Sapir 1921, ch. 5). As noted above, Marantz (1997a) contends that the configurational definition of category labels is already implicit in Chomsky (1970).

Specifically, the different "parts of speech" can be defined as a single l-morpheme, or Root (to adopt the terminology of Pesetsky 1995), in certain local relations with category-defining f-morphemes. For example, a noun or a nominalization is a Root whose nearest c-commanding f-morpheme (or licenser) is a Determiner, a verb is a Root whose nearest c-commanding f-morphemes are v, Aspect and Tense; without Tense such a Root is simply a participle (Embick 1997; Harley & Noyer 1998b). Thus, the same Vocabulary Item may appear in different morphological categories depending on the syntactic context that the item's l-morpheme (or Root) appears in. For example, the Vocabulary Item *destroy* is realized as a noun *destruct-(ion)* when its nearest licenser is a Determiner, but the same Vocabulary Item is realized as a participle *destroy-(ing)* when its nearest licensers are Aspect and v; if Tense appears immediately above Aspect, then the participle becomes a verb such as *destroy-(s)*. However, it is probably the case that many traditional part-of-speech labels correspond to language-specific features present after syntax which condition various morphological operations such as Impoverishment (see 3.2) and Vocabulary Insertion.

1.4. Idioms: the content of the Encyclopedia

In DM, the Vocabulary is one list which contains some of the information which in lexicalist theories is associated with the Lexicon. Another such list is the Encyclopedia, which relates Vocabulary Items (sometimes in the context of other Vocabulary Items) to meanings. In other words, the Encyclopedia is the list of idioms in a language.

The term *idiom* is used to refer to any expression (even a single word or subpart of a word) whose meaning is not wholly predictable from its morphosyntactic structural description (Marantz 1995, 1997a). F-morphemes are typically not idioms, but l-morphemes are always idioms.

(3)
Some idioms

cat	(a fuzzy animal)
(the) veil	(vows of a nun)
(rain) cats and dogs	(a lot)
(talk) turkey	(honest discourse)

The notion of "idiom" in DM, obviously, embraces more than the conventional use of the term implies. Idioms in the conventional sense — that is, groups of words in a particular syntactic arrangement that receive a "special" interpretation, for example *kick the bucket*, whose meaning is roughly 'die' — are represented in DM as subparts of the Encyclopedic entry for the Root (or Roots) which are involved. The Encyclopedia entry for *kick*, for example, will specify that in the environment of the direct object *the bucket*, *kick* may be interpreted as 'die'. The study of conventional idioms has been an important source of evidence for locality restrictions on interpretation in DM; in particular, following the observations of Marantz (1984), the fact that external arguments are never included as part of the contextual conditioning of Roots in conventional idioms has led to the proposal whereby external arguments are projected by a separate "little-v" head, not by any Root, and they thus are not mentioned by Encyclopedia entries for Roots as a possible interpretive conditioner. (For an alternative, non-DM discussion of idioms, see Jackendoff 1997.)

As indicated in the schema in (1) above, the "meaning" of an expression is interpreted from the entire derivation of that expression, including the information from the Encyclopedia which is considered extralinguistic. LF does not express or represent meaning; LF is merely a level of representation which exhibits certain meaning-related structural relations, such as quantifier scope. (The relationship of the Encyclopedia to the Vocabulary is the topic of much current debate, see, for example, Marantz 1997a; Harley & Noyer 1998a).

2. Spell-Out

Spell-Out inserts Vocabulary Items (phonological pieces) into morphemes. In the unmarked case, the relation between Vocabulary Items and morphemes is one-to-one, but as we have seen, several factors may disrupt this relation (Noyer 1997), including fission of morphemes, removal of morphosyntactic features by Impoverishment, local displacements of Vocabulary Items by Morphological Merger and post-syntactic insertion of dissociated morphemes.

Spell-Out works differently depending on what type of morpheme is being spelled out, f-morphemes or l-morphemes. Regardless of the type of morpheme, however, Spell-Out is normally taken to involve the association of phonological pieces (Vocabulary Items) with abstract morphemes. Halle (1992) construes Spell-Out as the rewriting of a place-holder "Q" in a morpheme as phonological material. This operation is normally understood as cyclic, such that more deeply embedded morphemes are spelled-out first.

2.1. Spell-Out of f-morphemes: the Subset Principle

Early work in DM was focused primarily on the spell-out of f-morphemes. In such cases sets of Vocabulary Items compete for insertion, subject to what Halle (1997) called the Subset Principle

(Lumsden 1987, 107 proposes a similar principle and calls it "Blocking". Halle's principle is not to be confused with the Subset Principle of Manzini & Wexler 1987, which deals with learnability issues).

Subset Principle
The phonological exponent of a Vocabulary Item is inserted into a morpheme... if the item matches all or a subset of the grammatical features specified in the terminal morpheme. Insertion does not take place if the Vocabulary Item contains features not present in the morpheme. Where several Vocabulary Items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen.

Below, we give an example from Sauerland (1995).

(4)
a.   *Dutch strong adjectival desinences*
                  [–neuter]   [+neuter]
     [–pl]   -e   Ø
     [+pl]   -e   -e
b.   *Vocabulary Items*
     Ø ←→ [___ , +neuter -plural] / Adj + ____
     -e ←→ Adj + ____

In Dutch, after syntax, a dissociated morpheme (see section 3) is inserted as a right-adjunct of those morphemes which are conventionally labeled "adjectives". The Vocabulary Items above compete for insertion into this morpheme. In the specific environment of the neuter singular, Ø is inserted. In the remaining or elsewhere environment -e is inserted. The insertion of Ø in the specific environment bleeds the insertion of -e because, under normal circumstances, only a single Vocabulary Item may be inserted into a morpheme. Note that the Vocabulary Items above are not specially stipulated to be disjunctive except insofar as they compete for insertion at the same morpheme.

Note that all Vocabulary Items may compete for insertion at any node; there is no pre-insertion separation of Vocabulary Items into "related" forms which may compete. However, since the insertion process is restricted by feature content, a certain collection of Vocabulary Items corresponding to the traditional notion of a "paradigm" may be the set under discussion when accounting for the phonological realization of a given terminal node. In some theories certain such collections have a privileged status or can be referred to by statements of the grammar (Carstairs 1987; Wunderlich 1996). But in DM, paradigms, like collections of related phrases or sentences, do not have any status as theoretical objects, although certain regularities obtaining over paradigms may result from constraints operating during language acquisition.

2.2. Feature Hierarchies, Feature Geometries and the Subset Principle

In some cases it would be possible to insert two (or more) Vocabulary Items into the same f-morpheme, and the Subset Principle does not determine the winner. Two approaches have been proposed in DM for such cases. Halle & Marantz (1993) suggest that such conflicts are resolved by extrinsic ordering: one Vocabulary Item is simply stipulated as the winner. Alternatively, Noyer (1997) proposes that such conflicts can always be resolved by appeal to a Universal Hierarchy of Features (cf. also Lumsden 1987, 1992; Zwicky 1977 and Silverstein 1976). Specifically, the Vocabulary Item that uniquely has the highest feature in the hierarchy is inserted.

(5)
Fragment of the Hierarchy of Features
1 person > 2 person > dual > plural > other features

Harley (1994), following a proposal of Bonet (1991), argues that the conflict-resolving effects of the Feature Hierarchy can be derived from a geometric representation of morphosyntactic features, according to which the Vocabulary Item which realizes the most complex feature geometry is inserted in such situations. See also section 3.2 on Impoverishment, below.

2.3. Spell-Out of l-morphemes: competition, suppletion and allomorphy

For l-morphemes there is a choice regarding which Vocabulary Item is inserted. For example, a Root morpheme in an appropriately local relation to a Determiner might be filled by *cat*, *dog*, *house*, *table* or any other Vocabulary Item we would normally call a noun. Harley & Noyer (1998a) note that it is clear that such Vocabulary Items are not in competition, as are the Vocabulary Items inserted into f-morphemes. Rather, these Vocabulary Items can be freely inserted at Spell-Out, subject to conditions of **licensing**. Licensers are typically f-morphemes in certain structural relations to the Root where the Vocabulary Item is inserted, and as outlined above, these structural relations typically determine the traditional notion of category. Nouns are licensed by an immediately c-commanding Determiner; different verb classes, such as unergatives, unaccusatives, and transitives each are licensed by different structural configurations and relations to various higher eventuality projections.

Marantz (1997a) discusses the interesting case of l-morphemes which undergo apparent allomorphy in different environments, such as the *rise*/*raise* alternation. These pose a problem in that they appear to be in competition for insertion in different environments (that is, *raise* is inserted in the context of a commanding CAUSE head, while *rise*, the intransitive and nominal variant, is the elsewhere case). They cannot be separate Vocabulary Items, however, for if they were, *raise* should be a separate verb with the properties of the *destroy* class. The absence of nominalizations like **John's raise of the pig for bacon,* however, indicate that *raise* is simply a morphophonological variant of the basic intransitive *rise* root, which is a member of the *grow* class. That is, in DM, l-morpheme alternations like *rise*/*raise* must not be determined by competition, as may be the case for allomorphy of f-morphemes, but rather must be the product of post-insertion readjustment rules.

DM, then, must recognize two different types of allomorphy: suppletive and morphophonological. Suppletive allomorphy occurs where different Vocabulary Items compete for insertion into an f-morpheme, as outlined in section 2.1 above. To give another example, Dutch nouns have (at least) two plural number suffixes, *-en* and *-s*. The conditions for the choice are partly phonological and partly idiosyncratic. Since *-en* and *-s* are not plausibly related phonologically, they must constitute two Vocabulary Items in competition.

Morphophonological allomorphy occurs where a single Vocabulary Item has various phonologically similar underlying forms, but where the similarity is not such that phonology can be directly responsible for the variation. For example, *destroy* and *destruct-* represent stem allomorphs of a single Vocabulary Item; the latter allomorph occurs in the nominalization context. DM hypothesizes that in such cases there is a single basic allomorph, and the others are derived from it by a rule of Readjustment. The Readjustment in this case replaces the rime of the final syllable of destroy with *-uct*. (Alternatively such allomorphs might both be listed in the Vocabulary and be related by "morpholexical relations" in the sense of Lieber 1981.)

Traditionally it is often thought that there is a gradient between suppletion and other types of more phonologically regular allomorphy, and that no reasonable grounds can be given for how to divide the two or if they should be divided at all. Marantz (1997b) has recently proposed that true suppletion occurs only for Vocabulary Items in competition for f-morphemes, since competition occurs only for f-morphemes. An immediate consequence of this proposal is that undeniably suppletive pairs like *go*/*went* or *bad*/*worse* must actually represent the spelling of f-morphemes. The class of f-morphemes is as a result considerably enriched, but since the class of f-morphemes is circumscribed by Universal Grammar, it is also predicted that true suppletion should be limited to universal syntactico-semantic categories. Moreover, given

that some independent grounds might in this way divide suppletive from Readjustment-driven allomorphy, a theory of the range of possible Readjustment processes becomes more feasible.

The controversial distinction between derivational and inflectional (Anderson 1982) has no explicit status in DM. However, the distinction between f-morphemes and l-morphemes perhaps captures some of the intuition behind the derivational/inflectional distinction, although certainly not all f-morphemes would normally be considered "inflectional". DM also distinguishes between syntactic and non-syntactic (dissociated) morphemes, although again this distinction has no straightforward analogue in the derivational/inflectional debate.

3. Manipulating structured expressions: morphological operations

In DM any given expression acquires at least two structural descriptions during its derivation. In a morphophonological description, an expression's phonological pieces (its Vocabulary Items) and their constituent structure are displayed. In a morphosyntactic description, an expression's morphemes and their constituent structure are displayed.

(6)
The expression cows*:*

Morphosyntactic description: [Root [+plural]]
Morphophonological description: [kaw+ z]

The morphosyntactic structure of an expression is generated by several mechanisms. Syntax, using conventional operations such as head-movement, plays a major role in constructing morphosyntactic structures, including "word"-internal structure. But in addition, DM employs several additional mechanisms in a post-syntactic component, Morphological Structure.

First, morphemes such as [passive] or [case] (in some instances, see Marantz 1991) which, by hypothesis, do not figure in syntax proper, can be inserted after syntax but before Spell-Out. These morphemes, which only indirectly reflect syntactic structures, are called **dissociated morphemes**. For a full exposition of the mechanism of dissociated morpheme insertion, see Embick (1997).

Second, the constituent structure of morphemes can be modified by Morphological Merger, which can effect relatively local morpheme displacements.

3.1. Merger

Morphological Merger, proposed first in Marantz (1984), was originally a principle of well-formedness between levels of representation in syntax. In Marantz (1988, 261) Merger was generalized as follows:

Morphological Merger
At any level of syntactic analysis (d-structure, s-structure, phonological structure), a relation between X and Y may be replaced by (expressed by) the affixation of the lexical head of X to the lexical head of Y.

What Merger does is essentially "trade" or "exchange" a structural relation between two elements at one level of representation for a different structural relation at a subsequent level. (Rebracketing under adjacency is also proposed and discussed at length in Sproat 1985.)

Merger has different consequences depending upon the level of representation it occurs at. Where Merger applies in syntax proper it is essentially Head Movement, adjoining a zero-level projection to a governing zero-level projection (Baker 1988). Cases of syntactic lowering may be a type of Merger as well, presumably occurring after syntax proper but before Vocabulary Insertion, e.g. the Tense to verb affixation in English (see Bobaljik 1994) or perhaps C-to-I lowering in Irish (McCloskey 1996).

The canonical use of Merger in Morphology is to express second-position effects. Embick & Noyer (in progress) hypothesize that where Merger involves particular Vocabulary Items (as opposed

(8)
Latin -que *placement*

Morphological structure:	[[A Q]	[N-Q]]	[cl	[[A-Q]	[N-Q]]]
Vocabulary insertion:	[[bon i]	[puer i]]	[–que	[[bon ae]	[puell ae]]]
Linearization:	[[bon*i] *	[puer*i]] *	[–que*	[[bon*ae] *	[puell*ae]]]
Local dislocation	[[bon*i] *	[puer*i]] *	[[[bon*ae]*que]	*	[puell*ae]]]
	good-NOM.PL	boy-NOM.PL	good-NOM.PL-and		girl-NOM.PL
	'Good boys and good girls'				

to morphemes), the items in question must be string-adjacent. Such cases of Merger are called Local Dislocation. Schematically Local Dislocation looks like this:

(7)
Local Dislocation:
X [Y …] → [Y + X …

In Local Dislocation, a zero-level element trades its relation of adjacency to a following constituent with a relation of affixation to the linear head (peripheral zero-element) of that constituent. (Local Dislocation has also received considerable attention outside of DM from researchers working in Autolexical Syntax, see Sadock 1991.)

　　For example, Latin *-que* is a second-position clitic which adjoins to the left of the zero-level element to its right (8) (* represents the relation of string adjacency; Q represents dissociated morphemes).

By hypothesis, Prosodic Inversion (Halpern 1995) is a distinct species of Merger at the level of Phonological Form, and differs from Local Dislocation in that the affected elements are prosodic categories rather than morphological ones.

　　For example, Schütze (1994), expanding on Zec & Inkelas (1990), argues that the auxiliary clitic *je* in Serbo-Croatian is syntactically in C, but inverts with the following phonological word by Prosodic Inversion at Phonological Form (parentheses below denote phonological word boundaries):

(9)
Serbo-Croatian second-position clitics
Morphological structure

after Spell-Out	[je	[VP [PP U ovoj	sobi]	klavir]]
Parse into				
phonological words	je	(U ovoj)	(sobi)	(klavir)
Prosodic inversion		((U ovoj)+ je)	(sobi)	(klavir)
		In this AUX	room	piano
		'In this room is the piano'		

The positioning of the clitic cannot be stated in terms of a (morpho)syntactic constituent, since *U ovoj* 'in this' does not form such a constituent. Embick & Izvorski (1995) specifically argue that syntactic explanations, including those involving remnant extraposition, cannot reasonably be held accountable for this pattern.

　　However, it should be emphasized that the extent to which Local Dislocation and Prosodic Inversion are distinct devices in the mapping to Phonological Form remains controversial, with many researchers seeking to reduce the two to a purely prosodic or a purely syntactic mechanism.

3.2. Impoverishment

　　Impoverishment, first proposed in Bonet (1991), is an operation on the contents of morphemes prior to Spell-Out. In early work in DM, Impoverishment simply involved the deletion of morphosyntactic features from morphemes in certain contexts. When certain features are deleted, the insertion of Vocabulary Items requiring those features for insertion cannot occur, and a less specified item will be inserted instead. Halle & Marantz (1994) termed this the 'Retreat to the General Case'.

(10)
Adjectival suffixes in Norwegian (Sauerland 1995)

STRONG	[–neuter]	[+neuter]
[–pl]	Ø	-t
[+pl]	-e	-e
WEAK	[–neuter]	[+neuter]
[–pl]	-e	-e
[+pl]	-e	-e

In Norwegian, there is a three-way distinction (*t ~ e ~ Ø*) in adjectival suffixes in a "strong"

syntactic position, but in the "weak" position one finds only *-e*. By hypothesis, it is not accidental that the affix *-e* is the Elsewhere affix in the strong context, and also appears everywhere in the weak context. Sauerland's (1995) Impoverishment analysis of the weak paradigms captures this insight. He proposes the following set of Vocabulary Items:

(11)
Norwegian Vocabulary Items
/t/　←→ [___ , -pl +neut] / Adj + ____
Ø　←→ [___ , -pl -neut] / Adj + ____
/e/　←→ elsewhere / Adj + ____

In the weak syntactic position, a rule of Impoverishment applies, deleting any values for gender features:

(12)
Impoverishment
[±neuter] → Ø

Impoverishment thus guarantees that neither the Vocabulary Items *t* nor Ø can be inserted, since both require explicit reference to a value for [±neuter]. Insertion of the general case, namely *-e*, follows automatically.

　　As we have noted above, in Bonet's original proposal (1991) and in several subsequent works (Harley 1994; Harris 1997a; Ritter & Harley 1998), morphosyntactic features are arranged in a feature geometry much like phonological features, and Impoverishment is represented as delinking. Consequently, the delinking of certain features entails the delinking of features dependent on them. For example, if person features dominate number features which in turn dominate gender features, then the Impoverishment (delinking) of number entails the delinking of gender as well:

(13)
Impoverishment as delinking

$$2 \qquad\qquad 2$$
$$\not=$$
pl
|
f

Noyer (1997) rejects the use of geometries of this sort as too restrictive, and proposes instead that Impoverishments are better understood as feature co-occurrence restrictions or filters of the type employed by Calabrese (1995) for phonological segment inventories. For example, the absence of a first person dual in Arabic is represented as the filter *[1 dual], and a Universal Hierarchy of Features dictates that where these features combine, because [dual] is a number feature and [1] is a (hierarchically higher) person feature, [dual] is deleted automatically. Calabrese (1994) and (1996) further expand this idea. The use of feature geometries in DM remains an unresolved issue at this time, but Feature Hierarchies, whether geometric or not, ensure that normally less marked feature values persist in contexts of neutralization.

　　Feature-changing Impoverishment, which as a device has approximately the same power as Rules of Referral (Zwicky 1985b; Stump 1993), has in general been eschewed in DM. However, Noyer (1998a) discusses cases where feature-changing readjustments seem necessary. It is proposed that such cases always involve a change from the more marked value of a feature to the less marked value and never vice versa.

3.3. Fission and Feature Discharge

　　Fission was originally proposed in Noyer (1997) to account for situations in which a single morpheme may correspond to more than one Vocabulary Item. In the normal situation, only

one Vocabulary Item may be inserted into any given morpheme. But where fission occurs, Vocabulary Insertion does not stop after a single Vocabulary Item is inserted. Rather, Vocabulary Items accrete on the sister of the fissioned morpheme until all Vocabulary Items which can be inserted have been, or all features of the morpheme have been **discharged**. A feature is said to be discharged when the insertion of a Vocabulary Item is conditioned by the presence of that feature.

　　However, Noyer (1997) argues that features conditioning the insertion of a Vocabulary Item come in two types. A Vocabulary Item **primarily expresses** certain features in its entry, but it may be said to **secondarily express** certain other features. This distinction corresponds (approximately) to the distinction between primary and secondary exponence (Carstairs 1987). Only features which are primarily expressed by a Vocabulary Item are discharged by the insertion of that Item.

　　For example, in the prefix-conjugation of Tamazight Berber, the AGR morpheme can appear as one, two or three separate Vocabulary Items, and these may appear as prefixes or as suffixes:

(14)
a.　*Tamazight Berber Prefix Conjugation.* dawa *'cure'*

	singular	plural
3m	*i-dawa*	*dawa-n*
3f	*t-dawa*	*dawa-n-t*
2m	*t-dawa-d*	*t-dawa-m*
2f	*t-dawa-d*	*t-dawa-n-t*
1	*dawa-ɣ*	*n-dawa*

b.　*Vocabulary Items*

/n-/	←→	1 pl
/-ɣ/	←→	1
/t-/	←→	2
/t-/	←→	3 sg f
/-m/	←→	pl m (2)
/i-/	←→	sg m
/-d/	←→	sg (2)
/-n/	←→	pl
/-t/	←→	f

Some features in the above Vocabulary Item list are in parentheses. This notation denotes that the Vocabulary Item in question can be inserted only if the parenthesized feature has already been discharged, whereas the features which are not in parentheses cannot already have been discharged if insertion is to occur. For example, -*m* can be inserted only on a verb to which *t*- '2' has already been attached. Parentheses are thus used to denote features which are secondarily expressed by a Vocabulary Item, while ordinary features — those which a Vocabulary Item primarily expresses — are not parenthesized.

　　In a fissioned morpheme, Vocabulary Items are no longer in competition for a single position-of-exponence, i.e. for the position of the morpheme itself. Rather, an additional position-of-exponence is automatically made available whenever a Vocabulary Item is inserted (see Halle 1997 for a slightly different view).

　　A form like *t-dawa-n-t* 'you (FEM.PL) cure' has three affixes, *t*-, -*n*, and -*t*. The affixes are added in an order determined by the Feature Hierarchy. Hence *t*- '2' is added first, then -*n* 'plural', and finally -*t* 'feminine'. (In the feature-geometric approach of Harley & Ritter (1998), fission detaches subtrees of the feature geometry and realizes them as separate affixes, giving much the same effect).

　　In a form like *n-dawa* 'we cure' there is but one affix. By discharging the feature '1', the insertion of *n*- '1 pl' prevents the subsequent insertion of -ɣ '1'. This illustrates that two Vocabulary Items can be disjunctive not by competing for the same position-of-exponence, but rather by competing for the discharge of the same feature. Such cases are termed **Discontinuous Bleeding**.

3.4. Morphological processes and the predictions of a piece-based theory

　　DM is piece-based inasmuch as Vocabulary Items are considered discrete collections of phonological material and not (the result of) phonological processes (as in Anderson 1992). Nevertheless Readjustment can alter the shape of individual

Vocabulary Items in appropriate contexts. Two factors thus distinguish DM from process-only theories of morphology.

First, since Readjustment can affect only individual Vocabulary Items and not more than one Vocabulary Item at once, it is predicted that "process" morphology is always a kind of allomorphy (see also Lieber 1981). For example, Marantz (1992) shows that truncation applies to (Papago) O'odham verb stems to produce a separate stem allomorph; it does not affect more than one Vocabulary Item at once.

Second, since processes produce allomorphs but do not directly "discharge" features, it is common for an allomorph to have several contexts of use. For example, in O'odham the truncated verb stem allomorph has several functions, including but not limited to its use in the perfective form, and the property of perfectivity is primarily expressed in another morpheme, namely an affix on the syntactic auxiliary. It is therefore incorrect to directly equate truncation and the perfective; rather, truncation applies to verb stems which appear in the perfective. This conception of stem allomorphy conforms to the viewpoint of Lieber (1981).

Since process-morphology can in principle apply to any string, regardless of its morphological derivation, it is predicted in that theory that a language could mark the category Plural by deletion of a final syllable, regardless of whether that syllable consisted of one or several discrete phonological pieces. Consider "Martian" below:

(15)
Singular and plural nouns in the pseudo-language 'Martian'

singular	plural	
takata	taka	'earthling'
takata-ri	takata	'earthling-GEN'
laami	laa	'antenna'
jankap	jan	'flying saucer'
jankap-ri	janka	'flying saucer-GEN'
zuuk	lorp	'canal'
zuuk-ri	zuu	'canal-GEN'
yuun-i	yuu	'antenna waving'
merg-i	mer	'canal digging'
merg-i-ri	mergi	'canal digging-GEN'

In "Martian", nominalizations can be formed from noun stems by addition of the suffix (-*i*) and genitives with the suffix (-*ri*). Regardless of the derivation of a noun, the plural is always either a truncation of the last syllable of the singular, or suppletive (*zuuk ~ lorp*). The truncated form never occurs anywhere else except in plurals. Number marking has no other expression than truncation.

The "Martian" rule of plural formation is easy to express in a process-morphology: instead of adding an affix, one simply deletes the final syllable. In DM however, this language could never be generated, because processes like "delete the final syllable" could only be expressed as Readjustments (or morphological relations) which affect individual Vocabulary Items.

4.　Syntax and morphology

As noted in section 1, DM adopts a strictly syntactic account of word-formation; structuring of the morphosyntactic feature primitives is performed by the syntactic structure-forming operations. Features which will eventually be realized as a subpart of a phonological word are treated no differently from features which will eventually be realized as an autonomous word. The phonological realization of features is accomplished by a distinct set of operations at Insertion and afterwards. That is, DM adopts a variety of Separationism.

4.1. Separationism

Separationism characterizes theories of morphology in which the mechanisms for producing the form of syntactico-semantically complex expressions are separated from, and not necessarily in a simple correspondence with, the mechanisms which produce the form ("spelling") of the corresponding phonological expressions. Lexeme-Morpheme Base Morphology developed by Robert Beard (e.g. Beard 1995) is another example of a Separationist model, but differs principally from

DM in its endorsement of the "lexeme" as a privileged unit in the grammar.

Theories endorsing Separationism are attractive because (a) they allow similar syntactico-semantic forms to be realized in quite different ways phonologically and (b) they permit polyfunctionality of phonological expressions: a single phonological piece (e.g. the English affix -*s*) might correspond to a set of distinct and unrelated syntactico-semantic functions.

Theories endorsing Separationism, on the other hand, are unattractive for exactly the same reasons as above: when unconstrained, they fail to make any interesting predictions about the degree to which syntactico-semantic and phonological form can diverge. See Embick (1997, 1998a, 1998b) for a discussion of how Separationism could be constrained in DM.

4.2. Morphosyntactic features and terminal nodes

In the early 1990s some linguists looked on with apprehension at the "explosion" of Infl and the increasing elaboration of clause structure. It is worth noting that the DM does not necessarily entail a complex clausal architecture simply because morphosyntactic features are manipulated by the syntax. In DM, because dissociated morphemes can be inserted after syntax, not every morpheme need correspond to a syntactic terminal. Rather it remains as always an open question what the set of syntactic terminal types is and how these relate to the morphophonological form of an utterance. In addition, fission of morphemes during Spell-Out in some cases allows multiple phonological pieces to correspond to single morphemes, further obscuring the morphosyntactic structure. Nevertheless, these departures are considered marked options within a grammar, and therefore are assumed to require (substantial) positive evidence during acquisition.

4.3. Theta-assignment

Most work in DM does not recognize a set of discrete thematic roles. Instead, following the insights of Hale & Keyser (1993, 1998), thematic roles are reduced to structural configurations. For example, Harley (1995) proposes that 'Agent' is the interpretation given to arguments projected into the specifier of Event Phrase (see also Travis 1994 on 'Event Phrase', and Kratzer 1996 for related ideas). 'Theme' corresponds to the interpretation given to any argument projected as a sister of Root. Unlike Hale & Keyser (1993), however, DM does not differentiate between an 'l-syntax' occurring in the lexicon and a regular 's-syntax'. Both are simply one module, syntax. See also Marantz (1997a).

Such an approach is not necessarily entailed by the DM model, however. One could imagine a model in which there were different types of [Root], corresponding to the verb classes of the world's languages, which assigned different sets of theta roles to elements in certain structural relations to them. What is not possible, in DM, is for one type of [Root] to be mapped onto another via a pre-syntactic lexical operation.

4.4. The phonology/morphology/syntax connection: clitics

"Clitic" is not a primitive type in DM but rather a behavior which an element may display. Conventionally, clitics are said to "lean" on a "host"; this sort of dependency relation of one element on another manifests itself differently depending on what the element is and where its dependency relation must be satisfied. Hence there is no coherent class of objects which can be termed clitics; instead morphemes and Vocabulary Items may show a range of dependencies.

"Leaners" (Zwicky 1985a) are Vocabulary Items which cannot form phonological words by themselves but whose morphemes have no other special displacement properties. For example, the English reduced auxiliary -*s* (from *is*) "promiscuously" attaches to any phonological host to its left (Zwicky & Pullum 1983):

(16)
Leaners
The person I was talking to's going to be angry with me.
Any answer not entirely right's going to be marked as an error.

Selkirk (1996) analyzes prosodically dependent Vocabulary Items as either free clitics (adjuncts to phonological phrases), affixal clitics (adjuncts to phonological words) or internal clitics (incorporated into phonological words). These options are shown schematically below:

(17)
Types of phonological clitics
$_\phi[$ = phrase boundary, $_\omega[$ = word boundary

$_\phi[...$ free clitic $_\phi[$ $_\omega[$ host] ...]
$_\phi[... _\omega[$affixal clitic $_\omega[$host]] ...]
$_\phi[... _\omega[$internal clitic + host] ...]

English leaners are typically free clitics, according to Selkirk, but other languages exploit other options. For example, Embick (1995) shows that, depending on whether they undergo head movement or are simply leaners, Polish clitics behave phonologically as either affixal clitics (allowing their host to undergo word-domain phonology), or as internal clitics (preventing their host from undergoing word-domain phonology on its own).

Second-position clitics, illustrated for Serbo-Croatian in section 3.1, are Vocabulary Items which undergo either Local Dislocation or Prosodic Inversion with a host.

Finally, the term "clitic" is sometimes used to describe syntactically mobile heads, typically Determiners, such as certain Romance pronominals on some accounts. In such cases the dependency relation or special behavior is a syntactic property of a morpheme. In many cases the Vocabulary Items which are inserted into these morphemes also show either phonological dependency as leaners or additional peculiarities of position via Local Dislocation or Prosodic Inversion. See Harris (1994, 1997a) and Embick (1995) for case studies.

5.　An agenda for future research

The research program envisioned by Distributed Morphology encompasses a great many aspects of the theory of grammar. Thus, the agenda for future research with which we conclude here touches upon what we feel are some of the most pressing questions in contemporary syntactic and morphological work. We have divided the agenda into three headings.

5.1. Syntactic categories and the architecture of grammar

As noted, DM denies that syntactic categories necessarily stand in any simple relation to traditional parts-of-speech such as nouns and verbs; moreover, DM denies that syntactic categories stand in any simple relation to phonological words. Thus, as is also the case with much work in Minimalist syntax, the DM research program demands a reassessment of the inventory and bases for syntactic categories. Related questions include the following. First, the ramifications of the L-morpheme Hypothesis (according to which open-class Vocabulary Items always instantiate the same syntactic category) point to the need for continued study of so-called "mixed" categories and the cross-linguistic validity, if any, of traditional part-of-speech labels in universal syntax. Second, how do these categories relate to universal semantic primes and to what extent do certain types of derivational word-formation manipulate such primes? This topic is explored extensively in the work of Robert Beard (e.g. Beard 1995), but has not yet been properly incorporated into the DM model. Third, DM hypothesizes that syntax manipulates only categories defined by features made available by Universal Grammar. This leads to the question of whether language-specific features (such as gender or form class) are present in the syntax at all, or whether such features are unavailable in syntax proper and are supplied for purposes of Spell-Out and agreement only through Vocabulary Insertion after syntax (for discussion, see Embick 1998b).

As Aronoff (1994) has most persuasively argued, morphology requires the manipulation of form classes and stem types whose relation to syntactic properties or configurations is not direct, but mediated by a complex mapping. DM adopts this Separationist position by positing a component of Morphology after syntax which provides for this mapping. Nevertheless, an important question for future work is whether this mapping is constrained by any interesting universal principles (Embick 1997).

Along with the research program of Hale & Keyser (1993, 1998), DM does not recognize the assignment of theta-roles by "lexical items". Thus, research in DM continues to explore whether theta-roles may be dispensed with as primes of the theory and replaced by a configurational definition of argument roles.

Properties of the Encyclopedia and its relation to grammatical well-formedness raise additional important issues. Marantz (1997b) for example has suggested that (phrasal) idioms cannot extend beyond the Event (v) projection, but it remains an open question how the Encyclopedia effects this constraint on semantic interpretation. A related question concerns the distinction between what are conventionally termed "productive" and "non-productive" processes. The earliest work in generative morphology such as Halle (1973) postulated a Dictionary which effectively licensed the use of expressions formed by non-productive word-formation rules. The question of whether the DM Encyclopedia can or should perform this licensing function, or how, if at all, expressions formed by non-productive mechanisms of the grammar are to be specially treated, is currently under investigation.

5.2. Spell-Out

A number of researchers in DM have accepted the traditional view that morphosyntactic features have markedness properties or are aligned into hierarchies of various sorts. Open questions — which DM in fact shares with all theories of morphology — currently include what the set of universal morphosyntactic features is and what, if any, are their universal markedness properties, as well as how these are structured in representation (e.g. in a geometry, in a list, or in some other way).

Spell-Out of morphemes may be conditioned by properties in nearby morphemes, and so an important issue is the syntagmatic (locality) constraints on Spell-Out, that is, how close structurally a morpheme has to be to another to influence the other's Spell-Out. Similarly, opinion remains divided as to whether the outcome of a competition of Vocabulary Items for positions may be settled by means of a hierarchy of features or can be stipulated.

Finally, not all morphemes are present in syntax proper, but some are purely morphological, **reflecting** syntactic configurations or properties. Which morphemes, then, are inserted after syntax and what kind of limitations are placed on morpheme-insertion?

5.3. Operations

Impoverishment, Fission and Morphological Merger are the chief novel operations proposed in DM for the Morphological component, and questions remain open about each.

Is Impoverishment constrained to reduce markedness only, and if not, does it differ fundamentally from Rules of Referral (Zwicky 1985b; Stump 1993)? What are the syntagmatic (locality) constraints on the operation of Impoverishment? Is the mechanism of morpheme fission, in which positions are automatically generated as needed for the insertion of features, really necessary, and if so, under what circumstances do morphemes undergo fission? How many types of Morphological Merger are there and how do they differ? Can Merger be reduced to a purely syntactic or purely phonological mechanism?

In the realm of morphophonology, Marantz's conjecture that true suppletion is limited to f-morphemes prompts a search for non-stipulative criteria dividing suppletion from Readjustment. Once cases of true suppletion are factored out, the possibility arises for an interesting theory of Readjustment allomorphy based on the degree of relatedness between allomorphs necessary for these to be acquired as variants of the same Vocabulary Item.

6. Conclusion

We have presented DM's primary theoretical assumptions, provided some concrete illustration of the implementation of certain of its mechanisms, and proposed an agenda for future research. Although we have touched on a large array of topics in current morphological theory, we cannot claim to have fully elucidated the advantages of DM relative to its competitors, nor have we exhausted the historical bases for many of its tenets. Instead, we hope that our exposition will provide the groundwork for an informed discussion of DM's contribution to the theory of grammar. Interested readers should consult the following bibliography of representative works within DM as well as important alternative approaches to the issues that stimulated the DM research program.

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CHOMSKY'S UNIVERSAL GRAMMAR UNDER FIRE!

by *Lisa Lai-Shen Cheng* and *Rint Sybesma*

In the short interview we had with him about a year ago (*Glot International* **3.5**), Henk van Riemsdijk warned that theoretical, and especially generative, linguistics is "in considerable danger" in the sense that the interplay of forces in the field of linguistics — and academics more generally — does not seem to be geared at leading up to a situation which is favorable to us. The reason is: We don't have enough friends — or even people who understand what we are doing and why we are doing it. First of all, there are the linguists who engage in the entirely honorable activity of studying language from other than theoretical perspectives but who, for reasons that elude us more and more, seem to hate theoretical linguistics more than their neighbor's labradors shitting all over their front yard. Secondly, non-linguists — the general public, politicians, as well as other academics who may at some point in their career be in charge of allocating research money — also don't seem to have a clear idea of what theoretical linguistics is all about.

They can hardly be blamed, of course. How should they find out if nobody tells them about it?

So we were very happy that *NRC Handelsblad*, a Dutch daily, published a page-long article on Universal Grammar in its Science and Education section of 23 January 1999 ("Wonderlijke waren woorden wezenloos?", p. 49). Written by staff writer Hendrik Spiering, it is a very good article. It has a few minor mistakes (for example, "Generative Grammar is an alternative term for Universal Grammar"; somewhere else in the article the term "Universal Grammar" is confusingly used in the context of the grammar of the language of the first *Homo sapiens*) and there are things that we would have preferred to see phrased differently (Spiering says quite explicitly that to Chomsky, structure is the only aspect of language that counts, meaning not playing any role of importance whatsoever), but on the whole, this being a newspaper article, we have no real complaints. Here is a short summary of the article.

After commemorating Chomsky's 70th birthday and mentioning the fact that he is the only living person in the Top Ten of the Arts and Humanities Citation Index (lower than Marx, Lenin, Shakespeare, Aristotle, the bible, Plato and Freud, but higher than Hegel and Cicero), Spiering goes on to summarize the essence of the innateness hypothesis; he does this adequately. The next part of the article is devoted to criticism of the hypothesis. Spiering briefly discusses articles in recent issues of *Behavioral and Brain Sciences* and *Science* (also mentioning the contribution to the discussion by Elizabeth Bates and Jeffrey Elman in *Science* of 13 December 1996), which report on research the results of which give reason to question the validity of the assumptions underlying the innateness hypothesis. Furthermore, Spiering reports that a dissertation soon to be defended in Groningen by Willem de Graaf argues that it is principally impossible that something like an innate Universal Grammar, or, for that matter, the complexity of human language, can have arisen as the result of evolutionary development. Spiering also visits Amsterdam professor Remko Scha, who tells him that the search for UG has met with so many problems and so much counterevidence, that he has decided to approach language in a different way.

The remainder of the article is for the other side. Spiering mentions another *Science* article (of

1 January 1999), allegedly supporting the innateness hypothesis, and he talks to Eddy Ruys from Utrecht, who gets ample opportunity to explain in quite some detail why, to him, the generative enterprise is not so hopeless after all, primarily going into the question of parameters and language variation. Ruys also talks about methodology. The article ends with a quote from Ruys, saying that he will resign if UG turns out to be "an empty shell": "I started this work in order to investigate a fundamental property of *Homo sapiens*, and not in order to compare accidental grammatical structures."

As we said, a good, fair article: here is a hypothesis, some researchers have reasons to believe that it cannot be right in its current form, other researchers have reasons to think it worthwhile to investigate some of its consequences, and both parties get due attention. So **if** we want to complain about the article at all, we can only complain about the fact that the flag of the sub-headline, "Chomsky's Universal Grammar under fire", doesn't cover the complete cargo — but then again, headlines are there to attract attention.

Recommended reading material for university administrators and others involved in the funding of scientific research.

Then the letters came.

In subsequent weeks, *NRC Handelsblad* published seven letters-to-the-editor, responding to Spiering's article ("Chomsky 1" to "Chomsky 7"; all dates and page numbers given below refer to issues of *NRC Handelsblad*; all dates are 1999.) With the exception of one, and maybe two (which will be left out of the following discussion), these letters underscore the relevance of Van Riemsdijk's warning.

The general picture that arises from these letters is that generative linguistics is a fallacy, a pseudoscience, an inbred personality cult (with Chomsky as the guru) or, most probably, all of the above.

For instance, incidentally showing that he doesn't seem to understand that, if all is well, science actually progresses, one of the letter writers says that the people who follow Chomsky only do that out of personal loyalty — it cannot be because of his theories "because they change continuously" ("Chomsky 4", 13 Feb, p. 50). The same writer says that he is relieved that "the media", after having "created Chomsky as a phenomenon", finally start to "dissociate themselves" from him: after all, "many linguists have [for years] been fed up with Chomsky's pretensions to a priori knowing the truth and his contempt for [linguistic] facts."

Similar sentiments are ventilated by another writer, whose letter is actually so improper and so nasty that we think that *NRC Handelsblad* was not right in printing it. It paints a picture of Chomsky as an incompetent maniac who, as an unfortunate victim of an extremely bad linguistic education, has to "keep on pretending that he is original" by constantly creating "new concoctions" ("Chomsky 6", 20 Feb, p. 48). Regretfully, he continues, many talented linguists followed him on his hopeless quest. This writer, by the way, also seems to count it against Chomsky as a scientist that he actually **develops** his ideas.

The suggestion that the generative enterprise has nothing to do with science is further raised by statements like the following: "That fanatic Chomskyans exist ... is due to the lack of mathematical

knowledge among Arts-and-Humanities people" ("Chomsky 2", 30 Jan, p. 50). "[Chomsky's] work is without any mathematical elegance" ("Chomsky 6", 20 Feb, p. 48). "These abstract properties, which children would not be able to learn and which for that reason have to be innate, are mostly artefacts in the form of algorithms, in which Chomsky and his followers cast their grammars, without any linguistic necessity or plausibility" ("Chomsky 1", 30 Jan, p. 50). "Why do [Chomskyan linguists] take a more or less plausible hypothesis for an absolute truth?" ("Chomsky 4", 13 Feb, p. 50). And so on and so forth.

Let's not go into the question as to what the motives of these people are (although it is obvious that some of the correspondents are driven by a strong personal dislike of Chomsky). Also, let's not try to find out how well-informed the writers are (some more than others, but it is a fact of life that everybody seems to think that they are linguists because they all speak a language (the same everybodies don't claim to also be urologists despite the fact that they have a bladder and all that and use it too)). Let's not even ponder the possibility of writing a letter to the newspaper ourselves (to write what? Defend ourselves? Against what? Spiering's article was fine).

The point is, Van Riemsdijk's warning may have come too late.

A very close relative called us up not too long ago. A retired scientist, he is very interested in intellectual debate and he keeps himself up-to-date by reading everything he can get his hands on. He has always been very interested in what we are doing and we talk about it regularly. He had also read the Spiering article, ánd the ensuing letters. So he telephoned us and asked (although we don't think we were supposed to really answer):

"So **that** is what you've gotten yourselves involved in?"

Well, at least he didn't say "implicated".

But it made us think of the university and science fund administrators and we were secretly hoping that they are so busy that they don't have time to read letters-to-the-editors.

PROJECTING THE ADJECTIVE: THE SYNTAX AND SEMANTICS OF GRADABILITY AND COMPARISON

by *Chris Kennedy*
reviewed by *Petra Hendriks*

The focus of this thesis is the meaning of gradable adjectives like *tall, dense,* and *bright,* and the structure and interpretation of the complex constructions in which they appear, which I refer to as **degree constructions**. Roughly speaking, degree constructions are complex syntactic expressions formed out of an adjective and a **degree morpheme** — an element of {*er*/*more, less, as, too, enough, so, how, ...*}. Some typical examples are given in (1)–(7): comparatives, equatives, *too*- and *enough*-constructions, *so...that*-constructions, and *how*-questions.

(1)
Mars Pathfinder was less expensive than previous missions to Mars

(2)
Venus is brighter than Mars

(3)
Neptune is not as distant as Pluto

(4)
The equipment is too old to be of much use to us

(5)
Current spacecraft are not fast enough to approach the speed of light

(6)
The black hole at the center of the galaxy is so dense that nothing can escape the pull of its gravity, not even light

(7)
How bright is Alpha Centauri?

Degree constructions, and comparatives in particular, have been the focus of a large body of work on the syntax and semantics of gradable adjectives. The syntactic complexity of these constructions has been a topic of investigation since early work in generative grammar (see e.g. Lees 1961; Smith 1961; Pilch 1965; Huddleston 1967; and Hale 1970), and has formed the basis for important developments in theories of phrase structure, ellipsis, quantification, and long-distance movement (see e.g. Bresnan 1973, 1975; Hankamer 1973; Jackendoff 1977; Chomsky 1977; Kuno 1981; Pinkham 1982; Napoli 1983; Abney 1987; Corver 1990, 1997; Gawron 1995; and Hazout 1995). On the semantic side, degree constructions have provided the empirical foundation for investigations of the meaning of gradable adjectives and, more generally, the expression of ordering relations in natural language since at least Sapir 1944 (see also Bartsch & Vennemann 1973; McConnell-Ginet 1973; Seuren 1973, 1978; Kamp 1975; Cresswell 1976; Klein 1980; Atlas 1984; Bierwisch 1989; Sánchez-Valencia 1994, and others).

This thesis continues in this tradition by using degree constructions (and comparatives in particular) as an empirical basis to motivate and develop a semantic analysis of gradable adjectives as **measure functions**: functions from objects to abstract representations of measurement or **degrees** (cf. Bartsch & Vennemann 1973). This analysis falls within a broader class of "scalar analyses", in which the core meaning of a gradable adjective is defined in terms of an ordered set of degrees, or **scale** (see e.g. Cresswell 1976;

Bierwisch 1989; see Klein 1991 for useful overview). It contrasts with an alternative "vague predicate analysis", in which gradable adjectives are analyzed as predicative expressions whose extensions may vary from context to context (see e.g. McConnell-Ginet 1973; Kamp 1975; Klein 1980). The first part of the thesis presents an overview of these two types of approaches, and argues that only a scalar analysis provides an adequate explanation of several important sets of facts, including the anomaly of two types of comparative constructions — examples involving incommensurable adjectives, such as (8), and examples involving adjectives of opposite polarity, such as (9) — and the semantic characteristics of "comparison of deviation" constructions such as (10).

(8)
??My copy of *The Brothers Karamazov* is heavier than it is old

(9)
??*The Brothers Karamazov* is longer than *The Dream of a Ridiculous Man* is short

(10)
William is as tall as Robert is short

(11)
William's feet are as wide as Robert's feet are long

Unlike the more typical equative in (11), (10) entails that the properties predicated of the compared objects hold in the absolute. Moreover, (10) does not represent a claim that William and Robert are equal in height (an interpretation parallel to that of (11), and completely impossible), but rather an assertion that the extent to which William exceeds some standard of tallness is the same as the extent to which Robert exceeds some standard of shortness (see Kennedy 1997 for additional discussion). The problem with a vague predicate analysis is that it not only fails to account for the anomaly of examples like (8) and (9), it also does not derive the inferences associated with (10). Given an appropriate formalization of degrees, however (see below), a scalar analysis explains the anomaly of (8) and (9) in terms of basic principles of ordering relations, and also accounts for the interpretation and inferences of (10).
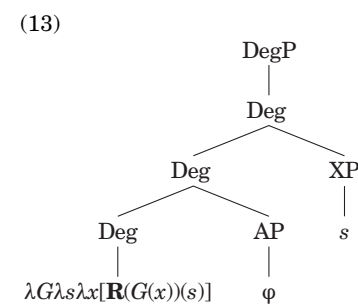
Although the analysis of gradable adjectives that I develop in this thesis falls into the general family of scalar analyses, it differs from traditional scalar approaches in two fundamental ways: (a) in terms of the semantic type of gradable adjectives; and (b) in terms of the analysis of degree constructions. Typically, scalar analyses characterize gradable adjectives as relational expressions, specifically, as relations between objects and degrees. On this view, an adjective like *bright* takes two arguments, a degree and an individual, and establishes a relation between them: *bright(x,d)* is true just in case the degree to which x is bright is at least as great as d. In principle, this variable should provide a position for a quantificational expression to bind; in most scalar approaches, this is exactly the function of a degree construction. (See, for example, Hellan 1981; Hoeksema 1983; von Stechow 1984a; and Heim 1985 and others for analyses of comparatives in

terms of existential quantification over degrees, and see Cresswell 1976; Moltmann 1992; and Hendriks 1995 for analyses in terms of universal quantification.) If degree constructions involve quantification over degrees, however, then we would expect them to interact with other quantificational operators to trigger configurational scope ambiguities. Focusing on the interpretation of comparatives, I demonstrate that this expectation is not borne out: the quantificational force introduced by a comparative does not participate in scope relations.

To account for the apparently restricted scopal possibilities of comparatives, I introduce an alternative, non-quantificational analysis of degree constructions, built around the assumption that gradable adjectives denote measure functions. Specifically, I claim that propositions formed out of a gradable adjective N contain three primary semantic constituents (cf. Russell 1905): (a) a **reference value**, which indicates the projection of the target of predication onto the scale associated with N; (b) a **standard value**, which is introduced either contextually, by a measure phrase (e.g. *2 meters* in *the telescope is 2 meters long*), or by the comparative clause (the complement of *than* or *as*); and (c) a **degree relation**, which is introduced by degree morphology and is asserted to hold between the reference value and the standard value. To this end, I analyze degree constructions as properties of individuals defined in terms of relations between degrees, as shown in (12), where G is a gradable adjective meaning (a function from objects to degrees), $G(x)$ is the reference value, s is the standard value, and $\mathbf{R}$ is a degree relation.

(12)
$\lambda x[\mathbf{R}(G(x))(s)]$

This proposal is implemented in the context of the syntactic analysis of degree constructions developed in Abney 1987; Corver 1990, 1997; and Grimshaw 1991, in which adjectives project extended functional structure headed by degree morphology. Specifically, the adjective that heads the extended projection introduces G in (12), the degree morpheme introduces $\mathbf{R}$, and the comparative clause (or measure phrase) introduces s. This is illustrated by the tree in (13), which schematically represents the structure of a comparative.

(13)

```
                    DegP
                     |
                    Deg
                   /    \
                 Deg     XP
                /   \     |
              Deg    AP   s
               |      |
  λGλsλx[R(G(x))(s)]  φ
```

In effect, the analysis defended in this thesis represents a kind of decompositional approach to adjective meanings. In traditional scalar analyses, the meaning of a gradable adjective contains a measure function — in order to determine the degree to which x is bright, it is necessary to define a function from x to the scale associated with the adjective *bright* — but this is not the core meaning of the adjective. Instead, the meaning of the adjective is characterized in terms of a measure function plus a relational component, typically a partial ordering relation (though see Carston 1988 and Horn 1992 for relevant discussion). In contrast, the analysis outlined here removes the relational component from the adjective meaning, locating it in the degree morphology. The result is a division of labor between the adjective — the measure function — and the degree morphology, a division that is reflected in the independently motivated syntactic structure of the AP/DegP extended projection. Chapter 2 of the thesis provides initial support for this approach — first, by showing that it accounts for the scopal characteristics of comparatives, and second, by demonstrating that it provides the basis for a general, composi-

tional analyses of a broad range of degree constructions in both the comparative and absolute form. What remains is to show that the approach extends to an insightful account of degree constructions headed by *too, enough, so* and *how* as well.

The thesis concludes by addressing the question: what sort of objects are degrees? Taking three sets of empirical phenomena as a starting point — the anomaly of comparatives formed out of antonymous pairs of adjectives (see (8) above), the interpretation of comparison of deviation constructions (see (9)), and the monotonicity properties of polar adjectives (see Seuren 1973, 1978; Ladusaw 1979; Linebarger 1980; Sánchez-Valencia 1990; Kennedy to appear), I argue that degrees should be formalized not as points on a scale, as standardly assumed, but as intervals on a scale, or **extents** (cf. Seuren 1978; von Stechow 1984b; Bierwisch 1989; Löbner 1990). Given the assumption that antonymous pairs of adjectives map objects onto the same scale (for example, both *tall* and *short* map objects onto a general scale of *height*), an analysis in which degrees correspond to points actually predicts that the anomalous sentence (14) should be logically equivalent to (15), because the degree to which Mike is short is the same as the degree to which he is tall (cf. Rullmann 1995).

(14)
??Carmen is taller than Mike is short

(15)
Carmen is taller than Mike

I demonstrate that if degrees are instead formalized as extents, and if adjectival polarity is characterized in terms of a sortal distinction between positive and negative adjectives based on a structural difference between the objects in their ranges (i.e., the scalar intervals onto which they project their arguments), then the anomaly of examples like (14) is due to the fact that the ordering relation introduced by the comparative morpheme is undefined for extents of opposite polarity. I conclude by showing that the assumptions about extents and adjectival polarity that provide an explanation for the anomaly of examples like (14) also provide the basis for principled explanations of the semantic characteristics comparison of deviation constructions and the monotonicity properties of gradable adjectives.

Review
by *Petra Hendriks*

Jack Hoeksema once remarked that "[i]f the realm of language is seen as a cosmos, vast, largely unexplored and sometimes bewildering, then the comparative construction must be a microcosm, reflecting all the complexity of the whole" (Hoeksema 1984, 93). Many linguists and philosophers set out to explore this mysterious microcosm, using different tools and working from different theoretical perspectives. Yet, the map of the comparative construction still shows several white spots and unknown regions, indicating the sometimes almost intangible nature of comparatives due to its intricate interaction with a variety of syntactic and semantic phenomena. In his dissertation, Chris Kennedy has taken up the challenge to further explore the microcosm of the comparative construction, the aim of his research already being suggested by the choice of the example sentences, in which space shuttles, space telescopes, Mars Pathfinders and other instruments for cosmic exploration feature prominently as objects of comparison.

Kennedy's dissertation concentrates on the semantic and syntactic representation of gradable adjectives and predicative AP comparatives in English. Other English degree constructions, such as *too* constructions and *enough* constructions, and other types of comparatives, are only touched upon briefly. Proceeding from an analysis of

gradable adjectives as measure functions, Kennedy provides both a semantic representation and the corresponding syntactic structure for a range of predicative AP comparatives. Part of the motivation for his analysis stems from an investigation of the interpretation of constructions involving incommensurability, cross-polar anomaly and comparison of deviation, that is, constructions that have not received a comprehensive treatment before.

One of the strong points of Kennedy's dissertation is his attempt to combine a semantic analysis of degree constructions with a syntactic analysis, thereby showing that a compositional semantic analysis of degree constructions is possible while assuming a syntactic structure of degree constructions as developed in, e.g., Abney (1987). In this respect, two traditionally more or less distinct lines of research are brought together in this well-written and sensibly organized dissertation. On the whole, this dissertation is an excellent piece of work, offering clear discussions on several theoretical issues and providing careful argumentation. Although in the rest of this review I will point out a number of possible weaknesses of the proposal and mention some points of debate, in my view this dissertation presents a very interesting and stimulating discussion of gradable adjectives and comparatives.

1. Gradable adjectives

Predicative AP comparatives such as (1) are characterized by the presence of a gradable adjective.

(1)
Jupiter is larger than Saturn (is)

There is no doubt that the gradable adjective *large* contributes to the meaning of the comparative in (1), but the question that is central to the first part of Kennedy's dissertation is **what** it actually contributes. Kennedy answers this question in two steps. First, he argues that the ordering relation associated with the meaning of a gradable adjective must actually be part of its meaning instead of some inherent property of the domain of a gradable adjective. In a second step, he argues that a degree argument is not part of the meaning of a gradable adjective, in contrast to what is generally assumed.

1.1. Scales

The motivation behind the first conclusion lies in the unacceptability of comparatives involving an antonymous pair of adjectives, such as *large*/*small* and *bright*/*dim*. If the ordering relation associated with the meaning of a gradable adjective would be some property of the domain of the adjective, the domain of one of the adjectives of an antonymous pair should simply be the inverse of the other. Only then is it possible to account for the generalization that if *a* is larger than *b*, then *b* is smaller than *a*. However, under this assumption a sentence like (2) should be acceptable:

(2)
*Venus is brighter than Mars is dim

Nevertheless, this sentence is unacceptable, illustrating cross-polar anomaly. Therefore, Kennedy concludes that the ordering relation associated with the meaning of a gradable adjective must be part of the meaning of the gradable adjective. In particular, the adjective imposes an ordering on its domain by relating objects to points, or degrees, on a scale. If adjectives relate objects in their domain to degrees on a scale, a plausible way to account for the unacceptability of (2) would be to assume that every adjective is associated with its own scale. This would also explain the unacceptability of a sentence like (3), which involves two unrelated adjectives:

(3)
*Morton is as tall as Richard is clever

Because the adjectives are distinct, the scales

associated with the adjectives must also be distinct. Hence, the comparison in (3) is undefined. Thus, the anomaly of (3) is explained by the uncommensurability of *tall* and *clever*. The unacceptability of (2), on the other hand, ultimately receives a different explanation. Kennedy convincingly argues that positive adjectives denote functions from objects to positive intervals (i.e., intervals from the lower end of the scale, usually 0, to some positive point) and negative adjectives denote functions to negative intervals (i.e., intervals from some positive point to ∞) on the same scale. Since the range of positive adjectives and the range of negative adjectives are formed by different parts of the same scale, their projections of objects on the scale are distinct and hence cannot be compared.

In the light of the previous examples, it is surprising that the following sentence is acceptable:

(4)
Fortunately, the ficus was shorter than the ceiling was low, so we were able to get it into the room

Because (4) is interpretable, Kennedy claims that the pair of adjectives in (4) must be associated with the same scale or with very similar scales. Under this view, the adjectives *short* and *low* introduce orderings according to different aspects of the same basic property, namely some notion of linear extent. However, if this were correct, we would expect (5) to be acceptable as well, since it is possible to measure both the tallness of an individual and the thickness of a book in, for example, inches.

(5)
*Morton is taller than this book is thick

Nevertheless, (5) seems as unacceptable as (3). The important difference seems to be that there is some causal relation involved in (4) that is not involved in (5), suggesting that the acceptability of (4) might be caused by certain pragmatic factors which somehow license a mapping between two distinct scales. However, Kennedy will not want to generalize this by claiming that every adjective is associated with its own scale. The assumption that adjectives of opposite polarity project onto the same scale is crucial to his detailed and convincing explanation of a number of different observations with respect to gradable adjectives and comparatives, such as the fact that only positive adjectives can be modified by a measure phrase, the fact that only negative adjectives license negative polarity items and the different interpretation that comparatives of deviation receive.

1.2. Quantification

Although the ordering relation associated with the meaning of a gradable adjective must be part of its meaning, Kennedy argues that a degree argument is not part of its meaning. His argumentation focuses on comparatives. Comparatives are typically analyzed as quantificational expressions, quantifying over degrees introduced by the adjectives. The logical representation of a gradable adjective would thus be *adjective(x,d)*, where *x* is the object of predication and *d* the degree introduced by the adjective. However, if comparatives are quantificational expressions, they would participate in scope ambiguities with quantified NPs and negation. Kennedy argues that this prediction is not borne out. He concludes that standard quantificational analyses of comparatives must therefore be wrong in their assumption that gradable adjectives introduce a degree argument. Although the examples Kennedy presents do not show any scope ambiguities, there exist comparatives that do seem to show scope ambiguities.

(6)
Everyone kissed someone

(7)
Everyone ran faster than Jacky expected

In the same way as (6) is ambiguous between a reading in which the kissed people co-vary with the kissers and a reading in which there is one person that is being kissed by everyone, (7) seems ambiguous between a reading in which Jacky had different expectations about the speed of different runners and a reading in which there is one maximal speed which Jacky expected that no runner would exceed. If this ambiguity indeed exists, and if it cannot be explained in the same way Kennedy explains the ambiguity of contradictory comparatives in counterfactuals, the impossibility of other comparatives to participate in scope ambiguities might require some other explanation.

In chapter 2, Kennedy presents another argument against this relational analysis of gradable adjectives, namely the problem of compositionality. A relational analysis of adjectives is based on the assumption that comparison is a psychological primitive, and that the interpretation of gradable adjectives should be stated in terms of such a relation. To refute this assumption, Kennedy presents sentence (8) as an example that not all degree expressions involve a notion of comparison.

(8)
Pug is too stinky to go to the Ritz

According to Kennedy, the best characterization of the meaning of this sentence is "the degree of Pug's stinkiness makes it impossible for him to go to the Ritz" (cf. Moltmann 1992, 301), which does not make reference to a comparison relation. But this characterization cannot be correct, since it would also apply to the (very unlikely) situation in which Pug is not stinky enough to go to the Ritz. This obviously is not a valid implication of (8). A better characterization of the meaning of (8) would be "the degree of Pug's stinkiness is greater than the maximal degree of stinkiness that makes it possible for him to go to the Ritz", which does make reference to a comparison relation.

Kennedy uses the two arguments discussed above to motivate his conclusion that gradable adjectives do not introduce a degree argument. To account for the interpretation of expressions involving a gradable adjective as relations between objects and degrees on a scale, he has to assume that the extended projection of the adjective must be headed by a phonologically null degree morpheme, which introduces both the degrees and an ordering relation between degrees into the semantic representation. This way, Kennedy is also able to present a completely parallel analysis of absolute constructions involving gradable adjectives and comparative constructions. A drawback of this analysis of absolute constructions is that, figuratively speaking, all the work with respect to the semantics of the construction is done by a null element. Since I am not quite convinced by the presented arguments, the introduction of this null element makes me feel slightly uncomfortable.

2.　Comparatives

In scalar approaches to comparison, comparatives are traditionally assumed to compare two degrees on a scale. The question is how these degrees are introduced into the semantic representation if they are not introduced by the adjectives. The only plausible alternative is that these degrees are introduced by the comparative morpheme (i.e., *more* / *-er, less, fewer, as*). Kennedy correctly does not consider the possibility that the comparative conjunctions *than* and *as* introduce these degrees, since comparison is not dependent on the presence of a comparative conjunction, witness (9).

(9)
The Sojourner rover is not very long, but it is even less wide

The assumption that the comparative morpheme introduces the degrees into the semantic representation forms the basis of Kennedy's semantic and syntactic analysis of a number of different comparative constructions.

2.1. A compositional semantics

Comparatives exhibit a whole range of ellipsis phenomena. The comparative clause, i.e., the complement of a comparative conjunction *than* or *as*, can be an apparently complete clause (a so-called comparative subdeletion construction), but can also be a reduced clause (a comparative deletion construction) or even a single phrase (what Kennedy terms a phrasal comparative but is also known as a comparative ellipsis construction). These constructions are exemplified in (10), (11) and (12), respectively:

(10) Comparative subdeletion
The Sagan Memorial Station is taller than the Sojourner rover is long

(11) Comparative deletion
The Mars Pathfinder mission was more successful than anyone thought it would be

(12) Comparative ellipsis (phrasal comparative)
The Mars Pathfinder mission was less expensive than the Viking missions

A semantic analysis of these constructions can proceed along different lines. One option would be to derive the meaning of a reduced comparative from the meaning of a full comparative through deletion under identity or LF copying. Another option would be to derive the meaning of a reduced comparative directly, i.e., without syntactic reconstruction. In the latter case, the compositional burden of the interpretation of the comparative construction rests on the comparative morpheme. It is this latter approach that Kennedy takes, a choice which he motivates through the existence of comparative constructions in which the deleted material and the antecedent material are clearly non-identical. Syntactically, Kennedy assumes that the missing material in both types of clausal comparatives is the trace of a null operator in SpecCP of the comparative clause; in (10), the operator is of the category of a degree variable and in (11), the operator is of category DegP.

Because he advocates a direct interpretation approach, Kennedy has to posit three distinct interpretations for the comparative morphemes: one for comparative subdeletion constructions, one for comparative deletion constructions and one for phrasal comparatives. In all cases, the comparative morpheme denotes an ordering relation between a reference value, which indicates the degree to which the subject has the property denoted by the adjective, and a standard value, which corresponds to some other degree. The interpretation of the comparative morpheme determines how the standard value is derived from the comparative clause, and in Kennedy's proposal indirectly reflects the elements contained within the comparative clause. As an illustration, compare the interpretation of *more* in comparative deletion constructions in (13) with its interpretation in phrasal comparatives in (14):

(13)
$more_2 = \lambda G \lambda Q \lambda x [\text{MORE}(G(x))(Q(G))]$

(14)
$more_3 = \lambda G \lambda y \lambda x [\text{MORE}(G(x))(G(y))]$

Here, G is the function denoted by the gradable adjective, x the subject of the matrix clause, y an individual and Q a function from gradable adjectives to degrees. In both cases, the comparative morpheme combines with a gradable adjective which applies to the subject to yield the reference value (this step is logically represented by $G(x)$ in (12) and (13)). Furthermore, the comparative morpheme in (13) together with the adjective combine with a function which applies to the gradable adjective of the matrix clause (i.e., $Q(G)$) to yield the standard value. In other words, this comparative morpheme co-occurs with a *than*-clause that is lacking a gradable adjective. The comparative morpheme in (14), on the other hand, combines with an individual which is the argument of the gradable adjective of the matrix clause (i.e., $G(x)$). Thus, this comparative morpheme co-occurs with a *than*-phrase containing a DP subject.

A disadvantage of this approach is that the number of interpretations for the comparative morpheme is not limited to three. For every comparative with a differently structured comparative clause or comparative phrase, it will be necessary to posit a new interpretation for the comparative morpheme. For example, Kennedy's three interpretations for the comparative morpheme do not derive the meaning of the discourse comparative in (9). In this comparative, the degree to which the Sojourner rover is wide (which is denoted by the matrix clause) is compared to the degree to which it is long (which is not denoted by a comparative clause but must be derived from the preceding clause). So the standard value of this discourse comparative is dependent on another adjective than the one in the matrix clause and, moreover, there is no material present corresponding to either Q or y. Yet another interpretation will have to be introduced for the construction in (15), which Kennedy presents as a comparative deletion construction but which obviously differs from standard comparative deletion constructions. Clearly, the material lacking from the *than*-clause in (15) does not correspond to just a gradable adjective.

(15)
The telescope was less expensive than I expected

If NP comparatives and sentential comparatives are also considered, the number of required interpretations for the comparative morpheme increases even more. This explosion of interpretations for the comparative morpheme is the cost of giving up LF reconstruction as a way to arrive at a semantic representation for incomplete comparatives. Of course, a reconstruction approach would give rise to its own problems with respect to the enormous range of possibilities of ellipsis in comparative constructions. One of these problems will be discussed in section 2.2. A clear advantage of Kennedy's approach is that it correctly predicts that, whatever material can be omitted from a comparative construction, the comparative morpheme can never be omitted.

2.2. Ellipsis versus direct interpretation

A puzzle for a reconstruction approach to elliptical comparatives is formed by the local dependency of comparative deletion. Kennedy observes that the interpretation of the missing adjective in comparative deletion comparatives differs from the interpretation of the missing VP in VP ellipsis constructions, in that the former exhibits a local dependency:

(16)
The table is wider than this rug is, but this rug is longer than the desk is

(17)
Marcus read every book I did, and I bought every book Charles did

A characteristic of VP ellipsis is that an elided VP can typically locate its antecedent from any accessible VP within recent discourse. Therefore, the VP ellipsis example in (17) is ambiguous between a reading in which I bought every book Charles bought (involving a local antecedent) and a reading in which I bought every book Charles read (involving a non-local antecedent). In contrast, the missing adjective in the comparative deletion construction in (16) only receives a local interpretation. Surprisingly, the following comparative, which is minimally distinct from (16) and has a subdeletion construction as its first conjunct, is ambiguous.

(18)
The table is longer than this rug is wide, and this rug is longer than the desk is

The second conjunct of (18) has a reading in which the rug is longer than the desk is long

(reading (i)) and a reading in which the rug is longer than the desk is wide (reading (ii)). If comparative deletion involves reconstruction of elided material, the first conjuncts in (16) and (18) would be completely parallel at LF. Since (18) is ambiguous but (16) is not, this is another argument for a direct interpretation approach to comparative deletion. Unfortunately, in order to explain the second reading of (18), Kennedy weakens his initial position substantially by assuming that the ambiguity of (18) results from the possibility of two different derivations: one in which the second conjunct is a non-elliptical comparative deletion construction, and one in which the second conjunct is a subdeletion construction which has undergone ellipsis under identity with the first conjunct. The problem with this newly introduced ellipsis operation, however, is that it does not resemble any other ellipsis phenomenon occurring in coordinate constructions and should thus be limited to comparative constructions occurring within coordinate constructions. For example, this operation cannot be the previsouly discussed operation of VP ellipsis, since the construction in (18) with its two interpretations is also possible in Dutch, whereas Dutch does not allow for VP ellipsis. Moreover, if the structure corresponding to reading (ii) is the result of an operation of ellipsis under identity, reading (ii) should be equally available for the following sentence:

(19)
The table is wider than this rug is wide, and this rug is longer than the desk is

The sentence in (19) differs from (18) in that *longer* in the first conjunct of (18) is replaced by *wider* in (19). This does not have any effect on the identity between the supposedly elided constituent and its antecedent, so it should not change the possible interpretations for the second conjunct. The only effect of this change is that it decreases the parallelism between the two conjuncts. Surprisingly, reading (ii) seems almost unavailable for the second conjunct in (19). This strongly suggests that what is responsible for the interpretation of (18) and (19) is not a purely syntactic operation of ellipsis under identity, but rather a more freely applicable form of ellipsis. Under this latter view on ellipsis, ellipsis resolution should be determined by non-syntactic factors as well, such as parallelism with respect to the preceding sentence, possible prosodic effects associated with this parallelism and general pragmatic constraints that, for example, summon to anaphorize text when possible. In fact, such an approach to ellipsis resolution is proposed by Hendriks & De Hoop (1998), based on the interpretation of elliptical quantified sentences. If this approach to ellipsis is correct and if it is true that certain comparative constructions receive a direct interpretation, as Kennedy argues, then it might be possible to eliminate ellipsis under identity altogether.

3.   Conclusion

Kennedy's dissertation is a careful and detailed study of the semantic and syntactic representation of gradable adjectives and predicative AP comparatives. Kennedy argues persuasively for a direct interpretation approach to elliptical comparative constructions. This conclusion is implemented in a syntactic analysis of comparatives which supports a straightforward compositional semantic analysis of these constructions.

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PROSODIC WORDS

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reviewed by *Caroline Wiltshire*

Summary
by *the author*

From a phonological point of view, morphological words, i.e. syntactic atoms, do not necessarily behave as a unit. For instance, derivational affixes and compound members can be treated independently by phonological word-level rules. The prosodic word has been defined in order to account for the non-isomorphy between morphology and phonology. Prosodic words are typically characterized as being the domain of word stress, phonotactics and segmental word-level rules. This thesis deals with various aspects concerning the definition of the prosodic word in the realm of derivation, compounding, and cliticization. In addition, it addresses several morphological issues; given the limitations on the length of the present article though, I will leave these aside.

The prosodic word is but one element in a series of hierarchically ordered phonological constituents known as the prosodic hierarchy (Selkirk 1981, 1986; Nespor & Vogel 1986). The Strict Layer Hypothesis (SLH) determines the geometry of this constituent structure, as follows:

(1) *Strict Layer Hypothesis* (Selkirk 1984; Nespor & Vogel 1986)
a. A given non-terminal unit is composed of one or more units of the immediately lower category
b. A unit of a given level is exhaustively contained in the superordinate unit of which it is part

The first clause concerns prosodic domination; it requires each prosodic constituent to directly dominate constituents of the immediately lower category only. The second clause concerns the formation of well-formed prosodic trees, in that it demands each string to be parsed exhaustively into non-overlapping domains. Both clauses appear to be problematic with respect to the formation of prosodic words.

As to the first clause, the prosodization of affixes, clitics, and compound members can induce violations of the requirements on prosodic domination. Specifically, some of these elements neither incorporate into an adjacent prosodic word nor form an independent prosodic word. An example is provided by prefixation in Spanish.

In Spanish, words cannot begin with [s] followed by another consonant; a rule of *e*-epenthesis applies at the left edge of underlying /sC/-clusters, as is shown in (2a). Crucially, I show that whereas the process does not generally apply word-internally, see (2b), it does apply at the left edge of the base of productively formed prefixed words, as in (2c).

(2)
a.	estable	'stable'
	esnob	'snob'
b.	instrucción	'instruction'
	obstaculo	'obstacle'
c.	inestable	'unstable'
	biescalar	'biscalar'

Contrary to Cressey (1978) and Harris (1983, 1986), I argue that *e*-epenthesis does not refer to a morphological constituent. Consider, for instance, the multiply derived word *inestabilidad* 'unstability'. There are two reasons for attributing the morphological structure shown in (3) to this word. First, its meaning is 'the state of not being stable', rather than 'not the state of being stable'. Second, *in*- subcategorizes for adjectives, not for nouns.

(3)
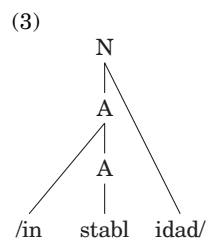
Suppose that *e*-epenthesis applied to the embedded adjectival stem /stabl/. The rule would then precede suffixation. Given that many suffixes in Spanish are stress-shifting, it would also be ordered before stress assignment. Consequently, we would predict that epenthetic /e/ can surface with stress, contrary to fact (Harris 1986).

Alternatively, I propose that epenthesis applies at the left edge of the prosodic word, which crucially contains a stem and any suffixes, to the exclusion of any prefixes. Thus, *estabilidad* forms a single prosodic word, which does not incorporate the prefix *in*-. Given the requirement of prosodic minimality (McCarthy & Prince 1986), the prefix cannot form an independent prosodic word either. In fact, it does not bear main word stress. Alternatively, I propose that it adjoins to the base prosodic word, as in (4).

(4)
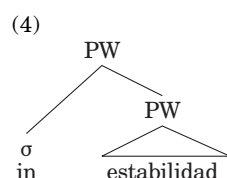
In this structure, a prosodic word dominates another prosodic word. Moreover, the prefix syllable is not dominated by a foot.

Similarly, I argue that compounding and cliticization can also give rise to recursion and the skipping of levels in the prosodic constituent structure. A constrained account of when and how these marked prosodic structures occur crucially involves the decomposition of the first clause of the SLH into separate, violable, constraints, as proposed in Selkirk (1995).

(5) Prosodic domination
a. LAYEREDNESS: No C_i dominates a C_j, j > i
b. HEADEDNESS: Any C_i must dominate a C_{i-1}
c. NONRECURSIVITY: No C_i dominates another C_i
d. EXHAUSTIVITY: No C_i immediately dominates a C_k, k<i-1

In particular, by ranking NONRECURSIVITY and EXHAUSTIVITY below constraints on the alignment of morphological and prosodic structure or on faithfulness of input representation, recursion and the skipping of levels, respectively, result.

In recent optimality-theoretic work, constraints requiring surface identity between paradigmatically related forms such as a base and a word derived from it, are invoked to explain the non-coherent character of certain affixes, such as the Spanish prefixes (Burzio 1994; Benua 1995; Kenstowicz 1996). Essentially, the base of the affixed word behaves as if the affix were not there, thus remaining phonetically identical to its form in isolation; if the affix were to cohere phonologically, either word-internal phonological processes would apply at the juncture with the affix, or word-edge processes would fail to apply at this juncture. In either case the base would be made distinct from its surface form in isolation. Cohering affixes, in contrast, attach to bases that are not existing words. There is, therefore, no effect from the isolated form of these bases in the derived words.

I argue that this approach is too restricted in two ways (cf. Peperkamp 1997). On the one hand, paradigmatic identity effects can arise in derived words of which the morphological base is not an occurring word. On the other hand, the distinction found within a single language between words that are subject to paradigmatic identity effects and those that are not cannot always be attributed to a distinction between stem-based and word-based morphology. Spanish *e*-epenthesis is an example of the former case. In fact, the presence of epenthetic /e/ in *inestabilidad* cannot be due to a paradigmatic identity constraint, since *estabilidad*, the only independently occurring word embedded within it, is not its morphological base (cf. (3)). An example of the latter case is provided by suffixation in Dutch. Syllabification of a base-final consonant applies across the boundary of cohering suffixes in Dutch, as in (6a), but is blocked across the boundary of non-cohering suffixes, as in (6b).

(6)
a.	groen+ig	groe.nig	'greenish'
b.	groen+achtig	groen.achtig	'greenlike'

Morphological subcategorization for stems or words does not interfere with the phonological behavior of suffixes. Rather, it is the phonological form of the suffix itself that determines whether it is cohering or non-cohering; suffixes which are eligible for prosodic word status are non-cohering, while suffixes that fail to satisfy requirements on prosodic words are cohering (Booij 1995). Paradigmatic identity constraints have nothing to say about this distinction, since suffixes — whether cohering or non-cohering — do not occur as independent outputs.

In many languages, the distinction between cohering and non-cohering affixes coincides with that between derivational suffixes and prefixes. That is, in these languages, prefixes, as opposed to suffixes, fail to incorporate into the prosodic word to which they attach (Booij & Rubach 1984; Nespor & Vogel 1986; Cohn 1989). I show that the same left-right asymmetry occurs with cliticization, in that in several languages, proclitics are phonologically less coherent than enclitics. This asymmetry provides an argument against the necessity of the clitic group, introduced by Hayes (1989) and Nespor & Vogel (1986) as a constituent of the prosodic hierarchy. In fact, given the symmetrical nature of the clitic group, phonological asymmetries between proclisis and enclisis cannot be accounted for by making reference to this constituent. Rather, I propose that clitics are bare syllables that can attach at various prosodic levels. This varied — but constrained — set of possible prosodizations allows to account not only for asymmetries between proclisis and enclisis, but also for crosslinguistic variation found in the behavior of clitics and their hosts with respect to stress assignment (cf. Peperkamp 1995, 1996).

Postlexical resyllabification constitutes the other potential problem for the SLH. Recall that the second clause of the SLH requires prosodic constituents to be properly nested within the constituent that dominates them. Syllabification, therefore, should not cross prosodic word boundaries. In many languages, however, phrasal resyllabification applies across prosodic words. Consider, for instance, the Italian phrase *bar aperto* 'open bar', which is syllabified [ba.ra.per.to]. I argue that neither extraprosodicity nor ambisyllabicity are feasible alternatives to an account involving lexical syllabification followed by postlexical resyllabification. I then propose that resyllabification induces prosodic restructuring, such that all syllables are properly part of a single prosodic word. Specifically, I propose that of two possible restructurings, shown in (7b), the latter one is correct. In fact, there is no evidence that resyllabification induces the restructuring of two prosodic words into one, with a single main stress.

(7)
a. *lexical prosodic structure*
    (bar)$_{PW}$ (aperto)$_{PW}$
b. *postlexical prosodic structure*
    *(ba.ra.per.to)$_{PW}$
     (ba.)$_{PW}$ (ra.per.to)$_{PW}$

Thus, postlexical resyllabification results in the formation of postlexical prosodic words, which differ minimally from the lexically built prosodic words from which they derive. As a consequence, syllables are properly nested within prosodic words, both lexically and postlexically, and no ill-formed prosodic trees result.

In order to account for prosodic restructuring, I propose a generalized Proper Nesting constraint, which involves the alignment of prosodic constituents. In fact, the decomposition by Selkirk in (5) involves the first clause of the SLH only. The second clause translates into the Proper Nesting constraint, defined in (8).

(8)
Proper nesting
Align(C_i, L/R; C_j, L/R)
where C_i and C_j are categories of the prosodic hierarchy and C_i immediately dominates C_j

Notice, finally, that Proper Nesting is unviolable and hence should be universally undominated. Violation of Proper Nesting would, indeed, give rise to geometrically ill-formed structures.

Review
by *Caroline Wiltshire*

1.   Introduction

For over a decade, the prosodic hierarchy has motivated a vast and productive line of research, accounting for phonological alternations through prosodic domains, templates, and phonotactics. Peperkamp's dissertation situates an analysis of prosodic structure in a constraint based Optimality Theory framework (Prince & Smolensky 1993), and advances the research program with an insightful examination of the prosodic word level of the hierarchy.

Peperkamp approaches the prosodic word from all angles: inside out (derivation), outside in (compounding), above (phrases, clitic groups), and below (syllabification). The result is a work that brings together a variety of data around a common theme: mismatches between prosodic words and morphological words. Such mismatches are constrained by the tenets of the **Strict Layer Hypothesis** (SLH), broken into violable components following Selkirk (1995). Taking advantage of the new structures made possible by minimal violations of the SLH, Peperkamp shows that not all prefixes have the same prosodic structure, and that their place in the prosodic word can be distinct from that of suffixes; parallel analyses are given for clitics and for words in compounds. Her parallel analyses connects the asymmetries of prefixes and suffixes with that of proclitics and enclitics, and with the strength of the left edge boundary of prosodic words.

Peperkamp provides neat solutions to some familiar thorny problems, along with new insights into English, Dutch, and Romance phonology and morphology. She also sketches previous work in each area and compares her analyses to the alternatives, providing interesting arguments against Output-Output constraints, as illustrated in her summary. Peperkamp's dissertation is valuable reading for phonologists, morphologists, and those interested in Romance languages in particular, although one need not be a Romance linguist to benefit from her conclusions.

I found her arguments convincing and thorough, and many of her solutions elegant; I sketch a few of the best below in sections 2–4. The only general critique I offer is that Peperkamp does not always push her own approach as far as she could. Like many a phonologist switching paradigms from rules to constraints in the 1990s, her descriptions begin with a rule-based formulation,

reflecting a tendency to conceptualize phonology in terms of a sequence of events in a derivation. As a result, what sometimes seems a simple solution in prose becomes more complex when formalized in OT, and the formalization seems almost an afterthought. By beginning with the basic tenets of violability and parallelism and pushing the potential for mismatches a little further, I think the work begun in this dissertation will have far reaching consequences (section 5).

2.   Derivation

Peperkamp's analysis of the distinction between cohering and non-cohering affixes as distinct prosodic word structures can be illustrated with one of her examples from Italian, in which suffixes are cohering and prefixes are non-cohering. A cohering affix joins inside a prosodic word with the stem, while a non-cohering affix remains outside the stem's prosodic word boundary, either as an independent prosodic word or inside a recursive prosodic word:

(1)
a. Suffixes, cohering: [fix-es]$_{PW}$
b. Prefixes, non-cohering: Independent PW: [pre]$_{PW}$[fix]$_{PW}$
c. Prefixes, non-cohering: Recursive PW: [pre [fix]$_{PW}$]$_{PW}$

While strict adherence to the SLH results in options (1a) and (1b), breaking down the SLH into separate violable constraints provides Peperkamp with a third option, (1c), which violates NONRECURSIVITY due to the one prosodic word inside another. Non-cohering affixes therefore need not form independent prosodic words themselves, contra Nespor & Vogel (1986).

Peperkamp analyzes **Intervocalic s-voicing** (ISV) in Northern Italian to show the need for this third option. For Italian, stress and the presence of low mid vowels, which indicate a primary stressed syllable, are used as diagnostics for the prosodic word. Using these criteria, Peperkamp divides prefixes into the structures (1b) and (1c) on principled grounds. ISV applies within monomorphemic words, before suffixes, and at the ends of prefixes, but not to word-initial /s/ following a vowel-final word or prefix. Peperkamp's insight is that, given the correct prosodic structure for prefixes, there are no prosodic words beginning with [zV], a constraint generally true throughout Italian. Ranking this constraint *$_{PW}$[zV above a constraint against intervocalic voiceless [s] leads directly to the desired results; an intervocalic /s/ which is not PW-initial is voiced (2a-c), while those that are PW-initial are not voiced (2d,e).

(2)
a.	PW-internal:	[asola]$_{PW}$	a[z]ola 'button-hole'
b.	PW-internal(with suffix):	[cas-ina]$_{PW}$	ca[z]ina 'little house'
c.	Prefix-final:	[dis[onesto]$_{PW}$]$_{PW}$	di[z]onesto 'dishonest'
d.	PW initial:	[la]$_{PW}$[sirena]$_{PW}$	la[s]irena 'the siren'
e.	PW-initial (with prefix):	[a[sociale]$_{PW}$]$_{PW}$	a[s]ociale 'asocial'

Thus the prefix-final /s/ in *dis-* can voice, since it is not at the left edge of a prosodic word; the /s/ in *sociale* cannot be voiced because it begins a prosodic word.

Nespor & Vogel (1986) had argued that ISV is a word span rule. In order to make their analysis work, however, they required a definition of the prosodic word that includes all vowel-final prefixes as independent words as in (1b), even if monosyllabic or monomoraic, in violation of prosodic minimality. As independent prosodic words, monosyllabic prefixes also should be stressed, but they neither have mid-low vowels nor do they trigger "raddoppiamento sintattico" like other stressed syllables. In Peperkamp's analysis, the definition of prosodic words is not altered to account for the behavior of vowel-final prefixes; the presence of the left prosodic word bracket separating them from the stem accounts for their non-cohering behavior. Her approach is thus able to capture the surface-true constraints as directly as possible.

In addition to her analyses of affixation in Italian, Peperkamp examines Spanish segmental rules and syllabification, to show that prefixes do not incorporate into the base prosodic word as do suffixes. A common point to both discussions is that coherence in prosodic word structure is independent of coherence in syllabification. That is, while a prefix may be outside a prosodic word for segment-based rules such as ISV, it may be syllabified with the following prosodic word. Due to her constraint on Proper Nesting, which she claims is inviolable, Peperkamp analyzes such cases as requiring two levels of syllabification (but see section 5 below). Peperkamp's basic point, that coherence and non-coherence are not monolithic, holds true in either case and advances our understanding of affix behavior.

3.   Compounding

In compounding, two or more words or lexemes are concatenated to form another word, but not all compounds have the same internal phonological structure. Peperkamp argues for three forms of prosodic structure for compounds: single prosodic words, two adjacent prosodic words, or a recursive prosodic word, parallel to the analysis of affixes in (1). In her discussion, Peperkamp touches on a wide range of data, both within Italian and cross-linguistically, but the focus is on the morphology and phonology of Italian compounds. In particular, Peperkamp examines the head properties of compounding in Italian, and comes to the conclusion that productive compounding is exocentric or rightheaded; structures that appear to be left-headed are not true compounds, and hence there are no word+root compounds.

Prosodic structure is derived directly from the morphological structure. Root+root compounds behave like monomorphemic words both morphologically and phonologically, and hence are mapped to a single prosodic word. Such words have a single primary stressed syllable and undergo ISV even at the beginning of the second root. Word+word compounds, if productively formed, constitute two adjacent prosodic words, as shown by the presence of the low-mid vowels which are restricted to stressed syllables and the failure of ISV to apply at the boundary. Familiar compounds, her term for compounds which are lexicalized and frequent, are given the recursive word structure of (1c), thereby explaining why they have only a single primary stressed vowel but fail to undergo ISV internally:

(3)
a.	Root + Root compounds:	
	[root-root]$_{PW}$	
	cromo[z]óma	'chromosome'
	filó[z]ofo	'philosopher'
b.	Root/Word+Word compounds	
	Productive:	
	[[word]$_{PW}$ [word]$_{PW}$]$_{PW}$	
	c[ó]pri sélla	'saddle cover'
	r[é]ggi lúme	'lamp stand'
c.	Familiar:	
	[word [word]$_{PW}$]$_{PW}$	
	c[ò]pri l[é]tto	'bedspread'
	r[è]ggi s[é]no	'bra'

The recursive prosodic word structure of the familiar compounds allows for only one main stress; hence the vowels in the initial word cannot be low-mid, since low-mid vowels appear only under primary stress. Both compounds in (3b,c) have an intervocalic initial prosodic word bracket, preventing ISV as in the case of prefixes. The parallels with affixation are both neat and convincing, and extend to her discussion of cliticization as well.

4.   Cliticization

Peperkamp argues against the need for the clitic group as a level in the prosodic hierarchy, located below the phonological phrase and above the prosodic word. While the clitic group has been supported by Hayes (1989) and Nespor & Vogel (1986), Peperkamp's arguments take the classic form: the use of the clitic group results in a theory that is both too strong and too weak. First, since

the levels of the prosodic hierarchy generally dominate elements exactly one level below, the clitic group should dominate prosodic words. But giving a clitic or clitic cluster the status of a prosodic word makes many incorrect predictions. For example, clitics are usually not subject to word phonotactics, especially minimality requirements, and they often do not bear word stress, similar to her argument against treating non-cohering prefixes as prosodic words. Second, the clitic group results in a theory which is too weak to account for clitics which take a phrasal host, as argued for Hausa in Inkelas (1989). Furthermore, the clitic group provides no means for distinguishing proclitics from enclitics, though these show the same asymmetries as prefixes and suffixes, or for distinguishing a sequence of host plus clitics from a sequence of clitics, though these show distinct structural properties. Peperkamp also argues away the data that motivated the clitic group as either not belonging to truly prosodic processes or prosodic but better reanalyzed without the clitic group. Supporters of the clitic group may not find all these arguments equally convincing, but Peperkamp makes a strong case for reconsidering them.

Peperkamp then analyzes enclisis in three varieties of Italian, Neapolitan, Lucanian, and Standard, to show that a clitic group is neither necessary nor sufficient (following Peperkamp 1996). These three varieties show different stress patterns as a result of adding one or two enclitics to a verb. In Neapolitan, stress appears on the verb as it would in isolation, on one of the last three syllables; a single enclitic is not stressed, but a sequence of two clitics is stressed on the first. Lucanian stresses the penultimate syllable of the combination of verb + enclitic(s), regardless of the number of enclitics added or the position of stress on the verb in isolation; stress can thus appear off the verb entirely, if the verb has two enclitics. Standard Italian stresses the verb in the same position as in isolation; regardless of how many clitics appear after the verb, no clitics are stressed.

(4)

		Verb	V + one enclitic	V + 2 enclitics
a.	Neapolitan:	cónta	cóntalə	cóntatíllə
		tell$_{IMP}$	tell$_{IMP}$-it	tell$_{IMP}$-you$_{REFL}$-it
b.	Lucanian:	vínnə	vənníllə	vinnəmíllə
		sell$_{IMP}$	sell$_{IMP}$-it	sell$_{IMP}$-me-it
c.	Standard:	pórta	pórtami	pórtamelo
		bring$_{IMP}$	bring$_{IMP}$-me	bring$_{IMP}$-me-it

Peperkamp analyzes the three cases using two of the constraints from the Selkirk (1995) version of the SLH: NONRECURSIVITY and EXHAUSTIVITY. Basing her analysis on a two level system, in which prosodic structure is built on lexical items before clitics are added, she also refers to a constraint for preserving lexical prosodic structure:

(5)
FAITHFULNESS: do not modify lexically built prosodic structure (p. 189)

Ranking these three constraints differently gives a different system depending on which constraint is lowest and therefore violable; the three varieties of Italian illustrate each ranking:

(6)
a. PW-adjunction
[[[host]$_{PW}$clitic(s)]$_{PW}$]$_{PPh}$ [[[cónta]$_{PW}$tíllə]$_{PW}$]$_{PPh}$
Neapolitan: NONRECURSIVITY violation tolerated (PW inside PW)
b. PW-incorporation
[host-clitic]$_{PW}$]$_{PPh}$ [[vinnə-míllə]$_{PW}$]$_{PPh}$
Lucanian: FAITHFULNESS violations tolerated (host alone is no longer a PW)
c. PPh-incorporation
[[host]$_{PW}$clitic]$_{PPh}$ [[pórta]$_{PW}$melo]$_{PPh}$
Standard Italian: EXHAUSTIVITY violations tolerated (PPh dominates a clitic which is not part of a PW)

Given the structures above, the stress generalization is the same in all three varieties: disyllabic feet (which do not cross prosodic word boundaries) get stress at the right edge of a prosodic word. In Neapolitan, both the internal prosodic word and the external prosodic word are stressed, resulting

in stress remaining on the verb and appearing on any sequence of clitics large enough to form a foot. In Lucanian and Standard Italian, there is only one prosodic word, hence only one stress in the rightmost foot. The analysis is an elegant example of the factorial typology: each constraint ranking results in a language. Her constraints also make a prediction: in a right branching recursive structure, stress could only fall on both the inner and the outer prosodic word, not solely on the outer prosodic word, and this seems to be right.

However, Peperkamp's account relies on a constraint, FAITHFULNESS, which is not surface-based; she also assumes that prosodic/metrical structure is built first lexically, before clitics are added post-lexically. In Peperkamp's approach, this means that Lucanian words would have structure built lexically and erased post-lexically without a trace, as FAITHFULNESS is lowest ranked. Peperkamp is technically correct that OT as a framework does not make a claim about the use of levels in phonology, but OT does attempt to limit derivationality. To extend the non-derivationality of the approach, we could reanalyze the Neapolitan and Standard Italian examples, in which FAITHFULNESS is active, using surface based alignment constraints. Following Selkirk (1995), we can use a family of constraints relating the edges of lexical words with the edges of prosodic words:

(7)

ALIGN-LEX/L:	Align (Lex, L; PW, L) }	Align the L/R edge of every lexical word with the L/R edge of some PW
ALIGN-LEX/R:	Align (Lex, R; PW, R) }	
ALIGN-PW/L:	Align (PW, L; Lex, L) }	Align the L/R edge of every PW with the L/R edge of some lexical word
ALIGN-PW/R:	Align (PW, R; Lex, R) }	

For Neapolitan, EXHAUSTIVITY and ALIGN-LEX/R dominate NONRECURSIVITY:

Tableau (1) Neapolitan

Candidates	Exhaustivity	Align-Lex/R	NonRecursivity
[[cónta]$_{PW}$tillə]$_{PPh}$	*!		
[[conta-tíllə]$_{PW}$]$_{PPh}$		*!	
☞ [[[cónta]$_{PW}$tíllə]$_{PW}$]$_{PPh}$			*

In Lucanian, ALIGN-LEX/R ranks lowest of the three:

Tableau (2) Lucanian

Candidates	Exhaustivity	NonRecursivity	Align-Lex/R
[[vínnə]$_{PW}$millə]$_{PPh}$	*!		
[[[vínnə]$_{PW}$míllə]$_{PW}$]$_{PPh}$		*!	
☞ [[vinnə-míllə]$_{PW}$]$_{PPh}$			*

In Standard Italian, EXHAUSTIVITY violations are tolerated in favor of satisfying the other two constraints:

Tableau (3) Standard Italian

Candidates	NonRecursivity	Align-Lex/R	Exhaustivity
[[[pórta]$_{PW}$mélo]$_{PW}$]$_{PPh}$	*!		
[[porta-mélo]$_{PW}$]$_{PPh}$		*!	
☞ [[pórta]$_{PW}$melo]$_{PPh}$			*

Peperkamp needs alignment in any case, to keep clitics from forming their own prosodic words (p. 186); these same constraints will do the work of preventing lexical words from accepting clitics into their foot structure. While Peperkamp doubts that there are empirical differences between the use of simultaneous alignment constraints and the use of levels (lexical/post-lexical) with potentially different constraint rankings, she does note that Lucanian enclitics seem to allow for restructuring of the word, in violation of her FAITHFULNESS, while proclitics may not. This would be exactly the sort of empirical difference in favor of the simultaneous alignment approach; alignment at the left edge can rank higher than alignment at the right edge, while FAITHFULNESS allows for no such distinctions unless levels of derivation are further multiplied. Furthermore, the simultaneous use of constraints rather than a sequence of levels prevents different rankings at different levels of the grammar, allowing for a tighter theory.

5. Violability and parallelism

Although the most interesting analyses result from breaking the SLH into ranked and violable constraints, Peperkamp balks at one type of ill-formedness: violations of Proper Nesting, in which an element at one level is dominated by more than one unit in the layer above. This can be represented with an improper graph or improper bracketing, as shown:

(8)

$[\sigma\sigma[\sigma]_{PW}\sigma\sigma]_{PW}$
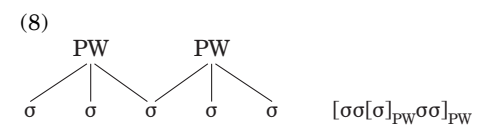
Since syllabification often crosses prosodic word boundaries, Peperkamp proposes that prosodic word boundaries are minimally relocated in such cases so that each syllable is properly nested within a prosodic word.

However, McCarthy & Prince (1993) give several tenets of OT, among them:

(9)

a.	Violability	Constraints are violable; but violation is minimal
b.	Parallelism	Best satisfaction of the constraint hierarchy is computed over the whole hierarchy and the whole candidate set. There is no serial derivation (McCarthy & Prince 1993, p. 4, and fn. 3)

By declaring Proper Nesting inviolable, in contrast to (9a), Peperkamp is also forced to rule out the maximally parallel, single-level analyses advocated in (9b). Instead, lexical syllabification obeying prosodic word boundaries is followed by post-lexical resyllabification, which also restructures prosodic word boundaries. There is, however, no explicit evidence for this proposed shift in prosodic word boundaries due to resyllabification. Presumably such evidence would take the form of a word-bounded post-lexical process to prove that a segment has joined a different prosodic word and not just a different syllable, and none springs to mind. The shift in word boundaries may also be problematic if it creates subminimal prosodic words, such as the *ba* in (7b) in Peperkamp's summary above. Finally, the insistence on the inviolability of Proper Nesting forces her to use two levels, an otherwise unnecessary complication in the grammar.

The shift of word boundaries due to resyllabification also seems to make wrong predictions. In an analysis of Tamil in Wiltshire (1998), I noted that words end with sonorants in one dialect of Tamil. For obstruent-final stems before vowel-initial words, Peperkamp's account predicts that the resyllabification of the obstruent across a word-boundary would result in a restructured, and therefore acceptable, prosodic word. However, stem-final obstruents must be followed by an epenthetic vowel, regardless of the following word, see (10). Only in sonorant-final words do we get resyllabification, since these satisfy the word-final-sonorant constraint without restructuring, as in (11):

(10)

Obstruent Final	No resyllabification (No restructuring)	Resyllabification (with restructuring)
/sappaṭ/ /ellaam/	[sʌppaɖu]$_{PW}$[jɛllā]	*[sʌppa]$_{PW}$[ɖɛllā]
food all	'all kinds of food'	

(11)

Sonorant Final	Resyllabification (No restructuring)	
/maram/ /ellaam/	[mʌɾəm]$_{PW}$[ɛllā]	
tree all	'all the trees'	

Extending her use of a set of violable constraints rather than a monolithic SLH, we need violations of Proper Nesting as well, so that resyllabification need not undo prosodic word boundaries.

Another example to illustrate the advantage of the alignment approach can be found closer to home. "Raddoppiamento sintattico" in Italian doubles consonants after words ending in stressed vowels, and applies regardless of whether the following word begins with a single consonant or a consonant cluster of rising sonority. It does not,

however, apply before words beginning in sC clusters:

(12)
a. [p]ulita 'clean' cittá[pp]ulita 'a clean city'
b. [t]riste 'sad' cittá[tt]rieste 'a sad city'
c. [sp]orco 'filthy' cittá[sp]orca 'a filthy city'

In an OT analysis (Wiltshire & Maranzana, to appear), we propose that the lengthening is motivated by a requirement that stressed syllables are heavy, PkProm, and epenthesis is limited by a constraint against surface consonants which are not present in the input, Dep-IO(C). Combined with Ons, the constraint that syllables begin with consonants, we can easily handle (12a):

Tableau (4) Input: /cittá pulita/ 'a clean city'

Candidates	PkProm	Ons	Dep-IO(C)
cittá]$_\sigma$[pulita	*!		
cittáp]$_\sigma$[ulita		*!	
☞ cittáp]$_\sigma$[pulita			*(p)

The same ranking would, however, incorrectly result in [(cit)(tát)]$_{PW}$[(ris)(te)], with resyllabification and prosodic word restructuring of the initial /t/ of *triste*:

Tableau (5) Input: /cittá triste/ 'a sad city'

Candidates	PkProm	Ons	Dep-io(C)
cittá]$_\sigma$[triste	*!		
⊗ cittát]$_\sigma$[riste			
cittát]$_\sigma$[triste			*(t)!

Rather than appealing to levels of syllabification, with the resyllabification of *triste* blocked by some kind of Faithfulness to lexically built structure, we use an alignment constraint on the left edge of the word, so long as syllable readjustments do not invoke prosodic word readjustments:

Tableau (6) Input: /cittá triste/ 'a sad city'

Candidates	PkProm	Align-Lex/L	Dep-io(C)
cittá]$_\sigma$[triste	*!		
cittát]$_\sigma$[riste		*!	
☞ cittát]$_\sigma$[triste			*(t)

If prosodic word boundary readjustment is triggered by resyllabification, we have no way to rule out the second candidate. Again, we need to consider candidates with violations of Proper Nesting in order to choose the correct output.

We are now also equipped to handle the apparently exceptional case of word initial sC clusters. An [sC] cluster is not a highly desirable onset, and word internally such clusters are broken into coda /s/ plus onset /C/ (as in *pas.ta*). Onsets generally satisfy a constraint that the sonority difference between members is at least four degrees on the scale proposed by Davis (1990), a constraint we call *<4difson. Not only is this constraint motivated by the word internal separation of sC clusters into separate syllables, but it also results in the failure of "raddoppiamento sintattico" due to its ranking above Align-Lex/L:

Tableau (7) Input: /cittá sporca/ 'a filthy city'

Candidates	PkProm	*<4difson	Align-Lex/L	Dep-IO(C)
cittá]$_\sigma$[sporca	*!	*		
cittás]$_\sigma$[sporca		*!		*(s)
☞ cittás]$_\sigma$[porca			*	

In an account in which lexically built structure must be preserved due to a high ranking Faithfulness constraint, we could derive *cittáttriste* through two stages of syllabification, but we would also derive *cittássporca*. Conversely, if Faithfulness ranks low, we can derive *cittásporca* by violating it, but we would also derive *cittá-triste*. If we allow for the misalignments of lexical and prosodic words but limit it through constraints, we can derive both cases with a single syllabification and eliminate Faithfulness. Adding Proper Nesting to the set of SLH constraints is a valuable idea, so long as it too is violable.

6. Conclusion

I enjoyed reading this dissertation and hope that it reaches the wide audience that it deserves.

Peperkamp offers both new data and fresh insights into familiar data, and raises questions for future research, such as the universality of the asymmetry between left and right edges of prosodic words. Her proposals are significant and broad reaching, her arguments well-reasoned and thorough. I look forward to seeing her future work.

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Leaving the field
The number sense

Another example has to do with people who suffered brain damages. One such patient "with massive damage to the left hemisphere" (p. 193), Dehaene reports, suffered from a major reading deficit: it was very hard for him to read aloud words or numbers. As to numbers, he could only read them out if they had a **meaning** beyond being a number. For instance, he could only pronounce the string *504* after associating it with a certain model of Peugeot, i.e., through its non-quantitive meaning. Findings like this surely have significance for neuro-linguistic research.

There are many more linguistically interesting things in this book (one section is called "The cost of speaking English").

But how about the similarities and differences between language and mathematics — or, for that matter, the language instinct and the number sense? Dehaene does not deal with this question explicitly; although he mentions Pinker once (p. 104) he does not seem to be aware of *The language instinct*. So let's see what he says about the number sense and mathematics.

Dehaene makes the point that our brain, like that of animals such as rats and chimpanzees, is equipped with what he calls an accumulator, which enables us, and the rats and the chimps, to perceive, memorize and compare numerical magnitudes. This accumulator enables us (humans and the other animals) to estimate how numerous some events are, but does not allow us to compute their exact number — beyond 2 or 3, everything gets fuzzy. This is the number sense.

In addition to this accumulator, humans have been endowed with supplementary competence: the ability to create and manipulate complex symbol systems (making it possible to do advanced arithmetics). This ability is partly related to some other innate properties, like mechanisms for individuating objects as well as intuitions about sets, continuous quantities, iteration, logic and geometry of space. Mathematics "can be characterized as the progressive formalization of these intuitions. It is the purpose to make them more coherent, mutually compatible and better adapted to our experience of the external world" (p. 246).

Mathematics, then, does not arise naturally in the same way as we acquire our mother tongue. For one thing, formal calculations have to be taught in school ("the human brain ... has not evolved for the purpose of formal calculation" — p. 134) and you have to keep practising, otherwise you lose it (p. 164) (sounds similar to a second language!). However, Dehaene argues emphatically, this does not mean that mathematics is "unnatural": mathematics is the way it is, because it is founded on our basic intuitions concerning set, number, space, time and logic. In the sense that mathematics is shaped by these intuitions, it is "created" by the mind, as it is mentioned in the title of this fine book.

Rint Sybesma

WORD ORDER AND CLAUSAL STRUCTURE IN SPANISH AND OTHER ROMANCE LANGUAGES

by *Francisco Ordóñez*
reviewed by *João Costa*

Summary
by *the author*

This dissertation explores different aspects of word order and clausal structure in Romance, with special emphasis on Spanish. These aspects are looked at in light of the highly constrained theory of word order proposed in the antisymmetry approach of Kayne (1994).

The approach of antisymmetry consists of positing a universal Spec-Head-Complement order. This rigid theory of phrase structure is designed to capture certain cross-linguistic asymmetries to the left such as position of the specifier, agreement patterns and head movement. The order is derived from the **Linear Correspondence Axiom** (LCA), which maps hierarchical structure into linear order. Some striking consequences of the LCA are that it makes unavailable certain mechanisms such as right adjunction and multiple adjunctions to the same head or specifier.

The development of antisymmetry is particularly significant for our understanding of Romance post-verbal subjects because standard analyses of these cases have assumed a right adjunction of the subject to the VP (e.g. Rizzi 1995). In this study, an alternative to this analysis — one compatible with antisymmetry — is explored in the context of VSO and VOS alternations in Spanish. Taking as a primitive the VSO order, following Sportiche's (1988) VP internal subject hypothesis, I contend the VOS order is better understood as a scrambling of the object to the left of the position of the subject. The crucial argument in favor of this alternative is the fact that there are certain asymmetries between the VSO and VOS orders that show that the object c-commands the subject in the VOS order. Thus, an object quantifier can bind a pronoun in the subject in the VOS order but not in the VSO order. Also, principle C effects obtain in the VOS order but not with VOS. Thus objects in VOS have to be in a more hierarchically prominent position than subjects, contrary to what a right adjunction analysis would predict.

Other types of asymmetries show that there are restrictions on the nature of objects that can appear in the VOS order. Specifically, *wh*-objects in situ and non-specific indefinite objects are allowed in VSO but not in VOS. I point out that these restrictions and the same asymmetric binding effects parallel facts attested in languages such as German, Hindi and Korean in which an independently motivated scrambling analysis has long been accepted for SOV-OSV alternations. Thus, a scrambling approach for the VOS order in Spanish is not only empirically more adequate but also more general.

My analysis of Spanish leads me to explore other Romance languages in which the right adjunction analysis has been proposed, including Catalan, French and Italian. These languages have a more restricted distribution of post-verbal subjects than Spanish since subjects must follow most complements, predicates and some adverbs. Moreover, the subject in that position is always marked prosodically (e.g., in Catalan and Italian post-verbal subjects are narrowly focused).

First, I conclude that the difference between Spanish and these other Romance languages is that Spanish contains an extra projection which allows the subject to remain neutral with respect to prosody. In Spanish, the verb simply moves above the subject in this extra functional projection by head movement. This movement is parallel to the one that yields the VSO order in Irish and Arabic. As in those languages, no restrictions occur on what can follow the post-verbal subject. For the narrowly focused nature of post-verbal subjects in Catalan and Italian, I explore an analysis in which the subject moves to an external focus position, above IP. The movement of the subject to this focus position is followed by the movement of the whole IP to a higher inflectional projection.

This analysis is in the same spirit as Den Dikken's (1995) account of Heavy NP shift in English, in which the movement of the object is followed by that of the whole predicate VP to the left. One of the consequences of this analysis is that the need for a special rule of extraposition is eliminated in favor of a combination of leftward movements. This combination can explain the restrictions on the distribution of what can appear after a post-verbal subject through parallelisms with Germanic and other leftward processes in Romance.

Finally, I elaborate further on the proposed analysis of Spanish. I observe that contrary to the case of the VSO order, in the VOS order the subject is narrowly focused in Spanish. Following my analysis for Catalan and Italian, I suggest that subjects in VOS structures in Spanish have been moved to focus projection. This movement is followed by a scrambling of the object to the left and final movement of the IP to a higher projection.

Another aspect of clausal structure I investigate consists of structures with overt *wh*-movement in Spanish and Catalan. It is shown that the obligatory post-verbal positioning of subjects in these structures cannot be explained by recourse to a required overt head movement of the verb to C as in Rizzi's (1991) V2 analysis. First of all, the V2 proposal is incompatible with the assumptions in Kayne (1994) that the sequence clitic–verb is not subject to head movement. Kayne's approach combined with movement of the verb would lead to the expectation that the sequence verb–clitic is possible. This sequence is indeed found in imperatives and infinitives — where a verb movement approach is feasible — but not in cases of *wh*-movement.

The overt V-to-C approach also predicts that the subject following the verb in interrogatives is in SpecIP. However, various tests — such as the insertion of the subject between the auxiliary and past participle, the licensing of floating quantifiers, and the possibility of insertion of the subject between verb in C and the objects in VP in Italian and Catalan — show that subjects in these languages are not in a SpecIP position. Finally, an overt V-to-C approach makes it impossible to explain why languages with overt complementizers in interrogatives still have obligatory inversion effects.

Instead of sticking to V-to-C, I conclude that pre-verbal subjects in Spanish and Catalan are always topicalized. Combining a complex CP approach (Rizzi 1995) with recent ideas on complementizer recursion developed by Browning (1996) and Watanabe (1992), I conclude that a topic subject conflicts in features with the +*wh*-complementizers of interrogatives. Finally, I look at some complex *wh*-words and note that they do not require inversion. I propose that these complex *wh*-words are topicalized.

Since the conclusions concerning *wh*-movement were based on the idea that subjects are topicalized in Spanish, I motivate this assumption in the last part of my dissertation. The typical assumption in a pro-drop language like Spanish is that covert as well as overt subjects occupy a preverbal position at Spell-Out in which their Case and agreement properties are satisfied. I present evidence against this claim. Instead, I show that pre-verbal overt subjects pattern with left dislocated DOs and IOs in a wide range of syntactic contexts, such as ellipsis and extraction of quantifiers. In these contexts, sentences with "silent subjects" differ from sentences with overt ones. I also show that quantified pre-verbal subjects have the same restriction on possible interpretations as other left dislocated complements. I conclude that overt pre-verbal subjects are necessarily left dislocated.

In order to account for the left dislocated nature of subjects, I propose the elimination of AgrS as a functional projection. Instead I propose that person agreement morphemes should be considered clitics (as in Taraldsen 1992), and the relation between agreement and overt subjects is one of clitic doubling. Evidence in favor of these claims comes from the striking parallelisms between standard clitic-doubling constructions and agreement-subject constructions. Specifically, both cases pattern similarly in relation to the determination of binding in certain cases of mismatches in person between the doubling DP and the clitic.

The clitic nature of agreement is also motivated morphologically. Following the morphological decomposition analysis of clitics (Harris 1995), I observe that 1pl agreement has the same morphological shape as the object clitic. Striking evidence comes from the fact that this agreement contains a plural morpheme which I contend is the same plural morpheme found in the nominal system. I show that this plural morpheme amalgamates with the same plural morpheme in 1pl imperatives in Spanish.

I take agreement to be an argumental clitic that absorbs theta role and Case. Movement of the doubling DP subject to a pre-verbal position cannot, therefore, be driven by agreement or Case requirements. Instead, movement of the subject to a pre-verbal position must be motivated by discourse considerations, as is typical in left dislocations. Finally, the obligatory enclitic nature of this agreement can be explained by Guasti's (1991) and Rizzi & Roberts' (1989) idea that this agreement has a subcategorization frame which requires a verbal host. Clitic agreement moves to a higher inflectional projection as in other cases of enclises and the verb left adjoins to it following antisymmetry.

Review
by *João Costa*

'Word order and clause structure in Spanish and other Romance languages' is a very important dissertation. It argues for an antisymmetric analysis of several word order phenomena in Spanish and other Romance languages. One of the crucial aspects of this dissertation is that it indeed **argues** for antisymmetry, rather than just assuming it, as is so often done. The author provides several convincing arguments for Kayne's (1994) framework, showing that it is not just a different way of accounting for word order facts, but a necessary mechanism for a proper description of the data he looks at. In particular, the arguments provided for analyzing VOS in Spanish as an instance of object scrambling across the subject are worth mention-

ing. Ordóñez shows that this analysis is necessary, since it is the only one able to account for the fact that the object is structurally higher than the subject.

In this review, I will discuss some aspects of the dissertation that seem to me to be controversial. It should nevertheless be clear from the discussion that none of these aspects crucially compromise the important results achieved by Ordóñez regarding the representation of word order variation in Spanish.

1. The position of postverbal subjects and neutral interpretation

While presenting the arguments for analyzing VOS orders in Spanish as an instance of scrambling of the object across the subject, Ordóñez notes that VSO may have a neutral interpretation. In other words, this word order may be an instance of sentence-focus and be uttered as an answer to *what happened?*.

According to Ordóñez, the neutral interpretation of VSO arises as a consequence of movement of the subject out of VP to the specifier position of a functional projection called NeutP, which is below TP and above VP:

(1)
$[_{TP} V [_{NeutP} S t_V [_{VP} t_S t_V O]]]$

In this section, I would like to question the adequacy of linking the neutral interpretation of the subject position with a specific functional projection.

As far as I can see, there are at least four problems with this assumption:

I   In sentence-focus interpretations, not only the subject is in its neutral position.
II   Cross-linguistically, VSO is not neutral.
III In some varieties of Spanish, the preverbal position of the subject is also neutral.
IV   It is not clear to what extent it is theoretically desirable to codify the distinction between neutral word orders and marked word orders in terms of functional projections.

Let me address each of these issues separately.

1.1. Neutrality in sentence-focus interpretations

According to the proposal put forward in this dissertation, the VSO word order in Spanish is neutral because the subject occupies the specifier position of NeutP. In frameworks allowing for an identification of discourse functions in terms of association with discourse-related functional projections, this is not unnatural.

However, it seems to overlook the discourse function of the other constituents of the sentence. In neutral contexts, not only the subject is in its neutral position, but also the verb and the object. In other words, there is a difference between a VSO sentence, in which all elements are in their neutral position, and a OVS sentence, in which the object is no longer in its neutral position. Following Ordóñez' proposal and pushing the idea that neutral interpretations arise as a consequence of movement to SpecNeutP, it ought to be assumed that in VSO sentences, all elements move to or through NeutP. This is not problematic for the verb, which moves through the head Neut on its way to T. However, it seems to be problematic for the object, since there is no position for it to move to, and yet it receives a neutral interpretation. Note that it would not work to propose a second NeutP for the object to move to, yielding a representation like (2):

(2)
$[_{TP} V [_{NeutP} S t_V [_{NeutP} O t_V [_{VP} t_S t_V t_O]]]]$

This type of representation makes the prediction that, like recursive Topic Phrases in the work of Rizzi (1995), subject and object may land in either SpecNeutP. If that were the case, however, both VSO and VOS should be neutral, which is not true.

Another problematic fact is that neutral interpretations are often taken to be ambiguous between sentence-focus, VP-focus and object-focus. If that is the case, object-focus may not be explained in this fashion, since it is not clear how to derive the neutral interpretation of the object alone.

1.2. VSO is not neutral in other languages

As Ordóñez discusses, VSO orders are not allowed in Catalan, French and Italian. He proposes that the difference between Spanish and the other Romance languages is that the latter lack the functional projection NeutP. This prevents the derivation of the VSO word order, since the landing site for the subject does not exist. Accordingly, a neutral VSO word order is not possible in these languages, because there is no way to generate VSO.

The corollary of this idea is that if a language permits VSO, NeutP is active in this language and VSO may arise as a neutral interpretation. However, if one looks at a related language like Portuguese, it may be seen that VSO word orders are possible, but inadequate in neutral contexts (Costa 1997a,1998):

(3)
a.   O Paulo partiu a janela
      'Paulo broke the window'
b.   Partiu o Paulo a janela

(4)
a.   O que é que aconteceu?
      'what happened?'
b.   O Paulo partiu a janela
      *Partiu o Paulo a janela

The only context in which VSO is legitimate is when both the subject and the object are focused:

(5)
a.   Ninguém partiu nada
      'no-one broke anything'
b.   Partiu o Paulo a janela

From these data, it can be seen that the only neutral word order in Portuguese is SVO. Under Ordóñez' account, there is no obvious way to explain this difference between Spanish and Portuguese. On the one hand, it must be assumed that Portuguese does not lack NeutP, in order for VSO to be possible. On the other hand, the facts show that VSO does not correspond to a neutral position for subjects.

1.3. SVO may be neutral in Spanish

As noted in several works on Spanish syntax (e.g. Hernanz & Brucart 1987), SVO is also a neutral word order. It is not clear from the literature whether the two options (VSO and SVO) coexist, or whether there is a dialectal split between speakers who utter VSO or SVO as neutral. The relevant aspect for Ordóñez' argument is that preverbal subjects may be neutral. This may not be explained if the neutrality of subjects is explained in terms of NeutP.

There are three ways of solving this problem. The first would be to assume that the difference between neutral SVO and neutral VSO has to do with the relative position of NeutP in the hierarchy of functional projections. In neutral SVO, it would dominate TP, while it would be dominated by TP in neutral VSO. This type of explanation of word order differences would be in line with the proposals concerning parametric variation in terms of selection properties of functional heads (e.g. Ouhalla 1991). A problem for such proposal would be to explain the evidence put forward for the crosslinguistic similarities in the hierarchy of discourse-related functional projections (e.g. Rizzi 1995; Kiss 1995). One would have the burden of explaining why such similarities break down in Spanish.

The second potential approach to this problem, very much in the spirit of Ordóñez' own proposal, would be to assume that preverbal subjects in Spanish are instances of left-dislocation (see also Barbosa 1995, among others). Since

subjects tend to be topics (cf. Lambrecht 1994; Givón 1984), their neutral interpretation would be derived. This proposal would apparently solve the problem, but it makes NeutP an unnecessary functional projection. The neutral reading of subjects is derived independently of the association with a functional projection responsible for neutral readings. Moreover, this would not explain why in sentence-focus contexts a subject in Spec-TopP (or left-dislocated) has a focus interpretation.

The third potential approach would not associate the neutral reading of sentences with any specific functional projection, but rather with the **lack** of discourse-marked operations. In other words, the neutral interpretation of unmarked word orders of each language would be a consequence of the fact that no process associated with discourse (e.g. topicalization or focus-movement) applies. The neutral word order of each language is decided by the syntax alone. Assuming that the neutrality of SVO and VSO in Spanish is not truly optional, but reflects the (dialectal) coexistence of two grammars, the neutral word order arises because subjects must check features overtly in SpecIP in the SVO variant, but not in the VSO dialects. The only problem of this approach is that it misses a generalized analysis for null subject languages, according to which case features of the subject are uniformly weak (Barbosa 1995), and the preverbal subject position is an instance of left-dislocation. If arguments are found for the A-status of preverbal subjects in some null subject languages (cf. Costa 1997a, 1998, among others), this analysis may be maintained (see also section 3).

1.4. Marked vs. Neutral as different functional projections

The representation of discourse functions in terms of functional projections in syntax is widely attested in the literature (Brody 1990 and subsequent work). Although it is questionable whether this is desirable for all discourse functions (see e.g. Reinhart 1995 for discussion of information focus), the functional projections are commonly used as landing sites for XPs that are marked with respect to discourse: they are either topicalized or contrastive focused constituents. Under this type of approach for the syntax-discourse interface, there are two ways of encoding neutral interpretations: either the set of constituents receiving a neutral interpretation is the complement of the set of constituents moved to topic and focus positions, or the neutral interpretation is itself the result of movement to a designated discourse-related functional projection. The former approach is the one proposed at the end of the previous paragraph, the latter is Ordóñez'.

There seems to me to be a conceptual problem with the movement approach. As noted above, neutral interpretations often arise in instances of sentence-focus. If that is the case, this should mean that all the constituents of the sentence (or the sentence as a whole) should move to a focus-related functional projection. Independently of whether or not there is empirical evidence for this type of movement, there is no evidence left for NeutP. If neutral interpretations are instances of sentence-focus and if discourse functions are encoded in the syntax, as Ordóñez assumes, NeutP should be some version of FocusP.

In short, the functional projection NeutP seems problematic, and there are alternative ways to derive the neutral reading of postverbal subjects that would not compromise Ordóñez' findings regarding the clause structure of Spanish.

2. VOS in Spanish vs. VOS in French, Catalan and Italian

It is argued in this dissertation that the impossibility of obtaining VSO word orders in Italian, French and Catalan follows, if it is assumed that NeutP is not projected in this languages. Like Spanish, these three languages allow VOS word orders, but it is proposed that the representation of VOS is not derived via scrambling of the object. Instead, it is argued that subjects move to a focus

projection at the left periphery, and the remnant TP moves to the specifier of a functional projection to the left of the subject. This proposal is in accordance with antisymmetry, and it is worth mentioning that Ordóñez does a good job showing the inadequacy of the right-adjunction approach.

In this section, I would like to note three aspects of this analysis that seem to be problematic:

I   The cross-linguistic variation in terms of the availability of NeutP;
II   The arguments against scrambling;
III The role of FocusP.

2.1. Crosslinguistic variation

The proposal put forward in the dissertation is that VSO is lacking in French, Catalan and Italian, because NeutP is not projected. Since this functional category is not available, the subject may not raise to this position.

In the preceding section, I have presented some arguments against the existence of NeutP, even in languages allowing VSO. For instance, in the case of Portuguese, the neutral word order is not VSO, hence NeutP could not be assumed to be projected in between TP and VP. If this functional category is not available in this language, the prediction made by Ordóñez is that Portuguese should lack VSO word orders, like French, Catalan and Italian. This, however, is not true (cf. the sentence in (5)). It thus seems to be difficult to link the availability of VSO with the neutral interpretation of VSO.

2.2. Arguments against scrambling

The alternative analysis of VOS in languages with V-to-I movement still within antisymmetry is refuted by Ordóñez: the scrambling analysis. According to this analysis, VOS would be derived via scrambling of the object to the left of the subject (which may stay within VP). This type of analysis has been proposed for Dutch by Koster (1993).

Ordóñez presents two arguments against extending the analysis of Dutch to Catalan, French and Italian. The first argument is the fact that VOS is a marked prosodic construction in Romance, while SOV is the least marked focus pattern in Dutch. The second argument is that scrambling is traditionally assumed to be an optional operation, while it must be assumed to be obligatory in Catalan, French and Italian. Since there is no parallelism with respect to these two properties, Ordóñez assumes that the two sets of languages must not undergo a similar analysis. I would like to note that these two counterarguments are not as strong as he would like them to be.

Let us consider first the argument based on intonation. There are two ways to discard this argument. On the one hand, it is not clear that the markedness of intonation may be used as an argument for or against unifying the analysis of two languages. If sentence stress is defined in terms of embedding (cf. Cinque 1993; Reinhart 1995), it is expected that the most embedded constituent receives the sentence main stress. In that case, SOV in Dutch is unmarked because the object is the most embedded constituent. If this approach is true, the prosodic markedness of VOS in Romance is surprising: the subject should receive unmarked sentence stress. The crucial aspect is that, either in the scrambling analysis or in the light predicate raising analysis, the subject is the most embedded constituent. In other words, the lack of parallelism in terms of intonation has nothing to do with the syntactic process involved. If sentence stress is defined in terms of directionality (Nespor & Vogel 1986, among others), the role played by the verbal head is crucial. Prosodic constituents may take into consideration the placement of the head, and the placement of sentence stress may differ because of the different position of the verb, which must be assumed both in the scrambling analysis and in the light predicate raising analysis. If this approach is right, the

difference in intonation follows from the cross-linguistic difference in terms of verb placement rather than in terms of strategies for moving the object across the subject.

On the other hand, scrambling in Dutch and German does create a more marked intonation. If one looks at the difference between S-Adv-O-V and S-O-Adv-V, it is often reported that the latter is more prosodically marked (see for instance Reinhart 1995; Neeleman & Reinhart 1996, who treat scrambling as an operation for defocusing the object). If scrambling of the object across the subject in Romance is compared with scrambling of the object across an adverb in Germanic, instead of with the movement from postverbal to preverbal position, there is no big difference between the two sets of languages: in both, the result is a more prosodically marked structure. The crucial difference between Dutch and Romance, besides the position of the verb, would be the obligatory nature of subject movement out of VP in Dutch.

Let us now consider the argument based on optionality of scrambling. Again, there are two ways of discarding this counterargument. First of all, if, unlike what I proposed in the preceding paragraph, scrambling in Romance is to be compared with the movement of the object from postverbal to preverbal position in Dutch, like Ordóñez does, then the movement is obligatory both in Romance and in Dutch. In other words, scrambling is only optional in Dutch from the preverbal position to a higher position.

Second, if the comparison is made between the standard scrambling in Dutch and the movement across the subject in Romance, the lack of optionality in the latter may be linked with the nature of the movement. If scrambling in Romance is triggered by some strong feature in AgrOP or PredP, no optionality is predicted. The optionality of Dutch may be explained in terms of defocusing, as in Reinhart (1995). The problem of optionality is thus reduced to a problem of feature strength. A similar solution for the lack of optionality in English, compared to Germanic and Romance, has been proposed in Costa (1997b). In short, the problem of optionality may not be considered if it is not proven that an analysis in terms of obligatory movement to an intermediary position is ineffable. The lack of parallelism does not provide evidence against an uniform analysis in the same way that the optional vs. obligatory character of *wh*-movement in French and English, respectively, does not provide evidence against an uniform analysis of *wh*-movement in these two languages.

If the counterarguments for the scrambling analysis are not as strong as Ordóñez suggests they are, it is worth reconsidering a more detailed comparison between this option and the light predicate raising alternative. Especially since the scrambling analysis involves a more simple representation of the clause and straightforwardly explains the fact that the object c-commands the subject in VOS word orders (cf. section 3.8.1 of the dissertation).

2.3. The role of FocP

For the proposal based on light predicate raising to work, the left periphery of the sentence is crucially involved. The derivation of VOS proceeds in terms of movement of the subject to SpecFocP and subsequent movement of the remnant TP to the specifier of a functional projection above FocP.

The first intriguing aspect of this derivation is the fact that focused subjects move to this position. In most analyses resorting to FocP (Brody 1990; Kiss 1995; Rizzi 1995, among others), this projection at the left periphery of the sentence is reserved for contrastive foci. This is not the case for postverbal subjects in French, Catalan and Italian. These subjects are not necessarily contrastive, but rather information foci (cf. Légendre 1998, among others). This mix of discourse functions associated with functional projections also comes up in the discussion of Spanish. Ordóñez suggests

that the VS orders may arise either by movement of the subject to NeutP (VSO) or via light predicate raising of the remnant TP (VOS). The difference is due to the status of the subject: whether it is neutral or focused. Now, if neutrality is to be reduced to sentence focus, as suggested in section 1, there is no reason for the subject to end up in different discourse-related functional projections.

Another unclear aspect is that in most analyses resorting to FocP, this functional projection is supposed to be able to host *wh*-phrases. This explains why contrastive foci are in complementary distribution with *wh*-movement (cf. e.g. Rizzi 1995). Surprisingly, *wh*-movement is sometimes the factor enabling VOS orders in the Romance languages studied in this thesis.

Finally, for the analysis to be clearer, one would like to know the status of the functional projection dominating FocP, where the remnant TP is moved to. Following most studies on the left periphery, this position should be topic-related. But, if that is the case, it is not clear why (6) is impossible:

(6)
*Deu à Maria, o   livro, o Paulo
 gave to Maria the book   Paulo

In some Romance languages, like Portuguese, multiple topic constructions are allowed, though a bit marked:

(7)
(?)O   livro, à Maria, o Paulo deu
   the book to Maria   Paulo gave

In these constructions, the order of the topicalized constituents is free:

(8)
(?)À Maria, o livro, o Paulo deu

Now, if remnant TP movement is to be identified with movement of the topical part of the sentence, it is expected that an object may be preposed to a position before the remnant TP (cf. (9)) or after. The latter, however, is not possible, as was shown in (6).

(9)
(?)O livro, deu à Maria o Paulo

If the functional projection above FocP is not topic-related, one would like to know what its nature is and what the trigger is for moving the remnant TP.

In short, neither the light-predicate-raising analysis for VOS orders is exempt of problems, nor can the scrambling analysis be as easily discarded as Ordóñez suggests. Hence, a more thorough comparison between the two might be helpful and fruitful. The type of work that Ordóñez performs for excluding the right-adjunction analysis would be useful for deciding between scrambling and light-predicate raising.

3.   Pro-drop and left-dislocated subjects

As in many current analyses (Barbosa 1995; Alexiadou & Anagnostoupoulou 1995, among others), Ordóñez attempts to establish a relation between pro-drop and left-dislocated subjects. The assumption is that preverbal subjects in null subject languages are always instances of left-dislocation.

In this final section, I would like to show that Portuguese, a null subject language, does not corroborate these findings: preverbal subjects in Portuguese, unlike those in Spanish, according to Ordóñez' description, exhibit A-properties. This can be seen in the following set of data.

A-binding. First, it should be noted that preverbal definite subjects are A-binders: they are able to bind an anaphor from this position:

(10)
Todos os coelhos comeram a sua cenoura
all   the rabbits ate   POSS carrot
'every rabbit ate his carrot'

In (10), the QP *todos os coelhos* is able to bind the possessive anaphor *sua* contained in the direct object. Note that there is a contrast between left-dislocated direct objects and in-situ direct objects concerning the possibility of binding into an indirect object, which is not expected if the same mechanism evoked for subjects would apply:

(11)
a.   Os jornalistas deram todos os livros$_i$ aos seus$_i$ autores
       the reporters gave   all   the books to POSS authors
b.??/?/*Todos os livros, os jornalistas deram aos seus autores

A-bar minimality effects. If preverbal subjects are left-dislocated, one expects to get A-bar minimality effects if there is A-bar extraction across a preverbal subject, in accordance with the findings of Rizzi (1991). This is not attested in Portuguese, as the examples in (12) illustrate:

(12)
a.   Que   livros o Paulo leu?
       which books   Paulo read
b.   Esses livros, o Paulo leu
       those books   Paulo read

These examples show that neither *wh*-movement nor topicalization induce A-bar minimality effects.

Multiple topicalization. In European Portuguese, it is possible to have multiple topicalization, but this is a slightly marked construction: for example, (13b) is felt as more marked than (14a), and it is necessary to introduce a prosodic break between the second preposed PP and the verb:

(13)
a.   Sobre o tempo, falei   com o Pedro
       about the weather talked-1SG with   Pedro
b.?/??Sobre o tempo, com o Pedro, falei

The contrast between (13a) and (13b) is not reduplicated in the constructions involving a preverbal subject and a preposed constituent: neither a marked sentence is obtained nor is it necessary to introduce a prosodic break in between the subject and the verb:

(14)
Com a Maria, o Pedro falou
with   Maria,   Pedro talked-1SG

The difference noted is further confirmed by the fact that in true cases of multiple topicalization, the order of the two preposed constituents is not rigid: there is a counterpart of (13b) with the reverse order of PPs, for which the grammaticality judgements do not change:

(15)
?/??Com o Pedro, sobre o tempo, falei
      with   Pedro about the weather talked-1SG

Note that, with preverbal subjects, changing the word order between subject and preposed PP does not yield a good result, unless the subject preceding the PP is a hanging topic (cf. Duarte 1987), in which case it can be reduplicated by another NP in the normal preverbal subject position, as in (16b):

(16)
a. ?? O Paulo, com a Maria, falou rapidamente
          Paulo with   Maria talked quickly
b. ? O Paulo, com a Maria, esse sacana falou rapidamente
          Paulo with   Maria that jerk   talked quickly

The fact that there is a contrast between sentences with preverbal subjects and sentences with multiple topics provides further evidence against the idea that preverbal subjects are left-dislocated in European Portuguese.

The differences of behavior between preverbal subjects in Portuguese and Spanish casts some doubt on the link established between left-dislocated subjects and pro-drop. Specifically to Ordóñez' analysis, the impossibility of having subjects in SpecIP must not be linked to verbal agreement morphology, since it does not differ in these two languages:

(17)
Spanish	Portuguese
1sg -o	1sg -o
2sg -s	2sg -s
3sg -Ø	3sg -Ø
1pl -mos	1pl -mos
2pl -is	2pl -is
3pl -n	3pl -n

4.   Conclusion
As the reader may have noticed, the skeptical aspects of this review focused on technical details of the analysis proposed in the dissertation. This hopefully shows that the general proposal and analysis are very interesting. As mentioned at the beginning, this dissertation is an important contribution to our understanding of the syntax of Spanish and Romance, and provides substantial evidence in favor of antisymmetric syntax. It is therefore strongly recommended to syntacticians in general and, in particular, to people working on Romance and antisymmetry.

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TWO TEXTBOOKS

Maggie Tallerman's *Understanding syntax*
reviewed by Marcel den Dikken
Ian Roberts' *Comparative syntax*
reviewed by Rint Sybesma

Understanding syntax
by Maggie Tallerman
reviewed by Marcel den Dikken

Linguistics — at least, of the sort practised by the readers of this journal — is a fundamentally comparative enterprise. On this, we all agree. Yet, while introductory textbooks to morphology and phonology often draw on data from a wide variety of languages, introductions to syntax typically confine themselves to just a handful of languages — Andrew Radford's (1997) recent book being an extreme case in point: it uses nothing but English example material. To this, Maggie Tallerman's new introduction, *Understanding syntax*, is a spectacular exception, addressing as it does data from no fewer than 83 different languages, from all sorts of different language families and parts of the world (which are all carefully registered in the book's language index). This fact alone was enough to arouse my curiosity and interest into this new textbook. So I read it, in one go — and I was not disappointed. Tallerman's strongly comparative approach to introducing the basic concepts of syntax has materialised in a very readable and interesting book, and the author's excitement about language data and their analysis is sure to light up a spark in her readers.

The fact that Tallerman does not confine her attention to English, or Germanic, or Indo-European, has interesting consequences beyond kindling students' interest in syntax — it also leads her to address issues and construction types which garden-variety textbooks typically find no occasion to discuss. Thus, in the discussion of lexical categories (which, by the way, makes the very interesting and effective move of using garden-path 'headlinese' examples like *Revived ferry sale fears dog islanders* (p. 32) to introduce the difference between verbs and nouns), the author stresses that "we shouldn't think that just because, say, English and Italian have an open class of adjectives, then all languages must have one" (p. 49). Tallerman touches upon such things as language variation and change (pp. 8–11), grammaticalisation (p. 54), serial verbs (pp. 79–81), the head-marking/dependent-marking dichotomy (pp. 103–9) and the differences between (split) ergative and accusative languages (pp. 151ff.), she acknowledges sign language (p. 22), and in her chapter on syntactic processes, she does not confine her attention to just passive, *wh*-movement and topicalisation, but also pays attention to antipassive, applicative and causative formation — though, surprisingly, there is no mention made at all of any head-movement processes (like noun incorporation, verb incorporation, or even simple subject-auxiliary inversion).

Not all of these discussions are equally enlightening, though — some are truly detailed and instructive, but others remain too shallow to tell you much. A good example is a comparison of the sections on antipassive and causative. Of these two phenomena, the former is typologically restricted, found basically in ergative languages only, but causativisation is robustly represented all around the globe. Yet, while the discussion on antipassives (pp. 185–91) really fills you in on

most everything there is to know about these constructions, the section on causatives (pp. 195–99) is remarkably poor by comparison. To illustrate this latter point, consider what Tallerman tells us about the French *faire à* construction: all she says is that the causative and causativised verbs "behave generally as a single verbal unit and not as predicates in separate clauses" (197), mentioning only the fact that an English type ECM causative is impossible with *faire* in support of this statement. The claim that in *faire à* causatives "the two lexical verbs are actually both inside a single clause, and share a single set of arguments rather than each having their own arguments as they do in English" (197) — controversial like most any claim in the literature; yet none of its controversial status seeps into Tallerman's discussion of French causatives — would have been easily illustrated with the aid of a simple example of clitic climbing, which would have had the additional advantage of introducing the notion of clitics. A missed opportunity, therefore; and an unfortunately shallow discussion of causative constructions as a result — a rather miserable successor to the rich and thoughtful section on antipassives earlier in chapter 7.

This is not the only point where Tallerman misses a good opportunity to do just a little bit more than what she has already managed to do. Another good example comes up in section 5.3.3, at the end of her discussion of constituent structure and the diagnostics for it. There she raises the interesting question of whether all languages have the same constituents, and answers "no, they apparently don't" (138), going on to mention Basque and Hungarian as examples of languages in which there seems to be no VP. She leaves the discussion there, at a point at which the uninitiated reader will no doubt get a sense of bewilderment — I can vividly imagine students crying out: 'So what about this constituent structure thing? Can languages just take it or leave it? I don't follow!' And of course they are right in raising such questions. So Tallerman should not have begged them; she should have addressed them out in the open, in some way. And since she already mentions the case of Hungarian in her discussion, one way that would spring to mind is to follow up the classic claim that this language apparently lacks a VP with a brief visit to more recent evidence (due, in particular, to Kenesei; see e.g. Kenesei 1998) showing that the lack of a VP in Hungarian may in fact be merely apparent, and that there **is** in fact positive evidence (from focus patterns) for the existence of a VP in this language — a view that is absolutely commonplace nowadays. Taking this tack would have been an excellent opportunity to show that, despite apparent evidence to the contrary, syntacticians may avail themselves of inventive ways of proving a particular point.

More seriously, there are also occasions in the book where missing an obvious opportunity goes hand in hand with serious misrepresentation of the facts. An example comes up in Tallerman's discussion of cross-linguistic word-order patterns. There, she brings up in passing the case of German and Dutch, which she says "have SOV order

in embedded clauses but have unmarked SVO order in main clauses" (148). That's all she says about Dutch and German; and of course everyone vaguely familiar with the facts of these languages or the discussion in the syntactic literature about them will know that it is flatly false — Dutch and German do **not** have 'unmarked SVO order in main clauses': though in subject-initial constructions with a finite main verb, Verb Second (a head-movement operation; recall from the above that Tallerman systematically ignores syntactic processes affecting heads) effectively results in a surface SVO pattern, the main verb continues to follow its object whenever V2 leaves it untouched. And that's very easy to show; a simple comparison of an example with a finite main verb (*Jan kust Marie* 'Jan kisses Marie') and one with a finite auxiliary and a non-finite main verb (*Jan heeft Marie gekust* 'Jan has Marie kissed') will do the trick — the trick, that is, of proving the quoted claim false, **and** of giving readers a chance to toy around with language data.

Yet, although the above remarks criticise some of its concrete executions in the book, and though occasionally it results in little more than decorative "sprinkling" of the text with exotic language facts ("As we'd expect, co-ordination occurs in many other languages; examples (70) and (71) show conjoined VPs in Persian and Malagasy", 136), all in all Tallerman's decision to use data from many different languages in her introduction to syntax works out very well. It is, I believe, **the** outstanding feature of the book — and a highly commendable one at that.

Almost inevitably, Tallerman's "zest for the exotic" occasionally makes way for a more 'classic' ₀approach, when she takes one language (English, of course) as the model. An example is her discussion of diagnostics for distinguishing main and embedded clauses on pp. 73ff., which is all about English and mentions exceptions to the diagnostics posed by other languages only in the margin. It is in passages like these that Tallerman's book looks just like a typical 'Introducing English Grammar' type book — which leads me to raising the question: what is this book's readership?

The book was clearly written with a native English-speaking readership in mind — the example just mentioned shows this, and also the fact that exercises interwoven with the text and at the end of each chapter (many of which feature very nice problem sets) occasionally invite readers to construct an argument on the basis of English sentences to be constructed and judged by the readers themselves. So I suppose that this book was intended for use in an Anglo-Saxon context. In any case, as a primary textbook for a course, it could only work in university systems in which there still is time in the curriculum of a (General) Linguistics department for a basically a-theoretical introduction course to the major concepts of syntax like the one provided by Tallerman's book — a book which, as the author herself intimates on p. 209, may serve as a stepping-stone to a course on syntactic **theory**. In university systems which, sadly, leave no room for such a course, perhaps the most fruitful way of using this book in an introduction to syntax course — the way that I will try it out myself — is as supplementary reading, for the students to study on their own (the book is self-explanatory enough not to require the assistance of a tutor), in tandem with a more theory-oriented introduction which will allow the instructor to introduce the technicalities which the present book does not go into.

For there is quite a bit left to be learnt or brushed up once you have gone through Tallerman's book. It fills you in about heads and phrases, and about the dependency relations between phrases. But the notion 'government', firmly rooted in grammatical tradition, is not mentioned a single time. And it tells you about the existence of complementisers (which are loosely "defined" over twenty pages after the term is first introduced), and about the idea that the sentence is a projection of the complementiser (CP) (and that,

by the same token the noun phrase might be headed by the determiner, though the DP hypothesis is not actually embraced: "The issue of whether D or N heads the 'noun phrase' is a controversial one in modern linguistics", 99). But while it develops the structure of the sentence as a CP, it leaves the structure between C and VP underdeveloped, resurrecting the old S–node on p. 131. And while it introduces X–bar structure on p. 140, the discussion there (which is based on an empirical argument which evaporates if the DP hypothesis hinted at on p. 99 is espoused) is entirely confined to the noun phrase, without any mention being made of the X–bar theoretic structure of other phrases.

Organisation-wise, the discussion of syntactic structure leaves something to be desired, too. With phrases already introduced, labelled bracketing continues at first to be confined just to the head of the phrase; and when tree structures are first presented (on p. 122, long after bracketed strings were introduced; the fact that tree diagrams are equivalent to bracketed structures is mentioned only in passing, in the summary at the end of the discussion), their branches at first receive no labels, the labels — which had long been familiar to the reader from the preceding discussion — popping up again on p. 126. In general, the book's exposition in the domain of phrase structure could be much improved, reducing the partial repetitions and potential sources for confusion which the text is riddled with in its present form.

These are, ultimately, minor wrinkles which can easily be ironed out in a revised reprint of the book. The same is true for the fact that, though the book's prose is generally unbiased towards any particular theoretical approach, there are occasional lapses — most notably when it comes to displacement, which is referred to on several occasions with the aid of the generative 'movement' metaphor without 'movement' being introduced as a theoretical notion. Equally easy to remedy is the sometimes annoying habit of interweaving a whole series of illustrations with the running text, which does not make it easy to retrieve examples while searching back and forth. But otherwise, the book really leaves very little to be desired on the formal side of things. The book is admirably flawless in that department, featuring virtually no typos or other imperfections — the spontaneous use of "different to" on p. 64 is (intentionally?) funny in the light of the remark made on p. 2 about prescriptive grammars, which "might tell you not to say *different than* or *different to*".

Understanding syntax is an absolute pleasure to read, thanks to its casual, down-to-earth style. It is user-friendly and accessible, and takes its readers seriously — with one curious exception, in the discussion of dominance on p. 128, where Tallerman warns her readers not to be "fooled by the fact that [a node] is drawn higher up in the tree": being drawn higher and dominating are not the same thing, mind you! Here I believe she underestimates her readership — I have taught the introduction to syntax at various levels in a variety of academic contexts, but I have never once come across a single student who was "fooled" this way. In the general case, though, the book smartly invites its readers to think along by pausing every once in a while and asking them questions (which receive immediate answers in the text that follows), and at the same time also gives them very useful pointers and hints — like instructing them how to tackle examples from other languages ("start at the bottom and work upwards, reading the translation first, then examining the gloss, then looking at the original", 14–15), presenting them with an apt characterisation of a specifier as "an adjunct that has a fixed position within the phrase" (99), and telling them explicitly that '[t]here is absolutely *no* rule of 'once a constituent, always a constituent'" (118), with reference to the pair *The students wondered how simple textbooks could be obtained* and *The students wondered how simple textbooks could be.*

Most importantly, *Understanding syntax* succeeds in giving the reader a taste of the "awful

lot of syntax out there in the world" (208), as the author puts it in her conclusion, while at the same time putting the message across that, despite all this language variation, "the overwhelming homogeneity which exists between languages is far more impressive" (210). And almost *en passant*, the syntactic novice learns about such important things as lexical categories, semantic roles, phrase structure and syntactic processes (passive, antipassive, applicative, causative, *wh*-fronting, topicalisation), and gets a good feel of how to argue a point and how to motivate an analysis.

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Comparative syntax
by Ian Roberts
reviewed by Rint Sybesma

Comparative syntax, "a new introduction to the Principles and Parameters theory of syntax" (the blurb says), is a good text book. It consists of 5 chapters, an introduction, a glossary, a list of abbreviations (T, GEN), three indices (subject, author, language) and, of course, a bibliography. Each chapter closes off with a very helpful section called "Further reading", a number of exercises and an "Appendix" which offers inquisitive students a chance to get slightly deeper into one of the subjects dealt with in the chapter (for example, the appendix to the chapter on Case and agreement is called "Formal relations", the one to the locality chapter is entitled: "Syntactic scope and logical scope"). In addition, towards the end of chapters 1–4, a section called "Parameters discussed in this chapter" presents an overview of the subjects discussed from a language variation perspective. This turns out to be very useful for the last chapter of the book, chapter 5, "Principles, parameters and language acquisition" (with 17 pages the shortest chapter in the book; no appendix, exercises or "Further reading"). Because Roberts has been introducing points of language variation explicitly as "parameters" throughout the book, he is able to discuss the issue of parameter setting in language acquisition in much more concrete terms than is the case in any other text book I have seen.

The core of *Comparative syntax* is made up of chapters 2–4 on the central subjects of mainstream theorizing: Case and agreement (chapter 2, 61 pages, not counting the appendix, the exercises and the "Further reading"), Binding (chapter 3, 53 pages) and Locality (chapter 4, 75 pages).

All three chapters present admirably comprehensive overviews not only of all the important issues relevant to the subject matter, but also of the most influential theories dealing with them. Impressively, Roberts generally manages to find the right middle road between giving a purely historical overview and dealing with things thematically.

To give an example, chapter three on Binding starts out from a descriptive overview of the differences and similarities between pronouns and anaphors in English, after which the notion of binding is introduced, stressing the relevance of c-command which had already been introduced in chapter 1. Roberts goes on to explain very patiently how to determine what the binding domain for an element is, not avoiding fundamental questions such as why tense or subjecthood would play a role in this matter. After Principles A and B have been put in place, we enter the domain of PRO, which quite automatically leads us to the other empty categories and Principle C. We learn everything about DP movement and *wh*-movement and the discussion of cross-over enables us to see why

the Binding theory really is a theory of A-binding. By this time, we have covered about 25 pages. The rest of the first part of the chapter deals with null subjects in languages like Italian and Chinese, closing off with the [± anaphor, ± pronoun] classification of both empty and non-empty elements. The remainder of the chapter on binding is devoted to two subjects. First, Roberts discusses long-distance anaphora, with examples from Icelandic and Chinese, exploring the possibilities of analyzing anaphors from a movement perspective, even in English. Secondly, he presents an excellent summary of Reinhart and Reuland's theory of reflexivity.

Similarly, chapter 4, "Locality", offers an overview of most issues relevant to the subject of locality and most theories trying to deal with them. After summarizing systematically all we have seen on the different types of movement in previous chapters (head, DP and *wh*), Roberts formulates the common factors as Move Alpha. After that, we are introduced to a number of islands, the notions of subjacency and successive cyclicity, the ECP and the Argument-Adjunct asymmetries (as well as the *that*-trace effect). After catching a glimpse of Kayne's connectedness, we immerse ourselves into Chomsky's Barriers, Rizzi's Relativized Minimality and, finally, Manzini's Locality.

A similar overview could be given for chapter 2, the issues and theories related to Case and agreement.

Evaluation

It is clear from the above that Roberts covers quite a lot of ground, and I am impressed by the way he does it. Here are a number of reasons why I think this is an attractive text book.

First, it is not only about English. Indeed, true to its title, it shows how certain insights are derived at by comparing different languages. (Although I must add that the comparative angle is not consistently chosen as a way to make progress; I guess that certain subjects lend themselves for a treatment in comparative terms more readily than others — word order vs. cross-over, for instance.)

The second attractive feature of this book is that it puts things in a historical perspective — certain problems have been with us for decades and several theories have been proposed to deal with them, none of them totally successful, and, most importantly, none of them coming out of nowhere: Roberts shows that new theories often capitalize on certain aspects of their predecessors. And that some of these theories are new does not necessarily mean that they will prove definitive. For example, Feature Checking, in chapter 2 ("Case and agreement"), is presented as just another, be it a rather novel, way of looking at certain phenomena.

Next, also in relation to the two previous points, the book very much reflects that the subject matter of the book is an enterprise in progress as-we-speak, lively and exciting. (The disadvantage is, of course, as often, that at some points the students are left behind in bewilderment, because **nothing** seems certain.)

In addition, the style of the book is informal and quite pleasant, with an occasional joke. (For instance, explaining the difference between abstract Case and morphological case, Roberts writes: "[W]e could be completely wrong about abstract Case (perish the thought!), ..." (p. 56).)

Finally, the book is quite difficult, but, after putting some effort in it, (some of) my students found working through the book rather rewarding.

Some drawbacks

Not everything is wonderful, though. I have some criticisms too, one quite fundamental — but I'll start with some lesser points of critique.

Above I praised the historical depth, but in some cases it leads to confusion on the part of the students. To give two examples: Roberts' overview of the Barriers framework is too long and too

detailed, and much of it is never referred to again; similarly, the summary of the reasoning behind the *LGB* PRO Theorem involves too many concepts and ideas that are not fully explained and not relevant elsewhere, that it does not really serve any useful purpose.

Secondly, in some respects the book is a bit unbalanced; in some cases Roberts squats down and is extremely patient, explaining every little step of the process, while in others he puts on his seven league boots and runs home, losing the student readers one after another along the way. For instance, Roberts spends a full two pages explaining the difference between morphological case and abstract Case, even going the extra mile of giving the full singular six case paradigm of the Latin *dominus*, while Manzini's very involved theory of locality is done in a mere eight pages: his overview of her "categorial indices" and "addresses", her way of dealing with weak and strong islands, her definitions of barrier and G-marking, her treatment of the *that*-trace effect and the way she unifies subjacency, antecedent-government and proper-head government leaves the poor student reader behind gasping for air.

Next, writing a text book, one obviously has to make choices. However, two pages on Control is a bit little. Hardly anything on *wh*-in-situ (or partial *wh*-movement, for that matter) in a book called *Comparative syntax* is also quite disappointing, I think. V-second also does not get very much attention. (But, I guess, in these things, some of it may just come down to taste.)

This point of missing subjects, however, brings me to the more fundamental drawback of this book, which can be introduced with the question: Who is this book for? The blurb on the back of the book says that it wants to "take students with a basic knowledge of syntax up to a point where they are able to read the primary literature and understand the latest theoretical developments." In the "Introduction", Roberts says that the "ideal background for this book would be the first four chapters of Ouhalla (1994)" (p. 8).

That is not very practical; curriculum-wise, it does not make very much sense to do phrase structure grammar, transformations and X-bar theory from Ouhalla's thorough and very basic introduction, and then, when the more difficult stuff comes up, switch to a higher gear and do binding, theta theory and everything else from Roberts. The result of Roberts' choice is that *Comparative syntax* lacks a chapter on the basics. So far I have not said anything about chapter 1 of the book, entitled "Categories and constituents". The reason is that it is baffling. In the first 21 pages, this chapter introduces phrase structure rules, X-bar-theory, the theory of lexical categories, functional categories **and** Kayne's LCA and the consequences for our ideas on word order typology! The following 15 pages run us, at an equally high speed, through Head-movement (HMC, minimal c-command!), CP, V-second phenomena in some Germanic languages, and the Split-Infl Hypothesis, including AgrO!

And a subject like The (T-) Model is not even talked about at all. (It is briefly mentioned on p. 99, in chapter 2.)

In my course, I had to provide for these introductory basics myself.

If the first chapter were to be rewritten and split into two, dealing with its subjects in a way the other subjects in the book are dealt with, *Comparative syntax* would be a very good high-level introduction into principles and parameters syntax.

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Going Romance 1998

Utrecht University, 10-12 December 1998
by *Josep Quer*

14th Comparative Germanic Syntax Workshop

Lund University, Sweden, 8-9 January 1999
by *Kleanthes K. Grohmann*

Going Romance 1998
by *Josep Quer*

The twelfth edition of Going Romance (Conference on Romance Languages) took place at Utrecht University, the Netherlands, between December 10 and 12, 1998. Most of the papers presented in the main session dealt with a great variety of syntactic and semantic issues in Romance Linguistics. They were generally situated in the broader generative grammar tradition, although other theoretical perspectives were also present.

The conference was opened by **Raffaela Zanuttini** (Georgetown University), who presented joint work with **Paul Portner** on the syntax and semantics of exclamatives, within a wider research project on clause types. They defended the view that the semantics of exclamatives can be reduced to that of interrogatives (roughly, a set of alternative propositions), but with a widening of the domain that is the result of the exclamative force. This allowed for an explanation of similarities that exclamative and interrogative sentences display at the C level. However, they also argued for the existence of an extra CP layer in the case of exclamatives on the basis of the evidence provided by Paduan (Nothern Italian dialect).

Three papers in the conference addressed different issues related to negation. **Adam Przepiórkowski** (Universität Tübingen) offered an analysis in Situation Semantics of the ambiguity of preverbal Italian *n*-words in interrogative sentences which was closely tied to the ambiguity of negation between a propositional ('it is not the case that...') and an eventuality reading ('it is the case that not...'). In his account, preverbal *n*-words always express negation, but in questions they can be interpreted non-negatively as a consequence of the fact that the negated eventuality reading is indistinguishable from the propositional one in semantic (though not in pragmatic) terms. This allowed him to dispense with standard ECP accounts of the asymmetries between pre- and postverbal *n*-word licensing.

Hans Georg Obenauer (CNRS, Paris), developing Kayne's (1998) ideas about movement of negative phrases in English, proposed that French object *personne* moves overtly as a consequence of its quantificational force. He based his claim on linear order evidence provided by lower adverbs like *bien* when co-occurring with *personne*. Cases where *bien* appears to the left of the negative object are explained by movement of *bien* (or a projection containing it). The different distribution of Italian *nessuno* was argued to follow from its non-quantificational status. In other Romance varieties showing French-type negation negative objects were suggested to have the same type of overt movement as object *personne*.

Caterina Donati (UHSR/Università di Urbino) offered an account of expletive negation in Italian comparatives that rejected previous analyses defending the presence of real negation in such cases. On the basis of evidence provided by *less*-comparatives, the scopal and movement properties of *than*-clauses and the morphology of expletive negation, she argues that expletive negation cannot be viewed as arising from underlying negation. Rather, it constitues the scope marker of the focus operator that is postulated in comparatives, as the comparison construction has strong focus properties.

Topics in the syntax and semantics of DPs constituted the focus of several talks. **Carmen Dobrovie-Sorin** (URA 1028-CNRS, Université Paris 7) presented a new approach to Romanian (and Saxon) genitives and to Hebrew Construct State

Nominals. As opposed to genitives introduced by a particle, structural genitive is argued to be assigned to SpecDP, which can be to the right of N, but only if D is filled with the definite article or if D is empty. The head N is assumed to denote a function that applies to the individual denoted by the DP in SpecDP and yields another individual, the one denoted by the whole possessive DP. The (in)definiteness spread which has been proposed for the Construct State in Hebrew and which Dobrovie-Sorin explicitly rejects is made to follow from this functional analysis in those cases where the genitives are definite. However, for indefinite genitives of Construct State, the [–def] feature is not inherited from the genitive, but is arguably contributed by a null indefinite article that is merged in the D position of the head N.

Alexandra Cornilescu (University of Bucharest) presented evidence from Romanian against Grimshaw's (1990) claim that all nominalizations suppress the external argument of the corresponding a-structure of the verb. She showed that the subject of an event-nominal of the supin type, as opposed to the infinitival type, is not a modifier but an argument. The difference is made to follow from the aspectual type of the nominalizing suffix: while the infinitival suffix is [+Telic], the supine one is [–Telic]. Given that only one Genitive argument can be projected in Romanian nominalizations, the object must be present as an event measure with the infinitive, but in the supin nominalization it is sufficient to lexicalize the subject in order to identify the activity. Crucially, it is assumed that the [+Telic] feature of the event nominal entails the projection of a lexical object DP, as its checking is contingent on the checking of the structural Genitive Case.

María Luisa Rivero (University of Ottawa) examined the crosslinguistic patterns of impersonal *se* in Romance and Slavic languages. In order to account for all the uses of *se*, she proposed analyzing it as an ambiguous pronominal anaphor that has no reflexivizing function and is not referentially independent. The simplex anaphor *se* was suggested to head a DP in all cases, while the empty head N would be open to different specifications: a non-relational/one-argument N with arbitrary/human features (impersonal *se*), a relational/two-argument N coupled to an identity relation (reflexive *se*) or a relational/two-argument N coupled to a disjoint (non-identity) relation (reciprocal *se*). The impersonal uses (in the Romance and Slavic varieties that have it) and the null object impersonal use (present in Slavic and absent in Romance) are viewed as the consequence of the subject or object orientation of the pronominal anaphor, which is executed by movement to subject or object related positions that remedy the feature deficiency of *se*.

Judy B. Bernstein (Syracuse University) concentrated on the derivation of certain word order patterns in Romance DPs where focused demonstratives, demonstrative reinforcers, possessives and some quantifiers appear in the right periphery of the DP (Sp. *el libro de matemáticas ese*). Drawing on the parallelism between verbal and nominal projections, she argued that these orders involve movement (leftward "scrambling") of the whole projection containing the head N, adjectives and complements across the element ultimately occupying the right periphery. As a consequence of this, the rightmost element receives focus, which must be seen as the trigger for this just apparently optional movement. By contrast, the non-neutral intermediate positions of demonstratives and possessives (*el libro ese de matemáticas*) was argued to be derived by N-raising.

Word order issues were discussed extensively in two papers, which independently argued for remnant

movement in Spanish. **Jon Franco** (Universidad de Deusto) suggested an analysis of word order possibilities in Spanish small clauses that appeals to leftward remnant movement. Unlike French or Italian, the small clause predicate can appear adjacent to the main verb, but the author argues that the incorporation and the extraposition accounts of this pattern are untenable mainly on empirical grounds. The order under examination would be the result of moving the small clause projection (AGR$_{Adj}$P) overtly to the Spec of an inner TopicP (located below AgrSP/TP) after the DP subject of the SC has vacated it and moved to SpecAgrOP. Consequently, apparent free word order in Spanish would follow from this inner topicalization strategy.

Reineke Bok-Bennema (Groningen University) presented an analysis of finite verb movement in Spanish that crucially appeals to remnant movement of the VP to SpecI. This allows for an explanation of the linearization of V with respect to different sorts of adverbials, as well as the fact that the auxiliary pied pipes the participle in the perfect without recourse to incorporation. The sequences where an adverbial intervenes between the auxiliary and the participle are argued to be cases of stylistic split deriving from movement of V out of the remnant VP in SpecI to a higher I′ head. The proposal implies that object stranding reduces to movement of the object to an object licensing position prior to VP movement to SpecI. Light complements are shown to be unable to vacate the VP before it moves, so they get pied piped.

Sequence of tense phenomena were treated in two different papers. **Alessandra Giorgi** (Università di Bergamo) and **Fabio Pianesi** (IRST, Trento) devoted their talk to the peculiar temporal dependencies of the complements of fictional predicates like *sognare* 'dream' in Italian. Unlike with propositional attitude predicates, the embedded events of *dream* can be temporally unrelated with respect to the matrix one. This property shows up most noticeably with the imperfective past, which also appears in other contexts not requiring temporal anchoring. Other indicative tenses are possible as well, but they give rise to "prophetic readings" about actual states of affairs. They argue that fictional predicates do not establish a relationship between a subject and the content of the subordinate clause, and in this sense are different from ordinary propositional attitude verbs.

James Higginbotham (University of Oxford) proposed that sequence of tense is obligatory in (Italian and English) complement clauses because the tense information in Infl must be copied onto C and anaphora is obligatory. When [−past] moves from Infl to C, both copies get interpreted and a double access reading arises: the [−past] tense is interpreted twice, anaphorically in C and non-anaphorically in the embedded Infl. If it is [+past] that moves, only the copy in C is interpreted. For double-access cases, it must be assumed that [−past] can be anaphoric to [+past] only from C. Additionally, the [+past] morpheme must be taken as either expressing anteriority or triggering anaphora. Crucially, this kind of movement of Infl to C must be absent from relative clauses.

The interpretation of mood contrasts was addressed by **Josep Quer** (Universitat Autònoma de Barcelona), who defended the hypothesis that mood marking (indicative/subjunctive oppositions) overtly conveys information about the models where propositions are interpreted. Specifically, he argued that mood shift signals a change in the model of evaluation. This is clearly observed in the domain of clausal complementation: as opposed to weak intensional predicates, which introduce epistemic(-like)/veridical models, strong intensional ones take clauses in the subjunctive, as they contribute non-veridical models. Mood shift is also triggered by the model shift that derives from a change in the individual anchor of a model. The same kind of explanation extends to mood contrasts in relative clauses and adjunct clauses like concessives.

In their talk, **Ricardo Etxepare** (LEHIA) and **Kleanthes K. Grohmann** (University of Maryland) proposed that root infinitives in (adult) Spanish are to be analyzed as containing an affixal null modal,

drawing a parallelism between these cases and subjunctive clauses. On the basis of distributional evidence (adverb placement, left dislocation, etc.), it was argued that the complex head formed by the null modal and the infinitival raises overtly to C. The absence of root infinitivals in child Spanish was argued to follow from the fact that subjunctive morphology, which is acquired very early on, blocks them. Certain differences with English and German root infinitivals were also discussed.

Jacques Lamarche (Université du Québec a Montréal) provided an explanation for transivity contrasts in French and English between verbs of Manner of Motion (*marcher* vs. *walk*) and Directed motion (*entrer* vs. *enter*), which analyzes them as following from the inflectional properties specific to each language. While in French rich subject agreement was suggested to block the identification of the Manner lexical constant by any other (potentially agentive) argument (*Marie marche* (*le chien*)), it was also argued to make a non-lexical Agent of a verb of Directed Motion close enough to the Theme in order to establish a substantive link with the affected entity (*Marie entre la voiture*). By way of contrast, the lexical Manner constant of English *walk* provides a link between the non-lexical Agent and the Theme (*Mary walks the dog*). However, the Interior constant of *enter* relates to the Goal rather than the Theme, and such a link is therefore unavailable (*Mary enters the car*). Lack of (syntactic) agreement does not interfere with these configurations in English.

Jenny Doetjes (HIL/Leiden University) offered a detailed analysis of the notion of frequency as instantiated in French. She proposed decomposing frequency into two subcomponents: relative quantity (RQ) and iteration (IT). Frequency expressions will then instantiate different specifications for such values: (a) a frequency adverb like *souvent* is [+RQ], [+IT]; (b) a degree adverb like *beaucoup* is [+RQ], [−IT], and (c) an iterative adverbial like *trois fois* is [−RQ], [+IT]. Such distinctions are shown to be sustained by the evidence that different contexts provide as to the restrictions in the readings they impose. Habitual contexts accommodate (a) and (b) because they require [+RQ] readings. Relational readings are only compatible with (a), as they require both [+RQ] and [+IT]. Finally, (a) and (c) can have scope over indefinites, because they are [+IT].

The conference was followed by a one-day workshop on the structure and acquisition of the lexicon.

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14th Comparative Germanic Syntax Workshop
by *Kleanthes K. Grohmann*

If you have never been to Lund, go there! It is a beautiful town in Sweden's southwest whose Department of Nordic Languages hosted this year's CGSW. A tightly packed programme turned out to be a great success not only due to the high level of performances by the speakers but also by the organizers. The idyllic atmosphere all around certainly contributed, and so did a dinner party that can hardly be beaten. I will begin this report with the three invited talks before briefly considering the other talks in the order they were presented.

Liliane Haegeman (U of Geneva) considered "Negation in West Flemish and the derivation of SOV word order." On the empirical evidence of IPP-constructions in West Flemish, Haegeman proposed a generalized V-to-I movement mechanism within an antisymmetric approach to Germanic clause structure: the interplay of sentential negation, functional heads in the middle field and remnant category movement could lead to an analysis of West Germanic clause structure that maintains the antisymmetric, head-initial approach on the one hand (Kayne 1994 and much follow-up work) and generalized V-to-I movement on the other. **Ken Safir** (Rutgers U) talked about "Derived complementarity in the pattern of anaphora" which argued for exactly that: a

derivation of the complementarity that (potentially) dependent elements exhibit, not a consequence of binding theoretical stipulations. As such, Safir decomposes Principle B into three different parts which interact to reproduce Principle B without strict universality due to cross-linguistic differences regarding morphological inventories. Picking up Reinhart & Reuland's (1993) splitting of Principle B into a large domain expressing non-coargument relations and a smaller one for coargument reflexives, he rejects their Reflexive Interpretation Principle and replaces it by the Form to Interpretation Principle which, moreover, replaces the original obviative principle, giving it more power. Safir then considers in some depth different types of reflexives and reciprocals among the Germanic languages. Finally, **Jan-Wouter Zwart** (Groningen University) combined "Bare argument structure and the syntax of middles." He basically argued that primitive relations of predication are licensed in unambiguous phrase structures (within a view of argument structure à la Hale & Keyser 1998). This analysis takes care of the debate whether subjects of middles have raised from their base-position, generated as the internal argument of the middle verb, or not. Zwart starts off by considering non-argument middles for which he develops an analysis that involves base-generation of the adverb in the internal argument position of the middle verb. He then proposes that argument middles are in fact non-argument middles, at least in Dutch. Thus syntactically raising internal arguments is superfluous, and so is a flexible relation between lexical conceptual structure and syntactic structure. Empirical support for the collapse of argument and non-argument middles comes from certain properties common to both, such as aspectual, complementation, diathesis and selection restrictions.

Thórhallur Eythórsson (U of Manchester) talked about "VP order and clausal architecture in diachrony." Challenging the V2-approach to Old English that enjoyed much attention in recent years, he argued for IP-internal V-movement independent of V2. The evidence comes from the very early stages of Germanic and takes diachronic developments into account. These data also shed light on the issue of VP-internal ordering of arguments. **Thorbjörg Hróarsdóttir** (U of Tromsø) proposed an interesting anaylsis of "VP-preposing in Icelandic." In a Kaynean antisymmetric model, differences between the Germanic OV- and VO-languages might be accounted for by obligatory argument raising in the former (à la Zwart 1997 and related work) or by some sort of verbal movement in the latter (Hinterhölzl 1998, Kayne 1998 and others). Hróarsdóttir adopts the latter approach, arguing that V-movement takes place in VO-languages, and proposes displacement of the remnant VP across complements. **Shalom Zuckerman** (Groningen) considered "The underlying structure of embedded participles in Dutch" and argued that the underlying order should be auxiliary-particle; the data come from markedness/preference judgements across dialects on the one hand, and from child language on the other. Structurally, Zuckerman assumes an approach where the participle moves obligatorily to the left of the auxiliary, while the auxiliary may then undergo optional raising, thus deriving either order. He then considers various alternatives to implement optionality of syntactic operations into the minimalist program.

Ute Bohnacker (Lund U) talked about "Root infinitives in bilingual child Icelandic-English" and suggests to take RIs are not defective constructions or syntactic misanalyses on the part of the child but rather an independent construction type made available in the grammar (of the child). The subject of this study, a child of Icelandic parents growing up in England, exhibits an extremely extended period of RI-use. This long RI-stage and the nature of her language provide further evidence for Bohnacker's view of RIs. Tying in the phenomenon with various aspects of verbal syntax, Bohnacker concludes that the late RIs in the child's Icelandic production are novel imperatives with a preverbal English-like subject. "Optimal strategies for identifying D" were **Øystein Alexander Vangsnes'** (U of Bergen) concern, evolving from the puzzle that pre-adjectival articles in definite NPs pose, namely that they are obligatory in Mainland Scandinavian and Faroese, but not in Icelandic. A look at the

data reveals that related questions involve AP/NP-movement in Icelandic definite NPs (versus demonstrative NPs), adjectival incorporation in Northern Swedish dialects and a correlation between lack of agreement and co-occurrence of pre-nominal possessives and definite articles. Vangsnes proposes that all four cases are optimal solutions in the respective grammars with respect to meeting the requirement that D be identified by an appropriate element. He then considers the most appropriate element in considerable details, concluding that the optimality hinges on differing lexical properties of classes of constituents, defined either by lexical semantics or morphology across the dialects.

Peter Svenonius (U of Tromsø) considered "The expression of negation in Germanic" languages and especially the typological differences yielded by different settings of two parameters: whether or not to move negative XPs to the left yields languages exhibiting Negative Concord (West Flemish versus dialects of English) and Double Negation (German, Dutch and Scandinavian versus Standard English). Pointing to some problems of a strict adherence to the Neg Criterion (Haegeman & Zanuttini 1991), Svenonius replaces it by two separate clauses which force (i) the Neg-head to be licensed by an negative expression in its checking domain (universal) and (ii) each negative expression to be licensed in the checking domain of the Neg-head (parameterized). **Jóhannes Gísli Jónsson** (U of Iceland) spoke on "Case absorption with *st*-verbs in Icelandic" where the subjects may bear thematic but not idiosyncratic Case (cf. Yip, Maling & Jackendoff 1987). A number of correlations can be found in the behaviour of these verbs with respect to nominative and dative subjects (medio-passives, reflexive/reciprocal meaning, inchoative meaning) which lead Jónsson to consider Dative Substitution (or "Dative Sickness" as can be read in Icelandic newspapers): there exists a strong tendency to replace accusative by dative on Experiencer subjects, or to replace either by nominative if the subject is Patient or Theme (Nominative Substitution). Other Case patterns in Icelandic further support the Case-distinction that he argues for (thematic versus idiosyncratic). And **Cedric Boeckx** (U of Connecticut) ended the first day with "Quirky agreement in Icelandic, English, and elsewhere" in which he argued for a proper understanding of the fact that only partial agreement (number, not person) exists between a verb and a nominative element when a quirky subject is present, resulting in a proper understanding of Quirky Case and more tentatively, inherent Case. Boeckx adopts Bonet's (1994) Person-Case Constraint under which object agreement is limited to third person if dative agreement takes place. This accounts for the above mentioned limited agreement pattern found. Quirky subjects, on the other hand, fully agree (if only rather abstractly) with the verb and should thus be assigned full subject status. One aspect of his approach is that agreement and Case are only one feature (see George & Kornfilt 1981), as also recently endorsed by Chomsky (1998). As such, Boeckx can easily do without agreement projections.

Ursel Luhde (U of Wales) started the first section of the second day after Ken Safir's talk about "Aspectual features and argument structure" in which she extends recent work on aspectual features (e.g. Arad 1996): three aspectual features — OR 'Originator' (the prototypical agent), EM 'Event Measurer' (traditional theme/patient) and DEL 'Delimiter' indicating the endpoint of the event) — are associated with three verbal heads in a VP-shell, As such, theta-roles are not primitives in the grammar but derived configurationally. Empirically, this approach intends to not only account for alternative auxiliary selection for verbs of motion (across Germanic and Romance languages, for example), but also derive the observations that a resultative phrase can only be predicated of the direct object, a subject of an ergative verb is the underlying object and others. **Elin Bech and Tor Åfarli** (U of Trondheim) considered "The syntax of two types of object experiencer verb in Germanic," namely the difference of *irritate*-type verbs (denoting feelings or emotions) and *appear*-type verbs (denoting judgements or acts/states of imagining) where only the former verbs assign an external theta-role; this analysis accounts for the

differences in passive constructions or topicalization. The data from Norwegian are compared and contrasted with German and Old Norse correlates; these two types do not correspond to any of the groups of psych-verbs in Italian as described in Belletti and Rizzi 1988. **Anna-Lena Wiklund** (U of Umeå) investigated "Morphosyntactic parasites and the path to PF" concentrating on supine constructions in Swedish which are parasitic in that they only appear in the context of an adjacent superordinate supine verb. This is analysed as copying before the word gets assigned PF-features, as the phonological form of the parasitic supine is identical to its non-parasitic counterpart. On the other hand, this copying operation must follow LF-interpretation because the parasitic is interpreted as an infinitive (not as a participle). Wiklund also considers underspecification in general, proposing that LF only acknowledges positively specified values (hence the possible interpretation of supines as infinitives). PF-realization of underspecified verbs depends largely on language-specific "Vocabulary" (taken to be a raw lexicon). The entire approach is an extension of Distributed Morphology (Halle & Marantz 1993), much in the spirit of Zwart (1997), which furthermore splits the Lexicon and insertion into explicit components of Vocabulary and Morphology.

Mark de Vries (U of Amsterdam) proposed to analyse "Extraposition of relative clauses as specifying coordination." He capitalized on 11 properties of extraposed relative clauses that apply exactly alike to instances of specifying coordination. Arguing against an analysis of extraposition as rightward movement, adjunction or stranding, de Vries favours a coordinated structure to underlie these cases where a deletion operation gets rid of the relative clause in the lower conjunct. He also tackles arising problems such as the loss of a promotion analysis of relative clauses, unlimited coordination of unequal categories, the absence of syntactic dependencies between the first and second associate and the fact that there is no "base position" needed for binding. As a result the underlying coordinate structure is identical to that found in specifying coordination and/or asyndetic coordination. **Kleanthes Grohmann** (U of Maryland) considered "Multiple interrogatives, discourse restrictions and quantifier interaction." He once again (see the SCIL 10-report in *Glot International* **3.9/10** and also Grohmann 1998) presented the observation that questions with two *wh*-expressions in German underlie "Discourse-Restricted Quantification" according to which a possible set of referents must have been established in the context prior to asking which he still considers evidence that both *wh*-elements must move overtly into a position in which this special type of discourse-linking can be licensed; TopP in the C-domain is the candidate suggested, arguing explicitly for *wh*-topics. Empirical evidence comes from the "Beck-effects" (Beck 1996) which can be generalized into a ban on topicalization of non-topicalizable material: increasing quantifiers may intervene between the two *wh*-elements, decreasing quantifiers may only follow both. The extension to earlier proposals concern a principled justification of DRQ and possible parametrization which ties in syntactic clause types with semantic sentence types. As such, all derivations must continue at LF where the force-expressing C-head (cf. "ForceP" in Rizzi 1997) specifies a construction as a declarative or interrogative, for example; in these cases, the lower *wh*-topic raises to SpecCP at LF to unambiguously categorize the multiple *wh*-question as such (a sub-type of interrogatives).

Kersti Börjars (U of Manchester)**, Kate Burridge** (La Trobe U, absent) **and Sue Spence** (U of Manchester) found "*For...to*-constructions in varieties of German and English: Consequences for clause structure" which are particularly interesting as the German *zu* or *ze* 'to' is part of the inflectional system, unlike *fer* or *fir* (found in some German dialects) which under standard assumptions should correlate to the English complementizer 'for' in these constructions. However, evidence from German "dialects" suggest complications of the matter: on the one hand, both *fir* and *ze* are often optional in Luxembourgish; on the other hand, *zu* is lost completely in Pennsylvania German. There seems to be good evidence that *fer* in these variants is an inflectional

element, much on a par with dialectal use of 'for' in English (Belfast, Ottawa), stemming from raising, control, negation and ECM-constructions. The final talk, "Prepositions as bare infinitival complementizers in some Westgermanic languages," was delivered by **Reimar Müller** (Tübingen U) who turned the traditional derivation of (many) complementizers in the Germanic languages from prepositions around. Rather than looking at *for...to*-type constructions (as in the previous talk), Müller considered complementizers in Westgermanic dialects (synchronic and diachronic) which select bare infinitival complements. Müller analyses these constructions as CPs with a bare infinitive arguing that historically these CPs appear independently in Frisian and Swabian. He employs a very careful study of data from these two dialects in their history to show infinitival grammaticalization accounting for present-day verbal, adjectival, prepositional and sentential *to*-infinitives (Frisian) and prepositional adjuncts, purposive constructions and nominal infinitives (found in older stages of Swabian).

I'm sure I can talk for all participants expressing my thanks to the Lundian linguists for a very successful workshop which was desperately needed. In this respect let me note that the number of submitted abstracts was fortunately much higher than the last time (see the report in *Glot International* **3.1**) but there could have been more. The community can only hope for ample submission of abstracts for the next workshop which will be held in Groningen to ensure another CGSW of high quality.

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LINGUISTIC E-CONFERENCES

by *Daniel Seely*

Introduction

The LINGUIST Network (http://linguistlist.org/) held its first on-line conference, "Geometric and Thematic Structure in Binding" in the fall of 1996. By all accounts this was a successful endeavor, and we hope that there will be many future conferences. This first conference taught us a number of lessons that may be of some value in the planning and implementation of future electronic gatherings. We review some of our experience with online conferencing in these notes.

Why on-line conferences

One of the goals of the conference was to take advantage of the potential of the Internet to encourage scholarly interchange. Electronic conferences have at least 3 potential advantages. One of these was obvious from the first, but the other two were discovered in the course of the conference.

First, the potential audience of linguists who can "attend" an electronic conference is much larger than that for a traditional conference. The medium allows linguists to be actively involved wherever they may be, regardless of financial, geographical or political constraints. As a result, nearly fifty countries were represented at this meeting. There were also some 525 subscribers, a very impressive number given the very specific focus of the conference (and this does not count the number of researchers who went directly to the conference Web Site but who where not official subscribers).

Second, the medium offers ways to overcome or minimize some disciplinary constraints. Many of the "attendees" subscribed in order to access up-to-the-minute research in a subdiscipline outside their own, research that they would not normally read. The hypertext format allowed us to provide ancillary information about the presenters and the theoretical context of the papers. The conference organizer established hyperlinks to relevant home-pages, to bibliographic information about cited works, and to definitions of key terminology. Such information, we hope, enriched the conference for everyone, but it seems to have been especially useful to non-specialists.

Third, on-line conferences allow the immediate and permanent archiving of the papers presented, and of the commentary as well. As one of the participants mentioned, this makes the conference proceedings a useful teaching tool: he pointed out that teachers can ask students to read and comment on the papers, then later compare their own comments to the archived discussion. The papers and discussion are, of course, also available to scholars who want to consider the papers more carefully than a traditional conference allows.

Basic structure of the conference

The organization of the conference was quite similar to a regular one in some respects. For example, a call for abstracts was made, and the usual procedure for reviewing and accepting abstracts was followed. One salient difference was that all correspondence — including submission of abstracts and papers — was electronic. In fact, this meeting did not require a single sheet of paper. Unlike most linguistic conferences, however, the authors of the successful abstracts were asked to provide a finished version of their papers some time before the conference took place. These papers were put on the Web, as well as sent out via e-mail to the "attendees", all of whom were put on a special e-mail list called "linconf". Discussion was carried out by e-mail, but all comments were archived and immediately translated into hypertext format so that they could also be made available on the Web.

Because the electronic medium requires extra reading and discussion time, and because the participants were from many different time zones, this conference lasted for three weeks.

To allow thoughtful consideration of the work presented, the conference was divided into three sessions each with three papers, roughly one session per week; a keynote address by Prof. Howard Lasnik brought the total number of presentations to ten. The original idea was to make all of the three papers of a session available at the beginning of the week, have a two-day reading period, and then open up the floor for open discussion, with the guidance of a moderator, for the rest of the week. At the end of the conference, there would then be discussion of all conference papers. As we will see below, however, in actual practice, more time was needed for both reading and discussion.

The linguistic theme of the conference was narrowly focused in order that the meeting be of manageable size and scope; and, furthermore, the primary conference organizer has some expertise in binding theory and it seemed useful to select a topic that we knew fairly well — indeed, this was important for everything from establishing the review board to editing papers for final presentation.

In the interest of space, the specifics of the linguistic theme won't be reviewed here, but all details are available at LINGUIST sites, e.g.:

http://linguistlist.org/linconf/
http://www.emich.edu/~linguist/linconf/
http://www.sfs.nphil.uni-tuebingen.de/linguist/linconf
http://www.philol.msu.ru/linguist/linconf/

Subscriber comments

At the end of the meeting, we encouraged comments from subscribers in order to better determine which components of the conference worked and which didn't. Some thirty subscribers wrote in and their comments and suggestions proved valuable. A summary follows.

On the positive side, comments can be divided up into those that apply to on-line conferences in general, and those relevant to this meeting in particular. Common general themes were:

- On-line conferencing is a good idea and should be continued.
- Such conferences do save money and time.
- Because there is more time to read and digest complex material, questions/comments and responses can be more thoughtful than at a regular conference.

Comments specific to this first meeting include:

- That it was well-organized.
- Papers and comments were of good quality.
- It was a good opportunity for non-specialists to get exposure to some of the latest developments in generative syntax; exposure that might not be practical otherwise.

As for the negative side, the central generalization was this:

- A regular conference is more focused in the sense that attendees do not have classes and the other normal responsibilities of the profession for the duration (usually 2 or 3 days) of the meeting. This means that conferees can concentrate entirely on the conference. Because an on-line meeting must take place over a substantially longer period of time, however, such focus is not possible. This makes reading all the papers and comments potentially difficult.

Representative comments on this point include:

- I would have participated more if I had time to read everything. The disadvantage of an on-line conference is that life does not stop during the conference, as it does for a real conference that you travel to.

There were a number of interesting suggestions for future meetings. One was to have more information available about subscribers so that everyone could keep better track of who was commenting. Another is that meetings be kept open such that people could make comments on papers for a longer period of time.

Conclusions

Over all, we think it clear that this first meeting was a success and we hope there will be many more such meetings in the future. One conference currently under development is on Endangered Languages. This conference will serve as a starting point for a larger project that the moderators of LINGUIST (Anthony Aristar, Helen Aristar-Dry, and Andrew Carnie) have in mind. LINGUIST would like to serve as a central repository for electronic grammars, dictionaries, and corpora. In particular, LINGUIST would like to focus primarily on endangered and minority languages. The conference would serve as a starting point in that endeavour. And it may have a special session on electronic methods & standardizations for grammatical information, a session on the role of grammars in language preservation, and sessions on language reports (similar to, but hopefully not in competition with, the endangered sessions at the LSA annual meeting). This conference would be scheduled for summer 1999.

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