Architecture and Blocking

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We discuss theoretical approaches to blocking effects, with particular emphasis on cases in which words appear to block phrases (and perhaps vice versa). These approaches share at least one intuition: that syntactic and semantic features create possible ''cells'' or slots in which particular items can appear, and that blocking occurs when one such cell is occupied by one form as opposed to another. Accounts of blocking differ along two primary dimensions: the size of the objects that compete with one another (morphemes, words, phrases, sentences); and whether or not ungrammatical forms are taken into consideration in determining the correct output (relatedly, whether otherwise well-formed objects are marked ungrammatical by competition). We argue that blocking in the sense of competition for the expression of syntactic or semantic features is limited to insertion of the phonological exponents of such features (the Vocabulary items of Distributed Morphology) at terminal nodes from the syntax. There is thus no blocking at the word level or above, and no competition between grammatical and ungrammatical structures. The architectural significance of these points is emphasized throughout the discussion.

Keywords: architecture, blocking, competition, Distributed Morphology

1 Introduction

Intuitions about blocking are driven by certain canonical cases emphasized in the linguistic literature. For example, a prevailing intuition is that the ''irregular'' form *gave* blocks the otherwise expected ''regular'' **gived* as the past tense of *give*. This intuitive notion of blocking evokes the cells of a paradigm structure: in a list or table of inflected forms of the verb whose stem is *give*, there exists a slot for the past tense of the verb. If this slot is filled by a memorized form, then the word formed by the regular past tense ''rule'' of adding *-(e)d* is blocked from filling this slot by the memorized form. The intuitive notion of blocking is illustrated in (1), which shows paradigmatic cells or slots and their contents.

(1) *Slots*

Lexemes	Present	3sg	Past
WALK	walk	walks	walked
GIVE	give	gives	gave

The authors are indebted to Morris Halle.

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In this article, we will support the view that blocking as captured by the intuitive description that *gave* blocks **gived* is not part of the grammatical system of language. Crucially, the intuitive notion of blocking, the basis for a set of formal proposals in the literature that have become standard, relies on two assumptions that we examine in detail here. First, the standard approach assumes that blocking involves competition at the level of the word, or perhaps at the level of larger objects as well (phrases, sentences). Second, it assumes that blocking involves consideration of ''ill-formed'' words like **gived* (or ill-formed phrases/clauses, in some theories). These assumptions define a range of *competition-based* approaches to blocking effects that hold that the existence of some irregular or memorized forms renders certain other forms deviant, even though the forms in question are not problematic as far as independent principles of the grammar are concerned. The losers of the competition are marked deviant solely because some ''listed'' or ''better'' way of expressing that meaning is found in the language.

We argue for a very different perspective on these matters.

Generalizing, the standard approach to blocking effects centers on two questions that motivate our investigation here:

Question 1 (Locality of competition question)
Is the computation of morphophonology local to the terminal nodes from the syntax, or more global, at the level of the phrase or sentence?

Question 2 (Grammaticality question)
Does the grammar involve comparison of two or more otherwise grammatical expressions (i.e., expressions that would be fine connections between sound and meaning, if they did not lose the competition to a ''better'' expression)?

We answer these questions as follows:

1. Competition in the relevant sense is limited to the level of the morpheme: in the model that we elaborate below, this amounts to competition between Vocabulary items, for insertion into terminal nodes in a syntactic structure. In the example of *give* and *gave*, the zero allomorph of the past tense node T[past] competes with the regular *-(e)d* allomorph for realization of the past tense terminal node from the syntax and wins in the context of *give* (but not in the context of, say, *walk*); a morphophonological *readjustment rule* changes the phonology of *give* to *gave* in the context of the past tense morpheme. No larger objects—words, phrases, clauses—enter into the competition.
2. The change in perspective involved in this approach to blocking has consequences for the treatment of ungrammatical forms. From the point of view of the grammar, **gived* is ill formed because it will not be part of the phonological form of a grammatical sentence; that is, it is not generated by the grammar. Thus, what is called ''blocking'' in the literature does not involve consideration of forms of a word rendered ungrammatical via competition (as it would if **gived* were marked ungrammatical by virtue of losing the competition with *gave*). Rather, blocking involves the interaction of stored information about mor-

phemes and the syntactic and phonological systems that build forms (and do not, crucially, yield **gived*).

Much of the discussion in this article centers on the analysis of blocking effects within Distributed Morphology, and on the examination of alternative approaches to blocking that make different predictions about the range of possible crosslinguistic variation. As indicated in the questions posed above, accounts of blocking differ crucially with respect to the locality of interactions between morphology and syntax. The centrality of questions of locality in this domain has a history that connects these questions with questions of architectural significance. Aronoff's (1976) groundbreaking treatment of blocking is based on the idea that blocking effects involve listedness or irregularity: ''lexical'' properties. In line with lexicalist assumptions about the division of labor in the grammar, this means that blocking effects are expected to be found in the lexicon, that is, in the domain of (certain types of) words. Poser (1992) directed the attention of the field to cases of what looks like blocking in which a phrase and a single word express the same meaning. To cite one of Poser's examples, if a phrase like **more smart* is blocked by a word like *smarter* in the same way that *gave* blocks **gived*, then it is necessary to extend the competitors relevant to blocking ''out of the lexicon'' (this is in fact the point that Poser makes).

For a theory like Distributed Morphology, in which all word formation is syntactic, the interaction of word formation and phrasal syntax is in some sense unsurprising. A particular syntactic configuration might yield either a phrasal or a single-word expression, depending on conditions governing the particular rules of syntactic affixation that might apply. For example, a condition limiting the merger of the comparative head to adjectives of a particular phonological shape would yield a single word like *smarter* or *taller* when the rule applies, and a phrasal expression like *more intelligent* when the rule does not apply. Cases of word/phrase alternation are simply a subcase of syntactic affixation in which the rule that affixes one piece to another is ''partial'' in some sense. As far as the grammar is concerned, a single set of mechanisms responsible for affixation in syntactic structures is all that is required; there is no need to implement blocking or competition. For theories that adopt blocking—competition between expressions—as a mechanism in grammar, on the other hand, cases of word/phrase ''Poser blocking'' require an extension of blocking beyond word-word comparisons and also beyond any notion that only ''listed'' words block words or phrases that are produced by regular processes (since, for example, comparatives like *smarter* are regular and need not be listed, but nevertheless appear to block phrases like **more smart*).

In asking whether there is competition in word-phrase interactions, we also consider whether there is evidence for word/word blocking in the first place. On our view, there is no fundamental architectural distinction between word-word and word-phrase (or phrase-phrase, etc.) interactions. Thus, rather than ''extending the lexicon'' in the manner associated with Poser blocking, our approach holds that there are explanations for all the relevant interactions that do not require blocking, and that, moreover, the explanations are syntactic in nature. Thus, part of the shift in perspective that comes from the theory we propose here involves the kinds of objects that have

to be considered in accounting for blocking effects. We demonstrate below that even ''canonical'' cases of blocking—those that appear to involve only words within a lexicon—implicate comparisons between phrasal and single-word expressions. Our initial comments above illustrate intuitions about blocking with reference to the relation between *gave* and **gived* for the past tense of *give*. Consider now that *did . . . give*, with tense and the verb expressed in two separate words, wins over both *gave* and **gived* as the past tense of *give* in the presence of negation (*didn't give*, **gaven't*) and in questions or emphatic contexts (*You did give him the paper, didn't you?*). This is an obvious and extensively discussed facet of English clausal syntax, but the importance of such observations for architectural matters has not been fully appreciated in the literature on blocking (but see the discussion of Andrews 1990 below). There is no escaping syntax in the discussion of blocking, and considerations of economy of expression should be as relevant at the level of the phrase as at the level of the word if these considerations drive blocking.

The importance of clausal syntax for blocking can be acknowledged both in local (node-only) theories of competition like ours, and in theories that extend competition to larger objects. The question then is which approach to grammar correctly predicts the empirical facts of blocking. The phenomena usually described as involving blocking, particularly Poser blocking, provide an empirical base for deciding these issues. When the approaches to blocking involving comparison between otherwise grammatical expressions are made explicit, they all necessarily involve global competitions and they appear to make the wrong predictions about the range of blocking phenomena observed. An alternative architecture of the grammar, that of the Minimalist Program as instantiated in Distributed Morphology, fares better in these cases precisely because it limits competition to allomorphy and limits morphophonological computation to the individual terminal node in its syntactic environment.

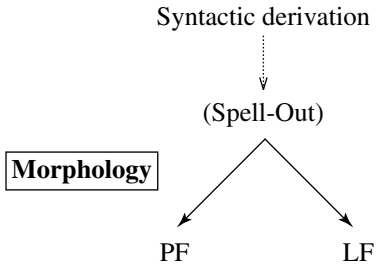
In section 2, we outline Distributed Morphology and what it has to say about blocking effects, as a preliminary to the discussion of ''standard blocking'' in section 3. Addressing some of the standard cases of blocking from the literature such as the relationship between *glory* and **gloriosity*, we show that there is no clear evidence for word/word blocking. In section 4, we discuss word-phrase interactions of the type associated with Poser blocking. We show that a theory with global (clause-clause) competition along the lines proposed by Bresnan (2001) makes incorrect predictions about the relevant interactions. Similarly, theories that implement Poser blocking with words winning over phrases under particular circumstances turn out to be inadequate. Instead, the generative treatment within Distributed Morphology makes the correct predictions. We discuss some implications of our results in section 5.

2 Distributed Morphology

2.1 Basics of Distributed Morphology

Distributed Morphology is a syntactic, piece-based, realizational approach to morphology in which there is at least some *late insertion* of phonological material into terminal nodes. The nodes are the primitives of syntactic derivations; many ''morphological'' operations are part of the PF component of the grammar (shown schematically in (2)).

(2) *The grammar*



The nodes that are manipulated in syntactic derivations are of two types, *functional morphemes* and *Roots*.

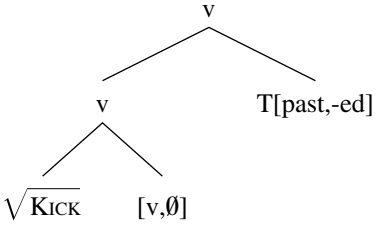
(3) *Terminals*
   a. *Functional morphemes* are composed exclusively of nonphonetic features, such as [past], [pl], or the feature (or features) that make up the determiner node D of the English definite article *the*.
   b. *Roots* make up the open-class or ''lexical'' vocabulary. They include items such as $\sqrt{\text{CAT}}$, $\sqrt{\text{OX}}$, and $\sqrt{\text{SIT}}$.

The functional morphemes are functional categories in the sense familiar from syntactic theory. In the PF component of the grammar, these morphemes receive phonological representations in the process of Vocabulary Insertion. This process involves Vocabulary items like those in (4), which spell out the past tense node T[past] in English; these items compete according to specificity, so that the most highly specified wins. When two Vocabulary items tie on measures of specificity, as is the case for the irregular items with *-t* and *-Ø* in (4), either there is no ordering, a possibility discussed in section 3.1, or the items are extrinsically ordered.

(4) *Vocabulary items for past tense (T[past])*
   T[past] ↔ -t/{$\sqrt{\text{LEAVE}}$, $\sqrt{\text{BEND}}$, . . . } ___
   T[past] ↔ -Ø/{$\sqrt{\text{HIT}}$, $\sqrt{\text{QUIT}}$, . . . } ___
   T[past] ↔ -ed

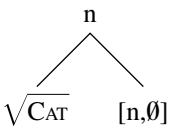
In displaying the effects of Vocabulary Insertion, we represent the node in question with its features/label, as well as the phonological exponent associated with the Vocabulary item. The verb *kicked*, for example, is represented as in (5).

(5) *Structure for* kicked



As noted above, we take Roots to be category-neutral. The members of the typical open-class categories—nouns, verbs, and so on—are Roots combined with a category-defining functional head n, v, and so on (e.g., Marantz 1997, 2001, Arad 2005). Thus, for example, the noun *cat* is complex, consisting of a Root and a category-defining n; the latter has the phonological form *-Ø* for this particular Root.

(6) *The Root* $\sqrt{\text{CAT}}$ *as "noun"*



We assume that every Root must combine with a category-defining functional head.

(7) *Categorization assumption*
Roots cannot appear (cannot be pronounced or interpreted) without being *categorized*; they are categorized by merging syntactically with category-defining functional heads. If all category-defining heads are phase heads in Chomsky's (2001) sense—that is, if they are heads that initiate spell-out—the categorization assumption would follow from the general architecture of the grammar (see Marantz 2007).

Concerning the functional heads themselves, we assume that there exist different types of n, v, and so on, distinguished by virtue of their feature content (although we will not provide a theory of such features here).[1]

As we discuss extensively below, competition in this approach is restricted to Vocabulary Insertion, which targets individual terminal nodes in the structure.

2.2 ''Wordhood'' and Structure

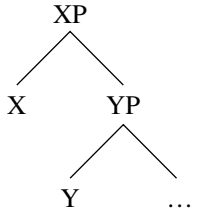
Much of the discussion below concentrates on cases of so-called Poser blocking, in which there are apparent interactions between ''words'' (e.g., *smarter*, **intelligenter*) and phrases (**more smart*, *more intelligent*). In traditional terms, these are alternations between synthetic ''one-word'' forms and analytic (or periphrastic) ''two-word'' forms.

The theory of Distributed Morphology does not have a primitive notion of ''word'' directly relevant to cases of Poser blocking (the phonological word may or may not play a role in the operation of phonological rules or constraints). Instead, the notions relevant to analytic versus synthetic expression are structural, and involve how the heads in a syntactic structure are packaged

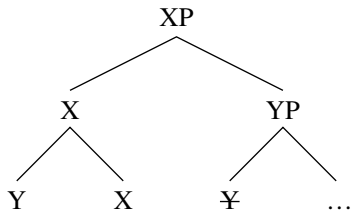
[1] Some literature exists on different v heads and their feature content; see, for example, Harley 1995 and subsequent work in this vein.

for phonological interpretation. We assume that the theory of constituent structure makes clear the notions ''head,'' ''complex head,'' and so on. According to the structural view envisioned here, multiple terminal nodes that are packaged as one complex head by the syntax or PF are ''one word'' in an informal way of speaking, whereas terminal nodes realized as separate heads are, in the same informal way of speaking, ''two words.'' This is illustrated for two heads X, Y in (8) (analytic) and (9) (synthetic), where we take (9) to be the output of head movement.

(8) *Analytic, "two words"*



(9) *Synthetic, "one word"*



There are other ways that a complex head could be formed in addition to head movement; these are discussed below. The important point is that the difference between the ''one-word'' and ''two-word'' types of expression has to do with the syntactic structure and, in particular, how the heads in the structure are packaged.

2.3 Notions Relevant for Blocking Effects

Many of the phenomena that fall under the heading of *blocking effects* are accounted for by mechanisms included in Distributed Morphology, although in ways that do not necessarily implicate competition-based blocking. As a way of introducing some of the basic points to be advanced later in this article, we present an overview of the relevant mechanisms and their effects here.

The process of Vocabulary Insertion assigns phonological content to syntactic nodes. We assume that each node receives a single phonological exponent in this process.

(10) *Single-Vocabulary-Insertion assumption*
One exponent per terminal node; that is, Vocabulary Insertion applies only once to a terminal node.

Vocabulary items like those in (4) are thus competing with one another, and when one wins this competition, it prevents others from doing so. For example, when *-t* appears as T[past] in the context of the Root $\sqrt{\text{BEND}}$, it is at the expense of the default case, which has the exponent *-ed*.

It might be said in this case that *-t blocks -ed* (more precisely, that the Vocabulary item with *-t* as its exponent blocks the Vocabulary item with *-ed* as its exponent). It is crucial to note here, however, that the blocking effect is limited to the phonology of a single node. It is not the case that one word blocks another word: *bent* does not block **bended*. The ungrammatical forms—in this example, those with ''incorrect'' allomorphs of T[past] like **bend-ed*—are never generated or considered in the derivation of *bent*.

Beyond the effects of Vocabulary Insertion at a single node, there are other ways in which conceivable forms are excluded from the language on this approach. That is, in considering the operation of the grammar as a whole, we as linguists are able to distinguish different ways in which an ungrammatical form fails to occur, of which allomorphic ''blocking'' of the type just described is one possibility. Importantly, our metalinguistic analysis of the ungrammatical forms does not imply that these forms play any role in the speaker's competence.

Including allomorphy of a single node, some of the relevant ways that forms can fail to exist, chosen with reference to our discussion below, are these:

(11) a. *Allomorphically:* The structure is well formed syntacticosemantically, but the morphophonology of the language simply does not produce the pronunciation under consideration.

Example: [bend T[past]] is well formed, but is pronounced *bent*, not **bended*.

b. *Syntactically/Semantically:* There are two subcases: one in which a structure is never possible, and one in which the combination of Root and functional structure is restricted but possible in limited cases.

i. *Example 1:* The ''potential'' (adjectival) head a pronounced *-able* attaches outside v but not outside, say, n. Thus, **atrocityable* is ungrammatical because the structure—Root merged with n, then [Root n] merged with potential head a—cannot be derived in the first place.

ii. *Example 2:* Some functional heads have a restricted distribution and only go with a limited set of Roots. For example, while feminine forms exist for certain nouns, such as *actress* and *lioness* next to *actor* and *lion*, they exist for only a handful of nouns (of the appropriate type: animate and so on). Thus, for any given noun, even of the appropriate semantic class like *jaguar*, one does not expect that the syntax of ''feminine noun'' will necessarily be available for that noun. Nothing rules out the structure that would underlie **jaguaress* as a whole (since forms like *lioness* and *tigress* are possible); but at the same time there are substantial restrictions on the distribution of the relevant functional heads.[2]

c. *Combinatorially (in terms of complex head formation):* Some process that creates a complex head may apply under restricted circumstances. When the process does not apply, there is no single ''word'' to consider.

Example: There is a rule that combines the degree element Deg and the adjective *smart* into a single complex head that is pronounced *smart-er*. The rule that affixes

[2] Some clarifications are in order about the ''Root-specific'' (selectional) effects identified in this classification. By assuming an approach in which Roots are category-neutral, we are not predicting that every Root should appear felicitously in every possible environment, for example, in every different ''lexical category'' (cf. Borer 2004 for another conception). While a theory of Root–functional head combinations must be part of a comprehensive theory of competence, we cannot provide such a theory here. Any theory able to account for so-called conversion—the appearance of the same Root in multiple categories—faces the same issues as the present approach.

Deg to adjectives does not apply in the case of the adjective *intelligent*. Thus, the synthetic form **intelligent-er* is not created by the morphophonology; the only way of realizing the syntactic structure ''comparative of *intelligent*'' is with the analytic form *more intelligent*.[3]

These, then, are various ways an ungrammatical form can fail to be generated by the grammar. Crucially, for our purposes, none of them involves competition at the level of ''words'' or ''phrases.'' Instead, the grammatical forms are derived, and conceivable ungrammatical forms are not.

We take it that (11) clarifies what it means to say that the only type of competition that takes place in this approach is at the level of the morpheme, where one Vocabulary item can win over another (as in (11a)), and that there are many ways that forms can fail to occur that do not result from competition.

3 Blocking

In the previous section, we outlined several ways in which the basic architecture of Distributed Morphology derives effects sometimes associated with blocking. In this section, we examine blocking directly, with reference to specific proposals concerning such phenomena.

It is convenient to refer to theories according to certain very general positions they endorse. We take the ''standard'' approach to blocking to be as follows:

(12) *Standard blocking*
Some forms are ungrammatical only because other forms happen to exist and win over them; competition takes place at the level of the word, phrase, or sentence.

Whenever we consider approaches in which one form is said to block another, the approaches are of this standard type. As a cover term, we refer to theories where competition takes place at the level of the word or above as *competition-based*.

(13) *Competition-based theories*
In competition-based theories, the forms that compete for expression of meaning are words, phrases, or sentences; that is, these theories endorse standard blocking.

We reserve the term *Poser blocking* for approaches that implement word-phrase interactions in terms of standard blocking.

(14) *Poser blocking*
Words win over phrases by standard blocking.

[3] Note that every theory of word formation has to say that there is a general rule of comparative formation, and that this rule does not apply to *intelligent*, because it only applies to words of a particular phonological shape. Thus, in some sense every approach in which words are preferred to phrases must hold that there is no word *intelligenter* to consider here, as we discuss further with reference to Kiparsky 2005 in section 4.5. Where our approach differs from others is in holding that there is no *more smart* to consider (and block) either.

Our arguments about blocking and Poser blocking in this section and section 4 proceed through a few steps. These are the major points of the discussion to come:

- Following a brief sketch of our take on derivational morphology, we show in section 3.1 that there is no evidence in favor of competition-based theories even at the level of the ''word'' (the traditional domain of blocking). After paving the way with a discussion of ''synonymy blocking'' (section 3.2), we examine standard cases of what is supposed to be word/word blocking, like *glory*/**gloriosity*, and show how the relevant patterns can be analyzed without such competition (sections 3.3, 3.4). This of course leaves open the possibility that word-phrase interactions (Poser blocking) are the only instances of standard blocking, motivating the discussion of section 4.
- In section 4.1, we outline a generative approach to analytic/synthetic alternations (and ''affixation'' generally), centering on the primary assumption of such theories: namely, that rules apply when their structural descriptions are met. This paves the way for a comparison with competition-based theories.
- In section 4.2, we demonstrate that theories that implement competition at the sentence level to accommodate blocking effects, such as Bresnan's (2001) (and perhaps Kiparsky's (2005)), make incorrect predictions; thus, there is no evidence for competition at this level.
- In section 4.3, we show that theories that implement Poser blocking with a principle that words win over phrases under specific structural conditions make precise predictions about the configurations in which analytic/synthetic alternations could occur.
- In section 4.4, we show with reference to specific examples that the Poser blocking approaches cannot predict where words and phrases interact in the relevant sense. The generative approach, with syntactic structures and syntactic (or postsyntactic) movement processes, makes the correct predictions.
- In section 4.5, we show in addition that there are interesting ways in which the principle ''Prefer words over phrases'' is problematic in the first place.

This article contrasts the approaches to blocking in (12)–(14) with the largely syntactic account of blocking phenomena made available within Distributed Morphology.

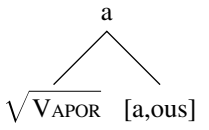
3.1 Derivational Morphology

As noted in the preceding section, we assume a syntactic approach to derivational morphology in which category-neutral Roots combine with functional heads n, v, a (see Marantz 2007 for recent discussion). With x ranging over these heads, we use the term *Root x* to refer to a structure in which x is the element that categorizes the Root. Thus, our example *cat* in (6) is a *root nominalization* (or *root nominal*); *red* is a *root adjective* (Root combined with adjectival head a); and so on.

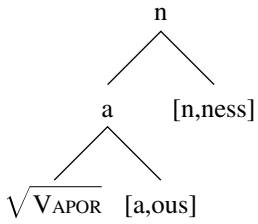
In addition to attaching at the Root level, it is of course possible for the x heads to attach outside other x heads. These are cases of true ''category-changing'' morphology. So, for example,

we assume that the root adjective *vaporous* can be nominalized by n to yield *vaporousness*, as shown in (15) and (16).

(15) *Structure for* vaporous



(16) *Structure for* vaporousness



Schematically, we refer to Root-attached x heads as being in the *inner domain*; outside other x heads, category-defining heads are in the *outer domain*. A significant set of generalizations that are captured in this approach hinge on differences between the inner and outer domains. These generalizations, which we assume in our analysis of blocking effects below, are summarized in (17).

(17) *Generalizations*

a. *Allomorphy:* For Root-attached x, special allomorphy for x may be determined by properties of the Root. A head x in the outer domain is not in a local relationship with the Root and thus cannot have its allomorphy determined by the Root.[4]

b. *Interpretation:* The combination of Root-attached x and the Root might yield a special interpretation. When attached in the outer domain, the x heads yield predictable interpretations.

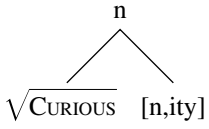
The workings of these assumptions can be illustrated with reference to the forms in (18), which also play a role in our analysis of blocking effects below.

(18) curious, curiosity
generous, generosity
verbose, verbosity

The first two are examples of what appear to be *-ous* adjectives being nominalized with *-ity*; the third is an adjective ending in *-ose*.

In these cases, we propose an analysis in which *-ity* is in the inner domain, as in (19).

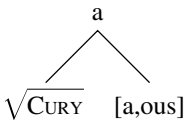
(19) *Structure for* curiosity



[4] Some cases of interest, which appear to be sensitive to the identity of the Root for insertion in an ''outer'' domain, are discussed in Embick 2003.

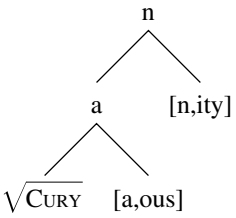
According to this analysis, the Root is $\sqrt{\text{CURIOUS}}$; our position is that this treatment accounts for significant generalizations that are lost in alternative analyses. In particular, it might seem possible in principle to treat *curious* as containing the piece *-ous*, with the Root $\sqrt{\text{CURY}}$ as a kind of *cran*-morph, as in (20).

(20) *Structure for* curious*?*



If (20) were the structure for *curious*, then *curiosity* would be a deadjectival noun, as in (21).

(21) *Structure for* curiosity*?*

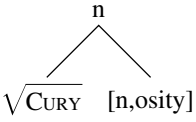


Given our assumptions in (17), (21) cannot be the structure for *curiosity*. There are two reasons for this. The first is that, as we discuss below, n is pronounced *-ity* only when it appears in the context of particular elements, and these elements have to be listed. Since [a,ous], which is visible to n in (21), is not on the list for *-ity* (see below), the n head could be pronounced *-ity* only if the Root $\sqrt{\text{CURY}}$ were in a local relationship with n. This is disallowed by (17). Similarly, *curiosity* has an idiosyncratic interpretation (a *curiosity* can be an artifact of specific interest/ strangeness). By (17), then, (21) is not a possibility.

Importantly, as we discuss in section 3.4.1, there are other reasons to think that the analysis that takes *curiosity* to be a root nominalization makes the correct predictions; see in particular the discussion of putative doublets, where we show that the Root in *curious* in a structure like (21) yields *curiousness*.

Notice that it is also possible, given the pattern in (18) and our assumptions in (17), that there is a monomorphemic *-osity* that is Root-attached in the nominal forms, as in (22).

(22) *Alternative structure for* curiosity



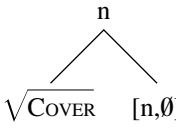
According to this view, the adjectival forms would involve *-ous* or *-ose*, attached to bound Roots. The analysis in (22) would be compatible with (17); the question is whether there is evidence in favor of this alternative as opposed to the one in (19). It might be possible to argue that there is a generalization within English according to which Roots that take an adjectival a head in *-ous*

or *-ose* also form a nominal in *-osity*, and that the analysis in (22) states this more directly than the one in (19).[5] While this is a possibility to be explored, we will assume (19) here, since the further differences are not essential to our discussion of blocking.

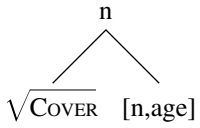
Before we address blocking, we wish to illustrate another point concerning Vocabulary Insertion in derivational morphology. As noted above, we assume that the n, a, v heads can be distinguished further in terms of their feature content. It seems that this is a necessary component of any theory with the general properties of the one supported here.

However, it is also important to note that in some cases it is not clear that differences in feature content are responsible for differences in form and interpretation. In one set of cases that highlight these issues, the same Root surfaces in more than one root nominalization. So, for example, we assume that the single Root $\sqrt{\text{COVER}}$ forms two different root nominalizations, *cover* (23) and *coverage* (24).

(23) *Structure for* cover



(24) *Structure for* coverage



At this point, the central question concerns the status of the n heads in these two trees: are they the same, or are they different? If we assume the latter (i.e., that there is some head n_1 in *cover*, and some head n_2 in *coverage*), then the effects on allomorphy and interpretation reduce to this difference. This could very well be the correct analysis in this particular case.

Or we could assume the former (i.e., that there is one n in these two structures). For this analysis to work, we have to configure Vocabulary Insertion so that the same Root may appear on more than one list, as in (25).

(25) *Vocabulary items, n inner domain*

$n \leftrightarrow$ -Ø/LIST_1 ____

$\text{LIST}_1 = \sqrt{\text{CAT}}, \sqrt{\text{DOG}}, \sqrt{\text{COVER}}, \ldots$

$n \leftrightarrow$ -age/LIST_2 ____

$\text{LIST}_2 = \sqrt{\text{MARRY}}, \sqrt{\text{BOND}}, \sqrt{\text{COVER}}, \ldots$

In (25), the Root $\sqrt{\text{COVER}}$ appears on more than one list. If we treat Vocabulary Insertion in such a way that two Vocabulary items that are not related to one another by inclusion are not ordered, and therefore one cannot always take precedence over the other, then either could be inserted. Thus, in a grammar containing (25) and the ''nonordering'' assumption just mentioned, both *cover* and *coverage* could be derived.[6] In this scenario, there is part of the grammar in which *cover* and *coverage* are identical. The interpretive difference between these forms arises from the

[5] Note that while *specious*, *precious*, and *impecunious* seem to support the generalization that adjectives with *-ous* take root nominalizations in *-osity*, other adjectives, such as *various*, *tenacious*, and *pious*, are counterexamples (see (34)).

[6] We put aside the question of what would be involved in ''choosing'' the correct outcome in any particular instance of use.

fact that they are used to refer to different parts of semantic space, perhaps in the way that *sofa* and *couch* or (as we discuss below) *thief* and *stealer* are in competition at the level of use (not grammaticality).

While we will not investigate these different accounts further here, the connection with what it means to have competition for use provides a natural transition to our main topic. Whatever the status of these different approaches to *cover* and *coverage* may be, this discussion leads up to an issue that is central to blocking: the difference between competition for *grammaticality* and competition for *use*. This is seen clearly in a standard question for blocking theories, the question of lexical relatedness.

3.2 Competition, Lexical Relatedness, and Synonymy Blocking

One question about blocking that must be answered at the outset concerns the scope of putative competitions. In particular, what can potentially compete with what? Returning for expository purposes to our example of blocked **gived*, note that certain conditions must be present for a blocking relation to obtain between **gived* and *gave*. All accounts of blocking assume that the competing forms must ''mean the same thing'' in some sense. For most accounts, this entails that the competing forms must be seen as forms of the same Root, the property of *lexical relatedness*.

(26) *Lexical relatedness in blocking*
Competing forms are forms of the same Root.

This of course raises issues for apparent cases of blocking brought up elsewhere in the literature, where assumption (26) appears to be denied. For example, can *thief* be said to block *stealer*, on the assumption that the latter is unacceptable in some sense? Since *thief* and *stealer* do not seem to share a Root, this blocking would seem to require equating the meaning of *thief* with that of ''one who steals''—certainly a bleaching of what one would generally call the meaning of the word.[7]

In any case, there are treatments of blocking effects that extend the notion of standard blocking to the *thief/stealer* relationship (Giegerich 2001). Theories of this type warrant further discussion as a means of elaborating our stance. For convenience, we call approaches with competition between lexically unrelated items in this sense theories with *synonymy blocking*.

(27) *Synonymy blocking*
Competing forms simply have to ''mean the same thing''; they do not have to share a Root.

There are some prima facie difficulties with this position. Given the various specialized uses of *thief* (see footnote 7), one would imagine that a more general *stealer* would have room to acquire non-*thief* meanings, so it is not entirely clear how the blocking relationship would actually work. In general, a notion of blocking based on ''meaning'' independent of ''lexical relatedness'' (built on the same Root) could only possibly account for the (nonoverlapping) sharing of semantic

[7] That is, *thief* in the normal sense means 'one who steals professionally or habitually', for example.

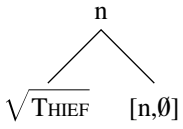
space—the possible meanings of a form like *stealer*—not the ungrammaticality or nonexistence of a form.[8]

Marantz (2003) discusses some instances of putative synonymy blocking from the literature and points out that, in cases like *stealer*, the feeling of ill-formedness that speakers have is arguably independent of the existence of single words like *thief*. Parallel forms, such as *breaker*, for someone who breaks things, have a similar status (i.e., are putatively deviant), although there is no ''listed'' form for someone who breaks things (something like *clumsy oaf*, *klutz*, or *butterfingers*). It seems clear that there is no obvious sense in which *breaker* is deviant because some other existing word blocks it.

While it is thus unclear how a theory with synonymy blocking could connect the effects found with *stealer* and *breaker*, these nominals exhibit a pattern that has nothing to do with blocking: transitive verbs of the semantic class including *steal* and *break* generally require direct objects, even in their agentive nominal form. So *base-stealer* is fine, and Web research suggests that *password-stealer*, *girlfriend-stealer*, *scene-stealer*, and a host of others are in common use. The same is true of *breaker*, unsurprisingly (*rule-breaker*, *heart-breaker*, etc.).

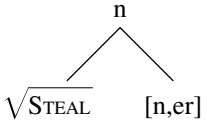
These considerations, which implicate the type of Root involved as well as the structure(s) it appears in, require us to look at different aspects of the derivation of *stealer*. In particular, which structure or structures is this form realized in? For *thief*, we assume that the structure is that of a ''noun''; that is, it is a Root combined with an n, the latter with a null phonological exponent, as in (28).

(28) *Structure for* thief

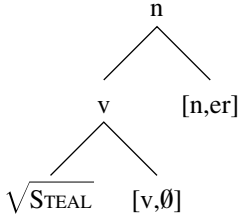


Given the theory of category-determining morphology presented in Marantz 2001, at least two analyses of *stealer* are possible. One is identical to the structure in (28), where a nominalizing ''little n'' creates a noun from the Root √STEAL; the other is a deverbal agentive *-er* nominal, in which a Root and a verbalizing head combine and are subsequently nominalized by an n. These two structures are shown in (29) and (30).

(29) *Root nominalization*



(30) *Deverbal agentive nominal*



[8] Compare ''pragmatic'' theories of blocking, already critiqued effectively in Poser 1992. Pragmatic approaches to blocking continue to be advanced (e.g., Williams 2007) without addressing Poser's original arguments.

One may ask whether the existence of *thief* might lead speakers away from the analysis of *stealer* as a root nominalization (29). If the need arises for a word to describe someone who steals for a living, against the law, the existence of *thief* might make the creation of a novel root nominalization pronounced *stealer* unnecessary (i.e., superfluous given that the semantic space for which *stealer* would be used is already filled). That is, the kind of principle invoked by language acquisition specialists to explain why children spread the words they hear around semantic space, instead of assuming that every word spoken around a dog, say, means *dog* (*cutie*, *shaggy*, *tiny*)—a ''uniqueness'' principle for sharing semantic space—might work against the root nominalization analysis of *stealer*. See, for example, the Principle of Contrast, discussed by Clark (1993) and others. It might be that what *stealer* in (29) could be used for depends to some extent on what other words happen to exist in the language. If *stealer* is used when *thief* exists, there might be strong motivation (''Contrast'') for the hearer to assume that *stealer* does not mean what *thief* means. In the absence of a clear use for the root nominalization in (29), the hearer might conclude that *stealer* is not a root nominalization.[9]

Thus, (a) the pressure exerted by the existence of *thief* might make the analysis of *stealer* as a root nominalization unlikely, given its relation to the semantic space for which it could be used at the same time (also see footnote 10 for other problems); and (b) the deverbal agentive nominal analysis in (30) has problems as well, since the requirement that an object be present is not met. As a result, there is something odd about *stealer* in some contexts. Crucially, while there is potentially some sort of interaction between *thief* and the hypothetical root nominalization *stealer*, it is not competition for grammaticality. Rather, the effect has to do with what a root nominalization *stealer* could be used for (in terms of semantic space) given that *thief* exists. Thus, there is no blocking effect that determines what is grammatical and what is not; any effect of *thief* on *stealer* has to do with how objects that are generated by the grammar might be employed, not with whether the object in question can be generated in the first place.[10]

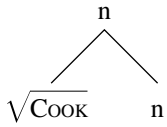
What we find with *thief* and *stealer* contrasts with cases involving lexical relatedness. In the case of someone who cooks, for example, the root nominalization *cook* already exists, beside the more professional *chef*. In the theory under discussion here, *cook* could ''block'' *cooker*, but this is only a manner of speaking. In our view of competition, all of the action occurs at the level of the morpheme, not the word. In this case, this means that the zero nominalizing suffix would win the competition for insertion over *-er* in the environment of the Root $\sqrt{\text{COOK}}$. What is really at issue, then, is the phonological form taken by the n head in (31), with reference to the Vocabulary items in (32).[11]

[9] Although compare *robber*, *burglar*, and so on.

[10] As far as the root nominalization analysis goes, our considerations elsewhere might raise the question whether the grammar leads us to expect that a root nominalization with the allomorph *-er* of n should be possible with $\sqrt{\text{STEAL}}$ in the first place; see (11bii). The answer is probably negative, but the possibility has to be considered nonetheless.

[11] It could be that $\sqrt{\text{COOK}}$ is on both lists in (32), in which case further reference to structures and features would be required in order to determine the pronunciation and meaning of root nominalizations formed from this root (consider,

(31) cook-Ø *vs.* cook-er



(32) *Vocabulary items*

n ↔ -er/Y____
Y = √ROB…
n ↔ -Ø/X ____
X = √COOK…

Reiterating our point from above, the same issues do not arise when there is no shared Root; thus, there is no grammatical sense in which *chef* could block *cooker*/*cook*, nor *thief stealer*.

In the literature on blocking, the existence of an ill-formed word and a word that intuitively would ''mean the same thing'' is often taken as sufficient evidence to substantiate a blocking relation. The cases outlined in section 2.3 illustrate several ways in which some form could fail to exist for reasons that have nothing to do with competition and blocking, as we illustrated for *stealer* above. Other cases of putative synonymy blocking from the literature can be analyzed in these terms as well. For example, Giegerich (2001) gives pairs like **horsess*/*mare* as cases of blocking. However, there is no reason to expect *horsess* for 'female horse' independent of the existence or nonexistence of *mare*: forms like **turtless* are deviant independent of any words we might know to express 'female turtle' (and sticking to the semantic domain of *lioness*, consider *leopardess* and *tigress* but **jaguaress*, **pantheress*; *leopardess* exists and **jaguaress* apparently does not, but not because there is some other word for 'female jaguar').

There are thus no strong arguments in the literature that a grammatical blocking relation holds between words that ''mean the same thing'' but do not share a lexical Root.[12]

(33) There is no synonymy blocking.

In the next section, we argue that there is also no word/word blocking relation between words that *do* share a Root, a point that arises in the analysis of certain facts that are central to all discussions of blocking effects.

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for instance, *pressure-cooker* and other examples where *cooker* is fine). One possibility is that there is no structural/featural difference at play here, as discussed at the end of section 3.1. If this is the case, then the Vocabulary items in (32) are such that neither wins the competition on the basis of specificity alone, so that either could appear for a Root that appears on both lists (recall section 3.1).

[12] Putting aside the question of suppletion: there is an important parallel between *went*/**goed* and *gave*/**gived* that can only be captured by recognizing *wen-* (or *went*) as an allomorph of the head that is pronounced *go*. If *thief* were analyzed as an allomorph of *steal*, a blocking/competition analysis of a connection between *thief* and the root nominalization *stealer* (along the lines of *cook-Ø* versus *cook-er* above) might be attempted.

3.3 Blocking in Aronoff 1976

While synonymy blocking can be dismissed in the manner outlined above, there remain cases in the literature involving what is claimed to be (a) blocking between whole words that mean the same thing and are built from the same Roots that (b) do not yield to an analysis involving competition among allomorphs for realization of a functional head. Perhaps the most famous case, found in Aronoff's work, involves the relation between ''bare'' (i.e., not overtly affixed) nouns, adjectives formed from these nouns with the suffix *-ous*, and the possibility of further nominalizing the adjectives with *-ity* and *-ness*. The existence of forms such as *curiosity* and *viscosity* suggests that *-ity* can attach to adjectives in *-ous* (*curious*, *viscous*) and create abstract nominals meaning, among other things, possession of the quality named by the adjective. A question then arises about *-ous* adjectives for which this relation apparently does not hold: for instance, if *curious* goes to *curiosity*, why does *glorious* not go to **gloriosity*? Why, moreover, is the form *gloriousness* allowed, unlike **gloriosity*? As Aronoff (1976) explains in the first detailed discussion of these types of facts, no simple notion of blocking between words based on meaning will be able to account for **gloriosity*, since consideration of the meanings of *-ity* and *-ness* would predict that *gloriousness* would mean what *gloriosity* would mean; thus, *gloriousness* should have the same ''blocked'' status as **gloriosity*, contrary to fact. The analysis that Aronoff develops in response to this and some related observations involves components that figure in all subsequent work on blocking effects, as we discuss below.

Roughly speaking, Aronoff's generalization about such examples says that if the *-ous* adjectival form decomposes into an independent noun (e.g., *glory*) and the affix *-ous*, then the *-ity* form is blocked. If, on the other hand, the *-ous* adjective cannot be decomposed in this way, then the *-osity* form is (potentially) grammatical. Thus, the absence of *cury*, as a word, allows *curiosity*.

(34) *Nominals from adjectives in* -ous (Aronoff 1976:44)

Xous	*Nominal*	*+ity*	*#ness*
various	*	variety	variousness
curious	*	curiosity	curiousness
glorious	glory	*gloriosity	gloriousness
furious	fury	*furiosity	furiousness
specious	*	speciosity	speciousness
precious	*	preciosity	preciousness
gracious	grace	*graciosity	graciousness
spacious	space	*spaciosity	spaciousness
tenacious	*	tenacity	tenaciousness
fallacious	fallacy	*fallacity	fallaciousness
acrimonious	acrimony	*acrimoniosity	acrimoniousness
impecunious	*	impecuniosity	impecuniousness
laborious	labor	*laboriosity	laboriousness
bilious	bile	*biliosity	biliousness
pious	*	piety	piousness

Aronoff attributes the difference between *-ity* and *-ness* to the regularity of *-ness* compared with *-ity*. Since *-ity* forms are not entirely predictable, they must be listed when they do occur.[13] What ''listing'' means is that a slot represented as ''Nominal'' for the Root in question in (34) contains the output of the word formation rule that assigns *-ity*. Because their existence is not predictable, ''simple'' nouns like *glory* must be listed as well. Blocking then can occur between listed forms, so that, for example, *glory* blocks **gloriosity*; technically, what this means is that *glory* occupies a slot associated with this Root, so that slot cannot be occupied by an *-ity*-affixed form. From the point of view of listed lexical items, the ''Nominal'' and ''+ity'' columns of (34) constitute a single lexical slot, for which only one form should exist. At the same time that this blocking relationship obtains between listed forms, productive formations like ''Nominal in #*ness*'' in (34) will not necessarily be blocked by words that mean the same thing, at least for this sort of derivational morphology.

In terms that we used above in explaining the intuition behind blocking, it is important to note that this approach makes crucial reference to paradigmatic notions: *glory* occupies the listed spot that **gloriosity* would occupy if the latter were formed. Similarly, *curiosity* would block **cury* as a backformation, since *curiosity* is itself listed and occupies the slot.

Four components of this treatment of blocking effects have been highly influential in subsequent analyses:

(35) *Components of Aronoff's blocking*

a. *Paradigmaticity:* The blocking effect arises because each ''lexical item'' has associated with it a set of cells expressing different meanings for that lexical item. Each cell may be occupied by (at most) one phonological form.

b. *Lexical relatedness:* The competition that results in blocking is between words that share the same Root.

c. *Irregularity:* Irregularity is crucial to blocking. Only elements that are irregular in some respect must be listed in the lexicon—that is, must be recorded in the ''paradigm slots'' (''The words which must be listed are blocked, and those which must not be listed are not blocked'' (1976:45)). Therefore, blocking effects may obtain only between formations each of which is ''irregular'' or ''unproductive.''

d. *Wordhood:* The objects that are entered into paradigm slots—and thus compete with each other by virtue of blocking each other—are *words*.

Our reexamination of word/word blocking centers on these points, and on how each point or the effects it is meant to cover are stated in a theory different from Aronoff's.

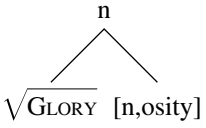
3.4 A Reexamination of Word/Word Blocking

Recall from our discussion of synonymy blocking that the absence of certain forms in what appear to be blocking situations might actually be independent of any putative competition between the

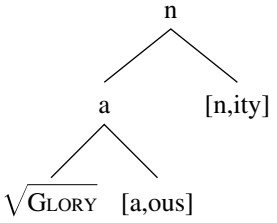
[13] Aronoff relates the irregularity of *-ity* to the application or nonapplication of Truncation (e.g., *atrocious*/*atrocity* but not *curious*/**curiety*). Similar points concerning the interpretation of *-ity*-affixed words arise in his discussion as well.

ungrammatical form and the grammatical form. In the case at hand, a similar approach must be examined as well. In line with the general architectural principles that underlie our approach, is there any reason to expect, say, *gloriosity* in the first place? That is, would the form that has to be blocked in theories with word/word blocking ever be derived by the grammar? More specifically, in our framework the question is whether either of the objects in (36) and (37) is found in English.

(36) *Structure 1*



(37) *Structure 2*



We address points related to each of these structures in the discussion below. We argue that there is no reason to expect *gloriosity* as the phonological form for either of them. The relationship between *glory* and *gloriosity* is thus not an argument for blocking at the word level, since the properties of *gloriosity* can be accounted for independently. Generalizing, our conclusion is as follows:

(38) There is no word/word blocking between lexically related words that ''mean the same thing.''

As discussed in section 2, Distributed Morphology allows competition for the phonological form of individual nodes. Competition among larger objects—for example, word-word competition of the type proposed by Aronoff (1976) and others following him—cannot be formulated in the theory. Taking up points from section 2 and earlier parts of this section, we demonstrate first that there is no need to prevent the **gloriosity* in (37) via competition, given the correct analysis of English derivational morphology (section 3.4.1). When the structures and their allomorphic properties are understood, **gloriosity* is not derived. A second question, considered (and answered negatively) in section 3.4.2, is whether or not some evidence for word/word blocking can be gleaned from occasional attestations of *gloriosity* or a hypothetical root nominalization *glori-osity* (as in (36)).

3.4.1 Accounting for Aronoff's Observations without Word/Word Blocking Beyond the (negative) conclusion in (38), there are stronger and more interesting things to say about *glory*/*gloriosity* and related cases that support the notion that grammatical competition is waged at the morpheme level, between Vocabulary items competing for insertion—once we recognize the full force of Aronoff's observations.

Our approach is based on identifying possible structures (combinations of Roots, n heads, a heads, etc.) and, further, the phonological exponents of the functional heads. Two aspects of

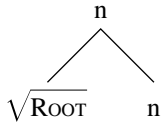
the distribution of the *-ity* allomorphy of n must be taken into account. The first is that in a particular domain, where an n is attached to a Root, *-ity* appears sporadically—that is, with a certain set of Roots that simply must be listed. Thus, we find root nominalizations like *atroc-ity* and *curios-ity*, but there are also many, many other root nominalizations without *-ity*.

This is only part of the picture, however. As explored further in Baayen and Renouf 1996, for example, while the distribution of *-ity* is highly restricted in what for us is the root nominalization structure, *-ity* is in fact productive in another context, attaching to adjectival-forming a heads with the exponents *-able* and *-al*. Since *-ity* has the listed property that it attaches to these suffixes, it will generally win over *-ness* as the realization of the relevant nominalizing node, yielding a preference for, say, *categorizability* over ??*categorizableness*. The Vocabulary item with the exponent *-ness* functions as a kind of default for n, as shown in (39).[14]

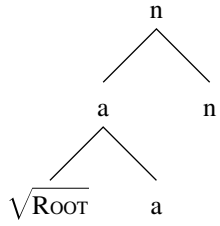
(39) *Vocabulary items*
n ↔ -ity/X ____
X = Roots ($\sqrt{\text{ATROC}}$, $\sqrt{\text{CURIOUS}}$ . . .); [a,able], [a,al]
n ↔ -ness

As outlined above, for *gloriosity* there are two different structures to consider: one in which the nominalizing head n is attached to the Root, as in (40), and one in which it is attached to an adjective (Root combined with adjective head a), as in (41).

(40) *Root attachment*



(41) *Outer domain attachment*



As shown in (39), one of the possible allomorphs of n in (40) is *-ity*; this is a listed property, which is correlated with the presence of certain Roots, but not others (there are a number of other allomorphs of n in this context: compare *cat-Ø*, *marri-age*, *act-ion*, etc.). The Root $\sqrt{\text{GLORY}}$ is not on the list in question. Thus, there is nothing in the grammar of English that leads one to expect **gloriosity* (or for that matter **glority*) with the structure in (40); see also section 3.4.2.

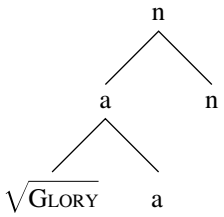
In any structure like (41) in which the n attaches outside a, some aspects of what happens at n are determined by the properties of a. With some a heads (e.g., the one with the *-Ø* allomorph

[14] Further specification might be required here, referring to structural properties of the n in question, and in particular to whether it is attached directly to a Root or to another category-defining head. For instance, *-ness* is a kind of default for n only outside other category-defining heads, not in the Root-attached domains. See Embick 2003 for discussion of how these conditions are relevant to the specification of Vocabulary items.

in *curious-Ø*, or the one with the *-ous* allomorph in *glori-ous*), the n head defaults to the phonology *-ness*. In the case of the ''potential'' a head with the exponent *-able*, the situation is different; the *-ity* allomorph of n is strongly preferred. In other words, the grammar of English provides no reason for a speaker to suppose that *gloriosity* from *glorious* [$\sqrt{\text{GLORY}}$ [a,ous]] exists, because there is no reason to expect to find *-ity* in this case.

The problem here is not with the syntactic structure. The grammar generates a structure in which $\sqrt{\text{GLORY}}$ combines with an a head, this structure then being nominalized by n, as in (42).

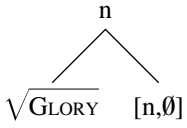
(42) *Structure for the deadjectival nominal of* $\sqrt{\textit{GLORY}}$



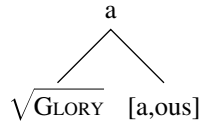
The point is about allomorphy. For *gloriosity*, the question here amounts to what phonological form is assigned to a and n. For a, the answer is clearly that in (42) this head is pronounced *-ous*. The real question regarding *gloriosity* is about n, and the answer is that in (42) it is pronounced *-ness*.

Putting these observations together, the structures for the cases under discussion, with exponents of category-defining heads included, are as shown in (43)–(45).

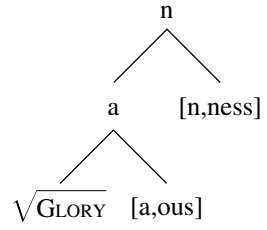
(43) *Structure for* glory



(44) *Structure for* glorious



(45) *Structure for* gloriousness



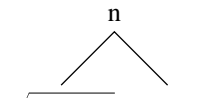
The word *gloriosity* with the structure in (45) is not blocked by *glory*; it is simply not derived. In some sense, then, the ill-formedness of **gloriosity* is similar to that of **jaguaress*. Neither of these forms is marked ungrammatical by virtue of being blocked by something else. Instead, each is deviant for independent reasons. However, the precise sense in which the two cases are deviant is not the same, in terms of a distinction made in section 2. In the case of **gloriosity*, although the hypothesized structure—that in (42)—is well formed, what is found in that structure is a different allomorph of n. In this sense, **gloriosity* is like **gived*. In the case of **jaguaress*, on the other hand, it seems that in general there is no productive way of expanding the paradigm space so that any noun (from Roots of the relevant semantic classes) can be affixed to form a

''feminine noun.'' The latter type of fact is independent of allomorphy, in the sense that the ''paradigm slot''—understood here as a particular structure produced by the syntax—is not created in the first place.

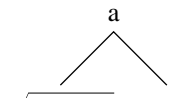
As an interim conclusion, then, we have an account of why **gloriosity* does not exist, one that makes no reference to the existence of *glory*.

With this analysis in hand, we now have a nice account of ''doublets,'' cases in which there is evidently no strong preference for either *-ity* or *-ness*: *curiosity*/*curiousness*, *ferocity*/*ferociousness*, *verbosity*/*verbousness*, and so on. No competition is relevant in apparent doublets like these because the *-ity* form is built on a category-neutral Root, as shown in (46), while the *-ous* form is built from the adjective (Root combined with adjectival head a), as shown in (47)–(48).

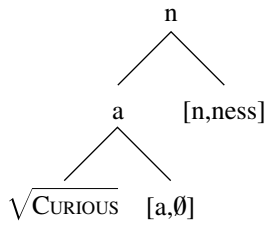
(46) *Structure for* curiosity



(47) *Structure for* curious

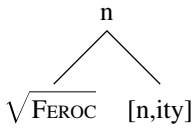


(48) *Structure for* curiousness

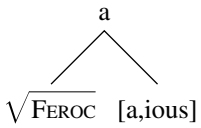


This is most apparent in cases like *feroc-ity*/*feroc-ious-ness*—cases of so-called Truncation—where *-ous*/*-os* is not part of the Root and one can see *-ity* attaching overtly outside an object that is phonologically different from what *-ness* attaches to. This is illustrated in (49)–(51).

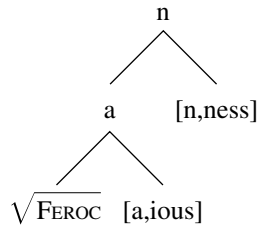
(49) *Structure for* ferocity



(50) *Structure for* ferocious



(51) *Structure for* ferociousness



But the generalization covers cases like *curios-ity*/*curious-ness* as well, where *-ous*/*-os* is included in the stem form. The doublets stand beside pairs like **gloriosity*/*gloriousness*, with preference for the *-ness* forms, and pairs like *categorizability*/??*categorizableness*, with a strong preference for the *-ity* forms. Where there is competition for realization of the nominalizing head in a single structure, a winner emerges (*-ity* outside *-al* and *-able* and a set of listed Roots; *-ness* as default, as in (39)). The relevant pairs behind the doublets do not involve competition, because the two members of the pair have different syntactic structures: one in which the n head is attached to

the Root, and one in which it is attached to an a head.[15] Different Vocabulary items win the competitions in these distinct structures.

Note that the account proposed here is still consistent with Aronoff's original observations, since *-ity* outside *-al* and *-able* functions as *-ness* does—that is, as ''productive'' or predicted morphology. It should be exempt from the Aronoff-style blocking to the extent that *-ness* is.

However, as implemented in our theory, local competition for insertion goes beyond Aronoff's blocking between listed words, as it includes cases of ''productive'' affixes ordered by the specificity of their insertion environments. The productive insertion of *-ity* in the environment of *-able* and *-al*, preferentially over *-ness* in these cases, illustrates that local competition produces apparent ''blocking'' effects even in the case where neither competing word needs to be listed.[16]

3.4.2 Additional Considerations We have provided an account in which the structures where *gloriosity* might conceivably appear do not receive that particular phonological form. There are two further aspects of *gloriosity* to consider. The first is that instances of *gloriosity* are indeed attested. The second returns to questions about word-word competition: to the extent that something like *gloriosity* exists, what does this imply for word/word blocking theories? We show that the possible structures for *gloriosity* are quite restricted; for the speakers who have this form, it appears to be a kind of emphatic of *glory* (following in some sense the general principle that emphatics are larger than their nonemphatic counterparts). Moreover, word/word blocking accounts, to the extent that they predict anything, seem to predict that *glory* should block this emphatic *gloriosity* more strongly than a deadjectival *gloriosity*. This prediction is not supported by the facts.

Some of the groundwork for the first part of this discussion is found above in section 3.1. If the grammatical system is explicitly comparing *glory-Ø* and *glori-osity*, this comparison can be reduced to a comparison similar to the one discussed earlier with reference to *cook-Ø* and *cook-er*. The zero form of n exists for *glory* and *cook*, and thus the motivation for a new root formation, *gloriosity* or *cooker*, is not present.[17] That is, given (52), there is pressure (in terms of ''semantic space'') for *gloriosity* to be analyzed as something other than (53); if it is analyzed with that structure, it should have to be different from *glory* in some salient semantic sense.

[15] If there is any competition when the same structure is at issue, then it is along the lines sketched at the end of section 3.1 with reference to *cover* and *coverage* (recall also footnote 11).

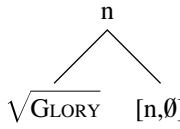
[16] ''Blocking effects'' between two entirely predictable affixes are found in other domains as well. Take passive prefixes in the Hokan language Seri (Marlett and Stemberger 1983, Carstairs 1990). This prefix has the allomorph *-p-* when it occurs before a vowel-initial Root, and *-a:ʔ-* elsewhere.

(i) -p-eši 'be defeated'
-a:ʔ-kašni 'be bitten'

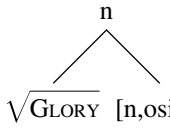
The form of the passive prefix is entirely predictable throughout this system; there is no need for either type of competitor to be listed (i.e., we expect passive prefixes on nonce verbs to be treated in an entirely productive fashion). Nevertheless, only one of these prefixes appears with any given verb, ''blocking'' the other despite the absence of listedness or unpredictability.

[17] There is a third option parallel to part of what was considered for *curiosity* above, one that would also require the Root to be analyzed so that it has an allomorph *glorious* all in one piece.

(52) *Structure for* glory



(53) *Structure for* gloriosity *(root nominalization)*



The alternative in (53) relies on the hypothesis that in some varieties of English *-osity* is a single affix (i.e., a single piece). Informal Web research reveals that *-osity* might be a productive affix in at least some dialects of English (see, e.g., the Bangles' *Babe-Osity* album).[18] *Gloriosity* is used not infrequently; its primary meaning is religious, referring to the glory of a deity. Note that the primary use of *glorious* is connected not to the type of glory that accrues via actions or deeds but to beauty and splendor, as in *glorious morning*. *Glory* is most often attributed to people, while *glorious* is associated with, say, weather, or with physical beauty in people. In its most frequent uses (as far as Web searches and intuitions reveal), *gloriosity* relates to *glory* and not *glorious*, suggesting that it involves an *-osity* suffix. One can think of this *glori-osity* as a kind of ''emphatic'' version of *glory*. This means that to the extent that *gloriosity* exists, it does not have a structure in which a Root combines with an a head and then an n head; rather, it is a Root combined with an n (perhaps an ''emphatic'' n, in the structure in (53)).

For the purposes of how blocking works, simple word/word blocking theories might suggest stronger blocking of *gloriosity* by *glory* on this reading than of *gloriosity* by *glory* if the former were analyzed as being created via affixation of *-ity* to the adjective *glorious*, with the meaning 'the state of being glorious, as of a morning or a beautiful person'. As noted above, *glory* does not occupy the semantic space of a *gloriosity* formed from the most common meaning of *glorious*, which would be the abstract property related to the basic meanings of *glorious*. On the other hand, *glory* does seem to occupy the semantic space of the actual uses of *gloriosity* (or is closer to it). For a theory with word/word blocking, then, the relationship between *glory* and *gloriosity* does not go as predicted. If anything, such theories predict that an existing *gloriosity* with a meaning ''close'' to that of the noun *glory* should be blocked by *glory*, more than a *gloriosity* related to *glorious* would be. This prediction is not borne out.

Thus, even when we look further into *gloriosity*, it does not seem to provide an argument for word/word blocking; if anything, the patterns go in the opposite direction. Close examination of the uses and meanings of *glory*, *glorious*, and *gloriosity* provides no support for a word/word blocking approach to the apparent ill-formedness of *gloriosity*.

3.5 Synopsis

The main line of the argument above is that there is no evidence for word/word blocking. The change in perspective motivated by our reanalysis puts a new light on each of the components of the standard treatment of blocking described in (35).

[18] In our dialect(s), uses of *-osity* in the relevant sense are only tongue in cheek. It is quite possible that some attested ''productive'' uses of *-osity* have this status as well, to judge from initial Web searches.

3.5.1 Paradigmaticity All reasonable accounts of blocking are paradigmatic in this sense: they assume that sets of syntactic or semantic features (of the sort usually assumed to be expressed by affixal morphology and/or function words) establish a space of discrete cells or slots for various forms of lexical stems or Roots. In theories such as the Distributed Morphology framework adopted here, the paradigm space generated by grammatical features is a virtual one: it derives from the inventory of functional heads and the generative process. The cells and the shapes of paradigms play no direct role in the grammar. For blocking, local competition for insertion of Vocabulary items into terminal nodes explains why a given paradigmatic ''cell'' lacks multiple residents, without direct reference to the paradigm. The syntax generates a structure, and morphophonology provides it with a phonological form.

3.5.2 Lexical Relatedness To the extent that there is something to say about competition effects, it is in the case of two forms that share the same Root, which can under specific circumstances be seen as competing for the same ''slot.'' In English, the fact that verbs have past tense sets up a potential slot for the past tense of any verbal stem. The notion of two forms ''meaning the same thing'' reduces to the notion that two forms built on the same Root or stem potentially express the same set of features—that is, fill the same cell or slot in a paradigmatic space generated by the possible meaning distinctions expressible morphologically or syntactically in a language. In our theory, in which paradigms are not reified as objects of the grammar, ''filling the same slot'' amounts to appearing in the same syntactic structure.

As we showed with pairs like **gloriosity*/*glory*, there is no strong evidence that a competition exists between a potential word, *gloriosity*, and the existing word, *glory*, in a way that must be invoked to account for the apparent ill-formedness of the former. Rather, the relative ill-formedness of **gloriosity* can be explained in terms of generalizations about the distribution of the n head with the exponent *-ity*, without invoking any sort of competition with *glory*. To use these generalizations about *-ity* in the case of **gloriosity*, it is necessary to examine the nominalization of a complex form, *glori-ous*, that contains *glory*. The competition between *-ity* and *-ness* is won hands down by *-ness* when the nominalizing suffix attaches outside the adjective-forming *-ous*. Thus, lexical relatedness, internal structure, and ''selectional'' information about Vocabulary items are all relevant to determining when competition between Vocabulary items yields a preference for one form over another. However, the explanations here do not require or suggest blocking relations between whole words that ''mean the same thing.''

3.5.3 Listedness Does blocking require ''listed'' forms taking precedence? Evidently not, as the discussion of *-ity* and *-ness* outside of *-able* and the like shows. What is crucial for the blocking effect is competition for insertion at a single node, not whether or not the output of some process is ''listed.''[19]

[19] The same considerations arise in the case of Poser blocking as well; both the phrasal *more Adj* and the word-level *Adj-er* are entirely regular, modulo the phonological restriction on adjectives with *-er*. Speakers tested on novel adjectives like *wug* judge that if *John is wug*, then *Bill is wugger than John*, not *Bill is more wug than John*.

3.5.4 Wordhood The one aspect of the standard approach to blocking that remains to be examined in detail is the ''wordhood'' assumption—in particular, the question of whether blocking effects exist between objects larger than the word and therefore outside the lexicon. Following Poser's (1992) lead, most approaches that consider analytic/synthetic alternations try to make such interactions look like ''standard'' blocking, in which a single word takes precedence over an analytic expression. In the next section, we examine such approaches and the alternative provided by Distributed Morphology.

4 Word-Phrase Interactions and Blocking

In the previous section, we explained why there are no strong arguments for standard blocking at the word level. Nevertheless, data like those discussed by Poser (1992) and others apparently involving word-phrase competition might still require standard blocking, perhaps with an additional principle that smaller objects block larger ones. In this section, we argue against approaches that extend Poser's line of reasoning about words competing with phrases, and we show that a syntactic approach (Distributed Morphology) without competition among larger objects makes the correct predictions.

4.1 No Competition: Rules Apply

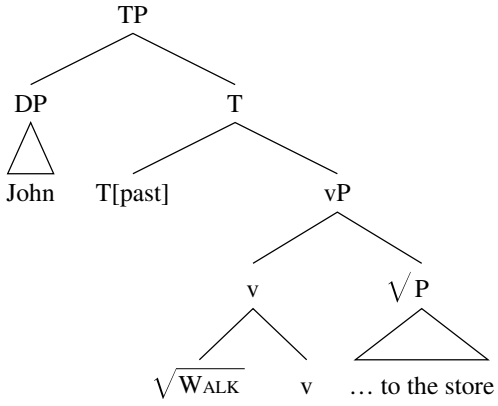
Our approach to word-phrase interactions is a ''traditional'' generative one, one that became unpopular when theories began to exploit an assumed split between lexical and syntactic derivations. If the same syntactic structure is found in both phrasal and single-word expressions, the apparent preference for the single-word expression, where possible, falls under the generalization that Rules Apply.

(54) *Rules Apply*
Perform a computation when the structural description of the rule is met.

If there is a rule of affixation—a rule that adjoins one head to another—that applies in a particular structural context, it will create something that is pronounced as ''one word.'' However, the operative principle is not ''Words are better than phrases''; it is (54). For instance, Lowering of the Tense node (T) to the verb in English is a process that applies when T is in the appropriate syntactic configuration with respect to the verb. It is ''obligatory'' in the sense that phonological and morphophonological rules are obligatory.

Further aspects of the past tense cast light on other facets of this type of approach. At least since Chomsky 1957, a standard analysis of tense in English puts tense features in a functional head higher than the phrase (VP) in which a main verb might be generated. This positioning of tense features captures (a) the fact that tense has sentential scope, not just scope over the verb to which it attaches, and (b) the facts concerning the distribution of tense morphology in questions, negative sentences, and so on. Abstracting away from various details in competing generative analyses, the relevant syntactic tree for a sentence like *John walked to the store* is something like (55), where some details (e.g., subject copy) have been ignored.

(55) *Structure for* John walked to the store

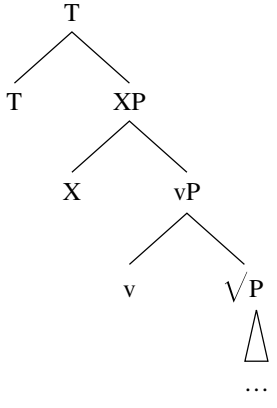


Following the standard analysis, main verbs in English do not raise to T; instead, T must be lowered.

(56) *T-Lowering*
T lowers to v.

This rule—a kind of *merger* process—applies when its structural condition is met. Following earlier work on merger operations, Embick and Noyer (2001) hypothesize that a kind of merger called *Lowering*, an operation that relates a head to the head of its complement, applies in English as in (56). As Embick and Noyer discuss, syntactic affixation (adjunction; ''morphological merger'') can be of different sorts, governed by different structural conditions, depending on the stage in a derivation at which the affixation occurs. The ''rule'' is an instantiation of the most general recursive operation of the grammar, merger, as realized within the parameters dictated by the properties of the structures in which it applies. In the case of T-Lowering, the target for T is a verb (i.e., v) and the locality conditions for merger are met if no head intervenes between T and the verb; when a head X intervenes, as in (57), T-Lowering does not apply.

(57) *No T-Lowering*



So, for example, when a negation head Neg or an emphatic node Σ (found in *I DID (too) walk to the store*) intervenes between T and v, merger does not apply, because T and v are not in the configuration specified in the rule. In such cases, the T head is pronounced as an affix on a dummy v, the light verb *do* (see Embick and Noyer 2001 for proposals concerning the relationship between *do*-support and Lowering).

It is crucial to note that this type of analysis involves no duplication of the lexical and the structural. Every theory requires some account of past tense formation. Standard lexicalist accounts rely either on a lexical rule of tense affixation or on a general notion of affixation or merger in the lexicon that allows compatible morphological pieces to get together and percolate their features to the word level. On the Distributed Morphology account, whatever one says about the structural details that define the affixation of T, it is always mediated by a structure that is essentially syntactic. This is a simple consequence of the architecture of the theory, which has no lexicon where complex objects can be built in the first place. There is therefore no sense in which we ask, faced with a complex word apparently consisting of a stem and an affix, whether the affixation was the result of a syntactic ''merger'' or of lexical affixation. All affixation results in a syntactic structure, one that displays the arrangement of syntactic features necessary for the derivation of the syntax, semantics, and phonology of the relevant word. The differences between ''standard'' head movement and the different ''lowering'' operations discussed in Embick and Noyer 2001 (see below) crucially involve the sensitivity of word formation to the syntactic environment of the words. The same factors must be taken into account on any approach. Thus, on some lexical treatment of word formation, the difference between how T and the verb relate to one another in, say, English versus French might be recast in a different way, but some difference has to be acknowledged. Thus, the Distributed Morphology approach is not under any special burden of proof because it posits different movement operations for affixation.

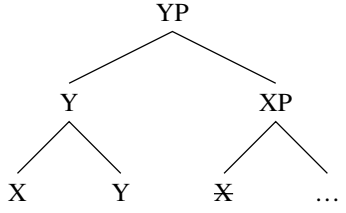
Now consider an approach that sets the phrasal *did walk* in competition with the lexical *walked* to compute the proper realization of the sentence *John walked to the store*. As far as we can tell, only a system like the one made explicit in Bresnan 2001 would be able to implement this sort of competition formally (see section 4.2.2). The reason is that the putative competition between lexical and phrasal expressions implicates the presence or absence of negation, emphasis, and/or interrogative structure, such that it is difficult to compute the notion of the availability of the phrasal or lexical expression of tense without a more global consideration of the expression of negation and interrogative force, as Bresnan makes clear. What is needed, then, is some set of constraints on the possible realization of tense, negation, and so forth, within the sentential domain. One can imagine a variety of constraints on the expression of negation that would cause *John didn't/did not walk to the store* to win over **John not walked to the store* and **John walked not to the store*. The important point here is that something like Bresnan's system seems to be required on this type of competition theory, and the details of the analysis of negation, emphasis, and interrogative force must be made explicit and defended against the treatment in the standard generative approaches; it is this challenge that Bresnan's work rises to.

The generative position here claims that what one needs to say anyway in an attempt to generate the possible competitors for a global competition analysis already yields just the grammatical structures. That is:

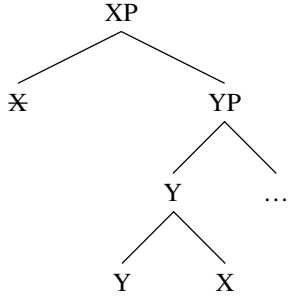
(58) *Generative position*
The space of competitors—''meaning space,'' ''paradigm space''—must be generated in syntactic derivations. These potential competitors are
a. grammatical, and
b. operated on phonologically to yield ''pronunciations,'' and at LF to yield ''meaning.''

For the purposes of word-phrase interactions, the relevant points center on how syntactic affixation occurs in a single structure that could in principle yield one word or a phrase (more than one word). As noted earlier, our version of the generative approach recognizes different means by which one terminal can be affixed to another (derived from work on ''(morphological) merger''; Marantz 1984, 1988). Beyond head movement, there are two other operations that can package terminals into a complex head. The example of packaging that we employed above, the much-discussed case of tense in English, is an instance of Lowering in the terminology of Embick and Noyer (2001). Formally, a head *lowers* to the head of its complement. This operation is the ''downward'' version of another complex-head-creating operation, ''standard'' head movement.[20] A third type of operation is defined in terms of linear adjacency rather than hierarchical notions of headedness. This operation is referred to as *Local Dislocation* in Embick and Noyer 2001: it affixes one element to another when they are linearly adjacent. We summarize these operations in (59) (with linear order inside complex heads irrelevant; the strikethrough in (59b) is for expository purposes).

(59) a. *Head movement* (Head X raises and adjoins to head Y)



b. *Lowering* (Head X lowers and adjoins to head Y)



[20] Questions have been raised about the status of head movement; see Chomsky 2001. Matushansky (2006) treats the process as movement to a specifier position that feeds a lowering operation.

c. *Local Dislocation* (X adjoins to Y under linear adjacency)
$X^\frown Y \rightarrow [[Y]X]$

Each of these processes crucially involves syntactic notions of locality and intervention, as shown in our initial discussion of T-Lowering above (in the case of Local Dislocation, the relevant linear notions are derived from a syntactic structure). We discuss the implications of these locality effects in greater detail below. Our central claim is that a theory with syntactic affixation correctly predicts the possible range of word-phrase interactions (i.e., that they occur in the structural configurations implicated by the movement operations above), whereas competition-based theories of different types do not.

4.2 Competition Theories

Two types of competition theories will be considered here. One type implements competition among multiword expressions (phrases, clauses, etc.), as mentioned with reference to Bresnan 2001 above. These we refer to as *sentential competition* or *global competition* approaches. The second type of competition theory, with *Poser blocking*, implements Poser's (1992) original insight: that there are specific nodes in a structure at which comparisons between words and phrases can be made, with a word winning over a phrase when the two ''mean the same thing.'' We outline some key differences between these types of competition theories before comparing them with the generative approach.

Within competition theories, one important question is whether or not the grammar contains a general principle regulating how words and phrases interact with one another. One global competition theory, proposed by Kiparsky (2005), develops the intuition that blocking is governed by two competing constraints on grammatical expression: they should realize as much of the information to be conveyed as possible, and they should be as economical as possible in expressing information. These constraints favor expressions with fewer morphemes and, perhaps, single-word over phrasal expressions, if the notion of economy can be tweaked in the appropriate way. These considerations by themselves do not favor stored, irregular forms over generated, regular forms when these are equally complex.

The Poser blocking theory of competition is similar to the global competition theory except that it is more explicit about how information is preserved in competition and about how economy of expression is defined. On this view, the lexical always takes precedence over the phrasal. Putting pieces together according to the general constraints of a language (say, the phrase structure rules) generates feature structures via conventions of feature percolation and combination. Two generated trees can be compared at any node. If a node in one tree has the same syntactic features as a node in the comparison tree, one can then ask about the number of morphemes dominated by the node used to create this feature structure. If one tree has a single word expressing the feature structure at the given node but the other tree has a complex structure of words expressing the same feature structure, the single-word expression blocks the multiple-word expression, rendering it ungrammatical.

Because the theories we discuss have different takes on the matter, we must ask whether the principle that words are better than phrases (all other things being equal) is an important part of the grammar. We refer to this hypothetical principle as *Lexical Preference*.

(60) *Lexical Preference*
Use a word instead of a phrase when they both express the same features. (That is, use a phrase exhausted by one lexical item over a phrase that contains more than one lexical item.)

The status of this principle figures prominently in the discussion below. For present purposes, one major difference between the two types of competition theories involves situations where it seems that a less expressive structure wins over a more expressive structure—that is, where considerations of blocking seem to yield a sentence that says less than it should. A crucial example here is *Aren't I lucky?*, expressing what the otherwise ungrammatical *Amn't I lucky?* would express. *Are* is underspecified for person and number compared with *am*, but it seems as though the unavailability of the form *amn't* causes the less expressive structure to be chosen here. Optimality Theory (OT) machinery can be employed, as in Bresnan 2001, to compute the competition among various structures expressing a set of syntactic features; OT assumptions allow for the possibility that some features will not be expressed in the winning candidate. This type of consideration—weighing expressiveness and factors surrounding lexical gaps—can be treated under the Kiparsky-style blocking but falls outside the scope of Poser blocking approaches, since no straight competition between the lexical and the phrasal is involved.

The second important difference between the two competition approaches to blocking is that the Poser blocking theory limits blocking locally to a node in a syntactic tree; in fact, competition must be assessed at every node in a tree, if the theory is to be fully generalized.[21] A Poser blocking approach thus makes precise predictions about the locality of competition effects, predictions that differ crucially from the ones our theory makes. While Poser blocking theories tightly circumscribe the locus of possible effects, this is not the case in a sentential competition theory weighing general constraints about the economic expression of features, where the domain of competition depends on the domains in which sets of features may be expressed, as well as on possible interactions among the ways that features are expressed. Bresnan (2001) implements these sorts of ideas via competition at the sentential level, where the competition is not between a single-word expression of the sentence and multiword expressions but among various multiword expressions.

In sections 4.2.1–4.2.3, we exemplify global competition theories and show that they make incorrect predictions.

4.2.1 Kiparsky 2005 Kiparsky (2005) hypothesizes that two constraints are operative in the domain of blocking phenomena. These constraints are supposed to exhaust what there is to say about blocking effects and are evidently operative in all cases to which the term *blocking* has been applied.

[21] In Poser's original conception, competition is constrained to nodes dominating heads. Full comparison of competition and noncompetition approaches requires generalizing this notion.

(61) *Kiparsky's (2005) constraints*
a. *ECONOMY:* Avoid complexity.
b. *EXPRESSIVENESS:* Express meaning.

The first constraint requires that the ''simplest'' form be chosen; the second, that meaning be expressed in the appropriate way (i.e., that the expression appear in the correct paradigmatic slot, to use our language from above). To operationalize the notion ''simplest'' relevant for the first constraint, Kiparsky suggests a procedure that counts morphemes, noting that other metrics could be conceived of. For our purposes, we will simply assume that there is a way of formulating LEXICAL PREFERENCE along these lines, since what is at issue is how words and phrases interact with one another.

Kiparsky's theory should prefer, say, *smarter* over *more smart* by ECONOMY (i.e., by that theory's version of something like LEXICAL PREFERENCE). This is something that blocking theories of many types could accomplish. What happens in other cases is more revealing. Part of what Kiparsky has in mind is a conceptual preference for a ''uniform'' conception of blocking effects, based entirely on competition. He considers the view of blocking expressed here incorrect on the grounds that

> D[istributed] M[orphology] in effect stipulates blocking twice: once by positing that merger processes are obligatory—an undesirable stipulation in itself—and secondly as the Subset Principle. (2005:118)

(The Subset Principle is one way of formulating the idea that Vocabulary items compete for insertion at a single node.) The claim here is that Distributed Morphology is missing a generalization by saying that some forms fail to occur because of allomorphic competition (e.g., **giv-ed*), while other forms fail to occur because of the nature of packaging processes like merger (e.g., **more smart*). The nature of the objection is conceptual, in the sense that the problem is supposed to be that a ''uniform'' notion of blocking is preferable.

In this light, it is instructive to consider that Kiparsky's treatment accounts only for one case under consideration: blocking of **more smart* by *smarter*. Because the grammar generates the synthetic form here, there exists a word that means the same thing as the phrase; and because the former is shorter in the relevant sense, it wins over its analytic competitor by ECONOMY. The same cannot be said about the relationship between *more intelligent* and **intelligenter*, however. Kiparsky does not consider this case. If the system generates **intelligenter*, or if it exists as a possible output form, then it must, by ECONOMY, block *more intelligent*—it is smaller in the correct fashion, by virtue of being a word, and thus should block the phrase. To avoid this result, it must be the case that *intelligenter* is impossible in Kiparsky's system for independent reasons—that is, reasons other than the interplay of EXPRESSIVENESS and ECONOMY. These principles might be stated as they are in other accounts; specifically, *intelligenter* is underivable because it violates the phonological conditions that govern the acceptability of synthetic forms. Whatever the relevant independent conditions are, the point is the same: Kiparsky's account ''stipulates'' blocking effects twice; as far as this sort of arithmetic is concerned, his proposal and ours are similar. One type of blocking arises when the two constraints interact, and another type because certain forms are ill formed or underivable for other reasons.

What is at issue, then, is not a conceptual preference for one versus two principles (''stipulations''), but which approach makes the correct predictions about the range of analytic/synthetic alternations: the competition-based theory or the generative one. In the earlier discussions of English comparatives and the English tense/verb system, we showed that a competition-based blocking approach to word-phrase interactions must make explicit assumptions about the possible phrasal and lexical expression of comparative, tense, negation, and question features, and the like—the whole range of features that play a role in apparent cases of Poser blocking. Since Kiparsky is vague on the general assumptions about syntax that lie behind his approach, we need to turn to a more fully realized system, that proposed by Bresnan (2001), to compare the generative and competition-based hypotheses.

4.2.2 Bresnan 2001 The insight behind Kiparsky's approach to the contrast between *smarter*/**more smart* and **intelligenter*/*more intelligent* is twofold: a single-word expression is preferred over a phrasal expression, but when the single-word expression is unavailable, the phrasal expression emerges. Within the generative approach, the same insight is captured without referring to a preference for single-word expressions (LEXICAL PREFERENCE). Rather, the syntactic structure that underlies both single-word and phrasal expressions yields the single-word expression when a rule's conditions are met, and a phrase when the conditions are not met. One question that ultimately must be addressed is whether there are clear arguments for adopting LEXICAL PREFERENCE or not.

We will examine the exact status of that principle later, with respect to more intricate examples. For the moment, we will continue our examination of generative versus competition-based theories by asking whether the global competition approach and the generative approach can be shown to differ in their predictions. Bresnan (2001) points out a strong prediction of the competition-style approach that, if proved accurate, would separate it from the generative approach. Bresnan argues for her global competition analysis by claiming that it can explain how an apparent gap in the lexicon can cause an otherwise blocked phrasal expression to emerge. Generative theories do not make this prediction. In a generative approach, a structure has whatever status it has independent of any other structure that the grammar may happen to derive. In a competition-based framework, on the other hand, the deviance of some structure could result in another *popping out*, that is, becoming more grammatical than it would be otherwise.

In an example that Bresnan examines in detail, she argues that the absence of *amn't* allows the possibility of *Am I not (verb) . . . ?* in some dialects of English, as shown in tableau (62).

(62) *Analytic expression emerging*

Input: interrogative wide negative 1sg

	LEX	*NEG-C	FAITH	*NEG-VP	*NEG-I, *NINFL
Amn't I working?	*!				*
Am not I working?		*!			
☞ Am I [not working]?				*	

Note that the input in this tableau refers to the person and number of the subject, as well as the scope (sentential, not constituent) of negation. The ranking of the various *NEG constraints encodes the preference for lexical expression of negation (NEG-I) over phrasal, and a preference for low expression (NEG-VP) over high (NEG-C). The constraint LEX enforces language-specific lexical gaps—in the case at hand, the fact that *amn't* is disesteemed (i.e., does not exist). If the input were 3sg rather than 1sg, a candidate in which negation and the auxiliary are expressed together would not violate LEX (since *isn't* is all right), and thus *NEG-VP would rule out *Is he [not working]?* in favor of *Isn't he working?*. In the 1sg case, on the other hand, anything with *amn't* violates LEX; the result in terms of the ranking in (62) is that analytic *Am I not . . .* is optimal. The *amn't* lexical gap thus allows the emergence of an otherwise dispreferred Neg-VP expression of sentential negation.

On a generative approach, a structure's grammaticality is not determined by considering alternative realizations of the same set of features. Therefore, the status of *Am I not working?* must be determinable in a way that is independent of the lexical gap that results from the ill-formedness of *amn't*. Here, the generative approach apparently makes the correct prediction, while Bresnan's theory produces the wrong results. The competition-based approach with popping out predicts that if a dialect of English allows *Am I not working?* only because *amn't* does not exist, then in this dialect *Am I not working?* should be *better* than *Is he not working?*, since the latter should be blocked by *Isn't he working?* given the constraint ranking shown in (62). Bresnan provides no evidence for dialects in which *Am I not . . .* is preferred to *Is he not . . .* in this way, and our own research fails to find such a preference among speakers who allow *Am I not . . .* or prefer it to *Aren't I . . .?*.

The general point here concerns the popping out effect; it does not seem to happen the way theories like Bresnan's predict that it should. For past tense, it is easy to demonstrate that Bresnan's predictions are not borne out. It is not the case that the existence of a gap renders some other (otherwise deviant) form grammatical. For instance, the lexical gap in the past tense for *forgo* (i.e., the deviance of **forwent*) does not make **did forgo* grammatical, as Bresnan's account predicts. For us, **forwent* is ill formed. At the same time, **I did forgo dinner* is not improved (or better than **I did consume dinner*), despite the ill-formedness of **I forwent dinner*. Nor is the absence of *stride*'s participle—**stridden*—associated with a grammatical analytical form that is otherwise impossible (e.g., *has done stride*, or whatever else it might be).

In general, there is no evidence that an apparent gap of this sort in the lexicon improves a conceivable phrasal alternative. On the generative account, this is because the structural constraints on lowering force the operation of merger, so that the phrasal ''alternative'' is never generated in the first place (i.e., there is no phrasal alternative, because the grammar is simply not structured to generate one). The apparent ill-formedness of the past tense of *forgo* cannot interact with the structural constraints on merger. As we argue later, it is a mistake to group forms like **intelligenter* with forms like **forwent* and **forgoed*. In the case of **forwent*, speakers are confronted by the apparent degraded status of a word generated by the grammar.[22] In such cases, the grammar does

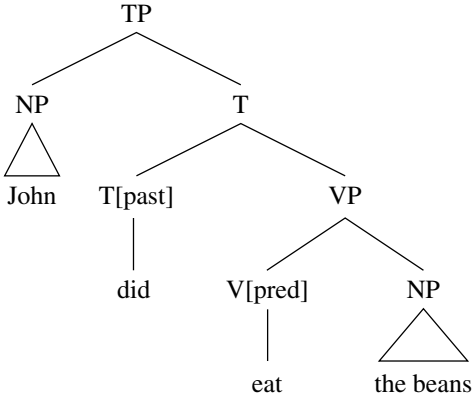
[22] We are aware of no account of the degraded status of these past tense forms that is incompatible with our approach.

not automatically yield an alternative that then emerges as grammatical in some sort of OT computation. In the case of **intelligenter*, the word is not generated by the grammar.

Finally, it should be noted that our argument here goes well beyond the familiar difficulty that OT systems have with ineffability. One could integrate some attempt to deal with that problem into Bresnan's system—for example, the null parse (McCarthy and Wolf 2005)—and the primary prediction of the global competition approach would still not be verified. All that the null parse (or its equivalent) would do is reduce the number of instances in which effects of the strong prediction of Bresnan's approach—popping out—could be detected.[23]

4.2.3 Blocking and Sentential Competition Bresnan (2001) acknowledges that a blocking account of word-phrase interactions requires comparisons between constructions at the phrase or clause level, and not just competitions between words (i.e., it does not suffice to simply have *ate* block *eat*). An examination of Andrews 1990, which Bresnan cites as precursor of her approach, reveals why. Andrews proposes a *Morphological Blocking Principle* that can block a structure S containing a particular word L_1 by consulting the lexicon for lexical entries related to the word (in practice, for lexical entries containing the same Root, and thus the same Root meaning, as the word in question). If there exists another lexical entry L_2, such that L_1 has a subset of the features of L_2 and L_2 has a subset of the features expressed in S, then L_1 is blocked (in S). For example, at the sentence level for the sentence *John did eat the beans* (with unstressed *did*), *eat* has the feature [pred] and *did* the feature [past], as shown in (63). Assume further that the lexical items in (64) are under consideration for appearing in this structure.

(63) *Structure for* John did eat the beans



(64) *Lexicon*
eat, [pred]
ate, [pred,past]

[23] Put slightly differently, it would be noteworthy if all cases in which the predictions of the competition-based theory could be tested were cases in which it is the null parse that pops out. The competition-style theory advocated by Bresnan predicts that there should be instances in which what pops out is in fact something other than the null parse.

The features of *eat* are a proper subset of the features of *ate*, and *ate* determines a subset of the features of *John did eat the beans*, which thus blocks *eat* from the structure *John did eat the beans* and renders the sentence ungrammatical.

Andrews acknowledges a deep problem for this account of blocking, which essentially involves a comparison between lexical entries but in a particular sentential context. Continuing with the example *John did eat the beans*, the problem is that the existence of *ate* should block *eat* not only in this sentence, but also in its negative and interrogative versions, where the auxiliary *did* is required.

(65) a. Did John eat the beans?
b. John didn't eat the beans.

All that the sentences in (65) add to the structure in (63) are an interrogative feature and a negative feature, respectively. Given that *ate* blocked the structure with *did* in (63), it is predicted that its existence should block the sentences in (65) as well, but it does not.

Andrews describes two solutions to this problem that will allow the use of *eat* in interrogative and negative sentences, but both involve having the auxiliary add features to the sentence that would not be present without the auxiliary. For example, if *did* adds a [+aux] feature to any sentence in which it occurs, the features of the whole—[+aux], [past], and so on—will not be a subset of the features of any lexical verb in the past tense, with the result that the existence of such a verb (e.g., *ate*) will not block a sentence containing *did* plus the verb (e.g., *did eat*). The consequence is that the Morphological Blocking Principle will no longer cause *ate* to block *John did eat the beans*. That is, in order to allow *eat* in sentences like (65) with past tense features, the Morphological Blocking Principle cannot block *eat* in any sentence with the auxiliary *did*.

In general, the Morphological Blocking Principle is not able to account for the distribution of phrasal versus single-word expressions of inflectional meanings when structural properties of sentences determine where the single-word expression is allowed (e.g., when there is necessarily some local structural relation between the verb stem and the functional head containing the inflectional features). To have blocking account for the ungrammaticality of **John did eat the beans*, one must compare this sentence with the alternative *John ate the beans*; it does not suffice to simply notice the existence of *ate*. Thus, a lexicalist account of word-phrase interactions must either adopt Bresnan's whole-sentence-comparison theory, problematic for reasons already discussed, or something like the implementation of Poser blocking found in Poser 1992 and discussed more recently by Hankamer and Mikkelsen (2002, 2005), to which we now turn.

4.3 Competition and Poser Blocking

In neither the generative approach nor Bresnan's sentence-level competition-based approach to blocking does a general preference for words over phrases do any real work. On the other hand, for Poser's (1992) initial idea that blocking ''extends the boundaries of the lexicon,'' this principle appears to bear a great deal of the explanatory burden. Whether any explanatory burden should be placed on LEXICAL PREFERENCE is an important question. A kind of conceptual argument could be made against the generative approach based on whether ''Merge when the conditions are met''

is a hidden way of saying ''Merge (i.e., prefer a single-word expression) whenever you can.'' If so, then the generative approach would be stipulating on a case-by-case basis something that should actually be treated as a universal principle if words are ''better'' than phrases.

Part of what is at issue is illustrated in (66).

(66) *I did walk to the park. (unstressed *do*)

The generative approach says that the ungrammaticality of (66) falls under the generalization Rules Apply; things that are not generated by the grammar, like (66), are ungrammatical. An intuition behind blocking, on the other hand, says that the ungrammaticality of (66) is the result of the preference for the lexical over the phrasal; *walked* wins over *did walk*.

In theories that accept some kind of blocking, reactions to Poser's (1992) proposals diverge in terms of how they relate to LEXICAL PREFERENCE. One line of research building on Poser's observations, the line that extends through Andrews 1990 and Bresnan 2001, implements a general comparison between sentences along a number of dimensions. In such approaches, LEXICAL PREFERENCE ends up being a consequence of a constraint ranking rather than an overarching principle. Because lexical gaps do not in general license the emergence of phrasal expressions, we noted above that the intuition behind LEXICAL PREFERENCE does not work out correctly in a system like Bresnan's. In this section, we turn to another line of research that extends Poser's proposals by trying to make precise the structural conditions under which words can block phrases.

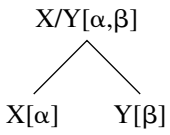
Poser's (1992) original formulation of word/phrase blocking attempts to restrict the competition between words and phrases to particular structures: ''small categories,'' like a node dominating two heads. The idea—also discussed by Hankamer and Mikkelsen (2002, 2005)—is as follows. Whenever a ''small category'' is built in the phrasal syntax, the lexicon is scanned; if a word expressing the same features is found in the lexicon, then that word blocks the phrase. As noted earlier, this implementation of Poser blocking can be generalized so that at each node in the structure, the lexicon must be scanned for an appropriate word. For the purposes of comparing approaches, we consider the generalized version, stated in (67).

(67) *Generalized Poser blocking*
For each node in the syntactic structure, scan the lexicon for a word that expresses the same features. If such a word exists, use the word in place of the phrase.

The condition in (67) is a more precise instantiation of LEXICAL PREFERENCE that specifies how a word can compete with and in some cases win out over a phrasal expression.

For many of the cases we are concerned with, what (67) might mean in structural terms is that a word can block a phrase when the features that are expressed by the word are provided by elements in a sisterhood relationship.

(68) *Blocking possible*

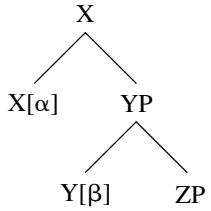


(69) *Lexical items*
$WORD_1[\alpha,\beta]$
$WORD_2[\alpha]$
$WORD_3[\beta]$

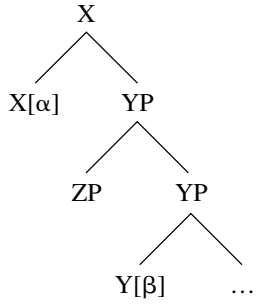
The idea here is that the lexicon of a language contains words that express α, β separately, along with a lexical entry that expresses both. Given generalized Poser blocking, the structure in (68) is one in which $WORD_1$ must be pronounced. We discuss how this might work in section 4.4.

Theories that implement Poser blocking make a very clear prediction about when a word can block a phrase: namely, only when the word expresses features of a *node*. Thus, a word may block a phrase when the node in question dominates sisters whose features are expressed. However, other configurations, like those in (70)–(72), are predicted not to show blocking of phrases by words.

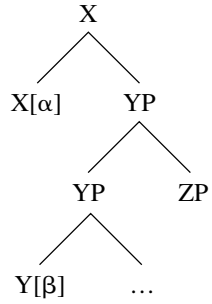
(70) *No blocking*



(71) *No blocking*



(72) *No blocking*



Because X[α] and Y[β] are not in the relevant structural configuration in (70)–(72), the word $WORD_1$ expressing [α,β] cannot be used. Rather, what is expected in this case is an analytic expression, with the words $WORD_2$ and $WORD_3$ appearing as separate words within a phrase.

On the other hand, an account where X/Y forms a ''word'' that is based on complex head formation in terms of syntactic and postsyntactic locality makes different predictions. Depending on the type of operation that applies—that is, depending on whether it is hierarchically defined, like head movement (and Lowering), or sensitive to linear order (Local Dislocation)—it would be possible to form a complex head X/Y in these cases and have a single word express [α,β]. In this way, the syntactic approach is less restrictive than the lexicalist alternative with generalized Poser blocking, in that it allows synthetic expression of syntactically distributed features in a greater range of cases.[24]

4.4 Case Studies

The real issue is whether the generalized Poser blocking theory or the generative theory makes the correct predictions. We argue that the generative approach is correct and that it generalizes

[24] On the other hand, generalized Poser blocking could allow an entire XP—head, complement, and specifier—to be expressed as a single word, with no predictions about that word's internal structure (if any). The Distributed Morphology approach does not have this property.

in a way that the Poser blocking theory cannot. We illustrate this point with Danish definite formation and English comparative and superlative formation, two cases that figure prominently in the literature.

4.4.1 Danish Definites Hankamer and Mikkelsen (2002, 2005) provide an explicit argument for Poser blocking in their analysis of definite nouns in Danish.[25] Nouns in this language are suffixed with a definite element under certain conditions, as in (73a), such that analytic expression of D and N is ungrammatical, as in (73b).

(73) a. hest-en
horse-DEF
'the horse'
b. *den hest
the horse
'the horse'

The affixed nominal is not found with a prenominal adjective.

(74) a. *gamle hest-en
old horse-DEF
'the old horse'
b. *den gamle hest-en
the old horse-DEF
'the old horse'
c. den gamle hest
the old horse
'the old horse'

Given this alternation between analytic and synthetic expression of D and N, one option that Hankamer and Mikkelsen consider involves a lexically created ''definite noun'' like *hesten* blocking the phrasally constructed *den hest*. They implement this in terms outlined more or less abstractly in our preceding discussion. One step involves a lexical rule of the language, Rule D, which, for at least some nouns, creates an affixed ''definite noun'' of category D. The rule is stated as follows:

(75) *Rule D* (Hankamer and Mikkelsen 2002:155)

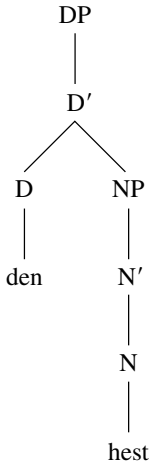
$$\begin{bmatrix} \text{PFORM } \alpha \\ \text{CAT N} \end{bmatrix} \Rightarrow \begin{bmatrix} \text{PFORM } \alpha + \text{EN} \\ \text{CAT D} \\ \text{DEF } + \end{bmatrix}$$

The second step is to state how the outputs of Rule D interact with phrasally constructed DPs. The interaction is like the one schematized above in our introduction to generalized Poser

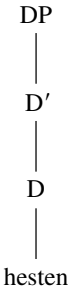
[25] The lexicalist treatment with Poser blocking is presented in Hankamer and Mikkelsen 2002. In Hankamer and Mikkelsen 2005, the authors consider a nonlexicalist alternative as well. For present purposes, what is important is the claim that this is a test case for something like generalized Poser blocking.

blocking. The syntax creates structure (76). The lexicon is checked at each node to see if there is a lexical expression that contains all the features included in that tree structure. In the case at hand, the lexicon contains derived *hesten*, a definite noun of category D, by virtue of Rule D. Given LEXICAL PREFERENCE as instantiated in generalized Poser blocking, the phrasal expression (76) is blocked by the lexical item *hesten*. This single word is employed and projects a DP, as shown in (77).

(76) *DP/NP*

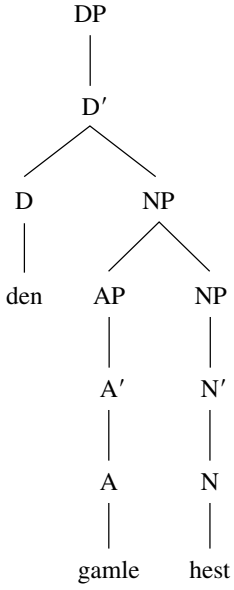


(77) *Definite "noun"*



In the cases with prenominal adjectives, it is clear from the structure in (78) that blocking of this type cannot occur.

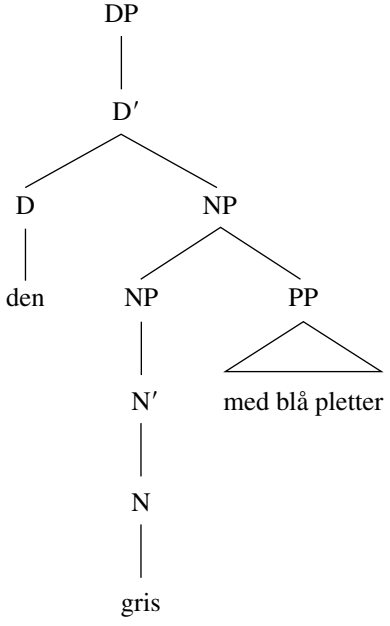
(78) *Prenominal adjective*



There is no node that expresses just the features of N and D, as there is in the case of (77). Therefore, the phrase (78) is grammatical, with no affixation of the definite element to N.[26] As far as this case goes, then, the Poser blocking approach is consistent with the facts.

While Poser blocking makes the correct prediction for prenominal adjectives, it does not predict any kind of left-right asymmetry in the prevention of synthetic definite noun formation. Hankamer and Mikkelsen (2005) discuss this component of Poser blocking with reference to postnominal PPs. On the standard assumption that these are attached to an NP as in (79), the Poser blocking account predicts that no synthetic expression should arise in such cases; the analytic form should surface.

(79) *Postnominal PP (ungrammatical)*



Structurally, a theory in which words express nodes predicts that cases like this should behave just like the above cases with prenominal adjectives. However, this prediction does not hold; instead, a postnominal PP does not prevent the use of the affixed N.

(80) a. gris-en med blå pletter
pig-DEF with blue spots
'the pig with blue spots'

[26] This raises the question of why an AP can never be associated with a DP that is headed by the output of Rule D. Hankamer and Mikkelsen (2005) state that it is because Rule D's output heads a DP, and APs attach to NPs. It should be noted that their approach requires additional assumptions to rule out (i) with the structure (ii)—

b. *den gris med blå pletter
the pig with blue spots
'the pig with blue spots'

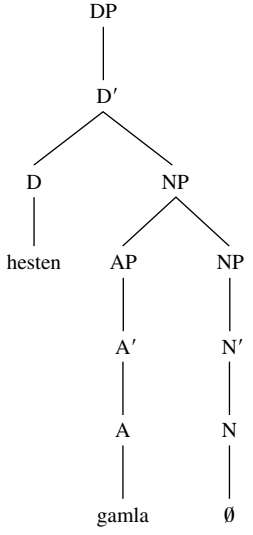
In examples of this type, the synthetic form appears even though D and N do not form a constituent. Hankamer and Mikkelsen discuss several possible treatments for patterns of this type, noting that they are forced to adopt a treatment in which all post-head material in NPs must be regarded as adjoined to DP.

Unlike the Poser blocking approach, an analysis based on syntax and morphological merger makes the correct predictions about locality in this and other cases. For the case at hand, it appears that D affixes to N under linear adjacency.[27]

(81) *D-suffixation*
D[def] ⌒ N → [[N]D[def]]

(i) *hest-en gamla
horse-DEF old
'the old horse'

(ii) *Structure for* *hest-en gamla



—or, for that matter, a case in which the output of Rule D occupies D and an overt N occurs in NP. In general, Ds created by Rule D must, unlike normal Ds, be prevented from combining with NPs. A reviewer notes that an account might be formed along semantic lines, whereby the output of Rule D is of the wrong type to combine with nouns; we defer discussion of such a possibility in the absence of a fleshed-out proposal.

[27] Hankamer and Mikkelsen (2005) note the existence of various Ns that do not allow affixation with D, something that is not unexpected under the Local Dislocation approach (cf. the discussion of comparative/superlative formation in the next section). The rule in (81) must be assumed to have additional specifications in its structural description that account for the exceptional nouns; that is, it must be made Vocabulary-sensitive in the required way.

This rule says that when D[def] is concatenated with N (i.e., with an n-headed element), D is adjoined to N, where it is realized ''affixally.'' This rule directly accounts for the basic facts of Danish definite DPs.[28] Importantly, adjacency-based merger predicts the kind of left-right asymmetry found in Danish and in other cases of affixation under adjacency. In cases with prenominal adjectives, (81) cannot apply because D and N are not linearly adjacent. When, on the other hand, the NP contains post-N material, such as a PP, nothing prevents the rule from applying, as its structural description is met. For these cases, nothing further need be said, as the adjacency-based account already contains the empirically correct locality conditions.[29]

4.4.2 English Comparatives and Superlatives In his original discussion of word-phrase interactions, Poser (1992) analyzes a well-known effect in the formation of English comparatives and superlatives: an alternation between synthetic and analytic forms that depends on the properties of the adjective.[30]

(82) a. more/most intelligent
b. smarter/smartest

In light of the previous sections, the question of course is how the forms in (82) relate to those in (83) and, in particular, whether the former are blocking the latter.

(83) a. *intelligent-er/*intelligent-est
b. *more smart/*most smart

Note that with shorter adjectives—those normally taking synthetic forms like the ones in (82b)—analytic forms are impossible with regular comparative interpretation. However, they are possible with a ''metalinguistic'' type of reading, as has been noted in the literature. For present purposes, since we are concentrating on normal comparatives and the processes responsible for the analytic/synthetic alternation, we mark such examples with an asterisk to indicate that **more smart* is not a grammatical pronunciation of the normal comparative of *smart*; we put aside discussion of the morphosyntax of metalinguistic comparison here (see Embick 2007a and references cited there).

The patterns in (82)–(83) provide another important case study for the present discussion. According to Poser (1992) and others who have followed him, such as Kiparsky (2005), *smarter* does in fact block **more smart*. We claim, though, that these patterns can be properly analyzed within the generative approach and that the Poser blocking alternative makes the wrong predictions.

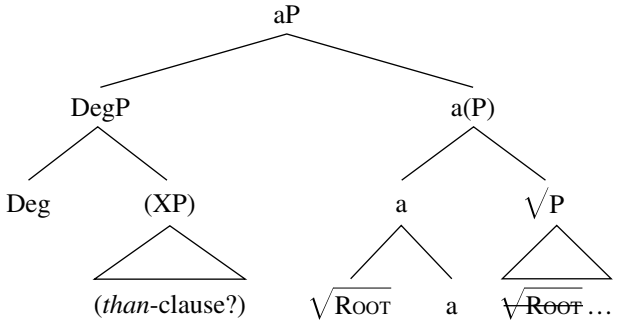
[28] Embick and Noyer's (2001) discussion of the interaction of determiner heads and definiteness agreement in Swedish wrongly assumes that D and N combine via head movement, an assumption that is drawn from elsewhere in the literature.

[29] Other cases, such as restrictive relative clauses, are special for independent reasons. See Hankamer and Mikkelsen 2005 for discussion of the facts and some pertinent considerations.

[30] Di Sciullo and Williams (1987) also note with reference to English comparative/superlative formation and the formation of Latin passive perfects that blocking effects extend beyond the domain of the ''word.'' For an analysis of the Latin case that does not invoke blocking, see Embick 2000.

Any account of the morphophonology of comparatives and superlatives must refer to the syntax of such constructions. We assume, with many authors who concentrate on the syntax and semantics of comparatives, that the structure of the comparative is (84) (see Bhatt and Pancheva 2004 for a recent discussion); in this structure, the Root moves to a by head movement.

(84) *Structure of comparative*



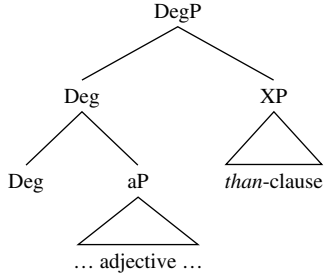
We indicate with parentheses in the DegP the fact that we are not taking a stance on certain aspects of comparative syntax, in particular, whether or not the *than*-clause is generated as a sister of Deg inside DegP and then extraposed to yield surface orders like *Mary is more intelligent than John*.[31]

For the purposes of blocking, what is important about (84) is how this structure relates to synthetic forms like *smarter* and analytic forms like *more intelligent*. For our approach, this is the question of the conditions under which Deg combines with an adjective (= [$\sqrt{\text{ROOT}}$ a]).

This question is addressed in Embick and Noyer 2001 and examined in greater detail with respect to issues of blocking in Embick 2007a. In terms of the head-packaging operations discussed earlier, the evidence suggests that when Deg is moved, it is combined with its host by a process that operates under conditions of linear adjacency—that is, by Local Dislocation. The rule in

[31] The structure in (84) represents one approach; for present purposes, the structure could also be (i). These structures are equivalent for the point we wish to make about blocking, although of course they are not syntactically.

(i) *Alternative structure for comparative/superlative*



In either case, an adjacency-based treatment like the one discussed in the text makes the correct predictions, whereas the blocking alternative does not. Other effects—for example, whether or not unpronounced copies are visible for adjacency-based affixation—are implicated in the choice of comparative structures; see Embick 2007a for some discussion.

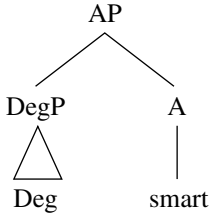
question affixes Deg to the adjective when (a) they are linearly adjacent, with the further condition that (b) the adjective have the correct phonological properties. This is stated schematically in (85).

(85) *Local Dislocation for comparatives*
Deg⌒Adjective → [[Adjective]Deg]
where Adjective has the relevant phonological properties

This is a rule of the PF component of the grammar, one that creates complex heads. As far as the syntax is concerned, the structure of all comparatives and superlatives is that shown in (84). In the case of shorter adjectives like *smart*, the rule in (85) applies. The effect is to place Deg inside the same complex head as the adjective—that is, to affix it. Inside a complex head, Deg is pronounced *-er*, and we have a synthetic comparative, *smarter*. In the case of phonologically heavier adjectives like *intelligent*, the rule in (85) does not apply. Deg and the adjective thus remain distinct heads in the representation. In this case, Deg is pronounced *more*, so that we have an analytic comparative, *more intelligent*.

By providing a blocking alternative to this generative account, we can formulate a Poser blocking account with LEXICAL PREFERENCE quite straightforwardly along the lines sketched above. This treatment assumes that the lexicon is capable of generating some synthetic comparative forms (i.e., comparative adjectives like *smarter*), which then function as Deg elements in the syntax (analogous to Hankamer and Mikkelsen's treatment of definite nouns in Danish). The syntax creates a structure in which Deg combines with an adjective.

(86) *Structure*



(87) *Employed item*

The lexicon is then scanned, and the action takes place at the AP node. In the case of (86), an object in the lexicon, *smarter*, expresses all of the features that appear in this AP (i.e., the features of *smart* and the comparative features). Therefore, the two objects (86) and (87) are in competition with each other, and by LEXICAL PREFERENCE the single-word expression wins, thus blocking the phrase. The syntax then employs a ''comparative AP'' headed by *smarter* (87), parallel to the discussion of Danish definites above.

This account with Poser blocking requires that the derived word in effect substitute for a node (technically, that an AP headed by the single lexical item *smarter* be used in preference to the AP that contains additional internal structure, *more smart*). Recall that Danish raises a problem

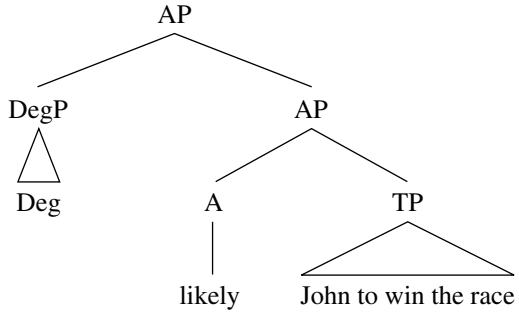
for the Poser blocking analysis in that postnominal material does not force the appearance of an analytic DP. Along these lines, parallel examples can be formed for the English comparative, showing that there are clear cases of adjectives with AP-internal material that nevertheless allow synthetic comparative forms, contrary to the prediction of Poser blocking.

For postadjectival material, there are a number of different configurations in which an AP that appears in a comparative has internal structure. The prediction of Poser blocking is clear: such cases should uniformly disallow the creation of a synthetic comparative. Yet they do not.

(88) *Adjectives with complements*
  a. Raising: John is [likeli-er [~~John~~ to win the race]] . . .
  b. Control: Mary is [quick-er [PRO to spot counterexamples]] . . .
  c. Transitive adjectives: Bill is [proud-er [of his accomplishments]] . . .
  d. *Tough*-construction: Susan is [easi-er [to understand]] . . .

For instance, we take it that the structure of (88a) is as in (89), where the raising infinitival clause is the complement of the adjective (which we represent as A and not [$\sqrt{\text{ROOT}}$ a] to facilitate exposition).

(89) *Substructure for (88a)*



There is no node that could be pronounced as the features of Deg and the adjective alone. Thus, for Poser blocking *likelier* should be impossible. The adjacency-based treatment outlined above does not suffer from this problem. In the cases in (88), Deg and the adjective are linearly adjacent, and thus the rule that affixes Deg under adjacency can apply. This approach can account for the facts, whereas the alternative cannot.[32]

[32] We note in addition that material to the *left* of the adjective appears to prevent the formation of synthetic comparatives. The facts are somewhat complex (see Embick 2007a for some discussion), but it can be shown that in cases like the following, the comparative Deg takes scope over an adverbially modified AP, and, as predicted, no synthetic form is possible:

(i) a. Mary is [more [amazingly smart]] than Bill.
  *amazingly smarter, on the relevant bracketing
  b. John is [more [ploddingly slow]] than Susan.
  *ploddingly slower

Much care must be taken in cases of this type to ensure that there is a ''true'' comparative interpretation (as opposed to

It seems that both Poser blocking and the generative approach make clear predictions about locality and analytic/synthetic alternations. The predictions made by the generative approach are correct for the cases we examined above, and generalize to others as well; we are in fact aware of no cases with the properties that are expected if Poser blocking is part of the grammar (section 4.6).

4.5 Remarks on LEXICAL PREFERENCE

To this point, we have established that the Distributed Morphology approach makes the correct predictions about word-phrase interactions, while generalized Poser blocking does not. As noted at various points, these two theories differ in terms of whether they accept the intuition that words are better than phrases. In the generative view, this is not a principle, whereas in the Poser blocking approach and other theories, it is supposed to be doing a lot of the relevant work. Here, we present some additional remarks on LEXICAL PREFERENCE.

Assuming that the features that are being expressed are held constant, theories with lexicalist Poser blocking express the intuition that we have encoded as LEXICAL PREFERENCE. It is important to note that LEXICAL PREFERENCE cannot by itself account for what is found in, say, comparative formation; it has to be augmented by additional principles or constraints. In a competition-based view, such as Kiparsky's (2005), one candidate for expressing the meaning 'comparative of *intelligent*' is the synthetic form *intelligenter*. If LEXICAL PREFERENCE (in Kiparsky's terms, ECONOMY) were the primary factor in deciding the competition that selects the grammatical form, then *intelligenter* should be preferred over *more intelligent*, contrary to fact. Some other constraint in the grammar must ensure that *intelligenter* is disallowed for morphophonological reasons; that is, there must be some constraint ranked higher than LEXICAL PREFERENCE that is doing most of the work here. The only alternative would be to hold that *more intelligent* and *intelligenter* are not actually competing with one another to express the same meaning (= ''paradigmatic slot,'' in our metaphor). However, this move is problematic. Why *smarter* and *more smart* would express the same features, while *intelligenter* and *more intelligent* would not, is unclear. Technically, this could take the form of the proposal that *-er* introduces/expresses features when it occurs with *intelligent* that are not introduced/expressed when it is affixed to *smart*, but this seems to be missing the point. Thus, even in theories that want to elevate LEXICAL PREFERENCE to an important grammatical principle, it is not doing all of the relevant work.

As noted at several points above, a more pressing problem with LEXICAL PREFERENCE is that in many if not all of the cases where it could potentially do some work, comparisons require considering alternatives at the phrase level and not simply at the level of words. The examples

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a metalinguistic comparative interpretation) and that the bracketing is [Deg [Adv Adj]], not [[Deg Adv] Adj]. When these factors are accounted for, it appears that the adjacency-based Local Dislocation of Deg is prevented, as predicted.

Along related lines, Bresnan (2001) notes problems with Poser blocking and the comparative, with reference to examples like *[exactly three times more] expensive*.

discussed above show one type of interaction, in which *intelligenter* cannot be preferred to *more intelligent* for morphophonological reasons. But there is a stronger point here as well. In the analysis of analytic/synthetic alternations, it quickly becomes clear that simply noticing that an analytic form (e.g., *ate*) exists does not suffice to account for where it occurs at the expense of the corresponding synthetic form (e.g., *did eat*), as we noted with respect to Andrews 1990. Instead, as we noted in connection with Bresnan 2001, the relevant comparisons involve phrasal objects, in which tense, negation, and so on, are expressed. From this perspective, the operative principle is not that words are better than phrases; rather, it is that certain types of phrases are better than certain other types of phrases, with LEXICAL PREFERENCE a possible emergent side effect of the overall constraint ranking.

The general question is whether a theory that does not encode LEXICAL PREFERENCE, either one like ours or one like Bresnan's, is missing a crucial generalization. One way to approach the question head-on is simply to ask whether the grammar seems to function as if it contains LEXICAL PREFERENCE as an inviolable principle in the first place. There are some cases that make it look as if this principle can be overridden. To take one often-discussed example, consider prepositions and determiners in French. Certain combinations require a ''fused'' form, as in (90a), whereas other combinations do not, as in (90b).

(90) a. *''Fusion''*
   i. du chat 'of.the cat' (*de le chat 'of the cat')
   ii. aux enfants 'to.the children' (*à les enfants 'to the children')
  b. *No ''fusion''*
   i. de la mère 'of the mother'
   ii. à la femme 'to the woman'

Note that our discussion here does not rely on whether there is one Vocabulary item (*du*) or two (*d* and *u*) in a branching head. The point is that for the purposes of morphophonology, the special P/D forms are realized in a single complex head.

The cases in (90a) look like prime examples of the operation of LEXICAL PREFERENCE: *du* and *aux* exist, and they must appear at the expense of phrasal two-word alternatives. However, it is significant that the ''fused'' P/D elements cannot occur when the element following the D is vowel-initial.

(91) a. de l'arbre 'of the tree'
  b. *du arbre 'of.the tree'

Thus, whatever LEXICAL PREFERENCE might encode, it is not inviolable, and in general it is not the sole factor in determining the winner between competing forms that (by hypothesis) ''mean the same thing.'' The only competition-based means of accounting for these patterns would evidently require an OT computation in which LEXICAL PREFERENCE can be outranked by other constraints—in the case at hand, perhaps something like *HIATUS.

The interaction between P, D, and whatever follows D poses no prima facie problems for a generative approach, although this phenomenon does raise some interesting questions (it might,

for example, illustrate something about cyclicity; see Embick 2007b for an analysis that takes cyclicity into account).[33]

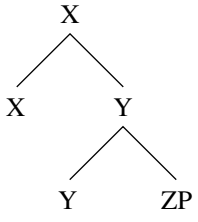
Overall, it does not appear that theories without LEXICAL PREFERENCE are missing significant generalizations.

4.6 Synopsis

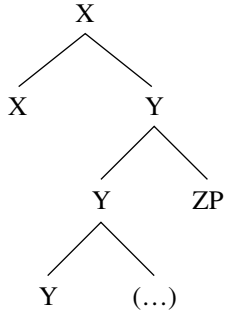
The kind of constituency-based word-phrase interactions required on the formalization of Poser blocking discussed above make very clear predictions about when words should be able to block phrases. As detailed above and elsewhere, these predictions are not borne out.

Abstracting, what is not attested is a case in which, for X and Y that potentially form ''one word,'' both pre-Y Z(P) and post-Y Z(P)—whether complements to Y or specifiers/adjuncts in the phrase headed by Y—prevent a lexical form from occurring. Another way of putting this is that the Poser blocking approach predicts no blocking of phrases by words in either of the configurations (92) and (93) (showing complement and noncomplement status for ZP), where *linear order of ZP in particular is irrelevant*.

(92) *Configuration 1*



(93) *Configuration 2*



It is not difficult to describe what such a language would look like. One case would be a language with an interaction between T and the verb like that found in English, but in which transitive verbs required analytic forms, unlike intransitives.

(94) *Hypothetical English′*
  a. John laugh-ed.
  b. John did eat the apple.

Naturally, this hypothetical English′ relies on a number of assumptions about constituent structure that are subject to question. The general point is that in this domain and others that have been

[33] As an aside, we note that both *de l'arbre* and **du arbre* can be seen as containing two ''words,'' if French is assumed to have something like Hankamer and Mikkelsen's Rule D for vowel-initial nouns. One might therefore consider a theory in which it is, as far as some global metric is concerned, the overall number of nodes (lexical items) that is optimized. In such an account, both competing outputs in (91) contain the same number of words—that is, could be seen as equally ''economical'' given some general idea that the optimal case involves the fewest words. Our point still holds, in that LEXICAL PREFERENCE by itself cannot explain why (91a) is grammatical and (91b) is not.

examined, cases with the property schematized in (92)–(93) are not found. In general, we are not aware of any cases that pattern in the manner predicted by Poser blocking, that is, cases where any material that interrupts ''node sharing'' prevents the creation of a synthetic form. On the other hand, every case that has been studied systematically shows locality properties definable in terms of a syntactically derived structure and operations on it—that is, in terms of putting heads together in a way that respects locality in hierarchical syntactic structure, or respecting locality of the linear relations derived from the hierarchical structure. The generative approach that makes these predictions is completely general, in the sense that it is not a specific theory of word-phrase interactions. This approach offers a theory of syntax, and a theory of how the heads in syntactic structures are packaged, and this covers affixation in general. Word-phrase interactions are a subcase of this general theory of syntactic affixation.

We conclude from these considerations that the Poser blocking approach fails, not for conceptual reasons, but because it makes the incorrect empirical predictions. Poser blocking cannot account for the range of cases in which word-phrase interactions (or affixation more generally) occur. Other competition-based theories, like Bresnan's (2001), do not overly restrict the size of objects in which competition takes place (Bresnan (2001:16) in fact critiques this aspect of Poser blocking, as noted above). However, Bresnan's theory of competition at the sentence level makes incorrect predictions as well. The generative approach within Distributed Morphology, on the other hand, is able to explain the attested patterns.

5 Conclusions

An analysis of blocking effects requires specific assumptions about the architecture of grammar along numerous dimensions that define a space of competing theoretical approaches. Cases of apparent competition between single-word and phrasal expressions, in what has been termed Poser blocking, highlight the need for any theory of grammar to explain the connection between affixation and the sentential distribution of information carried by closed-class items (e.g., tense). Although it is true that a theory in which all affixation is syntactic, like Distributed Morphology, leads one to expect the sorts of interactions exemplified by cases of Poser blocking, our primary argument here has been in service of a stronger conclusion: there are clear *empirical* domains in which this grammatical architecture makes the correct predictions, whereas others do not.

Looking primarily at (a) the locality of competition effects and (b) whether otherwise well-formed structures are marked ungrammatical as a result of competition, we showed that the generative approach to grammar as formalized within Distributed Morphology forces an analysis that explains the facts. Other alternatives, based on competition between larger objects (words, phrases, and sentences as opposed to Vocabulary items) and different notions of what it means to be (un)grammatical, do not make the correct predictions. Lexicalist approaches to blocking, as inspired by Poser's (1992) work and as formalized by Andrews (1990) and by Hankamer and Mikkelsen (2005), stumble because single words are (sometimes) not constituents from the point of view of the functional structure of sentences, arising instead from the syntactic manipulation of heads (via head raising, merger, and Local Dislocation). Recognizing this problem with the

narrow lexicalist account of blocking, Bresnan (2001) has proposed that blocking involves an OT competition at the sentential level. However, global approaches of this type fail because they wrongly predict phrasal expressions to emerge as grammatical when single-word expressions are ill formed or unavailable. There is thus no evidence for blocking at this global level, where a blocked but otherwise well-formed expression becomes grammatical when an otherwise more harmonic expression is removed from the competition. Moreover, the generative approach makes the right predictions about directionality effects on syntactic affixation: for example, Distributed Morphology provides an account of why material to the left of a head in a head-initial structure might result in a phrasal expression where a single-word expression would otherwise be available, while material to the right would not. As a general point, the lexicalist approach explicitly predicts symmetrical effects on word-phrase interactions, and these are never exemplified.

We take these results to constitute a strong argument for generative approaches to grammar in general, and for our version of such an approach in particular.

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