

BOUND FEATURES, MERGE, AND TRANSITIVITY ALTERNATIONS
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0. Introduction:

Denominal verbs in English, with certain exceptions, do not participate in the standard transitivity alternation readily enjoyed by de-adjectival verbs. Thus, while verbs like *clear*, *narrow*, *widen*, etc., have both transitive and intransitive uses, location and locatum verbs, like *bag* and *harness*, have only the transitive use; and denominal unergatives, like, *sneeze* and *foal*, have only the use traditionally called intransitive (setting aside the cognate object and small clause complementation constructions, *sneeze a raucous sneeze* and *sneeze one's head off*). All this can be explained quite easily in a variety of frameworks, including those which, like ours, attempt to explain such phenomena in structural, or configurational, terms. In our case, unergatives fail to transitive because they project no specifier; locatum and location verbs fail to "detransitivize," because omission of the upper verb leaves a P(repositional)-projection, not a verbal projection. These features are often mirrored by corresponding analytic constructions. Thus, for example, the location verb phrase *put the loot in the bag* and the locatum verb phrase *fit the mule with hobbles* have no intransitive counterparts. Likewise, *make trouble*, an analytic unergative, so to speak, has neither an intransitive counterpart nor a further transitive sort—*make him trouble* does not mean "cause him to make trouble." These are explained in the same way as the synthetic (denominal) constructions above. Finally, the transitive denominal verbs of the location and locatum type share the property that they can participate in the middle construction, like the transitive de-adjectival verbs—thus, the following are well-formed: *these apples bag easily*, *this colt saddles easily*, and *this paint thins easily*. The middle is possible here, we maintain, because the argument which advances to subject is a specifier. The object of an analytic unergative is not a specifier, by hypothesis, hence **trouble makes easily*.

The purpose of this paper is to attempt to explain certain counterexamples to the picture presented above. Consider, for example, the use of English *get* in the analytic location construction *get the books on the shelf*, in the sense of "put the books on the shelf." This has an intransitive counterpart, *the books got on the shelf (mysteriously)*, not accounted for in the manner suggested in the previous paragraph. According to what is implied there, this should be transitive only. The same observation is represented in the comparison between *splash* and *smear*, as in *splash/smear mud on the wall*. While the second of these verbs, *smear*, behaves "as it should" in having only a transitive use, the first has an intransitive use as well, as in *mud splashed on the wall (when the car passed)*. Similarly, the analytic locatum construction *load the truck with hay* is transitive only, while *fill the room with smoke* has an intransitive counterpart, *the room filled with smoke*. In explaining these examples, we will consider the nature of the Merge operation responsible for the composition of lexical argument structure configurations. We will also make reference to what we term "manner" features inherent in the overt lexical nuclei heading verbal predicates of the type just adduced. In this latter respect,

we propose an extension of our framework beyond our core program of explaining lexical argument structure solely in terms of the structural relations head-complement and specifier-head.

Certain verbs to which we impute the structure of location and locatum denominals fail to participate in the middle construction. The verb *dent*, for example, does form middles, as in *this kind of fender dents easily*. But the verb *kick*, for example, does not, thus **this kind of tire kicks easily*. Here we will make reference again to inherent manner features distinguishing these two classes and accounting for the "affectedness" or "change of state" associations of one as opposed to the other. We will extend this analysis to subject experiencer and object experiencer verbs; the former resist the middle (**Leecil Bewd respects easily*) while the latter do not (*Leecil Bewd angers easily*).

1. Background.

By the term "argument structure," we mean the syntactic configuration projected by a lexical item. Argument structure is the system of structural relations holding between heads (nuclei) and the arguments linked to them, as part of their entries in the lexicon. While a lexical entry is clearly more than this, argument structure in the sense intended here is just this.

In order to illustrate the problems we are concerned with, we offer the following three examples, representing three distinct and productive classes in the English verbal inventory:¹

- (1) (a) The cow calved.
- (b) The screen cleared (when I bumped the keyboard).
- (c) She shelved the book.

The verbs of (1) have readily distinguishable syntactic characteristics, and we assume that their syntactic behavior is correlated in some precise way with their associated argument structure configurations, i.e., with the syntactic structures they project.

¹By "productive," we mean simply that the classes exemplified by the verbs of (1) are well represented in the English lexicon, they are numerous. We are reminded by James Higginbotham, however, that there is another, theoretically more interesting, conception of productivity, namely, that which is concerned with the question of why *the mare foaled* is acceptable while **the cat kittened* is not. That is, why can't all animal offspring terms be used in this way? It is likely that there are many answers, but while some unacceptable cases may be due to phonological factors (as in the case of *kitten*, possibly), or to other formulable factors, we suspect that in the final analysis conflation is a lexical matter in the sense that denominal verbs, and de-adjectival verbs as well, must be listed in the lexicon. While their formation has a syntactic character, as we claim, they constitute part of the lexical inventory of the language. The two characteristics, the syntactic and the lexical, are in no way incompatible. In relation to the issue of productivity, it is interesting that we have intuitions about neologistic conflations. Some go by without evoking especially negative judgment (e.g., *the fish minnowed*, *the shad roed*), while others are likely to be rejected by native speakers (*?the kangaroo joeeyed*, **the sow pigleted*).

The properties which must be accounted for are the following, at least. The verb *calve* in (1a) is “unergative.” It is therefore superficially intransitive and moreover lacks a transitive counterpart:

- (2) *An injection calved the cow early.

This property is shared by all prototypical unergatives, including other evidently denominal verbs—*laugh, sneeze, pup, foal*, and so on.² By contrast, the verb *clear* in (1b) is “unaccusative”. It is intransitive and does have a transitive counterpart:

- (3) I cleared the screen (when I bumped the keyboard).

The same is true of other unaccusatives, quite systematically those which are evidently de-adjectival—*narrow, thin, widen, redden*, and so on. Finally, the verb *shelve* in (1c) has the property that it is transitive and has no intransitive counterpart (apart from the middle):

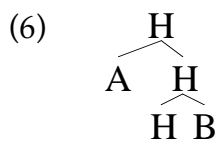
- (4) *The book shelved.

This verb belongs to a large class of denominal location and locatum verbs sharing this property—*box, bag, bottle; saddle, harness, clothe*.

To account for this, we make certain assumptions about argument structure and we are in the process of investigating the consequences of those assumptions, which may of course be wrong. Our principle assumptions, expressed informally, are embodied in (5):

- (5) Argument structure is defined in reference to two possible relations between a head and its arguments, namely the head-complement relation and the head-specifier relation.

For a given configuration, a complement is the unique sister of the head—e.g., B in (6), where H is the head. And a specifier is the unique sister of the first branching projection of the head—e.g., A in (6), where H dominating [H B] is the first branching projection of the head H:

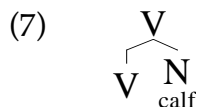


²Verbs of manner of motion are often classified as unergative (except in certain constructions; see, for example, Levin and Rappaport Hovav, 1995). Nevertheless, they have transitive alternants: *I jumped/ran/walked/trotted/cantered/galloped my horse*. We believe, however, that these are not simple transitives of unaccusatives of the type represented by *clear* in (3) or by *break*, for example. While one can say *I broke the pot by slamming the door*, one cannot say **I jumped my horse by slamming the (stall)door*. We have not yet written our account of this difference.

A given head may enter into one or both or neither of these relations. These are its argument structure properties, and its syntactic behavior is determined by these properties, insofar as its syntactic behavior can be attributed to argument structure as defined.

With reference to the verbs of (1), our proposals are as follows, starting with the unergative type exemplified by *calve*. First, we assume that this, and other verbs of its type, implicate a process of “conflation,” involving a bare nominal root and a phonologically empty verb—we assume the process is a morphophonologically motivated concomitant of Merge. The nominal is the complement of the verb, i.e., representing the standard syntactic relation. The process of conflation (a restrictive variant Head Movement, adjoining the nominal to the verbal head) fuses the two items into a single word. At conflation, the verb is no longer “empty”, as it shares the overt phonological matrix of the noun. This is our theory of denominal verb formation—and correspondingly of de-adjectival (e.g. *clear*) and deverbal (e.g., transitive *grow*) verb formation as well, since these too involve the the same fusion of a head with that of its complement.

Abstracting away from the conflation process itself, the argument structure of *calve* of (1a) is as follows:³

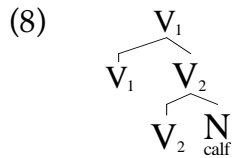


The essential property of the verbal head here is that it projects a structure which contains a complement, its sister, but it projects no specifier. This is characteristic of unergative verbs in general. They project no specifier. Their sentential syntactic subjects are *external* arguments and, thus, excluded from the argument structure configuration itself.

This is their essential property, in our conception of their argument structure. It is to this property that we trace the inability of unergative verbs to enter into the transitivity alternation, an inability exemplified in this case by (2) and by countless other cases, such as **the clown laughed the child*, **the hay sneezed the colt*, and so on. The explanation depends upon another assumption, namely that transitivity involves embedding a verbal projection as the complement of another verb, a free and unavoidable possibility within a system which recognizes the head-complement relation. Transitivity will be successful, or

³Such tree diagrams as this, and (6) likewise, are abstract representations of the relations involved in the corresponding lexical items. Where conflation is involved, however, there is of course no level of syntactic representation at which a structure like (6) or (7) actually appears as such, on the assumption that conflation is a concomitant of Merge—the conflated structure appears instead. However, there is a reality to the structure which represents the basic relations head-complement and specifier-head, abstracted away from conflation. And we will continue to employ them.

not, depending upon the nature of the embedded verbal projection. Consider (8) below, a result of the Merge process, defining a structure in which (7) appears as the complement of V_1 :



Conflation would fuse V_2 and its nominal complement *calf*, and this derived verb would then conflate with V_1 , giving a putative transitive verb *calve*, as in (2). But this is not a successful transitivity, since there is no position in (8) for a sentential syntactic object, i.e., no place for *the cow*, in this case.

Many explicitly transitive verbs also share this property. Consider, for example, the verbs *give* and *have* in (9):

- (9) (a) The cow gave birth.
 (b) The cow had a calf.

These verbs project the same structure as does the empty verb of (7):



These are “analytic” representatives of the simple head-complement configuration—they are the result of Merge alone. The verb of (1a), on the other hand, represents the “synthetic” type, so-called because it is the result of both Merge and concomitant conflation.⁴

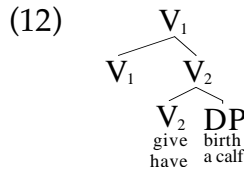
The synthetic and analytic forms share the property that the head projects no specifier and, as a consequence, neither can undergo transitivity in our sense. Thus, just as (2) is ungrammatical, so also (11) is ungrammatical:

- (11) (a) *An injection gave the cow birth early.
 (b) *An injection had the cow a calf.

The intended (and failed) interpretations here are approximately “an injection brought it about that the cow gave birth early” and “an injection brought it about that the cow had a calf”. We paraphrase only to give an approximate idea of the meaning. We are not interested in “deriving” forms from paraphrases or semantically similar structures. The sentence *the cow had a calf* is not the source of *the cow calved*. Our claim is simply that these share the same argument structure

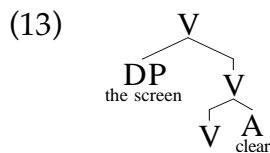
⁴The complement in (10) is a full DP-projection, as required in sentential syntax. In this respect, (10) differs from (7), in which the complement is a bare N, as required for conflation.

configuration (the same specifier-head and head-complement relations), and consequently, they share certain syntactic behavior. The insertion of (10) in the complement position of a matrix empty verb leads to the same transitivity failure as noted in relation to (8) above:



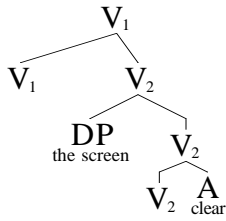
This is an abstract representation of the relations defined by Merge; the surface form would have V_1 and V_2 conflated, of course. Since the subject of V_2 , i.e., *the cow*, is an external argument, it will not appear as a specifier in the lexical argument structure of that verb, by hypothesis. It will therefore not be possible for it to function as the sentential syntactic object of the derived verb. Whatever the fate of (12), it will not give rise to the putative transitives **give the cow birth*, **have the cow a calf*. The DP *the cow* simply cannot appear in the object position of *give* or *have* here. And this is accounted for under the assumption that the verb which heads the complement—i.e., *give*, *have*—does not project a specifier, just as the empty verb of (7) does not.

The behavior just noted is to be contrasted with that of the de-adjectival verb *clear*, the relevant syntactic behavior of which is illustrated in (1b) and (3). We assume that the intransitive variant of *clear* is identified with the following structure:



Again, this is an abstraction, indicating only the relations defined by Merge, not the conflation which gives rise to the actual de-adjectival verb *clear*. The property we are interested in is this: the head V together with its complement A (*clear*) force the projection of a specifier (occupied by the DP *the screen* in (13)). This is a consistent characteristic of de-adjectival verbs, which are classic "unaccusatives" (cf., Levin and Rappaport Hovav, 1995, for these and their opposites, the "unergatives"), and it is this property which permits transitivization. If (13) appears as the complement of a higher verb, the latter will locally c-command the specifier *the screen*. This specifier is thus in the position required for it to function, without further ado, as the sentential syntactic object of the derived verb—i.e., of the verb *clear*, arising through conflation first with V_2 and finally with the higher verb, V_1 :

(14)

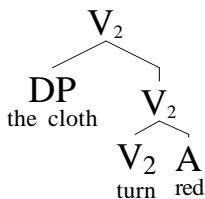


De-adjectival verbs like *clear*, *narrow*, *thin*, *redden*, and the like, are synthetic representatives of their argument structure type. Analytic representatives abound, of course:

- (15) (a) The cloth turned red.
- (b) The lake froze solid.
- (c) The safe blew open.

These have precisely the same dyadic structure as their synthetic counterparts:

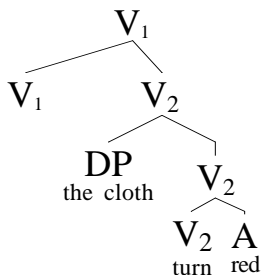
(16)



And like their synthetic counterparts, they participate in the transitivity alternation, unavoidably, so to speak, since Merge applies freely and the specifier projected by these verbs presents a DP in the required position, shown in (18), corresponding to (17a), abstracting away from conflation (of V₂ with V₁):

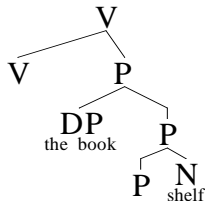
- (17) (a) The ochre turned the cloth red.
- (b) The arctic air froze the lake solid.
- (c) The charge blew the safe open.

(18)



Finally, let us consider the argument structure configuration associated with *shelve* in (1c):

(19)



The actual surface form related to this structure, of course, is defined by conflation of the noun *shelf* with its immediate governing head P, an empty (phonologically null) preposition, and subsequent conflation of the P thus derived with the governing V, also empty. The complement of this verb is a P-projection which, by the very nature of that category, contains both a complement (*shelf*) and a specifier (DP, *the book*). The latter is in the position required for it to function as the sentential syntactic object of the derived verb *shelve*, resulting from conflation. Denominal location and locatum verbs—like *shelve* and *saddle*, respectively—are synthetic. Analytic counterparts include *put* (*books on the shelf*), *fit* (*the horse with a saddle*), and so on.⁵

The necessary transitivity of denominal location and locatum verbs (cf., (4) above) follows from their argument structure. Unaccusative verbs alternate because both the inner head and the outer head are verbs—the intransitive is simply the inner projection unmerged with another verb. Location and locatum verbs, by contrast, are built upon a prepositional projection, by hypothesis. That is to say, the inner head is a preposition, not a verb; in the absence of the outer verbal structure, we are left not with an intransitive verbal projection but with a prepositional phrase.

2. Merge.

We will now suggest an account of verbs like *splash* and *get* which take P-projection complements and, unlike *put* and *smear*, nonetheless participate in the transitivity alternation:

- (20) (a) The pigs splashed mud on the wall.
(b) Mud splashed on the wall (when the pigs ran past).
- (21) (a) The pigs got mud on the wall.
(b) Mud got on the wall.
- (22) (a) We put spurs on Leecil.
(b) *Spurs put on Leecil.

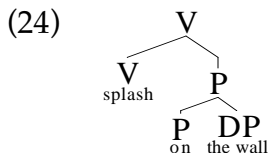
⁵For reasons discussed elsewhere (Hale and Keyser, 1993), we maintain that "locatum" verbs like *saddle* have the "theme" (e.g., *saddle*) in complement position and the "location" (e.g., *horse*) in specifier position. Thus, if we were to suggest a paraphrase for *saddle the horse* it would be the homomorphic *fit the horse with a saddle*.

- (23) (a) Leecil smeared saddlesoap on my chaps.
 (b) *Saddlesoap smeared on my chaps.

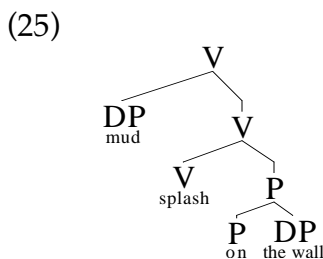
In the past we accounted for verbs of the type represented by (22) and (23), which we assumed to be the "normal" location verb type, under the assumption that the overt verbal head (*put, smear*) took as its complement an "entire" P-projection, as does the phonologically null verbal head of a denominal location verb like *shelve*, whose structure is depicted above in (19). Removal of the matrix verbal projection leaves a P-projection, not an intransitive verbal projection. This is in contrast to de-adjectival verbs, whose inner and outer heads are both verbs. Absence of the outer verb leaves the standard (unaccusative) intransitive verbal projection, as exemplified by *clear* in (13) above.

If this is correct, then something additional must be said about verbs like *splash, drip, dribble, spill*, and many others, which take P-based complements and nevertheless participate in the transitivity alternation exemplified in (20) and (21).

Although many possibilities exist, the simplest is one which, so far as we can tell, stems directly from the principles inherent in Merge (Chomsky, 1995, 1998), deriving the basic structures upon which the relations head-complement and specifier-head are defined. Accordingly, let us suppose, contrary to what we have suggested heretofore, that a constituent consisting of a preposition and its complement (e.g., *on the wall*, a syntactic object previously defined by Merge) can itself be merged, not with its required specifier, but with a verb (e.g., *splash*), giving the structure portrayed in (24):



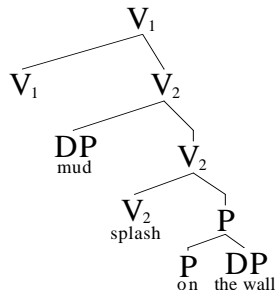
There is nothing to prevent this; in fact it is an unavoidable possibility, so far as we can see. We must assume, however, that this structure is ill-formed unless the specifier requirement of P-projections is met, in the same manner in which it is met in de-adjectival verbs—to wit, the verb necessarily projects a specifier, giving (25):



In essence, this is the structure associated with the intransitive alternant of the standard transitivity alternation for de-adjectivals, extended here to the class of P-complemented alternating verbs of the type represented by *splash* in (20), the

transitive alternant being derived now in the usual way (by further application of Merge with a non-overt V), as in (26):⁶

(26)



On the assumption that the structure shown in (26) cannot be avoided within the conception of argument structure we have adopted throughout, we have a solution to one half of the problem of P-complemented verbs—the alternating type is basically like verbs with adjectival complements. But this analytical decision creates another problem—what about the non-alternating P-complemented verbs, like *smear*, *daub*, etc? Why do these *not* alternate?

This is the topic of the next section. But before taking that question up, we would like to remark briefly on denominal location and locatum verbs in this connection. These verbs, with occasional exceptions (among them verbs of "moving to an edge, surface, or point," e.g., *land*, *center*, *back*, *front*), systematically fail to participate in the transitivity alternation (e.g., **the books shelved*, **the horse saddled*, and so on). We feel that this follows, to some extent at least, from the fact that the verbal component is of the non-overt variety, which has just the features of a verb, nothing else, and by its very nature therefore does not project a specifier, necessarily taking the entire P-projection as its complement (the required specifier being projected by P itself).⁷ It is the essential property of verbs that they take complements but do not project specifiers,

⁶This is one possibility, the other being the more "direct" configuration resulting simply from application of Merge to the pair (V,P), V the head and P maximal. This latter is what we will assume below for the non-alternating verbs; and we will not deal at this time with the obvious redundancy inherent in this system.

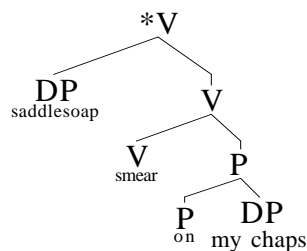
⁷The phrase "has just the features of a verb" is not meant to imply that the lexical categories (V, N, etc) are themselves basic features of grammar. The categories may well be identified with the configurations they project (cf., Romero, 1997). The following correlations hold in general, with certain regular exceptions: in the maximal configuration [Head-Complement], the head corresponds to "V", reflecting the property that verbs generally take external subjects; in the maximal configuration [Specifier [Head-Complement]], the head corresponds to "P"; and in the configuration [Head], the head corresponds to "N". Adjectives are a secondary category, morphosyntactically diverse among languages of the world, with the special property that they must be attributed of some argument, attained parasitically and accounting for one class of exceptions to the otherwise general, specifierless, configuration associated with verbs (the other being that under consideration here for P-complemented alternating verbs like *splash*, *drip*, etc.).

exceptions being those cases in which the complement forces projection and the unmarked case being that in which the verb does not project a specifier. Denominal location and locatum verbs represent the unmarked, or regular, case. The use of this in de-adjectival verbs is impossible, of course, since a bare adjective cannot project its required specifier autonomously.

3. Bound features.

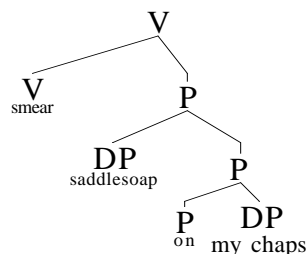
We must account now for the "normal case"—i.e., that represented by verbs like *put* and *smear* in (22) and (23). Specifically, we must somehow ensure that *smear*, for example, be excluded from the configuration associated with the intransitive variant of alternating verbs like *splash*, i.e., that the verb phrase of (23b), depicted in (27), be excluded:

(27)



Instead, we assume, the verb *smear*, and its like, enters directly into construction with the maximal projection of P, including its specifier, of course, as in (28):

(28)



If (28), but not (27), is the correct configuration for *smear*, then the data of (23) are accounted for. But how can we ensure this? One possibility is that (28) is simply the regular case, (27) being ruled out by preemption. On this view, the alternating type (i.e., the *splash* type) would represent the marked case and would have to be specially learned, implying that the whole matter might simply be unsystematic.

There is another possibility, one which requires us to depart somewhat from our program of focussing primarily on the role of syntactic configuration in the study of argument structure. It is generally agreed that certain aspects of the meanings of lexical items are relevant to their functioning in syntactic structures. We are referring here not to meanings which stem from the configurations in which they appear (e.g., the so called theta-roles, and the various eventuality relations, like causation, coincidence, affectedness, change of state, result, and the

like) but rather features of the lexical semantics of individual items, often of an "encyclopedic" character (in the sense of Marantz in recent lectures). We believe that the contrast between *smear*-type and *splash*-type verbs is to be found in this realm, though it has clear syntactic correlates (namely, the ones we are concerned with).

Consider again the contrast involved here. The verbs of (29) below can be termed patient-manner verbs because they include, as an integral part of the verbs themselves, perhaps in their lexical-encyclopedic entries, an adverbial semantic "feature" which identifies the physical motion, distribution, dispersal, or attitude, of the entity denoted by the argument (the "patient") occupying the specifier position in the P-projection which functions as the complement of the verb:

- (29) (a) Mud splashed on the wall.
(cf., The cars splashed mud on the wall.)
- (b) Ice cream dripped on the sidewalk.
(cf., The child dripped ice cream on the sidewalk.)
- (c) Water spilled on the floor.
(cf., The puppy spilled water on the floor.)

Patient-manner verbs belong to the alternating type, of course, the lexical semantic adverbial feature being associated with an *internal* argument. By contrast, P-complemented verbs of the steadfastly transitive type might be termed agent-manner verbs:

- (30) (a) *Mud smeared on the wall.
(cf., They smeared mud on the wall.)
- (b) *White pipeclay daubed on the dancers' bodies.
(cf., The kurdungurlu daubed white pipeclay on the dancers' bodies.)
- (c) *Quarter moons stamped on the leather.
(cf., The saddle maker stamped quarter moons on the leather.)

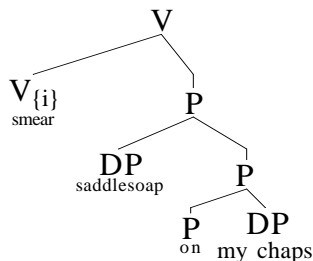
These can be said to include an adverbial feature which describes the actions of entities denoted by their *external* arguments—to "smear X on Y" requires an "agent" which executes the gestures which, in accordance with the lexical encyclopedic entry, are necessary in performing the action so named; similarly for "daubing X on Y", and so on.

We propose that it is the circumstance just described which prevents the non-alternating verbs from appearing in the otherwise freely available intransitive configuration (27). Briefly, that configuration interferes with the correct association of the "agent-manner" adverbial feature with the external argument, there being no truly external argument in the intransitive

configuration. On the other hand, the alternating verbs will permit the correct adverbial feature association in both transitive and intransitive configurations, the relevant internal argument being present in both.

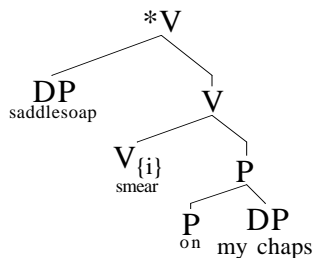
There are complications associated with this idea, but we would nevertheless like to pursue it somewhat in the final portion of this discussion. Before proceeding, however, we suggest a notation (a notation, not a true formalism) based on the analogy of indices of the type used in expressing coreference and anaphoric binding. We will represent the adverbial feature associated with a lexical item by means of a (curly) bracketed index, e.g., {i}. This index must be "bound" (by an argument bearing an alphabetic subscript index identical to that appearing within the brackets of the adverbial feature index); otherwise, the structure fails. The configuration shown in (31), in a sentential syntactic context in which an external argument is locally available, is well formed, since {i} will be properly bound:

(31)



In (32), however, assuming just the argument structure configuration shown, the adverbial index is not bound, assuming it to require an external binder, and the structure fails:⁸

(32)



We have assigned bracketed indices so far only to items bearing externally bound adverbial features, as if internally associated features were simply bound to the "closest" argument and needed no special notation. In the

⁸One of the complications alluded to above is the following. Suppose the configuration (32) were merged with a verbal head, becoming the complement of the V in a larger structure, a transitive structure in sentential syntax. The adverbial index would be bound and the structure would succeed (apparently, and perhaps actually). This is again the reflection of a redundancy in the system—there are two derivations for *Leecil smeared saddlesoap on my chaps*. We are setting this problem aside for present purposes.

best situation, this would be true in general, we suppose—the proper association would be decided by the configuration in which heads and arguments appeared, returning us nicely to our original expectations of argument structure relations. But we have not been able to achieve this. Instead we are led to believe that, at the very least, a distinction between obviative and proximate adverbial features must be recognized. In the following section, a somewhat different case is examined.

4. Respect and impact.

The problem which we will take up here has to do with behavior of certain verbs in relation to the renowned and much studied middle construction of English (cf., Ackema and Schoorlemmer, 1995; Condoravdi, 1989; Fagan, 1988, 1992; Kemmer, 1993; Keyser and Roeper, 1984; Levin, 1993; Rapoport, 1997; among others). As is well known, many transitive verbs cannot participate in that construction. Among these are certain experiencer-subject (psych-)verbs of the type represented in (33):

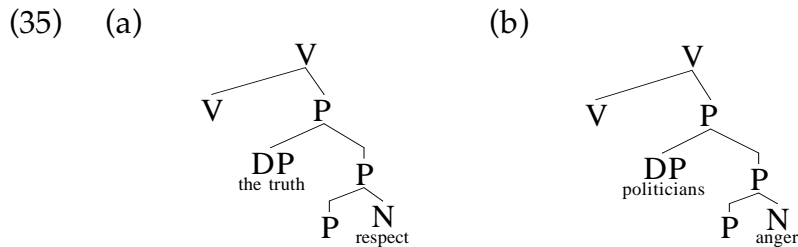
- (33) (a) *The truth respects easily.
(cf., We respect the truth.)
- (b) *John's talent envies easily.
(cf., Everyone envies John's talent.)
- (c) *French films love easily.
(cf., My kids love French films.)
- (d) *The Misumalpan languages know easily.
(cf., Most Sumus know at least two Misumalpan languages.)

Many experiencer-object verbs, by contrast, form middles straightforwardly:

- (34) (a) Politicians anger easily.
(cf., The truth angers politicians.)
- (b) This colt frightens easily.
(cf., Loud noises frighten this colt.)
- (c) I worry easily.
(cf., Economic down-turns worry me.)
- (d) Children bore easily.
(cf., Adult talk bores children.)

This asymmetry is a problem for the view that the two types of experiencer predicates share the same essential argument structure—with the theme a complement and the experiencer a specifier in the internal P-projection complement of the verbal head. This arrangement is shown in in (35a, b), the

assumed lexical configurations for *respect the truth* and *anger politicians* (abstracting away from conflation, as usual):



The problem could be these structures themselves, of course, and that would be a serious problem for our conception of predicate argument structure, since these structures are virtually forced on us by our conception of conflation as (i) a concomitant of Merge and (ii) a relation between heads—and not, say, a relation between a head and a specifier it locally c-commands (this latter being invisible for conflation, by hypothesis).

The usual story here is that experiencer-object verbs form middles because they conform to the requirement that the relevant argument (the experiencer in this case) is "affected" by the action denoted by the verb, while the relevant argument of experiencer-subject verbs is unaffected, in some sense, and therefore fails to meet the Affectedness Requirement. This is descriptively true, to be sure, but we ask what it means, exactly, in relation to the grammar. What is behind the notion that the object of an experiencer subject-verb is unaffected? We think that this is probably true, though it is hard to argue for it in some cases—does loving someone leave that person unaffected? The issue becomes a philosophical question rather than a grammatical one. However, if we look at the problem from a different point of view, there is perhaps something that can be said of a grammatical nature.

Consider not whether the object of an experiencer-subject verb is affected, or not affected, but rather, the semantic connection between the inner complement (the conflating "theme", e.g., *respect*, *anger*) and the internal and external arguments of the transitive verb. And consider as well the expressions cited in (36) and (37), which bear a quasi paraphrastic semantic relation to corresponding experiencer-subject verbs:

- (36) (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.)
- (37) (a) I give my respect to Mary.
 (b) The boss gives her his esteem.
 (c) His children give him their love.

These 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 (36) and (37) 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 (38) cannot be linked to the subject:

- (38) (a) John_i has his_j respect.
(b) Mary_i has her_j esteem.

And in (39), likewise, the genitive pronouns cannot be linked to the indirect object, but is linked to the subject (i.e., the more distant argument):

- (39) (a) Mary_j gives her_i all her_j love.
(b) John_j gives him_i his_j respect.

Thus, the psych nominals in such sentences as these contain a genitive which exhibits the following properties:

- (40) (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 constructions of a different type:

- (41) (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 (40) essentially boil down to two: the genitive in the psych nominal expressions is *obviative* and *anaphoric*. We believe that this is the key to the problem of the Middle Construction illustrated in (33).

⁹For 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.

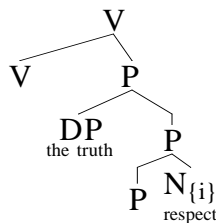
Notice first that in a sentence like (42a), the psych N *love*, which we assume to give rise to the corresponding verb (through Merge and conflation), has semantic properties which are identical to the psych nominal phrase in (42b):

- (42) (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 (40). We will assume that something of this nature is in fact true.

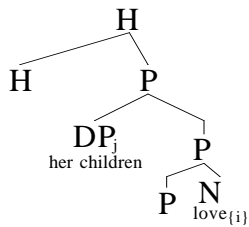
It cannot be “literally” true that the conflating noun in experiencer-subject verbs has a genitive specifier, since that would entail that it heads a phrase (nontrivially) and hence would not conflate with the verb. We will assume instead that the psych noun (*love*, *respect*, *envy*, etc.) is to be 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). We will employ the bracketed subscript to represent this informally, and we will speak informally as if the subscript assigned to the psych noun, in addition to signaling its relation to its antecedent (bearing the corresponding plain subscript), were an actual item having the properties set out in (40), 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 (35a), corresponding to (33b), would have the following representation, in which, in accordance with (40), the bracketed subscript is necessarily disjoint from the specifier, the closest argument, but it is necessarily bound by the next closest argument, the external argument, corresponding to the experiencer-subject (not shown):

(43)



Correspondingly, in (42), the subscript is not bound by *her children*, by virtue of (40ii), but by the external argument *Mary*—it is *Mary’s* emotion, not *her children’s*:

(44)

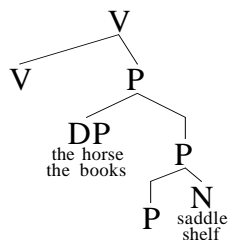


Not shown here is the external argument, the experiencer-subject, which by hypothesis must bear the *i*-subscript in accordance with the anaphoric nature of the bracketed subscript assigned to the psych noun *love*.

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 again verbs like *shelve* or *saddle*, which freely enter into the Middle construction. The structure is essentially that shown in (45), abstracting away from conflation:

(45)



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 (45)). 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, 1996a,b). Now, from this it follows that experiencer-subject verbs cannot form Middles; otherwise, the principles of (40) 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 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 (40).

But the relevance of (40) is not limited to the psych verbs which we have considered here. Consider, for example, the behavior of certain verbs of “impact,” as in (46):¹⁰

- (46) (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.

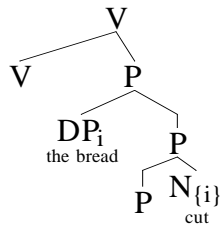
We assume that these verbs have the relevant structure—i.e., V with P-projection complement—and, furthermore, that the complement of P is a noun (the “impact noun,” e.g., *kick*, *punch*, *slap*, *jab*, *poke*; *knee*, *elbow*) which must be linked to its source, the external argument (i.e., the sentential syntactic subject in sentences like (46a-c), identified here as the “agent”, rather than the “experiencer” as in the case of the psych-verbs). Notationally, the impact noun is supplied with a bracketed subscript, as that appearing in (43), representing a variable which must be bound obviatively. The suggested middle counterparts therefore violate the principles of (40).

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

¹⁰It 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, (46b') 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).

specifier position, as shown in (47), the abstract structure corresponding to the verb of (48a) below:

(47)



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. In (48), for example, the separation in material integrity entailed by a successful instance of cutting is an acquired property of the internal argument (DP_i), not of the external argument; similarly for experiencer object verbs, the induced emotion (*anger*) is linked to the internal argument:

- (48) (a) I cut the bread.
 (a') This bread cuts easily.
- (b) That angers me.
 (b') I anger easily.

5. Final remarks.

Our purpose here has been to address certain apparent shortcomings in the theory according to which argument structure is defined solely in terms of the complement and specifier relations. We maintain that these shortcomings are not, properly speaking, failings in our conception of argument structure. Rather, they derive from our failure to understand fully certain implications of the system. On the one hand, we failed to understand the possibilities inherent in the Merge process and, therefore, to understand that P-complemented verbs naturally fall into two classes, an inevitable outgrowth of the basic structural relations. The second problem dealt with here is just one of many of similar nature which will have to be confronted, since it has to do with the interaction of subsystems, not with the basic argument structure relations themselves. The observed asymmetries in this case relate to the connection between features of lexical meaning and the arguments of the verb, internal on the one hand, external on the other.

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