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Functional Elements and Licensing

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1 Introduction

An important change in generative theory has been the conceptual shift from viewing grammar as a set of rules, to viewing grammar as a set of well-formedness conditions. By not restricting ourselves to a particular rule format, we are able to state conditions which give promise of holding universally.

The principles that constrain the structural positions in which predicates and arguments appear have received much attention, and their character is for the most part clear, but the principles constraining the balance of categories remain largely unknown. In this talk, I would like to address the conditions governing the distribution of the so-called "non-lexical" categories, which I will call *functional elements*. After giving a general account of functional elements, I turn to a more detailed treatment of the Determiner, which, I claim, is also a functional element, and deserves a parallel structural treatment. To lay the groundwork for the discussion, I first spell out my general assumptions about the shape of a principle-based account of the distribution of elements in a phrase marker.

1.1 Licensing

In his thesis, Tim Stowell (1981) argues that grammatical principles can be made restrictive enough to render phrase-structure rules superfluous, and

he demonstrates the power of θ -theory and Case theory to constrain the class of well-formed structures compatible with a given surface string. The leading idea is what Chomsky, in *Knowledge of Language* (1986), sums up in his Principle of Full Interpretation: every node must have a role in the sentence; every node must be *licensed*. Chomsky does not assume that there is a unique licensing condition for every node; in fact he assumes that nodes are subject to a multiplicity of conditions. But I take a stronger position. Not only must every node have a role in the sentence, but for every node, there is a unique relation by which it is licensed. A given node must meet a number of conditions, but there is one condition which is primary. For example, consider sentence (1):

(1) For John to leave would be a shame

There are at least two conditions to which the noun phrase *John* is subject. It must be θ -marked, and it must be Case-marked. I submit that the condition imposed by θ -theory is primary, and that the condition imposed by Case theory is contingent. Consider for instance the sentences of (2):

(2)

(a) *John to leave would be a shame

(b) *For John to be obvious that Bill came would be a shame

The (a) sentence involves a violation of the Case filter, and the (b) sentence involves a violation of the Theta Criterion. Though both are ungrammatical, (a) is interpretable, whereas (b) is not. Most speakers would agree that (a) would mean the same thing as *For John to leave would be a shame*, if it were grammatical. In this way it is similar to sentences which violate subadjacency, such as

*Who did you wonder when John would visit

These sentences are readily interpretable, but are syntactically ill-formed, as they violate certain grammatical conditions. The (b) sentence, on the other hand, is simply uninterpretable, as *John* has no role in the sentence.

Generalizing, I adopt what I will call the Licensing Condition:

The Licensing Condition

Every node must be uniquely licensed by entering into a (sufficiently strong) relation with an independently-licensed node.

We have identified θ -assignment as a “sufficiently strong” relation. I also alluded above to predication as a licensing relation, for “certain adjuncts”. I had in mind secondary predicates and non-subcategorized PP’s, among others, such as those of (3):

(3)

(a) John left [a better man]

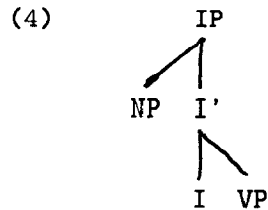
(b) John ate [in the kitchen]

I assume that these and similar elements are licensed by predicating of an independently-licensed element: the noun phrase *John* in (a), the verb *ate* in (b).

The question I would particularly like to address in the present paper, however, is how “non-lexical” categories—functional elements—are licensed.

2 Functional elements

Consider the analysis of the sentence in which the element *Infl(ection)* is the head of the sentence, as in (4):



John PAST hit the ball

Adopting this analysis, and given the usual assumption that all complements of a head are lexically selected by that head, we are led to postulate some selection relation between I and VP; let us call it *functional selection*. The natural assumption is that functional selection licenses the complements of functional elements in the same way that θ -assignment licenses the complements of thematic elements. But there are important ways in which functional selection differs from θ -assignment.

For the moment, let us take Infl and Comp to constitute the class of functional elements. Then the following seem to be the most important properties of functional elements, as they contrast with thematic elements:

1. First, functional elements constitute closed lexical classes. They are generally stressless, often clitics, even merely affixes or phonologically null.
2. Second, functional elements permit only one complement, which may fail to be an argument. For instance, I selects VP, which does not otherwise appear as an argument, and C selects IP, which appears as an argument only with Exceptional Case Marking verbs, if at all.
3. Third, functional elements lack what I will call "descriptive content". Their semantic contribution is second-order, regulating or contributing to the interpretation of their complement. The role of the complementizer is to mark features concerning how a sentence is to be understood: as subordinate, as a question, etc. Infl fixes the time, mode, etc., of the action designated by the VP.

2.1 Semantics of functional elements

Since θ -assignment is basically a semantic relation, it is natural to seek the key to the difference between θ -assignment and functional selection in their semantics. I just claimed that functional elements are characterized by lacking descriptive content; let me begin by clarifying the notion of descriptive content. A phrase's descriptive content is its link to the world. If someone utters the word "ball", and there is a ball in view, the assumption would be made that the ball is being described by the utterance of the word "ball". This is the sense in which the noun *ball* has descriptive content. Verbs also have descriptive content in this sense. For instance, if John hits Bill, and the word "hit" is uttered, it is clear what action is being described. On the other hand, with the utterance of a functional element—say, the modal "will", or the complementizer "if"—it is not possible to pick out some bit of the world in the same way. Fundamentally, "will" does not describe any aspect of the world, but encodes a relation between two actions: it encodes the temporal relation between an utterance, and the action described by that utterance. This intuition actually goes back to Aristotle. In his *Poetics*, Aristotle calls complementizers and the like "words without meaning", in contrast to nouns, verbs, and adjectives, which are "words with meaning".

Not only single words, but also phrases have descriptive content. For example, the verb *hit* describes an act of hitting, and the verb phrase *hit Bill* also describes an act of hitting, namely, one whose patient is Bill. In this way, the VP inherits its "core" descriptive content from its head; the VP is simply more specific in its description. I must emphasize immediately that "descriptive content" in this sense does not correspond to semantic value. The verb and the VP do *not* have the same semantic value. The semantic value of the verb is a two-place predicate; the semantic value of the VP is a one-place predicate.

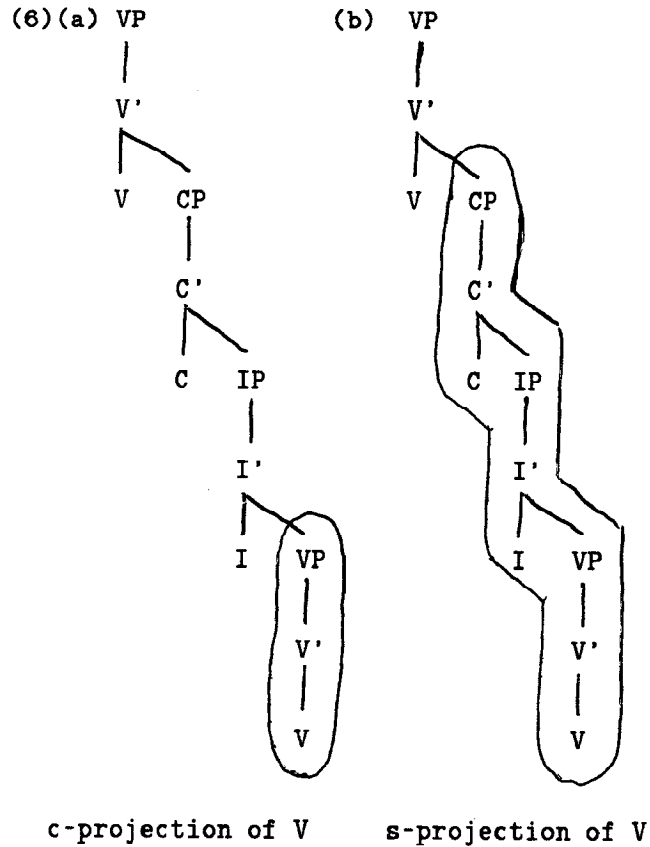
Now consider an IP, say, *John will hit Bill*. Intuitively, *John will hit Bill* also describes an act of hitting, one whose agent is John, whose patient is Bill, and which has not yet occurred. In that it describes an act of hitting, it

appears to inherit its descriptive content from the VP, and ultimately, from the verb. Assuming that this intuition is valid, there is a ready explanation for it: we might assume that since the Infl *will* lacks intrinsic descriptive content, it must acquire it from its complement. In fact, I take this to be the purpose of functional selection: to allow a functional element to acquire descriptive content, by inheriting it from a complement.

An important difference between functional selection and θ -assignment is that θ -assignment does not involve inheritance of descriptive content. The verb phrase *hit the ball* describes an action of hitting, whereas the θ -assigned complement of the verb, viz., *the ball*, describes a ball. The verb does not inherit its descriptive content from the noun phrase, "the ball"; rather, the noun phrase designates an object which plays a role in the action described by the verb.

We are now in a position to give content to the intuition that the verb is in some sense the head of the sentence. The verb is the head of the sentence in that it is the lexical source of the descriptive content of the sentence. Let us call the lexical source of the descriptive content of a phrase the *semantic head* of the phrase. With thematic categories, the structural head (that is, the \bar{X} head) and the semantic head of the phrase are the same. Not so with phrases headed by functional categories. For instance, the structural head of IP is Infl, while its semantic head is V.

This also gives us two notions of projection. Let us call \bar{X} -projection *c-projection*. Contrasting with c-projection, define an *s-projection* of a head α as any node of which α is the semantic head. C-projection defines the phrase of a head: the verb phrase, for instance, is the maximal c-projection of the verb. The domain of the maximal s-projection of the verb, we might call the verbal *system*. This is illustrated in (6). In (6a), the c-projections of V are circled, and in (6b), its s-projections are circled.



As something of a footnote, note we can now explain why functional elements take exactly one complement, on the assumption that semantic headship must be unique.

3 The structure of the noun phrase

The account of functional elements which I have presented receives support from the insight it allows us into the structure of the nominal system. Let us begin by examining the problem of licensing the Determiner.

3.1 Licensing the determiner

The only account which has been given for the distribution of the noun phrase specifier is the phrase-structure rule (7).

$$(7) NP \rightarrow \{NP / \text{Det}\} \bar{N}$$

But if we follow Stowell in abandoning phrase-structure rules, we must provide a different account for the facts captured in rule (2), especially as concerns the Determiner.

The fact that Determiners occur exclusively in noun phrases suggests that there is selection between the noun and determiner. We might take the N or \bar{N} to select the determiner. But N is not a sister of Det , and \bar{N} is not a lexical item. Also, selection in English is generally rightward. If there is selection, we must assume that it is the Determiner which selects \bar{N} .

The desire to regularize \bar{X} -theory leads us to the same conclusion. We assume that every word is projected by \bar{X} -theory. It would be incumbent on us to explain, then, why determiners are exceptional in never taking complements or specifiers. If D selects \bar{N} , though, there is nothing to explain.

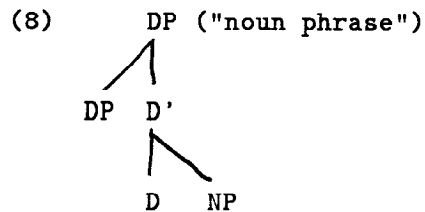
Assuming that a selectional relation does exist between Det and \bar{N} , this relation has much more in common with functional selection than with θ -assignment. \bar{N} cannot receive a θ -role, because it is not an argument, but a predicate. Det shares many properties with Infl and Comp , in fact. It is a closed-class element. It is stressless, and may be null, as with plurals and mass nouns. And it is not a "content word". There is no natural situation in which the utterance of a Determiner alone, say "the" or "every", describes an object.

Determiner and Infl have similar semantic functions. The function of the determiner is to specify the reference of a noun phrase. The noun provides a predicate, and the determiner picks out a particular member of that predicate's extension. The same function is performed in the verbal system by tense, or Inflection. The VP provides a predicate, that is, a class of events, and tense locates a particular event in time. In Higginbotham's terms, Infl

binds the VP's event place, in the same way that the Determiner binds the open place in \bar{N} .

Assuming that Det heads the noun phrase, a question arises immediately concerning the position of the subject of the noun phrase, that is, the prenominal genitive. Since the subject is not a word, but a phrase, we can no longer assume that it shares the same position as the determiner. The natural hypothesis is that it is the subject of DP. Let us take the possessive morpheme, 's, to be the determiner. This provides an immediate explanation for Case assignment of the genitive noun phrase: 's is the head and Case-marker. It assigns Case to its subject in the same way that Infl plus Agr assigns nominative Case.

A final problem is that it is generally assumed that only maximal categories may be selected. If D selects \bar{N} , \bar{N} should be a maximal category. Assume that it is, in fact. This gives us a structure for the noun phrase as in (8).



John 's book

I will continue to call DP the "noun phrase". The syntactic projection of N I will call "NP", not "noun phrase".

There are several reasons for believing that \bar{N} is in fact a maximal category. First, assuming that \bar{N} is maximal allows us to simplify the definition of c-command. For most purposes, the definition of c-command which is required is one in which the c-domain of a node is the first maximal category which dominates that node. But with respect to binding in the noun phrase, Reinhart's (1978) original "branching node" definition is necessary. Consider the noun phrases of (9).

- (9)
- (a) John's [α picture of himself]
 - (b) The city's [α destruction t]

 - (c) His [α picture of himself]
 - (d) Its [α destruction t]

 - (e) *Himself's [α picture of himself]
 - (f) *Himself's [α destruction t]

If we assume the "maximal category" definition of c-command, and assume that α is not maximal, the subject and object positions mutually c-command. So we would expect that (a), *John's picture of himself* would violate Condition C of the binding theory, as the r-expression *John* is c-commanded and bound by *himself*. Similarly, *his picture of himself* should violate Condition B, and (e) and (f) should arguably be good, with each anaphor binding the other. For this reason, in *Barriers* Chomsky (forthcoming) adopts two command relations: *c-command*, with the "branching node" definition, and *m-command*, with the "maximal category" definition. We can avoid this duplication of relations by supposing that α is in fact maximal. Then a noun's complement would not m-command its subject, as desired.

Even if we assume a distinction between c-command and m-command, the definition of government is given in terms of m-command. Hence, a noun governs its subject position. For this reason, it should be impossible for PRO to appear as the subject of a noun phrase. There is growing evidence, however, that PRO does appear as the subject of noun phrase. Thomas Roeper (forthcoming) discusses sentences like those of (10):

- (10)
- (a) John's sinking of the ship PRO to collect the insurance
 - (b) The sinking of the ship PRO to collect the insurance
 - (c) *The ship's sinking PRO to collect the insurance

In (a), *John* controls the purpose-clause PRO. Roeper explains the contrast between (b) and (c) by arguing that the PRO *must* be controlled. In (b), he proposes, there is an “implicit argument” controlling the PRO, while in (c), the implicit argument has been displaced by the fronted object, *the ship*. The most natural way to make this insight concrete would be to suppose that there is a PRO in the subject position in (b), which is displaced by *the ship* in (c). This hypothesis has two consequences which are unpalatable for Roeper, but predicted under the DP-analysis: (i) the determiner and the subject do not occupy the same position, and (ii) the subject is not governed by N.

Other evidence for Pro subject of noun phrase is alluded to in Chomsky’s *Knowledge of Language* (1986). Consider the paradigm (11):

- (11)
- (a) They_i heard [stories about each other_i]
 - (b) They_i heard [(PRO) stories about them_i]
 - (c) They_i told [stories about each other_i]
 - (d) *They_i told [(PRO) stories about them_i]

Assuming Chomsky’s binding theory, the judgements are as would be expected, except for the (b) sentence, *They told stories about them*. Since the whole sentence is the governing category for *them*, we would expect a violation of Condition B, just as in (d). On the other hand, if PRO optionally appears in the noun phrase, the noun phrase becomes the governing category. Thus, sentence (b) becomes acceptable, where PRO is not coindexed with *them*. And in fact, the only interpretation available is one in which they heard someone else’s stories about them. In sentence (d), on the other hand, the PRO must be coindexed with the subject, hence with *them*, because of the meaning of *tell*. Thus (d) cannot be saved by allowing the optional PRO to appear.

A third class of evidence that \bar{N} is maximal rests on the assumption that only maximal categories can be adjoined to. It has been argued that \bar{N} can

be adjoined to. It is widely assumed that adjectives adjoin to \bar{N} , for instance. Also, Fiengo and Higginbotham, in "Opacity in NP" (1981), argue for adjunction to \bar{N} at LF to account for certain scope facts. These considerations also lead us to conclude that " \bar{N} " is in fact a maximal category.

3.2 Pronouns

The DP-analysis provides a more principled account of pronouns, as well. There are a number of reasons for assimilating pronouns to determiners. Like Det, pronouns form a closed class. Many pronouns double as determiners: for instance, *that*, *which*, *each*. This is very much the case cross-linguistically, as well. It is probably true in a majority of languages that the third person demonstrative pronoun is identical to the demonstrative determiner. In many languages, the definite determiner is used either as a personal or relative pronoun.

Pronouns differ from nouns in that pronouns do not take complements, specifiers, or modifiers: we have *pictures of Bill*, for instance, but not **they of Bill*.

pictures of Bill	*they of Bill
big pictures	*big they
the pictures	*the they

For this reason, it has often been suggested that pronouns are "lexical noun phrases". But these facts fall out immediately, without resort to the questionable device of phrasal words, if we take pronouns to be determiners.

4 The Gerund

Especially striking support for the DP-analysis is given by the gerund—that is, the POSS-ing construction. The gerund has always been a puzzle. Externally, it behaves exactly like a noun phrase, whereas its internal structure is

that of a VP. I need not go over these well-known arguments in detail, but I will just point out the most relevant facts.

The gerund appears almost everywhere a noun phrase can; particularly, it appears in positions from which CP is excluded, such as subject of a sentence where Subject-Auxiliary Inversion has applied, and object of preposition, as in (12):

(12)

Would John's smoking stogies bother you

*Would (that) John smoke(s) stogies bother you

*Would for John to smoke stogies bother you

I heard about John's smoking stogies

*I heard about that John smokes stogies

Also, unlike subjects of sentences, subjects of gerunds bear genitive case. This again makes them look like noun phrases.

Another relevant fact is that extraction from gerunds shows specificity effects. In this gerunds contrast minimally with acc-ing constructions. Consider the sentences of (13).

(13)

(a) We remember his describing Rome

(b) We remember him describing Rome

(c) *the city that we remember his describing t

(d) the city that we remember him describing t

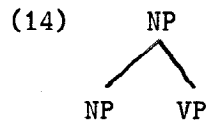
The ungrammaticality of (d) can be accounted for by assimilating it to specificity effects in extraction from noun phrases:

Who did you see a picture of t

*Who did you see his picture of t

On the other hand, the *-ing* "head" of the gerund Case-assigns its complement, takes adverbs rather than adjectives, takes auxiliaries, licenses resultative adjunct predicates (as in "his painting the house red"), etc. In all these ways, it behaves like a true verb, and not a noun.

For these reasons, the standard analysis of gerunds takes them to be noun phrases, where \bar{N} is replaced by VP, as in (14):

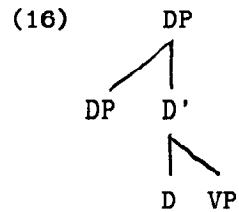


John's hitting the ball

But this analysis, if unpalatable in older versions of the theory, is especially undesirable under present, more restrictive characterizations of \bar{X} -structure. Assuming VP is the head of NP, there are two problems: how can a maximal category head another category, and how can a head differ in syntactic category from the phrase it heads: i.e., how can a verbal category head a nominal category? On the other hand, if VP is not the head of NP, then NP is unheaded, and we still have a violation of \bar{X} -theory.

Also, to account for the appearance of genitive Case in the gerund, it is assumed that genitive Case is assigned to the structural position [NP,NP]. All other Cases are assigned by lexical Case assigners, though. It would be much preferable to assimilate genitive Case to the others in this respect. In *Knowledge of Language*, Chomsky takes the noun to be the genitive Case-assigner, but this leaves the presence of genitive Case in the gerund a mystery.

In the present analysis, both of these problems receive natural solutions. Replacing NP in (8) by VP yields (16):



John 's hitting the ball

The VP is not the head of the noun phrase: the Determiner is. At the same time, the intuition that the verb is the head of the phrase is preserved: though DP is a c-projection of Det, it is an s-projection of V. Also, genitive case in the gerund is accounted for, given our earlier assumption that the Determiner assigns genitive Case.

However, there are indications that this structure is somewhat too simple. Consider Raising in the noun phrase. Gerunds allow raising, while non-gerundive noun phrases do not.

(17)

John is likely t to win

John is certain t to win

John appears/seems t to want us to leave him alone

John is eager PRO to win

(18)

[John's being likely t to win] will only spur Bill on

[John's being certain t to win] will make Bill give up

[John's appearing/seeming to want us to leave him alone] miffed

Muffy

(19)

*John's likelihood t to win

*John's certainty t to win

*John's appearance t to win

On the other hand, neither gerunds nor non-gerundive noun phrases allow pleonastic subjects:

(20)

*its being likely that John would win

*its seeming that John would win

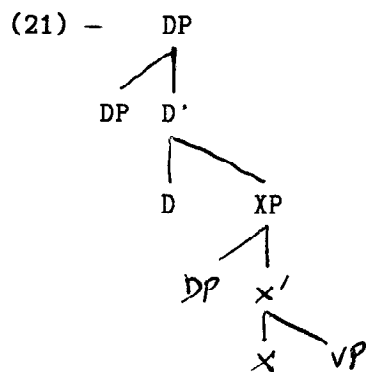
*its likelihood that John would win

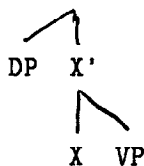
*its appearance that John would win

cf.: the likelihood that John would win

We can account for these facts if we assume that 's is a θ -assigner. This would explain why pleonastics can never be the subject of 's, and it would explain why the sentences of (19) are bad: it is not possible to move into a θ -assigned position. There are two major problems which this analysis raises: First, why are the gerunds in (17) good? And second, if it is not possible to move into subject of DP, we must find an alternative analysis for e.g. *the city's destruction*, one which does not involve movement.

First, why are the gerunds of (17) acceptable? For instance, *John's being likely to win*. We must assume that *John* is base-generated where it is. But then the trace lacks an antecedent. Since *John* cannot be antecedent for the trace, the only alternative is that its antecedent is an empty category. This leads us to assume a somewhat more complex structure for the gerund, namely, that of (21). An extra category has been interposed between Det and VP to make room for a PRO antecedent of the trace.





John 's PRO ? being likely t to win

A question is the syntactic category of X. The fact that X takes a subject and a VP complement, as well as the presence of the inflectional morpheme *-ing*, suggests that X=Infl. On the other hand, the fact that XP is selected by D suggests that it is NP. Let us suppose that X is a "nominalized" Infl: its syntactic category is Infl, but it has certain lexical features which make it sufficiently nominal in character that D can select it.

Now we must account for the fact that that PRO subject is always controlled by the genitive noun phrase. If simple control were involved, we would expect a PRO_{arb} reading to be possible, but it is not. First, let us consider the interpretation of 's. 's inherits its descriptive content from its complement. *John's rock* denotes a rock, and *John's leaving* denotes an act of leaving. But 's also provides an additional bit of information, namely, that the subject possesses the object denoted by the whole phrase. For *John's rock*, this is straightforward. But consider a phrase like *John's honesty*, which does not denote a concrete object, but an attribute. In this case, saying that John possesses the attribute of honesty entails that John is honest. In other words, possession of an attribute entails that that attribute is predicated of you. Let us call this the Possessional Entailment.

Possessional Entailment:

Where α is an entity, and β is an attribute, $Poss(\alpha, \beta) \rightarrow \beta(\alpha)$

John's honesty \rightarrow Poss(John, λx (honest(x)) \rightarrow honest(John)

Now suppose that the nominalized IP involved in gerunds denotes an attribute. To be an attribute, the IP must have an open place. Following

Williams, let us assume that PRO provides infinitival IP's with an open place, making them predicates. Then in *John's leaving*, for instance, John possesses the attribute of leaving, which entails that John leaves. *John* "controls" PRO, at least at a semantic level, inasmuch as it binds the open place supplied by PRO.

In this way, gerunds resemble infinitival relatives and purpose clauses.

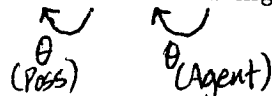
(22)

A man [PRO to fix the sink]

I bought a dog [PRO to keep me company]

[PRO to fix the sink] is predicated of [a man], hence [a man] necessarily controls the PRO. Note that this is not to say that *John* in *John's leaving* bears the Agent θ -role assigned by *leaving*. That is borne by PRO, as is made explicit in (23).

(23) John 's PRO leaving



The understanding that John is the Agent of *leave* is a semantic entailment, and is not directly represented in the syntactic structure.

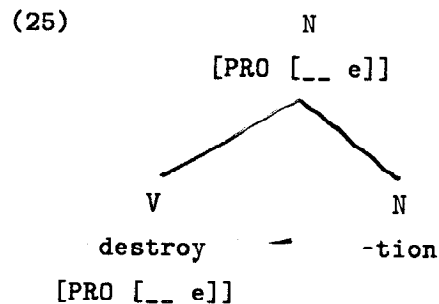
Now let us turn to the second problem in our analysis, namely, that if 's assigns a θ -role to its subject, passive is not possible in the noun phrase. The Possessional Entailment in fact provides us with a solution. Note that the Possessional Entailment must have access to the θ -grid of the adjective *honest*, which is "buried" in the nominal *honesty*. However we are to spell this out in detail, it suggests an alternative to NP-passive in examples like *the city's destruction*. Suppose that in general, when a noun is derived from a root that possesses a θ -grid, the (maximal projection of the) noun denotes an attribute formed by λ -binding one of the positions in the θ -grid. There are two attributes which the NP *destruction* can denote, given in (24): the property of destroying something, and the property of being destroyed.

(24)

a. $\lambda x[x \text{ destroy } a]$ b. $\lambda y\exists x[x \text{ destroy } y]$

The former underlies *Caesar's destruction of the city*, the latter underlies *the city's destruction*.

Take the morphological representation of *destruction* under reading (24a) to be (25):



The structure with PRO and e is a subcategorization frame. Following Keyser and Roeper (1984), I assume subcategorization frames which include information about external as well as internal arguments. PRO and e represent slots in the frame. The distinction between them is that the θ -role represented by e must be discharged, while that represented by PRO need not be. If the θ -role represented by PRO is assigned at all, it is assigned externally, via predication. θ -discharge involves identifying a syntactic argument with an e , as in (26).

(26) destruction of the city _{i} [PRO [_ _ e_i]]

The PRO is not available for θ -discharge, but instead provides the open place in the attribute denoted by NP. The semantic value of (26) would accordingly be (27).

(27) $\lambda x(x \text{ destroy the-city})$

If Caesar possesses this attribute, then by the Possessional Entailment, he destroyed the city.

The affix *-tion* is also capable of altering the subcategorization frame of *destroy*. It can eliminate it altogether, yielding the result nominal, as in (28):

(28) The destruction was widespread

Or *-tion* can alter the subcategorization frame of *destroy* by operator-binding the empty object, yielding (29):

(29) destruction
 [OP_i [PRO [__ e_i]]]

The *e* is no longer available for θ -discharge. As above, the PRO is also not available for θ -discharge. In this case, the operator provides the open place in the attribute denoted by NP, parallel to infinitival relatives and purpose clauses, as in (30):

(30)
 a wrench [OP_i [PRO to fix the sink with *t_i*]]
 I bought some eggs [OP_i [PRO to throw *t_i* at Reagan]]

Thus the attribute denoted by an NP projected from (29) is (31). This provides the reading of *the city's destruction* in which the city is destroyed.

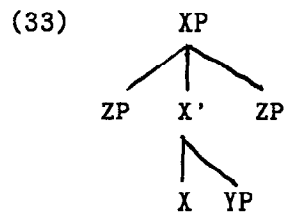
(31) $\lambda y \exists x [x \text{ destroy } y]$

This analysis in effect proposes that passive occurs in the syntax, in the sentence; but in the lexicon, in the noun phrase. This distinction seems correct for an independent reason, namely, that passive in the sentence is for the most part free, whereas passive in the noun phrase is highly idiosyncratic. *Destruction* is in fact somewhat exceptional in allowing passive, as the paradigm (32) suggests.

- (32)
- the city's destruction
 - *the city's burning by the Huns
 - *the city's sacking by the Huns
 - *the article's criticism
 - *the body's disposal

4.1 The elimination of phrase structure rules

In conclusion, I have argued that functional selection provides us with a principled account for the structure of the clause and the noun phrase, that is, CP, IP, and DP. Consider an arbitrary word X, as in (33).



If X is a functional element, it selects a unique complement YP, because YP provides the semantic head of XP, and semantic headship must be unique. Because X subcategorizes YP, YP must appear as the sister of X, and no other elements may appear under \bar{X} . The complement appears to the right of X because functional selection, like θ -assignment, is right-directional in English.

There is also an interesting generalization which emerges concerning sisters of \bar{X} . If ZP is a sister of \bar{X} , it can be licensed by predicating of some element in XP, regardless whether X is a functional or thematic category. But where ZP is an argument, X must be a functional category. Comp, Infl, and Det have subjects, N and V do not. There are several options available to account for this fact—the analysis I find most appealing is to say that subjects are licensed by agreement, and that only functional elements can contain AGR. But whatever the account, the categories that take subjects

now form a natural class, and N is no longer exceptional in being the only thematic category to take a subject.

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References

Chomsky N. (1986) *Knowledge of Language*, Praeger Publications, NY.

— (forthcoming) *Barriers*, Linguistic Inquiry Monograph, Cambridge MA.

Fiengo R. and J. Higginbotham (1981) "Opacity in NP", *Linguistic Analysis*

Roeper T. (forthcoming) "Implicit Arguments and the Projection Principle", ms., University of Massachusetts, Amherst.