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RECONCILING LEXICAL INTEGRITY WITH AFFIXATION IN SYNTAX*

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1. Introduction

Much recent work on the interaction of morphology and syntax has brought to light a range of evidence that at least some of the units that are surface words cannot be syntactic atoms in the sense that parts of these word-size units are better analyzed as being put together in the syntax. This view implies that at least some morphology has to be allowed in the syntax. This has been claimed in the analyses of clitics and inflectional morphology for quite a long time and has recently been argued to be necessary for some areas of derivational morphology such as grammatical function changing morphology (Baker 1985a, 1985b; Marantz 1984), complex verb formation (Sugioka 1984, Sadock 1985, Woodbury and Sadock 1986), and different varieties of incorporation phenomena (Sadock 1980, 1985, 1986, Baker 1985b) as well.

Most of these analyses, however, violate a principle of grammatical description known as the Lexical Integrity Hypothesis (henceforth LIH) (Bresnan 1982, Lapointe 1979, 1983), a principle which can be traced back to the Lexicalist Hypothesis proposed in Chomsky (1970). Abstracting away from minor details in variation, the LIH says in essence that:

- (1)a. The internal structure of word-sized constituents is opaque in the syntax;
- b. Rules of syntax and rules of morphology operate in strict autonomy.

The LIH is above all a thesis advocating the autonomous existence (or modularity) of Lexicon and Syntax, but it is stated in such a way that it restricts word-building morphological rules to the lexicon and phrase-building rules to syntax. It thus makes the typology of rules easy, at least for rules which involve characteristic morphology,

since all morphological rules are lexical rules in this view.

Of course, the mere fact that the LIH¹ is violated in some analyses does not entail its abandonment altogether. Indeed, for most of the phenomena claimed to provide evidence against the LIH, there are healthy lexical (i.e., those consistent with the LIH) and syntactic alternatives (those violating the LIH). Furthermore, in some works, the decision to treat certain morphological processes as syntactic rests on theory-internal assumptions that do not carry over easily into other frameworks (e.g. the necessity to be consistent with the Uniformity of Theta Role Assignment Hypothesis in Baker (1985a)).

However, I believe that, at least for certain types of morphosyntactic interaction in languages, analyses that are strictly in keeping with the LIH are at best inferior alternatives to syntactic analyses because certain generalizations that fall out naturally in a syntactic analysis remain isolated stipulations in a lexical approach. A potential case exemplifying just such a state of affairs has been presented in the so-called Mirror Principle correlations studied in Baker (1985a). Another type of morphosyntactic interaction where a lexical analysis misses important generalizations is the so-called "phrasal affixes" (Sadock (1985, 1986), Woodbury and Sadock (1986), Sugioka (1984), Kendall and Yoon (1986)) -- those affixes which are assumed to attach productively to syntactically formed phrases rather than to stems or words.

In the following section, I will review the properties of these "phrasal affixes" which defy an adequate lexical treatment but are easily accommodated in a syntactic account.

2. The LIH and Phrasal Affixes

"Phrasal affixes" are those affixes which are best analyzed as attaching in the syntax to phrases, although they typically appear attached to words or stems of words at the periphery of the phrases.

The range of constructions that can be analyzed in this manner includes at least Noun Incorporation in Eskimo², the attachment of Sentence Particles in Japanese and Korean, and Complex Verb Forming Affixes in Japanese, Korean, and Eskimo. The challenge that a phrasal affixation analysis of these phenomena poses for the LIH is obvious. If these affixes do indeed attach in the syntax to syntactically constructed phrases, one can no longer maintain that all affixal structures are built in the lexicon, contrary to what the LIH dictates.

I will therefore review the arguments put forth for phrasal affixation and show how crucial generalizations that otherwise follow in a phrasal affixation account remain isolated stipulations in a lexical alternative consistent with the LIH.

2.1 Productivity

One of the reasons for suspecting that noun incorporation (denominal verb formation) in Eskimo (Sadock 1980, 1985, 1986) involves phrasal affixation to NPs has to do with the complete productivity of the process. Unlike noun incorporation (N-V Compounding) in Iroquoian languages studied in Mithun (1984) whose productivity is compromised by the existence of parallel non-affixal

structures so that the affixal structure is subject to restrictions and idiosyncratic uses³, some verbs in Eskimo are affixal verbs to start with and so sentences in which these verbs occur obligatorily involve incorporation. The productivity in such cases is almost complete because there are no competing non-affixal structures.

(2) Eskimo NI (Sadock 1985)

- a. Hansi illu-qar-poq
 Hansi-ABS house-have-INFL
 b.*Hansi illu-mik qar-poq
 Hansi house-INST have-INFL

Such extreme productivity is typical of processes in the syntax. Indeed, in many lexicalist models of syntax, rules which are treated as syntactic in other frameworks are relegated to the lexicon just because of limited productivity (cf. the motivation for treating Passive, Dative Alternation as lexical in LFG). Still, productivity by itself does not establish a process as syntactic, since there are quite productive word-formation processes which on independent grounds need to be treated as lexical.

However, Eskimo NI and other instances of phrasal affixation exhibit a clustering of properties which are puzzling for a lexical account but expected in a phrasal affixation analysis.

2.2 Referential Opacity and Incorporated Nominals

Words have been known to be "anaphoric islands" ever since Postal (1969). There are presumably other ways in which one can derive generalization, but the referential opacity of words can also be derived from the Bracket Erasure Convention (BEC) of Lexical Phonology (LPM hereafter) (Mohan 1982, Kiparsky 1983). In LPM, all word internal brackets are assumed to be erased upon exiting the Lexicon by the BEC. This means that word-internal constituency is invisible in the syntax. Therefore, a syntactic rule of anaphora could not refer to a word internal constituent since the constituency does not exist anymore, assuming only constituents, or maximal projections, can be referred to.

Thus if NI is lexical, it would be subject to the BEC and the incorporated nominal would not be able to bear reference in the syntax since it is not a constituent. Nevertheless, as Sadock (1980, 1986) shows, the incorporated nominal (IN) can be referred to anaphorically in the syntax. If, on the other hand, NI is phrasal affixation of the verb to the object NP in the syntax, the constituency (or the maximal projectionhood) of the object NP is retained, since the BEC is irrelevant to the "postlexicon" (i.e. syntax). Therefore, the object NP could be referred to anaphorically. This is illustrated below.

(3) Anaphoric Islandhood and NI

a. Lexically derived compounds:

[[Nixon]hater] ---> BEC on exiting the Lexicon --->
 [Nixon-hater]

*John_i is a Nixon_i-hater except that he_i doesn't care.

b. Noun Incorporation:Hansi [_{vp} [_{np} illu]-qar-poq]

No BEC since affixation is syntactic, hence the possibility of reference of "illu".

Mithun (1984) and Williams and Di Sciullo (1986) write off the fact that an IN can be referred to anaphorically as a quirk of the pronominal system of languages that have NI. They cite examples like (4) below where the verb "watch" does not even have a noun incorporated and yet serves to introduce a discourse referent.

(4) Mohawk (Mithun (1984))
 K-atenun-hah-kwe. Ah tsi yehekv.
 I-watch-HAB-PAST Boy she is ugly.

Williams and DiSciullo (1986) take the fact that in Mohawk definite pronouns can take pragmatic antecedents even in the absence of an overt linguistic antecedent to constitute the significant difference between the pronominal systems of Mohawk and English. They write that, "naturally, introduction of discourse referents is possible with NI as well, this example simply shows that it (=the different pronominal systems-JY) is independent of NI" (1986: 131). But as Sadock (1986) points out, pragmatic antecedents for definite pronouns are also possible in English, as seen in perfectly acceptable examples parallel to (4) above.

(5) (=Sadock (1986) (8))
 I dined at the Homard Rouge. It was much too salty.

The interesting thing is that pragmatic anaphora, which is otherwise possible in English, is not allowed when the possible antecedent is part of a word (6a). Hence, words are anaphoric islands even for pragmatically sanctioned anaphora in English. The fact that a language allows pragmatic anaphora does not entail that anaphora into words will be possible, as the English case clearly demonstrates. Therefore, anaphora into NI constructions is not a garden variety of pragmatic anaphora and is something unique to NI languages.

(6)a.*I was babysitting last night. Boy, is she ugly!

b. Eskimo (Sadock (1986) (1))
 Erneg-taar-put atser-lugu-lu Mala-mik
 son-get.a.new-INDIC.3pl name-CONTEMP3sg-and Mala-INST
 'They had a son and called him Mala'

2.3 Deviant External Syntax

In Eskimo NI, sometimes the constituents outside the verb has to be understood as modifying the IN. Mithun's (1984) explanation for these was that the external element can always be construed as a potential argument of the verb and hence that there is no reality to the constituency of the external element and the IN in the syntax. But, as Sadock (1980, 1986) emphasizes, there are crucial differences between what he calls the "external syntax" of incorporating affixal

verbs and those of simple underived verbs.

The IN can exceptionally take external modifiers which show up with the same agreement as would be found in unicorporated structures. As illustrated below, objects of transitive verbs in Eskimo cannot take Ergative Case. However, when the head noun of a possessive NP is incorporated, the sole argument of a surface intransitive verb (agreement on verbs with NI is taken from the intransitive paradigm) can exceptionally take Ergative case instead of the expected Absolutive.

While a lexical theory would mark the agreement pattern of these denominal verbs as exceptions (but note the potentially large number of exceptions in a lexical account given the productivity of NI), such a state of affairs is expected in a syntactic account. If affixal verbs attach to the phrasal object NP in the syntax where it is not subject to the BEC, the internal constituency of the NP remains unaffected and the possessor is still governed only by the head noun rather than the affixal verb. Thus, it will be assigned case within the NP by the head noun.⁴

(7) Eskimo (Sadock 1980)

a. Kunngi-p panik-passuaq-qar-poq
 King-ERG daughter-many-have-IND.3sg(intrans)
 'There are many king's daughters (princesses)'

a'. [(pro) [[Kunngi-p panik-passuaq]-qar-poq]]

b. *Kunngi-p taku-vunga (taku-vara)
 King-ERG see-IND.1sg
 'I saw King's'

With regard to Possessor Raising, there is a minimal but crucial difference between NI in Eskimo and N-V Compounding in the Iroquoian languages studied by Baker (1985b) which provides a very strong argument that NI in Eskimo is syntactic, whereas Compounding in the Iroquoian languages can be lexical.

Baker (1985b) observes that when the head noun of a possessive NP like John's house is incorporated in Mohawk, the agreement on the complex verb no longer references the head noun but instead the possessor, inducing a Possessor Raising effect. This is illustrated below.

(8) Mohawk (Baker 1985)

a. ka-rakv ne sawatis hrao-nuhs-a?
 3N-white John 3M-house-suff

b. hrao-nuhs-rakv ne sawatis
 3M-house-white John

Baker claims it to be an advantage of his theory that the Government Transparency Corollary (GTC) will ensure that the complex verbal derived through incorporation will govern the possessor, thus making the agreement between the possessor and the derived verb possible, given fairly standard assumptions that agreement takes place under government. Now, although the GTC exempts his theory from a

stipulation, the same range of facts can also be accounted for by deriving the complex verb in the lexicon. The N-V complex so derived will inherit the properties of its head, a transitive verb, and will now take the possessor as its argument, assigning to it the case that is usual for complements of transitive verbs. Thus, this fact alone does not argue for a syntactic analysis like Baker's over a lexical account. Indeed, the complexity of his account could very well support a straightforward lexical analysis since the identical "external syntax" of derived verbs and simple verbs in the Iroquoian languages is expected under a lexical account.⁵

Furthermore, Baker's theory makes the wrong predictions in Eskimo NI. The problem is that by the GTC the verbal which incorporates the head noun should govern (and hence agree with, or case assign) the possessor, but as we have seen in example (7) above, the stranded possessor still shows up with Ergative case.

Baker deals with this problem by suggesting that there could be a parametric variation across languages with NI with respect to whether the IN needs case. He notes that in Eskimo the verbal affix assigns Case to the IN but that in other languages with NI, since incorporation itself is also a means of satisfying the Case Filter ("morphological identification", in his words) INs need not get case from the verb into which it is incorporated, thereby freeing the verb to assign Case to external modifiers.

It is not obvious that this solves the problem though. Although Baker can account for the fact that the Case which would be assigned by the verb to its object is not assigned to the stranded possessor, his account still fails to predict that the possessor will get Case from the incorporated head noun. Furthermore, it is not obvious that the Case requirement on INs is just a matter of parametric variation. What it may very well indicate is the crucial difference between genuine cases of syntactic incorporation from lexical N-V compounding. Indeed, as Mithun (1984) argues, N-V Compounding in the languages that Baker studies look suspiciously lexical, since speakers readily recognize when a new incorporation is being introduced. The fact that in Eskimo the IN needs Case, a clear syntactic requirement, is a strong indication that incorporation is syntactic, and correlates with the far greater productivity of the process when compared to N-V Compounding in Iroquoian.

The IN in Eskimo is aberrant in other ways that point forcefully to an analysis of NI in terms of phrasal affixation rather than being derived in the lexicon.

The IN in Eskimo can also determine the formal plurality of stranded modifiers, as we see below. These facts can be explained straightforwardly in a manner analogous to the cases described above but an alternative lexical account is hard put to come up with a descriptively adequate analysis of these facts.

(9)a. Ataaseq-nik qamut-qar-poq
 One-INST.PL sledPL-have-INDIC 3sg

a'. (pro) [Ataaseq-nik qamut]-qar-poq

b. *Ataaseq-mik qamut-qar-poq
 One-INST.SG sledPL-have-INDIC 3sg

Iroquoian languages allow a copy of the IN to remain in object position. Baker takes this as evidence for the syntactic nature of incorporation by considering the copy on a par with "doubling" found with clitics, which are presumably syntactic. However, an IN in Eskimo is not compatible with the simultaneous external occurrence of the same nominal. This is an important difference because, as Mithun (1984) and Williams and Di Sciullo (1986) show, the so-called "copy" of IN in Iroquoian languages is not even an exact copy of the IN. But such doubling is impossible with NI in Eskimo, precisely because the IN is the only argument of the affixal verb.

- (10) Eskimo (Sadock 1986)
 *276-inik ammassak-nik ammassak-tor-poq
 276-INSTpl sardine-INSTpl sardine-eat-INDIC3sg
 'He eats 276 sardines'

We find similar instances of deviant external syntax in morphologically derived structures in the formation of predicate nominals and complex verbs in Japanese and Korean. These processes also show a clustering of properties typical of syntax but I will mention just two for reasons of space: Case-marking alternations and distribution over coordination.

Complements of [+stative] verbs in Japanese are marked with nominative case whereas those of [-stative] verbs are marked with accusative. In addition, there is a productive process of forming [+stative] verbs from [-stative] ones by affixing the desiderative verbal affix -tai or the potential affix -reru. Now, if this derivation takes place in the lexicon, the derived verbs should be [+stative] by the percolation principles that are commonly assumed (Lieber 1980) since the affixes are the heads of the complex verbs. Nevertheless, in the complements of derived stative verbs, there is a case-marking alternation between -o and -ga instead of the expected -ga marking. The following paradigm illustrates this point.

- (11) Japanese (adapted from Sugioka (1984))
 a. Taroo-ga eigo-ga/*o dekiru
 T-NOM English-NOM/*ACC can-do
 b. Taroo-ga eigo-*ga/o hanasu
 T-NOM English-*NOM/ACC speaks
 c. Taroo-ga eigo-ga/o hanasi-tai/ hanas-eru
 T-NOM English-NOM/ACC speak-want speak-can
 d. Taroo-ga [[eigo-o hanasi]-tai]

Under an analysis where the attachment of the affixes is to a syntactically formed VP as in (11d), it is possible to account for the case marking alternation in a principled way. Since the affixation takes place in the syntax, the BEC does not apply and the constituency of the VP may remain. Internal to the VP, the verb 'hanasi' is [-stative] and can discharge accusative case on its complement. As for -ga, one can resort to Reanalysis as in Sugioka (1984).

Further evidence for the phrasal affixation analysis of (11) is provided by the interaction of complex verb formation with coordination and the placement of adverbials. In (12), where there is intervening material between the verb and its object, the ga/o

alternation of (11c) is no longer allowed and only -o is acceptable.

- (12) Taroo-wa eigo-o/*ga sannen mae-kara issyokenmei hanasi-ta-
 T-TOP English-acc 3 years ago-from very-much speak-want-
 kute-imasita
 -be-Past-Decl

In a lexical account this is an anomaly, while in a phrasal account this could be attributed to the lack of Reanalysis.

In addition to these, the "logical scope" of affixal verbs like tai distributes over coordination, as shown in (13) below, where only the relevant reading is indicated.

- (13) Taroo-wa [hon-o yonde, eiga-o mite, gohan-o tabel]-tai
 T-TOP book read, movie see, rice eat-want
 'Taroo wants to read a book, see a movie and eat rice.'

If the complex verb "tabe-tai" is derived lexically and inserted in the syntax, one cannot explain the fact that the scope of tai distributes over all the conjuncts, whereas in a phrasal analysis where tai combines with a VP, the scopal facts naturally fall out.

The unexpected behavior of morphologically complex verbs which in turn finds a natural solution once we analyze them as involving phrasal affixation in the syntax is crucial evidence pointing to the superiority of a syntactic analysis over a lexical one.

Indeed, the bulk of Woodbury and Sadock's (1986) response to Grimshaw and Mester (1985) also capitalizes on the aberrant external syntax of derived complex verbs, for which a syntactic solution along the lines proposed here (or in Sadock (1985)) derives the observed facts without stipulations. In my view, it is fairly "theory-neutral" evidence of this sort that constitutes the strongest arguments for the need to recognize affixation in the syntax. An analysis of NI like Baker's, although elaborate in detail, shows only that a syntactic treatment may be consistent with the facts, rather than exposing the inherent inadequacies of a lexical alternative.

2.4 Wholesale Bracketing Paradoxes

An argument from semantic grounds also supports the phrasal affixation analysis proposed above.

If, as would be the case in a strict lexicalist theory, the formation of NI in Eskimo and complex verbs in Japanese, took place in the lexicon, there is a pervasive "bracketing paradox" (Pesetsky 1985) between the semantic requirements of these affixes and their morphological attachment, as hinted briefly with regard to coordination. That is, the affixes are morphologically parts of the word to which they are attached but their semantic or logical scope extends further beyond the word to phrases of which the word is the head in the syntax. In a lexicalist account, such mismatches would have to be handled by resorting to syntactic (LF) or semantic operations that get the affixes in the right scope, using something like Pesetsky's rule of Affixal QR.

If, on the other hand, these are phrasal affixes attached to syntactic constituents, the paradox disappears, since they have scope just over the the phrases with which they combine syntactically.

A similar observation was made concerning the distribution of SPs in Japanese and Korean in Kendall and Yoon (1986). It was noted that there is a systematic correlation between the "scope" of SPs and their placement in the clause. If they occur in their usual clause final position, attached to the verb-plus-inflection complex, they have scope over the entire clause. If, on the other hand, they appear clause-internally, their scope extends to just the constituents the head of which they are attached to. This is illustrated below.

- (14) SP scope in Japanese (Kendall and Yoon 1986)
- a. [kono okashi-wa amai]-yo
this candy-TOP sweet-YO
 - b. Bill-wa [Kansas-no ichiban ooki daigaku-ni]-yo
iki-tai-n-desu
B-TOP Kansas-of most big college-to-YO
go-want-nom-cop

In an account where say, "daigaku-ni-yo" is derived in the lexicon, one would have to resort to something like Pesetsky's Affixal QR to get the "yo" (and "ni") into the right scope in the syntax. But since one encounters countless numbers of such paradoxes in languages like Japanese, Korean and Eskimo, one would have to resort to Affixal QR for a large number of constructions and this seems to indicate that we are missing a generalization. Of course, no Affixal QR is called for in a phrasal affixation account since the apparent paradox is not a paradox at all. Indeed, I will argue below that Affixal QR should be limited to the lexicon and processes in the lexicon, thus accounting for its admittedly rather marginal nature.

2.5 What Do We Do with the LIH?

The arguments for phrasal affixation presented above show that we need to allow some morphology in the syntax. If these arguments are genuine, does this force us to abandon the LIH totally? Indeed, many a criticism of the LIH goes no further than to indicate that the LIH is too restrictive, suggesting its elimination. But I have reason to believe that such challenges entail only a minor modification of the LIH.

As was observed earlier, the LIH states two logically separate hypotheses - the thesis of the autonomy of the lexicon and syntax and the thesis of the operational independence of morphological and syntactic rules. I do not think that the autonomy thesis sought under the LIH is challenged at all by most analyses which point to its excessive restrictiveness. This is because it seems possible to distinguish in a principled manner morphology that is syntactic from genuinely "lexical" morphology once we recognize the two senses of the term "morphology" that is used indiscriminately in the current literature to refer to both rules with a particular type of operation (i.e., building words-size units) and the domain of the lexicon where all morphological rules are presumed to reside in.⁶ Capitalizing on this distinction, I will propose a model of rule interaction which is constrained enough to be consistent with the autonomy thesis but is able to accommodate genuinely syntactic morphology such as phrasal affixation.

3.A Proposal for Reconciliation

3.1 Rule Typology and the LIH

A fact about morphology which has been claimed to be syntactic is that it is highly productive, regular, semantically compositional and can be fed by syntactic rules. Thus, if one looks not at the operations involved in rules but the properties of the rules, productive morphology constitutes a natural class with other rules which are recognized to be syntactic (such as phrasal concatenation, movement, adjunction, etc.). On the other hand, there are phrasal idioms that show properties typically associated with morphological processes in a language with degenerate morphology like English. The phrasal idioms are restricted, idiosyncratic in interpretation, and their internal structure is opaque to genuinely syntactic rules, although the formation of idioms utilizes the same operation of phrasal concatenation involved in the formation of sentences in the syntax.

In other words, clusters of properties associated with typical processes in syntax and the lexicon cut across the morphological-phrasal dimension. This state of affairs challenges the simplistic rule typology espoused under the LIH where all rules with morphological operations are assigned to the lexicon and all phrase-building rules to syntax.

This kind of rule typology is often claimed to follow from the autonomy (modularity) thesis which is attributed to Chomsky (1970). But in fact, in "Remarks", the autonomy thesis is introduced and pursued in a different way. Chomsky did not introduce the autonomy thesis by identifying distinct types of rules that belong in the two domains of the lexicon and syntax. His criterion for rule typology was not in terms of the operations associated with rules but in terms of the properties of the rules. It is perhaps unfortunate that he used derivational morphology to exemplify lexical rules so that in some works, the dictum "derivational morphology in the lexicon" is touted as the "master criterion" of Remarks (Hoekstra, v.d. Hulst and Moortgat 1980).

In a historical context where all distributional regularities were being captured through transformations, Chomsky reasoned that not all productivity (regularity) need be syntactic and proposed that some regularities be relegated to the domain of the lexicon. He argued that the limited productivity and semantic idiosyncrasy of derived nominals as opposed to gerunds made them inappropriate to be treated in the syntax (by transformations), since the very nature of rules in syntax resides in their exceptionlessness and productivity. Therefore, Chomsky proposed to capture the relatedness of verbs and their corresponding derived nominals in the lexicon while allowing the greater regularity of gerund formation to be syntactic.

A proper construal of such a position should have led to a clear distinction between the types of operations involved in a rule and the domain of application of that rule, but the immediate impact of "Remarks" was limited to that of merely sanctioning inflectional morphology in the syntax while restricting derivational morphology to the lexicon. This in turn has led to subsequent, largely futile, attempts to find formal properties distinguishing inflection from

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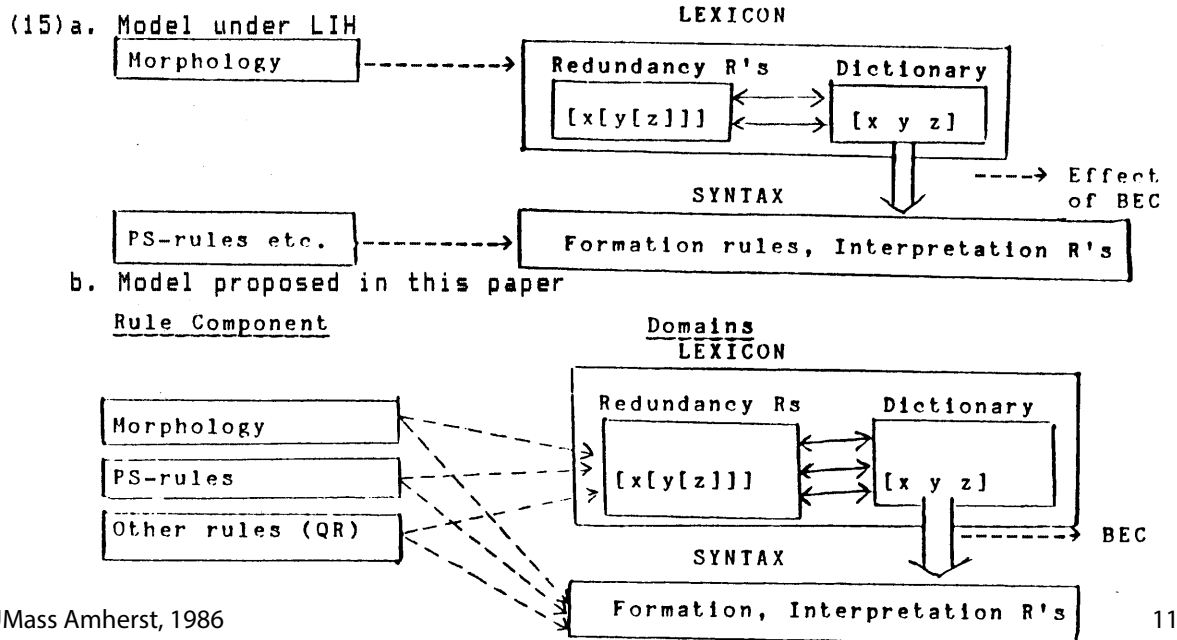
derivation. The latter effort clearly illustrates the preoccupation on the part of linguists to define distinct domains by assigning distinct types of rules to those domains. The idea that the same type of operation could be in rules in distinct domains seemed to ruin the autonomy thesis and did not sit well with them.

Another factor that undoubtedly aided in the development of rule typology where all morphological operations (word formation) are assigned to the lexicon was the influence of the early works (Halle 1973, Siegel 1974, Aronoff 1976) on the lexicon, where a tacit identification of word formation rules and lexical rules was made, based on limited data from English -- although Jackendoff (1975) is a notable exception among the early works.⁷ The view espoused by LPM where morphology is regarded as defining the "lexicon" together with phonological rules which are "lexical" also rests on the identification of morphology with the lexicon and phrase-building with the "postlexicon" (syntax).⁸

I suggest that such an identification is unwarranted and that we go back to the criteria of rule typology of "Remarks" in order to salvage the autonomy thesis sought under the LIH.

I suggest that we free morphology and phrasal operations from inherent association with the respective domains of the lexicon and syntax and view both Morphology and Phrasal Concatenation as constituting rule components, or a type of operation with its own set of distinctive properties (cf. footnote 8). I thus recognize two distinct domains of the lexicon and syntax and allow either type of operations in both domains. This idea is illustrated schematically below (15).

The autonomy of the domains is recognized, and the effect of Opacity of the internal structure of lexically formed units (whether morphological or phrasal) is hypothesized to follow from the interpretation of lexical rules as Redundancy Rules, whose function is not to generate, but to "redundantly specify" the internal structure of units listed in the mental dictionary (as argued in Aronoff (1976), Jackendoff (1975), Bresnan (1982)). The basic formatives are taken from this dictionary as a unit and enter the domain of syntax as atomic units, deriving the effect of Opacity (BEC). The internal structure of sentences, the output of the syntax, is not subject to Opacity.



3.2 The Assignment of Rules to Domains

The model of morphosyntac interaction proposed above finds a close parallel in the assignment of phonological rules (or phonology) to the domains of the "lexicon" and "postlexicon" in LPM. Unlike morphology, which is taken to belong solely in the "lexicon", phonological rules in LPM are not assigned to the domains of either the lexicon or the postlexicon but exist as a rule component separate from the domains. The crucial question of whether a particular phonological rule is lexical or postlexical is determined by examining the properties of the rule. If the rule exhibits properties associated with the lexicon (such as BEC, derived environment only, strict cyclicity, lexical exceptions, precedes postlexical rules), it is lexical. If on the other hand, the rule applies across the board (not cyclic), is not restricted to derived environments (lack of BEC), applies after all lexical rules, then it is postlexical. The criterion for rule typology here is none other than that employed in "Remarks".

I will follow LPM and early works on the nature of the lexicon (Jackendoff 1975, Aronoff 1973, etc.) in assigning rules to domains by the properties. Many of the properties attributed to the lexicon and postlexicon in LPM carry over to the present discussion.⁹ The properties I listed in section 2 in connection with phrasal affixes, such as productivity, transparency of semantic composition, the interaction with other syntactic rules, will also be relevant. Of course, it is only when a particular rule involving either morphological and/or phrasal operation exhibits a clustering of properties associated with each domain that they will be assigned to the domains. Doubtless, there may be some borderline cases, indicating the various of degrees of "drift into the lexicon", or "drift out of the lexicon". But in the majority of cases, the decision seems straightforward, as will hopefully become clear in the discussion that follows.

3.3 Rule Interactions Permitted in the Present Model

The model of domains and rule interaction with domains proposed above eliminates the empirical problems with the LIH as it is stated yet at the same time it captures the intuition that the lexicon and the syntax are autonomous domains standing in a "level-ordered" relation of sorts, thus capturing the insight of the LIH that productive syntactic rules do not mix with less productive lexical rules (be they morphological or phrasal).

The model proposed here makes a number of predictions concerning possible and disallowed morphosyntactic interactions. Concretely, it predicts that:

- i) Whenever one finds the intermingling of morphological and phrasal operations, the rules involving these operations will be either all syntactic or all lexical.

This follows from the model of rule interactions plus the autonomy thesis. It also predicts that;

- ii) The same morphological or phrasal operation may be in the lexicon or the syntax.

This is possible since operations are freed from their erstwhile inherent association with particular domains. What is further

predicted is that the same operation will show differing properties depending on which domain it is in. Similar cases of the same phonological rule occurring in two domains and showing properties typical of that domain have been discussed by Kiparsky (1983).

What it does not predict is the intermingling of the rules of the lexicon and rules of syntax, regardless of which type of operation is involved in the rules.

In the next section, I examine these predictions and show that they are borne out. I look first at instances where the same operation is in two domains and are constrained by independent properties of the domains it occurs in, since this kind of evidence provides striking support for the view here. Then I look at the interaction of morphological and phrasal operations in both the lexicon and the syntax and show how the interactions are consistent with the view advanced here.

4. Rule Interactions in the Present Model

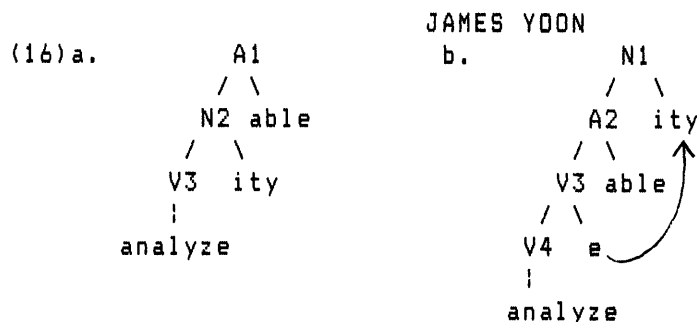
4.1 One Rule in Two Domains

4.1.1 "Affixal" QR

The view outlined above leaves open the possibility that operations other than morphology or phrasal concatenation may interact in the manner that these do. However, when the rule involving the same operation is in different domains, we expect it to show the properties associated with the domain. We find just such an example with Affixal QR, proposed in Pesetsky (1985) to resolve "bracketing paradoxes" in the lexicon.

Syntactic QR serves a filtering function at the interpretive level of LF to move scope-bearing elements to their correct scope so that compositional semantic interpretation will work straightforwardly when LF becomes input to semantic interpretation. Syntactic QR has been claimed to be an instance of Move-alpha. Now, if we assume that Affixal QR is QR operating in the lexicon moving affixes to the right configuration so that compositional semantics can work straightforwardly, we expect it to be different from QR in the syntax in being constrained by independently known properties of the lexicon.

Looking through Pesetsky's discussion, we find striking confirmation of this prediction. Pesetsky has to assume that QR at "Word LF" operates cyclically, in tandem with the cyclic construction of the morphological structure of words. This assumption proves to be crucial in ruling out a non-word like *analyziti~~able~~ shown below. If QR applied after the entire word was formed (i.e., postcyclically), all the requirements of the affixes could be met. But if QR applies cyclically from "bottom-up", there is no way for Affixal QR to save the structure, since in the first cycle in (a), there is a violation of C-selection.



Pesetsky notes that the cyclicity of QR in the lexicon does not need to be stipulated since it can be attributed to the inherent cyclic nature of processes in the lexicon.

It is obvious that QR in syntax does not operate in this manner, since QR applies after the sentence is generated (at DS) and derived (SS) meaning that it is not subject to the kind of cyclicity that its lexical counterpart is subjected to. The cyclicity of QR in the lexicon will induce the effect of BEC, which we know independently to be a property of the lexicon. But the internal structure of sentences built in the syntax remain transparent, so that syntactic QR can apply at LF after all the phrases are built/modified.

4.1.2 Lexical Affixes with Phrasal "Doubles"

In Fabb (1984:219ff), where the theory of syntactic affixation is proposed, certain affixes are treated as "doubles". For example, he has reason to believe that the affix -able is syntactic when it occurs in certain structures. But then, there are other instances of the same affix that warrant being put in the lexicon. These are the instances of lexical and phrasal doubles. It is easy to see how this observation translates into in the present framework. There is only one affix and yet the operation which affixes it can take place both in the syntax and the lexicon, hence the difference in the behavior of the affix.

Another example is furnished by the deverbal (lexical) vs. gerundival (syntactic) affix "-ki" in Korean. The list of properties distinguishing the two (17 below) can be accommodated in the present framework by letting the affixation of "-ki" take place either in the syntax or the lexicon, and everything follows. If the operation is syntactic, it will attach to clauses and further manifest properties typical of syntax; if it is lexical, it will attach to verb stems and exhibit lexical properties.

(17) a. deverbal <u>-ki</u>	b. gerundival <u>-ki</u>
po-ta ---> po- <u>ki</u> "examples"	[Chulsoo-ka k+ chaek-+l
see-decl see-nom	C-NOM that book-ACC
	po-ass]- <u>ki</u> -e
	see-ASP-nom-because
Restriction on host (no stative verbs)	No restriction (any clause)
Cannot follow inflection	Can follow inflection
Restricted (Lexical Exceptions)	Productive

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LEXICAL INTEGRITY

Meaning opaque

Meaning transparent

Early stratum phonology
(Umlaut)Late stratum phonology
(No umlaut)¹⁰

4.1.3 PS-Rules and Phrasal Idioms

Also consistent with the model proposed here is the treatment of phrasal idioms as lexical, as suggested in Jackendoff (1975). Phrasal idioms are far from productively formed and their semantics is completely idiosyncratic (non-compositional). Yet the idiomatic and non-idiomatic readings of the phrase "kick the bucket" are associated with the same phrase structure.

In this framework, even if the same phrasal operations are involved, we need not assume that the operation of building phrasal idioms is syntactic. Under the present view, both morphological and phrasal operations are allowed in the lexicon. Therefore, phrasal idioms could involve the operation of phrasal concatenation and still be lexical. That it is formed in the lexicon rather than in the syntax is demonstrated by the fact that idioms do not interact freely with genuinely syntactic rules and principles, as shown by the fact that they cannot be further modified or syntactically altered.

(18)

He kicked the old, rusted bucket in a frenzy --non-idiomatic reading only (No modification)

The bucket was kicked by Bill--non-idiomatic reading (No transformations)

Bill kicked the bucket yesterday. It was a new one --non-idiomatic reading (No anaphora, reference)

Here we have another instance of the same operation of building a VP in the lexicon and the syntax and showing properties of respective domains.¹¹

4.2 Rule Interactions in the Lexicon and the Syntax

4.2.1 Phrasal Operations feeding Morphological Operations in the Syntax:

The possibility of lexical and syntactic rules interacting with each other is ruled out by both the LIH and the present hypothesis. The possibility of syntactic rules which involves only a morphological operation, however, is predicted to be possible in the present framework, although it is not in the LIH. In the model of rule interaction proposed here, we expect phrasally constructed units in the syntax to be able to undergo syntactic rules which involve morphological operations.

Phrasal affixation argued for above is just such a case. Phrasal affixation involved in NI for instance illustrates a case where a morphological syntactic rule of forming a VP takes a phrasally constructed object NP.

Phrasal affixation provides a different sort of confirming evidence for the theory of morphosyntactic interaction proposed here. Morphology in the present context refers to a particular type of operation with its own set of properties. Therefore, an interesting

prediction that this makes in the case of phrasal affixation is that since the resulting structure is morphological, albeit a syntactic one, it should conform to morphological rather than phrasal constraints when there is a possible conflict between the two.

An example illustrating this point is provided by NI in Eskimo (Sadock 1980, 1985) which I argued to be an instance of phrasal affixation earlier. Although the language is generally SOV, the non-incorporated order of modifiers and nouns as required by PS rules is N>Modifier. But when NI takes place, the order becomes Mod> N.

(19) Eskimo (Sadock 1980)

Nonincorporated forms:

Sapanngamik	kusanartumik	pisivoq
bead-INST	beautiful-NOM-INST	thing-get-INDIC-3sg
[N	Mod]	

Incorporated forms:

Kusanartumik	sapanngarsivoq
beautiful-NOM-INST	bead-get-INDIC-3sg
[Mod	N]

The change of order would be necessary in order to meet the morphological requirements of phrasal affixes is such that they attach to the word/stem that is the syntactic head of the phrase they combine with (Sadock 1985). If deverbal compounds in English also involve phrasal affixation (as argued in Sugioka (1984)), then the same reasoning could be extended to those in order to account for the change in the order of V and its complement. Exactly such a state of affairs is predicted under our model of rule interaction in grammar and these structures provide support for it.

4.2.3 Phrasally-constructed units interacting with morphological processes in the Lexicon

Also consistent with the model of rule interaction here are phrasally constructed lexical units undergoing lexical morphological processes (affixation). The relevant range of examples in this case is furnished by constructions which Kiparsky treated as being built through "limited recursion from phrase-levels" into the lexicon.

(20) [matter-of-fact]-ly; [transformational grammar]-ian, etc.

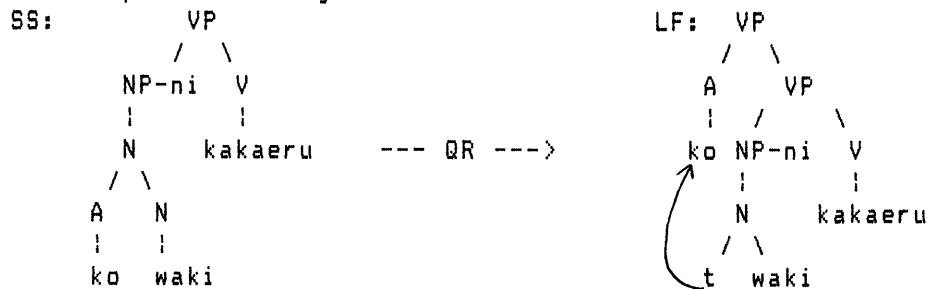
Although these look superficially similar to structures built through phrasal affixation in the syntax discussed in section 2, they are in fact quite different. The former are formed in the syntax and the internal structures of the phrases that are incorporated are not opaque to other syntactic rules (such as anaphora or modification as we saw earlier). But the examples above involve arguably lexical affixes attaching to lexicalized phrasal units. Thus, one expects the formation of these to be limited (as Kiparsky points out), and the internal structure of the phrases to be opaque to syntactic rules, which is also correct (anaphora into these is impossible). This type of rule interaction is also predicted in the present model and the resulting structures exhibit all the expected properties (of the lexicon).

If this account is correct, we need not extend the domain of

Affixal-QR to the syntax as suggested in Pesetsky (1985) or Kitagawa (1986) in order to explain these cases. These limited examples show the interaction between lexical processes, a natural state of affairs and does not force us to extend Affixal QR to syntax. If one accepts Pesetsky's proposal and allows Affixal QR to apply even in genuinely syntactic phrases (such as the case of Sentence Particles discussed earlier), we lose all generalizations derivable from the BEC as a property constraining the lexicon. This is because the internal structure of words would have to be transparent all the way through syntax so that QR can apply at LF, although for the purposes of phonology the BEC would still hold. This is tantamount to the proposal that the lexicon and syntax are not autonomous domains.¹² Indeed, Pesetsky suggests that the BEC may hold just for morpho-phonology but not for interpretive processes like QR. But given the view here, even such a relaxation is uncalled for.

Kitagawa's analysis of "bracketing paradoxes" straddling the syntax and the lexicon can also be reanalyzed as instances of lexical rule interaction. He notes that the prefix ko- in expressions like ko-waki-ni kakaeru (to hold something lightly under the armpit) presents a bracketing paradox in that while ko- is an affix on the noun waki, in terms of its scope as an adverbial, it takes the entire VP. He thus chooses to resolve this paradox by Affixal QR raising the affix to its correct scope in the syntax.

(21) Japanese (Kitagawa 1986)



If the VP is formed in the syntax, this entails that the word-internal structure of the noun ko-waki remains transparent all through the syntax until the scopal paradox exhibited by the prefix can be "resolved" at LF. But this is just the sort of rule interaction that the LIH as well as the present model does not permit. Even here, we are not forced to accept such a conclusion because there is reason to believe that the entire VP is really formed in the lexicon and the clue is provided by the fact that these are idiomatic expressions. We know by now that phrasal idioms are formed in the lexicon and not the syntax. Therefore, we can analyze this as the affixation of ko- in the lexicon to the lexically constructed phrasal unit [waki-ni kakaeru].

5. Conclusion

The view of morphosyntactic interaction proposed in this paper is an attempt at reconciling the merits of the autonomy thesis espoused under the LIH and the apparent counterexamples which challenge the operational independence of morphology and other syntactic rules. I have shown that the model is not only theoretically elegant and

interesting but that there are a range of empirical data that provide support for the proposed model of rule interaction. In particular, I have argued that once we assign productive morphological rules to the syntax and idiosyncratic phrasal formation to the lexicon by dissociating the notion of properties of rules from operations involved in rules, we obtain a clearer picture of morphosyntactic interaction that does not sacrifice the valuable observations that Chomsky initially made concerning the fundamentally different nature of regularities in the lexicon and in syntax.

Footnotes

* For their help in developing and solidifying the ideas in this paper I would like to thank Jerry Morgan, Michael Kenstowicz, Jae Ohk Cho, Sue Ann Kendall, Euiyon Cho and Hyangsook Sohn.

1 See Baker (1985) vs. Mithun (1984), Williams and DiSciullo (1986) for noun incorporation; Grimshaw and Mester (1985) vs. Woodbury and Sadock (1986) for complex verbs, Sproat (1985), Fabb (1984), Sugioka (1984) vs. Selkirk (1982), Lieber (1983) etc. for deverbal compounds in English.

2 Although not necessarily in the Iroquoian languages studied in Mithun (1984) and Baker (1985)).

3 Mithun observes that NI is a skill and that speakers can tell when a novel NI is being introduced -- this supports the view that NI is morphological (=lexical) since items in the lexicon are committed to memory whereas sentences are not.

4 If NI in Eskimo is analyzed this way, then one cannot invoke the analysis of NI in Baker (1985b), where by the Government Transparency Corollary (GTC), the host of incorporation (denominal verb) will govern the external modifier as well as the incorporated head noun. For more differences between NI in Eskimo in the present paper and Baker's analysis, see the discussion on Possessor Raising.

5 Grimshaw and Mester (1985) use exactly this kind of argument in their claim that complex verb formation in Eskimo can be viewed as a lexical process.

6 The advantages of such a distinction were foreseen in Dowty (1979) and developed in Sugioka (1984), although these authors fail to provide an overall framework of morphosyntactic interaction.

7 The view of the lexicon in Jackendoff, often called the "static" view in contrast to the "dynamic" view of Siegel (1974) and LPM, seems to be the logical descendent of the "Remarks" framework. Jackendoff suggested that even rules without typical morphology could be lexical if they lacked productivity and regularity. This suggestion has been followed and developed vigorously in theories such as LFG. It is ironical, however, that LFG can still maintain a principle like LIH. If it is not the presence or absence of characteristic morphology but the properties of rules that matter, why should all rules that build

units that are **phonologically** "words" be lexical, even when they are extremely productive?

8 A. Marantz pointed out that the view of "morphology" in the present paper differs from that in LPM since in the latter morphology is intricately tied in with phonology (lexical). I do not think that it is a correct observation. I can still define morphological operations by phonological means (i.e., whether the output is a "word" in terms of phonology) in addition to other properties such as Righthheadedness. What is different between my view and LPM is that while morphology is identified with the lexicon and taken as defining the domain of the lexicon together with "lexical" phonological rules in LPM, it is not in my view. This points to another difference, which is that, in the view I am proposing, the "lexicon" of LPM defined by morpho-phonological evidence cannot be the lexicon understood as the domain in which less productive and restricted regularities are taken to reside (i.e., the lexicon as defined from a morphosyntactic perspective). Likewise, the "postlexicon" cannot be identified with syntax, since phrasal idioms, which I argue are stored in the lexicon, nevertheless undergo "postlexical" phonological processes.

Lexical and postlexical phonology, then, designate affixal versus phrasal phonology with no pretensions about all affixal (including compounding) structures being in the lexicon or all phrasal structures being outside of it (cf. Sproat 1985 for similar ideas concerning "lexical phonology").

9 This seems to be true despite what I have said in footnote 8. What would not be considered properties of the lexicon are those properties of the LPM lexicon that are relevant solely for morphophonology. However, properties like BEC, interpreted as Opacity of internal constituency, holds for all lexical structures regardless of how they are built (i.e. phrasal idioms in the lexicon). The property of strict cycle, as shown in Pesetsky (1985), also holds in the interpretation of phrasal idioms. It is these properties that characterize all lexical processes that are relevant.

10 Following the logic of the argument in this paper, this cannot be criterial to the distinction between what is lexical and what is syntactic, as M. Baker pointed out, but is included here nonetheless.

11 Incidentally, this may constitute an argument that inflectional morphology must be lexical since even in the case of idioms, verbs are inflected. If the attachment of inflectional morphology (-ed) is syntactic, since the idiom as a whole contains the inflected verb, this would be a case of syntactic rules "feeding" lexical rules, a possibility denied by the "level ordering" thesis (autonomy thesis) of the lexicon and syntax espoused here.

12 This is also exactly the view in Sproat (1985).

References

- Aronoff, M. (1976) Word Formation in Generative Grammar. Linguistic Inquiry Monograph Cambridge:MIT
- Baker, M. (1985a) "The mirror principle and morphosyntactic explanation", Linguistic Inquiry 16.3: 373-416
- (1985b) "Incorporation: A theory of grammatical function changing." Ph.D dissertation, MIT
- Bresnan, J. (1982) "Passive in Lexical Theory." in J. Bresnan ed., The Mental Representation of Grammatical Relations, 3-86, Cambridge, MA:MIT Press
- Chomsky, N. (1970) "Remarks on Nominalizations." in R. Jacobs and P. Rosenbaum eds., Readings in English Transformational Grammar. 184-221. Waltham, MA:Ginn
- (1981) Lectures on Government and Binding. Dordrecht:Foris
- Dowty, D. (1979) Word Meaning and Montague Grammar. Dordrecht:Reidel
- Fabb, N. (1984) "Syntactic Affixation." Ph.D dissertation, MIT
- Grimshaw, J. and R.A. Mester (1985) "Complex Verb Formation in Eskimo." in NLLT 3:1 - 19
- Halle, M. (1973) "A Prolegomena to a theory of Word-formation." in LI 4.1: 3 - 16
- Hoekstra, T. H.v.d. Hulst, M. Moortgat (1980) "Introduction" in Lexical Grammar, ed., Hoekstra, v.d. Hulst & Moortgat. Dordrecht:Foris
- Jackendoff (1975) "Morphological and Semantic Regularities in the Lexicon." Language 51.3: 639-671
- Kendall, S.A. and J.H-S Yoon (1986) "Morphosyntactic Interaction with Pragmatics and Sentence Particles." in A. Farley et.al. ed., Papers from the Parasession on Pragmatics and Grammatical Theory Chicago: Chicago Linguistics Society. 54-66
- (1986) "Sentence Particles as Evidence for Morphosyntactic Interaction with Pragmatics." in Studies in the Linguistic Sciences 16.1:53 - 77, Department of Linguistics, University of Illinois, Champaign-Urbana
- Kiparsky, P. (1983a) "Some Consequences of Lexical Phonology." ms. MIT
- (1983b) "Word Formation and the Lexicon" in Proceedings of the Mid-America Conference on Linguistics
- Kitagawa, Y. (1986) "More on Bracketing Paradoxes." LI 17.1: 177 - 183
- Lapointe, S. (1979) "A Theory of Grammatical Agreement." Ph.D dissertation, University of Massachusetts, Amherst
- (1983) "A Comparison of Two Recent Theories of Agreement." in J. Richardson et.al. ed., Papers from the Parasession on the interplay of phonology, morphology, and syntax, Chicago: Chicago Linguistics Society
- Lieber, R. (1980) On the Organization of the Lexicon. Indiana University Linguistics Club
- (1983) "Argument Linking and Compounds in English" LI 14.2 251 - 286
- Marantz, A. (1984) On the Nature of Grammatical Relations LI Monograph. MIT Press
- Mithun, M. (1984) "On the evolution of Noun Incorporation." Lg 60.4 847 - 894
- (1986) "On the nature of Noun Incorporation." Lg 61.2: 32 - 37
- Mohanan, K. (1982) "Lexical Phonology." Ph.D dissertation, MIT

- Pesetsky, D. (1985) "Morphology and Logical Form." LI 16.2: 193 - 246
- Postal, P. (1969) "Anaphoric Islands." Papers from the Fifth Regional Meeting. Chicago Linguistics Society
- Sadock, J. (1980) "Noun Incorporation in Greenlandic." Lg 56: 300 - 319
- (1985) "Autolexical Syntax: a proposal for the treatment of noun incorporation and similar phenomena." Natural Language and Linguistic Theory 3.4: 329 - 440
- (1986) "Some notes on noun incorporation." Lg 62.1:19 - 31
- Selkirk, L. (1982) The Syntax of Words. LI Monograph
- Siegel, M. (1974) "Topics in English Morphology." Ph.D dissertation. MIT
- Sproat, R. (1985) "On Deriving the Lexicon." Ph.D dissertation. MIT
- Sugioka, Y. (1984) "Interaction of derivational morphology and syntax in Japanese and English." University of Chicago Ph.D dissertation
- Williams, E. and A.M. di-Sciullo (1986) "Noun Incorporation vs. Cliticization." in Proceedings of NELS 16, ed., S. Berman et.al. GLSA, University of Massachusetts, Amherst, MA:126 - 135
- Woodbury, A. and J.Sadock (1986) "Affixial verbs in syntax: A Reply to Grimshaw and Mester." NLLT 4: 229 - 244

