Aspect and the Syntax of Argument Structure

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0. Introduction.

We use the term "argument structure" to refer to the syntactic configuration projected by a lexical item. It is the system of structural relations holding between heads (nuclei) and their arguments within the syntactic structures projected by nuclear items. While a lexical entry is more than this, of course, argument structure in the sense intended here is nothing other than this.

Argument structure is determined by properties of lexical items, in particular, by the syntactic configurations in which they must appear. There are just two syntactic relations, complement and specifier, defined so as to preclude iteration and to permit only binary branching.

These assumptions delimit a certain project, i.e., that of ascertaining the extent to which the observed behavior of lexical items is due to structural relations, as opposed to the interaction of structure and some other component, that is to say, to matters which we will refer to as "questions of interface."

We take (1) and (2) to be structurally distinct:

(1) The pot broke.
(2) The engine coughed.

And this structural difference accounts for their behavior in relation to the standard causative-inchoative transitivity alternation:

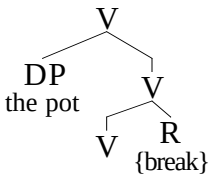
(3) I broke the pot.
(4) *I coughed the engine.

The properties which distinguish these two verbs are the following. The verb *break*, as illustrated in (1) and (3) consists of the following structural elements, a root (R) and a verbal host (V):

(5) R, V

The verbal component has the property that it takes a complement, realized here as the root. The latter contains the semantic and phonological features associated with the dictionary entry *break*. The root component requires a specifier, as shown in (6):

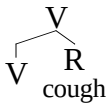
(6)



This is an essential feature of the root {R, break}, accounting for the central syntactic feature of the verb, namely the transitivity alternation observed.

The verb *cough*, represented in the grammarical sentence (2) and in the ungrammatical sentence (3), likewise consists of two parts, a root, and a verbal nucleus. Unlike the root component of *break*, however, the root element of *cough* does not require a specifier, thus the verb does not, and cannot, project a specifier:

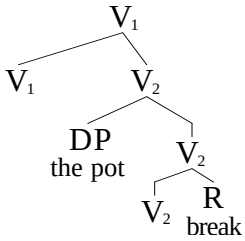
(7)



A verb, in and of itself, does not project a specifier, and its complement in this case (i.e., root element) does not motivate the projection of a specifier. These properties account for the ill-formedness of (4).

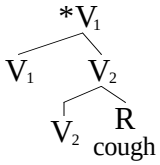
Transitivization of the type represented by (3) is in principle automatic, by virtue of the complement relation. The structure of (3) is a result of the combination, via Merge, of (6) and a verbal nucleus V, as in (8):

(8)



Comparable senertion of (7) into the complement position of a matrix verb is impossible—(9) cannot converge as a transitive, there being no internal argument (specifier) to be licensed (e.g., case marked) by V_1, assuming that to be a requirement for convergence:

(9)



This follows from the fundamental nature of the root √{cough}, which does not force the verb to project a specifier. In general, but with some exceptions, this

property is shared by R elements which exist independently as the lexical heads of nominal projections, i.e., as nouns. This is in contrast to adjectives, for example, which generally do force the projection of a specifier.

While we attribute these effects to structural factors, there are other matters which must be addressed in gaining full understanding of these verbs — there is more to the grammar of verbs than structure, to be sure. We take some such nonstructural factors to be matters which can be understood only in terms of one or the other interface.

Sentences (1) and (2) above are identical in "profile," representing the canonical intransitive frame DP V. But they are not structurally isomorphic, we maintain, since their behavior in relation to transitivization distinguishes them in a manner which implicates structure, not some other factor.

The following are also structurally distinct, despite sharing the same profile superficially:

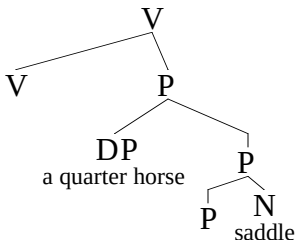
(10) (a) He saddled a quarter horse.
(b) He made a fuss.

The difference is revealed in their behavior in relation to the middle construction:

(11) (a) A quarter horse saddles easily.
(b) *A fuss makes easily.

This asymmetry is due to a structural factor, we believe. A verb can participate in middle formation if and only if its complement is a dyadic projection and, consequently, contains a specifier, as exemplified in (12), the structure associated with (10a):

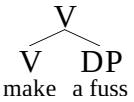
(12)



The middle construction involves a number of issues and problems, amply discussed in the literature (see. for example, Ackema and Schoorlemmer, 1995; Condoravdi, 1989; Fagan, 1988, 1992; Kemmer, 1993; Keyser and Roeper, 1984; Levin, 1993; Rapoport, 1997; among others). However, from the point of view of its grammatical essence, we claim that the middle simply cancels the case binding ability of the governing V, forcing the specifier to raise into the position associated with the sentential syntactic subject. This prevents the appearance there of the external subject which would otherwise combine with VP to give the transitive structure of (10a).

By contrast, the verb *make* in (10b), although it is transitive and might be expected to undergo middle formation, evidently cannot do so, at least not for us, as indicated by the judgment we have indicated for (11b). The reason, we believe, is because the structure assigned to *make* in this use fails the basic requirement. Its complement, a DP, presents no specifier (in the required sense):

(13)



As mentioned above, a complete understanding of the middle construction will involve other linguistic components. The middle is another construction in which purely structural considerations interact with other linguistic objects and principles.

The purpose of this discussion is to examine certain cases in which argument structure, as defined above, interacts with certain other linguistic systems, including the following:

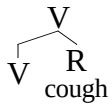
(14) (a) Conflation and Selection
(b) Merge and Obviation
(c) Active and Stative

The first of these has to do with the principles involved in the circumstance that the phonological matrix associated with the nominal root *cough* is realized in the verb of (2), and not in its complement. The second problem is semantic in nature. It has to do, among other things, with the fact that the semantic features of the root component of a verb are sometimes linked with an internal argument (object or specifier) and sometimes with the external argument (the sentential syntactic subject). The consequences are straightforward in the syntactic behavior of the relevant verbs. The third problem involves an issue with which we have not dealt heretofore, although we have alluded several times to an opposition (i.e., central and terminal coincidence) which may be relevant. The problem will be to determine the role of structure in this domain.

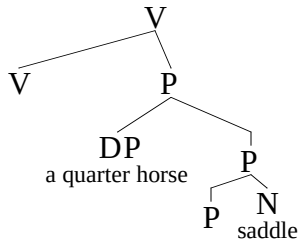
1. Conflation and Selection.

Conflation is a term that we use to refer to the phonological instantiation of light verbs in denominal verb constructions. Specifically, the issue of conflation has to do with the problem of how the verb ends up carrying the phonological matrix of its nominal complement, as in examples of the type represented by (2) and (10a) above, the relevant structures for which are repeated here:

(15) (a)



(b)



These representations give the impression that the basic structures locate the phonological matrix of the noun in the noun itself, i.e., in the complement of V in the case of (15a), of P in the case of (15b). On this view of the matter, which we held to be self-evident for many years, the spell-out of the verb (*cough*, *saddle*, in these examples) required a kind of movement, resulting ultimately in the acquisition by the V of the phonological matrix of the relevant noun. It seemed reasonable to propose that the movement operation involved in these derivations was Incorporation, in the technical sense of Baker (1988). This idea was abandoned, however, because incorporation overgenerates, incorrectly sanctioning incorporation from the position of the internal specifier (e.g., from the position of DP in (15b)). Unconstrained, incorporation will permit forms like those in (16):

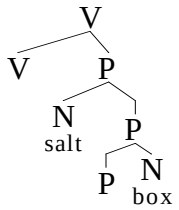
(16) (a) *They salted in the box.
(cf. They boxed the salt.)

(b) *They tiled with grout,
(cf. They grouted the tile.)

A properly constrained Conflation operation must be strictly local, relating a head (say V) and the head of its complement (e.g., V, P, N). The relations expressed in (15) are local in the required sense. Thus, in (15a), the noun *cough* heads the complement of V. And in (15b), there are two relevant local relations to consider. These are P and its complement *saddle*, and V and its complement P. This chain of local relations permits the Conflation of V with *saddle*. Importantly, the specifier DP in (15b) is completely "out of the loop."

A slightly different way to think about the structural relation which is relevant for Conflation is in terms of selection. Strict locality holds for Conflation if the governing head (V) *selects* the target X° in its complement. This guarantees locality and precludes Conflation of a specifier, which bears no structural relation to the governing head. In (17b), the noun *box* is selected by P, and P is selected by V; but *salt* is not selected by V or any other head in (17):

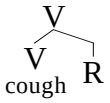
(17) (a) They boxed salt.
(b)



The correct structural relation for Conflation can be guaranteed in a number of ways. As just suggested, selection itself guarantees the correct structural relation—a head X° may enter into the Conflation relation with the head of its complement C if X° selects C. In (17b), P conflates with *box*, and V conflates with P. Conflation of V and *salt* is impossible. In (15a) above, V conflates with R.

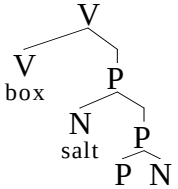
What is the mechanism whereby X°, the governing head, acquires the phonological matrix implicated in the Conflation relation? This too must be properly constrained. We reject incorporation, because it is constrained by government, not selection. A possibility for the the phonological realization of X° in Conflation is this. At Merge, the structure defined by X° and its complement C is assigned a label. In the simplest case, the label is determined by the head, X°. We assume that the label includes imformation about the phonological make-up of X°—i.e., a phonological matrix, an organized set of phonological features. But suppose X° has no phonological features. In that case, let us suppose that X° assumes the phonological features of its complement. This conforms perfectly to the strict locality required by Conflation. The phonological matrix *cough* is transferred to V at Merge V-R in (15a), giving (18), with overt verb and non-overt complement:

(18)



Similarly, in (17b), the phonological matrix *box* is transferred to P at Merge P-N and then to V at Merge V-P, resulting in (19):

(19)



There is a problem with this conception of Conflation. Consider the following pair:

(20) (a) He danced.
(b) He danced a jig.

Verbs which are candidates for Conflation appear in constructions like (20a); that is why they are candidates for Conflation. But virtually all such verbs also appear in constructions like (20b), in which the phonological matrix (*dance* in this case) must be considered in some sense "basic." While *dance* could be derived from the complement in (20a), it is not obvious how it could be derived from the complement in (20b). In short, we must assume that the verb *dance* is entered as such in the lexicon, complete with its full phonological matrix.

This challenges the basic foundations of Conflation as a theory of phonological realization. Except as an item of terminology, Conflation ceases to exist. The relation subsumed by this term reduces to another fully established and generally recognized relation, namely Selection. We have already suggested that Selection is a condition on Conflation. Suppose we carry this thought further and simply identify Conflation with Selection, folding the former into the latter. The idea would be that the full verb of (20a), for example, would be "rich enough" in semantic features to license the empty category functioning as its complement. This is a kind of selection, inasmuch as the verb identifies the empty category as a hyponym of "dance," i.e., a member of the class of entities which qualify as dances. This conception of the matter has the advantage that the semantic relation involved in (20a), where the complement is non-overt, is essentially the same as in (20b), where the complement is overt. The overt complement, *a jig*, is identified as a hyponym of "dance," i.e., the jig which is a dance, as opposed to a musical score, a fiddle tune, or whatever else "a jig" might mean.

There is some support for this from the licensing of non-overt complements. A non-overt complement is possible if it is selected in the sense indicated, i.e., identified as a hyponym by semantic features inherent in the governing verb. It follows then that so-called "light verbs" cannot license a non-overt complement:

(21) (a) *The builder made [$_N$ ec].
(b) *The children did [$_N$ ec].
(c) *They put the books [$_P$ ec].

In this section we have been concerned with an aspect of the interface of syntax and phonology. The problem which we began with has essentially evaporated once the licensing of null complements is properly understood as an effect of Selection. With this realization, the idea that Conflation involves incorporation, of whatever sort, from a complement into a governing P or V disappears entirely from the theory of the phonological realization of verbs like *laugh*, *cough*, *corral the horses*, *saddle the horses,* and the gamut of denominal verbs. The solution arrived at in this discussion has in no way impinged upon the theory of argument structure assumed here.

2. Merge and Obviation.

In the discussion just concluded, the special role of root elements is brought out. For present purposes, we maintain that a verb like "dance," for example, has two components, (i) the categorial signature V and (ii) the root component *dance*, a core lexical item comprising the correct phonological matrix (or matrices) and the correct semantic structure. The phonological matrix determines the spelling of the verb, and we have concluded that it is inherent to the verb, not moved or incorporated from its complement. To be sure, incorporation does exist as a process in the syntax of verbal projections; verb raising is the central mechanism in the derivation of transitives (e.g., transitive *break* from unaccusative *break*) and adjective incorporation is the process involved in the derivation of deadjectival verbs (as in *redden*, *thicken*). But the vast inventory of so-called denominal verbs is, so to speak, "base generated," in the sense that the phonological matrices of the verbs are present in the lexical entry.

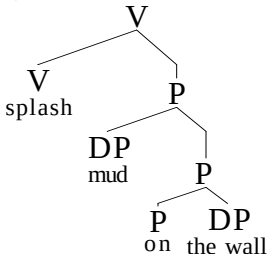
In this section, we consider certain aspects of the meanings of the root elements, again with the expectation that what we will find will be in the nature of some sort of interface relation between semantics and argument structure, with no fundamental effect on our conception of the latter. We have already observed one of the syntactic effects of the semantics of a root element. This is the relation which we have called Selection, following tradition. The selectional features of a root may be strong enough to impose a particular interpretation upon an overt complement (*dance a jig*), or they may be strong enough to license a non-overt complement (*dance*). Alternatively, they may be too weak to license a non-overt complement, as in the case of light verbs (*make, do, have, take*).

We will be concerned now with a somewhat different aspect of the semantics of root elements. Consider the following pair, illustrating a common transitivity alternation in English:

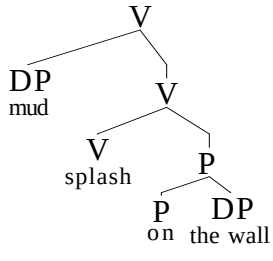
(22) (a) The kids splashed mud on the wall.
(b) Mud splashed on the wall.

The transitive alternant results from "immediate gratification" of the specifier requirement of P, as shown in (23a); and the intransitive variant results by "delayed gratification" of that requirement, as in (23b):

(23) (a)



(b)

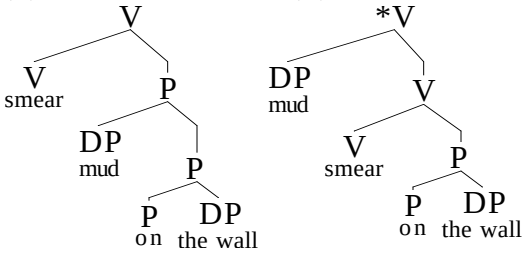


The two alternants (Hale and Keyser, 2000b) are defined straightforwardly and automatically by the operation Merge (Chomsky, 1995). Ceteris paribus, the

alternation seen here should always be available. It is not always available, of course, as shown by (24), where the intransitive alternant is ungrammatical:

(24) (a) The kids smeared mud on the wall.
(b) *Mud smeared on the wall.

(25) (a) (b)



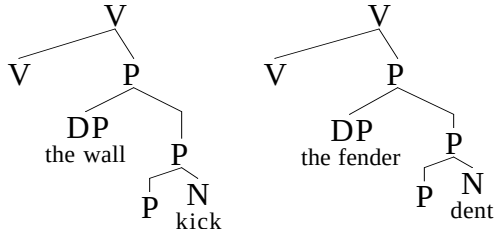
The difference between these two verbs lies in the semantic components of their root elements. Specifically, the difference is to be found in what might be termed the "manner factor" inherent in the semantics of the root. The verb *splash* in (22) involves a manner feature which is in a clear sense "linked" to the internal argument *mud*. It represents the motion and dispersal of particulate matter associated with *mud*, not with the external argument. This relation is preserved in both the transitive and the intransitive alternants. By contrast, the verb *smear* in (24) is characterized by a "manner feature" linked externally, i.e., embodying a gesture or motion associated with the external argument. This relation is, of course, disrupted in the intransitive alternant depicted in (25b). The *smear* factor cannot be linked to the external argument there, since that position will be taken by the internal argument, raised there in sentential syntax. Accordingly, the sentence is ungrammatical (Hale and Keyser, 1999).

Verbs of impact and concussion behave in a related manner; the following is a relevant pair:

(26) (a) Leecil kicked the wall.
(b) The bronc rider dented the fender.

These are assumed to have the locatum structure (cf. *give it a kick*):

(27) (a) (b)



This represents an older structural representation, of course; in accordance with the previous section, the phonological matrices of the nominal roots *kick* and *dent* would appear in V, as inherent parts of the lexical entries of the verbs. The relation between the heads V-P-N is now seen as Selection, rather than

Conflation as in earlier models. However, the nominal elements symbolized N (interpreted as *kick* and *dent* here), despite being phonologically non-overt, are crucially present in the structures of (27), in the function indicated (complement of P). Their semantic properties play a role in sentential syntax, as seen in relation to the Middle Construction:

(28) (a) *This wall kicks easily.
(b) This fender dents easily.

The semantic properties of *kick* crucially involve a manner factor linked externally; a kick is so to speak a property of the entity giving the kick. For this reason, (28a) is ungrammatical. The requirement that *kick* be externally bound cannot be met there. The very nature of the Middle Construction is to eliminate the external argument. Thus does not affect (28b), by comparison, since the manner factor inherent in *dent* is internally bound. The internal argument is not affected syntactically by the Middle Constructon, hence the required bounding relation is satisfied here.

Psychological predicates also exhibit behavior which is relevant to these observations. Consider the pair in (29):

(29) (a) *John loves easily.
(b) John angers easily.

Thus, as we might now reasonably expect, obviative (subject experiencer) predicates cannot form middles, since that operation eliminates the external argument, required to satisfy the external linking requirement of the verb's semantic factor (i.e., the semantics of *love*, an externally linked root). The proximate (object experiencer) predicate *anger* permits middle formation, since the semantic factor *anger* is internally bound.

The two types of psychological predicates display a number of well-known differences, including backwards anaphora, for example. It is possible as well that they differ in the assignment of thetic and categorical readings. Consider the sentences in (30), written to reflect the pronunciation according to which the verb bears the intonation peak, as opposed to the rendition according to which the clause receives nuclear stress:

(30) (a) The TV bóthers Bill.
(b) John respécts Bill.

It seems to us that (30a) has a thetic reading. Accordingly, it is not a standard predication construction. But (30b) is a categorical judgment, we believe. The intonation peak on the verb there is contrastive. No manipulation of the intonation causes the thetic interpretation to emerge easily. Thetic and categorical interpretations correlate with proximate (object experiencer) and obviative (subject experiencer) root semantics, suggesting that external linking is incompatible with the thetic judgment of sentences (cf. Basilico, 1998).

The examples brought forth in this section are intended to exemplify a kind of interface relation between argument structure and meaning. Certain syntactic consequences follow from the appearance of roots of different semantic types, along the obviative-proximate dimension. A root like *dent*, for example, being proximate (internally bound) will permit the formation of the middle, an operation which eliminates the external argument. By contrast, a root like *kick* is obviative (externally bound) cannot permit middle formation, since its external binding requirement cannot be met in that construction. In general, the root elements of lexical verbs involve a system of classification of this sort. But it seems to us that this does not yet touch significantly on the syntax of argument structure. In the following section, we examine a number of questions on statitivity and action which may indeed require some extension of the theory of the syntactic projection of argument structure.

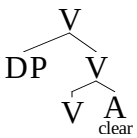
3. Events and States.

The third and final topic will concentrate on the issue of stativity and the question of its relation to structure. This section is much more speculative than the previous two, however speculative those may be. We begin with a discussion of the category adjective.

Adjectives pose an immediate problem for the framework assumed in Hale and Keyser (1993). This is the case, in particular, for adjectival nuclei that have the fundamental property that they take just one argument—specifically, an argument which stands in the relation of specifier, not complement. The problem resides in the fact that the appropriate cooccurence of the adjective and the specifier it requires cannot be effected by Merge. The creation of a syntactic constituent by merging DP and A(djective) results in the complementation configuration, putting the DP in the wrong relation to the adjectival nucleus. What is required is a configuration in which the DP stands in a position in which the adjective will be attributed, or predicated, of the DP—a relation which can be expressed notationally by coindexing DP and an appropriate projection of A. This is the essencial adjectival requirement, and it can be satisfied in a configuration in which the DP is suitably close to the A-projection but is not a sister to the A-head. By "suitably close," we mean that the specifier DP locally c-commands the relevant (whether maximum or intermediate) projection of the adjective and the latter is c-subjacent to the former (cf. Williams, 1980).

The problem is resolved in the argument structure configurations of deadjectival verbs like *clear, narrow, redden, darken*. These are assumed here to have a structure in which a verbal head serves not only to project the verbal category (i.e., to "verbalize" the adjective) but also to host the specifier required by A (here a maximal projection, trivially):

(31)



As usual, this diagram represents the properties of the heads involved. It is the "virtual" structure, not the actual "output"—Merge applied to V and A results immediately in Conflation, giving the verb *clear*, as in *the sky cleared*.[1]

But what of the adjective when it appears to lack a host for the specifier it requires? Consider, for example, the structure of an adjectival small clause, of the type illustrated in (32):

(32) (a) We found [the sky clear].
(b) We consider [our students brilliant].
(c) With [the sky clear], we can fly today.
(d) With [my clothes wet], mom wouldn't let me in the house.

If *the sky* in (32a) is in a specifier position, what head projects that position? We have assumed that A itself does not merge directly with the phrase that satisfies its specifier requirement, since the resulting relation would be indistinguishable from that holding between a head and its complement, not the required relation here. And in (32) there is no other obvious candidate to host the specifier—a problem, on the face of it. The solution can be seen by considering the difference between conflation constructions like (31) and free-standing adjectival predicates like those in (32).

In the conflation construction, the adjectival component is an unprojected head—that is to say, a bare adjective. In the small clause construction, however, we assume that the free standing adjective is the lexical head of an extended projection. In (32), it happens that no part of the extended projection is overt, since the adjective is in the absolute degree. In the examples in (33), however, elements of the extended projection are overt:

(33) (a) We found [the sky so clear that it hurt our eyes].
(b) With [the sky clearer than glass], we can fly.
(c) We found [the sky as clear as glass].

It is the functional category defining the extended projection of A, we suggest, that projects the specifier position required to complete the licensing of the adjective. This is depicted abstractly in (34):

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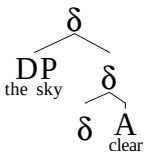
[1]There are two kinds of "incorporation", in our view. The type which we have termet tconflation" here is strictly a matter of the PF representation of syntactic objects. It is a part of the operation Merge. When a dependent head (i.e., a phonologically non-overt head or an affix) merges with a complement, the latter fuses with the former to eliminate the empty phonological matrix. This fusion, of course, involves the *head* of the complement, not, say, a specifier of the complement, accounting for the impossibility of *we appled in boxes*, beside well-formed *we boxed apples*. By contrast, sentential syntactic incorporation generally involves adjunction of a bare root (noun, verb, etc.) to an overt locally c-commanding verb, resulting in a composition of overt elements, i.e., a compound. Constraints of incorporation are the familiar ones, including the ECP. In principal, and in fact, incorporation of a specifier into a c-commanding verb is possible. Incorporation is also morphologically driven, possibly, since in many languages that have incorporation (e.g., Tanoan, Nahuatl, Kunwinyku) the bare root cannot stand alone.

(34)



Among the elements which occur in the head position δ are Ø, the non-overt head of the absolute degree, exemplified in (32a), and *-er*, the affixal head of the comparative degree, exemplified by (33b)—these both implicate conflation, eliminating the empty phonological matrices. Other members of the category δ presumably include *so, as, too, very*. The δ-projection exemplified in (34) appears as the complement of a verb in (32a,b) and as the complement of a preposition in (32c,d). In (35) it appears as the complement of raising predicates, including the copula:

(35) (a) The sky seems [*t* clear].
(b) The sky is [*t* as clear (as glass)].
(c) The sky is [*t* clearer (than glass)].

The adjective conflates with the phonologically empty head in (35a) and, in (35c), with the empty matrix associated with the comparative degree suffix *-er*.

The structures (31) and (34) share the property that they are dyadic—in both cases, the head projects two "argument positions," corresponding to the relations termed complement and specifier.[2] There is an important difference between the two structures, a difference which resides in the nature of the head. While V and δ both select adjectival complements and DP specifiers of the same general sort (appropriate to the adjective), they differ consistently in stativity. The V-based structure is active (non-stative) and the δ-based structure is stative.

In this discussion, we will be concerned in large part with the question of stativity, and with its "source" and proper representation in the grammar. We will take a number detours, however, in order to discuss structural matters which come up. We begin with a consideration of the possibility that stativity correlates with lexical category or part of speech.

3.1. Stativity and category.

It is not unreasonable to ask whether it is a general principle that verbs project structures associated with an active (nonstative) interpretation while other categories project structures associated with a stative interpretation. In some languages, this is true without exception—e.g., it is true in Warlpiri of Central Australia. But it is of course well known that, in a great many other languages, including English, there are verbs which are stative according to

[2]Since these are structural relations, the terms complement and specifier have no special status, being simply the names of the structural relations: (i) a complement is the sister of the head, and (ii) a specifier is the sister to the syntactic object consisting of the head and its sister. We will continue to use these traditional terms, nonetheless, as an expository convenience.

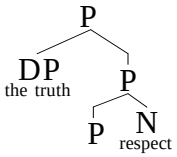
standard tests (the progressive, imperative, telicity, etc.). Experiencer-subject "psych" verbs are generally classed as stative:

(36) Experiencer-Subject Verbs (taken from Tenny, 1994:65):

(a) John feared the truth.
(b) John knew the truth.
(c) John admired the truth.
(d) John liked the truth.
(e) John respected the truth.

What accounts for the stativity of these verbs? One possibility is that they involve the dyadic sturcture projected by the category P—specifically, the covert P of central coincidence—like that found in locatum verbs of the type represented by *saddle, hobble, clothe*. Accordingly, these verbs would have paraphrases involving *give*, as in *John gave the truth his respect*, or, more accurately *John got the truth (to be) with his respect*, where *with* corresponds to the overt possessive preposition, a prototypical preposition of central coincidence, also illustrated in secondary predicates like*with gifts*, as in*they came with gifts*. Of course, the preposition putatively implicated in (36) is empty, non-overt, and necessarily conflates with its complement. Under these assumptions, the dyadic structure underlying the verb phrases of (36) is as follows (using *respect the truth* to illustrate):

(37)



As usual, the structure depicted in (37) abstracts away from Conflation, according to which the phonological matrix of the noun *respect* is spelled out in P (see section 1).

If (37) is projected by a central coincidence P, we can assume it is inherently stative, like any small clause based on central coincidence P, as in *we found [him with money] (i.e., in possession of money), we found the [horse saddled]*.[3] The stative uses of experiencer-subject verbs correspond structurally to certain expressions based on the structural head realized by the verb *have*, which is also stative:[4]

---

[3]James Higginbotham, in the context of a Lexicon Seminar at MIT in 1997, developed an idea compatible with the view that the ending *-ed* in derived attributes like *saddled* corresponds to the head in a dyadic (b)-type projection; we take this *-ed* to belong to the category P.

[4]The correlation does not extend to all experiencer-subject verbs; many verbs cannot appear in the *have*-construction, e.g., *fear, hate, like*. We maintain, however, that these have the same basic structure as that attributed here to *respect, love,* and *esteem*. It is perhaps interesting some nouns which enter into the *have*-construction easily form adjectives with *-able.* And some nouns which do not enter into the *have*-construction also do not form adjectives with *-able,* e.g., **fearable,* ?**hateable* (cf. *hateful*).

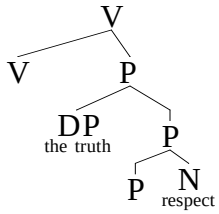
(38) (a) Mary has my respect. (cf. I respect Mary.)
(b) She has the boss's esteem. (cf. The boss esteems her.)
(c) He has his children's love. (cf. His children love him.)
(d) Cowboys have my envy. (cf. I envy cowboys.)
(e) Leecil has our admiration. (cf. We admire Leecil.)

The structural correlation is this, taking (38a) as the model and comparing this to (37). The subject of the *have*-construction, *Mary* in this instance, corresponds to DP in (37), and the object of *have*, i.e., *my respect*, corresponds to N, complement of P; *have* itself corresponds to P. In essence then, the predicates in (38) are structurally identical to (37). The differences between them are matters of realization and selection—(37) is headed by empty P, whose complement is a bare N, while the predicates of (38) are headed by an overt, morphologically verbal element *have*, whose complement is a full DP, specifically a possessive construction linked to the external subject.

We will resume this structural comparison at a later point. For the present, let us return to the issue of stativity. We ask whether the suggested categorial affiliation of the head of (37) could be the source of the stativity of the verb phrases of (36). This would be in line with the proposal that non-verbs head stative projections.

The usual fate of a P-headed structures like (37) is to enter into construction with another category, as when it appears as the complement of the lexically monadic V-head, as shown in (39):

(39)



This is a verbal construction, of course, and by hypothesis should be non-stative. And we think this is true, in fact. That is to say, experiencer-subject psych-verbs like *respect, love, like, hate*, etc., are "ambiguous"—they can occur in the imperative and the progressive, and in contexts akin to those commonly used in typing non-stative verbs:

(40) (a) Respect your parents.
(b) He is liking his new job.
(c) The troops respected their new commander in minutes.

Often, to be sure, some invention must be employed to show these verbs in canonical non-stative environments, due perhaps to the fact that their characteristic, unmarked, use is that of statives. But we maintain that the usage exemplified in (40) is real and must be accounted for, as it is under the

assumption that these verbs can in fact enter into the construction presented in (39), essentially the structure of locatum verbs.

If the stative predicates of the *have*-constructions of (38) are structural paraphrases of (37), then the *give*-construction predicates seen in the slightly stilted (41) are structural paraphrases of of (39):

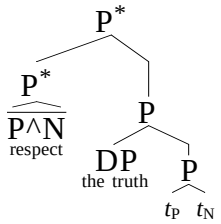
(41) (a) I give my respect to Mary.
(b) The boss gives her his esteem.
(c) His children give him their love.

Here again, the difference is one of realization and selection—the head is overt in (41), non-overt in (39), and the complement in (41) is a possessive DP linked to the external argument.

However, if (39) accounts for the non-stative use of experiencer-subject psych-verbs, what accounts for their allegedly more fundamental stative use, as in (36)? On the view that the stative counterparts are lexically non-verbal, there is a rather natural suggestion that can be made. The head of (37), as given, is a non-verbal head—its head is P, by hypothesis. By contrast, the head of (39) is verbal. Of course, the two are homophonous, taking the form *respect*. But this follows from the fact that both result from "conflation" of the same bare nominal, *respect*. This gives overt phonological form to P, yielding the P-based predicator *respect*. The same nominal root gives phonologival form to V in (39), deriving the verbal variant of *respect* exemplified by (40a).

If the distinction between stative and non-stative experiencer-subject predicators like *respect, love, fear*, etc., can be attributed to lexical category (V, P, etc.), then the suggestion we are entertaining now could in principle be the solution to the problem of stativity—statives are P-based, non-statives are V-based. There is another part of the problem, however. The stative is just as much a "verb," in the traditional sense, as the non-stative is. That is to say, contrary to what is expressed in (37), the stative variant of *respect* assumes the same commanding position that its V-based active homophone does. And like the latter, the stative variant enters into the same inflectional relations (e.g., tense inflections) as the non-stative, unquestionably verbal, variant does.

One possibility which might be considered is that the P of (37), while not itself verbal, must inflect with verbal morphology—in violation, to be sure, of the principles which generally hold in extended projections (Grimshaw, 1991). If this morphological eccentricity were in fact a property of P in (37), then its satisfaction would require P (with conflated N) to be raised to a position from which it c-commands its original position and those of its arguments. For the present, let us suppose that P raises and merges with its own maximal projection, as shown informally in (42):

(42) 

Assuming that this is a legitimate structure, it has the desired characteristics.[5] It not only brings P (P*) into its observed s-structure position, but it also places it in a position where it can assign case to the specifier DP, as required. The alternative of having P raise straightforwardly to the functional head T is, we think, not tenable, since alleged P raises in the absence of T in causative constructions of the type represented by (43a-b) and to the proximity of a functional head, without adjoining to it, as in the infinitive illustrated by (43c-d):[6]

(43) (a) That made John respect the truth.
(b) We had John learn Spanish.
(c) That'll teach John to always respect the truth.
(d) We forced John to learn Spanish.

Thus, the motivation for the putative P-raising in (42) is not straightforward. It is not simply the case that P in the stative constructions at issue "needs" verbal inflection. Rather, we think, that the putative P here has the verb-like property that it must head a predication to which a "τ-value" is assigned. This requires that this P, like a verb, be situated in a certain structural position—specifically, it must head a predicate and it must itself be c-subjacent to a head which sets the τ-value of the predicate—e.g., T itself, assigning a "tense" in the traditional sense; the infinitive *to*, involved in assigning a dependent or relative tense; or a causative predicator, like *make*, which likewise assigns a dependent tense to its complement (by contrast verbs of the type represented by *expect*, which assigns no τ-value, as is evident from such examples as **we expect John learn Spanish*).

This analysis purports to account for the stative readings of certain experiencer-subject verbs by attributing their stativity to the lexical category of their heads. By implication it is imagined that the whole business of stativity might be explained in terms of category—verbs are active, non-verbs are stative, to put it simply. Before taking up this issue in more detail, we need to consider certain problems and consequences related to the basic structural relations involved in this proposal.

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[5]The structure depicted in (12) is problematic. Without some special provision, the label assigned to the upper maximal projection is ambiguous—that is to say, there is no way to determine which of P' and P is the head of the upper projection. We think, however, that the problem associated with this ambiguity is spurious and that (12) well formed.

[6]This argument depends, of course, on whether the stative variant of *respect the truth* can actually appear in the causative and in the to-infinitive construction of the type shown here. We assume that the complement in (13a), for example, is stative and that its telic interpretation is due to the construction; the truly active version, as in *respect your parents*, means *give your parents your respect*, not *come to respect your parents*. In (13a), the meaning is that an event, or the like, *made John come to respect the truth*, not *give the truth his respect.*

First, the subject of experiencer-subject verbs is evidently an external argument. Thus, verbs of the type of *respect* and *envy* cannot "freely" transitivize (or rather, further transitivize), in the manner of verbs like *break*, *clear*:

(44) (a) *That respects John the truth. (... makes John respect the truth)
(b) *That envies me his talent. (... makes me envy his talent)

This follows straightforwardly in the verb-headed structure, (39), assigned to alleged active variants of these verbs, assuming that the verbal head is of the unmarked type for that category, i.e., the type which projects no specifier. We must assume that the same is true of the P-head in (42). But the category P is prototypically dyadic, necessarily projecting a specifier. Hence transitivization—e.g., insertion of (42) into the complement of the canonical verbal configuration—should be freely possible, leaving (44) unexplained. Persisting for the present with the idea that the head of (42) is categorially P, we appeal to the fact that the raised P (P*) is the head of a chain and hence the member of a single lexical item whose properties are satisfied in the projection initiated at the tail of the chain, i.e., at the point of first Merge. On this assumption, (42) presents no upper specifier and, hence, cannot automatically transitivize. As in the putative active variant, so also in the stative, the experiencer-subject is an external argument.[7]

While this account is not really a satisfactory solution to the problem of transitivization, it is workable and appeals to an established principle—i.e., the uniqueness principle inherent in the theory of argument structure relations, restricting a given lexical head to at most one complement and one specifier—and it, therefore accounts for the fact that (42) must lack an upper specifier.[8] Assuming this for the time being, we turn now to another problem. These experiencer-subject psych-verbs fail to enter into the Middle Construction (see section 2, and cf., Ackema and Schoorlemmer, 1995; Condoravdi, 1989; Fagan, 1988, 1992: Kemmer, 1993; Keyser and Roeper, 1984; Levin, 1993; Rapoport, 1997; among others):

(45) (a) *The truth respects easily.
(b) *John's talent envies easily.
(c) *French films like easily.
(d) *The Misumalpan languages know easily.

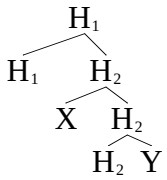
---

[7]We have not fully explored the possibility of a Case-theoretic explanation for (14) and the like. An explanation seeking to limit structural Case to just one internal argument, for example, would have to explain the range of constructions in which two VP-internal arguments are somehow licensed without resort to adpositions or other oblique Case morphology (e.g., *I envy him his talent*). Such an explanation may well be possible, but we do not pursue it here.

[8]This is not an autonomous principle, of course, but rather an integral part of the definition of these two relations, according to which a complement is the unique sister of a head and a specifier is the unique sister of the first projection (traditionally notated X') of the head. These notions may ultimately be shown to be wrong, linguistically fictitious, but they are fundamental to the proposals being entertained here.

This is a problem for the proposal that the structural configuration associated with experiencer-subject predicators is that depicted in (39) and (42)—i.e., that these verbs, whether stative or nonstative, consist of a dyadic, small clause type structure embedded in the complement of the monadic verbal structure. The unacceptibility of (45) is a problem for this proposal, because the structural configuration assumed (abstractly, (46) below) has precisely the characteristic which we have supposed to be a prerequisite and enabling condition for the Middle—namely, a specifier (X) projected by the inner head (H_2) and locally c-commanded by the upper head (H_1):

(46)



We have attributed this configuration to a number of closely related verb classes, including location verbs, locatum verbs and the transitive counterpart of inchoative verbs. All of these freely undergo Middle Formation, as exemplified in (47):

(47) (a) These books shelve easily. (location)
(b) Quarter horses saddle easily. (locatum)
(c) This glass breaks easily. (transitive of inchoative)

If experiencer-subject psych-verbs like *fear*, *respect*, *envy*, etc., also have the structure in (46), then we must explain why those verbs do not participate in Middle Formation.

Repeating earlier remarks, the answer to this question, we feel, comes from the nature of the nominal elements which, by hypothesis, appear in the lower complement position (Y) in the structures of experiencer-subject verbs. Consider the expressions cited in (38) and (41), which bear a certain paraphrase-like semantic relation to corresponding experiencer-subject verbs. These are repeated here, in part, as (48) and (49):

(48) (a) Mary has my respect. (cf. I respect Mary.)
(b) She has the boss's esteem. (cf. The boss esteems her.)
(c) He has his children's love. (cf. His children love him.)

(49) (a) I give my respect to Mary.
(b) The boss gives her his esteem.
(c) His children give him their love.

These all have in common the characteristic that the phrase corresponding to the "emotion", i.e., the "psych nominal" (*my respect*, *the boss's esteem*, *their love*, etc.), contains overt material (a genitive nominal or pronominal) representing the experiencer. Without this (e.g., in *Mary has respect*, *he has love*), the character of these expressions is greatly altered; for all intents and purposes, the experiencer

disappears (except to the extent that it can be imagined somehow and variably attributed).

Importantly, morphology referring to the experiencer in sentences of the type represented by (48) and (49) is *obviative*, in the sense that it cannot refer to the entity corresponding to the "closest" argument (compare, the similar effect of the interesting and quite separate semantic principle embodied in the Notion-Rule of Wechsler, 1995).[9] Thus, for example, the genitive pronouns in (50) cannot be linked to the subject:

(50) (a) John$_i$ has his$_j$ respect.
(b) Mary$_i$ has her$_j$ esteem.

And in (51), likewise, the genitive pronouns cannot be linked to the indirect object, but is linked to the subject (i.e., the more distant argument):

(51) (a) Mary gives her$_i$ all her$_j$ love.
(b) John gives him$_i$ his$_j$ respect.

Thus, the psych nominals in such sentences as these contain a genitive which at once:

(52) (i) refers to an experiencer,
(ii) is obviative, and
(iii) is anaphoric, in the sense that it is necessarily linked to a c-commanding antecedent if there is one.

These characteristics do not hold, of course, of genitives in structurally similar, but non-psych, constructions:

(53) (a) John has his foibles.
(b) Mary has her customs.
(c) Mary gives her all her money.
(d) John gives him his money.

Here, it seems to us, only the general Binding Theory limits the range of coreference possibilities.

The properties enumerated in (52) essentially boil down to two: the genitive in psych nominal expressions is *obviative* and *anaphoric*. We believe that this is the key to the problem of the Middle Construction illustrated in (35). Notice first that in a sentence like (54a), the psych N *love*, which we assume to

[9]For an important recent cross-linguistic analysis of the classical system of obviation, see Aissen, 1997; and for a discussion of an extension of the term to other domains, attributed originally to a suggestion by Charles Hockett via Joseph Grimes, see Hale, 1992, and references cited there. It is this extended use of the term which is employed here.

give rise to the corresponding verb (through Merge and Conflate), has semantic properties which are identical to the psych nominal phrase in (54b):

(54) (a) Mary loves her children.
(b) Mary$_i$ gives her children$_j$ her$_i$ love.

That is to say, the emotion "love" is attributed to Mary, the experiencer, in both cases. That emotion is not attributed to the children, whatever the real-world situation might be. This pattern is true of all experiencer-subject verbs we have considered—the conflated noun "acts as if" it contained a genitive specifier conforming to the principles of (52). We will assume that something of this nature is in fact true.

It cannot be "literally" true that the conflating noun in experiencer-subject verbs has a genitive specifier, since that would entail that it heads a phrase (nontrivially) and hence would not conflate with the verb. We will assume instead that the psych noun (*love, respect, envy*, etc.) is to be understood as a bare noun which bears the "part" relation to some entity (the "whole") and, as in many languages, is related to the latter by means of a relation akin to, perhaps identical to, secondary predication (as suggested for Part-Whole relations in Warlpiri, for instance, in Hale, 1981).[10] We will employ a bracketed subscript to represent this informally, and we will speak informally as if the subscript assigned to the psych noun, in addition to signalling its relation to its antecedent (bearing the corresponding plain subscript), were an actual item having the properties set out in (52), specifically the properties of being obviative and anaphoric—technically, it corresponds to a variable and hence must be bound (obviatively in these constructions). Accordingly, the abstract structural configuration given in (46), assuming Y to be the psych noun, would have the following representation, in which, in accordance with (52), the bracketed subscript is necessarily disjoint from X, the closest argument, but necessarily

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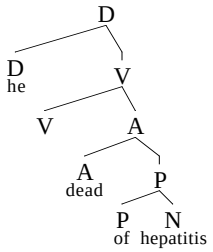
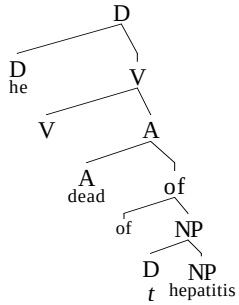
[10]It is possible, we suppose, that certain morphological nouns can project a specifier . We have not considered this to date, but the hypothetical delayed and immediate satisfaction structures (i) and (ii)—corresponding roughly to *he died of hepatitus (in an hour)*, and *he was dead of hepatitus (in an hour)* may be relevant to the issue:

(i)



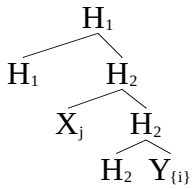
(ii)



It is perhaps more likely, however, that the specifier here (i.e., *he*) is projected by the preposition in the standard delayed gratification manner.

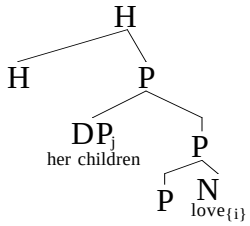
bound by the next closest argument, the external argument, corresponding to the experiencer-subject (not shown):

(55)



Thus, in (54), the subscript is not bound by *her children*, by virtue of (52ii), but by the external argument *Mary*—it is Mary's emotion, not her children's:

(56)

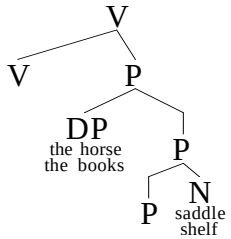


Not shown here is the external argument, the experiencer-subject, which by hypothesis must bear the i-subscript in accordance with the anaphoric nature of the bracketed subscript assigned to the psych noun *love*.

It is the anaphoric property of the bracketed subscript, or rather of the real linguistic correlate of this (i.e., necessary attribution of the psych noun to the external argument), that is most centrally relevant to our account of the failure of experiencer-subject psych-verbs to form Middles. We assume with a number of other writers (cf. Ackema and Schoorlemmer, 1995; Rapoport, 1997) that the Middle lacks an external argument.

Consider verbs like *shelve* or *saddle*, which freely enter into the Middle construction. The structure is essentially that shown in (57), abstracting away from conflation:

(57)



Under "ordinary" circumstances, a verb with this structure will form a predicate in sentential syntax and will take an external argument, its subject. The bare noun will have conflated with the empty P at Merge, and P will have conflated with V at Merge, and the DP in the internal specifier position will be Case-licensed by the locally c-commanding V.

We maintain that the essential circumstance driving Middle Formation is the matter of Case-licensing the DP in specifier position (*the horse, the books*, in (57)). In the Middle, the verb has the property that it is unable to assign Case. From this, it will follow *ceteris paribus* that the verb will not take an external argument; it cannot, since the DP in internal specifier position must raise to sentential syntactic subject position (for a formal proposal on the verbal property correlating with the ability or inability to assign Case, see Bittner, 1994, and Bittner and Hale, 1996). Now, from this it follows that experiencer-subject verbs cannot form Middles; otherwise, the principles of (52) would be violated. In particular, the requirement that the bracketed subscript be appropriately bound cannot be satisfied in the Middle, inasmuch as the hallmark of the Middle is its lack of an external argument. The internal argument, the specifier DP, cannot satisfy the binding requirement, because the bracketed subscript is obviative.

Location verbs, and locatum verbs, types which freely form Middles, have the property, we assume, that the nominal in the complement position (i.e., Y in (46)) is not assigned a bracketed subscript—nouns like *saddle, shelf*, and the like, do not represent the Part member of a Part-Whole relation, i.e., they are not "inalienably possessed," so to speak. Consequently, Middle Formation with location and locatum verbs does not obtrude the principles of (52).

But the relevance of (52) is not limited to the psych-verbs which we have considered here. Consider, for example, the behavior of certain verbs of "impact," as in (58):[11]

(58) (a) I kicked the wall. (cf., give the wall a kick)
(a′) *This wall kicks easily.

(b) He punched the bag. (cf., give the bag a punch)
(b′) *This bag punches easily.

(c) She slapped the fender. (cf., give the fender a slap)
(c′) *This fender slaps easily.

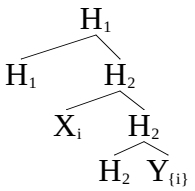
We assume that these verbs have the structure represented in (46) and, furthermore, that Y is occupied by a noun (the "impact noun," e.g., *kick*, *punch*, *slap*, *jab*, *poke*; *knee*, *elbow*) which must be linked to its source, the external argument (i.e., the sentential syntactic subject in sentences like (28a-c), identified here as the "agent" role, rather than the "experiencer" as in the case of the psych-verbs). Notationally, the impact noun is supplied with a bracketed subscript, as

[11]It should be mentioned, perhaps, that judgments about the Middle are not particularly stable. With a little thought, most Middles can be made to sound acceptable, or at least imaginable. We assign stars to middles which require extra thought, recognizing that assessment is relative, in the sense, for example, that *this horse saddles easily* is more or less perfect, while *this wall kicks easily* is much less than perfect. Interestingly, (b′) approaches perfect if the noun *punch* is taken to refer to a result or effect, rather than the action attributed to the external argument—i.e., if *punch* refers to a "dent" or "depression" in the bag, an effect of "punching the bag" (cf., *this bag takes punches nicely*). In this interpretation, *punch* is more like verbs of the *cut*-type (see text below).

in (55), representing a variable which must be bound obviatively. The suggested Middle counterparts therefore violate the principles of (52).

By contrast with verbs of impact, verbs of material separation like *cut, split, crack*, and experiencer-object verbs like *anger*, *frighten*, etc., are based on nouns which, though anaphoric, are "proximate," not obviative, and are accordingly linked to the closest c-commanding argument, namely, the DP in specifier position (X_i), as shown in (59):

(59)



It follows that these verbs form Middles readily, since the binding requirements of the "result nouns" (*cut, slice*, etc.) and nouns of "induced emotion" (*anger*, *fright*, etc.) are met internally—thus, in (60), for example, the "separation in material integrity" entailed by a successful instance of cutting, slicing, and the like, is an acquired property of the internal argument (X_i), not of the external argument, i.e., of the sentential syntactic subject in the transitive; similarly for experiencer object verbs, the "induced emotion" is linked to the internal argument:

(60) (a) I cut the bread.
(a′) This bread cuts easily.

(b) He sliced the salami.
(b′) This salami slices easily

(c) She grooved the wood.
(c′) This wood grooves easily.

(d) That angered me.
(d′) I anger easily.

(e) The dog frightened the chicken.
(e′) Chickens frighten easily.

Assuming that these remarks about structure are correct and, specifically, that it is correct to assume that the experiencer-subject psych-verbs share the same structural configuration with location and locatum verbs, we can assume further that the stative and nonstative uses of verbs like *respect*, *love*, and so on, are identical structurally. In this instance, at least, stativity does not correlate with structure, in the sense of syntactic configuration, but with something else.

By assigning to stative experiencer-subject psych-verbs the representation in (42), we have forced the issue, claiming that their statitivity is a matter of category, with V nonstative and P stative. But this is an artifice, a trick designed

to make category and stativity coincide. Moreover, we have not investigated the consequences of the kind of head movement invented here to derive the structural configuration in (42), and we have probably violated the principles underlying the relations involved in the extended projections which define sentential syntactic constructions (Grimshaw, 1991), principles strongly suggested by our intuition that the very definition of the category V is the morphological one according to which a verb takes tense and aspectual morphology.[12]

3.2. True stative verbs.

To say that experiencer-subject verbs of the kind exemplified in (36) [fear, knew, admired, liked, respected] are stative is probably inaccurate. This is suggested both by the fact that they are open to non-stative interpretations in appropriate contexts and by the findings documented in a rich body of literature on aspect which provides copious demonstration of the fact that stativity, telicity, and the aspectual classes (activities, accomplishments, achievements), pertain not to verbs but to the predicates they head (cf., Dowty, 1979, 1991; Tenny, 1987, 1992). It would be reasonable to entertain the possibility that these notions, and stativity in particular, are never features of individual lexical items—e.g., of verbs, nouns, adjectives, adpositions, or what have you—but rather of whole predicates.

But this does not seem altogether satisfactory either, for some heads are entirely consistent in their behavior in relation to so-called stativity. For example, the functional head (covert or overt) defining the extended projection of the category adjective is consistently stative. Thus, while the verb phrase *turn greener* is nonstative, this is a property of the verb phrase headed by *turn*; the adjectival extended projection headed by *-er* (putative category δ) is itself "stative" (as it is in (33b) and (35c) above), a property evidently attributable to the functional head.

The category V is not entirely left out here, since some verbs head predicates which are "classically stative":

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[12]Systems of the type represented by Hopi (Jeanne, 1978), in which tense and aspect morphology selects the category P, as well as V, may or may not counterexemplify the principles of Extended Projection. This will depend on a variety of factors. In the related 'O'odham, for example, the categories N and A take tense and aspect morphology, superficially, but it can be argued that these cases involve incorporation of bare nominal and adjectival stems into a morphophonologically suffixal copula *-k(a)* derived from the Uto-Aztecan verb *katï 'sit, be'. It is this copula which takes tense and aspect morphology, not N and A directly. The case is not as simple as this for Hopi, inasmuch as, if there is a copula there, it is not overt and its detections will require more work. In general, however, the principles of Extended Projection are supported empirically to an extent which encourages us to assume that the Hopi system will eventually be shown to fall in with the general case.

(61) (a) That house costs fifty thousand dollars.
(b) This bull weighs one ton.
(c) Two and two equals/makes four.
(d) Three books comprise the entire collection.

These are stative in much the same way copular sentences with *be* are stative:

(62) (a) That house is fifty thousand dollars, if you are interested.
(b) This bull is one ton in weight.
(c) Two and two is four.
(d) These three books are the entire collection.

Furthermore, if we take the position that the verbs of (61) are in reality copulas, sharing certain essential properties with the copula *be*, then their most renown property can be explained—namely, their failure to participate in the passive construction:[13]

(63) (a) *Fifty thousand dollars is/are cost by that house.
(b) *One ton is weighed by this bull.
(c) *Four is equaled/made by two and two.
(d) *The entire collection is comprised by three books.

Suppose that the verbs of (61) are copulas, in fact, differing from *be* by virtue of their lexical (as opposed to functional) status and correspondingly richer semantic content, sometimes paraphrasable by means of a prepositional modifier, as in (64a, b):

(64) (a) That house is fifty thousand dollars in cost.
(b) That bull is one ton in weight.

Under this interpretation, the verbs of (61) do not select an object complement, but rather a predicate, as pointed out often in the literature on these topics. Thus, while the expression *fifty thousand dollars* is a standard (plural) object DP in the passivizable (65a) below, it is a predicate in the unpassivizable (65c) (cf. (61a) and (63a) above):

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[13]There is an important property of the copula *be* which is not shared by the semantically more contentful verbs of (31). Even in its copular function, *be* behaves like an auxiliary in relarion to inversion (I-to-C raising)—e.g., "Is two and two four?"

Some of the verbs of (33) can passivize, of course, in a different use. And, (33c-d) themselves are weakly possible, using *equal* and *comprise* in senses somewhat different from those attributed to them inthe suggested copular use. The well-formedness of the passive verb form in *the collection is comprised of three books* is a different issue. In general, measure phrases of the type found in (33) sound rather bad as subjects of passives—e.g., ??*$5 was earned by John*. This cannot account for (33), however, since in the corresponding Wh-questions, the passive is possible with *earn*, as in *how much is earned by each worker*, while with *cost*, for example, it remains ill-formed, as in **how musch is cost by that house*?

(65) (a) The counterfeiter printed fifty thousand dollars.
(b) Fifty thousand dollars were printed by the counterfeiter.
(c) That house costs fifty thousand dollars.

If this suggestion is correct, then the unpassivizability of the verbs of (61) follows. The measure phrases appearing in those sentences are predicates there, albeit nominal in category; and if they are assigned case at all, it is not the accusative case ordinarily assigned by a verb but, rather, some other case, perhaps the nominative, assigned "across the copula". Thus, the sentences of (61) simply do not have the properties of sentences which participate in the standard active-passive voice alternation. This is consistent, incidentally, with the well-known fact that the measure phrase in (66) does not require *of*-insertion:

(66) That house is worth (*of) fifty thousand dollars.

The lexical head which projects the clause in this case—i.e., *worth*—is nominal in category, requiring support by the auxiliary *be*, as expected. But it is syntactically a copula, and its structural complement, the measure phrase, is a predicate and not the sort of complement which is expected to be case marked by the head that selects it. Hence, *of*-insertion (which is otherwise required, as in *the worth of her suggestion*) is not applicable.

Although the details are far from clear, it is possible that a similar analysis is appropriate to another class of verbs which fail to passivize (cf., Perlmutter and Postal, 1984:92):

(67) (a) This trailor sleeps (up to) three (gorillas).
(b) This couch seats (up to) four (people).

Here again, the complement is a measure phrase of sorts, a capacity phrase. It is possible that the proper conception of this construction is one according to which *(up to) three (gorillas)* and *(up to) four (people)* are measure predicates, as suggested for the measure phrases in the putative copular constructions of (61)—if so, the passive is expected to be inapplicable. Verbs like *hold (three gallons)*, *contain (five books)*, etc., share the property of non-passivizability with the verbs of (67), possibly for the same reason. A copular paraphrase in these cases, while generally awkward and difficult to contrive, is sometimes weakly possible, as in *this can is three gallons (in capacity)*.

Let us return to the matter of stativity, which has again drifted away as something which seems essentially beside the point. It appears to be true, in actual fact, however, that the verbs in (61), in the "copular" use we have alleged for them, are genuinely stative. The question is, then, to what is this to be attributed? It is probably true that virtually any verb can be used to denote an eventuality which is a state. But in (61) something else is going on. The verbs of (61) are stative because they are copulas, and copulas are essentially stative. Why are copulas stative, if that is so? And why is *be* in (68a) inherently stative and a legitimate copula, while *turn* in (68b) is not a copula and only derivatively stative

(if at all), given that the two evidently select identical complements (here, *yellow*)?

(68) (a) The leaves are yellow.
(b) The leaves are turning/have turned yellow.

3.3. Stativity as a relation.

If the copula is inherently stative, then it is reasonable to ask whether other syntactic heads have this property as well. The hypothetical category δ is also stative, in the generally accepted sense. So the answer is affirmative, different syntactic heads can share the property of consistently projecting a stative predicate. But is this an autonomous property? Or, as we asked in the beginning, is this a matter of category—true verbs are variable in stativity, while other categories are steadfastly stative, copulas falling outside the class of "true verbs", despite their fully verbal extended projection?

The idea that stativity is a matter of category, pure and simple, is belied by the copula. To say that the copula, where that is understood to include verbs like *cost* and *weigh*, is not a verb flies in the face of our conventional understanding of the parts of speech of English. Thus, if stativity is a property at all, it is evidently autonomous. Consider now the behavior of the category P, in the small clause construction:

(69) (a) With Annan in Baghdad, we can relax.
(b) With Kirsten at Lincoln Center, ballet remains supreme.

(70) (a) *With Annan to Bagdad, we can relax.
(b) *With Kirsten from Lincoln Center, New York will boycott the ballet.

The prepositions in (69), like the putative δ in (32), project a predication which is evidently stative. At least, it is stative in the same sense that small clauses appearing in this construction generally seem to be. Verbal small clauses are clearly impossible here, as shown in (70c), though this is not in and of itself relevant, since *all* verbs are precluded, regardless of their relation to stativity—that is, *bare* verbs are precluded; not gerunds, which are stative and therefore allowed. It is trivially true, therefore, that eventive predicates projected by bare verbs are precluded in the *with*-construction.

The category P, however, is not uniform in relation to this construction. Those in (69) project small clauses which are perfectly possible there, while those in (70a-b) do not. Some prepositions, e.g., *in* and *on*, are permitted on one reading, but not on another:

(71) (a) With Father Jim in the room, we have to watch our language.
(≠ With Father Jim entering the room, ...)
(b) With Clint on his horse, all's right with the world.
(≠ With Clint getting on his horse, ...)

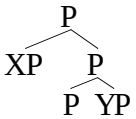
The plain prepositions *in* and *on* can express a relation in which the argument in Specifier position (i.e., derived s-structure subject) corresponds to an entity which moves or is arrayed along a path ending at the place denoted by the complement, like the related prepositions *into* and *onto*:

(72) (a) Frankie walked in(to) the room.
(b) Clint got on(to) his horse.

But this is not the reading which comes through in the *with*-construction exemplified in (71). Instead, in those examples, the understanding is that the location of the entity denoted by the Specifier in the P-projection coincides in a certain sense with the place denoted by the complement.

The opposition which emerges in (69) and (70) is one which appears to be rather pervasive in the lexical and functional systems of the grammars of natural languages. It is probably to be identified with the well known telicity opposition, and with the central and terminal "coincidence" opposition to which we have referred on occasion (cf. Hale, 1986). The prepositions of (69) project the dyadic structure characteristic of the lexical category P:

(73)



The prepositions which project dyadic structures compatible with the *with*-construction of (69) share the property of expressing the relation of "central coincidence," holding between the figure (specifier) and the place (complement). Those which cannot appear in that construction are identified with the relation we have labeled "terminal coincidence." The various manifestations of this fundamental opposition are, of course, well known by a variety of names, including "stasis" and "change". We employ the terminology of "coincidence" here to reflect the dyadic nature of the relations. In any event, we suspect that this opposition is a true reflection of inherent properties—relevant to the notion traditionally referred to as "stativity"—in certain lexical and functional heads which project dyadic structures in syntax. Central coincidence consistently corresponds to stativity. Terminal coincidence, on the other hand, corresponds to change and therefore to the various active, dynamic, and otherwise nonstative event types.

If participation in the coincidence opposition is indeed a fundamental property of certain syntactic heads, and if stativity is identified with central coincidence, then it is very probable that this identification is the *only* way in which stativity is attributable to a *head*, as opposed to a *construction* (as in structures projected by the experience-subject verbs of (36), for example).

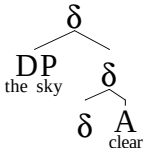
Let us assume that this is correct. Then which categories participate in the opposition? In particular, which heads are associated with central coincidence, and to that extent, with stativity?

We have suggested three nuclear types which are inherently stative in this sense: (i) the head which defines the extended projection of A, i.e., the category δ (as in (32, 33) above); (ii) a subclass of the category P, e.g., *in*, *at*, as in (69a, b); (iii) the copula, morphologically a subclass of V, e.g., *cost*, *weigh*, as in (61).

The first of these can be illustrated by means of the small clause in (32a), repeated here as (74), with structural representation in (75):

(44) We found [the sky clear].

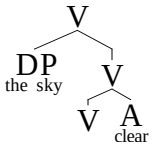
(45)



This is claimed to involve "central coincidence" because its specifier, *the sky*, corresponds to an entity which possesses the attribute denoted by the complement, i.e., the adjective phrase *clear*. That is to say, the relation between the specifier and the complement is not one of change. The entity denoted by the specifier possesses the attribute. It does not come to have the attribute, or come to lack the attribute, but rather, the entity and the attribute coincide to define a set whose members are at once *the sky* and *clear*. Contrast (75) with (77) below, corresponding to the inchoative, i.e., terminal coincidence, hence nonstative, (76):

(76) The sky cleared.

(77)

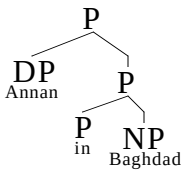


The dyadic head V, like the majority of verbs, has the property of projecting a structure expressing the terminal coincidence relation. The entity denoted by the specifier undergoes a change whose end point is possession of the attribute denoted by the complement.

Central coincidence prepositions, like *in* in (69a), repeated here as (78), project a wide variety of structures showing a correspondingly wide range of interpretations. In this case, the preposition is used to express its customary locational sense and function:

(78) With [Annan in Baghdad], we can relax.

(79)



The entity denoted by the specifier, *Annan*, coincides with the location denoted by the complement, *Baghdad*. Here again, no change is expressed in the small clause. Rather, the preposition identifies the location of the entity denoted by the specifier with the place denoted by the complement—the two locations coincide centrally, not terminally, in so far as that is physically possible. By contrast, in *they led Annan into Baghdad*, the preposition expresses terminal coincidence (the place, Baghdad, being the *terminus ad quem*).

Turning now to the stative copula, we believe that central coincidence is what defines that category of verbs. In a predication of the type represented by (80), employing the prototypical copula *be*, the property denoted by the syntactic complement, i.e., the predicate nominal *a calf roper*, is attributed to the entity denoted by the subject:

(80) Leecil is a calf roper.

This is central coincidence—the property (*a calf roper*) coincides temporally and spatially with the entity (*Pyeatt*). In this respect, the copula *be* contrasts minimally with the nonstative, terminal coincidence *become*, which likewise relates a subject and a predicate and, to that extent, is a copula:

(81) Leecil became a calf roper.

In this case, the predicate nominal denotes a property which corresponds to the end point of a change undergone by the entity denoted by the subject—a relation comparable to that in (76) above, and unlike that in (78), which is to be compared rather with (80). The verbs *be* and *become*, in (80) and (81), constitute a minimal pair, so to speak, for the central versus terminal coincidence opposition.

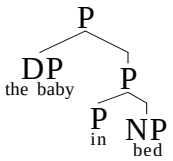
Our conclusion about stativity is that it is not itself a feature of heads. Rather, it is a property of constructions and arises in the semantic composition of meaningful elements. However, among the elements which contribute to a stative semantics is an element which is attributable to syntactic heads. This is the semantic opposition just discussed, i.e., coincidence. Some heads must be identified with central coincidence. Among these are some verbs. The stative copulas (e.g., *be, cost, weigh, equal*) are clearly members of this class. We leave open the question of how widely central coincidence is distributed among the rest of the verbal lexicon.

3.4. Stativity as a structural relation.

The suggestion of the previous section is that there is a property of syntactic heads, specifically the central value in the coincidence dimension, which is responsible for the stative interpretation of certain predicates. That is to say, central coincidence is the origin of stativity, in some cases at least. Let us assume that this is so, for the sake of argument. The question then becomes, what is the nature of this element. Is it a feature, say [central], with values plus and minus, or is there something else going on? It is hard to imagine this as a feature opposition, in the traditional sense, i.e., as the presence or absense of some property. Suppose the feature is [central]; absence of a property "central" does not really make sense. If the feature is [terminal], then "minus terminal" makes some sense (i.e., absence of movement to or from an end point) but only in relation to some other element, i.e., a place (path or ground). The latter is fundamental. Thus, the simplest "events" involve a place. If a terminal relation is involved, it is in addition to the place. Thus, what we have called "terminal coincidence" is more complex than "central coincidence." If this relative complexity were expressed in structure, then central coincidence would involve a simple dyadic structure, like that defined by the projection of the preposition *in*, as in the bracketed small clause of (82) for example:

(82) With [the baby in bed] we can relax.

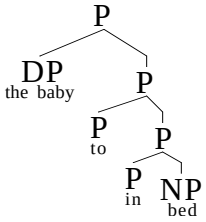
(83)



By contrast, the terminal coincidence preposition *into* implicates a complex structure (as suggested, in this case, by the form of the preposition itself; cf. Jackendoff, 1983).

(84) Getting [the baby into bed] is hard.

(85)

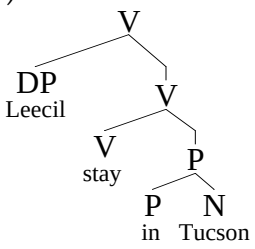


Some lexical items are characterized by the appearance in them of P-projections belonging to one or the other of these two types. The pair (86) exemplify intransitive verbs belonging to the central coincidence and terminal concidence categories, respectively:

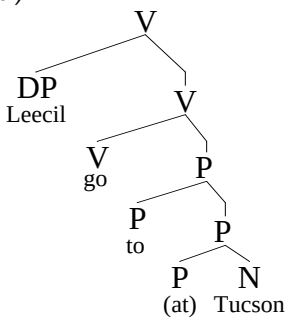
(86) (a) Leecil stayed in Tucson.
(b) Leecil went to Tucson.

The structural representations of these sentences are as follows:

(87) (a)



(b)

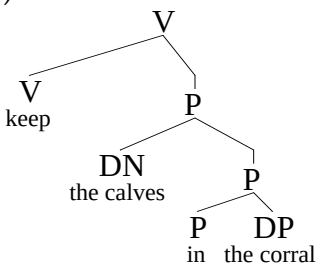


The verbs *stay* and *go* select the P-projections indicated. They are not themselves central or terminal coincidence. That property derives from the P-projections. Accordingly, the verbs are not necessarily stative. Any stativity which might adhere to these sentences is due to the P-projections, and it correlates with the central and terminal coincidence distinction inherent in the configurations. The simple P-projection (as in (87a) corresponds to central coincidence, and the more complex structure (P within P, as in (87b)) corresponds to terminal coincidence.

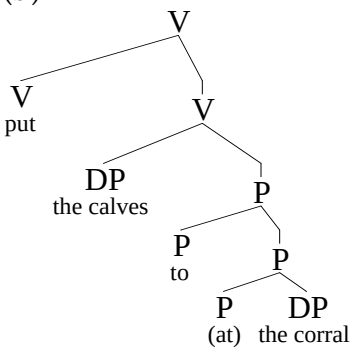
Transitive counterparts to (86) are illustrated in (88) and (89):

(88) (a) We keep the calves in the corral.
(b) We put the calves in the corral.

(89) (a)



(b)



With these examples we claim that a genuine opposition exists between two kinds of verbs, depending on the type of P-projection which appears in their lexical structures. Central coincidence verbs are those built upon a simple P-projection. By contrast, terminal coincidence verbs are built upon complex P-projections; they contain a P-projection consisting of a P which takes a second P as its complement.

4. Semeliterative *re-*.

Finally, we turn to a prominent feature of English morphology which belongs clearly to the realm of aspect, in the sense of this conference. Our interest in this element, i.e., semeliterative *re-*, is more syntactic than semantic, but like other examples discussed here, it represents the semantics-syntax interface. We are concerned here with the phenomenon illustrated by the following paradigm, based on Keyser and Roeper (1992):

(90) (a) We heated the soup.
(b) We reheated the soup.
(c) We heated the soup up.
(d) We heated up the soup.
(e) *We reheated the soup up.
(f) *We reheated up the soup.

The issue which interests us is the complementary distribution between the particle and the prefix *re-*. The same mutual exclusion is observed between a particle and the prefix *over-*:

(91) (a) We overheated the soup.
(b) *We overheated the soup up.

We will consider an analysis of these phenomena which explains them in terms of the fact illustrated by the following verbal forms:

(92) (a) cool down
(b) cool off
(c) *cool off down
(d) *cool down off

While the complementarity of verbal particles could be due either to semantic or to syntactic factors, or to factors of both kinds, we suspect that the *syntactic* representation of verb-particle constructions must bear a significant portion of the explanatory burden in relation to (92c,d). And we believe also, that the same explanation is implicated in a proper account of (90e,f) and (91b). In short, in each of the ill-formed verbal constructions, there appear two elements which are in complementary distribution.

In Keyser and Roeper (1992), the complementary distribution just exemplified is explained in terms of an "abstract clitic hypothesis". Each verb, it is proposed, has associated with it a single "clitic position" which can be occupied by a single element only. All of the well-formed verb-particle constructions cited above are in conformity with this principle of exclusion. The ill-formed constructions, however, are held to be in violation of it. The prefix and the particle are in competition for the same morphological "slot", so to speak. The fact that the particle does not actually appear in an affixal position in the verb word is due, presumably, to movement. The particle itself, being a maximal projection, cannot be an affix. Its trace, we must assume, may occupy an affixal

position. It is this trace, then, that fills the clitic position, to the exclusion of any other like element. Taking the prefixes *re-* and *over-* to be "like elements", they are excluded from co-occurrence with the particle *up*, because the trace of the latter occupies the unique clitic position. Similarly, the occurrence of two particles construed with a single verb, as in (92c,d), is likewise impossible, since there is room for only one trace.[14]

The proposal which we will make here is spiritually akin to the analysis developed by Keyser and Roeper . In particular, it exploits the fact, amply documented in that study, to the effect that there is somehow "room for just one element" in the outer morphology of the verb. In our framework, however, we are constrained in the matter of a "clitic position". The idea that there is a *unique* position for clitics, assuming that the class of *clitics* is itself definable, is not a notion which has a place in the theory of argument structure which we are considering (cf., Hale and Keyser, 1993a,b).

Let us take a *clitic* to be an adjoined head. Since there is, in principle, no limit to the *number* of possible head-adjunctions in the formation of a complex verb word, there can, in principle, be no *single* clitic position. Some other factor must be at work in determining the mutually exclusive distribution of the elements under study here.

4.1. Non-overt adjuncts, the witch's heart

One observation which casts doubt on the single-clitic hypothesis is exemplified by the verb forms in (93) below:

(93) (a) rereheat the soup
(b) reoverheat the soup

These are far from elegant, to be sure, but they seem perfectly well-formed to us. They are not at all in the category of (90e,f) or (92c,d), for example. If *re-* and *over-* are clitics, in the sense of Keyser and Roeper, then their co-occurrence is in defiance of the single clitic hypothesis, clearly.

While the prefixal clitics are *not* in complementary distribution with each other, they *are* in complementary distribution with the particles. This rings a bell, in fact. If, as we have suggested, a particle is part of a chain, with a trace located

[14]While the exclusion of two or more particles might be a semantic matter., as suggested in the text, it is also a syntactic fact, one which the Keyser and Roeper analysis accounts for straightforwardly. A semantic analysis might appeal to the idea that multiple clitics would be expected to correspond to multiple contrastive scope relations; the fact particles do not co-occur, might be put down to some "scope competition", or some such thing. But this would simply be the result of the syntactic mutual exclusion, so far as we can see. It should be mentioned further that particles *do* co-occur, as in *take the pot back off (the stove)*. From our point of view, however, sequences like *back off X* form single constituents and do not counterexemplify the claim that particles are mutually exclusive; in the example just given, the verb *take* selects a single particle (complex). We also exclude from consideration here coordinated particles, as in *he bounced up and down*.

in the verb word, then the problem may well have to do with that very fact. That is to say, perhaps it is not the particle itself but rather the associated *non-overt* element that is the cause of the ill-formedness. This brings to mind the impressive body of evidence marshaled by Pesetsky (1993) showing that limitations on non-overt morphology are fundamental in characterizing and explaining a wide range of ill-formed structures. These limitations are succinctly expressed in Myers (1984), in the form of the generalization now widely known by its author's name:

(94) *Myers' Generalization*:
Zero-derived words do not permit the affixation of further derivational morphemes.

The effect of this is to rule out any derived word having the following abstract form, where X, Y, and Ø are heads, and the manner of composition is by conventional adjunction (order of head and adjuncts irrelevant):

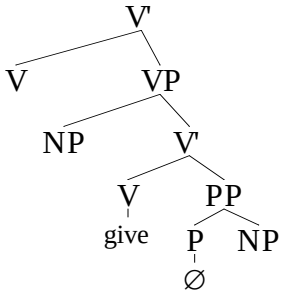
(95) $[_X\ Y\ [_X\ Ø\ [\ X\ ]\ ]\ ]$[15]

Thus, if a non-overt head Ø is adjoined to another head X, the resulting structure [Ø [X]] cannot host a further adjunction. The effect of this restriction is seen, for example, in such ill-formed nominalizations as the following (see Pesetsky, 1993, for detailed exemplification):

(96) (a) *John's gift of a book (by Mary)
(b) *the gift of John of a book

Let us assume that (96a,b) involve the attempt to nominalize the verb *give* in the so-called "double object construction", to which we have attributed a structure essentially like that associated with "locatum verbs", of the type represented by *saddle*, *clothe*, etc. (cf. Hale and Keyser, 1993a). In our structure, the verb *give* has the function of lexical constant, as in the following:

(97)



The upper NP corresponds to the goal or recipient, the lower NP corresponds to the theme, the entity given. The crucial assumption here is that the preposition governing the theme is null and must, therefore be interpreted through

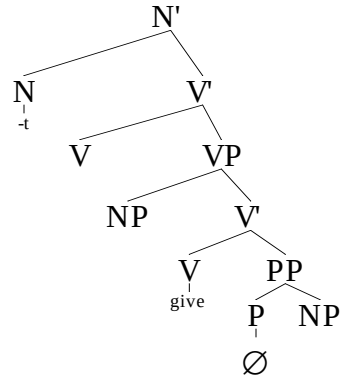
[15]The configuration which figures in Myers'Generalization reminds us of the Tohono O'odham (Papago) name given to the "spirit level", namely *ho'ok iibdag* 'witch's heart'.

movement, a requirement which is satisfied by adjunction to the governing verb *give* (see Pesetsky, 1993, for a detailed analysis sharing this assumption). This adjunction results in the configuration depicted in (98):

(98) $[_V \varnothing\ [V]]$

This raises and substitutes for the upper V, giving the final form of the transitive verb. The derived upper V, a product of substitution, not adjunction, presents the same configuration as (98)—it is not, therefore, in violation of Myers' Generalization. Further derivational morphology, however, would give rise to a violation, as in the nominalization:

(99)



Here, the derivation of the verbal subpart proceeds as for (97) above; but the final adjunction (to N) gives rise to a configuration which is in clear violation of Myers' Generalization:

(100) $[_N\ [_V \varnothing\ [V]]\ \text{-t}]$

Hence the ill-formedness of (96a,b). By contrast, the nominalization formed from the *to*-Dative construction, since it does not involve a phonologically null adjunct, does not obtrude Myers' Generalization:

(101) John's gift (of a book) to Bill

It is tempting to attribute the behavior of the prefixes *re-* and *over-* to the principle underlying Myers' Generalization.[16] In this connection, consider the following set, modeled on examples in Keyser and Roeper (1992:90; compare especially their (91h)):

(102) (a) I sent the letter to them.
(b) I resent the letter to them.
(c) I sent them the letter.

[16]We have not attempted to determine what this principle might be, but we suspect that it is the requirement that all terminal nodes be fully interpreted. The "witch's heart" may simply be invisible for interpretation, presumably at LF.

(d) ?*I resent them the letter.

By hypothesis, the derived verb of (102d), but not that of (102b), has a morphological structure which would appear to be relevant to Myers' Generalization:

(103) $[_V$ re- $[_V \varnothing$ [V]]]

The verb of (102) should, therefore, be impossible. Let us assume for the moment that it is impossible. And suppose further that we attribute the configuration represented in (103) to the structures with which we began—(90e,f) and (91b). The null element, in that case, would be a trace, according to the analysis of Keyser and Roeper (1992). The effects which Keyser and Roeper explained in terms of a single clitic position would, on this alternative view, be attributed instead to the principle underlying Myers' Generalization, now well established in relation to examples of the general type exemplified by (96) above, both in the work of Myers (1984) and, particularly, in that of Pesetsky (1993).

This is one way in which to avoid appealing to a "single clitic position". The observed uniqueness restriction is the effect of an established principle of derivational morphology.

However, there is reason to doubt this line of argument. There are empirical problems with it, the principal one being that the deviance of (102d) is simply not strong enough to be a Myers' Generalization violation. The sentence is fully accepted by many speakers, the same being true of other parallel cases, such as the following:

(104) (a) ?We reoffered him the job.
(b) ?I rewrote him a recommendation.
(c) ?She retendered them her resignation.

These are awkward, perhaps, but they are totally different in character from (96a) and (96b), which are completely impossible, being *true* examples of Myers' Generalization.

If (102d) and (104) are not Myers' Generalization violations, we have now *two* problems to solve. Why aren't they? And, what explains the relative ill-formedness of our original examples, (90e,f) and (91b), and for that matter (92c,d)? Can we still avoid appealing to a single clitic position?

We do not have a lot to say now about the first question, but we expect that (102d) and (104) are not Myers' Generalization violations because *re-* is a particle in origin, not derivational morphology of the sort involved in the lexical derivation of verbs; it gets its surface position, we think, in sentential syntax, not lexical syntax. We will leave it at that, for the moment, but we will return to the question later on. In any event, *re-* does not qualify as derivational morphology for the purposes of Myers' Generalization.

We are now left with the residue of the "uniqueness", or "single position" hypothesis.

4.2. Uniqueness

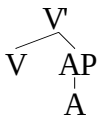
We think that the proper understanding of examples like (90e,f), (91b), and (92c,d) does in fact lie in uniqueness. There is something right about the idea that there is "no room" for both *re-* and a particle, or for more than one particle. The problem is to determine the precise nature and location of the restriction. We have rejected the "single clitic" hypothesis on the grounds that there is no non-stipulative way to limit adjunction in word formation, assuming that "clitics" are simply adjoined morphemes (heads). Hence, if the apparent uniqueness restriction is to be explained, it must "fall out" from general properties of grammar.

Let us approach the problem by first considering how the verbs of (105a-c) are derived:

(105) (a) We heated the soup.
(b) We heated the soup up.
(c) The soup heated (slowly).
(d) The soup heated up (finally).

Our assumption to date has been that verbs of the type represented by (105a) and (105c) are the result of head-movement from the adjectival complement of an abstract verb V, giving the intransitive (105c). Subsequent movement to a higher V yields the transitive (105a). This has been our basic position in relation the derivation of de-adjectival verbs. An essential feature of this simple view is that the adjective raises directly out of the AP, and the latter is the immediate sister of V, as shown in the structural diagram (106):

(106)

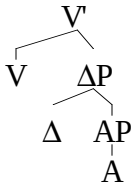


In this respect, de-adjectival verbs differ from denominal verbs of the location and locatum types, like *shelve, corral, saddle, bridle*— the latter involve raising of N first to P and then to V (cf. Hale and Keyser, 1993a). While the adjective reaches the verb in a single step, the location or locatum noun reaches the verb in two steps.[17]

[17]This represents the account of Hale and Keyser (1993); our current view, of course, is that the relations holding in the location and locatum verbs is the relation of "selection". The analogue of a two-step composition still holds, however. This being the case, we will speak in terms of Hale and Keyser (1993), bearing in mind that the derivation of denominal verbs does not involve incorporation. The derivation of de-adjectival verbs evidently proceeds via incorporation (as in $[_V$redd$[_V$en]]).

But this view of the matter may be incorrect, overly influenced by superficial appearances. Suppose instead that the adjective also reaches the verb in two steps. In other words, suppose there is some category, ΔP, which dominates AP and bears the immediate sister relation to V, as in (107):

(107)



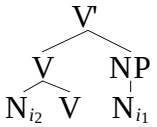
An empty Δ will, by general assumption, require interpretation (at PF). This is accomplished, let us suppose, by head-movement. The adjective raises first to Δ, thereby satisfying the Full Interpretation requirement for Δ; the latter then raises to V, satisfying the Full Interpretation requirement for that empty category as well.[18]

We are proposing, in effect, that an adjective phrase in these constructions is always dominated by a lexical category Δ. This has a semantic correlate, we assume—it is the component of an adjectival expression which refers to the "degree" or "intensity" at which the quality denoted by the adjective is realized.

We maintain that this is basically correct. If it is indeed correct, then we have a source for the particles *up, off, down*, and the like, as they occur in association with de-adjectival verbs. These particles represent the category Δ, and they arise, we contend, in the same way that cognate and hyponymous objects arise (cf. Hale and Keyser, 1993b).

In an earlier analys, a hyponymous object construction, like *dance a new dance* or *dance a jig*, involved insertion of a DP in the position corresponding to the complement of the verb *dance*. However, this position was in fact the point of origin of a chain headed by the noun *dance*, adjoined to the abstract V heading the verbal projection as a whole. Thus, head-movement was assumed to derive the structure depicted in (108), where the point of origin, or "foot", of the chain corresponds to N_{i1}, the "head" of the chain being the adjoined N_{i2}:

(108)



[18]The precise manner in which categories satisfy the Full Interpretation requirement at PF remains to be determined. We assume that a raised phonological matrix merges with the empty matrix of the host, thereby satisfying the requirement in relation to the latter. An empty head, however, remains empty when adjoined to a host. If no further raising takes place, the empty adjunct is presumabl y licensed as a zero-affix. Further raising, however, will yield a Myers' Generalization violation, of course.

In that analysis, our conception of cognate argument constructions required us to maintain that the foot of a head-movement chain of this type is a position to which lexical insertion can apply. Suppose, for example, that N_{i2} is the noun *dance*, raised from the position designated by N_{i1}. The latter is the "trace" of the raised N; but this is not a "referential" trace of the sort defined by DP movement, for example. It is therefore a position available for lexical insertion—or so the argument went. Suppose now that the noun *jig* is inserted at N_{i1}. Since this noun will not incorporate, it must project to the phrasal level, e.g., DP (hence *a jig, the jig, a fine jig*, or some such thing). We must assume also that some vestige of the original head-movement chain is present, to account for the "classificatory" and "selectional" relations which holds between the incorporated N and the head of the lexically inserted DP—thus, *a jig* is understood here to refer to something belonging to the class of dances, not to a written score, a tune played on a fiddle, or the like.[19] In our current analysis,denominal verb formation does not involve incorporation—rather, the operative principle is selection. An overt verb (e.g., *dance*) selects its object, imposing on it a semantic restriction (thus *jig* is a dance, not a fiddle tune in *dance a jig)*. The verb also licenses (see above).

The incorporation of an adjective does not offer any straightforward correlate to the category of cognate or hyponymous object—thus, there is no "cognate or hyponymous" attribute construction parallel to the cognate object construction. Hence the following, it seems to us, are ill-formed:

(109) (a) *We heated it too hot.
(b) *Don't redden it vermilion.

If these were well-formed, of course, their derivations would be entirely parallel to our analysis of cognate objects— the trace of the adjective would simply be a position at which lexical insertion can apply, giving forms of the type represented by (109). However, we maintain that such forms are at best very weak, and we will take them to be ill-formed.

But let us look at the situation more carefully. Does the adjectival complement present *nothing* corresponding to the cognate object construction? We think, in fact, that there *is* a parallel. If we assume that the source of a de-adjectival verb is a structure like that depicted in (107), then the complement of the matrix verb is not the adjectival projection, but the "degree" projection dominating the adjectival, as in (107), repeated here as (110):

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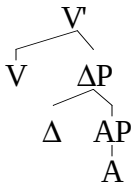
[19]Jon Bobaljik, in his *Notes From Kamchatka* (e-mail, 1994), considers a theory of cognate objects according to which they are inserted in substitution of traces at the foots of chains defined by incorporation. He develops this idea in the context of a typological account of the variability observed within the class of so-called unergative verbs. Our own view of this matter is not sufficiently well articulated to determine whether we agree or disagree with this, but both Bobaljik's proposal and ours share the conviction that the "classificatory" nature of the putatively incorporated material is properly expressed by positing a chain whose foot is associated with certain "classificatory features"—for us these are associated with the trace and its projection, for Bobaljik they are associated with the index and the category originally dominating the trace.

(110)



Thus, when the adjective raises, first to Δ and then to V, we are left with traces in A and Δ. The head of the complement is Δ, of course, and the category of the complement is Δ as well. We might suggest that when reinsertion takes place, giving the equivalent of a cognate argument construction, it is the category Δ, not A, that is inserted. This is the source of de-adjectival verb-particle constructions like those of (111):

(111) (a) heat up
(b) cool down
(c) cool off
(d) widen out

The particles here are (intransitive) members of the category Δ. By hypothesis, then, the expressions in (111) are adjectival correlates of the more familiar cognate argument constructions of English and other languages.

Under this assumption, the ill-formedness of (92c,d)—i.e., **cool off down, *cool down off*—is explained as a function of the principle according to which the head-complement relation is biunique. The category V has the essential property that it takes a (single) complement and forms an expression denoting an event type. There is, therefore, "room" for only one complement, and since the particles *off* and *down* represent the complements of the verb *cool*, there is room for only one particle, a condition which is met in the well-formed (92a,b), *cool off, cool down*.

This analysis extends as well to (90e,f) and (91b)—**reheat up, *overheat up*—under the assumption that the prefixes *re-* and *over-* are members of the category Δ, originating in the complement of the verb to which they are attached at s-structure. The prefix and the particle are mutually exclusive for the same reason that particles are themselves mutually exclusive, namely, the principle of the uniqueness of complements.

To the extent that this suggestion is based on a true linguistic principle—the uniqueness of the complement relation— it has the quality of a real explanation for the mutually exclusive distribution of prefixes and particles. But there are some questions remaining. We have not really explained the ill-formedness of (109a,b), assuming that they are in fact ill-formed. Our explanation will have to be tied to the category Δ. We must assume that this category is *always* present in the structure which gives rise to de-adjectival verbs of the type being considered here. That is, the basic structure of the verb *heat* has the form depicted in (107), necessarily. A simple adjectival (AP) complement is not a possibility there; if it were, then *heat too hot* should be perfect as a "cognate

complement" construction; we have claimed that it is not.[20] The derivation of adjectival cognate complements is prevented, we assume, by the intervening Δ-projection. Only the latter can surface as a cognate complement.

But why is this? What is it that prevents forms like the following?

(112) (a) *cool down cold
(b) *heat up red hot

There is an interpretation of these according to which the final adjective is an adjunct. The relevant interpretation, however, is that according to which the particle and adjective together form a ΔP:

(113) (a) *[$_{\Delta P}$ down cold]
(b) *[$_{\Delta P}$ up red hot]

These are simply impossible, the reason being that *down* and *up* do not take adjectival complements in sentential syntax. So while these particles can be inserted as "hyponymous complements" for the category Δ, they cannot appear with an adjectival complement. Hence, the ill-formedness of (112a,b) on the relevant interpretation. And in general, we propose, the only cognate complement construction possible for de-adjectival verbs is that in which the "cognate" is a particle such as *down, up* (or a prefix *re-, over-* assuming that these, like the particles, originate as Δs).

4.3. The category Δ

Let us address next the question of the identity of the category Δ. We suppose that it belongs to one of the established lexical categories whose identity is suggested by such forms as the following, in which Δ (*up, down*) appears to take a complement:

(114) (a) heat up to 100˚
(b) cool down to 32˚
(c) Up to what temperature did the engine heat before seizing?
(d) Down to what degree will this mixture cool before freezing?

This use, we imagine, is essentially the same as that found in (115):

(115) (a) rise up to the top
(b) sink down to the bottom
(c) Up to what level did the needle rise?
(d) Down to what depth did the charge sink before exploding?

---

[20]We assume, of course, that *heat too hot* is ill-formed as a cognate complement construction. However, judgments vary considerably in this regard. The expression *redden vermilion* for example, is judged worse than *heat too hot*. The latter might involve adjunction in sentential syntax, rather than complementation—compare *heat up too hot*, in which *too hot* must be an adjunct, by hypothesis. In this connection, see also the text in relation to (23) below.

In both uses, the particle forms a constituent with the PP which follows it, assuming that its pied-piping potential can be construed as indicative of that. And the two uses also share the property that they can be modified by *right*:

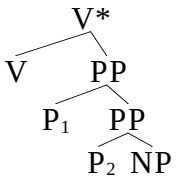
(116) (a) cool right down (to 0, to the lowest temperature possible)
(b) heat right up (to 1000°, the the highest temperature)
(c) drop right down (to the bottom)
(d) rise right up (to the top)

Thus, the particles *up* and *down* give every indication of being the same thing in the two observationally different uses seen here. They share the property that they may take an overt complement, if that is a PP.[21] An overt adjective cannot appear as the complement of *up* or *down*, as shown by (112) and (113) above. We have claimed, however, that while*up* and *down* cannot take an adjectival complement, there is an empty member of the same category which can, namely the element which we have symbolized Δ. Presumably, this null variant lacks the morphological properties which compel its overt brethren to select a particular category. We will assume that this is true and proceed to identify this property, and thereby the category of Δ itself.

We are assuming, of course, that the null element Δ and the overt particles *up*, *down*, etc., belong to the same category. This being the case, let us temporarily refer to the entire class as Δ. And let us assume that overt Δ is parasitic on P, in the sense that it inherits a certain property from P—it can take an overt complement only if P "supports" it. The property in question might well be one which is relevant in sentential syntax. In fact, it is quite likely that Case is at issue here. This is consistent with the fact that Δ can take a nominal complement, but not an adjectival one. Of course, Δ can "assign case" only if P, a true case assigner, intervenes. We suggest, therefore, that Δ is a kind of P—a "defective" P, let us say. When it is overt, and when it takes an overt nominal complement, it must combine with a "full" preposition in order to transmit Case to the nominal, thereby satisfying a sentential syntactic requirement (the Case Filter).

This proposal assumes that there exist Lexical Relational Structures of the following abstract form:

(117)



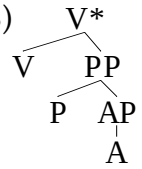
However, on the assumption that this is in fact a Lexical Relational Structure—i.e., a lexical argument structure—the particular structure depicted here is observed only where P_1 is a "defective" preposition. In addition to its

[21]It is possible, of course, that *up* and *down* also take overt DP complements, as in *up the tree, down the road*. We are not decided on the question of whether these usages are the same as that represented by (25) and (26).

dependency in relation to Case, it also has the property that it is not "thematically" autonomous, when in this configuration, since the entire complex PP functions as a *single* predicate; in this, it is unlike the complex PP of (*I saw*) *the horse with the Mexican saddle on it*, in which each P heads its own predicate. Thus, the structure in (117) must be exempted from the general rule that all PPs are predicates. The exemption, we suggest, follows from the "defective" character of $\Delta = P_1$, which inherits its thematic properties from its complement, joining with the latter to form a single predicate.

There is nothing in principle, of course, to prevent Δ from taking AP as a complement, as in (118):

(118)



But P (=Δ) cannot be overt here, for the same reason that overt members of the category P are in general prevented from taking true AP complements. But, we contend, there is a non-overt member of the defective P-class which *can* take an AP complement, as suggested above. It is possible that this non-overt P-projection is regularly present with a certain class of stage-level AP predicates, denoting conditions which characteristically vary in degree—and in a manner which, in English at least, can be spoken of in terms of direction (*up, down, out*). It is a fact of English, of course, that the defective Ps are used in this way, but the lexical and syntactic systems involved are quite general.[22]

In section 3 above, we suggested that verb-particle constructions of the type represented by (1c,d) and (92a,b) arise as a result of the same process which is responsible for ordinary "cognate objects". In the following section, we return to this idea.

4.4. P as a cognate complement

Let us now consider in detail the derivation of the verbs of sentences (1a) and (1c), repeated here as (119a) and (119b):

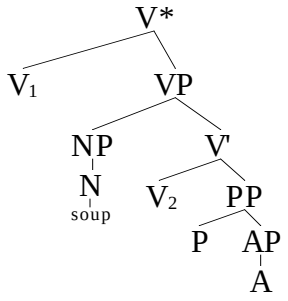
(119) (a) We heated the soup.
(b) We heated the soup up.

The shared underlying VP-structure of (119a,b) is approximately as in (120). Since we are dealing here with the defective P, we can assume that it simply combines with the AP to form a simple predicate—that is to say, P does not head a separate, autonomous, predicate. Instead, it is as if A and P jointly head one

[22]It is not surprising, therefore, to learn that adjectival predicates in some languages are regularly marked for some a category relating to the presence, or absence, of the condition denoted—stage level adjectives are so marked in O'odham (Pima-Papago) for example.

and the same predicate. And this, like any adjectival predicate, finds its subject external to its own projection. Accordingly, its subject (*the soup*, in the example at hand) appears in the specifier of the immediately superordinate verb, V_2. The substructure headed by this verb could itself have constituted the matrix VP, giving the intransitive (*the soup heated*). But (119a,b) represent the transitive variant corresponding to the structure the depicted in (120):

(120)



The derivation of (119a) proceeds as follows. The P here is empty and therefore must be given phonological constituency in order to satisfy the Full Interpretation requirement at PF. As usual, this requirement is met by incorporating the head of its complement, here the adjective, A. This process effects a merger of the phonological matrix of the overt A with that of the non-overt P. The governing verb, V_2, being phonologically null, must also incorporate the head of its complement (the newly derived $[_P$ A-P]), and the uppermost verb, V_1, must likewise incorporate the head of *its* complement (the derived complex head $[_V [_P$A-P]-V]). Given the English pattern of incorporation exemplified here, the phonological representation of the derived matrix V_1 is traceable ultimately to the overt source, ordinarily the most deeply embedded lexical head involved in the sequence of incorporations—in the present example, it is the adjective *hot* in its derived verbal form *heat*.[23]

Now consider (119b), with the particle *up*. The derivation of the verb and VP proceeds by incorporation, in the same manner as for (119a). By hypothesis, after incorporation, there is a trace corresponding to the PP—more specifically, there are traces corresponding to A and P. These are not referential traces, but rather traces of lexical heads. They represent *positions* in which lexical heads, of appropriate categories, can appear. We may suppose that these "traces" are nothing more than empty terminals in the syntactic structure. If this is correct, then it is possible that the positions which they occupy are positions into which lexical material can be reinserted. This is what we have proposed in order to account for the phenomenon of "cognate complements" (see above, and see also Hale and Keyser 1993b). And this is what we propose for (119b). The overt particle *up* is inserted in place of the empty P, i.e., in the position corresponding

[23]To be sure, it is unlikely that there is a synchronically real phonological derivation here; the relationship is essentially suppletive, but in many othercases, e.g., *warm, cool*, the adjective and the derived verb are homophonous, and in many, the relation involves affixal morphology, as in *redden, widen, darken*.

to the "trace" left by incorporation of P into V_2. Of course, reinsertion is not *limited* to a particle. Any appropriate P-projection is possible:

(121) (a) warm up
(b) warm to 100°F
(c) warm up to 100°F

The empty node, or "trace", defining the position into which lexical material can be "reinserted" has associated with it, we assume, the classificatory features of its incorporated antecedent. This accounts for the intuition that certain items are "appropriately" inserted, while others are not. Thus, the verb *warm* "selects" the PPs exemplified in (121), but most others it rejects. The features corresponding to this selectional property are present, by hypothesis, in the position corresponding to the trace of the incorporated complement.

4.5. Further remarks on the principle of uniqueness

Our explanation of the ill-formedness of (90e,f), (91b) and (92c,d), repeated here as (122a-e), relies on the principle of complement uniqueness. If the postverbal particles are complements, then only *one* can appear for each head—this follows from the principle of "one complement per head".[24] Assuming, as we do, that the prefixes *re-* and *over-* originate as particles (defective prepositions), and therefore as complements to the verb, they are predictably in complementary distribution with postverbal particles.

(122) (a) *We reheated the soup up.
(b) *We reheated up the soup.
(c) *We overheated the soup up.
(d) *cool off down
(e) *cool down off

At the level of observation, however, there are some problems which must be acknowledged and dealt with. For example, while (123a-b) are evidently ill-formed, as expected, (123c) is not unacceptable, to our ears, at least:

(123) (a) *We rewarmed the soup up.
(b) *We rewarmed up the soup.
(c) We rewarmed the soup (up) to 100°.

The analysis of (123a-b) which we have been considering would identify (123c) as ill-formed as well, since the latter violates the principle of uniqueness inherent in the head-complement relation.

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[24]It is important to determine that this is a true *principle* and not a stipulation. We are not prepared to argue this point here, but we imagine that the principle is inherent in the *projection* of syntax from the lexicon and the general requirement that projected structural relations are *asymmetrical* in the sense of Kayne (1993).

We think that (123c) is *not* a violation of uniqueness, in fact. Relevant to this issue is the verb form in (124), which seems unexceptional to us, though it is a prima facie counterexample to the uniqueness principle:

(124) We rereheated the soup.

If *re-* originates as a particle, which is to say a complement, only *one* ocurrence of it is possible, according to our hypothesis. We believe, however, that the two instances of *re-* in (124) must be distinguished; the wide-scope *re-* is roughly equivalent, semantically, to the adverb *again* in the expression *reheat again*. The narrow scope *re-*, on the other hand, refers to the process of bringing the soup "back up" to some temperature which qualifies as "warm". Only the latter meaning is associated with the complement of the verb. If the *re-* of (123c) is the wide scope *re-*, it does not originate as a complement and, therefore, that sentence does not violate uniqueness.[25]

There is a problem with the suggestion just made. Our feeling is that (123c) is *ambiguous*. That is, in addition to the *again*-meaning which we have associated with "wide scope", the "narrow scope" reading (get back up to some temperature) seems to us to be possible as well.[26] If the latter reading is in fact possible, and if it derives from the putative complement *re-*, then (123c) is once again at odds with the uniqueness principle. We doubt this.

There is an additional analysis of (123c) which must be considered. It is perfectly possible in sentential syntax to "append", or "adjoin", a maximal projection to a category in such a way that it will appear, from a strictly linear point of view, to occupy the position of a complement. It is possible, therefore, that (123c) is structurally ambiguous—in one structure, the phrase [(up) to 100°] is a genuine prepositional complement of the verb (in which case the prefix *re-* would be the wide scope prefix, by hypothesis); in the alternative structure, the phrase in question is an adjunct, and therefore irrelevant to the issue of uniqueness. The inelegant, but nonetheless possible, co-occurrence of a particle complement with an adjunct (or parenthetical) of the relevant sort lends some plausibility to the interpretation(s) we are giving to (123c):

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[25]We should point out, perhaps, that uniqueness itself is not strictly speaking an autonomous principle of grammar. Rather it is a consequence of a principle which might be termed "the asymmetry of projections" (cf. the antisymmetry of Kayne, 1993). Suppose this principle requires that: "if *A* c-commands *B*, where *A* and *B* are at the same level of projection (X°, X', XP), then *B* does not c-command *A*." From this it will follow that all branchings are binary. This "principle" might itself be the consequence of a deeper linguistic principle, to wit Full Interpretation (cf., Chomsky 1986).

[26]Tom Roeper has opointed out to us that the verb *reenter* is ambiguous in the manner being suggested here. The sentence *he reentered the atmosphere*. can mean (a) he entered twice or (b) he came back into the atmosphere (only one entry). This seems to be general for initial/new states (enter, turn out, insert, etc.) but not for gradations (warm, heat, cool); with *re-*, and without further specification these latter verbs, it seems to us, have only the "back to some level", or "narrow scope *re-*", reading.

(125) (a) We warmed the soup up, (up) to 100°.
(b) We cooled it off, down to 32°.

We cannot answer an obvious question which this discussion raises. Our intuitions do not permit us to assign the putative wide scope interpretation to *re-* in (122a,b), thereby, so to speak, "rescuing it" from ill-formedness. Why is this? This remains as a worrisome flaw in our treatment of these de-adjectival constructions. It may involve something which is quite unrelated to the actual issue, however, some aspect of surface form that strongly, or even exclusively, favors the narrow scope interpretation in the superficially simple forms like (122a,b). In fact, it could be simply that forms are *actually* ambiguous but that the wide scope reading is so thoroughly masked, for some reason, that only the unacceptable form comes through. A consideration of the very simplest relevant form, i.e., *reheat* itself, seems to encourage this idea—we personally cannot detect two distinct readings for the simple form. The behavior of the prefix *over-* seems to us more straightforward in its behavior; a "wide scope" reading does not appear to be possible, so that (126a,b) are ill-formed, for us, at least. They are *intelligible*, to be sure, but they strike us as ungrammatical, though this is a judgment which, we admit, is exceedingly difficult to make with a high degree of confidence:

(126) (a) *over-re-heat
(b) *over-over-heat

If it turns out in fact that *over-* has only what we have been calling the "narrow scope" interpretation, then it follows from our hypothesis that (127a) is likewise ill-formed, and (127b) involves an adjunct, rather than a complement:

(127) (a) *overheat the soup up
(b) overheat the soup up to 120°

4.6. The linguistic basis of uniqueness

This essay is part of a general study of those aspects of the lexicon which bear on the problem of explaining a prominent fact about about argument structure, namely, the fact that it is severly limited in variety. Verbal lexical items rarely achieve a degree of internal complexity which exceeds that of an ordinary triadic verb like *give* or a of location verb like *put*. Where these limits appear to be exceeded, there is typically reason to question whether a *single* lexical item is at issue. This remark applies to *lexical argument structure* and we do not question at all the semantic complexity which is often achieved by individual lexical items (see, for example, Jackendoff 1990, Lumsden 1993, and works cited by these authors, for discussions of Lexical Consceptual Structures and their linguistic representation). We have a more narrow focus of curiosity, being especially intrigued by that fact that the number of arguments a verb can take is not far *higher* than it is in actuality, and further by the fact that the "depth of embedding" achieved by lexical items is extremely shallow.

Of course, these questions make sense only in the context of a particular conception of the lexicon and of argument structure, such as the conception which we have simply taken for granted in this paper up to this point. We have been assuming, first of all, that lexical argument structure is a syntax, in the sense that each lexical head defines, or "projects", a structural configuration expressing the grammatical relations born by its arguments, if it has any. Secondly, we have been assuming a conception of the lexical categories which attributes to each of them specific properties whose effect is to place severe limits on the syntactic structures which they may project.

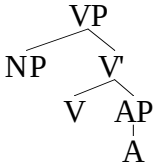
If the syntactic theory of argument structure is correct, then limits on the variety of possible argument structures can be understood in terms of two basic aspects of grammar—namely, (i) the lexical categories (V, N, A, P) and their inherent properties, and (ii) the principles according to which syntactic structure is projected from the lexicon. The first of these is set out in informally in (127) below, the second in (128):

(127) The inherent properties of the lexical categories.
- (a) V - takes a complement and forms an expression denoting a dynamic event;
- (b) N - denotes an entity;
- (c) A - is a predicate and denotes a state or attribute;
- (d) P - takes a complement and forms a predicate.

(128) Principles of projection.
- (a) Full interpretation (phonetics, semantics);
- (b) Asymmetry of syntactic relations (complement, specifier, predicate).

The major effects of the interaction of the properties of the lexical categories and the principles of projection can be seen in virtually any simple argument structure configuration. Consider, for example, the following structure, corresponding to the lexical representation of intransitive de-adjectival verbs of the type represented by *clear*, *lengthen*, etc., and of simple verb+adjective expressions like *get warm*, *turn green*, and the like:

(129)



The fundamental property of the category A, i.e., that it is a predicate, is acknowledged in (129) by virtue of the appearance of an NP in the Spec of VP. The NP satisfies the requirement that the AP have a subject, thereby satisfying the principle of full interpretation for AP. And the NP itself satisfies the principle of full interpretation as the subject of AP. The basic requirement of the category V is met by AP, which functions as its complement. And, in de-adjectival verbs, the V achieves full interpretation in phonology through raising, a process which,

so to speak, results in the absorption of the phonological matrix of the adjective by the empty matrix of the verb.

The principle of the asymmetry of projections is met as well in (129), since each syntactic relation conforms to the following description:

(130) If *A* c-commands *B*, where *A* and *B* are at the same level of projection (X°, X', XP), then *B* does not c-command *A*.

It will follow from (130) that, among other things, a head may take no more than one complement and that the specifier-head relation is likewise biunique.[27] This, we contend, is the structural origin of the complementary distribution represented by comparisons like *reheat*, *heat up*, and **reheat up*. Assuming that the prefix and the particle are both complements underlyingly, only one such element can occur with a particular verb, given the principle of the asymmetry of projections.

Consider again ill-formed sentences like (131):

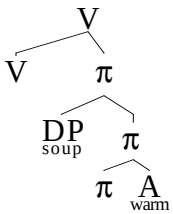
(131) *They rewarmed the soup up.

It is as if this were attempting to say (132a) and (132b) in a single sentence:

(132) (a) They rewarmed the soup,
(b) They warmed the soup up.

This is, at the very least, a recognizable intuition about this type of ill-formedness. The structure shared by (132a,b) is presumably that shown in (133), π being the position assumed for the prefic *re-* and the particle *up*:

(133)



This position can be "filled," of course, by just one element, in accordance with (130). Hence (132a) or (132b) is possible, but (131) is not.

5. Concluding remarks and observations.

What is the relationsip between aspect and argument structure? The question makes sense, of course, if the terms are defined. We define argument structure as the system of structural relations holding between lexical heads

[27]The biuniqueness of grammatical relations may follow ultimately from full interpretation, but the two notions are conceptually distinct, and it would be premature to conclude, for example, that the principle of the asymmetry of projections is itself redundant.

(nuclei) and their arguments within the syntactic structures projected by nuclear items.

Our conclusion, in general, is that aspect is orthogonal to argument structure. Whenever we deal with questions of interface and interaction in this domain, we observe that argument structure is for the most part autonomous. Its properties and characteristics are strictly local, being defined in terms of the structural relations of complement and specifier. To be sure, any argument structure configuration associated with an actual predicate in sentential syntax will be interpreted in terms of one or another aspectual type (achievement, accomplishment, etc.) and its arguments will be associated with one or another aspectual role (measure, path, terminus, etc. (Tenny, 1994)). But argument structure is a distinct and separate component of grammar.

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