THE LEXICON-SYNTAX INTERFACE

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1. Introduction

The past ten years have seen a rapid development in the study of the lexicon. The central concern of the lexical study has been reorganization or decomposition of the lexicon: to eliminate the redundancy of the component by consigning morphological operations to syntax (Baker (1988), Lieber (1992)) and, furthermore, to link this slimmed lexicon accurately and elegantly to other components, in particular, the syntactic component (Halle and Marantz (1994)). One of the aims of Emonds (2000) is to put forward a number of unique and stimulating proposals on such reorganization of the lexicon and its relation to syntax. Another aim of the book is to make a useful concrete proposal about how the choice of a complement is implemented. The complement-choice presents a challenge for linguistic theory: to develop a theory that succinctly describes co-occurrence relations between a head and its complements. Three ways of complement-selection have been proposed in syntactic literature (arranged in chronological order): (i) by means of specified subcategorization ("c-selection," in earlier works on generative grammar), (ii) on the basis of specified θ-roles ("s-selection," Chomsky

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(1986)), and (iii) by using the semantic classification of a head and its link to specified subcategorization (Jackendoff (1990)). These proposals have also been applied to head-complement structure within a word. Going against the stream of time (in a sense), the author sets out to defend the classical c-selection by providing a range of evidence to show that lexical subcategorization features determine all syntactic and morphological head-complement combinations. Thus the lexical reorganization and c-selection form a dual focal point for the book under review.

After introducing basic notions such as categories, features, and their projections and the grammatical organization that is assumed (Ch. 1), Emonds develops a theory of syntactic subcategorization (Ch. 2) and then extends the theory to morphological structures to give head-complement co-occurrence a unified account (Ch. 3). In Chapters 4 and 5, the author classifies and illustrates ways in which bound morphemes are inserted at different derivational levels; the main focus is nominalization (Ch. 4) and the formation of adjectival and verbal passive (Ch. 5). Chapters 6 and 7 are devoted to insertion of free morphemes; it is shown that syntactic flat structures originate in the insertional property of linking verbs and “light” verbs (Ch. 6) and that the insertional property of prepositions and the infinitive marker to brings about closer relations between similar syntactic constructions (Ch. 7). Chapter 8 offers a model of complementation in which possible complement patterns are restricted in a principled fashion. Finally, Emonds argues in Chapters 9 and 10 that an understood argument is best represented with a feature complex in syntax, but not lexically or in LF; syntactic representations of “null complement anaphora” and “null generic objects” are justified (Ch. 9), and understood external arguments such as null subjects of imperatives and implicit agents in passives are shown to have purely syntactic representations (Ch. 10).

The main purpose of this article is to offer a general overview of Emonds’ own account and raise a number of general questions. The article is organized as follows. After a sketch of Emonds’ grammatical framework (§ 2.1), we will focus our attention on three main themes of the book: (i) subcategorization (§ 2.2), (ii) multi-level insertion (§ 2.3), and (iii) word formation (§ 2.4), recapitulate the proposed mechanism involving each theme, and discuss some of its advantages and problems. Section 2.5 is devoted to substantial modification of the nominalization system discussed in § 2.3. Finally, Section 3 will present some brief
concluding remarks.

2. The Lexicon and Lexical Insertion

2.1. The Overview of Grammatical Organization

In this section, we will give a brief introduction to Emonds’ framework, making a careful comparison of its lexical component and a previous model of the lexicon. A widely accepted idea on the lexicon in the generative theories that range from the Standard theory to GB theory is well illustrated with Allen (1978). According to Allen (1978: 197), the organization of the lexicon and its relation to syntax may be sketched in (1).

(1)

The subcomponent of “underived words and stems” is a set of simple words such as wife, pretty, and assign. These words can be the inputs to word formation rules, which derive complex words like nonwife and pretty-ish from them. The set of the derivations is called the Conditional lexicon. Conditional lexicon items (e.g. assignment) readily acquire idiosyncratic meanings (‘homework’) and hence they are stored in the Permanent lexicon. Each item of subcomponents (a)–(c) is inserted into the relevant nodes of a phrase structure to make a D-structure.¹

¹ Unlike word formation, inflection takes place in syntax or PF.
tion that Emonds takes, which may be shown diagrammatically as follows (pp. 23–26, pp. 104–121):

(2)

The components of the lexicon, PF, and LF are syntactic interfaces and so they connect the syntactic component to the three encircled systems of mental faculties. The mental faculties are parts of “real world” and they engage in memorizing a variety of things including words, translating auditory patterns into motor patterns, or turning semantic materials into thought. Comparing (1) with (2), we notice three lexical characteristics of Emonds’ model. First, Emonds’ lexicon does not contain word formation rules and their outputs. Second, in his system the lexicon is divided into the two modules, Dictionary and Syntacticon. Dictionary is the list of the lexical items that contain lexical meanings or purely semantic features \( f \), while Syntacticon is a closed set of lexical items such as \textit{have}, \textit{thing}, and \textit{in} which only contain purely syntactic cognitive features \( F \). One may call the latter module a “grammatical lexicon.” And finally, lexical insertion can be implemented at three different levels—at D-structure, in syntax, or in PF—depending on the
type of a lexical item. In the following sections, paying particular
attention to the three major themes that is, bifurcation of the lexicon
and subcategorization, multi-level lexical insertion, and out-of-the-lexi-
con word formation, we will observe the author’s important arguments
and discuss their merits and defects.

2.2. The Lexical Bifurcation and Subcategorization

2.2.1. Outline

This section briefly describes the essence of Emonds’ lexical organi-
ization and subcategorization, elaborated in Chapters 1 and 2. A lexical
item is generally associated with five different kinds of information.
For example, the kinds of information encoded in the word rebuild are
(i) phonological information ([ri:ˈbild]), (ii) morphological information
(re+build), (iii) syntactic information ([+V]; [+DP, where the DP is
[−Animate] [+Concrete]), (iv) semantic information (‘to build again’),
and (v) pragmatic information (“figurative occurrence with a [+Abstract]
DP in the context he rebuilt her confidence after a setback”). The
majority of lexical items involve all of these kinds of information, in
particular, purely semantic information (feature f). The inventory of
these lexical items is called Dictionary. On the other hand, there exist
closed class items that use only syntactic information (feature F). The
set of these items is called Syntacticon.\(^2\) Syntaction items include not
only core or primary vocabulary such as be, do, have ((auxiliary) verb);
time, place, thing (noun); good, many, other (adjective); in, on, of
(preposition), but also inflectional and productive derivational mor-
phemes. As the title of the book indicates, the focus of Emonds’ inter-
est is on the unique syntactic behaviors of Syntacticon items.

Particularly important is the syntactic information of subcategoriza-
tion. It plays a role of specifying the range of sister constituents that a
lexical item takes and thus making an X-bar projection by combining a
head with its complements. All the co-occurrence relations between a
head (@) and its complements can be encoded in a generalized, single
form in (3).

\[
\text{3) } @, \text{X, F}_i, f_j, \text{+_F}_k (X=\text{category}) \quad \text{(p. 43)}
\]

\(^2\) Some of the Syntacticon items are inserted at D-structure by way of Dictionary
and others are directly inserted in syntax or PF, as will be seen in (10). Hence
phonological information is necessary at least for the latter items.
Five important points should be made clear here concerning the kinds and scope of the subcategorization frame. First, a subcategorization element should be an intrinsic cognitive syntactic feature F, but not a phrasal category. The subcategorization frames of *amuse*, *put*, and *disperse*, for example, are respectively +_ANIMATE, +_D'PATH, and +_PLURAL (p. 47). One may think that the use of F has the effects of both strict subcategorization and selectional restrictions in the Standard theory. Second, according to the Lexical interface principle, which states that the lexicon cannot mention phrases (p. 42), Fk has to do with a word category, but not a phrasal category. This enables us to conflate the X⁰ and XP structures, that is, capture the parallel combinatorial properties in a word and a phrase. Third, Emonds’ system extends the “depth” of subcategorization element; it permits as subcategorization features not only the features of the whole category but also those of its lexical head (“Generalized subcategorization,” p. 286). Given the Generalized subcategorization, the specification of *ask* in *you’re asking too much of them* is +_D’([ANIMATE, SOURCE]), where SOURCE is the feature of the PP (of them) percolated from its (empty) structural head and ANIMATE is the feature ascribed to the lexical head N (them) of the PP. The fourth point concerns the widening of the scope of sisterhood. Although a lexical item is subcategorized in terms of its sister-nodes, in [VP [V1 [V2 burn] [V, PAST Ø]] [DP papers]], for example, the lexical head burn and the DP papers are not sisters. So “Extended sisterhood” is needed, which ensures that when head X (V1) and its complement (DP) are in sister-relationship, the lexical head (V2) of X and the complement of X (DP) are also sisters (p. 129). It should be noted here that the subcategorization theory is weakened to a minimum; an element that is not strictly a sister of a head can participate in subcategorization only if (empty) “functional heads” such as P and inflectional suffix intervene between them. Finally, the subcategorization element Fk need not be overt. For example, a null complement anaphor can be assumed after a verb, as in “I wasn’t sure if the door had been locked. Unexpectedly, someone found out” (p. 389).

### 2.2.2. Appraisal

We think highly of Emonds’ enterprise in extracting a closed class of lexical items across the free/bound morpheme boundary and revealing their common syntactic properties. It is also noteworthy that the author
works out the simplest format of subcategorization to unify certain aspects of word and phrase structures and that he makes use of a complex of subcategorization features in order to fully integrate selectional restrictions into subcategorization and make a detailed subclassification of verbs. This represents a noticeable advance over the rather arbitrary-looking assemblage of subcategorization frames, and the book thus establishes a good foundation on which all the syntactic analyses of complement selection will rest.

However, there exist some problems with the “extended classical subcategorization” and issues for further investigation. The first problem is the one concerning the correlation between features and categories. A feature is canonically combined with a category in one-to-one correspondence: the features +ANIMATE and +PATH match well with DP and PP, respectively. But there exists a set of verbs that disregards such a canonical correspondence. Consider the following examples of verbs produced from nouns by conversion:

(4) a. He dusted the knees of his trousers. (SOURCE)
b. I’ll have to bill you for this appointment. (GOAL)
c. Someone tried to poison our dog’s food. (PATH)
d. The action replay begins with characters who’ll people the unfolding dreams. (LOCATIVE)

Although features like SOURCE, GOAL, PATH, and LOCATIVE are typically matched with PPs, they are actualized as DPs in (4). How does the present analysis fare with these cases? One way is to simply make the stipulation that SOURCE can be exceptionally realized as DP. But this would make the subcategorization theory too narrow in its coverage of the feature-category correlation. The other response to the question is that dust is subcategorized for DP and SOURCE as θ-role is assigned to the object DP by means of such general interpretive principles as discussed on pp. 56–74. But this approach is not plausible as it would produce the redundancy between subcategorization features and θ-roles. Closely related to this issue is another problem of subcategorization features: the definition of F is not clear. Terms like SOURCE themselves indicate the vagueness of the definition; typical names of θ-roles such as PATH, LOCATIVE, and SOURCE are used throughout the book as the F features of prepositions. The distinction between F features and θ-roles thus gets blurred. The “width” of subcategorization also poses a problem; there is a subcategorization element that cannot fit in the range of (extended) sisterhood. The examples in (5) below
show that the subcategorization frames of *treat, lay, and attribute* are respectively +D'A, +D'LOCATIVE and +D'SOURCE. In the examples in (6), the second subcategorization feature of each verb is marked morphologically with the word-internal prefix mis- (see the discussion of Morita (1997: 88–90)). This suggests that subcategorization in terms of sisterhood must be weakened.

(5)  
- a. He treated his employees *(badly).
- b. He laid his coat *(over a chair).
- c. He attributed his success *(to hard work).

(6)  
- a. He mistreated his employees.
- b. You do mislay things sometimes.
- c. He misattributed songs.

We turn now to two issues for further investigation. First, it is pointed out that verbs like *serve, help,* and *suffice* require their IP complements to contain transitive verbs, as in *artistic literature serves to reduce emotional conflicts* (Kajita (1967: 107–109), Lasnik (1986: 5–6)). Cases of this kind are captured simply within the extended subcategorization framework; the verbs concerned are assigned a subcategorization frame such as +[TRANSITIVE, 1], where TRANSITIVE is the feature of the lexical head verb (*reduce*). By contrast, Lasnik attempts to account for the transitivity restriction by means of a thematic requirement without extending the scope of subcategorization. A phenomenon like this is therefore the touchstone by which to test the extended subcategorization account.

The other point that may be raised relates to the modes of selection and the predictability of complements. Emonds emphasizes that the grammatical environment in which a lexical item, particularly a verb, occurs is specified in a purely syntactic way. There seems to be a problematic case, a case in which more specific semantic features f may be added to the grammatical environment, as in specification of ‘liquid’ in the DP object of *drink*. Yet cases of this kind, he argues, involve linguistic use or common sense rather than linguistic competence (pp. 43–44). On the other hand, various researchers take the opposite position: the environment that determines the distribution of a lexical item need not be specified syntactically. One view in this position is to eliminate syntactic specifications by the use of *θ*-roles and a principle of Canonical structural realization (CSR) (Chomsky (1986)). If the lexical entry of *put*, for example, specifies that *put* selects the *θ*-roles THEME and LOCATIVE, CSR derives the subcategorization frame
from this semantic property, with no need for specification of the subcategorization in the lexical entry. There are two undesirable aspects of this view, however. First, what used to be called \( \theta \)-roles are unrefined; there are many thematic relations that cannot be captured by the traditional \( \theta \)-roles (cf. Jackendoff (1990)). Second, this approach has difficulty in unifying the various subcategorization frames of a lexical item into a single form. Thus, the semantic approach cannot succinctly express a variety of complement patterns of \textit{find} exemplified in (7), whereas the subcategorization approach can achieve unification of the complement patterns, as shown in (8).

(7) a. John found Mary \{a pest / very ill / studying / in the garden\}. \((X=N, A, V, P)\)
b. John found good schools for his boy. \((X=P)\)
c. John found his boy good schools. \((X=D)\)
d. John found the lesson to be difficult.
e. John found that the lesson would be difficult.

(8) find, \(V, +\{D, (X)/[I, (SUBJUN)]\}\)  \hspace{1cm} \text{(p. 343)}

A more promising view of the semantic framework is to derive subcategorization frames from the semantic content that a lexical item contains. This involves a detailed examination of \(f\), which has not been made by Emonds. According to Jackendoff (1990), the semantic structure of \textit{put} is like the one indicated in the last line in (9). That is, \textit{put} means essentially 'cause something to go to a certain place,' with the 'something' and 'to a certain place' being supplemented by its complements.

(9) \[
\begin{array}{c}
\text{put} \\
V \\
\underline{\text{NP}}_j \text{ PP}_k \\
\{\text{Event CAUSE ([Thing]_i, [Event GO ([Thing]_j, [Path TO ([Place]_{(k)})])])}\} \\
\text{\hspace{1cm} (Jackendoff (1990: 80))}
\end{array}
\]

As found in (9), Jackendoff directly specifies the subcategorization frame in the verb's lexical entry. But if the frame \([+_\text{NP} \text{ PP}]\) is derived from the independently needed semantic structure, the frame need not be specified in the lexical entry, thereby obtaining a simplified lexicon.

One of the merits of Emonds' subcategorization system is the unification of lexical and phrasal categories; both the suffix \textit{-ness} and the verb
seem have the common frame +<A>. The combination of a suffix (head) and its base (complement) is thus a test case for the validity of the semantic approach; for example, a full inquiry should be made whether the frame +<A> of -ness is derivable from the semantics of -ness. Some important analyses have been proposed along this line, which may give some foothold for the semantic approach to intra-word head-complement combination (see, for example, Lieber (1998)). According as complement patterns are predicted from the meanings of heads (verbs or suffixes), the notion of subcategorization will not be a primitive, but a derived relation. The predictability of complements is clearly an important issue for the future development of lexical theory, but it is premature to assume that complement patterns are to be reduced to semantic structures.

2.3. Multi-Level Insertion

2.3.1. Outline

This section will show in a sketchy way three types of lexical insertion, described in Chapter 4. Emonds takes the position throughout that the lexical items should be inserted as late as possible, following economy conditions (pp. 349–350). Whether an item can be inserted later or not is fully determined by its feature composition. There are three levels of insertion, as shown schematically in (10) (p. 117).

![Diagram](#)

Lexical choices \( \{ l \left( S_i \right) \} \rightarrow \rightarrow \text{"Spell Out"} \rightarrow \rightarrow \text{PF} \left( S_i \right) \)

\[ \downarrow \]

\[ \text{LF} \left( S_i \right) \]

Lexical items with purely semantic features \( f \), i.e. Dictionary items and part of Syntacticon items, must be inserted before syntactic derivation

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3 The lexical notation “@, +<A>” means ‘@ occurs with A,’ with the ordering of @ and A determined by general parameters (p. 89).
(Deep lexicalization, p. 117), as indicated by arrow (4). By contrast, items without f are subject to “late insertion.” Such items additionally divide into two types: (i) those with features F, which are LF-interpreted, are inserted in the syntax prior Spell Out (arrow (5)), and (ii) those without F are inserted after Spell Out, during a phonological derivation (arrow (6)).

Classification of Syntacticon items in terms of the insertion levels is summarized as (11) (p. 121).

\begin{equation}
\text{(11)}
\end{equation}

<table>
<thead>
<tr>
<th>Insertion Level</th>
<th>Free Morphemes</th>
<th>Bound Morphemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to syntactic</td>
<td>grammatical words with special meanings</td>
<td>non-productive derivational morphology with</td>
</tr>
<tr>
<td>computation</td>
<td></td>
<td>special meanings</td>
</tr>
<tr>
<td>During syntactic</td>
<td>grammatical words with LF syntactic</td>
<td>productive derivational morphology</td>
</tr>
<tr>
<td>computation</td>
<td>features</td>
<td></td>
</tr>
<tr>
<td>During PF computation</td>
<td>“place-holders”</td>
<td>inflectional morphology</td>
</tr>
</tbody>
</table>

Let us give the examples of these six types of Syntacticon items. First, free/bound morphemes with specialized or additional meanings (f) and non-productive affixes are inserted at D-structure: do ‘suffice,’ transmission ‘the parts of a vehicle,’ and -ful. Linking verbs such as be, become, and get have unique grammatical behaviors characterized as syntactic features F and so they are inserted during syntactic computation; likewise, the productive suffix -er with the lexical entry “N, ANIMATE, +<[V, ACTIVITY]>” is inserted prior to Spell Out. And finally, of used in of-insertion and gerundive nominal -ing (with the lexical entry “N, +<V>”) do not have F features and hence they are subject to PF-insertion.

2.3.2. Assessment

The three-way distinction of insertion just presented is very interesting and thought-provoking. There are two general advantages of the multi-level insertion system: (i) it permits assignment of only the infor-
mation that is available to each point in the computation of a sentence—the types of lexical items that play no part in syntax or LF do not exist there, and so achieves derivational economy, and (ii) it clearly classifies the level of lexical insertion in terms of the properties of an item’s feature composition and the classification is tested by a wide variety of (mainly) English constructions. In what follows, we will closely observe some of the constructions, with the aim of revealing some merits and weaknesses in the present insertion system.

Let us first consider the free/bound morphemes that are inserted after Spell Out, as is indicated in the last rank of table (11) above. These involve three types of empty heads: (i) \([Z \emptyset] - [YP Y] - XP\) (higher empty head), (ii) \([Z Y - [Z \emptyset]] - XP\) (inflectional empty head), and (iii) \([YP ZP [Z \emptyset] - XP]\) (intermediate empty head). A typical example of the first type is the "light verb" construction, discussed in Chapter 6: light verb plus deverbal noun, which takes the place of the corresponding verb for certain contexts. In this combination, the deverbal noun bears major part of the meaning and so the noun takes its own complement. In (12), for instance, the noun look licenses its complement at that under the extended sisterhood, whereas the non-content-bearing have only plays the part of a place-holder and hence it is PF-inserted. Emonds' system can naturally capture these syntactic and semantic properties of the periphrastic construction.

\[ ZP [Z \emptyset (\Rightarrow \text{have in PF})] [YP a \{Y \text{look}\}] [XP \text{at that}] \] (p. 281)

Observing this construction further, we notice that verb insertion can take place immediately before the DP-trace complement. Consider, for instance, the following sentences:

(13) A long walk should be taken into the forest (by Mary).

(14) How long a walk should Mary take into the forest? (p. 223)

That example (13) involves syntactic DP-movement is suggested on page 163, and wh-DP in (14) is moved to the front of the sentence during syntactic computation, since the structure after wh-fronting is assigned a phonological representation. As take as a place-holder is inserted at PF, it must be subcategorized with respect to a DP-trace. Yet extending the subcategorization frame to a movement-trace creates the following undesirable aspect. The notion of late insertion is not entirely new. In fact, the model of "Distributed morphology" (DM) promotes late insertion to an extreme; it claims that all the lexical items including Dictionary items are inserted between Spell Out and PF (Halle and Marantz (1994)). This model has the merit of producing
more economical syntactic derivations than Emonds’ model, since purely semantic features $f$ that play no part in syntax (p. 116) do not exist during syntactic computation. The trouble with DM, though, is exactly what is observed above: lexical insertion is implemented based on the structure that has gone through various syntactic operations including complement-movement, so that restrictions on lexical insertion are relaxed and, furthermore, insertion device would be enriched with a series of stipulations. If Emonds generally permits a trace of movement as subcategorization frame, he would cast away his advantage.\(^5\) It is therefore important for him to reconsider the way of dealing with the limited subcategorization case in which a place-holder is a verb and, furthermore, to give evidence to Deep lexicalization: Dictionary items must be inserted at D-structure (p. 117).

Inflection is dealt with very convincingly in Chapter 4. We will look here at comparative inflection as an example of the inflectional empty head (type (ii)). The author considers inflection as the process of redundantly realizing syntactic features $F$ that contribute to LF in certain syntactic positions—“Alternative realization” (AR), which is defined as follows:

\[(15) \quad \text{A syntactic feature } F \text{ canonically associated in UG with category } B \text{ can be alternatively realized in a closed class grammatical morpheme under } X^0, \text{ provided } X^0 \text{ is the lexical head of a sister of } B^i. \]  

(p. 125)

By AR, the comparative feature [COMPAR $\emptyset$] is copied in the lexical head to derive [AP [SPEC(AP), COMPAR $\emptyset$] [A` [A [-A fond] [A, COMPAR $\emptyset$]] [PP of sweets]]]. Alternatively realized features ($F'$) are redundant and do not contribute to LF, and so they are materialized at PF. Besides inflection, AR is argued to apply to numbers of constructions including Bare NP adverbs like [P $\emptyset$] [DP the same place] and a certain type of derivation such as [P $\emptyset$] [AP more frequently], where the features canonically associated with Ps are alternatively realized as place and -ly (pp. 307–308).

The view of AR is illuminating in that (i) it eliminates a lowering transformation, and (ii) it prevents insertion of inflectional affixes in syntax, so that economy conditions are satisfied and inflectional charac-

\[^5\] The author suggests that take, unlike have, is inserted during syntactic computation (p. 224, p. 212). Even if it is so, the present problem would arise unless it is stipulated that insertion of take takes place before movement operations.
teristics—notably, the outer-layer status of inflection—follow automati-
cally. Two interesting questions then arise with respect to AR. The
first one is whether AR is not involved in the comparative form more,
that is, the application of AR is optional. More generally, are there
various cases in which a syntactic feature may be realized either canon-
ically or alternatively within a language? If this is true and the proper-
ties of each actualization are accounted for, it will give evidence to the
relevance of AR. Second, since alternatively realized features \( F' \) are
actualized at PF, would \( F' \)-materializing derivational suffixes such as -ly
be permitted PF-insertion? It is crucial to work out the theoretical
details of AR more explicitly, taking account of the two questions.

Various expressions including stative uses of have ("possessive" and
"perfective") and second indirect objects of verbs are associated with
the intermediate empty head (type (iii)), and they are discussed in
Chapter 7. Let us here consider open class verbs taking a non-finite
complement such as \([VP \ [V decide \ [IP \ [DP \ \emptyset \ (oblig. cont.)\] \ [I \ \emptyset \ (to in PF)] \ [VP own two cars]]]\). As is well known, obligatory control infini-
tives compete with gerunds of obligatory control. Emonds claims that
a gerundive complement serves as default, given Economy of derivation
(p. 315), according to which the derivation with fewest insertions of free
morphemes is chosen if nothing else is named (cf. owning vs. to own).

An infinitival complement, he argues, is named when it refers to an
unrealized event that is attributable to the feature MODAL or "irrealis"
(pp. 312–316). For example, the lexical entries of decide and avoid,
which require activity verbs, are respectively "V, +<[ACTIVITY,
MODAL]>, ..." and "V, +<ACTIVITY>, ...," where the feature MODAL
is a property of I. Hence decide, which requires a MODAL comple-
ment, naturally takes an infinitival IP, while avoid, which does not
require such a complement, takes a DP gerund essentially by default.

Thus a verb’s choice of to V or V-ing complement is captured natu-
rally within Emonds’ system. One problem here is that the present
feature specification is surely insufficient. For one thing, the to V com-
plement is taken by verbs strongly implying actualization of the event
of the complement such as "verbs of desire" and "verbs of decision,"
whereas verbs implying "weak future" such as "intellectual verbs" (con-
sider) and "verbs of proposal" (suggest) occur with the V-ing comple-
ment. For another thing, with aspectual verbs, to V has a generic or
serial reading, while V-ing has a durative reading, as in they continued
to play/?playing until 1 A.M. stopping for 5-minute breaks every half
hour (Freed (1979: 94)). In two respects, then, features like [+fulfillment] and [+serial] should be added to the feature composition of the infinitival I under consideration.\(^6\)

The feature MODAL of I casts a doubt on the authenticity of features \(F'\). As to \(\text{is} \) subject to PF-insertion (p. 337), its feature, MODAL, should be an \(F'\) feature, which is used in PF but plays no role in LF (p. 116). In other words, MODAL (“irrealis”) should be a marked Absence of Content feature for the category I. Moreover, many sorts of grammatical features are classified as Absence of Content features; for instance, –LOCATION on \(P\) is among them (pp. 44–45). So features like MODAL, “Instrument,” and “Benefactive” are not interpreted at LF and hence do not enter into the mental system of interpretation. Consequently, it is essential for Emonds to specify where and how these features are interpreted in order to show the validity of features \(F'\).

The discussion of nominalization in Chapter 4 aptly illustrates how bound morphemes are inserted at different levels (see the right column of chart (11)). The nominalization process extends over three levels of insertion: non-productive suffixes like -age (breakage) and \(f\)-bearing “result nominal” suffixes like -ation\(_1\) (examinations) are inserted at D-structure; “complex event nominal” suffixes like -ation\(_2\) (deliberate examination of the papers) and nominal gerund -ing\(_1\) (the making of money), which have \(F\) features like [+ACTIVITY], are inserted to form

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\(^6\) An anonymous reviewer has presented a greater problem with Emonds’ syntactic approach to complement selection, adducing examples of how implicative verbs behave:

(i) John managed to solve the problem.
(ii) John didn’t manage to solve the problem.
(iii) John forced Mary to stay home.
(iv) John didn’t force Mary to stay home.

Both manage and force imply realization of the events named by their infinitival complements, as (i) and (iii) illustrate. But their corresponding negatives have different implications. Negation of manage implies non-actualization of the event named in its complement as in (ii), whereas negation of force implies neither actualization nor non-actualization of the object clause event as in (iv). The reviewer states that these behaviors of implicative verbs may not be ascribed to a syntactic feature of I, and then suggests that not only the implicative verb-complement relation but also the verb-infinitival complement relation in general should be analyzed semantically. It is not easy at present to show exactly how the present implication-al relations should be accounted for. I leave this matter as an unsolved but interesting problem.
nominals during syntactic derivation; verbal gerund -ing, which has no F feature, is inserted at PF. This analysis has the great benefit of deriving the different properties of homophonous nominals from the different levels of insertion. For example, the argument-taking property of a complex event nominal, a property ruled out with a result nominal, follows directly from the fact that the base verb of an event nominal selects its argument because of the absence of the event nominal suffix at D-structure. Similarly, the different internal structures of verbal and nominal gerunds are expected given the insertion difference depicted above.

We will return to the multi-level nominalization below in § 2.5, but here we will only point out two disadvantages of the present scheme. One of them is that verbal gerunds have internally VP-like but externally NP-like structures, and both structural properties are used in syntax and LF. The former property is a direct consequence of the fact that because of PF-insertion of -ing the verb is a substantial head of verbal gerunds throughout the derivation from syntax to LF. However, where does the latter property come from? The verbal gerund fiercely attacking her for instance must be an NP in syntax, since it may be combined with an NP with genitive Case as in a lion’s fiercely attacking her. What insures, then, the external NP structure of the gerundive? In Emonds’ model, it would have to be stipulated that an “empty structural head” can serve as a substantial head in a certain aspect: the empty head N that is not filled with -ing in syntax and LF determines the category of an entire verbal gerund. Another shortcoming involves the complements of base forms that may be inherited into derived forms. Emonds’ stance on this issue is not clear; it is suggested on pages 142 and 153 that derived nominals freely inherit the complements of a base verb, whereas it is mentioned on page 95 that the possibility of inheritance should be specified in each subcategorization frame. It has been suggested by various researchers that the addition of an affix generally reduces a base’s subcategorization frame and some “inherit-

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7 Formation of PP structures raises a similar puzzle. As we saw on page 598 in this article, some types of prepositions are PF-inserted and hence the category P in this case would not be expected to serve as a head throughout the derivation from syntax to LF. How do we form a PP structure needed in syntax and LF with the empty head P?
tance principle" is involved in this phenomenon. Randall (1982: 70), for example, proposes an inheritance principle by which the affixes that change both the category and the meaning of their base inherit only direct objects, while affixes that retain either of them allow complete inheritance; the gerundive suffix is among the latter affixes and the rest of nominalizers belong to the former group (cf. *the putter of men on the moon and the putting of men on the moon). In-depth studies have been promoted in pursuit of more precise inheritance principles (Booij (1988), Roeper (1993)), and I believe that such principles should be used together with Emonds' insertion system.

Summarizing this section, we see that the three-level insertion of Syntacticon items correlates to a considerable degree with the three-way distinction of relevant constructions, although a number of important problems remain. Probably a word is in order here as to an issue that needs to be considered. Emonds has dealt well with (auxiliary) verbs, prepositions, and suffixes among Syntacticon classes, but it is also important to investigate Syntacticon nouns (e.g. time, place) and adjectives (other, many). In this respect, the following examples pointed out by Kajita (1976: 256) are interesting:

(16) a. It would be normal for freshmen to take five courses.
   b. *It would be a situation for freshmen to take five courses.
   c. It would be a normal situation for freshmen to take five courses.

Adjectives like normal take a for-to complement, as in (16a). By contrast, nouns like situation, which probably have no f features, do not take this complement ((16b)); but when they are accompanied by modifiers such as normal, they may fit in the subcategorization frame, as in (16c). Once we allow for PF-insertion of situation, (16c) has virtually the same D-structure as (16a), accounting for the contrast in (16).

2.4. Word Formation

Emonds argues in Chapter 3 that the grammatical patterns within X^0 domain are accounted for by syntactic theory and hence word formation processes are performed outside the lexicon. This position is basically Lieber's (1992)—there is no autonomous component of word formation. As is shown in § 2.3 in this article, productive suffixes drawn from Syntacticon are inserted under a node within X^0 to form complex words during syntactic derivation, and non-productive suffixes and suffixes with special meanings from Dictionary are put into an intra-X^0 node to con-
struct derived forms at D-structure. In addition, compounds are formed by insertion of free Dictionary items into intra-X₀ nodes at D-structure. Thus, word-internal structures as well as phrase structures are uniformly stated in terms of X-bar projection in syntax.

We mentioned in §2.2.2 that one of the merits of Emonds’ lexical system is conflation of intra-word and extra-word subcategorization frames: both the intra-word head -ness and the syntactic head seem make use of the same subcategorization frame <+A>, with the position of each head determined by headedness principles (pp. 78–79). Word formation in syntax accomplishes another economy of grammar: word construction (happiness) and phrase construction (her exuberant happiness) utilize a common structure, thereby eliminating the redundancy of the construction devices concerned. Consequently, the use of the subcategorization format and combinatorial device common to morphology and syntax gets rid of some redundancies from grammar.

While the positing of syntactic word formation may provide an elegant account of the formation system for word-internal and sentential frameworks, it makes certain other systems inelegant, which has often been criticized by proponents of the lexicalist position (see, for example, Chomsky (1970)). The first classic criticism of the syntactic treatment of word formation concerns the handling of a set of facts captured by the so-called Lexicalist hypothesis. Because it is of wider application than the Lexicalist hypothesis, “the Autonomy hypothesis” is used here, a term that closely relates to the thesis of “syntactic atomicity of words” proposed by Di Sciullo and Williams (1987). The Autonomy hypothesis holds that the lexicon and syntax are autonomous modules of grammar, each with its own elements: morpheme is an atomic element and word is a maximal element in the lexicon, while in syntax word is a basic unit and sentence is a maximal unit. Under this view, some morphosyntactic constraints follow automatically. A constraint against applying word formation rules to phrasal categories (cf. */very happiness) derives precisely from the grammatical organization just formulated. Further, there is a constraint by which no syntactic operation can refer to word-internal elements; the interior constituent develop of the derived nominal development cannot be modified by an adverb outside the word, as in *development intellectually. Again, the Autonomy thesis permits this constraint as a matter of course.

Under Emonds’ system, however, a series of special stipulations would be needed to eliminate the mixtures of morphological and syntac-
tic units. Regarding the first constraint, since -ness and seem take the same subcategorization frame <+A> and their insertion is implemented at the same place, it would be predicted that -ness takes very happy as its complement in much the same way as seem takes it as complement. Some sort of stipulation is therefore required to prevent a suffix from combining with a phrasal base. Similar remarks apply to the second constraint given above: a verbal element within a derived nominal cannot be modified by an adverb outside the word. Given that the suffix -ment (as “complex event nominalizer”) is inserted during syntactic computation (p. 153) and that before the insertion the base verb may be modified or selected by an adverb, Emonds’ analysis would wrongly predict that *development intellectually is well-formed. If the modification or selection concerned is claimed to take place after -ment-insertion, a clause would be necessary to set up the ordering.

The second difficulty with Emonds’ theory is that it would fail to describe a distinct characteristic of derivational morphology: it involves idiosyncracy. Derived forms often have idiosyncratic meanings together with regular meanings, as in shipment ‘something that is sent by ship,’ entertainment ‘something that entertains,’ and settlement ‘a newly settled place.’ Compounds also have meanings that are idiosyncratic in that the meaning relation of their constituents is haphazard and unpredictable; for example, by convention snow-man means ‘man who is made from snow,’ but not ‘man who prevents snow’ or ‘man who makes snow.’ In the lexicalist position, these complex words with their own additional and idiosyncratic meanings are listed in the Permanent lexicon presented in flowchart (1) above. On the other hand, in Emonds’ framework they are generated by insertion of free and bound morphemes into the relevant nodes in a D-structure. But, how are the unexpected extra meanings assigned to the generated words at D-structure? Furthermore, the difficulty in handling semantic irregularity carries over to lexical idiosyncracy. Word formation processes, albeit highly productive, are not completely free and they are subject to accidental gaps; for example, derivation and arrival are morphologically well-formed and occurring words, while &derival and &arrival are morphologically well-formed but non-occurring words (Halle (1973: 5)). These “possible but non-existent” words would be generated by insertion of free and bound morphemes into the relevant nodes in syntax, but they cannot be handled adequately within the syntactic component, which is foreign to such notion as “possible but non-existent.”
Finally, note that prefixation is not discussed in the book. While suffixes play the main role of changing the category of the base, prefixes mainly add certain meanings to their base. Since these additional meanings are arguably connected to f features, as shown by each gloss of the prefixes—mis- ‘badly,’ co- ‘jointly,’ and ex- ‘former,’ prefixes are to be analyzed as Dictionary items rather than Syntacticon items. Hence the analysis of prefixation would show that the two major classes of derivational affixes are put into different places, i.e. into Dictionary and Syntaction.

In summary, an economy achieved by syntactic word formation fails to counterbalance its disadvantages: (i) failure to eliminate illegitimate morphology-syntax mixture, (ii) failure to capture idiosyncracy of words, and (iii) to lead to a split between derivational prefixes and suffixes within the lexicon.

2.5. A Suggestion

The purpose of this section is to suggest a new analysis of nominalization to make some modifications in Emonds’ account of the process, and then show some of the consequences it entails for the organization of grammar. Let us first consider the case of forming a Process-nominal from a verb. According to the insertion level of a nominalizer, we can distinguish three subtypes of Process-nominal formation: (i) involving derived nominals ending in suffixes such as -(a)tion (-ion), -ment, and -al, where the suffixes are inserted in the lexicon or at D-structure; and (ii) involving nominal gerunds and gerundive synthetic compounds, where the suffix -ing is inserted during syntactic computation; and (iii) verbal-gerund formation, involving PF-insertion.

There is strong competition among nominalizers for the “nominalization post,” and the “winner” may be determined by several factors: morphophonological, semantic, syntactic, and functional factors. To illustrate the morphophonological determinant, consider that a suffix has a general tendency to combine with a base of a particular form; -(a)tion freely combines with verbs ending in -ize, -ify, and -ate (organization, justification, education) (Jespersen (1949: 374)), while -ment is likely to attach to verbs with the prefixes be- and en- (bewilderment, enjoyment)

8 We leave the exact place of the insertion at issue for future research.
and verbs of two syllables with stress on the second syllable (concealment, fulfilment) (Jespersen (1949: 376)). Following a general tendency like this, verbs of a given morphophonological class are combined with a suffix that is productive with that class to produce derived nonimals, which in turn “block” the addition of rival nominalizers to the class concerned: hence *organizement and *bewilderation (Aronoff (1976: 55–56)). The suffix -ing, on the other hand, does not have such fastidiousness about its base class, and it is therefore classified as “default” nominalizer (as suggested by Chomsky (1970: 215)). The semantic factor is illustrated by the examples that Vendler (1968: 33–34) affords: a nominalizer that has a “result” reading, i.e. f feature forms derived nonimals (shipment, settlement); a nominalizer that has a MANNER reading, i.e. f feature constructs nominal gerunds (John’s singing of the Marseillaise is slow) or gerundive synthetic compounds (a correspondence course in hotel keeping), but not verbal gerunds (*John’s singing the Marseillaise is slow).9 The syntactic factor that controls the choice of a particular nominalizer is exemplified by the following: a verbal gerund does not occur with a certain type of verbs (see (17a) below); on the other hand, only a verbal gerund is used in nominalization of a perfect form (Humphrey’s having committed the crime). A nominal form is also selected on the basis of the communicative functions of the formation. To be concrete, when the object of a nominal is the focus of attention, nominal gerund or verbal gerund is used following the principle of end-focus, as in (17). By contrast, gerundive synthetic compound is employed for suppressing the prominency of the object ((18)) (Rice and Prideaux (1991: 290)).

(17) a. ... the young woman was done in by a metabolic imbalance, aggravated by a fad diet that prohibited the drinking of water. (Newsweek (1983: 76))

b. ... many Australians would be forced to choose between paying rent and buying food. (Time (1986: 20))

9 Vendler points out that verbal gerunds normally have a FACT reading, as in John’s singing the Marseillaise is unlikely. We simply assume here that FACT as well as PROCESS is not an F feature, so that the -ing for verbal gerunds is inserted at PF. In addition to a “result” reading, derived nonimals may have FACT and MANNER readings, as in the abolition of the House of Lords cheered the Labour Party immensely (Kilby (1984: 119)).
(18) I am now drinking whiskey. You don’t approve of whiskey-
drinking do you? (Chandler (1984: 102))

Example (18) also illustrates an important role of nominalization: to rephrase a process or activity that has been expressed in a sentence with a condensed form in the succeeding context. In (18), the first mention of an activity that is done with a sentence (I am now drinking whiskey) is followed by the subsequent mention of that activity with a simple nominal form (whiskey-drinking). Additional discourses to exemplify the context-dependent nominalization are given below:

(19) ... and the fingers of her hands twined and untwined about each other. ... Again that nervous twining and untwining of fingers. (Christie (1985: 86))

(20) Involuntarily, Peter glanced towards Aloysius Royce who had come into the room and was arranging a pile of magazines. ... Royce left his magazine sorting and stood facing the other two. (Hailey (1983: 78))

In each example, a previously mentioned process or activity is expressed as compactly as possible in a subsequent context. Nominal expressions are thus produced instantly during syntactic computation on the basis of the prior utterance. It is noteworthy that derived nominals may also be created context-dependently, as in (21).

(21) ... Germany and Europe as a whole (except for France and Britain) will be denuclearized. The irony is that the denuclearization of Europe ... was for 45 years the central objective of Soviet diplomacy. (Newsweek (1991: 27))

In the light of “a permanently stored lexicon and the instantly created and lost representations of syntax” (p. 435), we can treat context-induced derived nominals such as (21) adequately in syntactic derivation. That is to say, a derived nominal is instantly coined during syntactic computation only if it requires an appropriate preceding context.

We have argued that several factors work together to choose a Process-nominalizer in a relevant situation. Another type of nominalization, involving the formation of a State-nominal from an adjective, can be handled in the same manner. Three subtypes are recognizable: (i) nominalization by means of suffixes like -ness, -ity, and -cy (fondness, reality, bankruptcy, lexicon- or D-structure-insertion), (ii) context-dependent nominalization by suffixes such as -ness and -ity (his stupidity is incurable (Vendler (1968: 44)), syntactic insertion), and (iii) verbal-gerund formation (his being stupid (*is incurable), PF-insertion of -ing);
each of these suffixes competes keenly with its rivals for the nominalization post.

If this line of thought is correct, it offers a flexible solution to some of the classic problems that Emonds faces. To begin with, the problem for actuality of words does not arise. We make the case that all nominalizers except -ing are essentially Dictionary items, but in certain limited cases semi-productive nominalizers may be used in syntax after the model of the fully productive nominalizer -ing. It should be stressed that a semi-productive nominalizer’s participation in syntactic computation is restricted considerably; it presumably requires an appropriate preceding context. Since derived nominals or -ness/-ity nominals may be created contextually as the need arises, we need not worry about whether they are non-occurring. Second, we can overcome the objections raised against Emonds’ claim that there is little motivation for a separate domain of “autonomous morphology” (p. 87). Our contention is that the spirit of the Autonomy hypothesis should be maintained and the process involved in context-dependent syntactic nominalization should get detached from the formation of ordinary nominals. Hence the trouble with Emonds’ position is avoided here, since the Autonomy thesis is fundamentally maintained, although the nature of the deviations from the thesis must be characterized and accounted for in an appropriate way (for details, see Morita (1997)). Finally, our approach offers an account of how a subcategorization feature required by a verb (treat) is filled with a word-internal element (mis-) (cf. § 2.2.2 in this article): a derivational bound morpheme as argument may adjoin to a base verb in syntactic derivation with the aid of contextual force (Morita (1997)).

To summarize, the central 3-level insertion that Emonds proposes is supported by the behaviors of several nominalizers that compete actively with one another and, furthermore, the necessity of divorcing “derivative” forms from fundamental forms is recognized in dealing with derivational morphology.

3. Conclusion

The book has laid the proper foundations for both complementation and lexico-syntactic relation. It systematically explores the relation between a head and its complement in a far more detailed and explicit way than any other approach, and then works out a concise, unified, far-reaching subcategorization format for word and phrase structures.
Regarding lexico-syntactic relation, the author makes a clear distinction between Syntacticon and Dictionary in the lexicon and puts forth the multi-level insertion of Syntacticon items. This brings about derivational economy and offers a unified account of the properties of a variety of syntactic and morphological constructions. In both of these respects, Emonds has done ground-breaking work and his formal lexical theory deserves to be widely adopted and developed further.

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