SYNTAX AT SUNSET 2

Edited by GIANLUCA STORTO

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THE *SOME* INDEFINITES*

MISHA BECKER
mbecker@ucla.edu

Important syntactic and semantic differences between the indefinites *a NP* and *some NP* may inspire one to call *some NP* a true quantifier, in contrast to *a NP* (assuming *a NP* is a variable, after Heim 1982, Kamp 1981). Specifically, unlike *a NP*, *some NP* resists genericity and unselective binding. Furthermore, the German indefinite *irgendein NP* 'some NP or other' induces a WCO-like effect. However *some NP* supports cross-sentential anaphora (i.e. it introduces a discourse referent), and Hungarian *valami NP* 'some NP or other' patterns like other DPs in Hungarian that introduce discourse referents (but unlike quantifiers), thus preventing us from calling this type of indefinite a quantifier. In this paper I argue that *some* indefinites are variables, like *a* indefinites, and their quantifier-like behavior can be derived by appealing to a semantic property of these indefinites. The *some NP* indefinite is epistemically nonspecific, meaning that the identity of the particular NP is either not known to, or will not be revealed by, the speaker (Farkas 1994, Strawson 1974). Under my account, the epistemic nonspecificity of *some NP* serves as a deictic modifier which attributes to the NP a stage-level property (i.e. the property of not being known to the speaker). Because the *some* indefinite has this stage-level property, it cannot take an individual-level predicate, and thus cannot be unselectively bound. The inability of *some NP* to be unselectively bound, by virtue of being predicated of a stage-level property, is reminiscent of the inability of certain bare plurals to be unselectively bound, as discussed in Carlson (1977). Thus I argue that the epistemic nonspecificity of *some NP* has the same effect on the indefinite as a modifier of a bare plural, namely the effect of predicating a stage-level property of the argument.

1. INTRODUCTION

This paper is intended to map out some of the less explored territory of indefinite DPs (expressions such as *a girl*, or *some student*). In particular, I will compare the syntactic and semantic properties of the indefinite DPs *a student*, what I call the *a* indefinites, and *some student (or other)*, what I call the *some* indefinites. Illustrating their properties by examples from English, German and Hungarian, I will argue that their similarities in behavior result from both *a* and *some* indefinites

* I gratefully acknowledge the invaluable discussions with and insightful comments from Anna Szabolcsi. I have also received helpful comments from Filippo Beghelli, Donka Farkas and Irene Heim, and I thank the audiences at CSSP '97 and UCLA for their suggestions. Finally, I am indebted to my faithful informants for their judgments in German and Hungarian and for their patience. Naturally, any remaining errors are my own.

being variables, not quantifiers, and I will attempt to explain their differences in terms of a special property of the determiner *some*. I will identify this property as that of attributing an accidental property, the property of being nondescript or unidentifiable, to the noun it modifies.

While the issue of whether indefinite DPs like *a student* are quantifiers or variables remains controversial, throughout this paper I will assume that these indefinites are variables and not quantifiers, following Heim (1982) and Kamp (1981). In terms of Dynamic Logic, my use of the term "variables" can be understood as referring to externally dynamic quantifiers. In Heim's and Kamp's terms, as variables, these indefinites can be generic and can be bound unselectively by adverbs of quantification (such as *usually*). Furthermore, on the assumption that quantifiers cannot bind into a clause they do not c-command, this view explains why indefinite DPs, unlike traditional quantifiers, can support cross-sentential anaphora (i.e. bind a singular pronoun in another sentence).

But what about indefinites like *some student,* or *some student or other*?[1] In much of the literature, these indefinites are lumped together with indefinites like *a student*. As we will see below, there are important differences between these types of indefinites. If *some student*, or *some student or other* were a quantifier, these differences would follow directly. However, I will also demonstrate ways in which the indefinite *some student* does not behave like a quantifier. Let us turn now to the differences between *a* indefinites and *some* indefinites.

2. SOME IMPORTANT DIFFERENCES AND SIMILARITIES BETWEEN *A* AND *SOME*

2.1. Some NP *Appears to Be a Quantifier*

First I will present three examples which appear to show that *some student or other*, in constrast to *a student*, is a quantifier. The first piece of evidence is that unlike the indefinite *a student*, the indefinite DP

[1] There may be important differences between the expressions *some student* and *some student or other*. In particular, the exclusion of *or other* seems to allow a reading on which the referent is in fact identifiable. That is, in some cases, *some student* seems to fall part-way between *a student* and *some student or other*, in the relevant respects (i.e. identifiability of the referent). For the moment, I will not further tease apart their differences. In most of the examples I will use *some student or other* because the effects are clearer. I also find *some student or other* to be a more accurate equivalent to the German indefinite *irgendein Student*.

some student or other cannot be generic or be bound by an adverb of quantification. We can see this in the examples in (1-4).[2]

(1) a. ??Some man or other is mortal. (≠ men in gen. are mortal)
b. ??Irgendein Mensch ist sterblich. (≠ men in gen. are mortal)

(2) a. A man is mortal. / Men are mortal. (= men in gen. Are mortal)
b. Ein Mensch ist sterblich. / Menschen sind sterblich. (= men in gen. are mortal)

(3) a. Usually some student or other is tall. (≠ most students are tall)
b. Normalerweise ist irgendein Student gross. (≠ most students are tall)

(4) a. Usually a student is tall. (= most students are tall)
b. Normalerweise ist ein Student gross. (= most students are tall)

While the sentences in (2) can easily receive a generic interpretation, and those in (4) can easily have the reading in which the Q-adverb *usually* unselectively binds the NP variable (in fact, to be felicitous they must take these readings), the sentences in (1) and (3) resist the respective interpretations ((1) cannot be generic, and (3) cannot allow the unselective binding reading).

A second piece of evidence is that *some boy or other* and *irgendein Junge* are not predicative, in contrast to *a boy* and *ein Junge*, as illustrated in (5-6).

(5) a. ??Hans is some boy or other.
b. ??Hans ist irgendein Junge.

(6) a. Hans is a boy.
b. Hans ist ein Junge.

Like the examples in (5a-b), example (7) shows that quantifiers are also not predicative:

(7) *John is every boy.

[2] In examples (1-6), and elsewhere unless otherwise noted, the German "b" examples correspond in meaning to the English "a" example sentences.

Since the sentences in (5a-b) are much better than the sentence in (7), and *Hans is some boy* is even preferable to (5a), it might be the case that *some boy (or other)* is not nonpredicative in the same way as a quantifier like *every*. In fact the expression *John is some boy (or other)* can be used to indicate the speaker's indifference to any further identificational attributes of John, beyond his gender. This pragmatic use of the indefinite *some boy* will turn out to be consistent with the epistemic properties of *some* I discuss in section 3. Space limitations prevent me from discussing these data in detail, so I will leave the nonpredicativity of *some* aside for now.

Thirdly, there is a weak crossover-like effect with German *irgendein NP* 'some NP or other'; there is a slight effect in English, but the judgments for English turn out to be extremely weak and inconsistent across speakers. German speakers find a marked contrast between sentences (a) and (b) given in (8) in terms of the acceptability of coreference between the indefinite DP and the possessive pronoun. Only when the indefinite is *ein Schüler* 'a student' do speakers allow coreference between the indefinite and the possessor.

(8) a. Seine$_i$ Mutter hat [einen Schüler]$_i$ zur Schule gebracht.
"His$_i$ mother brought [a student]$_i$ to school."
b. *Seine$_i$ Mutter hat [irgendeinen Schüler]$_i$ zur Schule gebracht.
"His$_i$ mother brought [some student or other]$_i$ to school."

The fact that the indefinite DP in (8b) resists coreference with the possessive pronoun makes it appear to behave much like a quantifier, as we can see when we compare with *jedes* 'every', given in (9) below.

(9) *Seine$_i$ Mutter liebt jeden Schüler$_i$.
"His$_i$ mother loves every student$_i$."

2.2. Some NP *Appears Not to Be a Quantifier*

Based on the facts enumerated in examples (1-9), we might draw the natural conclusion that *some student* is a quantifier. In this section I will present evidence to the contrary. One reason to doubt that *irgendein Student* and *some student or other* are quantifiers is based on the assumption that quantifiers cannot bind a singular pronoun in a non-c-commanded position. Yet both *a* and *some* indefinites support cross-sentential anaphora, as we can see in (10):

(10) a. Some man or other called. He wanted to talk to you.
b. Irgendein Mann hat angerufen. Er wollte dich sprechen.

In both (10a) and (10b), the pronoun in the second sentence can easily corefer with the subject of the first sentence. But if we compare *irgendein Mann* and *some man or other* with traditional quantifiers, we find a contrast:

(11) a. *Every man called. He wanted to talk to you.
b. *Jeder Mann hat angerufen. Er wollte dich sprechen.

(12) a. *More than one man called. He wanted to talk to you.
b. *Mehr als ein Mann hat angerufen. Er wollte dich sprechen.

Unlike example (10), in (11-12) the quantified subject of the first sentence cannot bind the pronominal subject of the second sentence in each pair. Crucially, the quantifiers *mehr als ein Mann* and *more than one man*, along with *jedes* and *every*, can bind a singular pronoun if they c-command it, e.g.:

(13) a. ok: [More than one man]$_i$ lost his$_i$ watch.
b. ok: [Mehr als ein Mann]$_i$ hat seine$_i$ Uhr verloren.

A second piece of evidence has to do with the widely held belief that German quantifiers can only take scope in situ. That is, unlike in English, inverse scope is not possible with true quantifiers in German. We can see that the German quantifier *jedes Buch* 'every book' cannot take inverse scope over *irgendein Mädchen* 'some girl or other', as in example (14):

(14) Maria sagte, daß irgendein Mädchen jedes Buch oft liest.
"Mary said that some girl or other reads every book often."
irgendein > jedes *jedes > irgendein

However, *irgendein Buch* 'some book or other', like *ein Buch* 'a book' can take inverse scope over *jedes Mädchen* 'every girl'. This is illustrated in (15).

(15) a. Maria sagte, daß jedes Mädchen irgendein Buch oft liest.
"Mary said that every girl reads some book or other/a book often."
jedes > irgendein irgendein > jedes
b. Maria sagte, daß jedes Mädchen ein Buch oft liest.
"Mary said that every girl reads a book often."
jedes > ein ein > jedes

Thirdly, if we look at Hungarian, we find some additional evidence for arguing that the equivalent of *some man or other* (in Hungarian, *valami férfi*) is not a quantifier. In Hungarian, the noun phrases that are standardly analyzed as introducing discourse referents, names, definites, and indefinites such as *two men* can occur in two distinct positions: in the first case (occurring in Topic position), the verb that follows them has its prefix procliticized (e.g. *elvitte* 'take away'), in the second case (Focus position), the prefix is encliticized (*vitte el*):[3]

(16) Két férfi el vitte / vitte el a kocsit.
two men away took / took away the car

Quantifiers like *minden férfi* 'every man' and *egynel több férfi* 'more than one man' can each occur only with one of these orders:

(17) Minden férfi el vitte / *vitte el a kocsit.
every man away took / *took away the car

(18) Egynél több férfi *el vitte / vitte el a kocsit.
more than one man *away took / took away the car

Distributive quantifiers in Hungarian (as in (17)) appear in Quantifier position (distinct from either Topic or Focus position), and modified numerals (as in (18)) appear in Predicate Operator position, which, like Focus position, induces verb-prefix inversion.[4] But what is relevant to us here is that the *some* indefinites in Hungarian (*valami NP*) follow the same pattern as those DPs that introduce discourse referents, cf. (16). This is illustrated in (19):

(19) Valami férfi el vitte / vitte el a kocsit.
some man away took / took away the car

The final piece of evidence that *some man or other* is not a quantifier is that it can be modified by an appositive relative clause, although this depends on the content of the relative clause. The relevance of the relative clause's content will be explained in the next section. As long as the relative clause does not attribute identificational information to the indefinite, it seems to be fine:

[3] I thank Anna Szabolcsi for pointing these facts out to me about Hungarian.
[4] For a more thorough and accurate discussion, please see Szabolcsi (1997: 120-121).

(20) a. Some man or other, who, so I'm told, was last seen in LA, has disappeared.
b. Irgendein Mann, der angeblich zuletzt in LA gesehen war, ist verschwunden.

Quantifiers, however, can never be modified by an appositive relative, only a restrictive relative clause:

(21) a. *Every boy, who by the way was wearing a red coat yesterday, got an A.
b. *Jeder Junge, der gestern übrigens einen roten Mantel an hatte, hat eine 1 bekommen.

Comparing the sentences in (21) with (22), we see that quantifiers can easily be modified by a restrictive relative clause.

(22) ok: Every boy who was wearing a red coat yesterday got an A.
(= all boys who were wearing red coats yesterday got an A)

3. EPISTEMIC (NON)SPECIFICITY

What could account for the differences we saw in examples (1-9) between the *a* indefinites and the *some* indefinites, in light of the important similarities we saw in (10-22)? Both types of indefinites introduce a discourse referent, yet they are not identical in all respects: *some student or other* cannot be unselectively bound or be generic, cannot be predicative, and it shows a WCO-like effect in German.

There is also a slight difference in meaning between the determiners *a* and *some*. Strawson (1974) characterized this difference in the following way. He suggested that in choosing the determiner *some* instead of *a*, the speaker is indicating that there is identificational information about the indefinite DP that the speaker is not disclosing. This information is undisclosed because either the speaker does not know it, or he does not wish to reveal it. Strawson gives the following sentences to compare:

(23) I've been stung by some insect.

(24) I've been stung by a wasp.

(25) I've been stung by some wasp.

Whereas (23) sounds natural, as there are hundreds of species of insects, and perhaps the speaker could not identify the exact species, and sentence (24) could be a clarification of (23), sentence (25) is odd: it

implies that it should be possible to distinguish between individual wasps, and the speaker is not providing the distinguishing information. It might be natural if uttered by someone who kept a small colony of wasps as pets, and could in principle distinguish among them, but on this particular occasion is unsure which one stung him. In any event, the lack of identificational information forces the reference of the indefinite DP in both (23) and (25) to be nonspecific, in the sense that the speaker does not know the identity of the referent.

Farkas (1994) refers to this type of nonspecificity as epistemic nonspecificity. An epistemically nonspecific DP means that either the precise identity of the DP is unknown to the speaker, or the speaker deems its identity irrelevant to the discourse. An indefinite DP such as *an agent* can be either epistemically specific or nonspecific, as is illustrated in the example in (26):

(26) An agent stole the documents from the office.
  a. His name is Albert, and he's done this before. (specific)
  b. We are interrogating all agents to figure out who did it. (nonspecific)

If sentence (26) is followed by sentence (a), the speaker of sentence (26) has some referent in mind for the indefinite. On the other hand if the speaker of (26) continues with sentence (b), then the indefinite turns out to be epistemically nonspecific: the speaker does not know the identity of the referent.

In contrast, the indefinite *some agent or other* can only be epistemically nonspecific. As we see in example (27), the sentence in (27a) is an odd continuation of (27), but (27b) follows naturally.[5]

(27) Some agent or other stole the documents from the office.
  a. ??His name is Albert, and he's done this before.
  b. We are interogating all agents to figure out who did it.

[5] It has been pointed out to me that the felicitousness of (27a) improves greatly when (27) contains the expression *some agent*, rather than *some agent or other*. This fact may indicate that some of my generalizations do not hold for *some NP*, but only for *some NP or other*, and, as I pointed out in footnote 1, that *some NP* can be used when the speaker is fully aware of the identity of the NP. Thus it may be the case that the relevant property of *some* has more to do with *irrelevance* of identity to the discourse, not lack of knowledge of identity on the part of the speaker. However for now I will continue to refer to *some NP* as being epistemically nonspecific.

How can we tie the epistemic nonspecificity of *some* to the differences we saw earlier between the DPs *some man or other* and *a man*? First of all, we can tie it directly to the restriction on the content of the appositive relative that modifies a *some* indefinite. Being epistemically nonspecific, the indefinite cannot be modified by a clause containing identificational information. This is illustrated by (28), which is an odd sentence:

(28) ??Some man or other, who, by the way, I had lunch with just yesterday, was promoted.

Let me propose the broader claim that this epistemic property plays a role in the explanation of all the phenomena mentioned above, but in different ways. Although I do not have a formal analysis worked out, I will explain the connection to each set of facts in turn.

3.1. *Genericity*

The explanation I propose hinges on the fact that epistemic nonspecificity is an accidental (i.e., noninherent) property of the DP. That this property of the *some* indefinites is responsible for the effects we saw earlier is supported by the fact that when we modify the indefinite *a student* with the relative clause *whose identity is irrelevant*, we get the same effects as those we got with *some student or other*:

(29) a. ??Some man or other is mortal.
  (≠ men in general are mortal)
  b. ??A man whose identity is irrelevant is mortal.
  (≠ men whose identities are irrelevant are generally mortal)

If it is the case that the accidental property of being epistemically nonspecific is the cause of the syntactic and semantic differences between *a* and *some*, then we should find that other indefinite DPs with accidental properties behave the same as the *some* indefinites in the relevant respects. Recalling an example from Carlson (1977), of which I give a modified version in (30), we can see that like the *some* indefinites, bare plurals modified by a stage-level predicate resist genericity:

(30) a. ??Alligators in the hallway are intelligent. (≠ alligators in the hallway are generally intelligent)
  b. Alligators are intelligent. (= alligators in general are intelligent)

Being intelligent, like being a man or an alligator, is an individual-level property, an inherent property of an individual. However, being in the hallway is a stage-level or accidental property. As Carlson points out (p. 324), it seems nonsensical to suggest that being intelligent somehow follows from being in the hallway (or from being an alligator in the hallway), whereas if the generalization "Alligators are intelligent" is true, it is plausible that being intelligent follows from being an alligator.[6]

It is striking that two syntactically distinct entities (a determiner, and relative clauses modifying bare plurals) both produce the same effect: by containing an accidental property, they cannot take an inherent property as a predicate, and so they cannot be generic. What this indicates is that it is a semantic property of these DPs, not a syntactic property, that causes this behavior, and a semantic, not a syntactic property at the root of the distinction between the indefinite DPs *some man* and *a man*.

3.2. *Unselective Binding*

Let us now turn to the unselective binding facts involving an adverb of quantification. *A* indefinites modified by an accidental property are like unmodified *some* indefinites in that in sentences containing them, *usually* can only bind an event variable:

[6] There may be a similar effect for certain temporally restricted DPs, such as *a fugitive* (i.e., being a fugitive is an accidental property of an individual, not an inherent property). When such a DP is modified by an individual-level property, the sentence cannot receive a generic interpretation:

i) A fugitive is blue-eyed (≠ fugitives in general have blue eyes)

However this effect may not be particularly robust, since the slight change in (ii) allows a generic interpretation more easily:

ii) A fugitive has blue eyes.

Note that the same change does not help in the case of *some* indefinites:

iii) Some man or other has blue eyes. (≠ men in general have blue eyes)

I think this issue is worth exploring in more detail, but I will not do so here.

(31) a. ??Usually, some student or other is intelligent.
(≠ most students are intelligent;
= some student is intelligent most of the time)
b. ??Usually, a student whose identity is irrelevant is intelligent.
(≠ most students whose identities are irrelevant are intelligent;
= a student whose identity is irrelevant is intelligent most of the time)

The similarity between the unselective binding examples (31a-b) and the genericity examples (29a-b) may indicate that they arise from the same mechanism. The fact that bare plurals modified by an accidental property also resist unselective binding by a Q-adverb supports this view:

(32) ??Alligators in the hallway are often intelligent.
(≠ most alligators in the hallway are intelligent;
= alligators in the hallway are intelligent most of the time)

Note that it is also possible to get the reading "in most cases in which one encounters an alligator in the hallway, it will be intelligent". However in this case the Q-adverb still quantifies over events.

Szabolcsi (personal communication 1997) suggests that we might make sense of these data in terms of a Dynamic Semantics approach (Chierchia 1992), where indefinites are initially interpreted as (externally dynamic) existential quantifiers. "Binding" by a Q-adverb requires that their existential quantifiers first be removed, and this is achieved by existential disclosure. She suggests that a linguistic constraint on the application of existential disclosure might prevent the existential quantifier from being removed if the determiner that contributes that quantifier contains additional semantic content. That is, a zero determiner (as in the case of bare plurals) or an *a* determiner can be removed by existential disclosure, but a *some* determiner cannot because it contains additional semantic content, namely epistemic nonspecificity.

3.3. *Weak Crossover*

The WCO-like effect for German is also likely to follow from the epistemic nonspecificity of *irgendein*, since as shown in (33), coreference is more difficult when the *a* indefinite is modified by the relative clause *who I don't know well*. This is reminiscent of what we saw earlier in (8).

(33) *Seine$_i$ Mutter hat [einen Schüler, den ich nicht gut kenne]$_i$ zur Schule gebracht.
"His mother brought a student who I don't know well to school"

In light of the weakness of the WCO-like effect in English, and the fact that German does not get a WCO effect in *wh*-questions (shown in (34) below), let me suggest that the resistance to coreference of *irgendein Student* and *some student or other* has to do with a reluctance to tolerate backwards anaphora with a nondescript DP.

(34) ok: Wenn$_i$ liebt seine$_i$ Mutter?
"Whom does his mother love?"

In other words, *His$_i$ mother loves John$_i$* allows the coreference reading because the DP *John* is not nondescript; it is specific. The fact that in English *His$_i$ mother loves a student$_i$* is marginal, while in German it is grammatical, might mean that English requires greater specificity or stronger identification of the referent in order to allow coreference.

4. SUMMARY

To summarize, whereas the differences we saw between the indefinites *a man* and *some man* (examples 1-9) would follow if *some man* were a quantifier, this position is impossible to maintain (at least, within a Kamp-Heim framework) in light of the variable-like behavior of *some man* illustrated in examples (10-22). I have maintained the view that both *a man* and *some man* are variables, based primarily on the fact that both types of indefinites introduce discourse referents:

- both support cross-sentential anaphora,
- both can be modified by an appositive relative clause,
- Hungarian *valami NP* patterns like DPs that introduce discourse referents,
- German *irgendein NP* does not show scope patterns typical of quantifiers.

It remains then to explain why *some man* cannot be generic or unselectively bound.

I have proposed that these phenomena are symptomatic of the semantic effect of the epistemic nonspecificity of *some*. I have argued that epistemic nonspecificity is an accidental property that is predicated

of the indefinite DP. This accidental property prevents the indefinite from taking an inherent property as a predicate, which is necessary for genericity. The indefinite cannot take an inherent property as its predicate because this construction would imply that an inherent property follows from a noninherent or accidental property, which is intuitively implausible. Coupled with a prohibition against existential disclosure when the quantifier contains additional semantic information, this will also account for the absolute lack of binding by an adverb of quantification.

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ON THE SINGULAR INDEFINITE ARTICLE IN ENGLISH*

MELISSA A. EPSTEIN
melissae@ucla.edu

There are several possible categories within the phrase structure for the indefinite article *a(n)*. *A* could be in the same category as the definite article *the*, the quantifier *some*, the numeral *one* or the plural marker *–s*. In this paper, I will provide structural and semantic evidence for *a* either being in the same category as *some* or *–s*. I will also provide an analysis of the noun phrase, using 'principles of economy', that will account for the distribution of *a*, as well as other pre-nominal modifiers, with respect to the pro-form *one*.

1. INTRODUCTION

At first glance (and a very naïve one at that), the singular indefinite article *a(n)*, along with other pre-nominal modifiers, such as *the*, *one*, *two*, *some*, *each*, etc. are all in the same category because in the following two paradigms they all precede the noun *book*:

(1) a. I bought *the* book.
b. I bought *a* book.
c. I bought *one* book.
d. I bought *each* book.

(2) a. I bought *the* books.
b. I bought *two* books.
c. I bought *some* books.

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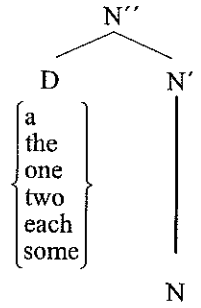
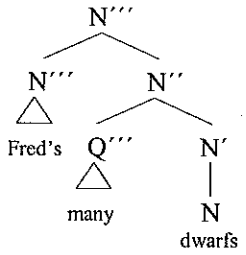
And in classical X-bar Theory, the noun phrase[1] was constructed so that cardinal numbers, quantifiers and articles were all in the same position, the specifier of N′′ (Chomsky 1970; Jackendoff 1977).

(3)



Then, in order to account for both a possessive and a quantifier being able to precede a noun, N′′′ was proposed.

(4)



Under this analysis, *a* has two possible positions: in the specifier of N′′ or N′′′.

Although this type of structure, with its multiple N′ levels and specifier positions, was able to account for the many word orders in English, it did not allow for the determiners which inhabited the specifier position to form a constituent with anything but the item closest to its right. For example, the noun phrase *the three dogs and three cats* must have the constituency structure in (5)a, where *the* forms

[1] I will use the term *noun phrase* in the pre-theoretical sense to refer to any phrase headed by a noun. Terms such as NP and DP will refer to actual theoretical structures.

a constituent only with the first half of the conjunction, instead of (5)b, where *the* forms a constituent with the entire conjoined phrase.

(5) a. [[the three dogs] [and] [three cats]]
b. [[the] [thee dogs] [and] [three cats]]

Therefore, a new structure for the noun phrase needed to be proposed.

Abney (1987) noticed a strong parallel between noun phrases and sentences, based on the construction of the English gerundive. Unlike sentences, though, the subject of the gerundive takes genitive case (e.g. Example (6)). The gerundive can also occur in positions where full sentences cannot, such as the subject position of a question (Example (7)) and the object of a preposition (Example (8)).[2]

(6) a. [John] destroyed the spaceship.
b. [John's] destruction of the spaceship.
c. [John's] destroying the spaceship.

(7) a. *Did [that John built a spaceship] upset you?
b. Did [John] upset you?
c. Did [John's building a spaceship] upset you?

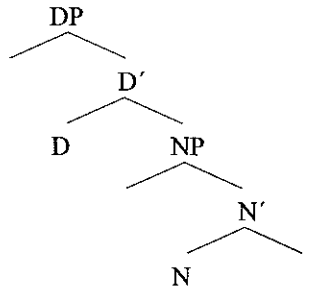
(8) a. *I told you about [that John built a spaceship].
b. I told you about [John].
c. I told you about [John's building a spaceship].

Furthermore, in many languages, there is agreement between the head noun and the other members of the noun phrase. Abney suggests that just as in a sentence agreement is hosted outside the verb phrase in I, agreement in noun phrases should have an agreement category outside the noun phrase. Abney claimed that the noun phrase equivalent to modals (the members of I) is determiners. Therefore he called the functional head of the noun phrase D, and gave the noun phrase the following structure:[3]

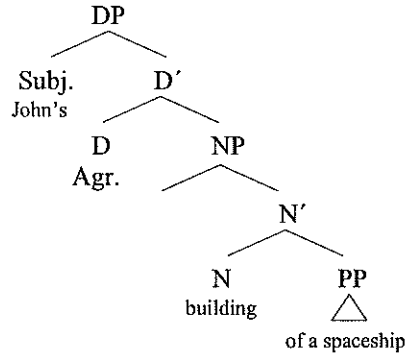
[2] Examples are adapted from Abney (1987).
[3] Examples are adapted from Abney (1987)

(9)

a.

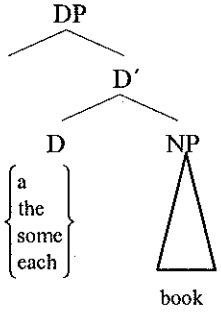


b.



Thus, under Abney's analysis, determiners, including *a*, are located in D.

(10)

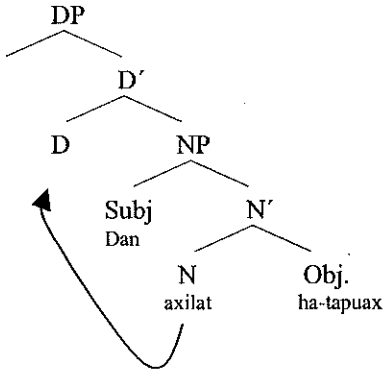


Ritter (1991) proposed the addition of another functional category to the noun phrase, NumP, on the basis of the structure of the Hebrew free

genitive noun phrase. In Hebrew genitives, the head noun obligatorily raises above its subject. In construct state genitives, the head noun cannot take the definite article *ha*, so Ritter proposed that the head noun had raised to D.[4]

(11) a. axilat dan et ha-tapuax
eating Dan ACC the-apple
'Dan's eating of the apple'
b. *ha-axila dan et ha-tapuax
the-eating Dan ACC the-apple

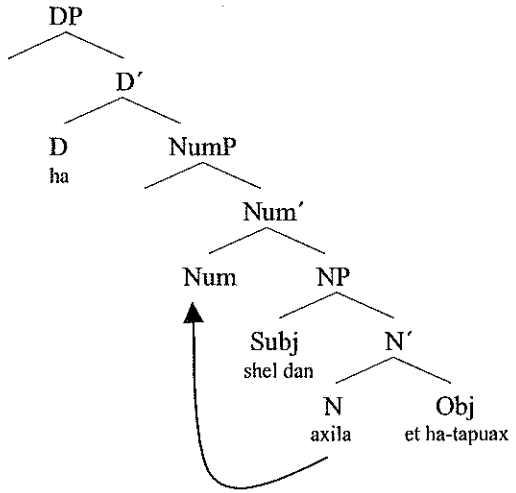
(12)



In free genitive noun phrases, on the other hand, there is a need for another landing site between D and N for the head noun because the definite article, *ha*, is grammatical with the head noun. In other words, the head noun cannot be in D.

[4]The following Hebrew examples are based on Ritter (1991).

(13) ha-axila shel dan et ha-tapuax
the-eating of Dan ACC the-apple
'Dan's eating of the apple'



Ritter (1995) provides evidence for the content of Num being grammatical number from the structure of Hebrew pronouns. She points out that Hebrew first and second pronouns cannot take the definite article, *ha*, but the third person pronouns may.[5]

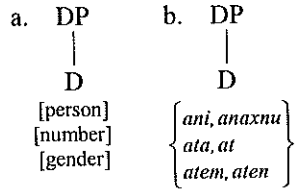
(14) a. *ha-ani/*ha-anaxnu
**the-I /*the-we*
b. *ha-ata /*ha-at /*ha-atem /*ha-aten
**the-you (m.sg.)/*the-you (f.sg.)/*the-you (m.pl.)/*the-you (f.pl.)*
c. ha-hu /ha-hi /ha-hem /ha-hen
the-he/the-she/the-them (m.)/the-them (f.)
'that' (m.)/'that' (f.)/'those' (m.)/'those' (f.)
d. ha-ze /ha-zot /ha-ele
the-it (m.) /the-it (f.)/the-they
'this' (m.)/'this' (f.)/'these'

Therefore, first and second person pronouns are analyzed as being located in D, which is fully specified for person number and gender, as

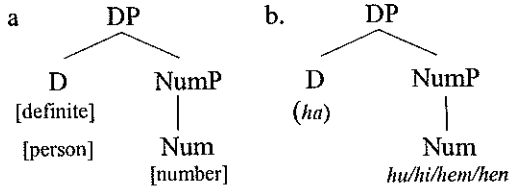
[5] Examples adapted from Ritter (1995).

in (15). Third person pronouns, on the other hand, are located in Num, with D being specified for the features of person and definiteness and Num being specified for number, as in (16).

(15) First and Second Person Pronouns



(16) Third Person Pronouns



Thus, Ritter's analyses provides two possible locations for *a*, either in D or in Num.

Furthermore, there appears to be a need for even more functional categories within the noun phrase, particularly when it comes to accounting for the location of various quantifiers in English. Jackendoff (1977) noticed that there were two 'sets' of quantifiers according to their distribution with respect to genitives and demonstratives. The following examples, taken from Jackendoff (1977), show that some quantifiers can be preceded by genitives and demonstratives, whereas others cannot.

(17) a. * { Fred's / the / those / which } { some / every / each / no / any } dwarf(s)

b. { Fred's / the / those / which } { many / few / several / two } dwarfs

The same quantifiers that may not be preceded by genitives and demonstratives can themselves precede the nominal pro-form *one*.

(18) a. I (haven't) met { some / each / no / any } one.

b. *I (haven't) met { many / few / several / two } one(s).

Furthermore, the quantifiers that may not be preceded by genitives and demonstratives may also precede cardinal numbers, whereas the other quantifiers may not.

(19) a. *Any two* cards would have won the game.
b. *No two* cards would have won the game.
c. I took a break after *every two* books.
d. I took a break after *each two* books.
e. I spent *some three* days in Florida.
f. I read *all three* books required for class.

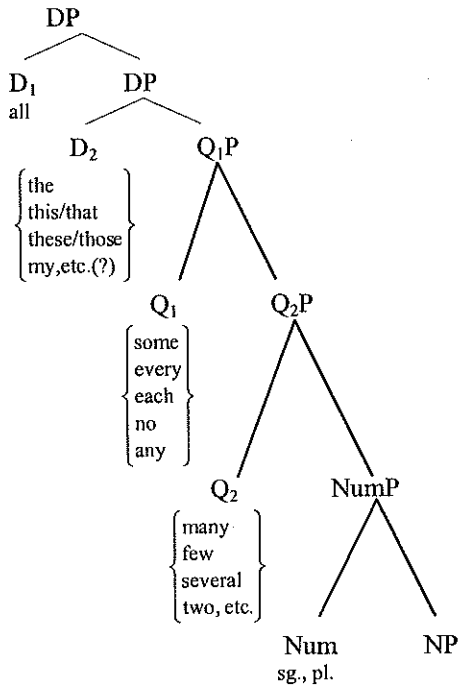
Thus, word order suggests that there are two (three, including a much higher site for *all* above the demonstratives[6]) different sites for quantifiers. A preliminary tree would then look something like the following, in figure (21), with separate nodes for *all*, demonstratives, the two separate sets of quantifiers, and grammatical number. It must also be noted that not all the logical combinations of the nodes in the tree are grammatical. For example,

[6] *All* is proposed to be above the demonstratives because of the following paradigm:

i. I bought *all the* books.
ii. I bought *all those* books.

(20) a. *all these some books
b. *my every three books

(21)



There are then four positions available for *a*: with the demonstratives in D_2; with the higher quantifiers in Q_1; with the lower quantifiers in Q_2; and with grammatical number in Num. In this paper I will propose a location for the article *a* within this structure of DP. I will also provide an analysis to account for its distribution with other elements of the noun phrase, particularly the pro-form *one*.

2. The Pro-form *One*

In order to better understand the noun phrase, it is necessary to be able to take it apart into its basic components. In the verbal system, the verb phrase is often dissected by looking at phenomena such as VP deletion, gapping, *so* substitution, etc. In particular, these phenomena help to distinguish between complements and adjuncts. Complements are constituents whose meaning is required by the verb, whereas adjuncts

are less closely related to the verb. For example, VP deletion requires that the complement be deleted, but not the adjunct, indicating that complements and not adjuncts form subconstituents with the verb in the VP. In examples (22) and (23) the verb *attend* requires an event (the complement) but not necessarily a date (the adjunct).

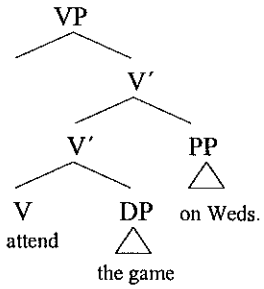
(22) a. Although Bill wanted to attend [the soccer game]$_C$ [on Monday]$_A$, the rest of us wanted to attend the soccer game on Wednesday.[7]
b. Although Bill wanted to attend the soccer game on Monday, the rest of us wanted to on Wednesday.
c. *Although Bill wanted to attend the soccer game on Monday, the rest of us wanted to the football game.

VP preposing, on the other hand, requires that the complement be preposed with the verb, but the adjunct may be left behind.

(23) a. Bill wanted to attend the game on Monday, but attend the game we did on Wednesday.
b. *Bill wanted to attend the game on Monday, but attend on Wednesday we did the game.
c. *Bill wanted to attend the game on Monday, but attend we did the game on Wednesday.

To account for this distinction, it is assumed that complements are sisters to V, but adjuncts are sisters to V′.

(24)

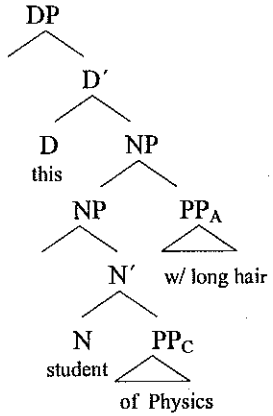


Likewise, it is assumed that in the nominal system nouns have complements and adjuncts, too; complements are required by the

[7] A = adjunct; C = complement.

meaning of the noun and adjuncts are less closely related to the meaning of the noun. And as in the VP, it is assumed that complements are sisters to N, and adjuncts are sister to N′ or NP, as shown in (25)[8]:

(25)

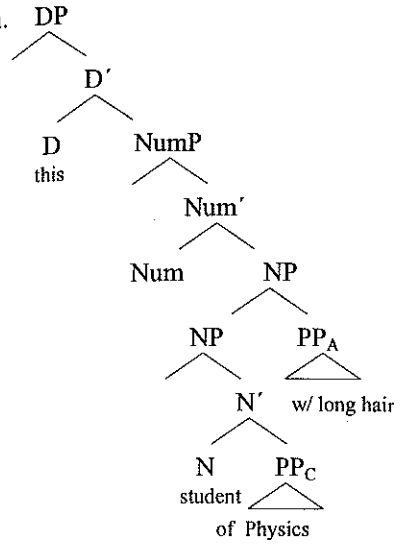


In the nominal system, complements and adjuncts may be distinguished by studying the pro-form *one* (also called anaphoric *one*). *One* is an indefinite quantifier over properties and refers to an NP, but not necessarily the maximal NP. In other words, the pro-form *one* and its plural counterpart *ones* obligatorily pronominalize the noun and its complements and can optionally pronominalize its adjuncts, as seen in Example (26) (Baker 1978, Hornstein & Lightfoot 1981, Radford 1988–updated to a DP analysis of the noun phrase).

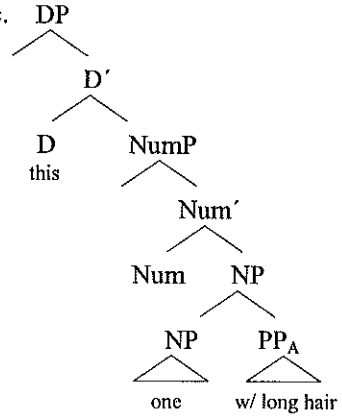
(26) a. I met this student of physics with long hair.
b. *I met this *one* of physics with long hair.
c. I met this *one* with long hair.
d. I met this *one*.

[8] N.B. that only relevant parts of the DP will be shown in each tree.

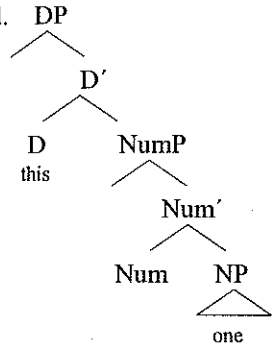
a.



c.



d.



Furthermore, just as VP deletion, gapping, etc. help to establish the location of tense outside of the VP, the pro-form *one* helps to establish the location of the "determiners" outside of the NP, as well as their location relative to each other. This is because the pro-form *one* has a plethora of co-occurrence restrictions (which are summarized in the Table (27)), dependent upon the identity of its modifier and whether or not an adjective is present.

(27)

I bought ...	
*a one[9]	*ones
one	*ones
a red one	red ones
one	two
*one one	*two ones
one red one	two red ones
	several
	*several ones
	several red ones
each	
each one	
each red one	
*every	
every one	
every red one	
I met everyone interesting.	
someone/something	some
	*some ones
	some red ones
this	these
this one	?these ones
this red one	these red ones
*the	*the
*the one[10]	*the ones
the red one	the red ones

There are also a few more points about the pro-form *one*. Neither *one* nor *ones* can replace mass nouns or other uncountable nouns.

(28) a. John bought cheap apples and Mary bought expensive *ones*.
b. *John bought cheap furniture and Mary bought expensive *one(s)*.

[9] There are a few quantifiers which can precede *a one*, such as in *many a one, not a one, nary a one, such a one*. They have a somewhat poetic reading, and I will regard them as frozen forms. Furthermore, *a one* can arise through wh-raising, as in *too good a one, what a one* (c.f. Jespersen (1961)). Although interesting, these forms will not be discussed further in this paper. However, a discussion of the phrase *not a one* can be found in Cogen (1974).

[10] *The one* can be rescued in several instances, in particular with relative clauses. More will be said about this in Section 7.

c. *I wished John great happiness and Mary even greater *one(s)*.

The pro-form *one* and the numeral *one* are difficult to disentangle. Earlier accounts for the data in Example (29) had proposed that this *one* was the number *one* (Epstein 1999; Epstein 1998). However, the *one* in (29)b 'feels' like the anaphoric *one* even though *ones* cannot occur in the same context.

(29) a. I bought an apple.
b. I bought *one*.
c. I bought apples.
d. *I bought *ones*.
e. I bought *two*.

In summary, the following generalizations can be made about the pro-form *one*: (1) the pro-form is sensitive to number (i.e. singular/plural/mass); (2) for the most part it cannot co-occur with the determiners without an intervening adjective or a relative clause; (3) but it *can* co-occur with quantifiers without an intervening adjective.

3. *THE/A*

The highest possible position for *a* is in D_2 along with the 'determiners' *the*, *this* and *that*. In fact, one of the oldest analyses of *a* is that it is the singular indefinite counterpart of the definite article, *the* (e.g. Bloomfield 1933). As can be seen by the following paradigm, *a* and *the* cannot co-occur, and they both can co-occur with singular nouns.

(30) a. I bought *a* book.
b. I bought *the* book.
c. *I bought *the a* book.
d. *I bought *a the* book.

Also, neither *a* nor *the* can co-occur with the pro-form *one* without an intervening adjective, suggesting that they share the same selectional restrictions with respect to the pro-form *one*.

(31) a. I bought *a* book.
b. *I bought *a one*.
c. I bought *a* red *one*.

(32) a. I bought *the* book.
b. *I bought *the* one.
c. I bought *the* red *one*.

On the other hand, there are several distributional differences between *a* and *the*. First, *the* and *this* (which is singular) can co-occur with both mass and count nouns, whereas *a* cannot.

(33) a. I bought *the* apple.
b. I bought *this* apple.
c. *I bought *this* apples.
d. I bought *the* furniture.
e. I bought *this* furniture.

(34) a. I bought *an* apple.
b. *I bought *a* furniture.

In other words, *the* and *this* do not distinguish between countable and uncountable nouns, but *a* does; although this does not necessarily mean *the* and *a* have two different positions.

Next, *the* appears to be much higher than *a* in the tree because of the paradigm in Example (35), assuming that the adjective *such* has a fixed position relative to the rest of the members of the noun phrase.

(35) a. I bought *the two* books.
b. I bought *two such* books.
c. I really enjoyed reading *the two such* books, which I had bought.
d. I bought *such a* book.
e. *I bought *such the* book.[11]

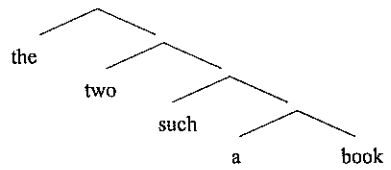
In summary, *the* is higher than the number *two*, *two* is higher than the adjective *such* and *such* is higher than *a*, which by transitivity implies that *the* is higher than *a*, meaning they cannot occupy the same slot in the tree.[12]

[11] Dialectally, *such* can occur before *the*. However, the noun phrase must be a predicate.

i. He is *such the* talker.

[12] I will consider the position of the adjective *such* to be fixed in much the same way the positions of adverbs are considered to be fixed in the verbal system.

(36)



Finally, *the*, unlike *a*, may precede *one* with a relative clause without an intervening adjective. In other words, on the surface it appears that the relationship between *the* and *one* is different than the relationship between *a* and *one*.

(37) a. I bought *the* book that fell off the shelf.
b. I bought *the one* that fell off the shelf.
c. I bought *the* red *one* that fell off the shelf.

(38) a. I bought *a* book that fell off the shelf.
b. *I bought *a one* that fell off the shelf.
c. I bought *a* red *one* that fell off the shelf.

(39) a. I bought *one* that fell off the shelf.
b. I bought *two* that fell off the shelf.
c. I bought *ones* that fell off the shelf.[13]

As noted earlier, (38)b and the examples in (39) show that the *one* in (39)a can be interpreted as either the pro-form or the numeral.

In summary, in this section it has been shown that although *the* and *a* in simple sentences share a similar distribution, it is likely that *the* is higher than *a*.

4. *SOME/A*

Another possibility is that *a* is the singular equivalent to unstressed *some* (*sm*), which would place *a* in the same node as the quantifiers in Q_1. Unstressed *sm* is the non-partitive quantifier *some*, and means 'an unspecified quantity'. According to Milsark (1977), if *some of the* can

[13] This sentence is best viewed in a contrastive context:

i. Sally only bought books in the best condition, but I bought *ones* that fell off the shelf.

be substituted for *some*, then the *some* in question is the stressed, partitive *some*. The converse, however, is not necessarily true. For example, (40)b shows that the *some* used in (40)a can be interpreted as the full, partitive *some*. However, the reading of 'an unspecified number of books fell off the shelf' is also available.

(40) a. *Some* books fell off the shelf.
b. *Some of the* books fell off the shelf.

A and *sm* do share several properties. Both *a* and *sm* are indefinite and occur in similar contexts with respect to simple sentences (Stockwell, et al., 1973).

(41) a. I bought *a* book.
b. I bought *sm* book*s*.

Neither *a* nor *sm* can co-occur with the pro-form *one*, except with an intervening adjective, suggesting that they both have the same relationship to the NP within the tree.

(42) a. *I bought *a one*.
b. I bought *a* red *one*.

(43) a. *I bought *some ones*.
b. I bought *some* red *ones*.

Furthermore, neither *a* nor *sm* can co-occur with the definite article *the*, although other singular and plural pre-nominal modifiers, such as cardinal numbers and other quantifiers, can.

(44) a. *I bought *the a* book required for class.
b. I bought *the one* book required for class.
(45) a. *I bought *the some* books required for class.
b. I bought *the two* books required for class.
c. I bought *the many* books required for class.

And, as Carlson (1977) points out, *a* and *sm* can occur in contexts where the bare plural cannot, making it appear that *a* is the singular of *some*.

(46) a. Max trapped *sm* beavers last night and fed some others.
b. Max trapped *a* beaver last night and fed some others.
c. *Max trapped beavers last night and fed some others.

(47) a. *Sm* dogs just ran across my lawn, and some others found their way into my kitchen.
b. *A* dog just ran across my lawn, and some others found their way into my kitchen.
c. *Dogs just ran across my lawn, and some others found their way into my kitchen.

Thus *a* and *sm* share several semantic characteristics.

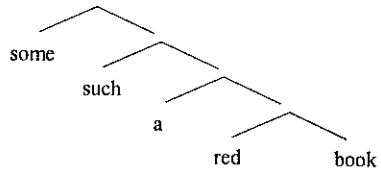
However, *a* and *sm* do behave differently in several contexts. As (48) shows, *some* occurs before the adjective *such* and *a* occurs after it; thus, by transitivity, *some* must be higher than *a*. Furthermore, (49) shows that *some* cannot co-occur with *such* and an adjective.

(48) a. I have *such a* book.
b. I have *some such* books.

(49) a. I bought *such a* long book today.
b. *I bought *some such* long books today.

The following tree suggests the relative positions for *some*, *a*, *such*, adjectives, and the head noun.

(50)



Next, NP deletion behaves differently for *a* and *some*. When the NP deletes from *a*, *one* appears, but when the NP deletes from *sm*, *sm* remains behind (although this is pronounced as the full *some*, it can be interpreted without a partitive reading).

(51) a. I have *a* book.
b. I have *one*.[14]
c. *I have *a*.

[14] Perlmutter (1970) has argued that *a* is derived from *one*, making this contrast uninteresting. However, I will argue against his proposal in the next section.

(52) a. I have *some* books.
b. I have *sm*.

This suggests that *a* and *sm* have different relationships to the gapped NP, even though their relationship to the pro-form *one* is similar.

Finally, *a* can occur in small clauses, whereas *sm* cannot, again suggesting a different structure for the noun phrase with *sm* and the noun phrase with *a*.

(53) a . I consider John *a* fool.
b. *I consider John and Sarah *sm* fools.[15]

In summary, *a* and *sm* share a similar distribution and semantic properties, however they behave differently with respect to gapped NPs and small clauses, suggesting that *a* and *sm* do not belong to the same category.

5. *ONE/A*

Moving down the tree, the next possible position for *a* is in the same category as numbers, Q_2. In fact, Perlmutter (1970) claimed that *a* is the unstressed variant of the number *one*, since whenever a stressed *a* would be expected, *one* occurs instead.

(54) a . I bought *a* bòok.
b. *I bought *à* book.
c. I bought *òne* book.
d. *I bought *one* bòok.[16]

[15] The use of *sm* with an adjective, as in the following example, is grammatical.

i. I consider John and Sarah *some* really big fools.
ii. I consider John and Sarah *some of the* really big fools.

Furthermore, as will be shown in section 6, the addition of an adjective also makes cardinal number one grammatical in small clauses, too.

iii.*I consider John *one* fool.
iv.I consider John *one* really big fool.

Although the addition of an adjective changes grammaticality judgements for small clauses, I still believe that it is important to take into account the grammaticality judgements in simple small clauses, separate from those with adjectives.

[16] Perlmutter claims that this is ungrammatical, although I find it to be grammatical in the following context:

Next, *a* and *one* cannot co-occur and neither of them can co-occur with the pro-form *one* without an intervening adjective.

(55) a. *I bought *a one* book.
b. *I bought *one a* book.

(56) a. *I bought *a one*.
b. I bought *a* red *one*.

(57) a. *I bought *one one*.
b. I bought *one* red *one*.

Last, neither *one* nor *a* can co-occur with mass nouns. In other words, both *one* and *a* mark singular countability.

(58) a. *I bought *a* furniture.
b. *I bought *one* furniture.
c. I bought furniture.

Nevertheless, there are different restrictions on *a* and *one*. First, *a* and *one* occur in different positions with respect to *such*; and transitivity implies that the number *one* must be higher than *a*.

(59) a. I bought *such a* book yesterday.
b. *I bought *such one* book yesterday.
c. I bought *one such* book yesterday.

If *a* were merely unstressed *one*, it seems unlikely that they would have two different positions with respect to an adjective dependent on stress. Next, *a* can occur in simple small clauses, but *one* cannot.

(60) a. I consider John *a* fool.
b. *I consider John *one* fool.

Unfortunately, this is the only stable intuition about small clauses and cardinal numbers. With cardinal numbers other than *one*, the intuitions range from grammatical, to questionable, to ungrammatical.

(61) a. ✓I consider John and Mary fools.
b. ✓/?/*I consider John and Mary two fools.

i. I bought *one* bòok and you bought *one* màgazine.

Whether or not the cardinality of the nouns in the small clause is expected or unexpected also obtains a range of grammaticality judgements. In the following example, one would expect the Rosenbergs and the Smiths to be two separate families.

(62) a. ✓/?/*I consider the Rosenbergs and the Smiths two families.
b. ✓/*I consider the Rosenbergs and the Smiths one family.

Whether or not the number is old or new information has a range of grammaticality judgements, as well. In (63)a, *twelve* is new information, and in (63)b *twelve* is old information.

(63) a. ✓/?I consider the students in my class twelve fools.
b. ✓/?/*I have a dozen students in my class. I consider them twelve fools.

Finally, the addition of an adjective to the small clause makes the sentence grammatical, but it then seems to be a much stronger statement. To put it another way, using *one* instead of *a* changes the meaning.

(64) a. I consider John *a* grad student.
*I consider John *one* grad student.
b. I consider John *a* really stupid grad student.
I consider John *one* really stupid grad student.

In summary, both *one* and *a* share the property of marking singular countability and cannot co-occur. However, they occupy two different positions based on the *such* test and behave differently with respect to simple small clauses. These last two facts make invalidate Perlmutter's analysis of *a* being the unstressed variant of *one*.

6. Bare Plural/*A*

The one position left for *a* from the tree in (21) is in Num along with grammatical number, and presumably the plural marker *–s* (also known as the 'bare plural' because it does not have pre-nominal modifier, such as *some*). First, neither *a* nor *–s* can co-occur with the pro-form *one* without an adjective.

(65) a. *I bought *a one*.
b. I bought *a* red *one*.

(66) a. *I bought *ones*.
b. I bought red *ones*.

Even though the *one* in the sentence *I bought one* is analyzable as the anaphoric pro-form, it is noteworthy that is ungrammatical to say either *I bought a one* or *I bought ones*. Second, both *a* and the bare plural are grammatical in small clauses.

(67) a. I consider John *a* fool.
b. I consider John and Mary fool*s*.
c. *I consider John *one* fool.
d. *I consider John and Mary *two* fools.
e. *I consider John and Mary *some* fools.

Finally, both *a* and the bare plural can have generic readings[17]:

(68) a. *A* dog is a wonderful pet.
b. Dog*s* are wonderful pets.

Carlson (1977), on the other hand, points out that the semantics of *a* and the bare plural are too different for the bare plural to be regarded as the plural of *a*. He calls the indefinite singular, *a*, the existential singular (Esg) and the bare plural the existential plural (Epl). The existential singular has both wide and narrow scope over the predicate or just wide scope, and the existential plural has only narrow scope. For example, in (69) the existential singular can scope either outside or within the predicate.[18]

(69) Minnie wishes to talk to a young psychiatrist.
a. (Esg x) (young psych. (x) & M. wishes M. talk with x)
Minnie wishes to talk with a particular young psychiatrist.
b. M. wishes (Esg x) (young psych. (x) & M. talk with x)
Minnie would talk with any young psychiatrist.

The existential plural, however, can only scope within the predicate for the same sentence.

[17] This generalization does not hold for the object position. The sentence *I like dogs* has a generic meaning, whereas the sentence *I like a dog* refers to a particular dog.
[18] Examples in this section are all adapted from Carlson (1977).

(70) Minnie wishes to talk with young psychiatrists.
  a. *(Epl x) (young psych. (x) & M. wishes M. talk with x)
     *Minnie wishes to talk with a particular group of young psychiatrists.
  b. M. wishes (Epl x) (young psych. (x) & M. talk with x)
     Minnie would talk with any group of young psychiatrists.

And in (71), the existential singular has only wider scope than the adverbial while the existential plural has only narrower scope than the adverbial.

(71) a. A dog hung around my valet all last year.
     (Esg x) all last year (dog (x) & x hung around my valet)
  b. Dogs hung around my valet all last year.
     All last year (Epl x) (dog (x) & x hung around my valet)

According to Carlson, this difference in scope judgements does not logically follow from a singular/plural distinction in the noun phrases.

Moreover, using two fairly similar sets of sentences differentiated only by plurality, two very different sets of scope and grammaticality judgements are available. For example, in (72)a Kelly and Millie must be seeking the same unicorn (existential singular–wide scope), but in (72)b Kelly and Millie are seeking two different sets of unicorns, and their finding the same set would merely be coincidence (existential plural–narrow scope).

(72) a. Kelly is seeking *a* unicorn, and Millie is seeking it, too.
  b. Kelly is seeking unicorn*s*, and Millie is seeking them, too.

However, in (73)a we can get a reading, with the existential singular, referring to two different sets of unicorns; whereas in (72)a the existential singular gave us a reading with only the same unicorn. (73)b, on the other hand, uses the existential plural and is only barely grammatical; but in (72), the existential plural had allowed two different sets of unicorns.

(73) a. Kelly is hunting for *a* unicorn, and Millie is looking for another/ some more/ some others.
  b. Kelly is hunting for unicorns, and Millie is looking for ??another/ ??some more/ ??some others.

Again, according to Carlson, these judgements would be unusual if *a* were merely the singular of the bare plural.

In summary, on the surface, *a* behaves very much like the bare plural syntactically: neither can co-occur with anaphoric *one* without an intervening adjective and both are grammatical in simple small clauses. There is also the intuition that *I bought books today* must be the plural equivalent of *I bought a book today*. Nevertheless, Carlson's scope judgements show that the relationship between *a* and the bare plural cannot be plurality alone.

7. What and Where Is *A*?

Thus, it appears that all that can be said for sure about *a* is that it is a marker of singular countability. The two best candidates for *a*'s category are Q_I with *some* and NumP with the bare plural. The arguments for these categories are summarized in the table below:

(74)

***A* behaves like…**

		-s	*some*
1.	**mass nouns**	✓	
2.	**the**		✓
3.	**pro-form one**	✓	✓
4.	**substantive**	✓	
5.	**Carlson**		✓
6.	**small clauses**	✓	
7.	**one + relative clauses**		

1. *A* behaves like *–s* with respect to mass nouns in that neither *a* nor *–s* can co-occur with mass nouns, although *some* can.
2. *A* behaves like *some* with respect to *the* in that neither *some* nor *a* can co-occur with *the*, although *–s* can.
3. *A* behaves like both *some* and *–s* with respect to co-occurrence with the pro-form *one*. Neither of them can co-occur with the pro-form *one* without an intervening adjective.
4. *A*, like *–s*, does not have a substantive form. *Some*, on the other hand, does.
5. *A* behaves much more like *some* in Carlson's (1977) semantic paradigms.
6. *A* behaves like *–s* with respect to simple small clauses.

7. *A* behaves like neither *–s* nor *some* with respect to relative clauses. Both *ones* and *some* can occur with a relative clause. *A one* is simply never grammatical.

There are four votes for *–s* and three votes for *some* and one vote for neither. Put another way, from these data there is no clear choice for the category for *a*.

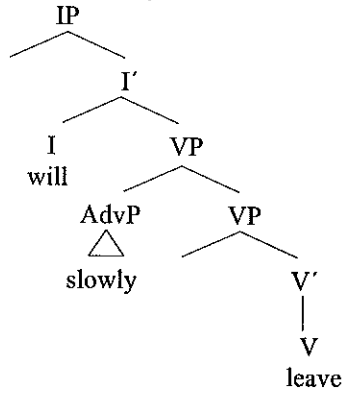
From the *such* paradigms, though, it is apparent that *a* is lower than all the other pre-nominal modifiers in the DP. As can be seen in (75), *the*, cardinal numbers and *some* must all be higher than *such*, whereas *a* is lower.

(75) a. I bought *the two* books.
b. I bought *some such* books.
c. I bought *two such* books.
d. I bought *such a* book.

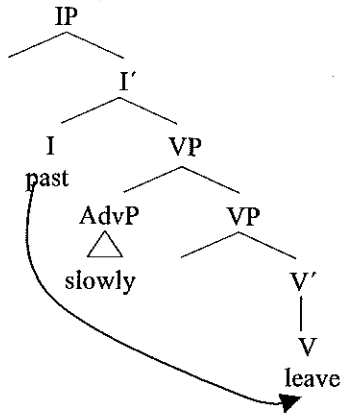
Thus, a location for *a* within the DP can be proposed, even though its exact category is unclear. And, for the meantime, it will be assumed that is the singular counterpart of the other grammatical number marker in English, *–s*, and located in the same position. In other languages, grammatical number information is placed in a node between D and NP, usually called NumP (Ritter 1991; Ritter 1995). Since the number property is represented as the head of NumP, and *a* is singular and *–s* is plural, affix lowering of the plural *–s* onto the head noun would have to be proposed. This would be analogous to inflection in the verbal system lowering onto the main verb. Also, the plural suffix can hop over adjectives, just as tense can hop over adverbs in the verbal system.

(76)

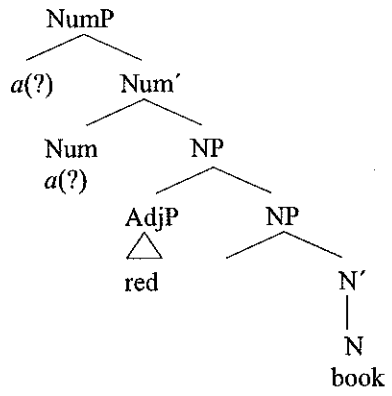
a. he will slowly leave



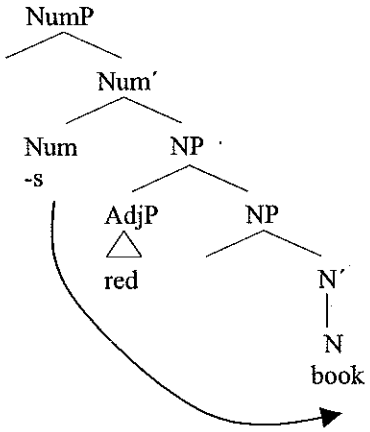
b. he slowly left



c. a red book



d. red books



The exact position for *a* is left undecided between the head of NumP and the Spec, NumP for two reasons: 1) *a* acts as a pre-nominal modifier and *–s* as a morphological suffix; and 2) the semantic differences between *a* and *–s* noted by Carlson (1977) hint at possibly different syntactic positions.

Since cardinal numbers agree with grammatical number, it has often been proposed that they are located in the Spec, NumP. However, in English there must be a division between the nodes for cardinal numbers and grammatical number because of the *such* paradigm.

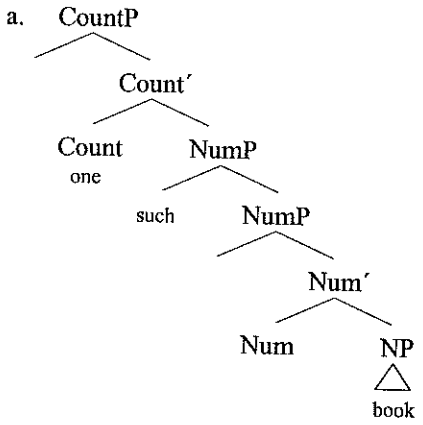
(77) a. I read *two such* books yesterday.
b. I read *one such* book yesterday.
c. I read *such a* book yesterday.

In short, *such* occurs before *a,* and by transitivity must be higher than NumP, but after cardinal numbers. The node containing cardinal numbers will be called CountP because it contains the cardinal numbers (e.g., *one, nine, fifteen*), expressions built from numbers (e.g., *more than three, less than seven*), measuring phrases (e.g., *a cup of, a lot of, a little, a few*), and quantifiers which denote groups of countable items (e.g., *several, many, most, few*).[19] Most of the members of this category can precede the adjective *such*.

(78) a. I bought *fifteen* such books.
b. I bought *less than seven* such books.
c. I bought *a few* such books.
d. I bought *several* such books.

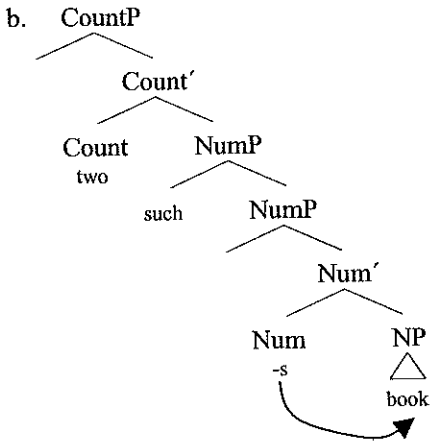
(79)

a.



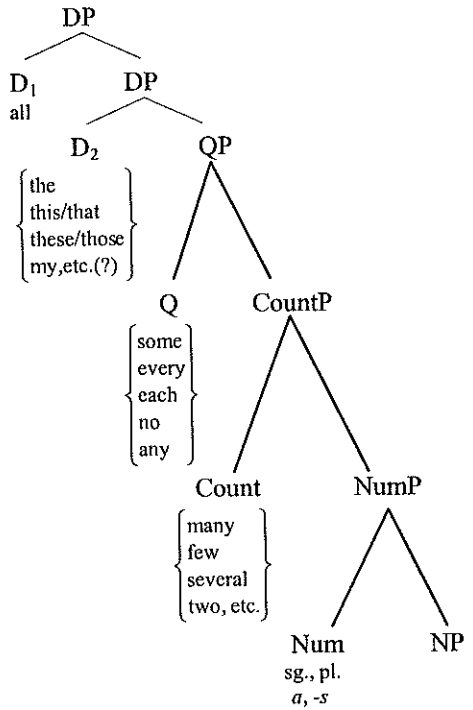
[19] This set of quantifiers is a combination of the Counting Quantifier Phrases and the Group-Denoting Quantifier Phrases (with the exception of *some* and *a*) as identified by Beghelli & Stowell (1997).

b.



The entire tree for the noun phrase would then appear as follows (revised from (21)):

(80)



8. **A ONE & *THE ONE*

As mentioned earlier, there is the sense that the *one* in (81)a is the anaphoric *one*, and not the numeral *one*, despite the fact that the plural anaphor *ones* cannot occur in the same environment.

(81) a. *I bought *a one*.
b. I bought *one*.
c. *I bought *ones*.
d. I bought *some*.

However, the plural anaphoric *ones*, as well as the anaphoric sounding *one*, can occur with relative clause, but not *a one*.

(82) a. *I bought *a one* that I like.
b. I bought *one* that I like.

c. I bought *ones* that I like.[20]
d. I bought *some* that I like.

Similarly, there is the following paradigm with *the*:

(83) a. *I bought *the one*.
b. *I bought *the ones*.

(84) a. I bought *the one* that I like.
b. I bought *the ones* that I like.

In other words, what is the difference between *one* and *ones*? And what is the difference between *one(s)* and *one(s)* plus a relative clause?

The answer may lie in the fact that some of the pre-nominal modifiers, specifically *a* and *the*, are clitics.[21] The clitic *the* has the special property that when it combines with the pro-form *one* or *ones* it forms the pronouns *it* and *them*, respectively (c.f. Schütze 1999; Postal 1970).

(85) a. I caught the ball yesterday.
b. I caught *it* yesterday.
c. *I caught *the one* yesterday.

(86) a. I caught the balls yesterday.
b. I caught *them* yesterday.
c. *I caught *the ones* yesterday.

Taking this proposal one step further, cliticization is prevented between *the* and *one(s)* when there is an intervening adjective or a relative clause modifying the noun. Thus, *it* is ungrammatical in the following contexts, but *the one* is:

[20] Relative clauses with *ones* are best in a contrastive or focused context. For example,

i. ?I bought *ones* that I like.
ii. I only bought *ones* that I like.
iii. I even bought *ones* that I liked.
iv. Sarah bought *ones* that she hated and John bought *ones* that he liked.

[21] I am indebted to Carson Schütze for assisting me in working out this explanation. Many of his thoughts can be found in a more concrete form in Schütze (1999). All errors are, of course, purely my own.

(87) a. I caught the red ball.
b. *I caught red *it*.
c. I caught *the* red *one*.

(88) a. I caught the ball that Jenny missed.
b. *I caught *it* that Jenny missed.
c. I caught *the one* that Jenny missed.

To put it another way, *one* only co-occurs with *the* when there is something else for it to 'attach' to, otherwise *it* or *them* will appear.

As mentioned above, *a* like *the*, is also a pre-nominal clitic. The cliticized form of *a* plus *one* is pronounced *one*. Thus, there is the following paradigm with *a*, comparable to the paradigm with *the* in (85).

(89) a. I caught a ball yesterday.
b. I caught *one* yesterday.
c. *I caught *a one* yesterday.

In order to explain the missing *a* (90)b, though (which would be parallel to the *the* in (88)c), another 'pronunciation' rule must be proposed. Namely, in English, *a* and *one* that are next to each other must be pronounced *one*.

(90) a. I caught a ball that Jenny missed.
b. I caught *one* that Jenny missed.
c. *I caught *a one* that Jenny missed.

In other words, the *one* in (90)b is underlying *a one*. The *a* will reappear, however, when there is an intervening adjective.

(91) I caught *a* fast *one* that Jenny missed.

Thus, **I bought a one* is not really ungrammatical, it is just pronounced *I bought one*.

Cliticization, nevertheless, does not offer an explanation as to why *I bought ones* should be ungrammatical, whereas *I bought ones that I like* is fine. In order to explain this apparent discrepancy, a 'principle of economy' must be added to the grammar:

(92) **Principle 1**
A DP without lexical content (i.e. is made up of just functional categories) is ungrammatical. In other words, there needs to be more than just definiteness and grammatical number for a noun phrase to be able to exist.[22]

Since *them*, *it*, and *one* have all undergone a cliticization process they can exist, despite their not having any lexical content. *Ones*, on the other hand, does not undergo cliticization (the plural *–s* is a suffix) so it is not allowed to exist without an intervening adjective or relative clause to give it meaning.

Furthermore, *ones*, the anaphor for indefinite plural count nouns, is not the only item that simply cannot exist in English. There is also no anaphor for uncountable nouns, as in (93)b.

(93) a. I wished John a good day, and Mary *one*, too.
b. *I wished John happiness, and Mary *some/one(s)*, too.

It could be argued that in some contexts, the anaphor for uncountable nouns is *some*, as in (95)b.

(94) a. I gave John an apple, and Mary *one*, too.
b. I gave John furniture, and Mary *some*, too.

(95) a. I gave John *some* apples, and Mary *some*, too.
b. I gave John *some* furniture, and Mary *some*, too.
c. *I wished John *some* happiness, and Mary *some*, too.

However, I believe that the *some* in (94)b is actually the same *some* as in (95)b; it is the quantifier *some* with the empty NumP left unpronounced. In (95)c, however, *happiness* cannot take a quantifier, so there is no grammatical way of expressing (95)c. The existence of (95)a and (95)b leads to the proposal of another principle of economy to the grammar:

(96) **Principle 2**
Do not create vacuous projections in the DP. Namely, do not create more structure within the DP if this structure would not contain additional lexical content (c.f. Schütze 1999; Carson Schütze p.c.).

[22] See Schütze (1999) for a similar explanation using a ban of vacuous projections in the DP.

It is Principle 2 which causes the substantive form of *some* to appear in (95)a and (95)b as opposed to *some ones*. Furthermore, *some* alone can appear in (95)b, even though there is no anaphor for the uncountable noun *furniture* in English.

There is now an explanation for the following two paradigms:

(97) a. *I bought *a one*.
b. I bought *one*.
c. *I bought *ones*.
d. I bought *some*.

(98) a. *I bought *a one* that I like.
b. I bought *one* that I like.
c. I bought *ones* that I like.
d. I bought *some* that I like.

There is simply a gap in the grammar for (97)c. (97)d is used as a next-best alternative, since the quantifier *some* means something very similar to what *ones* would have meant. Other alternatives may also be used, such as *several* and *a few*. In example (98) both *ones* and *some* can occur because they mean two different things (*some* coming closer to specifying a quantity than *ones* does), and *ones* is the only true anaphor. *One* occurs instead of *a one* because there is a restriction against *a* and *one* co-occurring.

8.1. *The Disappearance of* A

If *a* is in NumP, and NumP is only occupied by grammatical number, it would be expected that *a* would co-occur with quantifiers and determiners that it semantically matches with. For example, the following should be grammatical:

(99) a. **one a* red book
b. **each a* red book
c. **the a* red book
d. **this a* red book.

First, it must be noted that these other members of the DP do not absorb grammatical number, as can be seen by their co-occurring with the plural *–s*:

(100) a. *two* red book*s*
b. *some* red book*s*
c. *the* red book*s*
d. *these* red book*s*

Second, *a* is not automatically absorbed by whatever precedes it, as can be seen by from the adjective *such*:

(101) a. such *a* book

Third, an intervening adjective does not block the disappearance of *a*:

(102) a. *one* such book
b. **one* such *a* book
c. *each* such book
d. **each* such *a* book

In other words, it is the presence of the cardinal number, quantifier, determiner, etc., that forces *a* to disappear, and not their proximity (since the presence of such does not prevent or cause the disappearance). These data could be accounted for by adding another principle of economy to the grammar:

(103) **Principle 3**
Do not use *a* if singular is marked elsewhere in the noun phrase by a quantifier, determiner, cardinal number, etc.

Thus, "*this a* book" is not expected to be grammatical, because *this* is already marked for singularity. At the same time, "*such a* book" is also grammatical because the adjective *such* is not marked for singular or plural, making *a* necessary to maintain the distinctions. Unfortunately, this principle does not account for ungrammaticality of *the a book*, since *the* does not mark grammatical number (c.f. (33)).

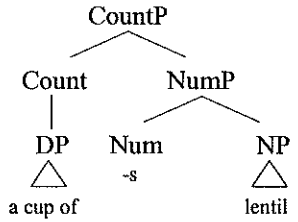
9. Some Loose Ends

Using the principles of economy and the cliticization story, most of the data in Table (27) can be explained. However, there do remain a few loose ends.

9.1. A *Phrases*

The *a* in measuring phrases, such as *a few*, *a dozen*, *a little*, and the "of" measuring phrases, such as *a ton of*, *a cup of*, etc., probably belongs in a separate DP located in CountP, as in (104).

(104)



First, this *a* is clearly does not mark singular on the head noun because these measuring phrases modify either plural count nouns or mass nouns.[23]

(105) a. I ate *a few* apples.
b. *I ate *a few* apple.
c. *I ate *a few* rice.

(106) a. I bought *a dozen* roses.
b. *I bought *a dozen* rose.
c. *I bought *a dozen* rice.

(107) a. I bought *a litle* rice.
b. *I bought *a little* apples.
c. *I bought *a little* apple.[24]

[23] Not all of the *a* measure phrases act in the same manner, although there are some generalizations which have been made in the main text. Aside from those generalizations, there is the following mini-paradigm, with respect to how the *a* phrases become plural:

a dozen lentils	*a cup lentils	*a lot lentils
two dozen lentils	*two cup lentils	*two lot lentils
*a dozen of lentils	a cup of lentils	a lot of lentils
dozens of lentils	*cups of lentils	lots of lentils
*two dozens of lentils	two cups of lentils	*two lots of lentils

In short, I believe that the *a* measure phrases are a lot more complicated than they appear to be on the surface, and are worthy of further discussion.

(108) a. I bought *a cup of* lentils.
b. *I bought *a cup of* lentil.
c. I bought *a cup of* rice.

Second, the noun or adjective which is part of the measure phrase (e.g. *cup*, *dozen*) does not act like an intervening adjective with respect to the pro-form *one*. Put another way, the measure phrases require an intervening adjective between themselves and the pro-form *one* just like cardinal numbers.[25,26]

(109) a. I ate *a few* apples.
b. *I ate *a few ones*.
c. I ate *a few* red *ones*.

(110) a. I bought *a dozen* roses.
b. *I bought *a dozen ones*.
c. I bought *a dozen* red *ones*.

(111) a. I bought *a cup of* lentils.
b. *I bought *a cup of ones*.
c. I bought *a cup of* red *ones*.

Third, when *such* is added, it appears below the measure phrase, including the *a*, implying that the phrases occur higher than *a*.

(112) a. I bought *such a* red potato.
b. I bought *a bag of such* red potatoes.

[24] The grammatical interpretation of this sentence means, "*a small apple*", not "*a small amount of apples*".

[25] *A little* is always ungrammatical with *one(s)* because it takes mass nouns, and mass nouns cannot be pro-formed by *one(s)*.

[26] For reasons that are unclear to me, the phrase *a single* is an exception to this rule.

i. I didn't buy *a single* rose.
ii. I didn't buy *a single one*.
iii. I didn't buy *a single* red *one*.

Although *a single* cannot co-occur with *ones* or *two* for reasons of semantic mismatch, it is clear from the preceding adjective in the third example above that the *one* in "*a single one*" is the pro-form *one* and not the number.

9.2. *Human Generic* One

There is also the question whether the human generic *one* can be analyzed under the same rubric as the anaphoric *one*. The human generic *one* has a restricted distribution, only appearing as a subject, as in (113)a, indirect object or genitive, as in (113)b. As (113)c shows, human generic *one* in object position is bizarre. The *one* in (113)c must be analyzed as an anaphor to a previously mentioned noun, and the statement does not have the same generic quality as (113)a and (113)b.

(113) a. *One* ought to go to school every day.
b. It is not good for *one's* reputation if a student gives *one* a gift.
c. *It is hard to find *one*.

Aside from the above restrictions, it could be thought that since this *one* must be human and generic, it is carrying a minimum amount of lexical information to not violate Principle 1, the ban on contentless DPs. However, it is still unclear as to why it must be singular (compare (114)b to (114)c).

(114) a. *One* ought to go to school every day.
b. **Ones* ought to go to school every day.
c. Children ought to go to school every day.

Therefore, it seems that the human generic *one*, while most likely related to the pro-form *one* at some level, is not the same item.

9.3. *Quantifiers*

As was shown in Table (27), partially repeated and expanded here as Table (115), quantifiers have a very interesting distribution with respect to the pro-form *one*.

(115) **I saw/didn't see...**

Quant[27]	Subst[28]	Q[29] + one	Q + ones	Q + A[30] + one
each	each	each one (h[31]/n[32])	***each ones**	each nice one
every	***every**	every one (h/n)	***every ones**	every nice one
any	any	any one (h)	***any ones**	***any nice one**[33]
no	*none*[34]	no one (h)	***no ones**	***no nice one**[33]
some	some	some one (h)	***some ones**	***some nice one**[33]

I saw/didn't see... (cont.)

Q + A + ones	Q + one + A	Q + ones +A	Q + of + them	Q + one + of them
***each nice ones**	***each one nice**	***each ones nice**	each of them	each one of them
***every nice ones**	every one nice (h)	***every ones nice**	***every of them**	every one of them
any nice ones	any one nice (h)	***any ones nice**	any of them	***any one of them**
no nice ones	no one nice (h)	***no ones nice**	none of them	***no one of them**
some nice ones	some one nice (h)	***some ones nice**	some of them	***some one of them**

First, the quantifiers *each*, *no*, *any*, and *some* can stand alone as substantives[35], obeying Principle 2, the ban on vacuous projections in the DP. Members of CountP behave in the same fashion. However, *each*, *no*, *any*, and *some*, as well the quantifier *every*, can also modify *one*, unlike the members of CountP.

(116) a. *I saw *several ones*.
b. I saw *each one*.

However, it must be noted that, for *any*, *no*, and *some* the *one* must be human. There is also the sense that the *one* in *anyone*, *no one*, and *someone* is not the pro-form. First, it cannot refer to a particular noun, as can be seen from the responses to the question, *Did you meet the boys in my class?*

(117) a. Yes, I met *each one*.
b. Yes, I met *every one*.[36]
c. No, I didn't meet *anyone*.
d. No, I met *no one*.
e. Yes, I met *someone*.

(117)a and (117)b both have the sense that *one* refers to *boy*, and that it is possible that you did or did not meet any girls. On the other hand, (117)c and (117)d mean not only did you not meet any of the boys in my class, but you also did not meet any of the girls, either. (117)e is also a very strange response to the question, *Did you meet the boys in my class?*, particularly when compared to the perfectly good response, *Yes, I met* some *(of them)*.

[27] Quantifier
[28] Substantive
[29] Quantifier
[30] Adjective
[31] human
[32] non-human
[33] The stressed, singular version of *any*, *no* and *some* is grammatical in this context.

i. I didn't meet ***any*** nice one.
ii. ***No*** nice one came to the party.
iii. I met ***some*** nice one.

Briefly, it seems to me that stressed, singular *any* and *no* are related to unstressed plural *any* and *no* in much the same way *some* and *sm* are related.

[34] *None* does not behave as if it is the contracted form of *no* + *one*. Historically, both *no* and *none* developed from the Old English *nân*, the final *n* disappearing before consonants in Middle English. In Modern English, though, *none* became used solely as the substantive form, and *no* was used as the quantifier before both consonants and vowels (Jespersen 1961). Also, in Modern English, *no one* precedes adjectives and *none* does not. Furthermore, *no* patterns like *any* and *some* in the rest of the paradigm.

[35] Both *every* and *each* differ from *any*, *no*, and *some* in that they take singular nouns, and one would therefore expect them to pattern together; but this is not the case. Although it will not be discussed further in this paper, there is evidence that *every* is lower than *each*, although still higher than the quantifiers placed in CountP. *Every* can co-occur with possessives if the head noun is a noun of "desire", *each* cannot.

i. He saw to *my every* desire.
ii. *He saw to *my each* desire.
iii. He saw to *my every* wish.
iv. *He saw to *my each* wish.
v. *He saw to *my every* pet.
vi. *He saw to *my each* pet.

Also, *every* is the only quantifier placed in QP that cannot stand alone as a substantive or occur before *of them* (see Table (115)). However, *every* can co-occur with cardinal numbers, unlike the members of CountP.

i. I took a break after *every two* books.
ii. *I took a break after *several two* books.

[36] There are two *every ones*, one with stress on *every*, and one without. The one without acts like *any*, *no*, and *some*; and the one with stress acts like *each*.

Second, when an adjective is present, it must follow *anyone*, *no one*, and *someone* (i.e. when *one* is singular), but not when the *one* is plural. Thus, in response to the question, *Did you meet any interesting people at the party?*

(118) a. I didn't meet *anyone* interesting.
b. I met *someone* interesting.
c. I met *no one* interesting.

(119) a. I didn't meet *any* interesting *ones*.
b. I met *some* interesting *ones*.
c. I met *no* interesting *ones*.

Third, the 'body' counterparts to *anyone*, *no one*, and *someone*, *anybody*, *nobody*, and *somebody*, cannot take an intervening adjective at all, and must have a following adjective.[37]

(120) a. I didn't meet *anybody* interesting.
b. I met *somebody* interesting.
c. I met *no body* interesting.

(121) a. *I didn't meet *any* interesting *bodies*.
b. *I met *some* interesting *bodies*.
c. *I met *no* interesting *bodies*.

(122) a. *I didn't meet *any* interesting *body*.
b. *I met *some* interesting *body*.
c. *I met *no* interesting *body*.

Finally, it must be noted that the singular quantifiers, *each* and *every* can take both human and non-human *one*. This may have to do with their being the only singular quantifiers in this group and their default substantive status may include the pro-form *one* (although *each* can be a substantive by itself). Otherwise, there is no easy solution to this problem.

[37] When there is an intervening adjective, *body* loses its human, or at least its living, status.

i. I didn't see *any* dead *bodies*.
ii. I saw *some* dead *bodies*.
iii. I saw *no* dead *bodies*.

9.4. This/These

There are two possible analyses for the paradigm involving *this/these*. The paradigm is as follows:

(123) a. I saw *this*.
b. I saw *this one*.
c. I saw *this* red *one*.

(124) a. I saw *these*.
b. ?I saw *these ones*.
c. I saw *these* red *ones*.

In the first analysis, the grammaticality of both *this* and *this one* can be accounted for by noting that *this* refers to either people, objects or actions, whereas *this one* refers exclusively to objects, but not to people. For example, a proud parent saying, *Look at* this*!*, could be pointing to either a toddler's newest art project or to him taking his first steps, but not the toddler. The announcement, *Look at* this one*!*, however, would refer to only the art project or to a particular child, but not directly to the actions performed by the child. In other words, *one* in this context adds new information, preventing it from being in violation of Principle 2, the ban on vacuous projections. *These*, on the other hand, refers exclusively to objects or people, and the addition of *one* does not add any information, thus making it ungrammatical for many people (it is informally assumed that *these ones* is grammatical for some people on analogy to *this one*), in violation of Principle 2.[38]

In the second analysis, the grammaticality of *this one* is accounted for by a re-analysis of the determiner *this*. *This* and *that* can be reanalyzed as:

(125) a. the *one* here
b. the *one* there

In other words, the *one* in *this one* or *that one* is actually being modified by an adjective and it can remain behind in its phonological form, *this one/that one*, without disobeying Principle 2. In French, much the same phenomenon occurs on a more overt level.

[38] On a historical note, Jespersen (1961) claims that the use of *this one/these ones*, etc. is quite recent, and most likely no earlier than the nineteenth century.

(126) a. ce livre çi
this book here
'this book'
b. ce lui çi
this one here
'this one'
c. ceçi
this-here
'this'

(127) a. ce livre la
this book there
'that book'
b. ce lui la
this one there
'that one'
c. cela
this-there
'that'

Furthermore, *which* behaves quite similarly to *this* in that it can co-occur with *one*, unlike *what*.

(128) Did you see the physics student with long hair?
a. *Which one*?
b. **What one*?

Like *this*, *which* can be reanalyzed as a more complex phrase, such as *what one among a set*, with the *among a set* being absorbed into what, but still allowing *one* to remain despite being a vacuous projection. Unfortunately, this analysis does not provide an explanation for the ungrammaticality of *these ones* for many people.

10. Conclusion

In conclusion, in this paper I have proposed a location for *a* within the phrase structure—in NumP, either in the SPEC or head, below all the other quantifiers and determiners in the DP. At the same time, it is not clear which category *a* belongs in. The two strongest candidates, in QP with *some* and in NumP with *–s*, both fail for various reasons. It is clear, however, that a rich structure for the noun phrase, as well as various principles in grammar, are needed to account for all the possible variations in the noun phrase in English.

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Syntax at Sunset 2—Gianluca Storto (ed.)

ARABIC WORD SYNTAX

PETER HALLMAN
hallman@humnet.ucla.edu

Recent research in syntax has underscored the importance of lexical features in determining the form of a syntactic derivation. Syntactic operations target features, and movement of syntactic categories is parasitic off of feature movement. An intriguing question in light of these developments is what exactly the difference is between a feature and a syntactic category. Based on structural effects of the distribution of features within prosodic words, this study shows that there is a one-to-one correspondence between features and syntactic categories. The internal structure of words is visible to syntactic operations, which are responsible for the derivation of the surface ordering of the pieces of morphology. Consequently, there is no autonomous morphology.

1. INTRODUCTION

This paper discusses the syntax-phonology interface, primarily in Arabic. It advocates a 'no autonomous morphology' model of grammar, in which the mapping from syntax to phonology is direct. This idea is related to the Mirror Principle (Baker 1988) which states that the ordering of morphemes at spell out is a direct reflection of their syntactic ordering, as well as Kayne's (1994) notion of correspondence between linear and hierarchical order. The present study differs from previous attempts to subsume morphology under syntax in that morphemes and words are not considered syntactic objects. Syntax manipulates only features, which are grouped into morphemes and words *after* syntax. This model is opposed, at least to some extent, to the theories of Halle and Marantz (1993) and Noyer (1992) and others, which give the morphological component of grammar a great deal of power to alter word structure. I will show that the morphological component in the theories of Halle and Marantz and Noyer requires so much power to attain descriptive adequacy because the theory of syntax they assume (Chomsky 1993) is debilitated by the assumption that the smallest element a syntactic operation may affect is the prosodic word/morpheme. A different formulation of syntax, where prosodic words are epiphenomena of the end juxtaposition of features in syntax, obviates a non-trivial morphological component in the theory of grammar.

The motivation for this line of reasoning is that the syntactic approach to morphology has generated important results in the past,

notably, for example, Chomsky's (1957) 'affix hopping' analysis of English verb complex formation. In the affix hopping analysis, a verb locally selects the tense/aspect *affix* of the immediately subordinate verb independently of the subordinate verb itself. This formulation is correct in that the subordinate verb indeed does not play a role in the selection of its own affix. The surface order of the subordinate verb and its affix is derived transformationally. Models of syntax in which affixes come prepackaged in words do not predict the irrelevance of the category 'word' to syntactic dependencies such as affix selection. A word-based theory of affix selection is unsound because it fails to explain why the word-mate subordinate verb fails to play a role in affix selection. Research on the configurations in which sublexical[1] elements enter in isolation into syntactic dependencies is motivated by the prospect of bringing such research to bear toward the reduction of unsoundness in the theory of grammar. In a syntactic framework with features as basic elements and without syntactic prosodic grouping, the following hypothesis will be shown to be tenable:

- *The syntax-phonology interface is direct:* the linear ordering of elements that syntax presents to phonology at spell out is not alterable by morphological operations[2], i.e., there *are* no morphological (i.e. post-syntactic) ordering operations, i.e., there is no morphology in the traditional sense[3], only syntax and phonology.

The empirical domain in which this hypothesis will be tested is Arabic inflectional morphology. Much of what is expressed as affixal morphology in other languages is expressed as alterations of prosodic structure in Arabic. Different 'templates' correspond to different aspects of meaning such as plurality (ḥakiim (*doctor*)→ḥikamaa (*doctors*)), causativity (katab (*write*)→kattab (*make write*)), syntactic category (ðakar (*remember*)→ðikr (*memory*)), etc. I show that Arabic nouns and verbs can be decomposed into pieces of segmental and prosodic structure whose ordering is not only describable in syntactic terms, but whose description in syntactic terms explains both semantic and morphological properties of prosodic alternations which can only be stipulated in a non-syntactic approach. I show this for imperfective

[1] Specifically submorphemic elements, i.e. features, which may coincidentally correspond to morphemes when a morpheme expresses exactly one feature.

[2] Infixation of one morpheme into another may represent a single exception to this generalization. But infixation is a phonological operation.

[3] It's not clear that the algorithm that groups features into morphemes and morphemes into words is purely phonological, since it references the lexicon, unlike e.g. the operation that changes /s/ to [z] in /car/+/s/. But if it is a misnomer for this reason to say that there is no morphology, it doesn't bear on the hypothesis that the mapping from syntax to phonology does not reorder elements of any kind.

verbs in section 3.2, and for nouns and adjectives in sections 3.1 and 3.3. The goal of the research program introduced here is ultimately to provide a complete phrase structure grammar (with movement) for Arabic derivational and inflectional morphology which conforms to the hypothesis above.

But because the idea that syntax is projected from a lexicon whose entries are words (→word formation is not syntactic) requires an autonomous morphology module, the hypothesis that the syntax-to-phonology mapping is direct cannot be evaluated in the lexicalist theory of syntax described by Chomsky (1993/1995). For this reason, the hypothesis will be evaluated in a syntactic framework modified slightly from the Minimalist framework, mostly along lines advocated by Halle and Marantz (1993), Koopman (1998) and Sportiche (1996). An important point in this connection is that all of these modifications are argued independently of the hypothesis. I.e., none of the modifications required to test the hypothesis presupposes the validity of the hypothesis.

The following section discusses these preliminary issues. Section 3 presents an analysis of Arabic inflectional morphology illustrates both how the feature-based 'no autonomous morphology' approach works and its explanatory value.

2. Preliminary Discussion

2.1 *Feature-Based Syntax*

Much recent research in syntax has pointed toward the atomization of complex properties in syntax. Ritter (1991) and Carstens (1991) present evidence that the feature 'number' is an independent head within the noun phrase. Giusti (1995) claims the same for the feature 'case'. Both of these features regularly form a prosodic word with the noun they are features of. Abney (1987) shows that definiteness is instantiated in an independent head within the noun phrase, though in Arabic the definite article prosodically associates to the noun and is copied in agreement configurations the noun enters into. The logical conclusion of this trend is proposed by Koopman (1998), who claims that every feature heads its own projection.

That syntactic operations manipulate features is a conventional assumption. For example, the wh-feature triggers wh-movement (den Besten 1983), the case feature triggers case-movement (Mahajan 1990), semantic features trigger QR (Beghelli and Stowell 1995), etc. In the Minimalist Program, syntactic operations such as wh-movement, case-

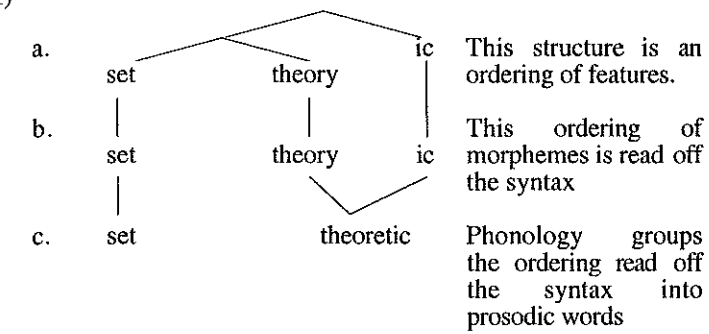
movement, etc., operate on features. However, features enter the derivation as words, already in their prosodic grouping (the 'numeration' consists of words), and the prosodic grouping is preserved under all syntactic permutations. In particular, if an operation moves a feature of an affix, the entire word with which the affix is associated moves with it. So while the features of the prosodic word like case, number, etc. are spread out over several projections, the prosodic word moves from projection to projection, checking a feature each time. This algorithm requires a principle like the Mirror Principle, which ensures that the ordering of features within the prosodic word mirrors the order in which the features are checked, i.e., their syntactic ordering. This system contains three redundancies. Each feature is redundantly instantiated twice, once in the prosodic word and once in its own projection; checking movement is motivated only theory internally; and the Mirror Principle is redundant with the syntactic ordering itself. These redundancies are eliminated by the elimination of the idea that features enter the derivation as words[4]. Words are composed across projections from the ordering of heads in the syntax itself without movement.

Specific empirical evidence also motivates the elimination of the pre-syntactic prosodic grouping of features. The idea that words are the basic components of syntactic structures leads to paradoxes in connection with expressions like *set theoretic*, whose prosodic grouping is '[[set] [theoretic]]' but whose syntactic/semantic grouping is '[[set theory] ic]]'. In the approach taken here, *set theoretic* consists of the features[5] *set, theory,* and *ic* in the hierarchical order in (1a). These features are mapped onto a linear order of morphemes (1b) which in turn is divided into prosodic constituents (1c).

[4] Of course, this elimination makes it necessary to say at some other level what a word is. If the observation of a word boundary ever motivates the postulation of a syntactic partition, the partition is also only motivated theory internally, and is redundant, just like the word based approach. It is therefore an important criterion in the present study that word structures always be motivated independently of word boundaries.

[5] I treat word stems as lexical features. The affix *-ic* is a spell out of an abstract adjective feature.

(1)



The clumping together of morphemes into prosodic words is partially caused automatically by a stress assignment algorithm and partially by rebracketing as described in Marantz (1988), who claims that a morpheme may prosodically associate with the head of a related phrase under adjacency, as *-ic* does with *theory* in (1). While more needs to be said about the syntactic structure and the basis for the prosodic grouping, creating a derivation that goes in the other direction (from the prosodic grouping at the bottom to the syntactic structure at the top) is not obviously possible at all, hence appellation 'bracketing paradox'. Bracketing paradoxes represent *a priori* evidence against the idea that prosodic words are basic units of syntax.

A similar problem is presented by cases such as in (2).

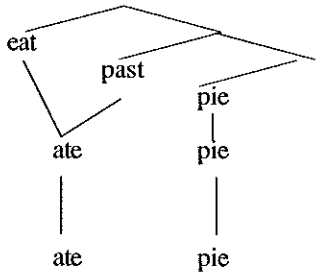
(2) John ate pie, but Mary didn't.

The VP of the second clause (*but Mary didn't*) has been deleted. It's content is anaphoric on the VP of the first clause (*John ate pie*). But the gap in the second clause should read *eat pie* (viz. *John ate pie, but Mary didn't eat pie*). The gap does not include tense, which is expressed on a dummy verb in the second clause as *did*. But the phrase *eat pie* does not occur in the first clause overtly. Tense has merged with the verb in the first clause. The resolution to this problem is the proposal that the merger between tense and the verb in the first clause is PF merger. In the syntax, tense and the verb are distinct, and the VP *eat pie* excluding tense is available as an antecedent for the gap in the second clause. Again, a paradox is avoided by the elimination of prosodic words from syntactic structures.

The irrelevance of tense to the identification of the gap is like the irrelevance of a stem to affix selection in the English verb complex (discussed in section 1). Again, a word-mate morpheme is invisible to

a syntactic dependency. Though, like the Minimalist approach to affix selection, it may be possible to formulate a word-based analysis of the identification of deleted VPs, such an approach is unsound compared to an approach which syntactically separates tense and the verb at the level of representation at which identification takes place, because it predicts the possibility of an interaction between tense and gap identification, contrary to fact.

(3)



This structure is an ordering of features

This ordering of morphemes is read off the syntax

Phonology groups the ordering read off the syntax into prosodic words

The fundamental argument against the presence of prosodic words in syntactic structures is that phonological form never feeds syntactic dependencies. While features such as case may trigger movement, no movement rule is triggered by a phonological property of a word, for example the property of beginning with /s/ or ending in /f/ etc. The absence of phonological information in syntax explains this phenomenological gap. Syntax is not even sensitive to the phonological form of the features it manipulates, much less their prosodic grouping.

2.2 *Selection*

Lexical dependencies obtain under selection (Chomsky 1981). When we say INFL is the complement of C, V is the complement of INFL, we stipulate the hierarchical order of C, INFL, and V as lexical properties of these heads: C selects INFL, INFL selects V. Selection expresses obligatory cooccurrence. When an element selects another element, they form a constituent (at some level). A head selects its sister (Chomsky 1981) and its sister's specifier (Larson 1988), who proposes that objective case is assigned by a verb to a noun in the specifier of the case assignor's complement). I adopt Larson's "traditional" view of case assignment (it obtains under government) instead of the contemporary checking approach. Checking obtains when two features cancel each other under locality. For example, the nominative feature in AgrS cancels the nominative feature of a DP in

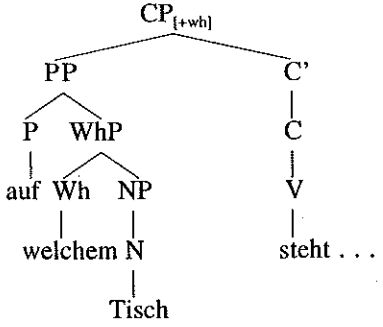
[spec,AgrSP]. However, there is no evidence that a nominative feature exists outside the subject DP. Neither tense, which correlates with subjecthood across languages, nor its host the verb, nor complementizers, which sometimes interact with subjecthood, bear case morphology across languages. The idea that a nominative subject matches AgrS in case as it matches in number and gender, which *do* have an external reflex on the verb (subject agreement morphology) is not corroborated. I propose nominative case is selected by the element with which it always co-occurs, namely tense, in the specifier position of the complement of tense, a structure essentially like that proposed by Pollock (1989).

Elements that covary do not always appear adjacent. I treat such cases in the transformational tradition, postulating that the elements which covary do form a (local) constituent at some level of representation, but that movement either dissociates the constituent when it exists at D-structure, or forms the constituent when it exists at LF. Movement may relate an element to multiple selectors across levels of representation. Though feature percolation is an often used device for characterizing relations between discontinuous but covarying elements, it is not a sound device, as I argue below. The argument against feature percolation is important for the analysis of noun phrases discussed in section 3.1, since the unavailability of feature percolation in a syntactic approach to morphology strongly constrains possible analyses.

The primary argument against feature percolation is that it does not predict the unaffectedness of nodes along the path of percolation. Consider (4a), from Standard German. The prepositional phrase is in the specifier position of a [+wh] COMP, as diagrammed in (4b).

(4) a. Auf welchem Tisch steht die Vase?
on which table stands the vase
'Which table is the vase on?'

b.



The wh-head in the prepositional phrase matches the value of the [+wh] CP. But PP intervenes between WhP and CP. The standard account for feature matching between WhP and CP in spite of non-adjacency is feature percolation from WhP to PP, which itself is in the spec-head relation required for feature checking.

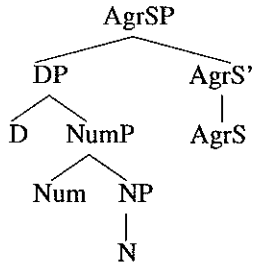
Percolation of the [+wh] feature from the wh-element to PP could be expected to affect the form of the preposition. I.e., there could be a wh-preposition 'on' morphologically distinct from a non-wh-preposition 'on'. Since heads normally covary with features in their local domain (e.g. selection, agreement), the fact that, in feature percolation contexts, no elements along the path of percolation covary with the features being percolated can only be considered coincidental. But this gap is surely not coincidental. The gap exists because features do not 'pass through' syntactic structure. Feature percolation is unsound because it does not predict this empirical gap.

Movement, however, does not predict any interaction between a moved element and the material between the base position and the landing site, since no information about the moved element is represented in any intervening node. Movement is a sound approach to these dependencies, whereas feature percolation is not (it overgenerates).

Further, feature percolation is redundant with movement in the majority of cases. Both operations have the same function, to move a feature from its base position to a selector, and both are subject to the same constraints, as demonstrated below.

In (5), a DP containing a projection of a noun and a projection of the feature 'number' (Carstens 1991), (Ritter 1991) is in [spec,AgrSP], a configuration argued by Chomsky (1993) to underlie subject verb agreement (the Agr head ends up as a verbal suffix).

(5)



In this configuration, the value of NumP matches the number feature of AgrSP. This matching relation seems to extend over the intervening node DP. A typical solution to the problem of intervening structure in this configuration is percolation of the number feature from NumP to DP, where it is local to AgrSP. One question the percolation proposal raises is why the DP needs to move to AgrSP at all. If the number feature (and case feature, d-feature, etc., i.e., all the features that characterize subjecthood) can percolate to DP, why can't they percolate to AgrSP from the DP's base position, allowing the DP to appear in its base position at S-structure, a position separated from the auxiliary in AgrSP by certain adverbials[6], generating e.g. (6). (6) depicts the licensing of number and case features through feature percolation from the base position without any alteration of the base word order.

(6) *has$_i$ probably already [$_{DP}$ the *Num$_i$* plumber] repaired the faucet.
(Intended: 'The plumber has probably already repaired the faucet.')

[6] While a common treatment of the VP-internal subject hypothesis is that subjects are generated in [spec,VP], to the right of manner adverbials, no correlate of subjecthood appears to the right of manner adverbials in English, e.g. floated quantifiers.

(i) The children <all> carefully <*all> died the easter eggs.

I adopt Diesing's (1992) view that the subject is in its base position in 'existential-there' constructions, to the right of certain temporal and conditional adverbials but to the left of manner adverbials. However, this position is not VP internal, as she claims, insofar as manner adverbs mark the left VP edge.

The restriction apparently blocking (6) is that DP is a barrier for feature percolation. A feature may percolate up to DP, but if it needs to percolate past DP, it can't. Instead, DP itself must move to any DP-external element that selects a DP-internal feature[7].

DP is also a barrier for movement, as (7) shows.

(7) *What$_i$ did John like [$_{DP}$the painting of t_i]?

According to the argument developed here against feature percolation, (6), in which feature percolation has illicitly carried subject features across a DP boundary, is analogous to (7), in which movement has illicitly carried a wh-element across a DP boundary. Restrictions on feature percolation and movement overlap here: neither may cross DP.

Consider also the German case of fronting of PPs containing a wh-element, illustrated in (4). The situation in (4) is similar to that in (5). The wh-feature of WhP is postulated to percolate to PP in order to be in the spec-head relation required by the head of the [+wh] CP The wh-head in the prepositional phrase matches the value of the [+wh] CP. But PP intervenes between WhP and CP. The standard account for feature matching between WhP and CP in spite of non-adjacency is feature percolation from WhP to PP, which itself is in the spec-head relation required for feature checking. (8) shows that feature percolation cannot carry the wh-feature to the wh-licensing CP from the base position of the PP, licensing the wh-feature with no alteration of the base word order.

(8) *Steht$_i$ die Vase [$_{PP}$ auf welchem$_i$ Tisch]?
stands the vase on which table

PP must move to the wh-licensing position (4a), showing that the wh-feature may move to PP, but not past PP. PP is a barrier for feature percolation.

(9) shows that PP is also a barrier for movement. A wh-phrase may not move out of a prepositional phrase, even to a wh-landing site.

(9) *[$_{WhP}$ Welchem Tisch]$_i$ steht die Vase [$_{PP}$ auf t_i] ?
which table stands the vase on

[7] The form of this argument is: if you observe a feature percolate to a certain node, then that node in turn *moves* to a licensing position for the percolated feature, then movement must be motivated by the inability of the feature to percolate past the node that moves. Therefore, the node that moves is a barrier for feature percolation.

Again, the constraints on movement and feature percolation are the same.

The constraint on movement out of PP is relaxed in English and in some dialects of German, but not the constrain on percolation.

(10) a. [$_{WhP}$ Which table]$_i$ is the vase [$_{PP}$ on t_i]
b. *Is$_i$ the vase on [$_{PP}$ on which$_i$ table]?
(Intended: 'Which table is the vase on?')

Likewise, weak DPs allow extraction, but not feature percolation.

(11) a. What$_i$ did John like [$_{DP}$ a painting of t_i]?
b. *has$_i$ probably already [$_{DP}$ a *Num*$_i$ plumber] repaired the faucet

(10) and (11) indicate that barriers for movement and feature percolation are sometimes more lenient with movement than with feature percolation. The gross overlap in the conditions on feature percolation and movement nonetheless corroborates the argument against feature percolation, especially in light of the following observation.

Feature percolation also obeys the Coordinate Structure Constraint (Ross 1967). The wh-feature of the first conjunct in (12a) cannot percolate to the preposition *wegen* unless percolation also obtains out of the second conjunct (12b). English examples of the same type are given in (13). In fact, percolation cannot even move a feature of only one conjunct to the coordinating node itself, as the ungrammaticality of the English translation of (12a) shows.

(12) a. *Wegen [welchem Hund und der Katze] beschwert sich Hans?
about which dog and the cat complains refl. Hans
('*Which dog and the cat does Hans complain about?')

b. Wegen [welchem Hund und welcher Katze] beschwert sich Hans?
about which dog and which cat complains refl. Hans
'Which dog and which cat does Hans complain about?'

(13) a. *The cover of [which biography and the novel] did John admire?
b. The cover of [which biography and which novel] did John admire?

(12) and (13) are analogous to (14), which show that movement out of a coordinate structure is illicit unless a gap occurs in both conjuncts, i.e. movement out of only one conjunct is prohibited.

(14) a. I wonder who$_i$ [John hit t_i] and [Bill kicked t_i].
b. *I wonder who$_i$ [John hit t_i] and [Bill kicked Fred].

Again, constraints on movement and feature percolation overlap.

In general, movement and feature percolation are both feature moving operations and are restricted by analogous constraints. The present study adopts the premise that selection is local and excludes feature percolation on the basis of both its incompatibility with the premise that selection is local and the fact that it is redundant with movement. The complex matter of how to formulate the dependency between NumP and AgrSP in (5) and WhP and CP in (4), etc., in terms of movement is addressed in the following section.

3. Syntactic Analysis of Arabic Morphology

3.1 *Arabic Inflectional Morphology: Nouns and Adjectives*

The exclusion of feature percolation as a mechanism for agreement opens up the problem of how to formulate such dependencies at all. However, the decomposition of prosodic words into hierarchies of features allows for an analysis of agreement in terms of structural isomorphy of agreeing trees. This approach says that an element agrees with another element when the syntactic subtree containing all and only the agreeing features of the first element is identical to the subtree containing all and only the agreeing features of the second element. Two trees are identical when they contain the same nodes in the same hierarchical order. Such an approach assumes that agreeing elements are in fact structurally isomorphic, which I show for Classical Arabic nouns and their modifiers below.

Classical Arabic nouns occur in the morphological template illustrated in (15a). The template in (15a) does not include a word final particle termed *tanwiin* which occurs with certain combinations of

definiteness, number and stem, because I do not have a complete theory of the *tanwiin* contexts to present at present.

(15) a. definiteness - stem - number - gender - case
b. al - ṭaalib - aa - t - u
def - student - pl - fem - nom
'the students (fem)'

Because case is selected by a noun-phrase external element, I propose it is base generated in the syntactically highest position in the noun phrase. Also, following the idea that inflectional systems are 'extended projections' of lexical heads (Grimshaw 1991), I propose that the stem is base generated in the syntactically lowest position in the noun phrase.

As for the D-structure ordering of number and gender, note that there is a universal implicational order of these two features, namely Greenberg's (1963) universal 36: "If a language has the category of gender, it always has the category of number." Number and gender are, in effect, hierarchically organized, such that if gender distinctions are present, number distinctions must also be present, but not vice versa. The syntactic approach to inflectional morphology makes it possible to translate the feature hierarchy directly into a syntactic structure. Gender selects number, and not vice versa, universally. Hence, whenever gender is present, number must be present, because gender selects it. The D-structure from which the ordering in (15) is derived is that in (16), where case is instantiated in CaseP, definiteness in DP, gender in GenP, number in NumP, and the stem in NP[8].

(16) [CaseP [DP [GenP [NumP [NP]]]]]

Movement of NP to [spec,NumP], NumP to [spec,GenP] and DP to [spec,CaseP] generates the surface ordering in (15), illustrated in (17).

(17) [[DP [[[NP] NumP] GenP]] CaseP]

I propose these three movement rules on the basis of the argument for (16) and the givenness of the distinct surface ordering (that the constituency in (16) obtains at D-structure, and not at LF via covert movement, is defended below). This analysis differs from traditional

[8] Regarding the mapping to linear order in these trees and others in this paper, I adopt the Linear Correspondence Axiom of Kayne (1994), which states that linear precedence at spell out is a function of hierarchical order in syntax. When an element E_1 is mapped to morpheme M_1, and an element E_2 is mapped to a morpheme M_2, and E_1 asymmetrically c-commands E_2, then M_1 precedes M_2.

analyses of nominal morphology in that it does not make use of head movement. Marantz's (1988) rebracketing algorithm, which I pointed out generates *[[set][theoretic]]* from *[[set theory] ic]*, obviates a traditional motivation for head movement, namely word formation. Given the possibility of this rebracketing, it is not true that every prosodic word must be dominated by an X^0 category, hence word formation does not motivate head movement in (16). I make use only of phrasal movement here, since phrasal movement is demonstrably required in the noun phrase in a certain case which I discuss in section 3.3.

The structures in (16) and (17) also structurally instantiate another of Greenberg's universals, namely universal 39: "Where morphemes of both number and case are present and both follow or both precede the noun base, the expression of number almost always comes between the noun base and the expression of case." Because case is selected by an outside element (a verb or tense), it is the syntactically highest element in the noun phrase. Because it is highest, it is 'outside' of other morphology, in accordance with the Mirror Principle, which states that the ordering of morphemes with respect to a base mirrors their hierarchical ordering. The locality of selection requirement in the structural approach to morphology explains this linguistic universal.

So far I have assumed without discussion that (16) is a D-structure and not a logical form. Suppose we wanted to explain the surface non-locality between the case particle and its outside selector by saying that case is generated discontiguous from the outside selector, but moves to its selector non-overtly. Then the position of the case particle is no longer a visible reflex of the (syntactically high) position of the selector. But the position of case *does* reflect the scopal order, whence universal 39. Also, the structural instantiation of universal 36 is arguably a D-structure relation. Suppose we wanted to explain the surface ordering of number and gender (num < gen) by claiming that number selects gender at D-structure, but we still wanted to explain the impossibility of the absence of the number category in a system with a gender category syntactically by saying that gender selects number, but non-overtly in a derived level of representation. Then we have to systematically fail to spell out gender when it is selected by a number category which is never spelled out, which amounts to restating the generalization. If selection of number by gender obtains at D-structure, number is required when gender is present, but not vice versa, as universal 36 states. For these reasons, the structure in (16) is a D-structure.

Adjectives agree with the nouns they modify in definiteness, number, gender, and case, and these features appear on adjectives in the same surface template as nouns, and in lieu of some reason to believe adjectives have a different D-structure, I assume they are the same.

(18) al - ṭaalib - aa - t - u — al - ðakiyy - aa - t - u
def-student-pl-fem-nom — def-intelligent-pl-fem-nom
'the intelligent students'

Verbs agree with subjects in gender and number. Agreement morphology is suffixal in the perfective tense. It is circumfixal in the imperfective, but the deep order gender > number is preserved (the imperfective is discussed in section 3.2).

(19) al - ṭaalib - aa - t - u — xaraž - na
def-student-pl-fem-nom — left.perfect-pl.fem
'The students left.'

(18) and (19) show that agreeing features of nouns, verbs, and adjectives indeed appear in structurally identical configurations in their respective trees, meaning agreement is directly characterizable in terms of isomorphy of structure (though the lexical heads themselves differ in category; but some form of referential identity is still required, as discussed below). In (20a) an adjective whose root node is CaseP is isomorphic to, and therefore agrees with, a noun whose root node is CaseP. In (20b), a tree containing a verb whose root node is GenP is isomorphic to, and therefore agrees with, a subtree of a tree containing a noun whose root node is GenP.

(20) a. $[_{\text{CaseP}}$ al - ṭaalib - aa- t - u] $[_{\text{CaseP}}$ al - ðakiyy - aa - t - u]
b. al - $[_{\text{GenP}}$ ṭaalib - aa - t] - u $[_{\text{GenP}}$ xaraž - na]

Keenan (1998) defines 'tree' as in (21). Agreement between trees is just identity, as in (22).

(21) A tree T is a pair (N,D) where N (nodes) is a set and D (dominates) is a binary relation on N satisfying (i)-(iii): (i) D is a reflexive order, (ii) there is a node r (root) which dominates every node, and (iii) for all nodes x, y, and z, if x dominates z and y dominates z, then either x dominates y or y dominates x.

(22) A tree T agrees with a tree T' if T=T' (i.e. if, for T=(N,D) and T'=(N',D'), N=N' and D=D')[9].

[9] This definition ignores the difference between a node and its lable, a difference which needs to be taken into account in a more precise statement of identity.

Morphological agreement obtains in (20a) by virtue of the identity of the two CasePs and in (20b) by virtue of the identity of the two GenPs.

Of course, what we speak of as agreement is really *obligatory* identity. The trigger of agreement is a semantic relation. Adjectives do not agree with nouns they do not modify. When a noun enters the 'predicate of' relation with a verb or adjective, the identity relation is triggered between a subtree whose root node is some extended projection of the noun and a subtree whose root node is some extended projection of the verb or adjective, e.g. GenP in example (20b). Adjectives that modify nouns directly (noun phrase internally) agree with the nouns they modify in case, definiteness, number, and gender, meaning that the local adjective-noun relation triggers identity between the trees whose root node is CaseP (the maximal extended projection of the noun and adjective respectively).

Noun phrase external adjectival modifiers like those that form sentence predicates agree like verbs, i.e., only in number and gender. In (23), the adjective fails to match the subject in definiteness and case (it is indefinite and receives accusative from the verb).

(23) al-ṭaalib-aa-t-u kun-na ðakiyy-aa-t-a-n
def-student-pl-fem-nom were-pl-fem intelligent-pl-fem-acc-indef
'The students (def,pl,fem,nom) were (pl,fem) intelligent (pl,fem)

The connection between locality and the extent of agreement suggests that the choice of the root node of the agreeing subtrees is sensitive to the distance between the two trees. The fact that the distance effect mirrors constraints on movement to some extent suggests that agreement may be reducible to across the board (ATB) movement, which also requires structural and referential identity of the moved constituents. Movement is the operation that forms the 'argument of' relation between a noun and its predicate. Agreement obtains through the (non-universal parametric) necessity of pied-piping additional structure, which then must match because of the identity requirement of ATB. The extent of pied piping is determined by constraints on movement.

Predication is unlike c-selection. When we say AgrS selects T, T selects AgrO, and AgrO selects V (per Chomsky 1993), we stipulate the hierarchical order of these elements, we do not posit a deep semantic relation between them. The semantic relation between T and AgrO (if

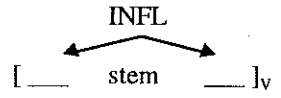
any) is not like the relation between a verb and its object, though both (traditionally) are head-complement relations. An element selects another element when the first requires the second. When we say T selects AgrO we stipulate the ordering of T and AgrO as a formal property of T—it requires AgrO. T selects the subject, which explains why subjects are absent in non-tensed clauses—their selector is missing. But subjects do not enter into a semantic relation with tense. A survey of head-complement relations in any articulated analysis of phrase structure seems to show that selectees are not in general semantically related to their selectors, so I assume they are never semantically related to their selectors, and the predication relation obtains in a configuration other than selection, possibly as a result of a form of movement (ATB) that superimposes the argument on the predicate.

3.2 *Arabic Inflectional Morphology: Verbs*

Set theoretic (1) is an example of a one-to-one mapping of features to morphemes. *Ate* (3) is an example of a many-to-one mapping of features to morphemes. That there are no one-to-many mappings of features to morphemes is more controversial, but the spreading of a single feature (with a certain syntactic exponent) to multiple morphological positions (the syntactic exponents of other features), is not compatible with the hypothesis that there is no non-syntactic reordering. If such spreading is observed, it must obtain in the syntactic configuration which allows such covariation, namely the selection configuration. What follows are two examples what is postulated by Noyer (1992) to be a one-to-many mapping of features to morphemes. I show that the first case doesn't exist and the second case is reanalyzable as a case of syntactic selection.

Noyer analyses circumfixal agreement in the Arabic imperfect (present and future) as splitting of INFL into a prefix and suffix position. These positions are morphological properties of the verb stem.

(24)



(25) Modern Standard Arabic imperfect indicative conjugation

[pers.-gen.-num.]$_{INFL}$	===>	[prefix-*write*-suffix]$_V$
3-m-s		*ya-ktub-u*
3-f-s		*ta-ktub-u*
3-m-pl		*ya-ktub-uu-na*
3-f-pl		*ya-ktub-na*
2-m-s		*ta-ktub-u*
2-f-s		*ta-ktub-ii-na*
2-m-pl		*ta-ktub-uu-na*
2-f-pl		*ta-ktub-na*
1-s		*ʔa-ktub-u*
1-pl		*na-ktub-u*

At first glance it seems as if both the prefix and suffix position are sensitive to all features of INFL. Noyer ingeniously simplifies this paradigm firstly by pointing out that the features '3rd person', 'masculine' and 'singular' are never marked in any category in Arabic and are simply absent from the feature inventory, and secondly by postulating that the prefix *ta-*is homophonous between 2nd person and feminine. The paradigm in (25) then becomes that in (26).

(26)

traditional paradigm	actual features present per Noyer	mapping to morpho-logical positions	prefix-*write*-suffix
3-m-s	-	Ø-*ktub*-Ø	*ya-ktub-u*
3-f-s	f	f-*ktub*-Ø	*ta-ktub-u*
3-m-pl	pl	Ø-*ktub*-pl-*na*	*ya-ktub-uu-na*
3-f-pl	f-pl	Ø-*ktub*-f-pl	*ya-ktub-na*
2-m-s	2	2-*ktub*-Ø	*ta-ktub-u*
2-f-s	2-f	2-*ktub*-f	*ta-ktub-ii-na*
2-m-pl	2-pl	2-*ktub*-pl-*na*	*ta-ktub-uu-na*
2-f-pl	2-f-pl	2-*ktub*-f-pl	*ta-ktub-na*
1-s	1	1-*ktub*-Ø	*ʔa-ktub-u*
1-pl	1-pl	1-pl-*ktub*-Ø	*na-ktub-u*

In the paradigm in (26) the content of the prefix and suffix positions is transparent. *Ya-* and *-u* fill featureless prefix and suffix positions respectively. 'Feminine' and '2nd person' are individually always spelled out as the prefix *ta-*. 'Plural' is individually always spelled out as the suffix *-uu*. 'Feminine' sometimes appears in the suffix position with 'plural', in which case they are suppleted as *-na*. The feminine plural *-na* is different from an additional *-na* which is suffixed to forms ending in a long vowel, which is unrelated to the content of INFL.

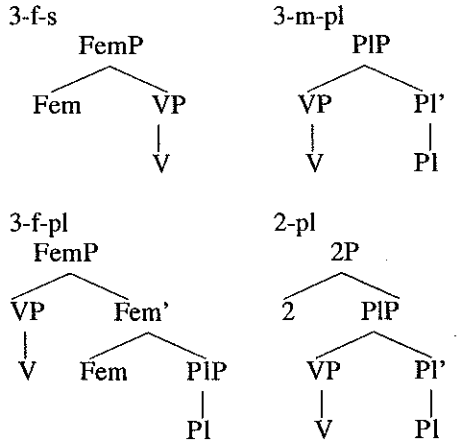
The first form of feature splitting that Noyer proposes–splitting of INFL into distinct prefixal and suffixal morphemes–is obviated by his own analysis, at least in the syntactic framework described in the present study, in which features are never grouped together into a single node, but rather always head their own projections. I propose that the forms in (26) are instances of various possibilities for the position of the verbal stem in a syntactic instantiation of Noyer's hierarchy of features (2>fem>pl>1). Some examples are shown in (27). The distribution of features 'around' the stem is generated by movement of the stem (VP) from a low base position to specifier positions in the inflectional hierarchy[10].

Noyer correctly points out that the hierarchy 2<fem<pl<1 cannot be reordered, generating 'plural' prefixally and 'second person' suffixally for example, so if you know for a certain form that 'feminine' is spelled out suffixally, then you don't have to say that 'plural' is spelled out suffixally, so it is only necessary to say for each agreeing form what the first suffixal feature is. The prefixal features will just be those that precede the first suffixal feature in the hierarchy. However, in the second person, we want to say that the first suffixal feature is the next feature in the hierarchy, after second person, that actually occurs. But then the first suffixal feature in these forms is a function of the prefix, meaning the prefixal features are not just those that hierarchically dominate the first suffixal feature, whatever the latter happens to be. Further, in the first person, there is no 'first suffixal feature', for which case some reference to the end of the hierarchy has to be made, essentially introducing another element to the hierarchy. However, these restrictions can be stated naturally in syntactic terms.

In the syntactic approach, given the syntactic instantiation of the feature hierarchy, it is only necessary to say for each form where the stem (VP) is. But you only have to say once for the first and second person respectively: 'second person' selects the verb to its immediate right, hence all other features are suffixal, since second person is at the top of the hierarchy, and 'first person' selects the verb to its immediate right, hence all other features are prefixal, since first person is at the bottom of the hierarchy.

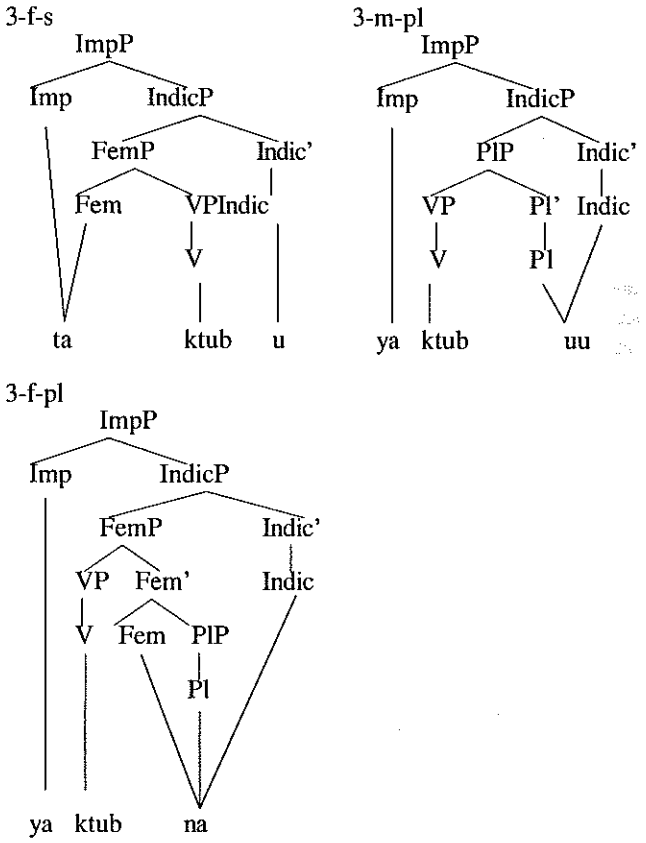
[10] The motivation for the variation in the landing site of the verb is ignored here, because I have not worked it out for all cases.

(27)



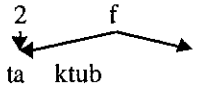
Noyer also does not offer any basis for the fact that the imperfective tense requires both a prefix and a suffix position. But it is the case that the prefix expresses the feature 'imperfective' (there is no prefix in the perfect) and the suffix expresses the feature 'mood' (here indicative: *u* →*a* in the subjunctive; *u* →Ø in the 'jussive'). I propose, to account for the dependency between tense and the two possible positions of exponence for the agreement features, that the trees in (27) are mapped by movement into a structure which provides the syntactic correlates of 'prefix' and 'suffix', namely the projections of the features 'imperfect' and 'mood' respectively, to form tensed structures, three examples of which are illustrated in (28). The inflected verb is selected to the immediate right of the imperfective head, namely in [spec,IndicP].

(28)



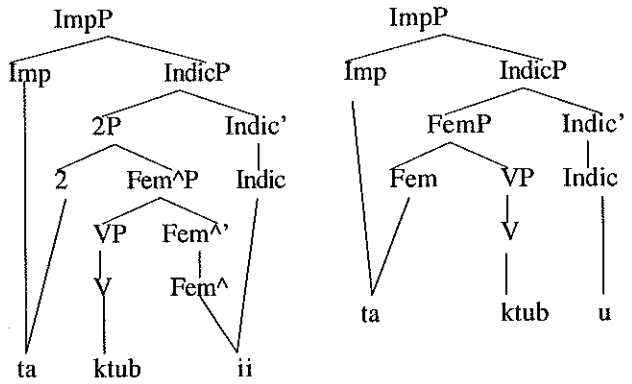
Another case of splitting that Noyer discusses is the case of the 2nd person feminine singular *ta-ktub-ii-na*. If *ta-* expresses '2nd person' in this form then *-ii* must express 'feminine', but feminine gender alone was observed to be spelled out as *ta-*. If *ta-* expresses '2nd person' and 'feminine' then firstly, *ta-* is now homophonous between three things—2nd person, feminine, and 2nd person and feminine together—and *-ii* seems to not be correlated with anything. Noyer's solution is that the feminine feature in the 2nd person feminine singular splits between the prefix and the suffix. The prefix *ta-* is its 'primary exponent' (as well as that of 2nd person), and *-ii* is the 'secondary exponent' of 'feminine', as illustrated below, and the secondary exponent of a feature may be spelled out differently from its primary exponent.

(29)



In the present study, '2nd person' and 'feminine' are syntactically instantiated locally (they are adjacent in the feature hierarchy). I propose, to account for the variation in the form of the feminine marker, that when '2nd person' is present, it selects a form of the gender node FemP—FemP^ (FemP-prime)—which is spelled out as *ii*, unlike FemP proper, which is spelled out as *ta*. While this approach may seem ad hoc, the fact is that the form of 'feminine' changes idiosyncratically in the presence of '2nd person', and the present analysis allows a syntactic formulation of this idiosyncrasy in just the configuration in which lexical idiosyncrasies are expressed–selection–in a syntactic framework in which every feature is structurally instantiated and has only one exponent, i.e. there is no splitting. The 2nd and 3rd person feminine singular are compared in (30).

(30) 2-f-s 3-f-s



There is a sense in which this analysis amounts to the claim that '2nd person' in the prefix 'spreads' to 'feminine' in the suffix, but the mechanism of spreading is selection under locality, precisely the configuration in which this sort of dependency is allowed. In this way, a completely syntactic instantiation of Noyer's morphological dependencies is possible, and there is no one-to-many mapping of features to morphemes, consistent with the no autonomous morphology hypothesis. Spell out rules in this system are not context sensitive at all, though syntactic context determines the category that is spelled out, e.g. whether FemP or ^FemP is selected, etc.

3.3 *Arabic Inflectional Morphology: Plural Nouns*

The last point I will bring in favor of the hypothesis proposed here is that the model developed in the present study deals adequately with one of the most 'morphological' phenomena of all, namely broken plural formation in Arabic, and expresses semantic generalizations about pluralization that the morphological analysis of Noyer (1992) fails to express.

Nominal and adjectival plurals may be formed in one of two ways, either by of lengthening of the vowel directly following the stem (which also changes to [i] in accusative masculine forms) or by alteration of the prosodic structure and vowel melody of the base. In these forms, as before, I leave out the word final *tanwiin* declension for the sake of being able to provide a working analysis. I am in effect working with a substructure of the structure of Arabic nouns. It will become clear that there is some utility in this. Often the declension is treated as forming a unit with case and/or number morphology. I show below that case and number behave systematically without taking the declension into account, i.e., the declension is fundamentally independent of case and number. The final *u* in these forms expresses nominative case (*a* in the accusative and *i* in the genitive).

(31) Broken plurals:

a.	kitaab-u	→	kutub-u	'book'
b.	nafs-u	→	nufuus-u	'soul'
c.	sulṭaan-u	→	salaaṭiin-u	'sultan'
d.	žundub-u	→	žanaadib-u	'locust'
e.	madiin-at-u	→	mudun-u	'city + fem'

(32) Regular plurals:

a.	saariq-u	→	saariq-uu	'thief'
b.	saariq-at-u	→	saariq-aat-u	'thief + fem'

Noyer claims that broken plurals have an inherent plural feature, whereas regular plurals acquire the feature in the syntax. He also stipulates that the presence of the inherent plural feature suffices to block syntactic pluralization.

Noyer's analysis fails to capture a semantic distinction between the two types of plurals. When a word has both plural forms, the two forms are not freely interchangeable. The regular plural form has a

restrictive interpretation, whereas the broken plural form has an attributive interpretation[11].

(33) a. al-ʔawlaad-u marḍaa (broken)
the children sick-pl
'The children are sick.'

b. al-ʔawlaad-u mariiḍ-uu (regular)
the children sick-pl
'The children are the ones who are sick.'

The syntactic analysis proposed here to account for both the morphological distinction and the semantic distinction between the regular and broken plural is based on the analysis of McCarthy and Prince (1990) of the phonological basis of broken plural formation. McCarthy and Prince point out that the alteration of the prosodic structure of the stem in broken plural formation only affects the leftmost foot of the word. The left-edge effect of broken plural formation often cannot be detected, since most Arabic words consist only of one foot. But the fact is evident in forms like (31c and d) above. In these words, the leftmost foot *sul-* and *žun-* respectively is mapped into an iamb, creating (with melodic overwrite) *salaa-* and *žanaa-* respectively. These feet are re-affixed to the base from which they were stripped away to form (again with melodic overwrite) *salaaṭiin* and *žanaadib*. The prosodic structure of the portion of the word not included in the leftmost foot—*ṭaan* and *-dub* respectively–is not affected.

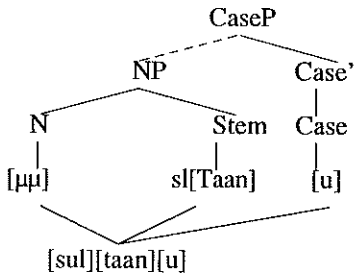
This left-affectedness is unlike regular plural formation, by which a suffix is attached to the right edge of the word. I propose that the left/right-affectedness alternation is a prefix/suffix alternation. Broken plural formation is prefixal, whereas regular plural formation is suffixal. I propose in turn that the prefix/suffix alternation is derived by movement of the stem to the left of the plural morpheme. If the stem fails to move, the order pl>stem is spelled out and the plural morpheme is prefixal (broken). If the stem moves, the order stem>pl is spelled out and the plural morpheme is suffixal (regular). The position of the stem triggers the interpretational distinction in the manner

[11] This was pointed out to me by Lena Choueiri to be true of modern Lebanese Arabic. Michael Fishbein points out to me that the early Arabic grammarians (~9th century AD) mentioned a difference between regular and broken plurals with respect to the 'individuation' of the plurality. As I discuss later, these are both results of restrictive clause formation. I assume that modern Lebanese and Classical Arabic are identical with respect to noun phrase internal syntactic correlate of restrictive clause formation proposed here.

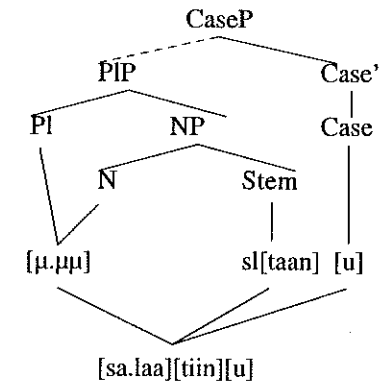
described below. First though, some details of the movement analysis are fleshed out.

According to this proposal, the phonetic material associated with the initial foot of the singular form is not associated with prosodic structure prior to spell-out, i.e., the base form of e.g. *sulṭaan* is *s-l-[ṭaan]*, the base form of *kitaab* is *k-t-b*. The base syntactic structure of *sulṭaan* is depicted in (34a). Prosodic alteration of the initial foot expresses plurality, as in (34b). Since the initial foot of the singular correlates with the category 'noun' (though a stem may turn up in other categories), I consider it the morphological exponent of NP (recall there is no feature 'singular'), i.e., we have a spell out rule of the form N→[μμ] which generates the prosody of the initial foot. N suppletes under adjacency with the category 'plural' when 'plural' is present, i.e., there is a spell out rule of the form Pl+N→[μ.μμ]. The first fails to apply when the second can apply by the Paninian principle. The case vowel is associated with its own mora, i.e., its own light syllable.

(34) a. singular: 'sultan'

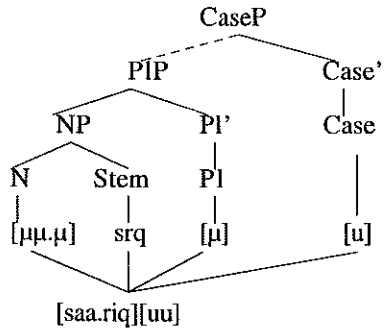


plural: 'sultan'



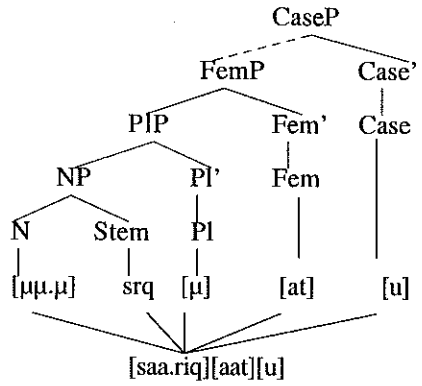
In the regular plural forms, I propose NP moves to the left of PlP, e.g. to [spec,PlP]. Now the category N is non-adjacent to the category Pl, so they do not meet the adjacency requirement for suppletion. N is therefore spelled out as in the singular, i.e., the initial foot of the stem has the same prosody as in the singular. I propose that the plural head in isolation is spelled out as a single mora, i.e., we have a spell out rule Pl→[μ], which also fails to apply when the rule Pl+N→[μ.μμ] can apply by the Paninian principle. This proposal immediately explains vowel lengthening in both the masculine and feminine regular plural forms. In the masculine forms, the plural morpheme [μ] now appears between the stem and the case marker, which has its own mora. The two adjacent moras create a heavy syllable, the vowel of case spreading to the mora of 'plural'. In feminine forms, the plural morpheme now appears between the stem and the feminine marker *at*, which also has its own mora. The two adjacent moras create a heavy syllable here also, the vowel of *at* spreading to the mora of 'plural'. Recall that PlP moves to [spec,FemP] independently, as discussed in section 3.1[12].

(35) a. plural: 'thief (masc)'



[12] The fact that PlP moves to [spec,CaseP] when no FemP is present, and FemP moves otherwise is a strange discrepancy (it means movement to CaseP doesn't always target the same category). But the effect is like pied piping: you want to move NP, but it's frozen in [spec,PlP], so you want to move PlP, but it's frozen in [spec,FemP], so you move FemP.

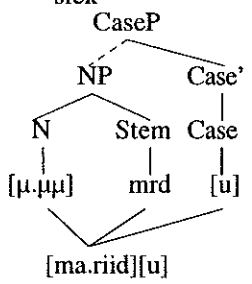
plural: 'thief (fem)'



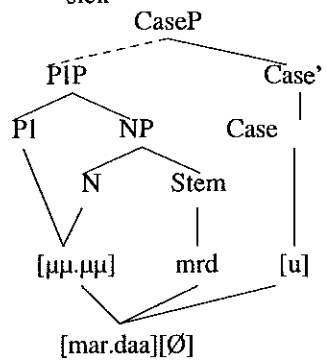
Note that there is no reason to assume the stem has undergone head movement to N (or anywhere else) in these structures; on the contrary, the typical left-adjunction effect of movement (Kayne 1994) would render prosodic morphology suffixal in a head movement configuration, contrary to fact. Movement of N to the left of the plural marker must therefore not be head movement, lest the stem, which is not in N, be left behind. Movement of N must target NP, i.e., it is phrasal movement. Given this instance of phrasal movement within the noun phrase, there is no reason to analyze other cases of movement as head movement insofar as they can be analyzed as phrasal movement, with the parsimonious result that movement targets only one type of category, namely phrasal categories.

The difference between prefixal (broken) and suffixal (regular) plural morphology is illustrated more effectively with the adjective *mariiḍ* ('sick'), a word with both plural forms. The case marker elides by regular phonology following a vowel in (36b).

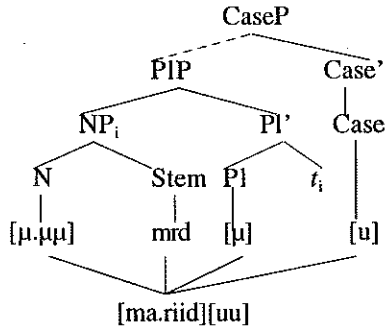
(36) a. mariiḍ (sg.) 'sick'



b. marḍaa (broken plural) 'sick'



c. mariiḍ-uu (regular plural) 'sick'



The proposal made here regarding the interpretation of the two types of plurals is that the plural marker demarcates a semantic partition in the syntactic structure like that proposed by Diesing (1992). Diesing claims that material in IP at LF is mapped into the restrictive clause in a first-order logic-like representation of quantifier scope. Material in VP is mapped into the nuclear scope. What appears in the restriction at LF is presuppositional (Berman 1991). I propose that the prosodic word is also syntactically partitioned into a restriction and a nuclear scope. Raising of the NP as illustrated in (36) places the NP in a portion of the prosodic word which is mapped to the restriction at LF, triggering the suffixal plural morphology and the presuppositional reading of the stem. When the stem does not raise, it remains in that portion of the constituent which is mapped to the nuclear scope, triggering prefixal (broken) plural morphology and the attributive interpretation of the stem. The correlation between the plural morphology and the presuppositional and attributive interpretations of the stem is

demonstrated in (37) and (38). The question in (37) presupposes the existence of sick people, hence the presuppositional (regular) plural form of *mariiḍ* is preferred in the answer. (39) does not presuppose any sick people, so the attributive (broken) plural form of *mariiḍ* is preferred[13].

(37) man mariiḍ-u?
who sick
'Who is sick?'

a. ʔal-ʔawlaad-u marḍaa
the-children pl-sick
'The children are sick.'

b. al-ʔawlaad-u mariiḍ-uu
the-children sick-pl
'The children are the sick ones.'

(38) ʔayna al-ʔawlaad-u?
where the-children
'Where are the children?'

a. al-ʔawlaad-u marḍaa
the-children pl-sick
'The children are sick.'

b. ʔal-ʔawlaad-u mariiḍ-uu
the-children sick-pl
'The children are the sick ones.'

In short, these data are subsumed by Diesing's Mapping Hypothesis under the syntactic analysis proposed here, given a parallelism between sentence structure and nominal structure. This parallelism certainly needs to be specified in more detail, in particular the connection between restrictiveness and depth of structure and the connection between the plural marker in the noun phrase and the VP boundary in the sentence. But the syntactic analysis allows a connection to be made between nominal structure and clausal structure for a noun phrase internal phenomenon with an analog at the clausal level.

[13] These judgements and those in (39) come from modern Lebanese Arabic, though again, the distinction that (39) demonstrates was documented for Classical Arabic before that form of Arabic disappeared as a spoken variant. Recall again the *tanwiin* is intentionally being omitted here and below.

Lastly, I point out that the prefixal/suffixal plural distinction also correlates with distributive vs. collective interpretation of the noun, as might be expected, given the restrictive/attributive distinction, as demonstrated below.

(39) a. al-ʕaamil-uu xabbar-uu bi ḥaadiθ-i

distributivity

def-worker-pl-nom reported-pl about accident-gen

'The workers reported an accident.'

b. al-ʕummaal-u xabbar-uu bi ḥaadiθ-i

*distributivity

def-pl-worker-nom reported-pl about accident-gen

'The workers reported an accident.'

In (a) the suffixally plural marked *al-ʕaamil-uu* (*the workers*) distributes over *ḥaadiθ* (*accident*) to make the reading available 'for each worker, there is an accident which that worker reported,' i.e., there is a different accident for each worker. In (b), the prefixally plural marked *al-ʕummaal-u* (*the workers*) does not distribute. It acts as a collective, and only the reading is available 'there is an accident which all the workers reported together.'

Restrictiveness and distributivity are typical semantic effects of structural distinctions (see, for example, Diesing's (1992) structural analysis of the former and May's (1985) structural analysis of the latter). Any non-structural analysis of these data fails to predict an interpretational difference, and once discovered, such an interpretational difference must be stipulated as a reflex of the position of plural morphology. Such a stipulation, however, fails to capture the directionality of the difference. In particular, suffixal (regular) plural morphology=presuppositional; prefixal (broken) plural morphology=attributive. If this effect is not structural, then the effect could have been the other way around, with prefixal plural morphology correlating with presuppositionality and suffixal plural morphology correlating with attributiveness. In the syntactic analysis proposed here, stems in regular plurals are syntactically higher than stems in broken plurals, the difference in interpretation falling out from a semantic partition of the noun (or adjective) phrase *a la* Diesing (1992), though again, the connection between nominal and clausal syntax has yet to be spelled out in detail.

Note that the function from singular to broken plural morphology is not obviously productive. Some broken plurals have an initial iamb (*sulṭaan→salaaṭiin, nafs→nufuus*) whereas others have an initial trochee (*kitaab→kutub, qiṭaar→quṭur*) and many other templates exist. There are generalizations about the form of the plural given the form of the singular, however (Wright 1981), and these are formulated in syntactic approach proposed here as noun class dependencies, i.e., as subclasses of 'NP'. Since the prosody of the initial foot of the form in singular contexts is a lexical property of the stem, there is a cooccurrence restriction between the subclasses of NP and subclasses of what I have referred to as the category 'stem'. I propose that the cooccurrence restriction results from a lexical selectional relation between NP and the stem (note that NP selects the stem in the diagrams above). Specifically, N_1, whose spell out in non-plural contexts is [μ.μμ], selects a category $Stem_1$, which contains stems like *k-t-b* (*book*), *q-ṭ-r* (*train*), etc., generating *kitaab, qiṭaar*, etc. The spell out rule for the suppletion of Pl and N_1 has the form $Pl+N_1 \rightarrow$[μ.μ], generating *kutub* (*books*), *quṭur*, (*trains*), etc. Further, there is a category N_2, whose spell out in non-plural contexts is [μμ], which selects a category $Stem_2$, which contains stems like *s-l-[ṭaan]* (*sultan*), *n-f-s* (*soul*), etc., generating *sulṭaan, nafs*, etc. The spell out rule for the suppletion of Pl and N_2 has the form $Pl+N_2 \rightarrow$[μ.μμ], generating *salaaṭiin* (*sultans*), *nufuus* (*souls*), etc.

There are many other prosodic templates in the singular and plural. One other template is dealt with here. A third subclass of N_3 is spelled out [μ.μ] (it is also a bimoraic syllable the initial foot of *nafs* and *sulṭaan* but with a lexical syllabification), and selects a category $Stem_3$ which contains *ʔ-s-d* (*lion*), *r-ž-l* (*man*), etc. The spell out rule for the suppletion of Pl and N_3 is $Pl+N_3 \rightarrow$[μ.μμ], just like the spell out rule for N_2 in the context of plural. That N_3 is nonetheless a distinct noun class from N_2 is evidenced simply by the fact that the distinct syllabification between the two classes is a lexical property of the nouns that cooccur in these two noun classes. No automatic syllabification algorithm would generate *ʔasad* but fail to generate **nafas*. It is a lexical property of *ʔasad* that it is bisyllabic, in particular a lexical property of its class. That N_3 conflates with N_2 in the plural looks suspicious at first, but in fact, it is the normal case that noun class distinctions conflate in the plural, as, in fact, Greenberg points out: "Universal 37: A language never has more gender [read 'noun class'] categories in non-singular numbers than in the singular." This conflation is a normal linguistic phenomenon (see e.g. German), though it does not yet have a natural expression in the present analysis (there are two independent plural formation rules for N_2 and N_3 in the grammar below; there should only be one, though it's presently unclear

how to do this in an insightful way). A grammar fragment that executes this proposal is given below, followed by some illustrative trees. The ultimate aim of the research project introduced here is to provide an explicit grammar like the 'Grammar Fragment' in the appendix which is complete for the inflectional and derivational morphological phenomena of Arabic.

4. Conclusion

The model of syntax proposed in the present study, which is a great deal leaner than other contemporary models, accounts for data which otherwise can only be accounted for with an independent morphology module, which however can never capture in a systematic way the semantic distinctions which correlate with morphological phenomena. In these and other arrays of data, the no-autonomous-morphology hypothesis goes hand-in-hand with a reduced theory of syntax to explain linguistic phenomena which have never before fallen under the scope of any kind of compositional algorithm, much less the theory of syntax.

Appendix. Grammar Fragment for Arabic Plural Formation

Phrase Structure Rules:

$PlP \rightarrow Pl\ NP_x$

$NP_1 \rightarrow N_1\ StemP_1$
$NP_2 \rightarrow N_2\ StemP_2$
$NP_3 \rightarrow N_3\ StemP_3$

$StemP_1 \rightarrow Stem_1$
$StemP_2 \rightarrow Stem_2$
$StemP_3 \rightarrow Stem_3$

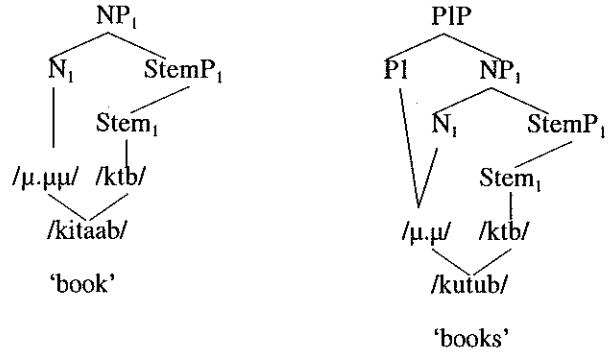
Spell Out Rules:

$Pl \rightarrow /\mu/$ *This rule occurs in regular plurals*
$Pl + N_1 \rightarrow /\mu.\mu/$
$Pl + N_2 \rightarrow /\mu.\mu\mu/$
$Pl + N_3 \rightarrow /\mu.\mu\mu/$

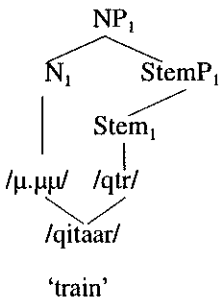
$N_1 \rightarrow /\mu.\mu\mu/$
$N_2 \rightarrow /\mu\mu/$
$N_3 \rightarrow /\mu.\mu/$

$Stem_1 \rightarrow$ {/ktb/,/qṭr/,. . .} *(book,train. . .)*
$Stem_2 \rightarrow$ {/nfs/,/sl[ṭaan]/,. . .} *(soul,sultan. . .)*
$Stem_3 \rightarrow$ {/ržl/,/ʔsd/,. . .} *(man,lion)*

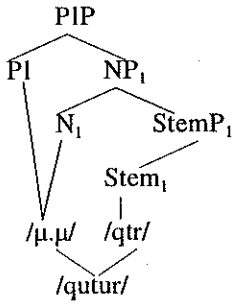
(40)



(41)

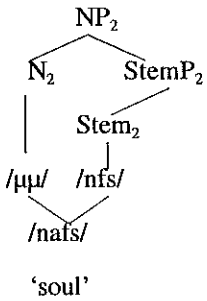


'train'

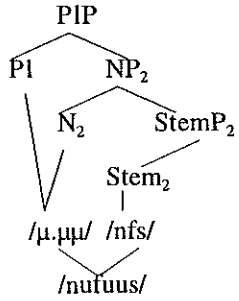


'trains'

(42)

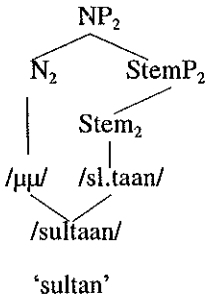


'soul'

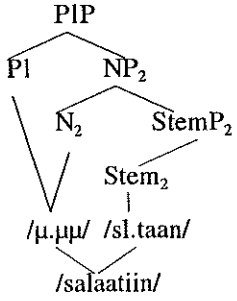


'souls'

(43)

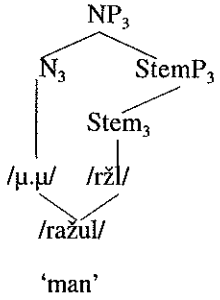


'sultan'

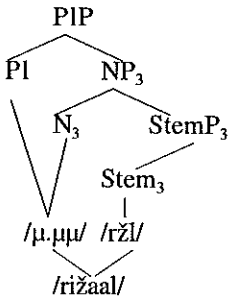


'sultans'

(44)

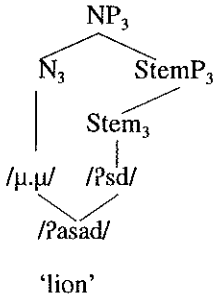


'man'

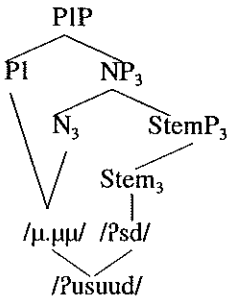


'men'

(45)



'lion'



'lions'

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TYPES OF NPIs AND NONVERIDICALITY IN KOREAN AND OTHER LANGUAGES

CHUNGMIN LEE
Seoul National University — clee@snu.ac.kr
UCLA — clee@humnet.ucla.edu

1. INTRODUCTION

This paper is an attempt to characterize the relationship between the mathematical function types of negative force and various types of negative polarity items (NPIs) in natural language, paying special attention to the weaker types of NPIs.[1] I will in particular try to show how free choice (FC) and negative polarity are closely related to concessive constructions and are in fact their subtypes. The algebraic function types of negative force are helpful guidelines for exploring different types and behaviors of NPIs and FC items but they do not exactly correspond to natural language polarity, which reveals attitudinal, expressive and emotive aspects of language and largely frozen forms in appearance.

2. TYPES

As for the types of NPIs, Zwarts (1990) originally distinguished between two types: strong and weak, as in (1):

(1) a. strong type:
ook maar iets 'anything', *bijster* 'very' (Dutch)
[with 'regular negation']

e.g.: Niemand heeft van der regenbui *ook maar iets*
no one *has* *of* *the* *rain* *anything*
gemerkt
noticed
'No one noticed anything of the rain.'

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b. weak type:
hoeven 'need,' *kunnen velen/schelen* 'can abide/care'
[with "minimal negation" (*weinige* 'at most,' etc.)]

Then, Zwarts (1998, but originally written in 1993) and Nam (1994), independently, added the strongest type, i.e. a type of NPIs that are claimed to be licensed exclusively by overt negation, which is the strongest antimorphic function. This strongest type is theoretically conceivable but empirically not easily witnessed, except in extremely idiomatized adverbial NPI cases, as the counterexamples to their claim show in (4), (5) and (6):[2]

(2) *No politician liked the performance *one bit*.
(Zwarts 1998)

(3) The men didn't like the performance (*even*) *one bit*.
(modified from Zwarts 1998)

(4) Did you like the performance *(*even*) *one bit*?

(5) Before Mary ate (even) one bit, Bill left.

(6) ne *pakke* nu-ka ku kes-ul ha -lsu iss
you *except* *who-Nom* *that* *thing-Acc* *do* *can*
-kess-ni?
would-Q
'Who else than you can do it?' (rhetorical question)

In other words, 'no' in (2) is weaker than 'not' or 'n't' in (3), but overt negation is not the only licensor of the NPI '(even) one bit,' since a question in (4) licenses it. A question is a context in which at most weak polarity-sensitive items, if any, can occur in normal cases; and pre-nominal negations such as 'no' are typologically marked and do not occur in most languages except in some Indo-European languages.

In another anti-additive context—'without'—'one bit' is far better than in (2): '(?)?They left without eating (even) one bit.' Therefore, we must say that 'without' is stronger than 'no' in negative force but that a

[2] Non-English examples are from Korean, unless otherwise specified. In the glosses I will be using the following conventions: *C* stands for 'concessive morpheme', *Q* for 'question morpheme', *Dec* for 'declarative morpheme', *Rel* for 'relativizer morpheme', *Conn* for 'connective morpheme' and *Prop* for 'property-forming morpheme.' The other conventions are pretty standard (e.g. *Nom*, *Acc*, for various Case morphemes and *Pres*, *Past*, etc. for verbal tenses).

question sentence such as (4) and a 'before' clause such as (5) are different and as strong as overt negation. The context of 'before' is indeed very strong in other languages such as Korean and Greek but we cannot say a question is also so strong. Likewise, a very strong NPI *pakke* 'except' in Korean is licensed not only by overt negation but also by a rhetorical question, as in (6). A rhetorical question, however, cannot license another strong NPI series *amu-to* 'anyone'/*amu*-N-*to* 'any N,' which is licensed by the 'before' clause. A similar NPI *sika* 'except'/'only' in Japanese is stronger in the sense that it is not licensed by rhetorical questions.

Krifka (1995) independently questions the strongest type for various different reasons, showing the ungrammaticality of: '*It is not the case that Mary/the men liked the performance one bit.' However, my counterexample above against the so-called "super-strong" type NPI 'one bit' is a clearer piece of evidence that it is not solely definable in terms of algebraic antimorphicness. Let us then turn to the examination of algebraic function types.

To see different degrees of negative force licensing polarity, let us first consider function types based on De Morgan's laws on disjunctive arguments in (7):

(7) Function Types (Function on Disjunction):
(a) Monotone-decreasing: iff $f(X \vee Y) \rightarrow f(X) \wedge f(Y)$ and $f(X) \vee f(Y) \rightarrow f(X \wedge Y)$
[e.g. 'at most']
(b) Anti-additive: iff $f(X \vee Y) \leftrightarrow f(X) \wedge f(Y)$
[e.g. 'no,' 'before,' 'every']
(c) Antimorphic: anti-additive plus: $f(X \wedge Y) \rightarrow f(X) \vee f(Y)$
[e.g. 'not'—strongest]

Hierarchically, the (a) expressions properly include the (b) expressions, which in turn properly include the strongest (c) expressions. Let us observe entailment relations and instances of NPI licensing accordingly, in (8)-(17) below:

(8) At most three girls sang or danced. →
(9) At most three girls sang and at most three girls danced.

(10) At most three girls sang or at most three girls danced. →
(11) At most three girls sang and danced.

(12) At most three girls have *ever* been to China/[??]received *any* gifts.

(13) kikkethaeya sonye se myeng-i *amu* senmul
at most *girl* *three* *Cl-Nom* *any* *gift*
i-ra-to pat-ass-ta
be-Dec-C *receive-Past-Dec*
'At most three girls received any gifts.' (Intended) (stress on *amu*)

The monotone decreasing expression 'at most' and its counterparts in Korean and Dutch, *i.e. kikkethaeya* and *hoogstens*, respectively, show entailment from (8) to (9) and from (10) to (11). It also shows entailment from 'At most three girls sang' to 'At most three girls sang loudly,' as an order reversing function—$X \subseteq Y \rightarrow f(Y) \supseteq f(X)$—and licenses the weak NPIs 'any N,' *amu* N-*i-ra-to* 'any N' (Korean) and *hoeven* 'need' (Dutch). However, 'ever' but not 'any' is licensed in this context in English, contra claims in the literature. In this sense, 'ever' is said to be weaker than 'any.'

Let us consider a stronger function type.

(14) Every man who sang or danced fell. ↔
(15) Every man who sang and every man who danced fell.

(16) Every man who has *ever* dated *any* women knows the pain of parting.

(17) *amu* yeca-hako-*i-ra-to* teit-hae-po-n
any *woman-with-be-Dec-C* *date-do-see-Rel(Past)*
namca-nun ipyel-uy kothong-ul al-n-ta
man-Top *parting-Poss* *pain-Acc* *know*
(Lit.) 'Men who have dated any women know the pain of parting.'

(18) Most addicts' children with/who have *any* sense steal candy. (modified from Barker 1999)

(19) Mechanics who have painted *any* cars *(in this district) know the difficulty of painting cars. (M. Gordon, p.c.)

The stronger anti-additive determiner 'every' shows mutual entailment between (14) and (15) and licenses the same type of NPIs, as in (16). The Korean universal determiner *motun* 'all/every' has the same effect. However, as in (17) in Korean, the generic expression with no universal determiner, restricted by a relative clause and followed by the Topic marker, licences a weak NPI [*amu* yeca-hako-*ra-to*] 'with *any* woman' (ungrammatical with its strong version [*amu* yeca-hako-*to*] in Korean).

A universal/generic head noun modified by a relative clause, as a mathematically strong anti-additive function, likewise licenses weak form existential NPIs (or rarely FC items) in the modifying relative clause but not in the predicate part, outside of the NP scope. This reveals a sort of mismatch between algebraic function types and natural language NPI types; a strong function type in this case licenses a weak polarity sensitive type with no negative sense unlike the 'before' clause, which also belongs to a strong anti-additive type.

Similarly, a generic restricted by a relative clause and further by a PP, as in (19), can license 'any' in English. This kind of restriction by a relative clause or PP has conditional force with partitioning and reinforces generic quantificational topicality with uncertainty/arbitrariness in choice in a specific domain. Thus, not only the anti-additive determiner 'every/all' but also the non-monotonic determiner 'most,' as in (19), and generics in general license polarity items in their head nominal (first argument) modifier position. The modifier position of the determiner 'any + Common Noun' also licenses NPIs. The generic nominal and its modifier position in the generic Topic construction in Korean and Japanese are anti-additive.[3] Similarly, grammaticality is obtained with restrictive modification in (20) below, otherwise the free choice sentence would be ungrammatical, unlike in an imperative where deontic modal force is obvious and the alternative choice set is contextually clear.[4] Consider:

(20) You must dance with *any* gentleman *(you can find/who wears a silk hat/with a silk hat).

As mentioned already, 'every' and its equivalents in other languages such as *ieder* (Dutch) and *motun* (Korean) are anti-additive but the NPI licensed in the head noun modifier of the corresponding

[3] The mutual entailment relation between (a) and (b) in the following shows the point:

(a) hankukin-ina ilponin-un ssal-ul mek-nun-ta
Koreans-or Japanese-Top rice-Acc eat-Pres-Dec
'As for Koreans or Japanese, they eat rice.' ('as for' has the same effect)
(b) hankukin-un ssal-ul mek-ko ilponin-to ssal-ul mek-nun-ta
Koreans-Top rice-Acc eat-and Japanese-also rice-Acc eat-Pres-Dec
'Koreans eat rice and Japanese eat rice.'

[4] Barker (1999) shows seemingly related data in partitive constructions, i.e. (a) and (b):

(a) I met the [one of your friends] *(who works at the Salk).
(b) I met the [friend of yours] *(who works at the Salk).

The partitive constructions are 'anti-unique' and do not allow for definiteness-marking, unless their denotations get partitioned and specified.

universal/generic sentence is of the weak existential form in Korean and English. The weak form in Korean is composed by the elements in (21):

(21) Indefinite *amu* + N (+Postposition) -Copula *i* -Declarative *-ra* -Concessive *-to*

The weak form originates from the concessive clause construction, as will be shown shortly. This form is used for Free Choice (FC) items and weak existentials. The strong form is composed by: 'Indefinite *amu* + N (+Postposition) -Concessive *-to*,' and is used in the contexts of negation and the 'before' clause. Thus, we can notice a discrepancy between a function type and an NPI type, as shown in the strong anti-additive universal quantifier context above. We also have already discussed that the strongest type of NPIs is often licensed not only by antimorphic overt negation but also by some other constructions such as an interrogative sentence and a rhetorical question. The adverbial NPI *te isang* 'any longer/more' in Korean is rather strong, being licensed by overt negation, 'before' clauses, rhetorical questions though not by real questions, and negative predicates. But it can also be licensed by the conditional and the concessive, unlike other strong NPIs such as *amu* N *-to* 'any N' and *pakke* 'except.'

Sentences with "negative predicates" such as 'refrain from,' and 'refuse,' and their corresponding expressions in Korean, *samka-ta* 'refrain from' and *kecel-ha-ta* 'refuse', and in other languages entail negation of their complement sentences. These predicates are also anti-additive and tend to license relatively strong NPIs in their complements in Korean and Dutch, even though these are not included in Zwarts' (1998) type classification and are neglected by Linebarger (1980). Hoeksema and Klein (1995) for Dutch and English merely indicate their monotone decreasingness, without pursuing the relative degree or type of their negative force. Consider the following mutual entailment relation between (22) and (23) and the resulting anti-additivity of negative predicates and the fact of (22) entailing (24) and NPI licensing in English (25) and Korean (26):

(22) Sue refrained from smoking or drinking. ↔
(23) Sue refrained from smoking and Sue refrained from drinking.

(24) Sue neither smoked nor drank (though she wanted to).

(25) Sue refrained from drinking *any longer*.

(26) (?)Yumi-nun *te isang amu/nuku* hako-*to* sul
Yumi-Top any longer anyone with-C wine
masi-ki-rul samka-ass-ta
drinking-Acc refrain from-Past-Dec
'Yumi refrained from drinking with anyone any longer.'

It turns out that negative entailment is stronger than negative implicature in licensing different NPIs. On the basis of the above facts, we can now see Linebarger's (1980) total rejection of Baker's (1970) negative entailment condition in favor of her "negative implicature only" is not tenable. In fact, there is a hierarchy of strength in negative force in a conceivable dimension, as follows:

(27) overtly negative proposition > negative entailment > negative implicature

Here, negative entailment is limited to the one triggered by lexically and inherently negative words such as negative predicates, 'without,' and 'before' ('while — not —' entailed), not by simple logical manipulation like double negation. In Korean, inherent negative predicates such as *eps-* 'not exist/have' and *moru-* 'not know' have the same negative force as overt negation in NPI licensability.

Most linguists have been more concerned with weaker types: Zwarts' original weak type was not weak enough and mostly covered by Ladusaw's (1979) notion of downward-entailing or monotone-decreasing contexts anyway. People came up with further contexts that cannot be properly treated by monotone-decreasingness itself. Such newly discovered contexts as Giannakidou's (1997) Greek and Rumanian subjunctives plus previously noticed but largely unexplained ones needed a more flexible function type than monotone decreasingness. This wider net is Zwarts' (1995) new notion of nonveridicality. This notion is also used by Zwarts to give a unified account of polarity-sensitivity and free choice. This must be a desirable direction of research. But some questions still remain. First, what is the real motivation behind the phenomenon of all those polarity-sensitive and free choice expressions of various degrees? Second, is the condition of nonveridicality necessary and sufficient? For the first question, let me tentatively say that the motivation behind the phenomenon of polarity sensitivity is attitudinal or emotive. It is rather pragmatic than truth-conditional. For the second question, let me quickly say that nonveridicality is not sufficient.

Zwarts (1995) defines the notion of *nonveridicality*, hinted by Montague's (1969) original idea, roughly as in (28):

(28) Let O be a monadic sentential operator. O is said to be *veridical* just in case $Op \Rightarrow p$ is logically valid. If O is not veridical, then O is *nonveridical*. E.g., 'it seems,' 'it is possible,' 'Sue hopes.' Truth-functional connectives are likewise defined. E.g., in *p and q,* both the p- and q-positions are veridical; in *p or q,* and *p if q,* both the p- and q-positions are nonveridical. In *p without q,* the p-position is veridical and the q-position is *averidical.*

Based on the above definition, the consequent clause of a conditional as well as its protasis is nonveridical. However, only the protasis, also defined to be monotone-decreasing, though not without controversies, can license NPIs. Nonveridicality is, therefore, rather superfluous in the consequent position for NPI licensing. For the protasis, nonveridicality is without question, even though its monotone-decreasingness effect must be adjusted in accordance with the meaning and illocutionary force of the consequent. Here, 'invited inferences' (Geis and Zwicky 1971) can better explain conditional situations involved than pure logical (contrapositive) entailment relations. Consider (29):

(29) If he *gives a damn* about his cat, he'll take it to the vet.

Linebarger (1987) employs the contrapositive entailment, 'If he doesn't take his cat to the vet, he doesn't give a damn about it.' But the invited inference or pragmatic implicature, 'If/Because he doesn't give a damn about his cat, he won't/doesn't take it to the vet,' is readily triggered and licenses the NPI. The reason why NPI conditionals are used as threats than as promises (Lakoff 1969) is that in threats but not promises, the protasis is negatively-oriented. In the case of promises but not threats, the consequent is what the addressee wants and is positive, and its protasis is given as a contributing condition.

If the protasis is given in a concessively minimizing manner, it can occur with an advice or promise. So, the issue discussed by Heim (1984) and Krifka (1990) of 'poisoned fruit' in (30) is not a real problem:

(30) If you eat *any* fruit, you will feel better.

The monotone-decreasingly entailed 'poisoned fruit' is simply filtered out by nonmonotonic common sense reasoning (Lee 1997) or lexical semantic relations with the verb 'eat' and the meaning of the consequent. The purpose of '(eating) fruit' must be nutrition and health (cf. Pustejovsky 1995) and there remains a matter of coherent and

relevant relation between the antecedent and the consequent in an act of offer, advice or promise, not a matter of inclusion in the anti-additive or monotone decreasing 'if.' In 'If you import any fruit, you will be punished,' the difference between poisoned and innocuous would not matter, revealing monotone-decreasing effects. But contrapositive entailment rather than invited inference seems to be exploited in negative assertion (denial), which is different from volition-related illocutionary acts, as in 'If I did it, I am a monkey.'

Nonveridicality as the weakest negative function still appears to be a promising candidate for encompassing weaker NPIs. Then, let us examine seemingly most important counter-examples to nonveridicality: emotive factive predicates in various languages and quasi-veridical contexts that license quasi-universals-turned free choice items in Korean.

3. The Weakest Type

3.1. *Emotive factive predicates*

There is a range of data involving emotive factive predicates that evade monotone-decreasingness and also threaten even nonveridicality as originally defined; witness (31) and (32):

(31) I am lucky that I got *any* tickets (at all)/to have gotten *any* tickets (at all).

(32) I am surprised that there are *any* tickets available.

These emotive factive predicates in English license 'any' with the weak indefinite existential interpretation. Analogously, emotive factive predicates in Korean such as *tahaeng-i-ta* 'lucky,' *nollap-ta* 'surprising,' and *huhoe-ha-ta* 'regret' take the weaker existential NPI form *amu* N *-i-ra-to*, as in (33), but these predicates in Hindi take the same NPI form *koii bhii*, as in (34):

(33) *amu* phyo-*i-ra-to* kuhae-ss-uni tahaeng-i-ta[5]
any ticket-be-Dec-C get-Past-since luck-be-Dec
'(I) am lucky that (I) got any tickets (at all).'

[5] The complex predicate *tahaenguro yeki-ta* 'regard as lucky' takes an object complement clause.

(34) Mɛ khush hun ki mɛne *koii bhii* tiket kharidi
I pleased be that I any even ticket bought
'I am pleased that I bought any ticket.'
[the same NPI form used] (Hindi) (H. Khanani, p.c.)

The above emotive factive predicates cannot be monotone-decreasing, since (31)-(34) cannot entail clauses containing some added specific expressions such as 'for Hamlet' after 'any tickets.' These predicates including 'be happy' in English embed complement clauses of facts, even though they implicate the speaker's expectation of possible negative facts, and Linebarger (1980) mobilizes negation, though in implicature, as a licensing condition. Then, because of the overt negation, they may have to belong to the stronger type, but they do not behave as such, not reaching even monotone-decreasingness. Therefore, even if we use negative implicature, it must be restricted to this weaker type, and this type must be distinguished from a stronger type licensed by negative entailment, as suggested by the hierarchy of negative force (24).

For a more general explanation, we can say that these predicates are inherently linked with 'desire' (emotives over satisfaction of desire), which is a nonveridical functor that needs a set of worlds for its interpretation. However, 'lucky' is slightly preferred to 'happy' in licensing NPIs, seemingly because the former tends be associated with negative implicatures more easily. Weaker NPI forms are licensed in these contexts in Korean and other languages. It is interesting to see 'any' stressed in the above context to emphasize existential minimization. On the other hand, Greek, French and many other languages betray the expectation of some "nonveridical" items in emotive factive predicates, as in (35) (Giannakidou 1997) and (36) (R. Billerey, p.c.):

(35) *Metaniose pu efere kanenan/KANENAN mazi tu.
regret-3sg that brought anyone/(no)one with him
'He regretted that he brought anybody with him.' (OK in English)

(36) *Je suis content d'avoir obtenue quelque ticket que ce soit.

In (35) in Greek, the negative implicature 'shouldn't have brought anybody' on the part of the subject or the expectation of a possible negative fact 'he didn't bring anybody' does not affect the sentence so as to license even the weaker existential *kanenan.* Instead *ka-pion* 'somebody' must be used. The positive factive presupposition wins over the negative implicature, particularly supported by the indicative

mood indicator *pu*, not the subjunctive *na*, in Greek. In (36) in French, the emotive factive predicate *content* does not license any polarity items such as *quelque ticket que ce soit*. Japanese emotive factives such as *ureshii* 'happy' do not license weak existential NPIs, whereas Korean counterparts do, as in (33). The weak NPI form *donna tiketo-de-mo* 'whatever ticket' in Japanese can occur in the conditional clause (with *-tara* 'if').

This kind of variation in NPI licensability of emotive factives among languages suggests that negative implicatures brought about by emotive factives are a weaker or different kind of negative implicatures. Even when we say that factives are veridical and thus constitute a counterexample to "nonveridicality" condition for NPIs, we need some caution in the sense that factive presuppositions are far weaker than regular entailments seen in "negative predicates" in assertive force. In the utterance 'Mary denied that she was there,' the inherent negative force of the predicate is so strong that the truthful reported speech act entails the negation of the complément clause 'She was not there,' and this negative entailment is more assertive than presuppositional. All these subtleties must be taken care of to account for all different sorts of NPIs.

Giannakidou's (1997) classification of them into "direct" and "indirect licensing" does not suffice and sometimes does not work. For instance, licensing by negative predicates is claimed to be "direct" but it is not clear why, and an affirmative rhetorical question carries a very strong negative implicature and thus carries out the indirect speech act of negative assertion, licensing strong NPIs in Korean and other languages. The adverbial NPI 'on earth' (and its equivalent *todaeche* in Korean) can appear in rhetorical questions with negative force but it cannot appear in the corresponding negative declarative sentences. Then, on one hand, its licensing may be "indirect" in the sense that it is based on invisible negative assertion force. On the other hand, it is based on the interrogative sentence form. In the latter sense, its licensing is "direct."

Factives other than emotive ones do not carry negative implicatures, and, therefore, cannot license NPIs. This is true of Korean, English and other languages. Consider (37) and its equivalent in English (38):

(37) *Chelsu-nun [amu-i-ra-to ttena-n kos-ul]
Chelsu-Top anyone leave-Past Compl-Acc
kkaetal-ass-ta
realize-Past-Dec

(38) *Chelsu realized that anyone had left.

Emotive factives, but not cognitive factives, are sensitive to NPIs, in some languages. They express the speaker's emotive status of expecting a possible relevant adversative situation in close association with the established fact. This emotive attitude can be encoded as to be sensitive to NPIs in languages such as English, Korean and Hindi, but not in other languages such as Greek, French and Japanese. Cognitive factives are more conceptual and do not have the force of inducing such contrafactual negative implicatures to license polarity-sensitive items.

Emotive factives can be said to be veridical, since their entire sentences entail their respective embedded factive clauses. The negative polarity expressions in the embedded factive clauses in (31-34) above, have the weak existential interpretation of 'at least one or another ticket' or 'whatever (bad, easy) kind of ticket.' The speaker goes down to the lower end (in quantity/quality) of the scale (Fauconnier 1975) strategically, making a concession, but its ultimate mode is arbitrary choice. The polarity-sensitive existential here is presented in a referentially opaque manner in the sense that it cannot denote a determinate specific object. Polarity-sensitive and free choice expressions have this inherent nature of referential opaqueness or roughly nonveridicality. This local nonveridicality is licensed by the emotive factive main predicate, which has the inherent property of desiderativity (and possible negative situation).

On the other hand, various nonveridical predicates such as 'dream' and 'seem' do not license NPIs and they show that the condition of nonveridicality is not sufficient for licensing NPIs. However, the nonveridical predicate 'hope' shows at least partial licensability, as in (39):

(39) %I hope there is *any* food left. (Giannakidou 1999 via L. Horn p.c.) (S. Strauss, p.c.)

A small number of people accept (39), and for those who accept it, the uncertainty of the complement proposition of the verb 'hope' is appealing, and it is negatively posed in the speaker's attitude against a possibly negative situation in a concessive way and therefore licenses 'any.' For those who do not accept it, the proposition is positively posed in the speaker's attitude for possible worlds in which it turns out true. If the majority of native speakers come to accept (39), the verb 'hope' will become polarity-sensitive in a historical change.

The verb *hope* is one of the desiderative verbs such as 'wish,' 'want'

and 'desire.' Desideratives as well as directives and epistemic/deontic modals introduce a set of worlds with respect to which their argument propositions are interpreted. They are thus intensional and their argument propositions are not true or not decided in truth at the time referred to by their functional predicates (Farkas 1992, Kratzer 1981). On the other hand, the verb 'dream,' one of the fiction verbs such as 'imagine,' 'fantasize' and 'lie,' is extensional and its argument proposition is interpreted with respect to a particular world of a dream, imagination, fantasy and lie, which is not the real world. Truth in that particular world is positively posed in the speaker's attitude and does not license any NPIs. Corresponding verbs in Korean do not license NPIs, either. In Rumanian and French, these verbs govern indicative mood, while NPIs are typically licensed in subjunctive complements.

Incidentally, the direct object position of the negative verb 'doubt/forget' is understood to be an extensional/referential <*e*> type position and not allow an NPI (Krifka 1995, Hoeksema and Klein 1995). Note, however, that the same position licenses an NPI in interrogative sentences and in clauses embedded in another negative predicate. The restriction holds only when a positive assertive illocution scopes over such a negative predicate with the direct object position. Consider:

(40) Did you doubt/forget *anyone*?

(41) I doubt he has doubted/forgot *anyone*.

The nonveridical operators/predicates such as a question operator/predicate and a negative predicate denote polarity-sensitive propositional attitudes and their arguments must semantically denote at the propositional level rather than the individual level and license NPIs within complement propositions. In a question, interpreted as a set of possible (true) answer propositions, if the speaker poses the answer proposition rather negatively or as uncertain, then the associated item becomes referentially opaque and turns out to be an NPI, as in (40). In other words, even though the NPI in the extensional object position cannot be licensed by its immediate local head verb, it can be licensed by a non-veridical question operator governing the VP. If the answer proposition is posed rather positively, an affirmative polarity item (API) such as 'someone' occurs. In (41), however, the negative entailment induced by the main negative predicate forces there to be an NPI but not an API in any position in the embedded clausal argument. The NPI in the direct object position cannot be licensed by its immediate governing head verb but must be licensed by its non-local super-ordinate main negative predicate. Therefore, licensing must be

checked globally rather than locally in this kind of situation. The claim that an NPI in the direct object nominal position cannot be licensed by its head verb but an NPI in the clausal complement can be licensed by its head verb can be supported by the following data:

(42) a. na-nun *amu-to* manna-ki silh-e
I-Top *anyone* *meet-Compl* *hate-Dec*
'I dislike to meet anyone.'
b. ?*na-nun *amu-to* silh-e
I-Top *anyone* *hate-Dec*
'I dislike anyone.' (Lee 1996)

(43) a. Arabella disliked (there being) *any* food on the carpet.
b. *Arabella disliked (there being) *any* of their relatives.

The verb 'lack,' on the other hand, takes a direct object NPI, 'any sense of humor.' This verb is claimed to take the property type <*e*, *t*> (like a predicative nominal) (Zimmerman 1992-93) or the quantifier type <<*e*, *t*>, *t*> (Krifka 1995) as its object. Let us avoid the controversy over extensional and intensional here. Hoeksema and Klein (1995) rightly criticized the claim that it is free choice 'any' to be involved in this case. The phenomenon of polarity in general, then, can be said to be semantically driven in contexts of use, though syntactically reflected to a certain degree. The negative force and the indefinite existential combined virtually create universal negation but not free choice. Then, why does another verb 'want,' which also implies absence, not license an NPI? That has been posed by Hoeksema and Klein (1995) as a problem. The verb 'want' is a desiderative and because its complement proposition is positively posed in the speaker's attitude for possible worlds in which it becomes true it cannot license an NPI. Note that 'lack' is descriptive and has negative entailment, whereas 'want' does not. Instead, the complement of 'want' is interpreted with respect to a set of desired possible worlds, as indicated; as such, it licenses free choice in it, whereas 'lack' cannot. Some verbs corresponding to 'need,' as in Dutch and German, license NPIs due to their evocation of the negative sense of absence, whereas 'need' in English cannot evoke this sense.

Emotive factives are based on 'desire,' which is intensional, and they can license NPIs in their factive complements—if they are negatively posed and evoke negative implicatures despite their factive presuppositons—in some languages and/or for some groups of speakers in one language.

3.2. *Quasi-universals and quasi-existentials*

A universal-like free choice series in Korean (and Japanese) (such as *amu-na* or *nuku-na* (wh- form) 'anyone/everyone') poses a puzzle for the nonveridicality requirement. Some very weak hidden sense of permission/possibility modality licenses this type even in superficially veridical past tense sentence, as follows in (44):

(44) *amu-na/nuku-na* kukcang-e ture-ka-ass-ta
anyone/anyone(wh-) theatre-to in-go-Past-Dec
'(Lit.) Anyone entered the theatre.' (bad in English, but some accept it with 'just anyone')

(45) Yumi-nun *amu*-hako-*na/nuku*-hako-*na* aksuhae-ss-ta
Yumi-*Top anyone-with/whosoever-with shook hands*
'Yumi shook hands with anybody.'

(46) ??*amu-na/ ?nuku-na* neme-ci-ess-ta
anyone/anyone(wh-) fell
'(Lit.) Anyone fell.' (very bad in English)

(47) *Yumi-nun uyenhi *amu-na/nuku-na*
Yumi-Top by accident anyone/anyone(wh-)
putichi-ess-ta
bumpinto-Past-Dec
'Yumi bumped into anyone.'

Example (46), lacking the modality of permission/possibility or even volition/intention, is odd. Sentence (44), on the other hand, is all right with a slight sense of modality ('Anyone was permitted to/could enter the theater'). This interpretation is facilitated by the social convention of entering the theater with permission in Korea. This universal-like form in Korean is formed by '*amu-/nuku*-(Indef) + *-na* (Disj)' and is independent of strong and weak NPI forms which cannot occur in past (veridical) contexts. As in (45), if the transitive verb is volitional, then the quasi-universal form can be used, and if non-volitional, then the form cannot be licensed, as shown in (47).

In this connection, consider (48) and (49) in English, in parallel:

(48) ?*Mary would bump into *any* student who is in the hall.

(49) Mary would shake hands with *any* student who is in the hall.

The sentence is odd with non-intentional 'bump into' in (48), whereas

it is all right with intentional 'shake hands with' in (49). This distinction shows that Dayal's (1998) argument does not suffice. In Japanese, the same form as an NPI but with stress is used almost as a universal quantifier but it seems still slightly odd in modality lacking contexts, as in (50):

(50) (?)?*dare-mo*(-ga) ochita[6]
who(Indef)-ever(-Nom) fell
'(Lit.) Whoever/Anyone fell.'

(51) *dare-mo*(-ga) dekita
who(Indef)-ever(-Nom) could do
'(Lit.) Anyone could do it.'

(52) ?*Mary-wa *dono/donna* gakusei-ni-*mo* butsukatta
Mary-Top whatever/whichever student-into-C bumped
'Mary bumped into whatever/whichever student.'

(53) Mary-wa *dono/donna* gakusei-to-*mo* akushushita
Mary-Top what-/whichever student-with-C shook hands
'Mary shook hands with whatever/whichever student.'

The same form is more natural in a modal context such as (51) and in a volition context such as (53) even in the past tense. The unstressed form *dare-mo* is used as an NPI in Japanese.

These universal-like forms in Korean and Japanese are presumably based on the original FC forms but have undergone a historical change and now can be used in the past tense contexts of hidden modality or volition (as opposed unaccusativity). If they are in the subject position, they need hidden modality, and if they occur in the non-subject position of a transitive sentence, they need volition in the transitive verb. Then, how can we explain their preferring modal contexts and the preferable hidden modality and volition interpretation (plus indiscriminacy: *amu-na*, distributivity: *nuku-na* and *dare-mo*) even in the past tense contexts? Zwarts himself (1995) cites *ooit* 'once' as a polarity-sensitive item and at the same time as a non-sensitive item in the late development of the same form in Dutch. The given definition of nonveridicality as it is cannot solve the cases of hidden modality and volition in the past tense sentences denoting established facts.

[6] Quite a few native speakers do not feel the difference between (50) and (51) in grammaticality but speakers such as Yuki Ono feel the difference. Ono feels some hidden modality of '— impossible not to fall' for its interpretation.

4. CONCESSIVES

All the natural language free choice and negative polarity items can be uniformly explained on the basis of indefiniteness and concession cross-linguistically. Typically, a concessive clause ends with *-to* 'even though' in Korean and *-mo* 'even though' in Japanese, and 'wh- -ever — may —' in English. It contains a wh-indefinite and emphasizes the arbitrariness of choice in its possible alternative referents or events. Giving options with indefinites to the addressee likewise constitutes concession. Therefore, 'Take any/whatever' is not an order but an offer (Vendler 1967), unlike other imperatives such as 'Take every —.' Specifically, it is the gesture of making a concession either way, i.e. in the direction of "offering a challenge" in the sense of Vendler (1967) for 'any' in distinction to 'every,' or in the direction of "begging," as I call it, to bring about the weak indefinite existential interpretation.

The challenge or betting type has either the universal negation force or the free choice/generic interpretation. This concession strategy can be understood in some game-theoretical way (van Benthem 1998). In the study of argumentation, concessions, exemplified by axioms/principles, presumptions and "free concessions," are opposed to substantive commitments or assertions (Krabbe 1999). It amounts, I would say, to taking one step back (retraction, concession) to take two steps forward. Assuming a agme-theoretical perspective, in the case of the universal quantifier 'every,' a challenge comes from the Falsifier—let's say the addressee—who can win by giving a single counterexample, whereas the Verifier's role is too tough. But in the case of 'any,' the challenge is by the speaker and it is to someone else and to some previous utterance or implicature or at least the speaker's apprehension in the context. For the generic use of free choice 'any,' there may be a few permissible or legitimate exceptions, and, it is closer to a generic than to a universal quantifier. Therefore, a counterexample may not quite falsify a statement with 'any' in this situation. However, if the speaker emphasizes the arbitrariness of choice and maximizes the alternative choice set, 'any' and its correspondents in other languages get universal force. Hence, betting/challenge. Maximization of the set is achieved by betting/challenge by the speaker, and in some languages free choice has changed to virtual universal quantification historically.

The determiner 'every' can have a (simultaneous) group reading but 'any' cannot. For 'any,' each individual in the alternative set is considered in turn. The universal negation reading of 'not — any,' with negation wide scope in logical form, also licenses arbitrariness or freedom of choice for existentially represented 'any.' The force of

negation is so strong that the arbitrariness of choice is not emphasized by stress in some languages such as Japanese. In languages such as English and Korean, emphasis by stress is optional, and in languages such as Greek, existentially represented NPIs within the scope of negation are emphatically stressed. Alternative elements are exhaustively negated. This is why the strong type is included in the betting type. But stressed or not, their truth-conditions do not change. However arbitrarily the denotation of the existential variable may be chosen, the universal negation reading remains constant. In that sense, those NPIs that occur with negation and negative predicates, logically represented as existential quantifiers, are strong. Naturally, they take the strong NPI form in Korean and Greek. You can choose whatever you like (this part is giving up, admitting, or making a concession), and it still is not the case that...(this part is my substantive commitment). The common factor for betting-type NPIs, whether strong or FC, is, therefore, exhaustivity or universality.

The begging type, on the other hand, is employed when the speaker does not dare to bet on exhaustivity/maximization in choice but decides to be cautious and remain at the level of minimization in choice. He is begging and will be satisfied with some minimum alternative element or other in choice. In Korean, the weaker form is used for this non-negation affective situation as well as for FC items.

Now let us turn to how polarity comes from the concessive construction and how it prototypically comes from the wh-indefinite forms cross-linguistically. Consider the following discourse consisting of question (54) or (56) and answer (57). In (54), the wh-question word *nu* 'who' is licensed in the conditional clause, and in (55), the same wh-question word *nu* is licensed in the embedded subject complement clause. These embedded clauses are not islands in Korean, since Korean is a *wh-in-situ* language. These question words are licensed by the [+wh-] Q morpheme (otherwise the same *nu-* is interpreted as indefinite personal pronoun 'someone' under the scope of the 'yes'/'no' Q, with a rising intonation as in English). In (56a), on the other hand, the same indefinite morpheme *nu-*, with an emphatic stress, is interpreted as an arbitrary choice wh-indefinite in the concessive construction. Observe:

(54) *nu*-ka o-myen coh-kess-ni?
who-Nom *come-if* *good-would-Q*
(Lit.) 'If who comes, would it be good?'
(In English, a conditional clause is a wh-island.)

(55) *nu*-ka o-nun kes-i coh-kess-ni?
who-Nom come-Compl-Nom good-would-Q
'Whose visit (for whom to come) would be good?'
(In English, a complement clause is another wh- island.)

(56) a. *nu/amu-ka o-a-to coh-ta*
who(Indef)/anyone-Nom come-Conn-C good-Dec
'Whoever may come (or Whoever comes) is OK.'
b. *dare-ga ki-te-mo ii-desu* (Japanese)
who(Indef)-Nom come-C good-Dec
'Whoever may come (or Whoever comes) is OK.'

The sentences with a concessive construction like (56a) in Korean and (56b) in Japanese constitute constructions of deontic modality of permission, with the appropriate modal predicates such as 'OK,' 'must,' or 'doesn't matter.' In the concessive *-to/-mo* clause, multiple wh-form indefinites can occur, all of which get universal force. This kind of concessive expression with something like 'even if,' 'although,' or 'wh-ever' has a proposition with a normative conditional as a conventional implicature behind. For instance, for such a concessive construction as (56) 'whoever may come is OK,' a normative conditional proposition such as 'If a *persona non grata* comes, it is not OK' (forbidding) (Lee 1980) is behind. Concessive sentences include both factual and modal ones. For instance, the sentence 'Although a beggar came, Yumi welcomed him' is a factual concessive, whereas the English translation in (56) is a non-factual, modal concessive, with an arbitrary choice wh-indefinite in it. Free choice items (including generic-like ones) come from concessive constructions but are changed from their clausal to nominal status, being more restricted to modal/atemporal/uncertainty contexts. Concessive clauses are reduced via grammaticalization to nominal FC items, though retaining the trace of a clause, particularly in Korean as in (57) (from a subject-less copulative concessive S, with a hypothetical flavor) and similarly in Japanese, as in (58). Canadian French also shows the form of concessive construction in free choice and negative polarity, as in (59) (Larrivee and Lee 1997). Observe:

(57) [[*nuku-i-ra*] *-to*] coh-ta
who(Indef)-be-Dec -C good-Dec
'Whoever that may be is OK.' (predicate of deontic modality of permission)

(58) *dare-de-mo* ii-desu (Japanese)
who(Indef)-be-C good-Dec
'Whoever that may be is OK.' (predicate of deontic modality of permission)

(59) Parlez-un a [*qui que ce soit*] (French)
'Say it to whosoever (anyone).'

In Korean, in addition to FC items coming from the wh-indefinite concessive construction, there are FC items coming from the *amu* 'any(one)'-indefinite concessive construction, as in (56a), unlike in Japanese. Likewise, *nuku* 'who'-indefinite in (57) can be replaced by *amu* 'any(one)'-indefinite, which is widely used just like 'any' in English. There is no meaning difference between the two series of FC items but the wh-indefinite series give the impression of considering individuals more specifically one by one in turn, though arbitrary individuals are meant in both series. The wh-indefinite FC forms are productive in the above and most other languages by means of the form '[wh-indefinite + Common Noun].' For instance, the 'who-indefinite' form in the subject part of (57) and (58) (and similarly (59)) can be replaced by the form '[wh-indefinite + Common Noun],' as follows:

(60) [[*etten/musun/amu ton-i-ra*] *-to*] coh-ta
what(Indef)/what(Indef)/any money-be-Dec -C good-Dec
'Whatever money is OK.'

(61) *donna okane-de-mo* kekko-desu (Japanese)
what(Indef) money-be-C good-Dec
'Whatever money is OK.'

(62) Prenez [*quelque* carte *que ce soit*], ce sera un neuf de pique
'Pick any card (a card, whatever it might be), and it will be a nine of spades.' (Quebec French)

These and many other languages show the concessive clausal form of FC items. However, some other languages such as Chinese show the form of '[wh-indefinite + Common Noun] + Concessive marker' (with a special emphatic rising tone in Chinese) without a trace of clause, as follows:

(63) *shei-ye* hao (Chinese)
who(Indef)-C(rise-tone) good
'Whoever it may be/anyone is OK.'

(64) *Whosoever* believes in him shall not perish.

These wh-indefinite-based FC items, even if they have lost their clausal forms, have the sense of betting or challenge by means of concession. In a game-theoretic manner, they have the interpretation of 'whatever you may choose, I concede that way, — you can check even the last member of the relevant set, the proposition will be true of it, thus I still win.' In (64), the form leads a subject free relative clause, '-so-' is emphatic and '-ever' is concessive (inherently being connected with 'may' in its interpretation). The predicate is modal and I view the wh-indefinite 'whosoever' as a FC item. FC items eventually get the universal quantificational force (though different from the universal quantificational determiner such as 'every' or 'all'); they are evaluated with respect to all the possible situations or worlds provided by the modal (or intensional—in the case of generic) context, even though they start as indefinite existentials. Such volitional predicates as 'want to' in English and *-ko sip-ta* in Korean license FC items as well as imperative sentences such as (59) and (62) are also FC licensors. Generic statements that show characterizing/intensional predicates that are atemporal such as (65) and (66) also license FC items, as follows:

(65) *Any* birds fly

(66) *etten* sae-i-ra-to na-n-ta
what(Indef) *bird-be-Dec-C* *fly-Pres-Dec*
'Whatever birds fly.'

Concession of giving options can also be made by disjunctive expressions in many languages. From among arguments, *a, b, c, or d* no matter which (disjunctively considered in wh-based items, 'any' and *amu*, as opposed to *every*), it is supposed to apply to the relevant function or predicate. Korean employs such disjunctive expressions for FC items in addition to the concessive marker *-to* 'even'. For instance:

(67) *nuku-tunci* chenkuk-e ka -l su iss -ta
who(Indef)-Disj *heaven-to go can* *-Dec*
'(Anyone) whosoever can go to heaven.'

Then, what about negative polarity items? They also come basically from 'wh-indefinites + Concessive.' In Korean and Japanese, the clausal form simply disappears to form NPIs. Canadian French uses the same wh-indefinite concessive construction for both FC and negative polarity, as already indicated, and the same concessive clausal construction is used mainly as NPIs in French (although it is still used for many as FC in the non-subject adjunct position). Observe data in Korean, Japanese and Chinese:

(68) *nuku-to* ip-ul yel-ci anh-ass-ta
who(Indef)-C *mouth-Acc* *open-Conn* *not-Past-Dec*
'Nobody opened his/her mouth.'

(69) *dare-mo* ko-nakatta (Japanese)
who(Indef)-C *came-not*
'Nobody came.'

(70) shei-ye mei you lai (Chinese)
who(Indef)-C *not* *be come*
'Nobody came.'

Those forms which retain the same concessive markers *-to*, *-mo*, etc. attached to wh-indefinites (also *amu* 'any' in Korean) in various languages typically came to be restricted to negation and some weakly negative or affective contexts. NPIs are employed for either the universal negation (strong) or existential (weak) interpretation. Let me explain how the two different interpretations come from the same or similar polarity-sensitive wh-form or *amu* or 'any.' Whatever you may choose from among possible alternatives in the contextually relevant set in the domain of discourse (concession—betting), it is not the case that *p* (universally negated—strong), and whatever that may be, at least one or another, may be, or, is the case (existential). The existential interpretation is an instance of begging type of concession, and strong NPIs, exemplified in (68)-(70), and FC items, as in (62)-(67), are a kind of betting/challenge via a concession mechanism. NPIs such as *nuku-to* in Korean and *dare-mo* in Japanese (strong form) are licensed only by overt negation, 'before' clauses, negative predicates, and comparatives.

The wh-indefinites that occur in concessive constructions originate from their corresponding wh-words but are not interrogative; wh-words are licensed only by some (embedded) question morpheme such as *-nun-ka/-ni*, *-nun-ci* (in Korean) or *-ka* (in Japanese). A wh-question is a set of alternative answers as (true) propositions (Hamblin 1973) and an indefinite wh-proform, as witnessed in Korean, Japanese, Chinese, (partly) French, and many African and American Indian languages, can stand for any (arbitrary) member of the same set as triggered by its corresponding wh-question words. A question demands a determinate answer from the set, whereas a concessive leaves its choice widely open from the minimal (existential) up to exhaustion (or universal). When exhausted, the choice usually gets the universal interpretation, and almost grammaticalized as a universal quantifier, as witnessed in Japanese ('*Dare-mo-ga* —'), or more or less in Korean (*nuku-na* 'who-indef + Disj'), lying almost beyond FC and NPIs. But because of their

origin they prefer modal contexts as FC items, and even if they occur in episodic contexts, they need hidden modality or intentionality, as discussed. Free choice items such as *nuku-ra-to* 'whoever' and *dare-de-mo* 'whoever' (weak form) have similar universal force but are restricted only to modal/generic contexts. In Korean and other languages, words corresponding to *why* do not have corresponding wh-form indefinites or strong/weak NPIs based on them (**wae-to*, **wae-ra-to*, '*whyever'), even though a word corresponding to 'how' in Korean can form at least the weak polarity form *ettehke-ra-to* 'however (lit.),' while its strong form *ettehke-to* is marginal and its *amu* counterpart *amu-reh-ke-to* is all right, derived from its adjective *amu-reh-*, which can independently form another NPI *amu-reh-ci-to*, as in (71):

(71) na-nun *amu*-reh-ci-*to* anh-a
I-Top any-Prop-Conn-C not-Dec
'I am all right; I am not in any (adversative) state.'

The utterance (71) is impossible without a prior utterance or nonverbal concern in discourse regarding the speaker's physical or mental/emotional state. This example clearly shows the interactive, responding, or challenging nature of *amu*.

The concessive construction in Korean (56a) and its counterpart in Japanese (56b) above demonstrate that wh-indefinites, even if (nominative or whatever) case-marked, are not wh-question words in meaning. They are indefinites and, if emphatically stressed, get universal force via computation of maximization concession associated with the 'betting' stress and *-to/-mo* in modal contexts. An existential reading of the same wh-form indefinites, devoid of stress, is possible, and both existential and universal can occur in the same *-to* clause, in which case scope interaction occurs. The strong and weak polarity forms **nuku-to/*amu-to* and ??*nuku-ra-to/??amu-ra-to* cannot be licensed in the concessive clause; concessives conflict with each other. If the modal sentence (56a) is embedded in a question, the same wh-form can be interpreted as a wh-question word because of the Q-operator, and it becomes three ways ambiguous: Q-word, universal and existential.

However, a Q-word is stressed and a wh-question has a falling intonation, whereas the other two readings are 'yes'/'no' questions and have a rising intonation. The Korean word *amu* in (56a) is not a wh-word but a purely indefinite pronoun which is under-specified but can occur in concessive, FC and negative polarity contexts just like *any* in English. Analogously the wh-indefinites *nuku* in Korean and *dare* in

Japanese in the same contexts cannot be wh-interrogative words. This distinction between wh-words and wh-form indefinites seems not clear in Kuroda (1965) and Hoji (1986) for Japanese, though the relatedness is well captured. The wh-indefinites, *nu(ku)* and *dare*, prosodically stressed, in combination with the non-continuous concessive subordinator *-to* or *-mo*, get a concessive arbitrary choice interpretation. Therefore, if such indefinites are embedded in a relative clause in the concessive, then the relative head noun cannot be specific/definite, and multiple occurrences are unselectively bound (Nishigauchi 1990). Their universal quantificational force is usually represented by ∀, but it is different from the force of 'every' in the sense that the wh-indefinites and *amu* or 'any(one)' in a concessive construction and further as FC items can bind (singular) pronominal anaphors across clauses (like donkey sentences) or across sentences.

There is no scope ambiguity between a subject NPI and negation in Korean and Japanese. Consider (72)-(73) for Japanese first.

(72) *Dono* gakusei-*mo* ko-nakkata. (1st syll unstressed)
which(Indef) student-even came-not
(Lit.)'Whichever/Any student didn't come.' (No student came.)

(73) *Dono* gakusei-*mo* ki-ta/dekiru. (1st syll stressed)
which(Indef) student-even came/can do
'Whichever student came/can do it.' (Hasegawa 1990)

In (72), the unstressed wh-form indefinite *dono* plus *mo* makes the subject an NPI and it is an existential under the scope of the following negation *-nakkata*. The Korean counterpart *enu haksaeng-to* behaves likewise as an NPI. The Japanese wh-form indefinite plus *mo* with a stress on the first syllable of the wh-form can be used for a universally interpreted sentence like (73). However, the same NPI form in Korean cannot be used for the past and modal sentence (73) just with variation in stress. Even the weaker polarity sensitive form (*enu haksaeng-i-rato*) in Korean cannot be used for the past tense, even though it can be used for the modal context. Rather, the universal-like form in Korean 'wh-form indef + N + *na* (Disj)' can be used in the context of (73).

Kawashima (1994) observed that the NPI form with no stress *dare-mo* in Japanese, just as 'any' in English, has narrow scope as an existential in the negative imperative, as in (74) and in its Korean counterpart (75):

(74) dare-mo iku-na
who-indef-Concess *go-not*
'Don't anyone go.'

(75) amu/nuku-to ka-ci ma
any/who(Indef)-C *go-Conn* *not(Imp)*
'Don't anyone go.'

(76) minna iku-na
all *go-not*
'All of you, don't go.'

Therefore, these sentences show universal negation. This scope fact contrasts with the behavior of real universal quantifier expressions such as *every* and *motu/ta* 'all' in Korean. These are narrow in scope as universals ('Don't everyone go!') or at most ambiguous in scope with difference in prosody (when a universal becomes a Topic, which scopes over illocutionary acts) (*ta ka -ci ma!* 'All go not(Imp)'), revealing partial negation interpretation (cf. Lee 1979, for the claim for ambiguity of Dec S *ta an ka -ss-e* 'All didn't go,' on which I agree). As in (76), *minna* 'all' in Japanese (preferably designating a group), scopes over negation for a universal negation interpretation. Part of the reason is that the negative element is merged to the verbal part in Japanese, not forming an independent word, which is essential for negation wide scope.

If *amu-na* takes the subject position of the same negative imperative sentence, its interpretation becomes clear but the behavior of *nuku-na* appears a bit puzzling. Consider:

(77) a. amu-na ka-ci ma
anyone-Disj *go-Conn* *not(Imp)*
'Don't just anyone go.'
b. ?nuku-na ka-ci (-nun) ma
whoever *go-Conn* *-CT* *not(Imp)*
(Lit.) 'Don't whoever go.'

From among the disjunctively possible alternatives of the restricted domain choice set, the process of choice can be so arbitrary that contextually less or the least relevant alternatives may be final turnouts. As a consequence, some pejorative sense of being indiscriminate is unavoidable for *amu-na*. For (77a), negation has wide scope over *amu-na*, producing partial negation. However, this kind of quantification scope alone cannot capture the reality of the semantic properties of these polarity-related items. These typically occur in affirmative modal

contexts, showing the property of positive polarity items (particularly *nuku-na*). Therefore, negation wide scope for these is natural. We must note, however, that negation applies crucially to the process of choice, "being indiscriminate," in the case of (77a). Compared with this, *nuku-na* in (77b) involves consideration of each individual and little sense of being indiscriminate. However, we cannot deny the universal force of both items *amu-na* and *nuku-na* in (77) in their scope interaction. The item *amu-na* is similar to 'just any(one).' The items *amu-na* and *nuku-na*, but not *amu-to*, are followed by *kwankye-epsi* 'with no regard to,' 'no matter' in meaning, showing their basic nature of free choice. What (77a) means is 'It shouldn't be the case that just anybody from you guys goes.' For (77a), the implication is that 'going' must be limited to some carefully chosen contextually relevant or appropriate alternatives out of the set of alternatives, the set being the addressees (second prson plural) of the negative imperative. Its illocutionary force, then, is advice, rather than order. In (77b), the expression before the final negative imperative morpheme, *nukun-na ka-ci-nun*, is a Contrastive Topic, which is related to concession (Lee 1999).

Because of the existence of NPIs and FC items based on wh-form indefinites and the *amu* and *any* series that are similar to these, it is interesting to consider the positions and scopes of different realizations of these wh-forms, i.e. wh-words, wh-polarity items, and wh-indefinites. First, consider the relations between wh-words and wh-polarity items. Wh-words, with no regard to their cases, must precede wh-polarity items in Korean. This is true of affirmative interrogative sentences (78) and negative interrogative sentences (79). Observe:

(78) a. nu(ku)-ka/-rul nuku/amu-na coh-a-ha-ni?
who(m)-Nom/-Acc *who(Indef)/any-Disj* *like* *-Q*
(Lit.) 'Who likes whomever?' or 'Whom does whoever like?'
b. ?*nuku/amu-na nu(ku) -ka/-rul coh-a-ha-ni?
who(m)ever/any-Disj *who* *-Nom/-Acc like* *-Q*
(Lit.) 'Who likes whomever?' or 'Whom does whoever like?'

(79) a. nu(ku)-ka/-rul nuku/amu-to coh-a-ha -ci
who(m)-Nom/-Acc *who(Indef)/any-C* *like* *-Conn*
anh-ni?
not-Q
(Lit.)'Who doesn't like whomever?' or 'Whom doesn't whoever like?'

b. ?*nuku-na nu(ku)-ka/-rul coh-a-ha-ni?
whoever who(Indef)-Nom/-Acc like -Q
(Lit.) 'Who doesn't like whomever?' or 'Whom doesn't whoever like?'

(80) nu(ku)-ka/-rul nuku/amu-to nuku-hanthe (-to)
who(m)-Nom/-Acc who(Indef)/any-C someone-to -C
mot math-ki-ni?
not leave-Q
(Lit.) 'Who can't leave whomever to anyone's care?' or 'Whom doesn't whoever leave to anyone's care?'

In (80), the order is: wh-words > wh-*/amu* polarity items > wh-indefinites. Under the scope of negation, the existential wh-indefinite *nuku-hanthe* can optionally take the concession marker *-to*, to become an emphatic maximizing NPI, forming a multiple NPI construction, without, however, changing the truth-condition of the sentence. To make a multiple wh-word construction, the second wh-word, say, *nuku -hanthe* in (80), must precede the NPI *nuku/amu -to*, so that all the wh-words can precede NPIs.

The same weak form is used for existentials, licensed by affective contexts from monotone-decreasing to non-veridical such as conditionals, generic-modifiers, and questions and emotive factives. The type of begging concession brings about existentials. Consider:

(81) ne indo-uy *amu/enu* tosi-*i-ra-to* ka
you India-of any/which(Indef) city-be-Dec-C go
po-n il-i iss-ni?
see-Rel(Past) case-Nom be-Q
'Have you been to any city (whichever it may be) in India?'

A question inherently has the sense of uncertainty with respect to the speaker's information status regarding possible true answers and can license weak existential negative polarity items in such languages as English and, in a limited way, in Korean. The question operator or question performative like 'I ASK you WHETHER —' is a nonveridical operator that licenses weak NPIs in its argument (complement) clause. A question itself may be neither true nor false and is non-veridical in the sense that it does not entail its corresponding proposition, as follows:

(82) Q(p) –/–> p

The possible true answer for a yes/no question can be p or ~p, and

which of the two is not certain. Therefore, a question can license weak existential polarity items, though its negative force is rather weak and some languages do not allow NPIs in questions. In face of the problems recently raised by Krifka (1999), I claim that illocutionary veridicality must be enforced to be able to explain away the unhappy situations of disjunctive questions and imperatives. For all illocutionary acts, only conjunctions but not disjunctions are acceptable, because they are positive as acts (Lee 1973 and 1988). For disjunctions, both disjunct positions are nonveridical and, therefore, unhappy examples are naturally excluded. For negation, no negated illocutionary acts (?) can be illocutionary acts, becoming negative assertions. As a way of enforcing illocutionary veridicality, the following abstract performatives can be proposed for questions and orders. Consider:

(83) I DO (ASK you Wh- —)
(84) I DO (ORDER you (YOU DO —)

The highest [I DO] applies to all illocutionary acts, and it is constrained by illocutionary nonveridicality. The nature of the complement propositions are, then, determined by the respective illocutionary act verbs such as ASK and ORDER. The constraint should be a cross-sentential discourse constraint, but the individuals involved can be represented by a quantifier in one sentence.

On the other hand, declarative sentences in the past tense or progressive aspect normally constitute factual statements and they apparently do not have any nonveridical operator. I assume that a factual statement p has a null operator or assertive performative predicate, as in (85):

(85) $\varnothing p \rightarrow p$ or [I DO (SAY to you [p]]) $\rightarrow p$]

Therefore, the null operator or assertive performative predicate can be said to be a veridical operator and the p is likely to be an easily verifiable past/progressive sentence with an episodic or stage-level predicate. The reason why separate assertions allow all possible Boolean operations is that they usually do not apply to the act predicate *DO*.

Then, strong NPIs have the 'wh-Indefinite(*/amu* in Korean) + *-to/ -mo*' form (as in *nuku-to an o-ass-ta* or *dare-mo ko-na-katta* 'Nobody came' in (69)). Note that a concessive clause *qui que ce soit* has frozen to an NPI in French, and the same form to an FC and an NPI in Canadian French. In Portuguese *qualquer libro* is both NPI and FC (Peres, 1998). The strong type of NPIs is possible through a betting

type of concession 'Whatever you choose, it is not the case that *p*' (universal negation). As in Greek (Giannakidou 1999), the noncommitative 'before' clause, i.e., *-ki cen-ey* in Korean and *mae-ni* in Japanese, also licenses strong NPIs. But only oblique case strong NPIs are licensed, as follows:

(86) Mary-nun [*amu-to/nuku-to/han saram-to* o-ki
Mary-Top anyone-C/wh(Indef)-C/one person-C come
cen-e] ttena-ass-ta
before-at leave-Past-Dec
'Mary left before anyone/whoever/even one person came.'

(87) **Dare-mo kuru mae-ni* 'Before anyone came' (Japanese)

(88) ?**Dare-mo naguru mae-ni* 'Before (he) hit anyone' (Japanese)

(89) *dare-kara-mo tegami-ga kuru kiku mae-ni* 'Before a letter comes from anyone' (Japanese)

(90) O Pavlos pethane prin na di KANENA
the Pavlos died before subj see any
apota egonia tu
from the grand-children his
'Paul died before he saw any of his grandchildren.' (Greek)

In Korean, as in (86), most strong NPIs (based on *amu*, wh- or Numeral) that favor overt negation are licensed in general in the 'before' clause with no regard to different grammatical relations (subject, object or adjunct/oblique) of the NPIs. Similarly in Greek, a strong NPI, *KANENA* is licensed in the 'before' clause freely. In Japanese, the subject and object NPIs are not licensed, as shown in (87) and (88), whereas an oblique case NPI (*dare-kara-mo* 'from anyone') is licensed. In other words, licensability of a strong NPI in the universal negation interpretation varies according to languages and even varies according to whether the NPI is a structural case or an oblique case.

The majority (57 out of 100) of languages investigated by Haspelmath (1993) base their NPIs on indefinites from wh-words. Basque, Chinese, Japanese and Zapotec are such examples. The concept of concession is marked by a concessive morpheme like 'even,' as in Korean (*-to*), Japanese (*-mo*), and Chinese (*-ye*), by an additive morpheme that means 'also' but can be extended to 'even,' or by a disjunctive morpheme added to the wh-form indefinite. English also has some FC expressions based on wh-, as shown in the

translations of (60) through (63) above and in (91) below:

(91) a. I can do *whatever*. Cf. ?*I ate *whatever*.
b. [Whoever that may be] can do it.

Furthermore, 'any' can co-occur with 'whatsoever' as both FC items and NPIs for the effect of reinforcing the assertion of arbitrary choice, e.g. 'He didn't have *any* idea *whatsoever*;' '*Anybody whatsoever* can come to the meeting.' It is because 'any' is based more on arbitrary choice in property, quality and kind, than on quantificational scale. That is also why 'whatsoever' does not co-occur with quantificational scalar NPIs such as 'even a' or 'even one.' Although '*a single* pen *whatsoever*' is exceptionally possible (Lee and Horn 1994), 'even' cannot precede it, posing a puzzle. Here, '-ever' already is concessive and occurrence of 'even' becomes redundant. In the expression of '*a single* pen *whatsoever*,' the word 'single' is emphatic just as 'whatsoever' and presumably universal negation applies to both the quantity and the property/kind of 'pen.' In 'even a' or 'even one,' the notion of number is explicitly indicated and less frozen than 'single.' All the wh-form-based NPIs plus 'any' and *amu* express the concession meaning, something like 'whatever' or 'how arbitrarily you may choose.' In Japanese, the weak FC form 'wh-form Indef + *de* + *mo*' (e.g. *nan-de-mo* 'whatever') can be used in such contexts as questions, conditionals, *dake* 'only' contexts, as well as emotive and cognitive factives and even episodic or veridical contexts in the universal force interpretation (Yoshimoto 1995). Consider the following Japanese past tense sentence:

(92) Ken-wa daigaku-de nan-de-mo benkyoo-si-ta
Ken-Top college-at what(Indef)-be-C studied
'Ken studied whatever in college.'

In (92), *nan-de-mo* is used as if it were a concessive clause, no matter what (whatever he desired). Its origin is a concessive clause, indeed, as I claim. Then, its occurrence with an episodic sentence is natural. In Korean, on the other hand, in such contexts as questions, conditionals, 'only'/'at most'/generic modifier contexts, as well as emotive factives, the corresponding weak form 'wh-form/*amu* N + *i* 'be' + *ra* 'Dec' + *to* 'C'' is used in the existential interpretation. The form can be used in modal/generic contexts in the universal force with a stress. But this form can hardly occur in episodic contexts in Korean, except in cases where events that are occurring or occurred can be generically interpreted. Consider:

(93) a. *mues/amu* kes-*i-ra-to* mek-nun
what(Indef)/any thing-be-Dec-C eat-Rel(Pres)
hwanca-nun swip-ke hoepok-toe-n-ta
patient-Top easily recover-get-Pres-Dec
'Patients who eat whatever/anything easily recover.'
b. ?*ce hwanca-ka *mues/amu* kes-*i-ra-to*
that patient-Nom what(Indef)/any thing-be-Dec-C
me-ko iss-/mek-ess -ta
eat-Prog/eat-Past -Dec
(Lit.) 'That patient is eating/ate whatever/anything.'

If the verb is replaced by *tteretturi-ta* 'drop,' a nonintentional verb, in (93b), the sentence becomes totally out.

In this connection, consider the following examples discussed by Dayal (1998) and examined by Lahiri (1998):

(94) a. *Any* girl who is in Mary's semantics seminar is writing a paper on polarity items.
b. At the end of his speech, the President thanked *any* soldier who had fought in the gulf war.

Even though formalisms so far developed cannot handle all the situations, one approximation can be the following tripartite structure:

(95) Gnx [wh-Indef (x) ^girl (x) ^is-in-Mary's-semantics-seminar'(x)] [x is-writing-a-paper-on-polarity-items]
Operator: generic operator (Gn); Restrictor: Topic (inherent conditional); Nuclear Scope: is-writing-a-paper-on-polarity-items

Given the interpretation in (95), how to check the truth conditions empirically is not so clear and to that extent the veridicality of (94a) is not so transparent. If we change the Gn operator to $\forall$, the situation becomes actual and the truth of the expression can be easily checked. But then the real sense of 'any' is lost. The restrictor can be a conditional, a Topic, a relative clause, a free relative, a corelative (in Hindi and Chinese), etc. A similar description is possible for (94b): the relative clause headed by '*any* soldier' is a (Contrastive) Topic and it will get wide scope, as follows:

(96) Gnx [wh-Indef (x) ^soldier (x) ^fought-in-the-gulf-war (x)] [the-President-thanked x]

The concessive part is an admitted or conditionally assumed part and

can take wide scope easily, becoming topical. 'Soldiers' and 'those who had fought in the gulf war' are intersective and the relative clause is also polarity-licensing.

Along with the 'wh-indefinite + Concessive' series of FC items and NPIs, another productive source of strong and weak NPIs is the form 'Minimum Quantity + Concessive.' Here, the minimum quantity is frequently represented by the smallest natural number 'one' in all the languages, as shown in (81) and its translation into English. Observe:

(97) *han* saram-*to* eps-ta
one person-even not exist-Dec
'Not even one (single) person is here.' (* without 'not')

(98) a. *ek* 'one' *bhii* — 'even one' quantity NPI (Hindi)
b. *koii* 'any(one)' *bhii* 'even' — 'any' quality NPI different from (a)

(99) a. Ain't *a single* teacher spoken to me all day. (West Texas English=WTE, J. Foreman p.c.)
b. Ain't *even a few* of the students done their homework. (WTE, J. Foreman p.c.)
c. He didn't visit *even a few* students. (* affirmatively, without *n't*)

This type of quantitative NPIs are based on the scalar model triggered by the lowest numeral or quantity expression and the concessive marker. If the lowest numeral 'one' of something is negated, then any arbitrarily higher number of it on the scale is implied also to be negated and naturally universally negated. In Korean *han pen -to* 'even one time' is also a strong NPI, requiring overt negation, and the English 'ever' can also be decomposed into 'even one time', as in 'I haven't seen him *ever* since' in the strong universal negation interpretation. The speaker is betting or challenging (to a question 'Have you seen him since we parted on Tuesday?'). The same concept is used in the existential context such as 'Have you *ever* been to china?' The same concept of 'even one time' is applicable to both situations. But Heim's suggestion of 'at least once' for 'ever' (Heim 1984) is applicable only to the existential interpretation, with no regard to weakly affective or affirmative. In Korean, the weak existential has a slightly different form. The weak existential interpretation arises when the speaker goes down to the lowest possible event iteration number ('one time') on the given scale by making a concession. It is a begging type of concession in the sense that the speaker goes down and remains at the bottom of the scale in a weakly affective context of asking about the addressee's

experience or of making an offer. Because the speaker opted to make a lowly concession against a possibly negative reaction, even if (s)he indeed encounters a negative answer or refusal, (s)he has little face to lose. Korean, a beggar uses the begging weak existential form, begging money (*han phun -i-ra-to* 'even one cent'). In French, as in English, the same form can be used for both interpretations. Consider:

(100) a. 'ever' = 'even once'
In betting: '(not) even once'—strong universal negation
e.g. 'never,' 'on earth,' *(ne) jamais* or *(ne — pas) meme une fois*
In begging: 'even once'—weak existential
b. *han pen-to* = 'even one time'
one time(event iteration Cl)-C
In betting: with negation (*an* 'not') —strong universal negation interpretation
han pen-i-ra-to = 'even one time'
one time(event iteration Cl)-be-Dec-C
In begging: 'even once' —weak existential
(in a question: *jamais* or *meme une fois*)

Other adverbial NPIs can be viewed similarly as 'Minimum/Norm + Concessive.' This quantificational type is different from the wh-indefinite/'any'-based type, as in (30b), which can be qualitative and/or quantitative. This contradicts Lahiri's (1998) position of unifying the two as purely quantificational. The English indefinites 'some' and 'any' are equivalent to 'what'-indef and amounts to 'what-indef property/kind/nature of,' a matter of choosing a member of certain nature from the set denoted by the given restricted common noun domain. Applying this analysis to our matter of concern, we can say that 'any' in English already contains the concept of concession, which can be expressed by 'even,' or '-ever' (cf. Lee and Horn 1994). Note that whenever 'even' is predictable from the context, it is deleted, as witnessed in 'even + superlative' in modal contexts, '(even) a single,' and so on. If negative force is not obvious, 'even' is required, as in (4) above. This also happens in Korean and other languages, revealing the frozen nature of polarity items.

5. Concluding Remarks

Tentatively, I can conclude that emotive factive predicates and universal-like free choice items provide REFERENTIALLY OPAQUE (NONVERIDICAL) contexts. These contexts are based on desiderative intensionality in the case of emotive predicates and genericity/topicality involved in the case of universal-like free choice, not affecting the

entire/global propositional veridicality. Because of the local opaqueness, however, the truth-conditions for the entire sentence become opaque to that extent.

In conclusion, the phenomenon of negative polarity and free choice is one and the same phenomenon based on the wh-indefinites plus Concessive indicator. The semantically under-specified wh-indefinites get different interpretations depending on different linguistic contexts, either the interpretation of wh-interrogative words under the question morpheme or question performative scope or the interpretation of wh-indefinite pronominals in existential contexts. What we have so far pursued is how this series of under-specified wh-indefinites can get the interpretations of free choice items and negative polarity items with the aid of concession markers such as *even, -to* (Korean), *-mo* (Japanese), *-ye* (Chinese), *ch* (Mongolian), and *ook* (Dutch). We have noticed that free choice originates from the concessive construction and that some languages retain the same form even for negative polarity. The order of grammaticalization is: Concessive Construction —> Free Choice Item —> Negative Polarity Item. The forms tend to get shorter in the process.

The stronger type occurs with overt negation and the 'before' clause in Korean and (though defectively) in Japanese. In Korean weaker existential NPIs are quite possible as in English. The weakest type of NPIs is emotive factive predicates, which are apparently veridical. This and quasi-universal free choice necessitate modification of Zwarts' definition of non-veridicality. The mathematical function types and natural language polarity types do not match exactly. Therefore, we propose that we accommodate attitudinal or emotive aspects of language and classify polarity items according to the types of concession, as follows:

(101) **Strong NPIs — betting**: licensed by overt negation, 'before' clause, negative predicates, etc.
Weak NPIs — Existential —begging
Free Choice —betting

Concession:
- **Betting (challenge)** — Strong NPIs & Weak-FC
- **Begging (face-saving)** — Weak NPIs-Existential

Thus, the categories of strong NPIs and FC items belong to the

concession type of 'betting' and the category of weak existential polarity items belong to the concession type of 'begging.' In request or question speech acts, by using negatively-oriented existential polarity form, even if the addressee's response is rather negative, the initial speaker loses less face. Arbitrary choice via indefiniteness is secured by Concession. Concession is expressed by scalar concessive markers such as 'even' and disjunctive markers (giving options). Concession is hypothetical (conditional behind, as in 'even if') and is in itself non-veridical/uncertain.

Polarity thus viewed as a concession-making interactional emotive act, we can explain why such polarity items of the phenomenon occur along with more logically well-behaved corresponding forms of expression. Cross-linguistic, intra-linguistic lexical variations in NPIs and nonveridical items ('NVIs') widely co-exist. Formal languages do not accommodate emotive uses and naturally lack NPIs.

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FEATURE INHERITANCE AND REMNANT MOVEMENT: DERIVING SOV ORDER UNDER THE LCA

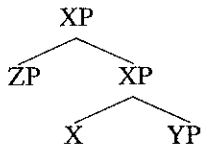
MATT PEARSON
mpearson@ucla.edu

1. INTRODUCTION*

The Linear Correspondence Axiom (or LCA) proposed by Kayne (1994) provides a simple and conceptually appealing mapping from the hierarchical structure of LF derivations to the linear structure of PF derivations. Roughly speaking, the LCA states that the linear order of PF elements is determined by the relation of asymmetric c-command on non-terminal nodes at Spell-Out: If node X asymmetrically c-commands node Y at Spell-Out, then for any terminal *a* dominated by X and any terminal *b* dominated by Y, *a* will precede *b* at PF.

By adopting the LCA, together with a limited number of other assumptions, Kayne is able to derive a rather restrictive phrase structure which includes the features in (1):

(1) a. There is no directionality parameter, and no (underived) principles of X-bar structure. Phrase markers conform universally to a Specifier-Head-Complement order (where specifiers are really a special case of adjunction to XP):



b. All adjunction is to the left. Right-adjunction to X^0 or XP is disallowed.

* Many thanks to Tim Stowell for discussing this material with me, and to the participants at the LSA Summer Institute workshop "Japanese Syntax in a Comparative Context" (Cornell University, 30 July, 1997), and the UCLA Syntax/Semantics Seminar, where this material was presented. Note that many of my ideas concerning movement—including the Feature Movement Principle—are based on (or inspired by) recent unpublished work by Hilda Koopman, presented at UCLA in 1996.

c. Given the requirement that a moved element must c-command its trace, rightward movement is also disallowed.

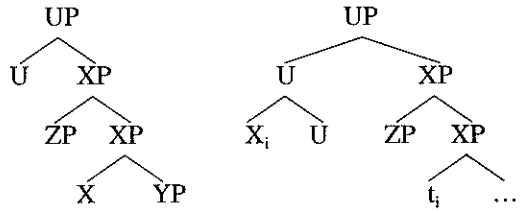
Subsequent analyses from a number of languages have provided considerable support for Kayne's basic ideas. These include Koopman (1996), Zwart (1993), Nkemnji (1996), Hallman (1997), Carstens (1997), Pearson (1998), and many others. A distinctive feature of these analyses is their use of movement to explain word order variation and other phenomena. In some cases the constituents which move are alleged to be quite large—e.g. an entire IP (Nkemnji and Koopman dub this 'heavy pied-piping'). In other cases, the moved element is a 'remnant' - that is, an XP which contains a trace. However, the question of what motivates heavy pied-piping and remnant movement is rarely addressed. When feature-driven movement occurs, what principle(s) determine *what* and *how much* material will be moved?

In this paper I consider a theory of word order variation which incorporates the LCA, and within which the movement of large remnant constituents is motivated. My approach will be to first present an analysis of the basic movements involved in deriving SOV word order in strict verb-final languages such as Japanese and Korean. I then go back and motivate that analysis by developing an articulated theory of feature movement and feature inheritance (or 'percolation'). Essentially I will argue that the concatenation of two constituents by Merge leads to the copying of features from the input into the output. Whether a particular feature is copied or not will depend on the type of Merge involved. The operation Move (reinterpreted as Attract-Feature) attracts the highest available copy of a feature, causing the constituent associated with that copy to pied-pipe. Note that, while my theory assumes the correctness of the LCA, I will challenge some of the secondary assumptions which Kayne is forced to make in order to derive the system in (1). In particular, I will reject his claim that specifiers are adjuncts to XP (in the traditional sense of "adjunct"), as well as his reliance on the segment-category distinction in his definition of c-command.

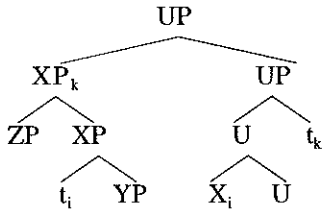
The main points I will argue for in this paper are summarised in (i)-(iv):

(i) SOV order in strict verb-final languages can be accomodated within a theory which assumes Kayne's LCA. This order may be derived by means of movement—in particular, by successive applications of head movement (as in (2) below), followed at each step by raising of the XP remnant (as in (3)), in order to check the features of the specifier ZP.[1] A sample derivation is given in section 3.[2]

(2)



(3)



(ii) Why is it that the XP remnant, and not ZP itself, raises to SpecUP? I will argue that when the head X raises out of XP, as in (2), XP then acquires the categorial features of its specifier ZP, and in effect *becomes a projection of the head of ZP*. Thus, any subsequent movement which targets ZP will force pied-piping of XP. I discuss this idea in detail in section 6.

(iii) The movements involved in deriving head-final structures can be explained by appealing to an articulated theory of feature inheritance, in combination with a principle of movement which I will call the Feature Movement Principle (FMP). The FMP states that:

> Attract-F attracts the highest visible copy of a feature, causing the constituent associated with that copy to pied-pipe.

[1] Nakajima (1996) presents a very similar analysis for deriving SOV order in Japanese.

[2] Note that this analysis is meant to apply only to head-final languages of the Japanese/Korean/Turkish type, where the verb arguably raises into COMP, as evidenced by the presence of suffixed complementisers on the verb complex. It has been argued for other head-final languages—e.g. Dutch (Zwart 1993) and Ijo (Carstens 1997)—that the verb remains low in the structure, perhaps within VP, and OV order is derived by raising of the object out of VP to SpecAgrOP, or some such position. Such an analysis seems questionable for strictly verb-final languages, however, in which postverbal elements are either not present at all (e.g. Japanese), or are restricted to topicalised (defocussed) constituents (e.g. Turkish; see Kural 1997), which are arguably quite high in the structure. Clearly SOV order should receive different treatments in different languages.

How features get copied, and what is meant by *visible*, will be made explicit in sections 4-6.

(iv) Kayne is correct to group together head incorporation, adjunction to XP, and the merging of a specifier with its target, and to view them as being a single phrase structure phenomenon ("adjunction"). However, his characterisation of this phenomenon in terms of traditional adjunction is conceptually inadequate. In this paper, I will reanalyse Kayne's "adjunction" as the union (or *fusion*) of two categories X and Y to form a third category Z which contains all of the features of X and Y. It is by means of this fusion that feature inheritance takes place. I discuss the properties of fusion in section 5.

This paper is organised as follows: In section 2, I present some of my background assumptions, and introduce various terms and concepts which will play a role later in the paper. I also briefly discuss Epstein's (to appear) derivationally-based definition of c-command, which I later compare with Kayne's definition. In section 3, I present an analysis which derives strict verb-final order from an underlying Specifier-Head-Complement structure by means of head movement, together with remnant pied-piping. Section 4 begins with a brief digression on c-command and the LCA. I present data which could be used to argue in favour of Kayne's version of c-command, and which would appear to present a problem for Epstein's version. These I explain by appealing to feature inheritance. I conclude section 4 by introducing the Feature Movement Principle, or FMP. Then in sections 5 and 6, I outline my theory of feature inheritance and the effects of head movement on feature visibility, using this theory to motivate the derivation argued for in section 3. In section 7, I offer my conclusions.

2. BACKGROUND ASSUMPTIONS

Some of the background assumptions I will be making in this paper are summarised below. Many of these assumptions will be discussed further (and in some cases modified) in later sections.

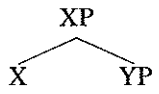
(i) *Features*: I assume that lexical items consist of bundles of features. Such features may include:

(a) *Categorial* features: [N], [V], [D], [T], ...
(b) *Operator* features: [Wh], [Neg], [Q], [Topic], [Def], ...
(c) ϕ-features
(d) Case features

I will have nothing to say on the precise inventory of features, or on the question of whether feature bundles have any internal structure (or 'feature geometry'). Note, however, that I will assume that there are no negative features, but only the presence or absence of a particular feature in a given bundle.

(ii) *Merge and Move*: Following Chomsky (1995, ch. 4), I assume that syntactic derivations are built in a 'bottom-up' fashion from an array of lexical items (a numeration) by cyclic applications of a small number of structure building operations, including *Merge* and *Move*.

Merge involves the concatenation of two syntactic objects X and Y to form a third (different) object Z, which is the projection of either X or Y. Z may be represented as the set {L,{X,Y}}, where L is the *label* of Z. In Z = {L,{X,Y}}, L and {X,Y} are the *members* of Z, and X and Y are the *members* of {X,Y}. Informally, the operation of Merge may be represented using standard tree structure notation, as shown below. Here, Merge concatenates X and YP to form a larger element. The label XP indicates that the output of Merge has inherited its categorial feature from X (i.e. X projects):



Those objects which form the input sets for Merge—as well as those objects produced by Merge—are called *terms*. In phrase structure trees of the type shown above, terms correspond to the labeled nodes (or to the subtrees for which those nodes represent the root).[3] Chomsky (1995, p. 247) defines the relation *term of* as in (4) below:

(4) For all Z = {L,{X,Y}}, T is a *term of* Z iff:
a. T = Z; *or*
b. T is a member of a member of Z

In other words, T is a term of Z if T is Z itself, *or* if T is X or Y, *or* if T is a term of X or Y.[4] If T = Z, then T is the *maximal term* of Z; otherwise, T is a *non-maximal term* of Z.

[3] Since new terms may only be formed by the concatenation of two pre-existing terms, it follows that all the nodes in a tree structure representation will be binary branching (Chomsky 1995, p. 246).

[4] Notice that the *term of* relation is the derivational equivalent of the (reflexive) dominance relation.

With regard to *Move*, I will follow Chomsky in assuming that movement is lexically or morphologically motivated, in that elements move in order to enter into feature-checking relations with other elements. Also as in Chomsky, I assume that movement is triggered by *Attract-F*: When a feature F needs to be licensed, it 'attracts' a compatible feature F′ from within its c-command domain, causing F′ (and the constituent with which F′ is associated) to raise into its checking domain.

Chomsky regards Move as a structure-building rule distinct from Merge. Here I will assume that Move is actually a complex operation which includes Merge as one of its steps (cf. Collins 1997):

(5) *Steps involved in Move*:

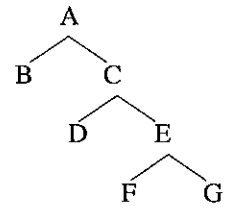
a. Copy(X): Copy a term X contained within an existing term Y (X ≠ Y), thus creating a new term X′
b. Merge(X′,Y): Concatenate X′ and Y, projecting Y
c. Delete(X): Delete (the phonological material associated with) X

Since, on this view, Move contains an application of Merge, I will treat the former as a subcase of the latter, and use the term *Merge* to refer to all instances of structure-building, regardless of whether movement or selection is involved.

(iii) *C-command*: In this paper I will be assuming that Epstein's (to appear) derivational approach to *c-command* is correct. Epstein argues that c-command should not be understood as a primitive relation, defined over phrase structure trees and relying on representational notions such as *dominance* and *branching node*. Such notions are unnecessary, he argues, and should thus be eliminated from the theory. Instead, c-command is a derived relation, which may be defined in terms of the way in which Merge operates in building phrase structures.

Consider for example the tree in (6):

(6)



We are assuming that this structure is derived in 'bottom up' fashion by means of cyclic applications of Merge: F merges with G to form E, E merges with D to form C, and so on. Epstein observes that, from this point of view, the c-command relation is identical to the relation between (the terms of) two categories which have been combined by Merge. For instance, D in (6) c-commands the nodes {E,F,G} and nothing else, and {E,F,G} is the set of terms of E, with which D has merged to form C. Generalising from this, we can define c-command as follows:[5]

(7) X *c-commands* Y iff:

There exists some term Z such that
a. Y is a term of Z[6], and
b. X and Z have been concatenated by the operation Merge

In other words, *c-command* is merely a label for the relation between a constituent X and all of the terms of the constituent Z with which X has been combined to form a larger unit. On this view, it follows that all other terms/nodes in the tree are invisible for c-command by X, since they literally *do not exist* (as part of the same tree) prior to the point in the derivation at which X and Z are merged. (See Epstein (to appear) and footnote 14 for more discussion.)

3. A MOVEMENT ANALYSIS OF SOV ORDER

In this section I present an analysis whereby strict verb-final order is derived from an underlying Specifier-Head-Complement structure, in accordance with the LCA. I will argue that head-final order results from a two-step process applied cyclically as the derivation is constructed: The first step involves head adjunction, while the second step involves XP movement of the remnant containing the trace of the head.

In (8) below I give a typical example of an SOV clause from Korean (Yoon 1990). The core of the clause is a 'verbal complex' consisting of one or more verb stems to which an array of suffixes may be attached. This verbal complex occurs clause-finally, with any arguments or adjuncts in the clause preceding it:

[5] Note that (7) is my restatement of Epstein's original formulation: "X c-commands all and only the terms of the category Y with which X was paired by Merge or Move in the course of the derivation."

[6] See the definition of *term of* given in (4) above. Notice that if Y = Z, then symmetric c-command obtains, and if Y ≠ Z, then asymmetric c-command obtains.

(8) Chelswu-ka chayk-ul sa-ess-kess-ta.
Chelswu-Nom *book-Acc* *buy-Pst-may-Decl*
"Chelswu may have bought a book."

Assuming (in agreement with Baker 1988) that morphologically complex words are formed via head movement and incorporation in the syntax, examples such as (8) must involve successive raising of the verb up to COMP (where the declarative morpheme *-ta* is presumably located; cf. Bhatt and Yoon 1991, Rizzi 1995).[7] I will argue below that verb-final order can be derived if we assume that, at each step, verb raising is accompanied by pied-piping of the remnant containing the trace of the head. This pied-piping is required by the need to check Case and other features of the argument DPs.

For concreteness, I will assume that all languages have the basic clausal architecture given in (9) (for a simple transitive clause).[8]

(9) $[_{CP}\ C\ [_{TP}\ T\ [_{vP}\ v\ [_{AspP}\ Asp\ [_{VP}\ V\ ]\ ]\ ]\ ]\ ]$

Internal arguments receive their theta roles by merging with VP to form SpecVP,[9] after which, if they are of category D, they raise and merge with Asp(ect)P to check Case. Similarly, the external argument receives its theta role by merging with *v*P, and then raises to check its Case in SpecTP.[10]

The derivation of clauses in strict OV languages proceeds as follows: Asp^0 merges with VP (containing the object) to form AspP. The verb then raises and adjoins to Asp^0, as in (10):

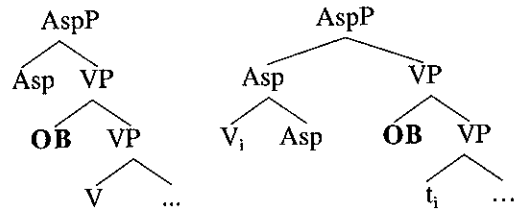
[7] Whether or not verb movement takes place in languages like Korean and Japanese is a matter of some dispute. Otani and Whitman (1991) and Koizumi (1995) present evidence to suggest that the verb raises out of VP in Japanese (see (15)). However, Fukui and Takano (1997) dispute the validity of this evidence. They argue instead that the verb remains within the VP, and claim that a number of syntactic properties of Japanese can be derived from this fact.

[8] This structure is based on Koopman and Sportiche (1991), Travis (1991), and Chomsky (1995). Note that additional functional categories may also be present (e.g. COMP may consist of a series of projections rather than just one; cf. Rizzi 1995, Koopman 1996), but I will ignore this possibility here. Note that I will also ignore scrambling, which I take to involve both A-movement to Case positions, and A'-movement to various operator positions (e.g. 'Inner Topic').

[9] I assume here that, as with external arguments, internal arguments and the arguments of adpositions are assigned their theta roles in Spec positions by XP-level categories (cf. Sportiche 1992, Bowers 1993). I leave open the question of whether V in (9) may take a complement as well.

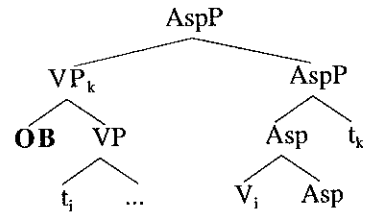
[10] Or perhaps to the specifier of some functional category selected by TP, such as Travis's (1994) EventP.

(10)



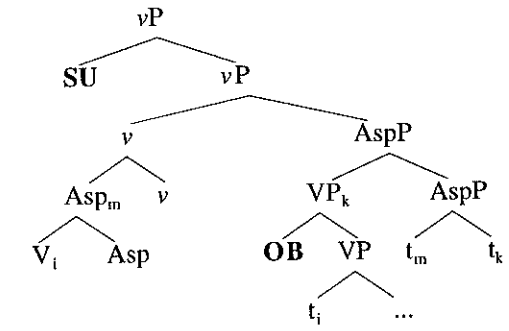
After V^0-to-Asp^0 movement, the object must then raise to check its Case features in SpecAspP. However, instead of assuming that the object raises out of SpecVP, I argue that the entire VP (containing the trace of head movement) raises and merges to form SpecAspP, as in (11). In other words, rather than raising out of VP to check Case, the object 'pied-pipes' the VP.

(11)



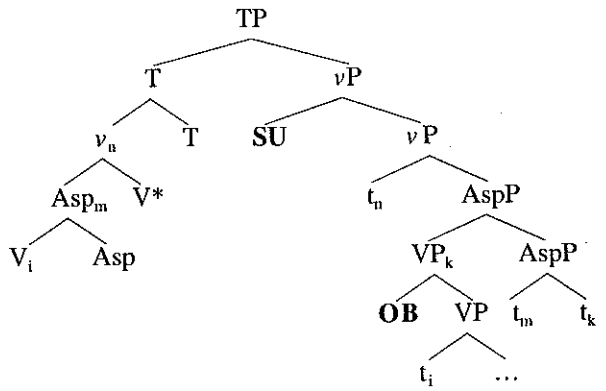
Next an additional layer of structure is added: v^0 merges with AspP to form *v*P, triggering movement of Asp^0 (containing V^0). The subject then merges with the resulting category and is assigned its θ-role. This is shown in (12):

(12)



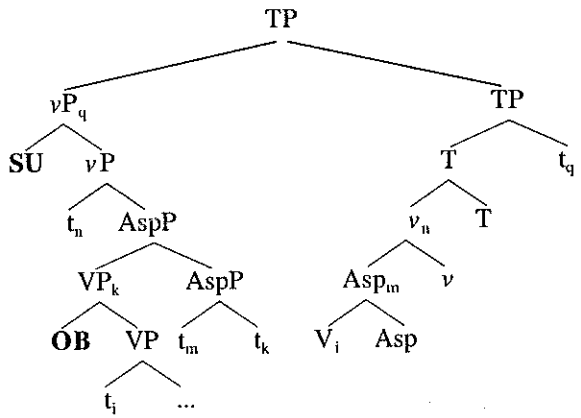
T^0 then merges with *v*P to form TP, and v^0 moves to adjoin to T^0, yielding (13):

(13)



Finally, the subject must raise and merge with TP to check its Case. As with object raising, the subject does not extract from its theta position. Instead, the entire *v*P, with the subject in its specifier, raises to become SpecTP, as in (14). It is this final movement which yields SOV order.

(14)



If feature-checking proceeded by means of extraction (e.g. raising of the subject out of Spec*v*P), then the object would be 'stranded' after the verb, resulting in SVO order. In order to ensure that the verbal complex ends up in clause-final position, we must assume that the subject carries along all of the elements which it c-commands when it raises to check Case.

Notice that if the structure in (14) is correct, then the surface constituency of an SOV sentence is [[SO]V], where the subject and object form a constituent to the exclusion of the verb complex.

Nakajima (1996) suggests that this is correct for Japanese, citing evidence from Koizumi (1995). Koizumi notes that it is possible to conjoin phrases consisting of a subject and object, as in (15):

(15) [Mary-ga ringo-o 2-tu] -to [Nancy-ga
Mary-Nom apple-Acc 2-Cl and Nancy-Nom
banana-o 3-bon] tabe-ta.
banana-Acc 3-Cl eat-Pst
"Mary ate two apples, and Nancy three bananas."

Nakajima analyses (15) as the result of Across-the-Board (ATB) extraction of the verb, followed by XP-raising of the coordinated remnants. Given the tree in (14), we could argue that (15) involves *v*P coordination: v^0 (containing the verb head) raises out of the *v*P conjuncts by ATB, after which the conjuncts raise to SpecTP, giving the correct surface order.

If the derivation presented in this section is correct, then the obvious question to ask is: Why should XP movement (in this case, DP raising) trigger pied-piping of the constituent of which XP is the specifier? In the following sections, I will put forward a theory which attempts to motivate this pied-piping. Essentially I will claim that when a head X^0 raises out of its maximal projection XP, that XP acquires the categorial features of its specifier (in a sense to be made precise below), forcing the XP to pied-pipe with the specifier if the latter raises to check features. For example, in the case of *v*P pied-piping, when v^0 raises to T^0 (as shown in (13) above), the *v*P which it headed loses its [V] feature and acquires the [D] feature of the subject DP in its specifier, essentially *becoming* a projection of DP. When the [D] feature is attracted by the nominative Case feature of T^0, it is this new, larger DP which raises to become SpecTP (as shown in (14)). I outline this analysis in detail in sections 5 and 6, after first discussing some issues relating to Kayne's (1994) assumptions about c-command and the status of specifiers.

4. C-COMMAND AND PIED-PIPING

In this section I introduce the concept of feature inheritance, and suggest that the copying of features occurs in all instances where a head or specifier merges with its target (operations which Kayne groups together as instances of adjunction). I also introduce the Feature Movement Principle (FMP), which states that the highest visible copy of a feature is targeted by Attract-F. It is this principle, I argue, which forces remnant pied-piping in the examples discussed above.

As a lead-in to this, let me turn first to the issue of *c-command*: The traditional definition of c-command, first proposed by Reinhart (1976), is given in (16):

(16) X *c-commands* Y iff:

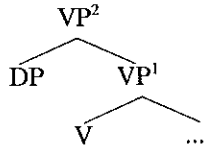
a. $X \neq Y$;
b. X does not dominate Y and Y does not dominate X; and
c. The first/lowest branching node which dominates X dominates Y

In order to establish an asymmetric c-command relation between specifiers on the one hand and heads and complements on the other, Kayne (1994) adds the following stipulations:

(17) a. X and Y in (16) must be full categories.
b. Specifiers are adjuncts to a maximal projection.

By restricting the definition in (16) to full categories, Kayne asserts that segments of categories are 'invisible' for c-command. The claim that specifiers are adjuncts is illustrated by the tree in (18), where VP^1 and VP^2 are considered segments of the same category.

(18)[11]



There is, however, something conceptually unappealing about regarding the DP in (18) as an adjunct in the traditional sense. Intuitively, when a DP argument combines with a VP predicate, thereby saturating that predicate, the resulting category is something different from the input: VP^1 and VP^2 have different semantic properties and a different syntactic distribution, by virtue of the fact that the latter is saturated. It would thus be preferable to avoid stipulating that specifiers are literally adjuncts.[12]

Chomsky (1995) incorporates the LCA into the Minimalist theory in such a way as to avoid the stipulations in (17). I discuss this in section 4.1. Chomsky's approach to the LCA is compatible with—and in fact

[11] Note that the superscript numbers in this and all subsequent examples have no theoretical significance. They merely serve as a convenient means of distinguishing identically labelled nodes in a tree.

[12] Thanks to Tim Stowell for drawing this to my attention.

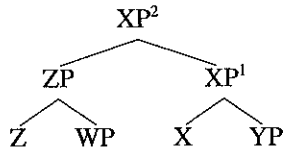
provides support for—Epstein's derivational definition of c-command, discussed in section (2) above. However, there are a number of (apparent) c-command configurations which cannot be subsumed under Chomsky's reworking of the LCA, and which seem to argue instead for Kayne's original approach. In 4.2, I argue that Chomsky's approach should nevertheless be adopted, and that the configurations in question are established by c-command in combination with feature inheritance.

4.1. The LCA

In this section I review the Minimalist take on the LCA, as discussed in Chomsky (1995, pp. 334-340). According to Chomsky, the LCA can be successfully incorporated into a 'bare phrase structure' system without having to stipulate that c-command does not apply to segments, and without recasting specifiers as adjuncts.[13]

Consider for example the c-command relations in (19) below, where ZP is the specifier of X, and YP is its complement. Within this structure, the c-command relations in (19) obtain:

(19)



(20) a. Z asymmetrically c-commands every non-maximal term of WP
b. X asymmetrically c-commands every non-maximal term of YP
c. ZP asymmetrically c-commands every term of X and every term of YP
d. XP^1 asymmetrically c-commands every term of Z and every term of WP

Given the LCA, it follows from (20a-d) that, at PF:

(21) a. Z precedes WP
b. X precedes YP
c. ZP precedes X and YP
d. XP^1 precedes Z and WP

[13] Note, however, that Chomsky's approach to antisymmetry does not have exactly the same empirical coverage as Kayne's, since he leaves open the question of how the LCA applies within head-adjunction structures.

Notice that (21c) and (21d) represent a contradiction: the terms of XP^1 cannot both precede and follow the terms of ZP. One way to resolve this problem is to modify the theory in such a way that XP^1 fails to c-command anything, thereby eliminating the relation in (20d/21d). Kayne does this by adding the conditions in (17), repeated here:

(17) a. X and Y in (16) must be full categories.
b. Specifiers are adjuncts to a maximal projection.

If c-command applies to categories rather than nodes, then it follows that segments are 'invisible' for c-command. Furthermore, if specifiers are really adjuncts, then it follows that XP^1 and XP^2 in (19) are segments rather than categories. As a segment, XP^1 is unable to participate in c-command, and so we are left with the following set of relations at PF, as desired:

(22) a. Z precedes WP
b. X precedes YP
c. ZP precedes X and YP

Chomsky takes a different approach, which allows us to avoid the undesirable stipulations in (17). This approach is based on the assumptions in (23) (which Chomsky argues for independently):

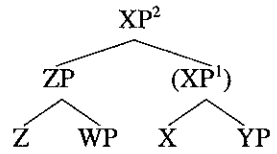
(23) a. Whether a projection is maximal or minimal (or neither) is relative to the structural context in which it occurs.
b. Only maximal and minimal projections are relevant for interpretation, and hence non-maximal, non-minimal projections are 'invisible' to the computational system.

Given (23), Chomsky concludes the XP^1, being neither maximal nor minimal, is 'invisible' with respect to syntactic relations, and hence neither c-commands nor is c-commanded by any other term in the structure. This yields the same results as in (22) above. I will indicate the invisibility of XP^1 by placing it in brackets, as in (24):[14]

[14] Incidentally, if we regard non-minimal, non-maximal projections as being invisible, then we are led to favour Epstein's derivational c-command over the traditional version: As Epstein points out, if we adopt the representation-based definition in (16) and evaluate c-command relations among the (visible) nodes in (24), then we end up concluding that X and YP c-command ZP. XP^1, being invisible *in the resulting representation*, cannot block c-command of the specifier by the head or the complement. This is clearly the wrong result.

However, if we adopt the definition in (7), then we avoid this problem. Under this definition, c-command relations between terms are determined at the point at which merger takes place. Since X and YP are concatenated by Merge, it follows from (7) that they c-command each other *and nothing else*. That fact that XP^1 subsequently becomes invisible when it merges with ZP is irrelevant. C-command of ZP by X or YP is blocked because ZP is not an input term of Merge(X,YP). Epstein concludes from this that c-command must be derivational.

(24)



4.2. C-command versus feature inheritance

Kayne's approach to deriving X-bar structure from the LCA, which relies on the stipulations in (17), makes different predictions from the Minimalist account outlined above when it comes to the range of nodes in a tree which stand in a c-command relation. When one examines the data, there appear to be certain cases of a licensing relation between two elements X and Y, where X does not c-command Y according to the traditional definition, but where X *does* c-command Y according to Kayne's definition. The existence of such cases would seem to support Kayne's approach over Chomsky's. However, I will argue in this section that in the configurations in question, X does not in fact c-command Y; instead, Y is c-commanded by a feature of X which has been 'inherited' by a higher node. Such a story is supported by the fact that the licensing configurations which Kayne cites as evidence for his version of c-command are exactly those configurations in which feature transmission or agreement has been independently argued to exist (e.g. as a means of explaining pied-piping in wh-questions).

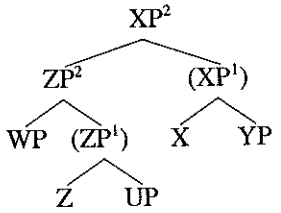
4.2.1. 'Spec-of-Spec' configurations

If the c-command relation is established by the operation of Merge, as Epstein argues, it follows that a syntactic object X can bear such a relation only to the terms of the category Y with which X was concatenated by Merge. If a given term is not a term of Y, then it will simply not be present (as part of the same subtree) at the point in the derivation where X and Y are merged.

For example, in (25) below, ZP^2 may bear a syntactic relation to YP, since YP is a term of XP^1, and ZP^2 and XP^1 have undergone Merge to form XP^2. However, WP and UP may *not* bear any syntactic relation to YP. UP merges with Z to form ZP^1, and WP merges with ZP^1 to form ZP^2. Both of these steps occur *prior* to the point at which ZP^2 merges with XP^1 (containing YP). YP is not part of the structure formed by

merger of Z and UP, or by merger of WP and ZP^1, and is thus not 'visible' to UP or WP.

(25)



This accords well with the facts when it comes to the role of c-command in binding theory. Based on the above discussion, we would predict that a subject DP in SpecIP may antecede a reflexive within the complement of I^0, whereas a specifier or complement internal to the subject DP may not. As (26a-c) show, this prediction is borne out:

(26) a. $[_{DP}$ Daniel's stepmother$]_i$ respects herself$_i$
(ZP^2 binds into YP)
b. * $[_{DP}$ Daniel$_i$'s stepmother] respects himself$_i$
(WP binds into YP)
c. * $[_{DP}$ The stepmother of Daniel$_i$] respects himself$_i$
(UP binds into YP)

However, as Kayne (1994, pp. 23-24) and others have pointed out, there do appear to be cases where the specifier of a specifier may bear a syntactic relation to a complement—i.e. cases where WP bears a relation to YP in (25). For example, take the sentence in (27) below. For many speakers, the QP *every girl* can bind the pronoun *she* within the complement of the verb:[15]

(27) $[_{DP}$ $[_{QP}$ Every girl$]_i$'s father] thinks she$_i$ is a genius

Given the generally assumed condition that a quantifier must c-command a pronoun in order to bind it as a variable, it seems from (27) as though the specifier of the specifier (WP) can c-command the complement (YP).

Kayne also cites the example in (28). Here a negative phrase in SpecDP, where DP is in SpecIP, appears to license the negative polarity item *ever* in the complement of I^0. If we assume that c-command is necessary for NPI licensing, then (28) would seem to be another case of c-command out of the specifier of a specifier.

[15] This observation goes back to Reinhart (1983, pp. 177-179).

(28) $[_{DP}$ $[_{DP}$ Nobody]'s articles] ever get published fast enough

This type of 'spec-of-spec' relation is apparently not constrained by depth of embedding. In (29), for example, the NPI is licensed by a negative phrase in the specifier of the specifier of the specifier of IP. Such examples seem to support Kayne's take on c-command and the status of specifiers. Referring back to the tree in (25): If specifiers were adjuncts, then ZP^2 would be a segment, and hence would not block WP from c-commanding into YP.

(29) $[_{DP}$ $[_{DP}$ $[_{DP}$ Nobody]'s professor]'s articles] ever get published fast enough

As with anaphor binding, pronoun binding and NPI licensing do not appear to be possible from the complement of a specifier, as shown in (30). This fact is also in accordance with Kayne's theory. Consider again the tree in (25): Here UP, the complement of Z, is dominated by both segments of ZP, and thus by the category ZP. Since ZP does not also dominate YP, it follows that UP does not c-command YP. This is the desired result.

(30) a. ?? [The father of every girl$_i$] thinks she$_i$ is a genius
b. * [Compromising pictures of nobody] would ever be printed in that newspaper

The empirical generalisation seems to be the following:

(31) a. The complement of a specifier (UP) may never bear a syntactic relation to the complement (YP)
b. The specifier of a specifier (WP) may sometimes bear a syntactic relation to the complement (YP) (e.g. in cases where an element is licensed by an operator feature)

If we are to adopt Epstein's version of c-command over Kayne's, and reject Kayne's stipulation that specifiers are adjuncts, then we must provide some account for the facts in (31).

The solution which I will propose takes advantage of a strong parallelism between the (apparent) constraints on c-command out of a specifier, and the constraints on pied-piping in wh-questions, as discussed by Webelhuth (1992) and others. Here, as in (31), there is an asymmetry between specifiers and complements: When a wh-phrase occurs in the specifier of an XP, then it pied-pipes the XP when it raises for feature checking, as shown in (32). When a wh-phrase occurs

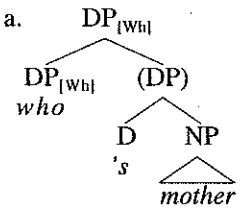
in the complement of an XP, however, pied-piping of XP is not possible; instead, the wh-phrase must extract from the XP and raise by itself.[16] This is shown in (33) and (34):

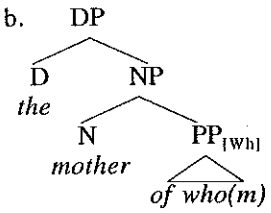
(32) a. $[_{AP}$ How sick$]_i$ is Elizabeth t_i?
b. $[_{AdvP}$ How quickly$]_i$ did he get here t_i?
c. $[_{DP}$ Whose mother$]_i$ did you meet t_i at the party last night?

(33) a. * $[_{AP}$ Proud of who(m)$]_i$ are you t_i?
b. * $[_{VP}$ Visit who(m)$]_i$ do you want to t_i?
c. * $[_{DP}$ The mother of who(m)$]_i$ did you meet t_i at the party last night?

(34) a. Who$_i$ are you $[_{AP}$ proud of $t_i]$?
b. Who$_i$ do you want to $[_{VP}$ visit $t_i]$?
c. ? Who$_i$ did you meet $[_{DP}$ the mother of $t_i]$ at the party last night?

Moritz and Valois (1994) explain such facts by claiming that (a) pied-piping is only possible if the feature which triggers movement (here, the [Wh] feature) has been transmitted to the pied-piped phrase, and (b) features are transmitted through spec-head agreement. Thus, compare the DPs in (35a) and (35b): The DP in (35a) contains a wh-phrase in its specifier. This specifier triggers agreement with the D^0 head, turning the entire DP into a wh-phrase. In (35b), however, the wh-phrase is inside the PP complement of N. From this position it is not able to trigger agreement with the D^0 head, and thus transmission of the [Wh] feature to the DP as a whole is blocked.

(35) a.


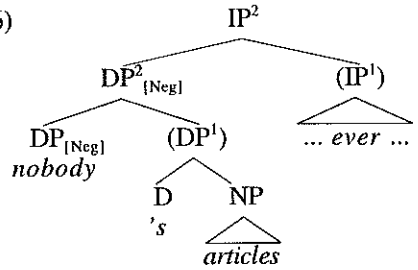
b.


I would argue that the sentences in (27)-(29), which appear to illustrate c-command out of the specifier of a specifier, should receive a similar analysis. Take example (28), repeated below:

(28) $[_{DP}$ $[_{DP}$ Nobody]'s articles] ever get published fast enough

[16] As Webelhuth notes, PPs with [Wh] complements are an apparent exception to this generalisation. I will ignore this complication here.

Here the DP *nobody's articles* 'inherits' the [Neg] feature from its specifier *nobody*, as shown in (36). Thus, it is not the case that *nobody* c-commands the NPI *ever*, as Kayne claims. Instead, *nobody* merges with DP^1, and the resulting category, DP^2, inherits its [Neg] feature. DP^2 then merges with IP^1, and licenses the IP-internal NPI *ever* under c-command. (DP^2 c-commands *ever* in accordance with the definition in (7), since *ever* is a term of IP^1, and DP^2 merges with IP^1 to form IP^2.)

(36)


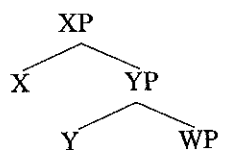
Under this theory, the examples in (30) are ruled out for the same reason as the examples in (33): Transmission of a feature to an XP (whether that feature is [Wh], or [Neg], or some other feature) is not possible from the complement position, since no 'agreement' relation with the head of XP can be established. (I expand on and generalise this notion of agreement and feature transmission in section 5, where I introduce the distinction between *selection* and *fusion*.)

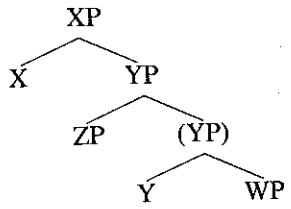
4.2.2. Head movement

The derivational definition of c-command, based on Epstein (to appear), is repeated below:

(7) X *c-commands* Y iff:
There exists some term Z such that
a. Y is a term of Z, and
b. X and Z have been concatenated by the operation Merge

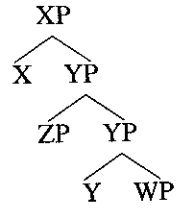
As Chomsky (1995, pp. 254-255) observes, if this definition holds, then the generally assumed ban on lowering and non-cyclic merger, which was previously a stipulation, falls out automatically. Consider the example of non-cyclic merger shown below. Here, X merges with YP to form XP (37a), after which ZP merges with YP, becoming its specifier (37b):

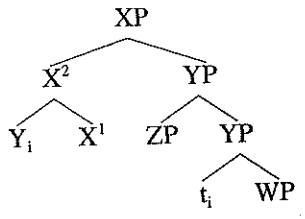
(37) a. 

b. 

Under the definition in (7), X in (37a) c-commands YP, Y, and WP, and asymmetrically c-commands Y and WP, which is the desired result. However, when ZP is introduced in (37b), we have a problem: Since ZP was not a term of YP *at the point in the derivation where X and YP merged*, it follows that X does not asymmetrically c-command ZP, which means (if we adopt the LCA) that no ordering relation is established between X and ZP at PF. This violates the requirement that the linear ordering of PF elements be a total order (see Kayne 1994, ch.1). From this, we can derive the principle that all operations of Merge must extend the entire structure in cyclic fashion—i.e. every operation of Merge must create a new root node: If a category were to merge with a target which is already a term of some larger category at that point in the derivation, this would result in a non-total ordering of terminal elements at PF.

Although this principle seems to hold for most cases of Merge, there is at least one well-known case where it does not. As Chomsky (1995) and Kitahara (1995) observe, head movement—where a head Y raises and adjoins to the immediately c-commanding head X—does not lead to the creation of a new root node:

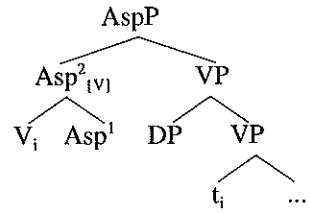
(38) a. 

b. 

Such structures present a problem for the version of c-command argued for by Epstein. Since Y adjoins to X^1 to create X^2, it follows from the definition in (7) that Y c-commands X^1 *and nothing else*. In particular, Y fails to c-command its trace. Notice that (38) does not present a problem for Kayne's theory, according to which X^2, being a segment, does not block Y from c-commanding its trace. The existence of head

movement would thus seem to argue in favour of Kayne's version of c-command and against Epstein's version.

To rescue (7), I will again appeal to feature inheritance by making certain assumptions about the properties of head incorporation. As an example, take V^0-to-Asp^0 raising:

(39) 

I will assume that Asp^0, being a functional category, needs to be supported by an incorporated head with appropriate lexical features, and so attracts the lexical head V into its checking domain. When V adjoins to Asp, they project a 'mixed' category (Asp^2) which contains both the functional features of Asp^1 and the lexical features of V. I notate the lexical features of V by means of a subscript [V] in (39). Thus, while V does not directly c-command its trace in (39) (according to (7)), its features form part of a complex category which *does* c-command the trace.[17] If this notion of 'mixed' categories created by incorporation proves to be motivated, then we will have additional evidence for the role of feature inheritance in establishing syntactic relations among nodes in the tree.

4.3. The Feature Movement Principle

As (40) and (41) show, when an XP inherits a [Wh] feature from its specifier, pied-piping is not merely possible, it is obligatory: Extraction of a wh-phrase from a DP or AdvP which has inherited the [Wh] feature yields an ungrammatical sentence:

(40) a. $[_{DP}$ Which book$]_i$ did you read t_i?
b. * Which$_i$ did you read $[_{DP}$ t_i book]?

(41) a. $[_{AdvP}$ How quickly$]_i$ did he get here t_i?
b. * How$_i$ did he get here $[_{AdvP}$ t_i quickly]?

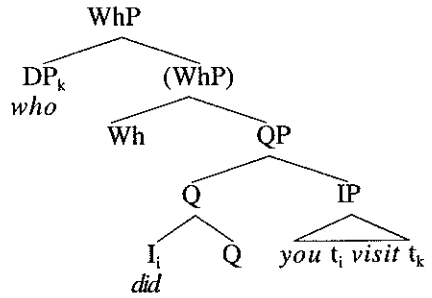
[17] Cf. Koopman (1994), who argues that when head movement takes place, there is an 'ambiguity' as to whether the adjunct or the target projects in the resulting adjunction structure. For instance, in (39) above, either V or Asp^1 'counts' as the head of AspP.

Koopman (1996) presents a theory of wh-movement which suggests that the same pattern of pied-piping obtains at the clausal level. Among other phenomena, Koopman is interested in accounting for the absence of *do*-support in English wh-questions when the wh-phrase is in subject position:

(42) a. Who visited you?
b. * Who did visit you?

In object-wh questions (e.g. *Who did you visit?*), the object extracts from IP and raises to the specifier of WhP to check its [Wh] feature. *Do* merges with the head of a functional projection QP, located below WhP, which contains the [Q] feature associated with questions. Insertion of *do* here is necessary, Koopman claims, in order to 'activate' the Q^0 head by associating it with overt phonological material. The results of this derivation are shown in (43):

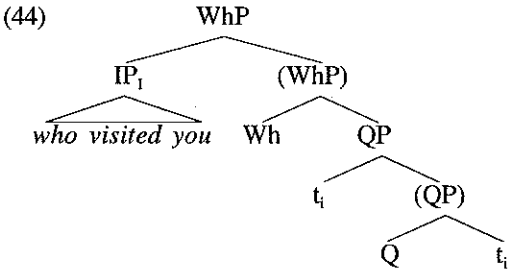
(43)



However, in subject-wh questions, the wh-phrase does not extract from IP; rather, the entire IP raises to SpecWhP to check the [Wh] feature of its subject. Here, the QP projection is activated not by insertion of *do*, but by successive cyclic movement of IP through the specifier of QP. The resulting structure is given in (44):[18]

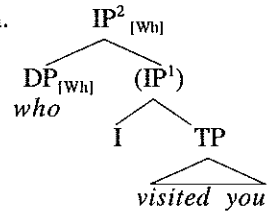
[18] See Koopman (1996) for details. Note that she uses the same set of movements, in combination with her Doubly-Filled COMP Filter, to derive the *that*-trace effect in embedded wh-questions in English.

(44)

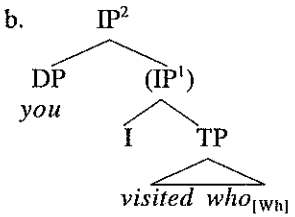


This pattern of pied-piping can be unified with those discussed in 4.2.1 if we assume that a wh-phrase in SpecIP transmits its [Wh] feature to IP, but that a wh-phrase in the complement of I^0 is blocked from transmitting its feature to IP:

(45) a.



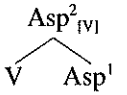
b.



If this analysis of the subject/object asymmetry in wh-movement is correct, then the ungrammaticality of (42b) must be due to the obligatory nature of IP pied-piping in subject-wh questions. As with DP pied-piping in (40) and AdvP pied-piping in (41), IP pied-piping is not merely possible, it is necessary.

Consider also the case of head raising: In section 4.2.2, I suggested that when V^0 raises and adjoins to Asp^0, the result is a 'mixed' category, containing the lexical features of the verb, as shown in (46):

(46)



It is generally assumed that an incorporated head cannot subsequently excorporate, stranding its host. Rather, the incorporated head and the host must move together.[19] For example, in (46), V^0 may not raise out to check the features of a higher head (such as T^0), stranding Asp^0; rather, the entire Asp^2 complex must raise. If head incorporation

[19] But cf. Roberts (1991), who argues that this kind of excorporation is possible in certain cases, e.g. clitic raising.

involves feature transmission or 'inheritance', as argued above, then this ban on excorporation can be viewed as an example of obligatory pied-piping at the level of heads: V^0 transmits its lexical feature to Asp^2, thereby forcing Asp^2 to be carried along when V^0 raises to a higher head.

Generalising from wh-pied-piping and head raising, I would like to make the following proposal: When a term containing a feature F merges with another term, the category resulting from this merger will inherit a copy of F. If F is subsequently attracted into the checking domain of a higher feature, it will always carry along the constituent containing the highest copy. I will refer to this constraint as the Feature Movement Principle, or FMP:

(47) *The Feature Movement Principle*
Attract-F attracts the highest copy of a feature, causing the constituent associated with that copy to raise.[20]

For example, when the DP *who* in (45a) merges with IP^1 to form IP^2, the [Wh] feature of *who* will be copied into IP^2. When that [Wh] feature is subsequently attracted by the head of WhP, it is IP^2 which will raise into SpecWhP, rather than the DP. Pied-piping of large constituents thus turns out to be the norm, rather than a peripheral phenomenon.[21]

[20] This movement principle appears to contrast with that of Chomsky (1995, p. 262), who suggests that features pied-pipe the *minimum* amount of material allowed by interface conditions—e.g. morphological conditions holding at PF. The apparent 'maximality' of the FMP (viz. Attract-F effects the largest constituent containing a copy of F) is reminiscent of Fukui's (1997) revised A-over-A Principle. Fukui's principle states that if a transformation—e.g. Attract-F—applies to a phrase-marker of the following form (where A ranges over sets of features), then it must apply to A1, i.e. the highest copy/instantiation of A:

$\ldots [_{A1} \ldots [_{A2} \ldots] \ldots] \ldots$

Fukui uses this principle to account for a variety of Relativised Minimality cases, as well as certain classical island constraints and apparent violations of the Proper Binding Condition (see Fukui 1997 for details).

My theory differs from Fukui's, however, with regard to how pied-piping interacts with feature attraction: Fukui claims that if a consituent XP bearing a feature F has inherited that feature from its specifier, then Attract-F may force *either* XP *or* its specifier to raise (the idea being that the feature of the specifier and the feature of the maximal projection are in some sense 'non-distinct'). However, here I take the strong view that only XP itself may raise—provided that it contains a *visible* copy of the feature in question (see section 5.3).

[21] Cf. Koopman (1996 class notes), who suggests that an operator can never be extracted from the specifier of an XP, but must always carry the XP along with it when it raises for feature checking.

Subsequent consideration will show that the FMP, as stated in (47), is too strong. I will thus modify it as follows (what is meant by *visible* will be discussed in the next section):

(48) *The Feature Movement Principle* (revised)
Attract-F attracts the highest *visible* copy of a feature, causing the constituent associated with that copy to raise.

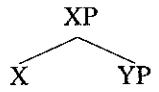
5. FEATURE INHERITANCE

In this section I consider the mechanism of feature inheritance in more detail. I argue that Merge should be subdivided into two types of structure-building operation, *selection* and *fusion*, based in part on how features are transmitted from the input of Merge to its output. I also introduce the notion of *dominant* and *recessive* features, and discuss the conditions under which features become visible. In section 6 I will make use of these concepts to explain the connection between head movement and remnant pied-piping, as postulated in section 3.

5.1. *Selection and fusion*

Chomsky (1995) treats Merge as being essentially a unified phenomenon: A term X merges with another term Y to form a third term Z, which is the projection of either X or Y.[22] However, in this section, I will distinguish two different kinds of Merge, called *selection* and *fusion*. Both selection and fusion involve the concatenation of two terms to form a third term, but they differ as to the phrase structure status (X^0 versus XP) of the input terms, and the type of category formed as output:

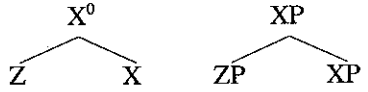
(i) *Selection* involves the concatenation of a head X^0, chosen from the numeration, and a maximal projection YP, to form a maximal projection XP which carries the head features of X^0. The output of selection is a complex category corresponding to a Head-Complement structure in traditional phrase structure terms:

(49)


(ii) *Fusion* involves the concatenation of two input terms with the same phrase structure status. That is, two X^0s may 'fuse' to form a zero-level category (equivalent to a head adjunction or incor-

[22] I am abstracting away from his account of adjunction, according to which Merge creates two segments of the target category.

poration structure in traditional phrase structure terms), while two XPs may 'fuse' to form a maximal projection (equivalent to the attachment of a specifier or phrasal adjunct to a phrasal category, thereby 'closing off' that category):[23]

(50) 

Fusion can in turn be subdivided into two kinds of processes, *theta saturation* and *agreement*, according to whether the target fuses with a copy of one of its own terms or with an independent term:

(a) In *theta saturation*, the target fuses with a separate subtree (i.e. theta saturation is 'base' fusion). Theta saturation involves the merger of two maximal projections which bear a thematic relation to one another. E.g., theta saturation may involve the merger of a VP predicate with the DP argument to which it assigns a θ-role. (Base adjunction—e.g. the merger of a VP projection with an adverbial phrase that modifies it—can perhaps also be subsumed under theta saturation.)

(b) In *agreement*, the target fuses with a copy of one of its own terms (i.e. agreement is fusion involving movement). Agreement involves merger for feature checking purposes, and thus subsumes head movement, wh-movement, and DP-movement.

5.2. *Projection and the Feature Inheritance Hypothesis*

Selection and fusion differ in the relation between the phrase structure status of the target and the phrase structure status of the output, as follows:

(51) a. In selection, an X^0 combines with a YP to form an XP
b. In fusion, an X^0 combines with a Y^0 to form an X^0, *or* an XP combines with a YP to form an XP

In this section, I claim that they also differ in terms of the featural content of the output.

[23] Under the system developed here, specifiers and XP-adjuncts are treated as non-distinct (at least with regard to how Merge operates). In this respect my theory follows Kayne (1994) rather than Chomsky (1995). Cf. also Sportiche (1994), who argues that XP adjunction does not exist, and that XP-adjuncts should be properly analysed as specifiers, as heads, or as the predicates of small clauses (depending on the type of adjunct).

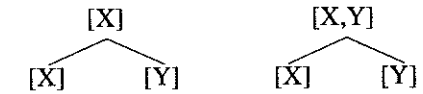
Recall that Merge operates on a pair of terms X and Y, producing an internally complex output term Z = {L,{X,Y}}, where L is the *label* of Z. Chomsky (1995, p.244) considers various options for what L might be:

(52) a. L is the *intersection* of (the features of) X and Y
b. L is the *union* of (the features of) X and Y
c. L is *either* (the features of) X *or* (the features of) Y

He argues that, of these options, (52a) and (52b) should be excluded: The intersection of X and Y is irrelevant for output conditions, and would in many cases be null. As for the union of X and Y, this is "not only irrelevant but 'contradictory' if [X and Y] differ in value for some feature, the normal case" (ibid.). He thus chooses (52c): In all cases where X merges with Y, the resulting term Z has the features of *either* X *or* Y as its label, *but not both*. In other words, whenever two terms merge, one of them projects its features and the other does not.

When it comes to *selection*, I believe that Chomsky is correct: When a head selects a complement, it is the head, and only the head, which projects. However, I would like to suggest that *fusion* operates differently: When two categories undergo fusion (whether it is theta saturation or agreement), the label of the resulting term 'inherits' the features of *both* input terms. In a sense, both terms project. This is schematised in (53), where [X] stands for "the features of X", and [X,Y] = [X] ∪ [Y], i.e. the union of the features of X and the features of Y:

(53) *Selection* *Fusion*



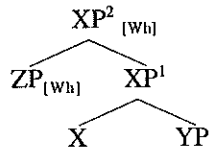
I will refer to this idea as the Feature Inheritance Hypothesis (or FIH):

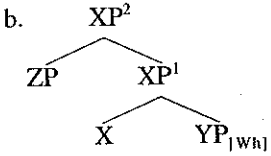
(54) *Feature Inheritance Hypothesis*
For all Z = {L,{X,Y}}
a. If X selects Y, then L = [X]
b. If X fuses with Y, then L = [X,Y]

The FIH expresses the asymmetry noted in section 3.3, where specifiers trigger pied-piping but complements do not:

(55) a. [$_{DP}$ Whose picture] did you see in the paper?
b. * [$_{DP}$ A picture of who(m)] did you see in the paper?

Specifiers combine with their targets by means of fusion. Thus, if the specifier contains a [Wh] feature, as in (55a), this feature will be inherited by the output category. However, complements combine with their targets by means of selection. Thus, if the complement has a [Wh] feature, as in (55b), inheritance of this feature by the output category will be blocked. This is represented schematically in (56):

(56) a. 

b. 

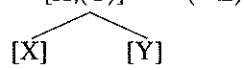
5.3. *Visibility: Dominant and recessive features*

If we accept the idea that a term produced by fusion inherits the features of *both* of its input terms, then we must respond to Chomsky's above-mentioned objection that the union of two concatenated feature sets will normally contain contradictory features. In part, this objection may be answered by asserting (as in section 2) that there are no negative features, merely the presence or absence of positive features. Thus in (56a) above, I assume that XP^1 does not contain a [-Wh] feature which could cancel out the [+Wh] feature of ZP, preventing the latter from being inherited by XP^2.

However, this stipulation alone is not enough. There is an intuition, which cannot be ignored, that the creation of a new category Z from two pre-existing categories X and Y is not simply a matter of adding together the features of X and Y. There is a sense that when, say, an argument combines with a predicate that θ-marks it, the resulting category does not bear the properties of the predicate and the argument in equal measure. A predicate which has been saturated is still, in some sense, a predicate, even though saturation has altered its semantic and syntactic status. In order to capture this intuition, we must introduce some asymmetry, some concept of 'headedness', into the mechanism of feature inheritance. Not all inherited features should be treated equally.

The model which I will propose here takes its inspiration (and some of its terminology) from Mendelian genetics. Suppose we have a term Z, formed by fusion of X and Y. Z will inherit all the features of both X and Y; however, these features will have unequal status: The features inherited from one of the input terms will be *dominant*, while the

features inherited from the other will be *recessive*. For example, in (57), the features of X are dominant in Z, while the features of Y are recessive. I notate this by placing the features of Y in parentheses:

(57) 

How do we determine which input term contributes the dominant features, and which contributes the recessive features? This appears to depend on the type of fusion involved. In the absence of a principled account of dominant and recessive feature inheritance, I will simply stipulate that:

(58) a. In the case of theta saturation, it is the saturated predicate which contributes the dominant features;
b. In the case of agreement, it is the target of movement that contributes the dominant features.[24]

Recall from section 4.3 that the FMP states that:

(48) Attract-F attracts the highest *visible* copy of a feature, causing the constituent associated with that copy to raise.

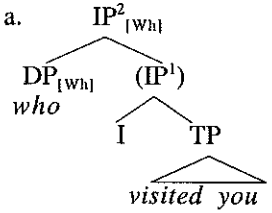
Given the concept of dominant and recessive features, we can now define *visibility* as follows:

(59) For all terms T, a feature F is *visible* in T iff:
a. F is dominant in T, *or*
b. F is recessive in T and there is no dominant feature F′ in T such that F′ blocks the expression of F

To illustrate the concept of visibility, consider the following example: Recall the structure in (45a), repeated below, where a DP containing a [Wh] operator feature merges with IP:

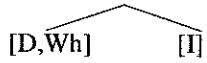
[24] This latter condition is equivalent to Chomsky's condition that the target of movement projects (1995, pp. 256-260), which he argues can be derived from independent principles.

(45) a.



Here, the features of IP^1 are dominant in IP^2, while those of the DP are recessive. The features of IP^1 include the categorial feature [I], as well as other features pertaining to finiteness, etc.. The features of DP include the categorial feature [D], ϕ features, and the operator feature [Wh]. For now, let us concentrate on the status of [Wh], as well as the categorial features [D] and [I], in the output of Merge, IP^2. The fusion operation which produces IP^2 may be represented as in (60):[25]

(60) [I,(D),(Wh)] (= IP^2 in (45a))



We may now ask which of these features, [I], [D], or [Wh], is visible in IP^2: [I] is visible by virtue of being dominant. [Wh] is also visible, in spite of being recessive, because there is no other feature in the same term which blocks it. On the other hand, [D], which is also recessive, is *not* visible, because there is a dominant feature in the same term which blocks it, namely [I]. *Blocking* is here a matter of mutual exclusivity: A term cannot have the syntactic and semantic distribution of an IP and a DP simultaneously, and so the 'expression' of the [D] feature is suppressed.[26]

[25] Here the bracketed sets represent the *labels* of the terms corresponding to each of the nodes in the tree. Thus, using the set notation developed by Chomsky (1995), where a term T = {L,{X,Y}}, the highest node in (60) represents the term: {[I,(D),(Wh)],{{[D,Wh],{...}},{[I],{...}}}}. For convenience, I list here only the features of those labels relevant to the current discussion. In a more complete representation, additional features would be listed as well.

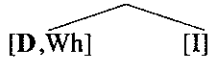
[26] Additional work will need to be done to determine exactly what conditions result in the blocking of a recessive feature by a dominant feature. In situations like the one discussed above, it seems as though the dominant categorial feature automatically blocks the recessive categorial feature. However, there do seem to be cases where the recessive categorial feature is *not* blocked—for example, in head incorporation cases, as discussed in section 4.2.2: There I argued that when a verb raises to Asp^0, the lexical [V] feature of the verb (which is presumably recessive) is inherited as a visible feature by the resulting incorporation structure, and is not blocked by the categorial feature of Asp^0.

Perhaps the correct generalisation is that *lexical* features like [V] are always visible, whereas *functional* features like [Asp] and [D] are only visible when they are dominant.

Feature visibility and the FMP act on the structure in (45)/(60) in the following way to force various movements: If Attract-F attracts the [I] feature in (60), then the entire IP^2 will raise, since it is IP^2—or, more precisely, the *label* of IP^2—which contains the highest visible copy of [I]. If Attract-F attracts the [Wh] feature, then again the entire IP^2 will raise, since IP^2 contains the highest visible copy of [Wh]. (This is what forces IP-pied-piping in subject-wh questions, as discussed in 4.3.) However, if Attract-F targets the [D] feature, then IP^2 will not raise, since the [D] feature of IP^2 is not visible. Instead, it is the DP specifier which contains the highest visible copy of [D], and so it is the specifier which will raise if the [D] feature is targeted.

Using boldface to mark the highest visible copy of a feature, we obtain the following representation for the operation Merge(DP,IP^1) in (45)/(60):

(61) **[I,(Wh),(D)]**



Note that even though the [(D)] feature is invisible in the label of IP^2, I assume that *it is nevertheless present*, and may become visible at a later stage in the derivation. As I discuss in the next section, this will happen if the dominant feature which blocks it—namely [**I**]—is eliminated.

Before proceeding to this discussion, however, we must make a brief digression to consider the relationship between head movement and the FMP. As given in (48), the FMP appears to disallow head movement entirely: Suppose, for example, that a [V] feature were being attracted. If only the constituent containing the highest visible copy of a feature may move, then we would expect VP to raise in all cases, rather than V^0. One way to handle this would be to assume that there is a fundamental difference between the features of zero-level categories and the features of phrasal categories, and relativise the FMP accordingly:

(62) *The Feature Movement Principle* (revised again)
Attract-F, triggered by a feature of an X^n-level category, attracts the highest *visible* X^n copy of a feature, causing the constituent associated with that copy to raise. ($X^n = X^0$ or XP)

It follows from (62) that when a feature F attracts a compatible feature F′ into its checking domain, the largest X^0-level category containing a visible copy of F′ will raise if F is associated to a head (head

movement); otherwise, the largest maximal projection containing a visible copy of F′ will raise (XP movement).

Note that this solution assumes that the difference between [+min] and [-min] projections is absolute rather than relative, and is thus contrary to the spirit of Chomsky's 'bare phrase structure' proposals. An alternative to (62) would be to invoke the Uniformity Condition, which states that a chain must be uniform with regard to the phrase structure status (maximal or minimal) of its members (Chomsky 1995, p.253). Note, though, that whatever solution we adopt, we must assume that an attracting feature F may be 'associated' to a head, in which case it will trigger head movement, *or* to an XP, in which case it will trigger phrasal movement. (What exactly it means for a feature to be 'associated' to an XP as opposed to a head is unclear.)

In the sample trees that follow, I will represent the distinction between features associated with X^0 and features associated with XP by using the symbols [X] and [XP], respectively. The complete set of symbols to be used in the next section is given in (63):

(63)

Dominant	*Recessive*	
[X]	[(X)]	copy of a (head) feature of X
[XP]	[(XP)]	copy of a (phrasal) feature of X
[X]	**[(X)]**	highest visible copy of a (head) feature of X
[XP]	**[(XP)]**	highest visible copy of a (phrasal) feature of X

6. THE 'UNBLOCKING' OF RECESSIVE FEATURES

In section 3 I claimed that head-final structures are derived by cyclic applications of head raising followed by pied-piping of the remnant containing the trace of the head. In this section I return to the question of what motivates remnant pied-piping in these cases. The analysis I will propose rests on an assumption about the interaction between feature inheritance and head movement—namely, that the raising of a head into a higher projection results in the deletion of all inherited feature copies associated with that head.

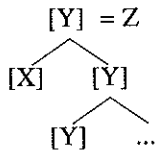
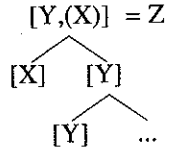
6.1. *Head movement and feature inheritance*

From all that has been said so far, the theory of feature inheritance and visibility presented here may seem like nothing more than a restatement

of observations that have been in the literature for years (e.g. the theory of feature percolation argued for by Cole, et al. (1993)).[27] Thus, one may ask whether the present theory contributes anything new to the understanding of features and feature transmission.

I would argue that my theory differs crucially from conventional theories with regard to how the notion of *blocking* is understood. In conventional theories, when a feature [X] of a specifier or adjunct conflicts with a feature [Y] of a head, then [Y] will block [X] from being inherited by the resulting category Z. In my theory, by contrast, [X] *is* inherited by Z; the presence of [Y] merely prevents it from being expressed. This difference is schematised in (64):

(64)

Traditional feature percolation	*'Mendelian' feature inheritance*
	
Z fails to inherit [X]	Z inherits [X] as a recessive feature

This distinction between the two theories becomes critical when we consider the interaction between feature inheritance and raising. In particular, I would like to postulate the following:

(65) When a head X raises out of its projection XP, all of the copies of the features inherited from X are deleted from the terms of XP.[28]

To give an abstract example: Suppose we have a phrase-marker XP which contains a ZP in its specifier position, and which has in turn

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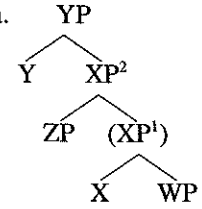
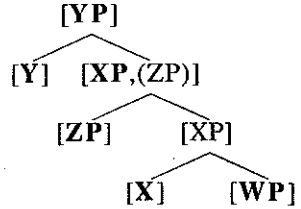
[27] Cole, et al., argue for the principles given below. (In my theory, the principles in (i) and (ii) are subsumed under the FIH, while the principle in (iii) is similar to the definition of *visibility* in its invocation of feature conflict.)

(i) The features of the mother node and the features of the daughter nodes will be identical.
(ii) No feature can percolate out of a (lexical) complement structure.
(iii) If the features of the daughter nodes conflict, the mother node will have the features of the head node.

[28] As Marcel den Dikken (p.c.) observes, (65) may follow if one assumes that traces have no features.

been selected as the complement of a higher head Y, as shown in (66a). Using the notation developed in section 5, this may be represented as in (66b):

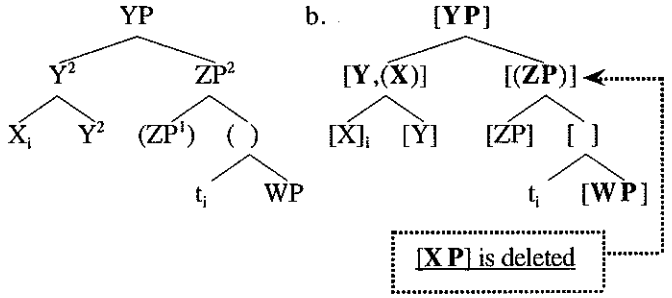
(66) a. 

b. 

Here we see that the maximal projection of X, namely XP^2, contains a (phrasal) feature of X, written [XP], as well as a (phrasal) feature of Z, written [ZP]. These features were inherited through the fusion of ZP with XP^1. In XP^2, the [XP] feature is dominant while the [ZP] feature is recessive, and hence the latter appears in parentheses in (66b). Furthermore, since [XP] and [ZP] are conflicting categorial features, it follows from the definition in (59) that [XP] is visible, while [ZP] is invisible. (Note also the use of boldface in (66b), indicating that the [XP] feature of XP^2 is the highest visible copy of this feature with respect to the FMP.)

Suppose that X^0 then raises to adjoin to Y^0. Assuming the hypothesis in (65), this will force all copies of the features of X to delete. In particular, raising of X^0 to Y^0 will result in the elimination of the dominant [XP] feature of XP^2. Notice that when this feature is eliminated, the recessive feature [(ZP)] is no longer blocked, and hence becomes visible. (Furthermore, it becomes the highest visible copy of the [ZP] feature.)

What (65) amounts to is saying that, when X^0 raises to adjoin to Y^0, the maximal projection XP loses the overt features of its head and inherits the overt features of the specifier, in effect *becoming a projection of the specifier*. ZP, which was originally the specifier of the complement of Y, is thus reanalysed as the complement of Y. This is shown in (67) below. (Notice that XP^2 has been relabeled ZP^2, to reflect the fact that it now bears the categorial features of Z.)

(67) a. 

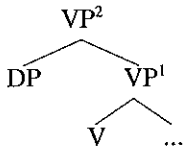
b.

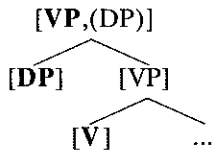
X raises to adjoin to Y, causing XP^2 to become ZP^2

Concrete examples of this kind of reanalysis are given in the next section.

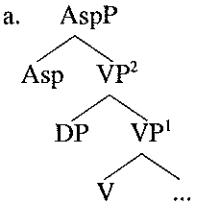
6.2. *SOV order revisited*

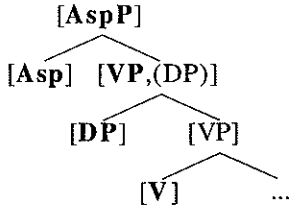
Consider now the steps which I posited in section 3 to derive SOV order in languages like Korean, reinterpreted now in terms of selection, fusion, and feature visibility: The first step involves fusion of the object DP with VP, thereby saturating the VP, as shown in (68a) below. This operation may be represented as in (68b), using the feature notation developed in section 5. Here we see that VP^2 inherits the dominant [VP] feature of VP^1, as well as the recessive [DP] feature of DP:

(68) a. 

b. 

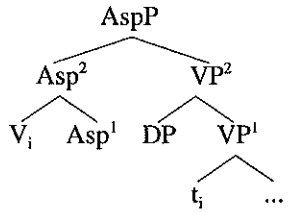
Asp^0 then selects VP^2, projecting AspP. This results in the structure in (69). (Recall from section 5.2 that when selection takes place, the output term only inherits the features of the head):

(69) a. 

b. 

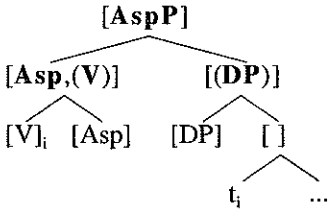
V^0 then raises and adjoins to Asp^0:

(70)



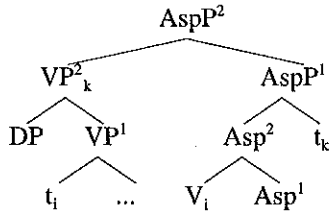
Here is where I exploit the idea that a dominant feature may be deleted, causing a recessive feature in the same term to become 'unblocked': When the V head raises out of VP in (70), all features inherited from that head are deleted, as shown in (71) below. Notice that when this happens, the recessive [DP] feature of VP^2 is no longer blocked by a competing dominant feature. As a consequence, it becomes visible, and so replaces the [DP] feature of the specifier as the highest visible copy (this is shown by the replacement of **[VP**,(DP)] with [(**DP**)] as the label for VP^2):

(71)



The next step in the derivation involves raising of the object DP to check Case by merging with AspP. As discussed in section 3, this is achieved by raising of the VP remnant, containing the trace of V^0, into the specifier of AspP:

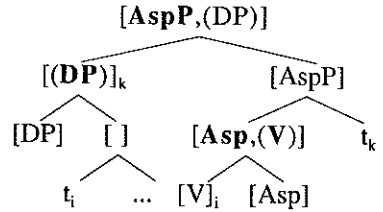
(72)



Given the FMP, together with our assumptions about feature visibility and feature deletion, the fact that DP pied-pipes VP^2 in (72) falls out automatically. Suppose we interpret Case checking as a lexical property of the Case-checking category, requiring it to merge

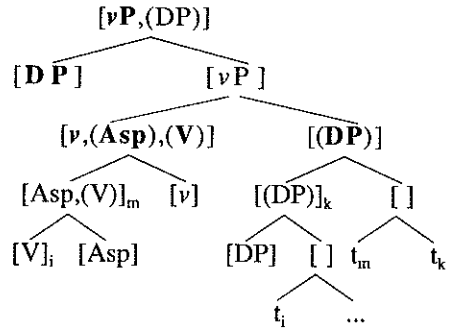
with a [DP] feature. Accusative Case checking would thus involve attraction of the closest available [DP] feature by Asp, resulting in the raising of the constituent whose label contains the highest visible copy of that feature. Recall that since VP^2 in (72) has lost its [VP] feature through V^0 raising, the recessive [DP] feature of VP^2 has become the highest visible copy of [DP], in effect turning VP^2 into a projection of D^0. It is thus this projection which must raise to SpecAspP:

(73)



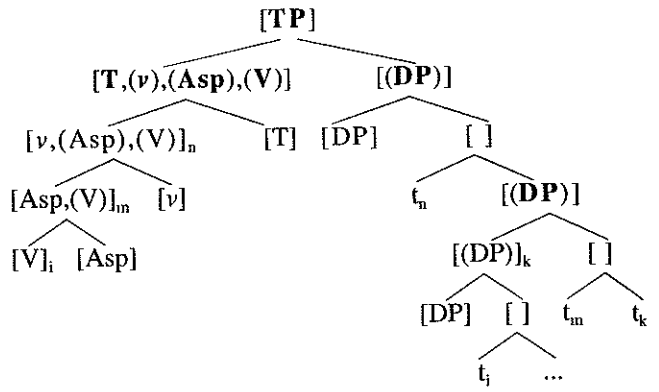
Next, v^0 merges with $AspP^2$ to form vP, after which Asp^2 raises and adjoins to v^0, and the subject DP is introduced. Asp^2 movement is forced here because this is the constituent containing the highest visible copy of [Asp] (and perhaps also [V]), as shown in (73) above. The result of Asp^2 raising and merger of the DP subject is represented in (74) (see (12) in section 3 for the conventional phrase structure tree). Notice that raising of Asp^2 causes $AspP^1$ and $AspP^2$ in (12)/(74) to lose their dominant categorial features, leaving just the recessive [DP] feature in $AspP^2$:

(74)



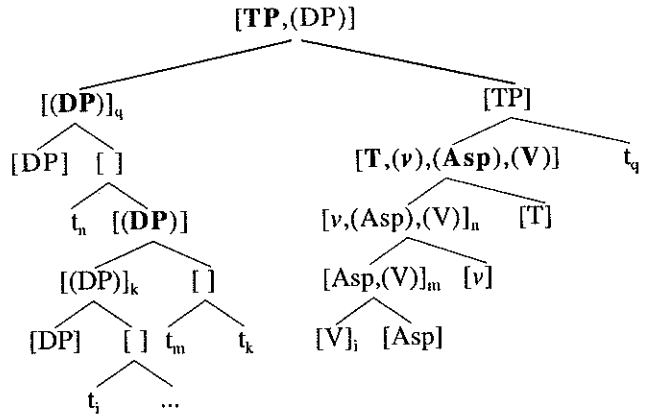
T^0 then merges with vP, and v^0 (containing Asp^2) raises to adjoin to it. Just as with V^0-to-Asp^0 raising and Asp^0-to-v^0 raising, v^0-to-T^0 raising causes vP to lose its dominant categorial feature, so that the label [**vP**,(DP)] in (74) is replaced with the label [(**DP**)] in (75). In this way the recessive [DP] feature of vP becomes visible (see (13) in section 3 for the conventional phrase structure tree):

(75)



Finally, the subject DP must raise and merge with TP to check its Case features. Attract-F attracts the highest visible [DP] feature, causing the constituent whose label contains this feature to pied-pipe. This is the movement—corresponding to the pied-piping of *v*P in the tree in (14), section 3—which derives SOV order:

(76)



According to this analysis, the strictly verb-final nature of languages like Japanese and Korean falls out from the interaction of three factors, namely (a) properties governing feature inheritance and feature deletion; (b) the operation of Attract-F, as conditioned by the FMP; and (c) how high the verb raises by head movement in these languages. Factors (a) and (b) are universal, but (c) is presumably subject to cross-linguistic variation, suggesting the hypothesis that word-order variation across languages follows directly from parameterised properties of verb movement. Additional work will need to be done to see if this hypothesis can be maintained for a variety of languages.

7. CONCLUSION

In this paper I presented an analysis which attempts to derive SOV order in strict verb-final languages by means of movement, in compliance with the LCA. The movements posited here were then motivated by means of an articulated theory of feature inheritance, Merge, and Attract-F. The major features of this theory may be summarised as follows:

- *How are features inherited/transmitted/percolated?*

(i) The Feature Inheritance Hypothesis: Whenever a specifier is added to an XP, or a head raises and concatenates with another head (*fusion*), the resulting category inherits the features of both input terms. However, when a head combines with a complement (*selection*), the resulting category inherits only the features of the head.

- *What moves?*

(ii) The Feature Movement Principle: The highest visible copy of a feature moves, carrying along the (phonological) features of the category it is associated with. (It follows from this that pied-piping is a central feature of movement, rather than a peripheral one.)

- *How is feature visibility defined?*

(iii) Dominant and recessive features: When a category inherits the features of both of its input terms, then the features of the projecting category will be *dominant*, while the features of the non-projecting category will be *recessive*—where the *projecting* category is understood to be the target of movement, and/or the saturated predicate.

(iv) Feature visibility: A feature is *visible* if it is a dominant feature, *or* if it is a recessive feature which is not blocked by (i.e. mutually exclusive with) a dominant feature present in the same term.

(v) 'Unblocking' a recessive feature: A recessive feature may become visible in the course of a derivation if the dominant feature which blocks it is deleted. A feature is deleted from a maximal projection if and only if the head from which that term was inherited raises out of the projection. For example, a VP loses its [V] feature if the V^0 head raises and adjoins to a higher head, allowing the recessive [D] feature in VP (inherited from the DP in SpecVP) to surface.

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NON-QUANTIFICATIONAL 'ALSO' IN HUNGARIAN: THE *IS* PARTICLE

TEMESE A. SZALAI
tszalai@ucla.edu

In this paper, I explore the behavior of non-quantificational 'also', focusing particularly on Hungarian but including some investigation into English and Dutch data. In these three languages, the distribution of the small particles expressing non-quantificational 'also' may provide an outlet for addressing some larger theoretical issues. To this end, a syntactic analysis of the Hungarian data has been provided.

1. INTRODUCTION

The purpose of this paper is to examine the behavior of non-quantificational 'also' in Hungarian. Hungarian non-quantificational 'also' is a tiny, but very productive particle, whose distribution may allow some larger theoretical issues to be addressed. These larger theoretical issues begin with exploring possible theoretical mechanisms available for handling the distribution of this type of particle in a particular language. They extend to attempting to reconcile (some of) the principles of current syntactic theory with certain ideas associated with the basic template for Universal Grammar: the 'universal base hypothesis' (Koopman (1996), Sportiche (1995), Cinque (1997), and others).

The backbone of this paper is an attempt to derive the syntactic distribution of non-quantificational 'also' in Hungarian: the *is* (/ɛʃ/) particle[1]. Non-quantificational *is* exhibits intricate surface patterns with respect to focus, negation, verbal modifiers and finite verbs.

In this paper, I hope to show that Hungarian has two, and only two, *is* particles. The first *is* particle is roughly equivalent to 'also' and is quantificational. The other *is* particle has a presuppositional meaning that affirms the occurence of an already expected event, situation or circumstance. An examination of the semantics of English non-quantificational *too* and Dutch non-quantificational *ook* support this view. It is this second *is* particle, non-quantificational *is*, with which I am concerned here.

[1] It is an unfortunate coincidence that non-quantificational 'also' in Hungarian happens to be a word in English. When *is* appears in italics in this paper, I am referring to Hungarian non-quantificational 'also'.

In analyzing this particle, I adopt Szabolcsi's (1996) account of verb movement in Hungarian. What makes non-quantificational *is* an interesting theoretical question is that it linearly follows certain elements while at the same time appears to act on the polarity of the clause as a whole. Thus, there is not a one-to-one correspondence between the item that precedes *is* and the thing that *is* operates on. I intend to show that non-quantificational *is* occupies an invariant stuctural position w.r.t. polarity projections in Hungarian and that both the syntactic and semantic behavior of *is* can be squared within this analysis.

I begin this paper by presenting reasons for considering Hungarian, English and Dutch as representative languages for determining the semantics of this particle. Then, I discuss an informal semantics of non-quantificational 'also'. In this section, I will present the relevant data, focusing on Hungarian. In the third section, I will outline the theoretical assumptions I adopt in my treatment of non-quantificational *is*.

Once the theoretical framework has been presented, I will discuss the specifics of the Hungarian case, beginning with a a brief background of theoretical treatments of non-quantificational *is*. Then, I will present a possible analysis of the Hungarian data.

2. WHY HUNGARIAN, ENGLISH AND DUTCH?

The first question that needs to be addressed is why Hungarian, English and Dutch have been chosen for this analysis. One of the original goals of this research was to provide an account of non-quantificational *is* based in current theoretic terms. There were several reasons for wanting to do this. To begin with, the only previous account of *is* could not account for certain crucial pieces of data. Additionally, Szabolcsi's (1996) work on V movement in Hungarian provides a good point of departure for further work, even on old questions, related to Hungarian sentence structure.

Most importantly, however, is the aspect of non-quantificational *is* already cited. Namely, *is* is a lexical operator that follows one element but seems to act on something much larger than just that single element. Therefore, some theoretical mechanisms must be made available in order to achieve the the syntactic and semantic behavior of this particle.

The goals of this research were then extended to consider the cross-linguistic viability of the proposed analysis. English and Dutch were

chosen because they differ from Hungarian in terms of the distribution of non-quantificational 'also' while also differing from one another. These differences will be highlighted when the relevant data is presented. Like Hungarian, however, both English and Dutch seem to have the same theoretical complication as *is* in Hungarian. Specifically, *too* in English and *ook* in Dutch both seem to follow the elements on which they operate.

These languages also exhibit other similarities to one another. These similarities will be discussed more fully in the section below. At this point, I would like to present an (informal) unified semantics of non-quantificational 'also'.

2.1. *Intuitions about Non-Quantificational 'Also'*

Non-quantificational 'also' is that 'also' that does not mean 'in addition to' or 'as well as'. The type of construction under consideration here are sentences like those below.

(1) Diana said that she would work and she worked, too!

(2) Blake said the he wouldn't come home and he didn't come home, either!

Non-quantificational 'also', in these cases instantiated as *too* and *either*, plays a particular function in the sentence. To a certain degree *too/either* seems to lend a certain emphasis to the second clause of the sentence. However, its function seems to extend beyond that. Note (3) and (4) below.

(3) Bea said that she wouldn't work and * she worked, too!

(4) Bea said that she would work and * she didn't work, either!

The grammaticality of *too/either* is affected by some type of concord effect: the polarity of both clauses must be identical. In some ways, this might be seen as an effect of the conjunction *and*. Yet, if the conjunction is changed to *but*, the examples above are still ungrammatical while *too/either* are present.

In some sense, this is reminiscent of quantificational 'also'. Sentences (5) and (6) below illustrate that while quantificational *too* is acceptable with *and*, it is not good with *but*..

(5) Diana bought apples and pears, too!

(6) Diana bought apples but not pears *too/*either!

The 'also' under discussion in this paper, however, is non-quantificational. The general sense is that *too/either* in these examples affirms the general situation conveyed by the predicate of the first clause. Additional examples have been provided below.

2.2. *The Relevant Data*

I have organized the relevant data by language. The Hungarian data appears first, followed by the English and then the Dutch data.

2.2.1. *The Hungarian Data*

The Hungarian data focuses on the distribution of non-quantificational *is* w.r.t. focus, negation, verbal modifiers and finite verbs. Hungarian realizes focus overtly via syntactic position, making it interesting to consider the distribution of *is* in relation to focus. Verbal modifiers (VMs) are small particles that certain verbs carry in Hungarian. Generally speaking, in neutral sentences[2] verbal modifiers appear immediately pre-verbally. In sentences containing focus and/or negation, VMs occur immediately post-verbally. Verbal modifiers are discussed more fully in the next section in connection with Szabolcsi's (1996) account of verb movement in Hungarian.

In Hungarian, non-quantificational *is* seems to have several meanings. It is for this reason that I am attempting to propose a unified semantics for non-quantificational 'also'. In Dutch and English, however, these meanings do not seem to be present.

2.2.1.1. *Emphatic usage ('too!')*

The emphatic usage is perhaps the most familiar occurence of non-quantificaitonal *is*. It is the usage handled by Piñón (1993) in his account of sigma heads. Piñón, however, cannot account for examples such as (7) below. In most of the examples that follow, I have tried to illustrate the different syntactic patterns exhibited by verbs with verbal modifiers versus the behavior of those without verbal modifiers. These differences will figure prominently in my analysis.

[2] Neutral sentences are sentences that do not contain either focus or negation.

(7) Péter meg igérte hogy.....
Peter VM promised+3rd SING +DEF, that.....
dolgozni fog és
work+inf will+3rd SING and
dolgozott is.
worked+3rd SING NQ-also
'Peter promised that he would work and he worked, too!'

(8) Péter meg igérte hogy.....
Peter VM promised+3rd SING +DEF, that.....
el fog menni és
away will+3rd SING go+INF and
el *is* ment.
away NQ-also went+3rd SING
'Peter promised he would go, and he went, too!'

In the pair of sentences above, it is important to notice the following. In (7), the finite verb precedes *is*. In sentence (8), the VM precedes *is*. Notice that in both cases, *is* seems to modify the neutrality of the sentence. Peter promised he would do something and, in both cases, he did.

2.2.1.2. *Interacting with Negation*

(9) Péter meg igérte , hogy.....
Peter VM promise+PAST+3rd SING +DEF, that.....
nem fog el menni és
not will+3rd SING away(VM) go+inf and
nem is ment el.
not NQ-also went+3rd SING away(VM)
'Peter promised he wouldn't go away and he didn't go away, either!'

(9) is an example of *is* interacting with negation. Note that the verb and VM follow the pattern expected with negation, namely verb-VM inversion. Moreover, notice that the expectation is negative and the result is negative as well. That is, Peter promised not to do something and it turned out that indeed he did not do that thing. Also note that an example in which the expectation were positive but the result negative would be ungrammatical.

2.2.1.3. *Interacting with Focus*

(10) Péter meg igérte, hogy.....
Peter VM promised +3rd SING +DEF, that.....
[Mari] fog el jönni és
[Mary] will+3rd SING away(VM) come+inf and
[Mari] is jött el.
[Mary] NQ-also came+3rd SING away(VM)
"Peter promised that [Mary] would come and [Mary] came, too!'

This example illustrates that *is* seems to be able to license focus. I use the term 'seems' as I think that this is not a matter of *is* somehow assigning a [+focus] feature to some structural position or carrying this feature itself. I will be more specific on this issue in my analysis. Primarily, however, it should be noted that a focused constituent can precede *is*. Also note that, as with negation, the expected pattern of verb-VM inversion is observable.

2.2.1.4. *Interacting with Focus and Negation*

(11) Azt mondtam, hogy.....
expl. say+PAST+1st SING , that.....
[Mari] nem fog jönni és
[Mary] not will+3rd SING come+inf and
[Mari] is nem jött.
[Mary] NQ-also not came+3rd SING.
'I said that [Mary] wasn't going to come and [Mary] didn't come, either!'

(11) is an example of *is* interacting simultaneously with focus and negation. The expectation is that some person x will not come, where x=Mary. The result is that some person x did not in fact come, where x=Mary. The *is* phrase thus confirms that the person x who was not expected to come did not come. Notice that the focused constituent precedes *is*, while negation linearly follows *is* in this example.

2.2.1.5. *Interacting with Constituent Negation*

(12) Péter azt jósolta, hogy
Peter expl. predicted+3rd SING+DEF, that
nem Mari fogja meg nyerni
not Mary will+3rdSING+DEF VM win+inf
a versényt, és nem is Mari
the contest+ACC and not NQ-also Mary
nyerte meg.
won+3rd SING+DEF VM
'Peter predicted that it wouldn't be Mary who would win the contest and it wasn't Mary who won, either.'

This example is quite interesting as the syntax of the *is* phrase is not what might be expected under certain accounts of constituent negation. If constituent negation formed a unit of negation + constituent, it might be expected that this unit would precede *is*. As can be seen, however, this is not the case; *is* intervenes between negation and the constituent being negated.

The expectation expressed in the sentence is that "A person x will not win the race, where x=Mary". This expectation is confirmed in the *is* phrase. ("X did not win the race, where x=Mary.")

2.2.1.6. *'So'/'Therefore' Usage*

The *so/therefore* meaning of *is* is used a fair amount. Piñón does not, however, document this usage in his account of non-quantificational *is*. It is clear, however, that this usage of *is* is not emphatic. *Is* is used in the sense of 'so/therefore' when the context makes it clear that the events described in the *is* phrase are a pragmatic consequence either of the situation in general or of the previous statement. There is no repetition of the same predicate, either in part or in its entirety. In instances like this, it does not make sense to assume that *is* has an emphatic meaning.

(13) Péter meg akart szabadulni a
Peter VM wanted+3rd SING be freed+inf the
kutyától és oda is adta
dog+from and away NQ-also gave+3rd SING+DEF
a hugának
the sister+3rdSING POSS + DAT
'Peter wanted to get rid of the dog, and so, he gave it to his sister.'

In this example, the same pattern can be observed as in example (8). That is, the VM linearly precedes *is*, which in turn linearly precedes the verb.

2.2.1.7. Akkor *('Just')*

This meaning of *is* is highly dependent on context. It must be uttered in a situation where the utterance reflects actions that are being taken as a result of the overall situation. For example, imagine the following context to accompany example (14) below. A friend of mine has asked me to come over to her house to help her with her computer. I oblige. While I am there trying to help, she is extremely nasty and rude to me. I could then utter sentence (14). It would be similar to uttering in English, "Well, if that's the way you're going to be, I'll just leave."

(14) Akkor haza is megyek.
Then home NQ-also go+PRES+1st SING
'I'll just go home, then.'

Again in this example a familar pattern can be observed. Namely, *is* intervenes between the VM and the finite verb. This is identical to the pattern found in example (8).

2.2.1.8. *In Embedded Clauses*

It should be noted that non-quantificational *is* is not limited to matrix clauses. The following example illustrates this point.

(15) Péter meg igérte, hogy
Peter VM promised+3rd SING+DEF, that
dolgozni fog és biztos vagyok
work+inf willl+3rdSING and certain be+PRES+1st+SING
benne, hogy dolgozott is.
in it that worked+3rd SING NQ-also
'Peter promised that he would work and I'm sure that he worked, too!'

2.2.1.9. *The Preference for Ellipsis: The Untold Story*

All of the above data are correct and fully grammatical according to my informants. It is interesting to note, however, that when predicates get longer, there is a strong tendency to pronominalize or ellipt part of the predicate. In fact, in certain instances it is ungrammatical if the predicate is not ellipted in some way or another. It will be shown that both English and Dutch also exhibit this tendency.

(16) Azt mondtam neked, hogy csütörtökön János
Expl. said+1st+SING you+DAT that thursday+on J.
lesz az elso és úgy is
be+FUT+3rd+SING the first and so NQ-also
lett.
be+PAST COND+3rd+SING
'I told you that on Thursday John would be the first and it turned out that way, too!'

In example (16) above, *úgy* ('so/in that manner') replaces the full expression of the ideas *John*, *on Thursday* and *the first*. Repeating all of these ideas in the second conjunct is quite strange, to the point of being ungrammatical.

2.2.2. *The English Data*

2.2.2.1. *Laka's 'Too' compared with Non-Quantificational 'Too'*

English does not exhibit nearly the variety of surface patterns w.r.t. non-quantificational 'also' as does Hungarian. As noted earlier, English seems to lack the multiple, related meanings of non-quantificational 'also'. This is not to say that English does not have other meanings of non-quantificational 'also'. Most notably, there is the emphatic meaning cited by Laka (1992). I maintain, however, that Laka's *too* and the *too/either* being discussed here are quite different.

Although both Laka's *too* and the *too* being discussed here have the quality of being emphatic, Laka's *too* reverses the polarity of a clause. For example,

(17) a. Veronika doesn't speak French.
b. She does *too* (speak French).

This instance of *too* seems to have a very different function than the instances of *too/either* cited earlier. The meaning of *too* in (17b) does not seem to stem from the same general intuitions about the *too* under discussion here. Note the meaning differences between *too* in (18) and (19) below, which differ in the syntactic position of *too*.

(18) Veronika did too cook on Sunday.

(19) ...and Veronika cooked on Sunday, too!

Thus, *too* as in (18) will not be included in the (informal) unified semantics of non-quantificational 'also' to be presented at the end of this section.

In English, non-quantificational*too/either* appears clause finally. The examples below illustrate this uniformity.

(20) Veronika said that she would work and she worked, too!

(21) Veronika said that she wouldn't work and she didn't work, either!

(22) Blake said that it was Tim who was getting married and it was Tim who got married, too!

Additionally, the use of English *too* is not limited to matrix clauses. This is evidenced by example (23) below.

(23) Peter said that he would work on Friday and I'm sure that he did work on Friday, too!

2.2.2.2. *Ellipsis: The Saga Continues*

I maintain that all of the above examples are grammatical. I cannot rule them out. In procuring these data, however, I have uncovered a very strong tendency for speakers to ellipt the VP. In fact, when the data above are evaluated side-by-side with their ellipted counterparts, the non-ellipted versions are often seen to be at best marginal. The following paradigm illustrates this point. Note that grammaticality judgments are not my own, but were provided independently by three different native speakers.

(24) a. John said (that) he wouldwork on Thursday and he did, too.
b. ? John said (that) he would work on Thursday and he worked, too.
c. ??/* John said (that) he would work on Thursday and he worked on Thursday, too.

The interesting observation here is that, given a choice between an ellipted form, a partially ellipted form and a non-ellipted form, native speakers seem to prefer the fully ellipted form. This observation will play a role in the formulation of the unified semantics of non-quantificational 'also'.

2.2.3. *The Dutch Data*

2.2.3.1. *Introducing* Ook *('Also') and* Ook Niet *('Also Not')*

The Dutch data do not appear to be as uniform as either the Hungarian or English data. In the Hungarian data, it was observed that there was a general pattern of *is* appearing immediately after the main polarity projection of the *is* clause, with the exception of clauses containing verbs which lacked VM's. In the English data, it was observed that, for the relevant meaning, *too* appeared clause-finally.

The data below illustrate that Dutch *ook* seems to precede negation and focus. Additionally, it seems to follow the finite verb and the subject. Note, however, the distribution of *ook* w.r.t. past participles. Also note that in some examples the subject and the verb are inverted due to scrambling effects.

(25) Ik ben ook (niet) naar huis gegaan
I am too (not) to home went.
'I went home, too! (I didn't go home either!)'

(26) Tine zei dat ze zou (niet) werken en
T. said that she would (not) work+INF and
ze heeft ook (niet) gewerkt!
she has too (not) worked
'Tine said that she would work and she worked, too!'/('T. said that she wouldn't work and she didn't work, either.')

(27) Tine zei dat ze zou een brief schrijven en .....
Tine said that she would a letter write+INF and
'Tine said that she would write a letter and ...'

a. zij heeft ook een brief geschreven.
she has too a letter written
'she wrote a letter, too!'
b. een brief heeft ze ook geschreven
a letter has she too written
'she wrote a letter, too!'
c.) dat heeft ze ook gedaan
that has she too done+PAST PART
'that's what she did, too!'

(28) Tine zei dat ze zou werken en * zij heeft
*Tine said that she would work+INF and * she has*
gewerkt ook.
worked+PAST PART too
'Tine said that she would work and she worked, too!'

The Dutch data illustrate several points. First of all, *ook* gets stranded in a position between the subject-verb complex and the past participle. Secondly, the data show that *ook* immediately precedes negation and focus (see (25)).[3] It seems as though *ook* cannot be left in clause final position when a full (i.e., non-ellipted) verbal string is used.

Additionally, like Hungarian and English, non-quantificational *ook* is not limited to matrix clauses. Example (29) below illustrates this point.

(29) Tine zei dat Jan zou werken enI k ben zeker
Tine said that Jan would work+INF and I am certain
dat hij heeft ook gewerkt.
that he has too worked+PAST PART
'Tine said that Jan would work and I'm sure that he worked, too!'

2.2.3.2. *More Ellipsis Facts*

Like Hungarian and English, Dutch also exhibits certain tendencies towards ellipsis where non-quantificational *ook* is concerned. Again, the striking fact here is that in certain instances ellipsis is preferable. Note the following example with both ellipted and non-ellipted forms.

(30) a. Tine zei dat ze zou werken en dat deed
T. said that she would work+INF and that did.
ze ook.
she too
'Tine said that she would work and she did, too!'
b. ?? Tine zei dat ze zou werken en werken
T. said that she would work+INF and work+INF
deed ze ook.
did she too.
'Tine said that she would work and she did work, too!'

[3] This observation was brought to my attention by Hilda Koopman (p.c.).

2.2.4. *Crosslinguistic Commonalities*

The above data exhibit some commonalities that are semantic in nature. Most notably, there seems to be some link between ellipsis and non-quantificational 'also'. This observation might lend some insight into the problem of determining the element on which non-quantificational 'also' acts.

I would like to consider the possible implications of this preference for ellipsis. First of all, it indicates that it is not the verb itself, or its arguments, that non-quantificational 'also' is acting on. Furthermore, it seems to indicate that it is the entire predicate that non-quantificational 'also' acts on.

Ellipsis is, however, not the only cross-linguistic commonality related to non-quantificational 'also'. In all of the languages examined, it is not possible to reverse the polarity of the sentence while using non-quantificational 'also'. That is, two affirmative or two negative clauses can be paired together, but two clauses of opposite polarity may not be paired together if non-quantificational 'also' is used. I believe that this point also bears on the semantics of this particle.

Finally, although non-quantificational 'also' frequently has an emphatic interpretation, this is not always the case. It cannot be said that the sole function of non-quantificational 'also' is for emphasis, particularly in light of the range of Hungarian data. Thus, a broader semantic function must be ascribed to non-quantificational 'also'.

2.3. *Ascribing an Informal Unified Semantics to Non-Quantificational 'Also'*

Non-quantificational 'also' has many different meanings. As Piñón (1993) noted for Hungarian, it can be emphatic. Additionally, in various other contexts it can mean 'so/therefore', 'again/by the way' and 'just'. Additionally, *is* can interact with focus and negation.

Non-quantificational 'also' has close ties to ellipsis in all three languages under consideration here. As mentioned above, this seems to suggest that non-quantificational 'also' has a relationship to the predicate as a whole.

Also as noted above, non-quantificational 'also' cannot be used to reverse the polarity of a sentence. It has a presuppositional meaning that the event, condition or situation being described is somehow a pragmatic consequence of the discourse or context. Non-quantificational

'also' affirms that the events that were somehow expected to have happened actually did happen. Non-quantificational 'also' is a lexical operator that confirms the polarity of the predicate.

Note that in Hungarian, there is frequently a single particle that is in some way associated with the polarity of the sentence. In particular, examples which involve either focus or negation spring to mind. *Is*, however, follows the relevant particle. This pattern is suggestive of the semantics just outlined.

This description of 'also' captures the range of occurences of non-quantificational 'also'. It represents the unified semantics of 'also'. The rest of this paper will be aimed at deriving the surface distribution of non-quantificational 'also' cross-linguistically, beginning by hammering out an analysis for the Hungarian data. Throughout the paper and the analysis presented, I will strive to capture syntactically the semantics ascribed to non-quantificational 'also' here.

3. The Background

3.1 *Piñón's Version of* Is *('Also')*

Piñón (1993) is, to the best of my knowledge, the first and only person to identify and analyze *is* in its capacity as a non-quantificational particle. I do not feel that Piñón's story is adequate, which is why I have endeavored to re-analyze this particle. Additionally, I feel that Piñón's analysis does not conform completely to some of the principles of X-bar theory. I do, however, outline his analysis here to provide the reader with a brief history of the problem as well as another possibility for analyzing this particle.

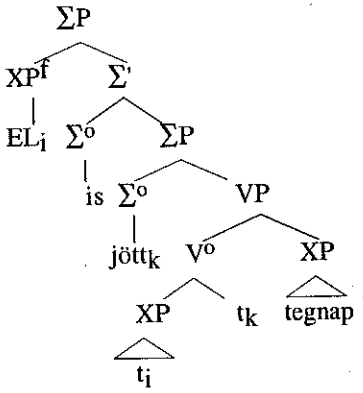
Piñón (1993) argues for a ΣP projection in Hungarian, akin to Laka's (1992) ΣP in Basque and English. Piñón (1992) examines which elements may appear in the Σ^0 position; he analyzes *is* as an emphatic particle that heads ΣP. This is very similar to Laka's analysis of *so* in English constructions like the following.

(31) a. Veronika doesn't speak French.
b. She does *so* speak French.

Piñón argues that negation can also occur in the Σ^0 position. Focus, however, occurs in Spec, ΣP under his analysis. He stipulates that non-quantificational *is* has a [+focus] feature which it assigns to its specifier. Moreover, Piñón houses the [±tense] feature in Σ^0. By employing this analysis as well as structures such as the one below,

Piñón successfully accounts for examples such as *el is jött tegnap* ('VM NQ-also came yesterday', lit. '....(s)he did come yesterday, too!').

(32) Piñón's Structure for *el is jött tegnap* ('she did come yesterday, too!' (1993, ex. 26))



Piñón's account is, however, somewhat problematic. First of all, he allows ΣP to be recursive, but not uniformly so. Specifically, Piñón's ΣP can either have or lack a specifier depending on what type of element heads the projection. Thus, in the structure above, notice that the first ΣP projection, headed by *is*, has a specifier, while the second, headed by *jött*, does not. On strictly theoretical grounds, I find this difficult to work with.

Additionally, note that Piñón's V^o houses an XP. This does not seem in keeping with current assumptions about X-bar theoretic structures. Namely, it does not seem possible for an XP to head a projection. Moreover, to suggest that an XP could left-adjoin to an X^o does not conform to restrictions and constraints on either head movement or XP movement.

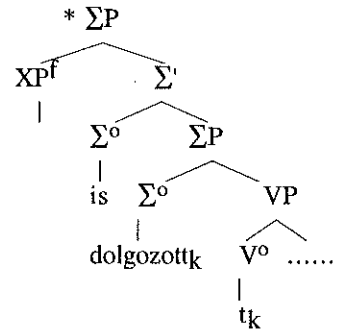
Despite the theoretical objections to Piñón's analysis, there is an even greater objection. Piñón's analysis cannot account for all of the data. Note that a structure such as (32) above cannot handle an example such as (7) cited in the data section. This example has been repeated here as (33).

(33) Péter meg igérte , hogy.....
Peter VM promised+3rd SING +DEF, that.....
dolgozni fog és
work+inf will+3rd SING and
dolgozott is.
worked+3rd SING NQ-also
'Peter promised that he would work and he worked, too!'

Notice that this construction does not involve a verbal modifier, but only a finite verb and the *is* particle. Placing the *dolgozott is* portion of this example into Piñón's structure is problematic.

Dolgozott should originate in V^o. It will then move into Σ^o to check its [+tense] feature. Based on the structure for *el is jött*, it seems as though Piñón does not allow for the possibility of *is* and the finite verb occupying the same Σ^o. In fact, he states that "ΣP must be projected because emphatic *is* is a Σ^o element." (Piñón (1992), p. 115). This assumption, however, derives the wrong order, as indicated by the ungrammatical structure below.

(34) Finite V in *is* Construction deriving incorrect surface order, following Piñón (1992, 1993)



Note that using a somewhat different set of assumptions, the finite verb could head move into the upper Σ^o, yielding the correct surface order. The problem with this possible extension of Piñón's analysis is that it leaves a discrepancy between the way in which finite verbs with verbal modifiers and finite verbs without verbal modifiers are handled.

Another alternative explanation within Piñón's account would be to XP move the entire VP or ΣP projection into the specifier of the highest ΣP projection. In the right context, however, an adverb such as *tegnap* could be attached to the VP. In this case, XP movement of

either the VP or the ΣP into the specifier of the highest ΣP projection would yield the surface order finite verb + adverb + *is*. Unfortunately, this surface order is completely ungrammatical with the relevant meaning. Essentially, Piñón's analysis as it stands cannot account for the *dolgozott is* surface order.

Finally, it should be noted that Piñón does not present what I consider to be the full range of data. Not all instances of non-quantificational *is* are emphatic, contrary to Piñón's claims. Piñón does not attempt to present a unified account of all non-quantificational instances of *is*.

In the rest of this paper, I intend to show that all uses of non-quantificational *is* can be unified to be handled in the same way. Additionally, I hope to show that by adopting a somewhat stricter set of theoretical assumptions, these data can be straightforwardly and uniformly accounted for.

3.2. *Theoretical Framework*

3.2.1. *Basic Assumptions*

The basic assumptions adopted here those of Kayne (1994). I assume binary branching tree structures and leftward only movement. Similar assumptions are adopted by Koopman (1996) and Sportiche (1993, 1995) among others. I also adopt Kayne's Linear Correspondence Axiom (LCA) and his notion of asymmetric c-command.

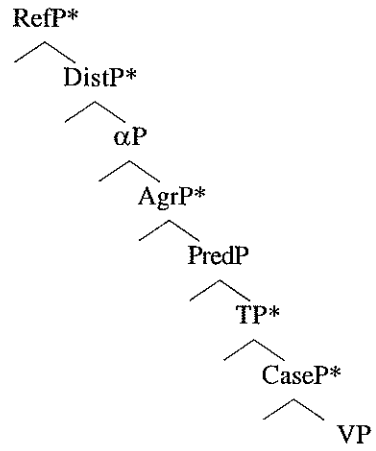
Additionally, I adopt the hypothesis that there is a universal syntactic hierarchy (cf. Sportiche (1993, 1995), Koopman (1996), Rizzi (1997)). Furthermore, I follow Koopman (1996), Sportiche (1995), among others, in assuming that the Spec – Head configuration is the canonical configuration for establsihing checking relations.

In this analysis, there is one exception to Kayneian binary branching structures. Specifically, the VP in Hungarian has been problematic to analyze in terms of binary branching. Thus, I do not put forth a binary branching structure for the VP. I do not, however, see this matter as trivial.

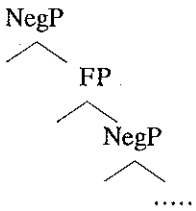
3.2.2. *Szabolcsi's Account of V-movement in Hungarian*

Szabolcsi (1996 a & b)[4] posits the following structure of functional projections in Hungarian. This structure is based on Szabolcsi (1996).

(35) Functional Projections in Hungarian á la Szabolcsi



(36) Where αP is an abbreviation for the following structure:



Szabolcsi argues that V does not move all the way to F, as previously argued in other accounts of V movement in Hungarian. Furthermore, she posits two basic sentence types in Hungarian: neutral and non-neutral. Non-neutral sentences are those containing sigma-type elements, such as focus.

Szabolcsi examines verbal modifiers (VMs) in sentences with sigma-type elements. As the behavoir of VMs figures strongly in my analysis as well, it is worth considering what a VM is. A VM can be a PP, a

[4] Much of the information presented here is included in the Appendix of the October, 1996 draft of Szabolcsi's paper. These ideas were discussed by Szabolcsi in Lx 225 as well, as cited.

determinerless argument, a PredP, or an infinitival complement of a subject control verb. In the case of a PP as a VM, a minimal P may constitute the whole PP. Traditional examples of VM's include *el* ('away') in *elmenni* ('away' + 'go +INF'), *haza* ('home') in *hazamenni* ('home' + 'go + INF') and *könyvet* ('book + ACC') in *könyvet olvasni* ('book + ACC' + 'read + INF').

Szabolcsi posits that infinitives have a clausal structure of their own. She sets out to provide an account for surface orders such as (37) below.

(37) *Most* fogok hazamenni kezdeni akarni
Now will+1SING home+go+INF begin+INF want+INF
'Now (focused) I will want to begin to go home.'

Her answer is that this surface order is the result of incorporation of VMs. Thus, the original word order is as in (38) below.

(38) fogok akarni kezdeni menni haza
will+1st SING want+infbegin+inf go+infhome

Essentially, *haza* is the VM for *menni*. It moves to the left of *menni* and incorporates. The string hazamenni then becomes the VM for *kezdeni*. It moves leftward to incorporate into *kezdeni*. The string *hazamenni kezdeni* then becomes the VM for *akarni*. Thus, the entire string moves to the left of *akarni* and incorporates.

Under Szabolcsi's analysis, a VM must incorporate into the verb if it has a feature P, which is licensed only in Spec, PredP. Furthermore, an XP can inherit the P feature from something in its Spec. These two conditions, along with one other specifying the necessary features for movement, force movement to the proper places at the proper times, thus deriving the appropriate surface orders.

Szabolcsi further notes that neutral sentences cannot serve as steps in the derivation to sentences containing sigma-type elements. She provides the following set of sentences, originally cited in Kenesei (1989), as evidence for this.

(39) Haza fogok akarni menni . (Neutral)
Home will+1SING want+INF go+INF
'I will want to go home.'

(40) **Most* fogok haza akarni menni.
Now will+1SING home(VM) want+INF go+INF
'I will want to go home.'

(41) *Most* fogok akarni haza menni.
Now will+1SING want+INF home(VM) go+INF
'I will want to go home *now*.'

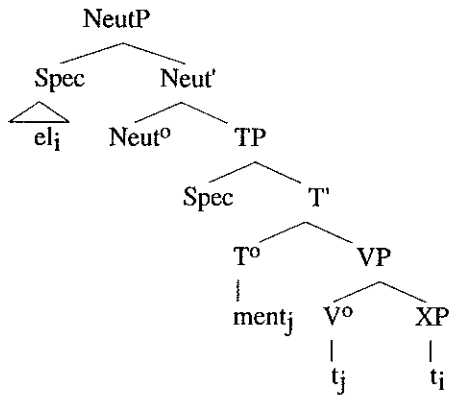
(42) *Most* fogok haza menni akarni.
Now will+1SING home(VM) go+INF want+INF
'I will want to go home *now*.'

The idea here is that the neutral order cannot be obtained simply by failing to complete the last step of V-movement. If *haza* merely stopped its leftwards movement in front of *akarni* instead of continuing on to the left of *fogok*, it would be left in a position in which it is entirely ungrammatical. Thus, (40) cannot be a step in the derivation of any sentence containing sigma-type elements.

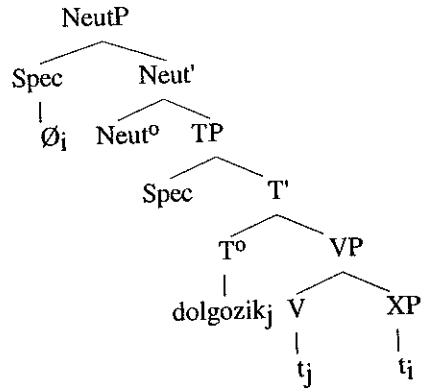
It is this type of evidence that leads Szabolcsi to argue for two types of Hungarian sentences: neutral and non-neutral. To do this, she posits a neutral projection, which she calls NeutP. According to Szabolcsi, this projection is in complementary distribution with the sigma projections.

Szabolcsi suggests a rather novel mechanism for accounting for the different surface orders observed. She posits that certain verbs, such as *útál* ('hate'), have phonetically empty VM's. Szabolcsi also formulates the Neut Criterion which ensures, through feature checking, that VMs wind up in the correct places at S-Structure, namely in Spec NeutP. The structures below illustrate neutral sentences with overt and null VM's.

(43) Elment. (neutral, '(S)He went away')



(44) Dolgozik. (neutral, '(S)He is working.')



Within Szabolcsi's framework, the verb can only move as high as T^o, or possibly Agr^o. For the purposes of my analysis, I show the verb raising as high as Agr^o.

4. My Account of Non-Quantificational *Is* ('Also'): The Theoretical Treatment

In this section, I will provide a summary of the patterns observed in Hungarian and then proceed to discuss the possibilities for accounting for these patterns.

4.1. *Summary of Patterns: Hungarian*

Above I presented a range of data surrounding non-quantificational *is*. I have summarized the patterns observed in a chart below. The is somewhat of a layman's approach. It simply lists extractions of the relevant strings along with an English gloss and a listing of the construction type. At this point, however, it is premature to couch things in more theoretical terms.

Table 1. The distributional patterns of *is* by construction type.

Construction Type	Hungarian			English
Neutral	el	is	ment	away *is* went
Neutral	dolgozott	is	-------	worked *is*
Focus	Mari	is	ment	Mary *is* went ....
Focus and Negation	Mari	is	nem.. ..	Mary *is* not...
Negation	nem	is	.....	not *is* .....
Constituent Negation	nem	is	Mari	not *is* Mary ....

At this juncture, it may be fruitful to ask what conclusions, if any, can be drawn from the above patterns. In this vein, the above data should be considered in conjunction with the structures à la Szabolcsi presented earlier. For the moment, *dolgozott is* ('(S)He worked, too!') and *nem is Mari* (lit: 'not too Mary') will not be taken into consideration.

For a neutral construction such as *elment* ('(S)He went away'), the structure would have a NeutP projection dominating a TP projection. In Focus and Negative constructions, the structures are essentially parallel to that of neutral sentences. An FP or NegP projection dominates as TP projection. Descriptively, it looks as though the main polarity projection (NeutP, FP or NegP) can precede *is*. There is, of course, one obvious exception to this: the *dolgozott is* example.

The case of the finite V preceding *is* is somewhat perplexing. Under Szabolcsi's account of V movement, it might be expected that *is* would be perfectly happy to be preceded by the null VM in the Spec, NeutP position.

The case of constituent negation might also fail to conform to expectations depending on one's account of constituent negation. I, however, follow Szabolcsi's lead in assuming that constituent negation is not actually different from sentential negation. This produces the desired results where *is* is concerned.

It is interesting to note that *is* does not necessarily bear a relationship to the element that precedes it. It does, however, bear a very strong relationshp to the polarity of the clause. In some instances, these things coincide, e.g., where negation and focus are concerned. Therefore, I argue that *is* is a lexical operator that operates on the polarity of the

clause. Speficially, it operates on the head of the main polarity projection of the clause.

4.2. *Non-Quantificational* Is*: The Theoretical Treatment*

4.2.1. *The Possibilities*

The first step is to establish what exactly *is* is a part of. I assume that non-quantificational *is* heads its own projection, Is-P.[5]

Descriptively speaking, the problem is that *is* acts on the polarity of the clause, but linearly follows a single element that in some way seems to be associated with the polarity of the clause. Thus, I must come up with some method for relating *is* to the polarity of the clause while simultaneously getting the syntactic facts to fall out. Given the data, the unified semantics of *is* and the other observations above, the following suggests itself. Specifically, I would like to treat Is-P as a functional projection selecting its own complement.

Before proceeding into the specifics of the analysis, I would like to outline its general properties. The analysis can be summarized as follows: *is* selects for an FP, NegP or NeutP complement. The XP occupying the Spec position of this polarity complement then XP moves into Spec, Is-P. When there is no XP available in the complement of Is-P, the head of the complement head-moves and left-adjoins to *is* in Is°.

Based on the data, I would like to establish the following criteria related to *is*.

- *Is* must immediately dominate (i.e., select as complement) the highest polarity projection of the clause.
- *Is* should ideally enter into the Spec-Head checking relation with an XP bearing a polarity feature.[6]
- *Is* must be asymmetrically c-commanded by overt lexical material associated with the (highest) polarity projection of the clause.

Why does this proposals suggest itself as a potential solution to the problem posed here? The problem here is complex. On the one hand, the syntax of the *is* data needs to be derived. On the other hand, I would like to represent the semantics of *is* structurally, if possible. At the

[5] Note that this Is-P is not the Is-P discussed by Brody (1990).

[6] I will discuss why this criteria is characterized as being "ideal" rather than absolute at a later point.

very least, some kind of relationship between the polarity of the clause and *is* needs to be established. This approach provides a means for establishing this relationship. Namely, Is-P selects a complement, thus establishing a relationship through the selection process as well as through scopal relations. I will return to this question of how the proposed relation between *is* and either the specifier or the head of the polarity projection captures the informal semantics I have ascribed to *is*

4.2.3. *The Analysis Itself*

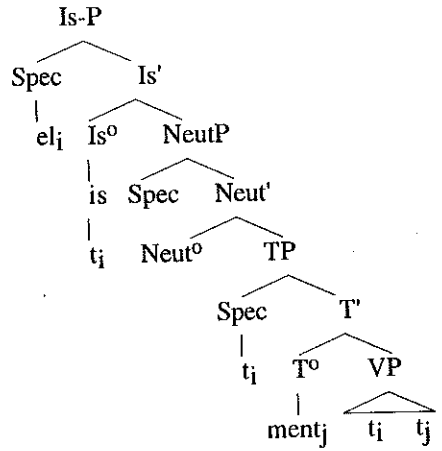
Under this analysis, Is-P immediately dominates the highest polarity projection of the clause. This would be either FP, NegP or NeutP. The specifics of the analysis are spelled out beginning with the simpler cases, moving on to the more complex examples.

One of the simplest cases is a neutral sentence containing a verb with an overt VM. Such an example was provided in (8) and has been repeated below.

(45) Péter meg igérte , hogy.....
Peter VM promised+3rd SING +DEF, that.....
el fog menni és
away will+3rd SING go+INF and
el *is* ment.
away NQ-also went+3rd SING
'Peter promised he would go, and he went, too!'

According to the assumptions and stipulations particular to this analysis, a tree for the relevant string should look like (46) below. Note that I have abbreviated the structures used here, leaving out anything above Is-P, as well as AgrP and CaseP. Also note that in (45) above, the manner of conjunction must be accounted for. The string *el is ment* is not part of the embedded clause. (That is, Peter did not say that he went away.) Thus, this is probably a situation in which two matrix CPs are adjoined.

(46) El is ment. (neutral, '(S)He went away, too!')



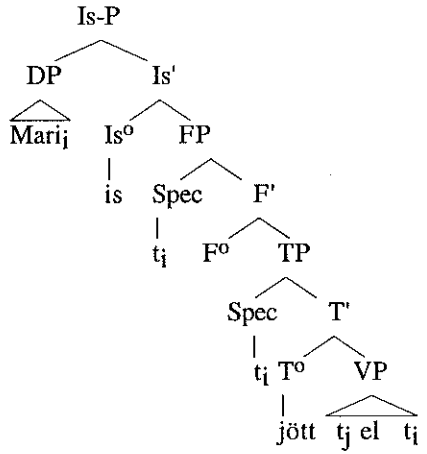
In the structure above, the following can be observed. Is-P immediately dominates NeutP. NeutP is the highest polarity projection of this clause. The finite verb, *ment* ('(S)He went'), head moves out of its original V^o position into T^o. Additionally, the VM *el* XP moves all the way up to Spec, NeutP to check its [+tense, +neut] features. It then enters into a Spec- Head checking relation with *is* to satisfy the features of *is*. Since the VM *el* is overt, the *is* criteria are all satisfied. The correct surface order is thus obtained.

Another simpler case is an *is* clause containing a verb with an overt VM and a focused constituent. An example of this type of *is* clause was provided in (10) above. This example has been provided again below.

(47) Péter meg igérte, hogy.....
Peter VM promised+3rd SING +DEF, that.....
[Mari] fog el jönni és
[Mary] will+3rd SING away(VM) come+inf and
[Mari] is jött el.
[Mary] NQ-also came away(VM)
'Peter promised that [Mary] would come and [Mary] came, too!'

The *is* clause of (47) can be accounted for as follows.

(48) [Mari] is jött el. (focus, '[Mary] came away, too!')



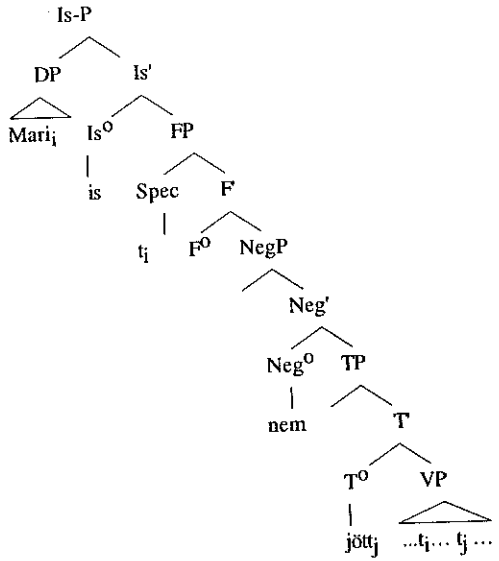
Structure (48) is accounted for as follows. Following Szabolcsi, the DP *Mari* XP moves out of the VP up to Spec, FP to check its [+focus] feature. Additionally, the finite verb *jött* ('(S)he came') head moves up to T^o. The VM *el* ('away') remains in the VP.

In relation to *is*, observe that Is-P immediately dominates FP and that FP is the highest polarity projection of the clause. The focused DP, which is overt and associated with the polarity of the clause, moves into Spec, Is-P, satisfying the features of *is*.

Finally among the simpler cases, examples in which focus and negation interact should be considered. An example such as this was cited in (11), repeated below as (49).

(49) Azt mondtam, hogy.....
expl. say+PAST+1st SING , that.....
[Mari] nem fog jönni és
[Mary] not will+PRES+1st SING come+inf and
[Mari] is nem jött.
[Mary] NQ-also not came+3rd SING.
'I said that [Mary] wasn't going to come and [Mary] didn't come, either!'

(50) *Mari* is nem jött. (focus + negation, '*Mary* didn't come, either!')



Again, this structure is straightforwardly accounted for by employing Szabolcsi's account of V movement coupled with the assumptions made above about the behavior of *is*. The finite verb *jött* ('(S)he came') moves into T^o to check its [+tense] feature. The DP *Mari* XP moves to Spec, FP where it is able to check its [+focus] feature.

Is-P dominates FP, the highest polarity projection. Furthermore, there is an overt XP associated with the polarity of the clause: the focused DP *Mari*. Thus, movement of the focused DP into Spec, Is-P would satisfy the criteria relating to *is* and produce the correct surface form.

Now it is time to move onto the slightly more complicated case. This case is the case in which the *is* clauses contains a finite verb with a null VM. An example of this was provided in (7) and is repeated below as (51).

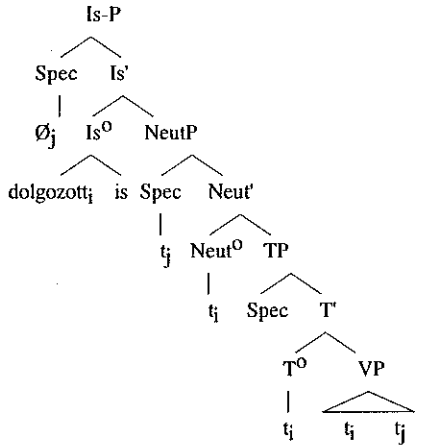
(51) Péter meg igérte , hogy.....
Peter VM promised+3rd SING +DEF, that.....
dolgozni fog és
work+inf will+PRES+3rd SING and
dolgozott is.
worked+3rd SING NQ-also
'Peter promised that he would work and he worked, too!'

This example is slightly more complicated because of the fact that the null VM associated with *dolgozott* ('(S)he worked) does not behave the way overt VMs do. That is, while *is* can very happily be preceded by an overt VM as in *el is ment* ('away NQ-also he went'), *is* is not happy to be preceded by a null VM. Note the ungrammaticality of an example such as (52) below.

(52) * is dolgozott
NQ-also worked+3rd Sing

This apparent problem is the reason for the criterion requiring that *is* be c-commanded by overt lexical material. In the event that something from the polarity projection has moved into Spec, Is-P but is not lexical, something that is lexical must move into a position that asymmetrically c-commands *is*. In cases involving finite Vs with null VMs, I posit that the finite V actually head moves and left adjoins to *is* in additon to the null VM moving into Spec, Is-P to establish polarity relations. This is explored in structure (53) below.

(53) Dolgozott is. (neutral, '(S)He worked, too.')



This structure can be accounted for as follows. Following Szabolcsi, the finite verb *dolgozott* moves up to T°. Additionally, *dolgozott* has a phonetically empty VM associated with it. This null VM moves up through the available Spec positions and checks its [+tense, +neut] feature in Spec, NeutP.

Once the null VM enters into a checking relation with Neut°, it becomes associated with the polarity of the clause and in some way bears a polarity feature. It can then move into Spec, Is-P and enter into a checking relation with Iso. This configuration satisfies some requirements of *is*, but not all of them.

Specifically, there is requirement that *is* be c-commanded by overt lexical material that is also in some way related to the polarity of the clause. In order to satisfy this requirement, the finite V *dolgozott* head moves up from T° into Neut°. From Neut°, it left adjoins to *is* in Is°. This combination of movements derives the correct surface order.

Finally, the most complicated cases can be addressed. These cases include *is* clauses containing negation and *is* clauses containing constituent negation. I will handle sentential negation first. An example of an *is* clause containing sentential negation was cited in example (9) and has been repeated below as (54).

(54) Péter meg igérte , hogy.....
Peter VM promise+PAST+3rd SING +DEF, that.....
nem fog elmenni és
not will+PRES+3rd SING away+go+inf and
nem is ment el.
not NQ-also went+3rd SING away(VM)
'Peter promised he wouldn't go away and he didn't go away, either!'

The most pressing question related to (54) is how negation is to be handled. In order for a constituent to XP move into the Spec, Is-P position, the constituent must be an XP. Additionally, I state that this movement is motivated by two factors. The first factor is that *is* bears some relationship with the polarity of the clause. The second factor is that *is* must be c-commanded by overt lexical associated with the polarity of the clause.

In the previous example, *dolgozott* head moved into Is°. There was, however, an element associated with the polarity of the clause in the Spec, Is-P position.

For this example, if *nem* is treated as a head, there is nothing in the NegP projection, the main polarity projection of the clause, to move into the Spec, Is-P position. The head *nem* would be forced to undergo head movement and left adjoin to *is* in order to satisfy the condition that *is* be c-commanded by overt lexical material. But, this would leave the polarity features of *is* unchecked.

There are several possibilities here. These are:

- Treat *nem* as an XP rather than a head
- Assume an empty XP-operator in the Spec, NegP position. This operator might be thought to correspond to overt negative operators, such as negative quantifiers, that are thought to move through Spec, NegP.
- Allow NegP to move in its entirity into Spec, NegP. This would require remnant movements of the sort proposed by Webelhuth (1992) to divorce NegP from the rest of the structure in order to get the word order facts to fall out.

I'll briefly address these alternatives in order.

The first alternative involves treating *nem* as an XP rather than as a head. In this case, *nem* could sit in Spec, NegP and XP move to Spec, Is-P like all the other constituents occupying the Spec positiion of the polarity projection of the *is* clause.

The question is whether there is evidence to suggest that *nem* is in fact an XP rather than a head. This question would require considerable research and seems to be well beyond the scope of this paper. Negation has been considered in the Hungarian syntactic literature (Kiss (1987), Horvath (1986), Piñón (1993) and others) .and is not generally treated as an XP. Moreover, there is cross-linguistic evidence to suggest that the Spec, NegP position is used for establishing checking relations between negation and negative quantifiers (Moritz and Valois, 1994). For these reasons, I am reluctant to treat *nem* as an XP rather than a head without further in-depth consideration of the questions. For purposes of the present analysis, though, such an assumption would simplify matters considerably.

The second alternative involves postulating an empty XP-operator in the Spec, NegP position. This operator might be considered to be parallel to overt negative operators, such as negative quantifiers. To explore this alternative, it might be worth considering the distribution of negative quantifiers like *senki* ('no one')in relation to *is*.

Consideration of these data are beyond the scope of the present paper, however. Entertaining an empty XP-operator story here would be speculative at best and evidence for such an account might prove to be elusive.

The third alternative suggests that the entire NegP could move into Spec, Is-P provided that NegP and the projections it dominates have been split apart from one another. That is, NegP would have to undergo remnant movement (Webelhuth 1992) to wind up in the Spec, Is-P position. This type of movement would be necessary to allow the word order facts to fall out. I will not pursue this alternative here as I again see this strategy as embodying a large research question.

For the moment, I will leave aside the question of how the checking relation between *is* and the polarity of the clause is established in examples involving negation. One of the criteria for *is* states that:

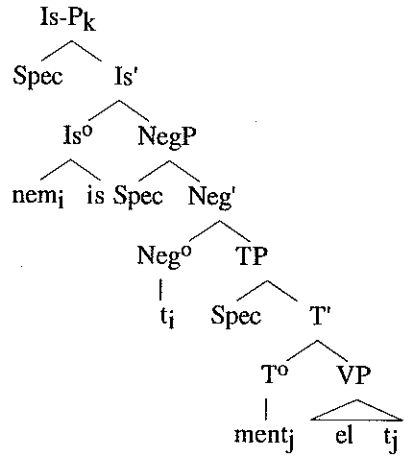
- *Is* should ideally enter into the Spec-Head checking relation with an XP bearing a polarity feature.

It was precisely because of the examples involving negation that this is not a strict criterion. At the very least, *nem* is adjoined to *is*. This head-adjunction results in a situation where *is* is asymmetrically c-commanded by overt lexical material associated with the polarity of the clause.

Thus, this situation can be summarized as follows. If the main polarity projection of the *is* clause has something in its Spec, that consituent must XP move to Spec, Is-P. In all cases, however, *is* must be c-commanded by overt lexical material associated with the ploarity of the clause. Thus, if the main polarity projection lacks material in its Spec, then the head of the polarity projection must undergo head movement and left adjoin to *is* in Is^{o}.

Now that some of the issues surrounding examples like (54) have been explored, it is worthwhile to examine a possible structure for (54). This has been provided below as (55).

(55) Nem is ment el. (negation, '(S)He did not go away, too!')



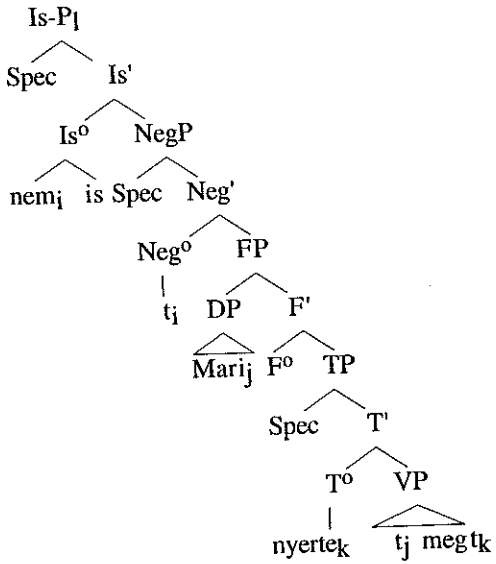
As the tree above illustrates, *nem*, the Neg head, has left adjoined to *is* in Is^{o}. Thus, *is* is c-commanded by overt lexical material. Moreover, *nem* has obeyed the requirement that if the main polarity projection of the *is* clause lacks material in its Spec, the head must left adjoin to *is*. The finite verb *ment* ('(s)he went') undergoes head movement from V^{o} to T^{o}. The VM *el* ('away') stays within the VP.

The final example to be considered under this analysis is an example involving constituent negation. Such an example was provided in (12) above and is repeated below as (56).

(56) Péter azt jósolta, hogy
Peter expl. predicted+3rd SING+DEF, that
nem Mari fogja meg nyerni
not Mary will+3rdSING+DEF VM win+inf
a versényt, és nem is Mari
the contest+ACC and not NQ-also Mary
nyerte meg.
won3rd SING+DEF VM
'Peter predicted that it wouldn't be Mary who would win the contest and it wasn't Mary who won, either.'

An account of this example also requires some thought on the topic of negation. Again, I will treat *nem* as a head and see what is possible operating under this assumption. A tree for the relevant string has been provided below.

(57) Nem is Mari nyerte meg. (constituent negation, 'It wasn't Mary who won it, either!')



In this structure, the finite verb moves up into T° as it should. The focused DP *Mari* moves to check its [+focus] feature in Spec, FP. *Mari* will not move up into Spec, Is-P because it is not the highest polarity projection in the *is* clause. NegP is the highest polarity projection of the *is* clause. Therefore, *nem* must undergo head movement and left-adjoin to *is*, leaving *is* asymmetrically c-commanded by over lexicalmaterial associated with the polarity of the clause.

Notice that in examples involving finite verbs with null VMs as well as in examples involving negation, the head movement of either the finite verb or of *nem* is motivated by the same reason. Specifically, these elements must undergo head-movement and left-adjoin to *is* so that *is* is c-commanded by overt lexical material within the *is* clause.

5. Conclusion

I would like to break the conclusion of this paper into several parts. In the first part, I would like to summarize the general thoughts in this paper. Then, I would like to return to some of the questions posed earlier in this paper. Specifically, I would like to address the issue of why the analysis presented here seem to be potential analysis fort his type of operator. Additionally, I would like to address the issue of why

is needs to be linearly preceded, and thus asymmetrically c-commanded, by overt lexical material within the clause that contains it. Finally, I would like to extend the critique section of the first part to several proposals for further research.

5.1. *Summary of Analysis*

In the proposal, I posited that Is-P must dominate the highest polarity projection (FP, NegP or NeutP) of the clause. Further, the analysis suggested that an XP associated with the polarity of the clause should ideally enter into a Spec-Head checking relation with *is*. Finally, it was noted that *is* must be asymmetrically c-commanded by overt lexical material associated with the highest polarity projection of the clause.

In this analysis, the semantic relationship between *is* and the polarity of the clause is established by *is* selecting for a polarity complement. This is a fairly strong mechanism for accomplishing this type of relationship. Constituents in the specifier of the polarity projection move to Spec, Is-P so that they then precede/asymmetrically c-command *is*.

A problem with this analysis is the lack of uniformity in accounting for structures with negation compared to the other constructions. In examples in which NegP was the highest polarity projection, there is no material in Spec, NegP to move into Spec, Is-P. Therefore, *nem*, the head of NegP, left adjoins to *is* in Is°. In all other cases, however, there is an XP in the specifier of the highest polarity projection. This XP can move into Spec, Is-P to establish checking relations. In the case of verbs with null VMs, however, the analysis relies on the additional criterion that *is* be c-commanded by overt lexical material associated with the polarity projection. It is in this way that examples like *dolgozott is* are motivated while ungrammatical examples like **is dolgozott* are ruled out.

This condition is definitely perplexing. *Is* must be linearly preceded by, and therefore asymmetrically c-commanded by, an element within the *is* clause. The element can be either a focused constituent, negation, a lexical VM or the finite verb for verbs with null VMs.

Why is this necessary, however? Is this a phonological requirement? Is it semantic in nature? Or, is it a syntactic restriction? The syntactic facts can be derived, as can the semantic nature of *is* to a somewhat lesser extent. But, the question of why *is* must be c-commanded or linearly preceded by overt material related to the polarity of the clause remains unanswered.

5.2. *Questions for Further Research*

5.2.1. *Reducing the analysis to the same mechanics*

Throughout this work, certain aspects of this proposal have struck me as somehow undesirable. As mentioned above, I find the condition that *is* be c-commanded by overt lexical material somewhat troubling. Second of all, I am concerned about the fact that the examples involving negation + *is* are not currently handled like the other examples, namely using XP-movement. I would like to see the analysis have greater uniformity from one sentence type to the next.

Under the present analysis, *is* sentences involving focus and overt VMs have the same analysis and the same mechanics. There is an XP in the Spec of the highest polarity projection and this XP can move into Spec, Is-P to check the polarity features of *is*. Sentences involving null VMs also have XP movement, although it is covert, but also must involve head movement. Finally, sentences involving negation do not make use of XP movement at all and rely on head movement to check the polarity features of *is*.

I would like to explore whether any of the alternatives proposed for XP-movement in the case of negation might actually work out. At the very least, XP-movement might then be involved for all examples. Additionally, the third alternative, in which NegP could move as a remnant into Spec, Is-P, might provide an interesting alternative for the case of verbs with null VMs as well.

5.2.2. *Extending the analysis to the cross-linguistic examples*

In general, it seems desirable to posit an invariant structural position for non-quantificational *is*. Such an account allows the mechanics of *is* constructions to be captured in a uniform and straighforward manner. There are other languages that have such non-quantificational particles, two of which were discussed in relation to the semantics of non-quantificational 'also'.

It would be interesting to extend the analysis given here to these particles other languages. Perhaps their behavior will shed light on the Hungarian case. Anoop Mahajan (p.c.) suggests that Hindi has a particle very similar to non-quantificational *is* in Hungarian. He also suggests that, like previous accounts of non-quantificational *is* in Hungarian, this particle has previously been treated as an emphatic particle although it has a range of meanings. His suggestion was that this particle has a semantics similar to that proposed here for non-

quantificational *is*. An examination of cross-linguistic evidence on this point is certainly necessary and, although some cross-linguistic data has been provided here, an analysis of these data has not been.

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