

ON THE DOUBLE-OBJECT CONSTRUCTION
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0. Introduction.

The conception of argument structure developed in Hale and Keyser (1993, 1995) sets a limit on the range of syntactic configurations which can be posited for the double-object construction headed by verbs of the type represented in (1):

- (1) (a) She gave her daughter a book.
 (b) He sent her a telegram.
 (c) I feed my horse cotton-seed cake.
 (d) I wrote my love a letter.

However, while the range of syntactic structures which might be assigned to these sentences is limited, it is by no means obvious what the correct structure is, or even if there is in fact just one. Be this as it may, we will assume here that the the double-object construction is subject to the same constraints as lexical argument structures in general. Using x to symbolize a lexical head, y a complement, and z a specifier (required to complete a “lexical predication”), the structures projected by basic lexical elements (heads) are defined in terms of just two relations—Head-Complement, and Specifier-Head. These define the elementary configuration types set out in (2), to which lexical argument structures are, by hypothesis, limited. Fundamentally, a head x is classified according to whether it takes a complement, a specifier, both or neither:

- (2) (a) $\begin{array}{c} x \\ \diagdown \quad \diagup \\ x \quad y \end{array}$ (b) $\begin{array}{c} x \\ \diagdown \quad \diagup \\ z \quad \begin{array}{c} x \\ \diagdown \quad \diagup \\ x \quad y \end{array} \end{array}$ (c) $\begin{array}{c} \alpha \\ \diagdown \quad \diagup \\ z \quad \begin{array}{c} \alpha \\ \diagdown \quad \diagup \\ \alpha \quad x \end{array} \end{array}$ (d) x

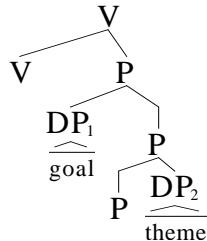
Concretely, of course, these lexical configuration types are realized variously in the morphosyntactic systems (parts of speech) of actual languages—in English, (a) and (d) are predominantly V and N, respectively, while both (b) and (c) typically have more than one realization, with P and A, respectively, predominating (for some discussion, see Hale 1995, and Hale and Keyser 1995).¹

In proposing a structure for the double-object construction, there are two temptations, at least. One is to assign a structure which, so to speak, “hugs the empirical ground,” representing in rather direct fashion the order and

¹ Although we maintain a distinction between (b) and (c), Déchaine (1996) has pointed out that the two can be treated as variants of the same lexical structure. For us, the distinction resides in the location of the head x which forces the appearance of a specifier; in (b) this is the head of the maximal projection; in (c) it is the complement of alpha, a “host” which is forced by x to project a specifier. In both cases, x has the lexical property that it must appear in a relation which we will refer to as a “(lexical) predication”; the specifier satisfies the “subject” required by this predication. The two structures can be unified, of course, since each involves the “formation” of a predicate from a structurally uniform Head-Complement subconstituent.

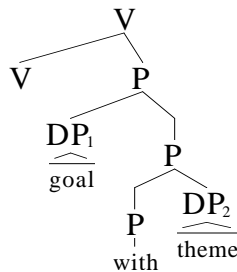
hierarchical structure present in the s-structure representation (compare the thematic hierarchy in Grimshaw, 1990). This conception of the double-object construction assumes that it consists of a (b)-type structure in the complement position of the (a)-type, as depicted in (3), with categorial realizations as indicated:

(3)



The DP variables correspond to the nominal phrases representing the goal or recipient (DP₁) and the theme (DP₂). The verb (V) corresponds to the class of elements which can head the double object construction, e.g., *give*, *send*, and so on. And the lower head, symbolized P, is assumed to be an empty category of the morphosyntactic category P, specifically, the preposition of “central coincidence” (cf. Hale and Keyser, 1993), corresponding to the overt counterpart *with*, as in (4) below, the structure plausibly implicated in *I fitted him with new shoes*, *I supplied the rebels with arms*, *I provided them with books*, and the like:

(4)

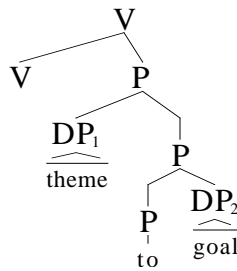


The configuration proposed in (4) is structurally isomorphic with that assumed for the *to*-dative of (5), customarily cited as near paraphrases of (1):

- (5) (a) She gave a book to her daughter.
 (b) He sent a telegram to her.
 (c) I feed cotton-seed cake to my horses.
 (d) I wrote a letter to my love.

The structural configuration which suggests itself for the *to*-dative involves, again, the (b)-type structure as complement of the (a)-type:

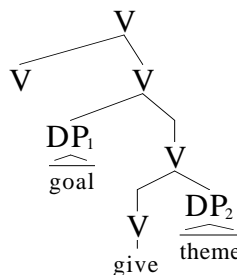
(6)



The difference is that the head of the inner projection is the P of “terminal coincidence”, regularly overt in English, realized as *to* in (5) and so represented in (6). The argument variables are accordingly “switched”, with DP₁ corresponding to the theme and DP₂ corresponding to the goal or recipient.

Within the framework assumed in this study, there is one aspect of (3) which is incorrect. An empty head must always fuse with the head of its complement. Thus, while (3) is correct for locatum verbs like *saddle*, *harness*, *blindfold*, and the like, in which the complement “incorporates” into the empty P, it is not the right structure for the double object construction of (1), where the lower complement (DP₂) does not incorporate. At the very least, we must assume that the lower head is not P but V; and it is not empty, but rather an overt verbal head *give*, *send*, etc. The structural configuration might remain the same, with just the morphosyntactic category of the head changed, as in (7):

(7)



The thematic roles attributed to DP₁ and DP₂ are as in (3). The surface form is achieved by verb raising, as required for elimination of the empty head, i.e., the upper V.

Let us assume, for the moment at least, that (6) is correct for the *to*-dative construction, with the theme argument (DP₁) higher, i.e., asymmetrically c-commanding, the goal argument (DP₂). This is the reverse of the relations holding in (7), where the goal or recipient is higher than the theme. We will turn our attention to the question of whether this latter structure is correct for the double object construction.

While (7) embodies the hierarchical arrangement we have assumed for the internal arguments of the double-object construction (cf., Hale and Keyser 1993), and in fact that assumed for both the double-object construction and the *to*-dative

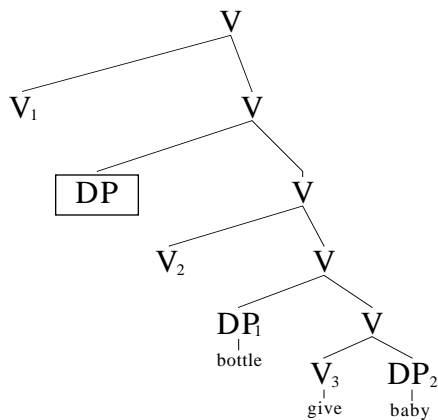
alike in some recent proposals (e.g., Takano 1996), it is theoretically possible, of course, that the hierarchical arrangement of arguments in (7) is wrong, for the double-argument construction, at least. It is possible instead that the asymmetrical command relation shown there is not original but derived, from a more basic configuration in which the arguments are as in the *to*-dative as depicted in (6), with the theme higher than the goal. Bowers (1993) and Romero (1995) point out that secondary depictive predicates of the type represented in (8) and (9) below, are construed consistently with the theme argument, not with the goal. This is consistent with a structural hypothesis according to which the initial syntactic configurations of the *to*-dative and the double object construction agree in the relative positioning of the goal and theme arguments:

- (8) (a) I gave the bottle to the baby full.
 (b) I handed the baby to its mother crying.
 (c) *I gave the bottle to the baby crying.
- (9) (a) I gave the baby its bottle full.
 (b) I handed the mother her baby crying.
 (c) *I gave the baby its bottle crying.

If this is the general pattern, secondary predication is regularly of the theme, not the recipient, in both the *to*-dative and the double object construction (cf., Jackendoff, 1990:203; Rothstein, 1983). If we take the *to*-dative construction to be correctly represented by (6), then the secondary predication at issue here is of the higher of the two arguments.

If the same is true in the double-object construction exemplified in (9), and this is what we take to be implied by the work of Romero (1995), then (7) is not the correct configuration for that construction. Instead, a structure more closely akin to that proposed by Larson (1988) must be assumed—to wit, a configuration in which the theme is higher than the goal, just as in the *to*-dative. In our terms, the structure would consist of a recursive (b)-type structure embedded in an (a)-type structure, as in (10):

(10)



The lower V-projection presents the same relative arrangement of arguments as that assumed for the *to*-dative construction in (6)—with the theme higher than the goal. The surface configuration is derived by head movement, as required by the empty terminal nodes, raising the overt verb (e.g., *give*, as in (10)) first to V_2 , and then to V_1 , the position assumed by the overt verb in the sentential syntactic representation exemplified in (9a). The goal raises to the position indicated by the boxed DP, i.e., the specifier of the V_2 -projection, where it appears as the s-structure object.

The elements of the structural configuration presented in (10) are justified in the following manner. The verb *give* is intransitive, i.e., does not assign case to its complement. This is the essential feature of the double object construction. As a consequence of this circumstance, DP_2 (*baby*) must raise to the position corresponding to the boxed DP, i.e., specifier of V_2 . That verb must be present to permit this and appears there for this reason alone. The upper verb, V_1 , is the standard transitive verb, projecting no specifier. The verb *give* raises to this position, thereby acquiring the ability to assign accusative case to the raised DP_2 *baby*.

In the paragraphs to follow, we will explore the implications of this conception of the double object construction, and the *to*-dative construction as well.²

1. The attachment of depictive secondary predicates.

Our decision concerning the structural location of depictive predicates will be determined under certain assumptions we hold, naturally enough, including the general assumptions inherent in the conception of argument structure configurations which we are using. Depictive predicates are not arguments, and hence are not registered in the lexical argument structure of predicators. However, it seems reasonable to attribute to them a structural position and a structural relation. Let us suppose that the structural relation of a depictive predicate is that of adjunct and that it is “licensed” by virtue of standing in a structural relation with another phrase, an argument, which we can call its “associate” or “subject”. Two questions follow immediately—(i) what is the nature of the adjunction relation, and (ii) what is the structural position of an adjoined depictive secondary predicate relative to its subject?

² A number of recent works argue that the opposite view is correct—i.e., that the goal is higher than the theme (cf., Takano, 1996, and references cited there; and see Koizumi, 1993, for a corresponding theory of secondary predicate attachment). In the English case, at least, evidence for this comes, in part, from the “connectivity effect” seen in such sentences as *?I showed each other’s pictures to the boys* which, if standard c-command is involved in interpreting the reciprocal here, suggests that the *to*-dative (i.e., goal) phrase is higher than the theme at the relevant point in the derivation. Since examples like *?I put each other’s crowns under the thrones of the King of France and the Queen of Holland* are of roughly the same acceptability, we suspect that something special is involved with connectivity (cf., Minkoff, 1994, for a theory which is probably relevant to this issue).

In partial answer to the first question, we simply extend to adjoined secondary predication an essential property of the argument structure types in (2) above, namely the property of relational uniqueness, according to which a given node has one and only one sister (differing in this regard from Koizumi 1994, for example). We may or may not be correct in this assumption, but it nevertheless limits the range of possibilities, ruling out ternary branching by adjunction. An additional aspect of the first question has to do with the identification of possible sisters of an adjoined phrase. Specifically, we must ask now whether a depictive predicate can freely adjoin either to heads (X°) or to projections of heads (X' , XP), i.e., phrases. We assume that a restrictive definition of the adjunction host is correct, and we appeal to a residue of X-bar theory to insure this. Heads adjoin to heads, phrases adjoin to phrases. That is roughly the principle involved. Accordingly, a phrase, say a depictive predicate, can only adjoin to a head if the head is also a phrase (as would be the case of a head which does not “project”; cf. Chomsky, 1995). This imposes a certain restriction on the structural positioning of secondary predicates. Since secondary predicates are phrases (whether or not they are also heads), they cannot adjoin to any of the terminal verb nodes in (10), for example.

In answer to the second question, we appeal to the work of Williams (1980), who argues in support of a structural requirement to the effect that a predicate must be c-commanded by its subject and, further, that a predicate must be c-subjacent to its subject (cf. also Bowers, 1993:641, in relation to secondary predicates of the type under consideration here). This imposes an additional limit on the range of possible attachment sites available to a secondary predicate—the predicate must be within the c-command domain of its subject and it must not be “too far below” its subject, structurally speaking. In fact, Williams suggests, mutual command is the “tightest”, and presumably preferred, construction (Williams 1980:204). However, immediate containment in a primary predicate, itself satisfying the mutual command requirement (as in *John_i [_ibecame rich_i]_i*), is clearly possible. Hence we must, with Williams, assume the “looser”, but empirically justified, c-subjacency provision, which allows the predicate to be separated from its subject by one branching node.

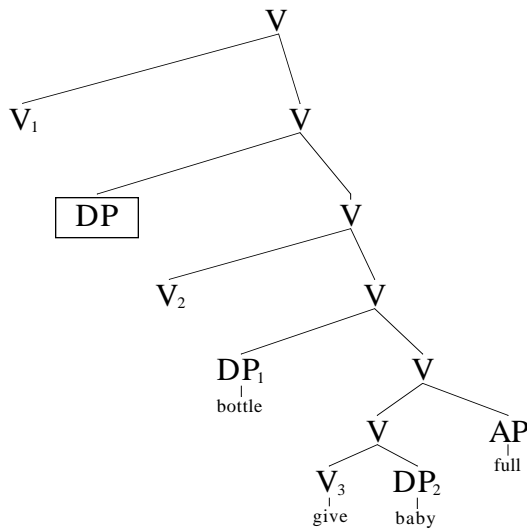
With these observations in mind, we can now narrow down the attachment possibilities for the secondary predicate *full* in (9a), whose corresponding structural configuration is (10), by hypothesis. The c-command requirement eliminates adjunction of *full* to any projection above DP_1 , its subject. Three possibilities remain, (i) the V node dominating V_3 (*give*), (ii) the subject DP_1 (*bottle*), or (iii) the goal DP_2 (*baby*). Any of these would satisfy the c-command requirement.

We know that only one of these can be correct. We might eliminate adjunction to DP_2 immediately. Apart from giving the wrong s-structure order (**I gave the baby full its bottle*), adjunction to that phrase can be construed as a violation of the c-subjacency requirement, depending on the precise definition of the c-subjacency relation. But this will not be enough in any event, because we must also contend with the possibility of adjoining to DP_1 . This would not

involve any ordering problem, but it makes available a plethora of unwanted adjunction possibilities. In general, we need to exclude adjunction of secondary predicates to their subject DPs (consider, for example, the *to*-dative (8c) above: **I gave the bottle to the baby, crying*). While DP-adjunction might be correct for modifiers (e.g., *a page yellow with age*), it is evidently not correct for secondary predicates. It seems necessary, therefore, to impose an additional limitation on the structural position of a secondary predicate—namely, the subject must *exclude* its predicate. This is not only a constraint on *secondary* predication. It also holds for the predication relation embodied in so-called “small clauses” (cf. Bittner 1994 for much relevant discussion), where the predicate does not exclude its subject. It does not hold of modification, however.

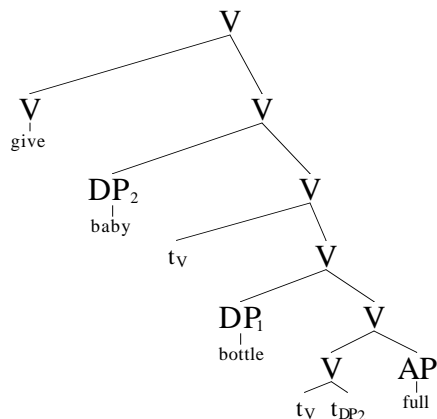
This leaves just one possible adjunction site, namely, the V-projection immediately dominating V_3 , as shown in (11):

(11)



Returning to the double-object construction—represented abstractly in (11), corresponding to (9a)—we suppose that the derived s-structure must be as in (13), by virtue of established principles of the framework assumed here:

(13)



The verb (*give*) must undergo Head Movement and fuse with the empty V which governs it, successive cyclically in this instance, satisfying (among other things) the morphophonological requirement that an empty head incorporate its complement. The goal, DP₂ (*the baby*), raises to assume the position of the boxed DP of (11), forming a Chain whose foot is in the position corresponding to the complement of *give* in its original V₃ position. The reasons for this operation seem to be two. First, in this recursive (b)-type structure, V₂ must project a Specifier—the raised DP₂ satisfies this requirement. Second, we must assume that DP₂ must raise to a position where it can be assigned structural case, by the overt transitive verb *give*. The theme argument, DP₁ (*bottle*), receives inherent case from *give*, in its base position, naturally.³

In (13), although DP₂ (*baby*) is now the higher of the two arguments, it cannot serve as the subject of the adjunct. For one thing, the adjunct AP (*full*) is not c-subjacent to DP₂. This may not be enough, however, to thoroughly preclude secondary predication of the raised DP₂ by some adjunct. Suppose an adjunct, say *crying*, were adjoined to the V-node sister to the raised DP₂, giving (9c). All requirements so-far identified would be met. But (9c) is impossible—in our speech, at least. This suggests to us that the original position of the raised DP is relevant to the predication possibilities in the double-object construction. Secondary predication of *baby* by *crying* is impossible, because the former does not c-command the latter at d-structure. We will assume, in light of this, that the c-command requirement is formulated in terms of argument Chains. If DP_{CH} is the Chain, trivial or nontrivial, of which an argument DP consists, then the

³ This may account for the marked character of the passive (*??the bottle was given the baby*), a construction which must evidently be specially learned and is, therefore, not uniformly distributed among English dialects (see Hudson 1992 for much discussion; and see below as well).

c-command provision for secondary predication requires that the subject be an appropriate DP_{CH} —the predicate must be c-commanded by its subject, a DP_{CH} . The ill-formed (9c) fails the c-command requirement, regardless of which of the two possible adjunction sites is employed.

In summary, an adjoined depictive secondary predicate must conform to the following principles of attachment:

- (14) (a) The subject (DP_{CH}) must c-command and exclude the predicate.
 (b) The predicate must be c-subjacent to its subject.

For secondary predication within a double-object or *to*-dative construction, (14) correctly limits the attachment of the adjunct to a position from which it is predicated of the higher VP-internal argument, i.e., the theme—assuming the structures (10) and (6), and rejecting (7). We move now to a consideration of some additional implications of the structures proposed here.

2. Derivational morphology and empty heads.

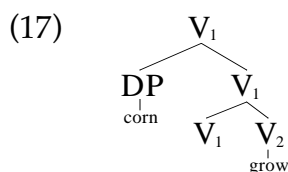
The verb *grow* as in (15) below, has both intransitive and transitive uses:

- (15) (a) Corn grows (fast, well).
 (b) We grow corn.

There is also a related derived nominal, *growth*, which involves only the intransitive variant (cf. Chomsky, 1972):

- (16) (a) the growth of corn (is fun to measure)
 (b) corn's growth (is fun to measure)
 (c) *our growth of corn (started in 1955)

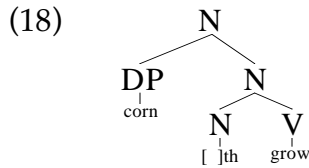
Under our assumptions, *grow* is a (c)-type element, appearing in the structure presented in (17):



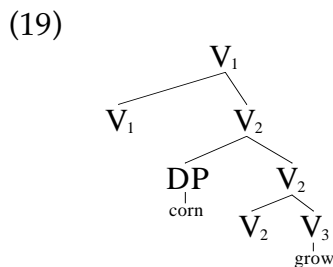
Thus, while *grow* is morphosyntactically a member of the category V, its argument structure is that of a (c)-type head, typically represented by an adjective in English. Be that as it may, *grow* takes a verbal host (specifically, an (a)-type host), and it forces its host to project a Specifier, in order to satisfy its fundamental lexical property, that of taking a “subject” (e.g., *corn*). As usual, the empty host V incorporates its complement, giving the simple verb *grow*.

The structure assumed in (17) is crucial to understanding the derivational asymmetry embodied in (16). At least, it is crucial in the framework we assume.

The derivational suffix *-th* has the property that it selects a limited set of lexical items—generally adjectives, such as *long*, *wide*, *high*, *strong*, etc., but also the verb *grow*. That is to say, *-th* strongly selects lexical items, which we interpret to mean that it takes them in complement position, in a (b)-type configuration which it heads (see Marantz, 1995, for a conceptually similar view within the Distributed Morphology framework):



It follows from this fact of selection, that *-th* cannot nominalize the transitive variant of *grow*. The transitive structure is as in (19):



The derivational suffix *-th* selects just the members of a small set of phonologically overt predicators, as noted above. It cannot, therefore, select the transitive structure (19), as that would involve selecting an empty head, V_1 , impossible by hypothesis, and in contrast to “productive” derivational morphology, like *-able*, which is restricted only by category, not by list (see Pesetsky, 1995, Chapter 3, for much relevant discussion within a distinct framework).

We believe that this line of reasoning is also appropriate in attempting to explain the derivational asymmetry observed in relation to *gift*, the putative nominalization of the double-object verb *give*, as in (20):

- (20) (a) our gift of a book to the children, our gift to the children of a book
 (b) *our gift of the children (of) a book
 (c) the children’s gift of a book (*the children as goal)

We assume that the derivational morphology involved here has the property of strong lexical selection—it selects the members (overt members) of a restricted list.

Since strong lexical selection is of a complement (i.e., a sister, or more accurately, the head of a sister), it follows that the derivational morphology of *gift* can combine with the *to*-dative structure—e.g., that represented by (6), where the head V is an actual lexical verb—but not with the double-object structure of

(10); hence the ill-formedness of (20b) and the lack of ambiguity in (20c). Selection of the double-object configuration represented by (10) would violate the strong selectional requirements of the derivational morphology involved in *gift* (cf. also *rental*, *payment*, *allotment*, *presentation*, and others, from Pesetsky 1995:127-8, citing Kayne 1984). This is because the double-object structure is headed by an empty V, not by a lexical verb; the *to*-dative, by contrast, is indeed headed by a lexical verb.

The account of *growth* and *gift* just sketched is an attempt within the present framework to express the principle inherent in the restriction on derivations which has come to be known as “Myers’ Generalization”:

(21) Zero-derived words do not permit the affixation of further derivational morphemes (Myers, 1984).

Although our claim is that certain derivational morphemes have the property that they select members of a particular set of stems, and therefore do not select empty heads (which have no morpholexical properties at all), the effect is closely similar to the idea expressed in (21). However, we believe with Fabb (1988) and Pesetsky (1995) that (21) is properly contained in a larger generalization about derivational morphology.

The generalization has to do specifically with the selectional properties of derivational morphemes. Some derivational morphology is “productive”, some is not. The morphemes at issue here are generally non-productive, restricted to particular stems, and are therefore incapable of selecting an entire morphosyntactic category, say verb, including both overt and non-overt members. Thus, because of the local nature of selection, it is in the lexical representation itself that a “zero head” is prohibited from intervening between derivational morphology (of the type involved in *growth* and *gift*) and a stem element (*grow*, *give*). For this particular type of derivational morphology, let it be symbolized Y, there can be no lexical configuration of the following type, where X is a stem and V is an empty head of category V:

(22) [_Y [_V [X] V] Y]

Although Y might indeed select X, it cannot appear in this structure, because it cannot select V, by the very nature of both V and Y. This is the sense in which Y-type morphology cannot be separated from X by an empty (i.e., zero) element. Since it is a fact of selection, the prohibition is in force in lexical argument structure representation. And furthermore, since it is a fact of *selection*, it is not really a fact about empty, or zero, morphemes, an observation which we owe to Fabb (1988), who argues in detail for the view that selection is what is at work in constraining affixation in English (and see Pesetsky, 1995, for development of an explicit theory of the multiple consequences of this idea within a different view of the relevant derivational morphology).

It follows, then, that V of (22) could in fact be overt, just not selected by Y. Under our assumptions, however, where V in (22) happens to be empty, it is

necessarily eliminated, of course, by incorporation of X—that is to say, its empty phonological matrix is “filled” through fusion with the overt phonological matrix of its complement, this being a fundamental feature of this conception of derivational morphology.⁴

Returning to the basic argument structure syntax involved in the double-object construction, we would like now to make a brief comment concerning the English possessive verb *have*.

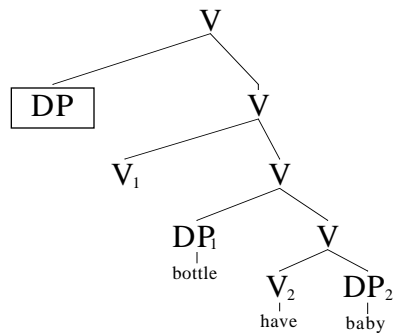
3. Have.

It has been suggested often that double-object *give* is a “causative” of *have*—to “give the baby its bottle” is to “cause the baby to have its bottle”. We have proposed here that the double-object construction is a recursive (b)-type configuration embedded as the complement of a configuration of the (a)-type. If the “cause-to-have” paraphrase of *give* is correct, then *have* could be just the recursive (b)-type structure, bereft of the (a)-type host (differing, therefore, from Hale and Keyser, 1996, and Harley, 1995, which propose a different analysis).

Accordingly, the possessive sentence (23) might correspond to the lexical argument structure configuration (24). Here again, we will use the informal terminology of thematic relations, referring to the higher argument as the possessum (or “theme”), the lower as the possessor (or “goal”):

(23) The baby has its bottle.

(24)

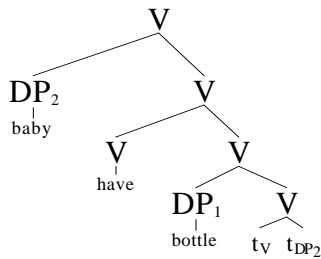


The difference here, of course, is that the overt verb (V_2 , *have*) undergoes head movement just once (i.e., just to V_1) in deriving the sentential syntactic form of the verb itself. But, just as in the double-object construction, so also here, the

⁴ It is a fundamental (possibly erroneous) feature of our conception of derivational morphology that V in (22) cannot be a true zero affix. Consequently, the derived word will not contain a zero affix beneath an additional layer of derivational morphology. The illicit derivations are precluded by selection at the outset; and empty heads are eliminated by fusion in the course of incorporation. Thus, (21) is not actually operative, even in the generalized version which does not distinguish overt and non-overt affixes. Nonetheless, the spirit is the same, we believe, and we are much indebted alike to Myers (1984), Fabb (1988), and Pesetsky (1995).

lower (possessor) DP raises to Spec of V_1 , the position indicated by the boxed DP, to satisfy the projection requirements of V_1 —i.e., to satisfy its need for a specifier:

(25)



The possessor DP_2 will, of course, not be case-marked in its raised position. It will therefore raise in sentential syntax to Spec-IP to satisfy, among other things, its Case requirements, as exemplified in the surface form (23).⁵

We must now face the obvious question of how depictive secondary predication works in relation to the possessive constructions headed lexically by *have*. In truth, it is not easy to decide the matter. The verb *have* is involved in a variety of constructions (cf., Ritter and Rosen, 1991; Déchaine, Hoekstra, and Rooryck, 1995), and it is sometimes difficult to be sure what construction (or constructions) a particular example illustrates. But consider, for example, the following:

(26) She had a copy of *On Raising* [hot off the press].

It seems relatively clear to us that the phrase *hot off the press* is a secondary predicate and that it is predicated of *a copy of On Raising*, i.e., of the possessum (“theme”), as predicted on the expectation that depictive secondary predication is of the higher of the two arguments in the basic form. If the depictive is replaced here with one which is appropriate to the subject *she*, e.g., *excited beyond words*, it does not seem to us to be acceptable, as expected, since *she*, i.e., the Chain headed by the subject, does not c-command the secondary predicate on the attachment assumptions we have made.

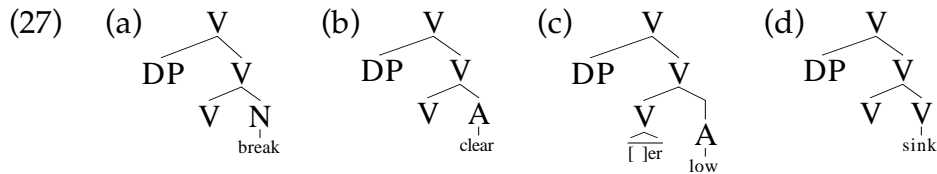
In the next section, we briefly shift our focus to the uppermost component of the structure attributed to the double-object configuration.

4. Cause.

A great many English predicators participate freely in the causative-inchoative alternation—e.g., *break*, *clear*, *lower*, *sink*, and many others (cf. Levin,

⁵ We leave undecided the question of the case assigned to the possessum. There are two possibilities: (1) structural case from *have*; (2) inherent case from the verb in its basic position. Our analysis of *have* likens it to an “intransitive” version of *give*. This may be right, in which case *have* assigns inherent case to its “object” (i.e., to its specifier). This may be why the passive is marginal in the true possessive sense: ??*The bottle is had by the baby* (and cf., also ??*The bottle was given the baby*).

1993); indeed, this is a popular alternation cross-linguistically. The intransitive (or inchoative) member of the alternation is, in the present framework, a (c)-type configuration, as in (27):

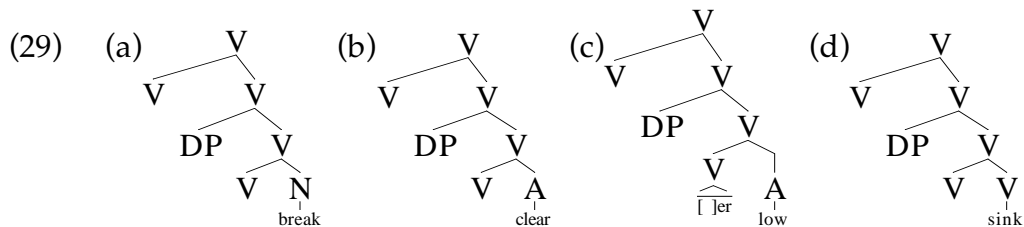


In these particular instances, the verbal head of the (c)-type structure is empty (or partially so, in the case of *lower*) and, accordingly, □□ct incorporate its complement; it is the latter which supplies the overt ingredient, and it is this ingredient which forces the appearance of a specifier (DP). This is a common source of surface monomorphemic inchoative verbs in English, although the (c)-type also occurs with overt V, yielding an overt verb-complement phrase (as in *turn green*, *get drunk*, and the like).

The DP constituent shown in (27) will, in the normal course of events, raise to an appropriate specifier position in sentential syntax, as in the intransitive sentences of (28):

- (28) (a) Hundreds of windows broke (in the storm).
 (b) The (computer) screen cleared.
 (c) Prices (eventually) lower.
 (d) Ships (often) sink.

To say that a verb of this sort participates freely in the causative-inchoative alternation is to say that it can freely appear as the complement in an (a)-type structure, as in (29):⁶



The head of the (a)-type structure has the syntactic property that it does not, in and of itself, force the projection of a specifier. The argument structures of (29), therefore, find their subjects (assuming they enter into verbal sentential syntax)

⁶ We acknowledge that something is lost in saying that causative-inchoative verbs “participate freely” in the alternation for which they are named. It does not seem to us that transitive *drop*, for example, permits the “pure cause” interpretation discussed below (see also Levin and Rappaport Hovav, 1995:86, for similar cases). We expect that the theory of supra-VP projections developed in the work of Borer (1996) will, in many instances, make the proper distinctions between verbs which we classify together as projecting the transitive argument structure configurations in (29). We bear in mind the possibility that Borer’s theory might succeed in making the VP-internal structures we posit unnecessary—a theoretical advance, if so.

externally, eventually in the specifier position of an appropriate functional projection (e.g., conventional Spec of IP). The DP pictured in (29) is, of course, the very same argument as that which assumes the surface subject function in the intransitive variant. Here, however, it is an internal argument, assuming the surface object function and receiving case from the higher verb, realized as a phonologically overt verb (*break, clear, lower, sink*) through successive cyclic incorporation and fusion, as required.

Our interest here is in the nature of the upper V, head of the (a)-type argument structure configuration. In verbs of the type represented in (29), the upper V is utterly empty, except for its morphosyntactic category (part of speech) V. It has no “meaning”. It is not, for example, a “causative verb”, like English *make, cause, have*, or the like. And it does not define a predicate which requires, suggests, or implicates, agency or volition on the part of its subject. On the other hand, it is obvious that a sentence using a transitive verb from among those of (29) involves the phenomenon of “cause”. The entity denoted by the subject is in a clear sense “the cause” of the eventuality described in the predicate—where the eventuality is actual, it is so “because of” the entity denoted by the subject. Thus, for example, in (30a), the windows broke because of the storm, and analogously for the other examples in (30):

- (30) (a) The storm broke hundreds of windows.
 (b) My fumbling at the keyboard cleared the screen.
 (c) Competition lowers prices.
 (d) Loose lips sink ships.

There is no sense of agency here, only of “cause” (although, in figurative speech, of course, agency might be “imputed” to the subject; we are assuming normal, non-figurative usage, however).⁷ We assume that this “cause” interpretation is simply the normal interpretation of the configuration [V₁ [V₂]], where V₁ heads the (a)-type configuration of (2) and is the unmarked empty verb, and where V₂ is a verbal construction of one sort or another appearing as the complement of V₁. That is to say, “cause” is an interpretation assigned to certain structures and, hence, is unlike the “agent” or “instrumental” component of verbs like *cut, stab, smear*, and the like. Verbs of the *break*-class can, of course, take agentive subjects or instrumentals, but they differ from the *cut*-class in that “agent” and “instrument” are not inherent components in their lexical entries. The element responsible for the transitive use of the *break*-class (i.e., the (a)-type host) contributes only the upper head-complement structure and the verbal category. The “cause” interpretation is attributed to the structure alone, as suggested.

Let us assume for present purposes that the foregoing is correct, and that the kind of “pure cause” interpretation is due to the presence of an (a)-type host

⁷ We are not sure what relationship exists between “cause” of the type we are referring to here and the often discussed “direct” versus “indirect” causation, as in *break the window* versus *cause the window to break* (cf., Jackendoff, 1990:150-151, and Pustejovsky, 1995, Chapter 9, for discussion). While the first is said to be “direct”, it is nonetheless clear that it can be used of a situation involving mere “cause” in our sense, devoid of any agency.

itself devoid of such semantic components as “agency”, “volition”, “instrumentality”, and so on. On this assumption, we can extend this observation to the double-object construction and the *to*-dative which differ, among other things, in the presense of an (a)-type head-complement host superstructure.

In his important study of these constructions, Oehrle (1976) observes that double-object sentences like (31) are ambiguous and, of particular relevance here, that one of the readings is what he terms “causative”:

(31) Nixon gave Mailer a book.

Oehrle’s “causative” reading is the one we have referred to here as “(pure) cause”, and corresponds to the situation in which “Mailer got a book because of Nixon” or, in Oehrle’s paraphrase: “Mailer wrote a book which he wouldn’t have been able to write if it hadn’t been for Nixon”. Nixon is not an agent here, but rather a cause (or Causer, cf. Pesetsky, 1995, q.v., for much relevant discussion). There is, of course, an “agentive” reading of (31), corresponding to the situation in which Nixon performed the action of transferring possession or ownership of a book to Mailer. This latter reading is the only one available for the corresponding *to*-dative:

(32) Nixon gave a book to Mailer.

It is to be expected from this that the two constructions will differ in acceptability according to the nature of the subject appearing with them (Pesetsky, 1995:193-194). Cause subjects go well in the double-object construction (e.g., *the interview gave Mailer a book*) but, for many speakers, they do not go so well in the *to*-dative construction, which requires an agent subject (**the interview gave a book to Mailer*).

The interpretations of these two constructions follow, we suggest, from the difference in their basic argument structure configurations. The double-object construction contains, as its uppermost component, the (a)-type structure, with empty V. This is precisely the element which, we have argued, contributes the cause interpretation to the verbs which allow it. By contrast, the *to*-dative does not allow this interpretation—to be sure, it is not always easy to separate the cause interpretation from an interpretation which might be called “figurative”; for example, *the interview finally gave answers to Mailer* might possibly have a figurative agentive reading. Problem cases aside, however, the *to*-dative favors an agentive subject, while the double-object construction imposes virtually no constraint, permitting the cause interpretation freely, as well as agentive interpretations where appropriate. This is to be expected given the structures assumed here, we believe.

5. Backward binding.

In this penultimate section to our discussion of the double object construction, we wish to take up the issue of problematic (anti-c-command) “backward binding”. One such case has been brought to light by scholars

working on the double object construction. There is, however, at least one other case of renown in the literature (Belletti and Rizzi, 1988), and we will attempt here to determine whether the two cases fall into a single family of problems and consequently imply a single explanation.

A number of recent works argue that it is the goal, not the theme, that is the higher argument in the sense relevant to secondary predication (cf., Takano, 1996, and references cited there; and see Koizumi, 1993, for a corresponding theory of secondary predicate attachment). In the English case, at least, evidence for this comes, in part, from the "connectivity effect" seen in such sentences as (33):

(33) I showed each other's pictures to the boys.

If standard c-command is involved in interpreting the reciprocal here, this example suggests that the *to*-dative (i.e., goal) phrase is higher than the theme at the relevant point in the derivation. But, examples like (34) seem to us to be of roughly the same acceptability⁸:

(34) I put each other's crowns under the thrones of the King of France and the Queen of Holland.

In fact, we see nothing particularly wrong with backward binding in all cases of the same general type:

- (35) (a) I set each other's drinks down beside Max and Harriet.
(b) I strapped each other's spurs on Leecil and Wayne.
(c) We led each other's colts up to Monica and Chiquita.

At worst, these may merit a question mark, but in honesty, we do not think that they are degraded even to that degree.

This kind of backward binding is not limited to the *to*-dative but smacks of something more general and common. Even so, we are not absolved of the need to explain these cases of problematic backward binding. On the face of it, at least, they are violations of Condition A of the Binding Theory. Before addressing this problem, let us introduce the other case.

So called "object experiencer verbs" have been cited to illustrate this second case of problematic backward binding (Belletti and Rizzi, 1988):

- (36) (a) Each other's outbursts frightened Marx and Hegel.
(b) The stories about himself bothered Clinton.
(c) Each other's foibles angered Bernice and Vinnie.

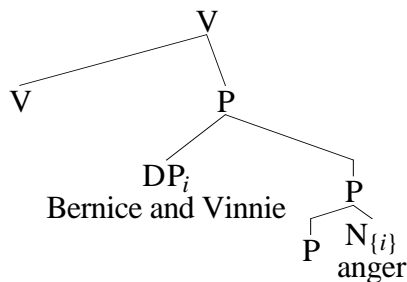
By contrast, so-called "subject experience verbs" fail to display the backward binding effect:

⁸ See Minkoff, 1994, for a theory which is relevant to this issue)

- (37) (a) *Each other's mothers love Bill and Hank.
 (b) *Each other's students respect Noam and Morris.
 (c) *Each other's relatives hate Biff and Chauncey.

We believe that the distinction is to be understood in terms of feature binding in the sense of Hale and Keyser (1999). Consider first the backward binding relation illustrated by (36). Using (36c) to represent the type, we assign to it the following structural representation, augmented by relevant feature indices:

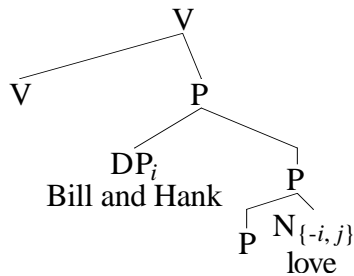
(38)



The plain index i , assigned to the specifier *Bernice and Vinnie*, is the familiar referential index of binding theory. The bracketed index $\{i\}$ is a special index representing not only the standard referential index but the relevant semantic features of the nominal complement of the preposition P. In this case, and in the case of the other examples of (36), this nominal is "proximate." That is to say, the semantic features of the nominal are locally bound, by the specifier, a circumstance which corresponds to the observed interpretation of (36c), where the emotion of anger is attributed to Bernice and Vinnie.

Compare now the case of subject experiencer verbs, using (37a) as an example. The configurational structure of the verbal projections of the sentence of (37) are parallel to those of (36):

(39)



However, the parallelism does not extend to the binding relations. Here, the bracketed index is "obviative," i.e., disjoint from the internal argument, and bound instead by the subject, an external argument.

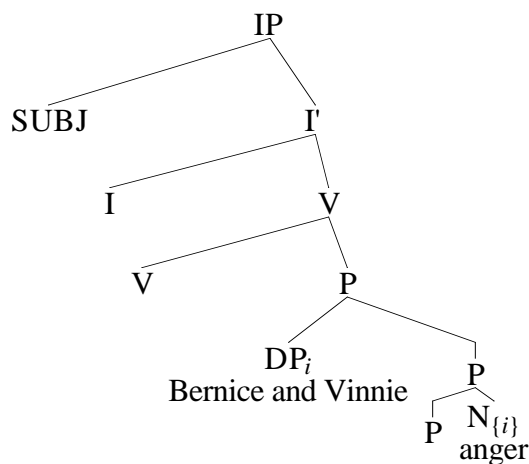
One reflex of this distinction is the behavior of these verbs in relation to the middle construction. Proximate verbs participate in the middle construction, while obviative verbs do not (see Hale and Keyser, 1999 for discussion):

- (40) (a) Bernice angers easily.
 (b) *Bill loves easily.

The behavior in relation to the middle follows straightforwardly from the special indexing. Since the proximate verbs are internally bound, the formation of the middle is possible because the bracketed index is "activated" within the verbal projection, and the elimination of the external argument has no effect on that requirement. But since obviative verbs are externally bound, however, elimination of the external argument prevents the bracketed index from fulfilling the requirement that it be activated.

With this background, we turn to the problem of backward binding. We propose that whether or not a verb will project a structure permitting backward binding depends upon the activation of the bracketed index. And this, we assume, takes place at the node which most locally dominates both the antecedent and the nominal bearing the bracketed index. In the case of the proximate verb of (38) this is the node P dominating the constituents of the prepositional projection. An activated bracketed index is a pronominal, by hypothesis. Backward binding occurs as a result of projecting the activated bracketed index to the first node which c-commands the subject, as shown in (41):

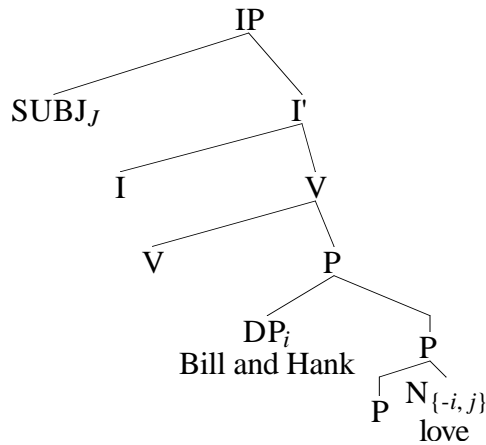
(41)



At I', the bracketed index c-commands the subject and can therefore bind an anaphor within it.

By contrast, in the obviative case, depicted in (42), the bracketed index is not activated within the relevant projection—i.e., not earlier than IP—and, consequently, cannot bind an anaphor within the subject.

(42)



At I', the obviative bracketed index is not yet activated.

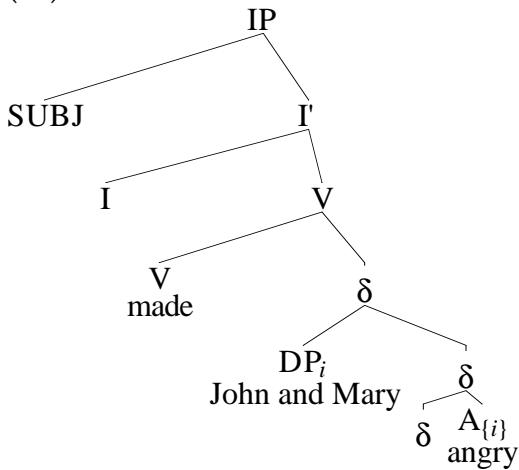
A bracketed index counts as a pronominal, as it consists of an indexed nominal feature together with semantic features representing relevant aspects of the content of the nominal root appearing as the complement of P (and conflated with V at PF). And a bracketed index may project to dominating nodes provided the process is limited to the extended projection of the most immediately dominating verb, in accordance with the principles of extended projection outlined in Grimshaw (1991).

Complex verbal constructions vary according to whether a bracketed index may project from an embedded predicate into the domain of a dominating matrix verb. Compare the following constructions:

- (43) (a) Each other's quirks make John and Mary angry.
(b) *Each other's relatives consider John and Mary angry.

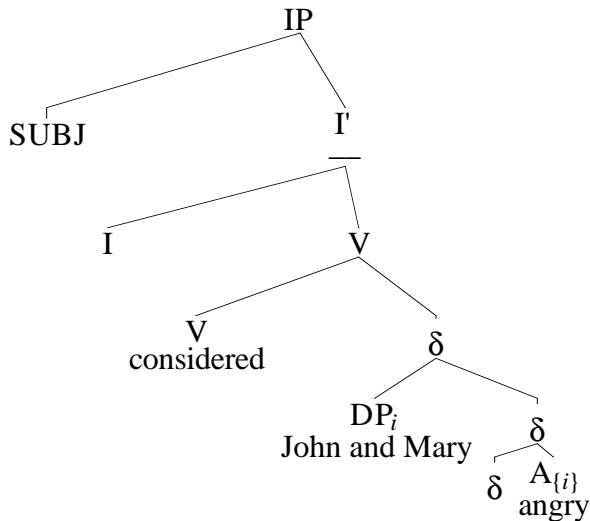
Evidently, the bracketed index projects without hindrance into the extended projection of the causative verb *make* and is able there to bind into the subject of that verb:

(44)



This is evidently not possible in the case of the verb *consider*. Thus, while the bracketed index may project to the node I' in (44), it is prevented from doing so in (45), the structure assumed for the verb phrase of the ill formed sentence (43b):

(45)



This disparity parallels that observed in the following pair, in which the bare infinitive is allowed only where the matrix verb imposes a tense dependency on the embedded verb:

- (46) (a) We made her speak Spanish well.
(b) *We considered her speak Spanish well.

The ability of the causative verb *make* to "impose a tense dependency" on the embedded predicate, whether verbal or a small clause, results from the structural relation according to which *make* directly selects the embedded predicator and is, therefore, not separated from the embedded predicate by any

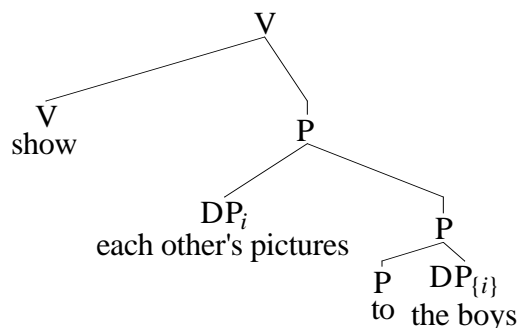
node belonging to a functional category, such as I or C. In (46), *make* satisfies this relation, since no functional category intervenes between that verb and the embedded predicate. By contrast, the verb *consider*—like most other verbs, in fact—fails in this regard, since it does not directly select the predicate of its complement.

We ask at this point whether a similar account can be given for the to-dative construction, as exemplified by (33), repeated here as (47):

(47) I showed each other's pictures to the boys.

Assuming that the structure of this type of to-dative construction is the same as that posited for to-datives generally, the constituents are arranged as in (48):

(48)



In our judgment all such structures permit backward binding, regardless of the preposition. Our account implicates the bracketed index on the prepositional object. This is activated by the upper projection of P, and it can therefore bind into the specifier *each other's pictures* at the first projection of P, where it c-commands the specifier.

Obviously, matters cannot stand as they have been formulated up to this point. Abstractly, the structural relations depicted in (48) parallel exactly those seen in the upper portion of (42). However, we permit backward binding in the case of (48), but not in the case of (42). The difference, we suggest, depends on locality. In (48), the domain of activation and the domain of binding are local, in the sense that they are within a structure defined by a single category, as in (48), where the relevant arguments are dependents of the same P projection. In this case, we maintain, activation and binding coincide, permitting backward binding. The situation represented in (42) is different. There, activation and binding must be taken separately. Local activation is impossible, given the obviative character of *love*. Backward binding, while theoretically possible, fails at the critical point, because the bracketed index is not activated and therefore not pronominal.

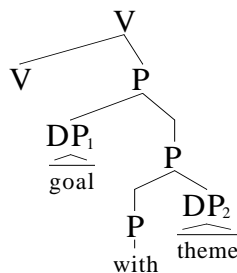
6. Concluding remarks.

The grammar of depictive secondary predication, in so far as we understand it, has persuaded us to consider assigning to the double-object construction a lexical syntactic structure (i.e., argument structure) which, at one and the same time, is (i) more “complex” than would seem to be warranted, on initial observational grounds, and (ii) in evident conflict with the surface hierarchical arrangement of the internal arguments, implying the further complication of a movement operation.

On the other hand, the lexical configuration required for the double-object construction has characteristics which can be invoked to explain not only the behavior of depictives but also limitations on certain derivational morphology and the availability of the (non-agentive) causative interpretation.

The analysis proposed here for the English double-object construction raises questions, naturally, for other constructions in the language. For the purposes of this concluding section, we will content ourselves with a discussion of the “*with*-construction” to which we assigned the structure shown in (4) above, repeated here as (49):

(49)

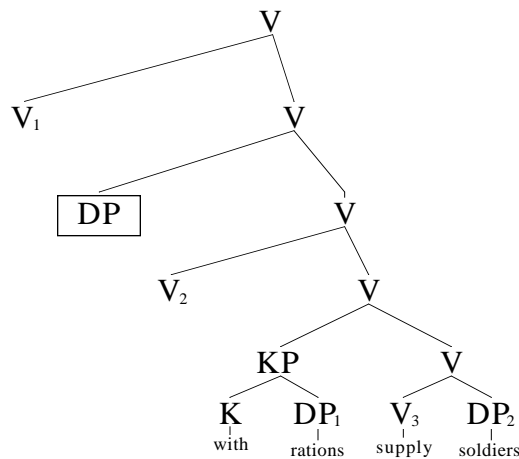


The correctness of this structure (like that of (3, 7), now discarded for the double-object construction) comes into question when depictive predication is taken into consideration:

- (50) (a) We supplied the soldiers with rations (*drunk).
 (Cf., We brought the soldiers to the armory drunk.)
 (b) We fit the mule with a harness (*unbroken, *green).
 (Cf., We brought the two-year-old to the home place unbroken.)

Since the first DP cannot take a depictive secondary predicate, we must assume that its advanced structural position is derived, as in the double-object construction, and that it heads a Chain which fails to c-command the predicate. That is to say, the basic argument structure configuration which must be attributed to the *with*-construction is essentially identical with that of the double-object construction (i.e., the structure embodied in (10) above). There is a difference, however. In the *with*-construction, the argument assigned to specifier position is not a “bare DP” but, rather, an overt case preposition (symbolized K, heading a “Case Phrase”, KP):

(51)



Thus, as in the double-object construction, so also in the *with*-construction, the verb assigns inherent case to its specifier. Here, however, the case is realized overtly as *with*, in accordance with the lexical property of verbs like *supply*, *provide*, and *furnish*. This overt element, like a “true” preposition, prevents DP₁ from c-commanding any depictive predicate. Accordingly, neither of the two internal arguments in the *with*-construction can function as the subject of a secondary predicate.

As expected, given the structure assigned, the *with*-construction occurs easily with a pure “cause” subject, as in (52):

- (52) (a) The hurricane furnished us with a lot of free lumber.
(b) Nixon supplied us with plenty of good copy.

And while *provision* is a well-formed derived noun, it cannot be a nominalization of the *with*-construction, as expected:

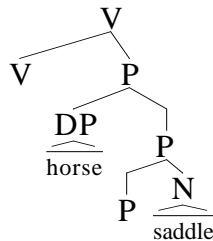
- (53) *Our provision of the soldiers with rations was fortunate.
(Cf., Our provisioning the soldiers with rations was inappropriate.)

This follows if, as we suspect, *-ion*, though relatively “productive” in terms of sheer numbers, nonetheless selects a particular class of lexical items, however large this may be—in any event, unlike *-able*, for example, it does not select items freely and cannot select the empty V heading the double-object and *with*-constructions.

The examples of depictive predication we have used here have all involved predicates with two internal arguments, the depictive being construed with the higher of the two (in the basic argument structure configuration). This raises the natural question of well-known examples like *eat the meat raw*, or *drink the whiskey neat*, in which only one surface internal argument appears. We must admit, at this point, that we do not know how examples of this type work, since we do not have an argument structure analysis of verbs like *eat* and *drink*. There is one class of verbs, however, which conform to prediction. These are the

locatum verbs, like *saddle*, which have a single internal argument on the surface but which we assume to have the more complex underlying argument structure of (3), repeated here as (54), with the “theme” (*saddle*) in the lower position, complement of an empty P (of “central coincidence”), and the “goal” (*horse*) in the specifier position projected by P:

(54)



This structure was rejected for the double-object construction, for the reasons given. But it is probably correct for the locatum verbs, derived by successive cyclic head movement of N, first to P and then to V, satisfying the phonological requirements of these empty heads. We believe that it is possible here to adjoin a depictive predicate in the allowed manner—i.e., to the P-projection immediately dominating N (*saddle*)—where it can be predicated of the DP, as in:

(55) (All the stock got into the fermented apples, so)
I saddled my horse drunk.

This is ambiguous, of course, but we can easily get the reading according to which the secondary predicate is of the surface internal argument *my horse*. If so, then this can be taken as a further example of the general rule, secondary predication is of the higher internal argument in the lexical argument structure configuration.⁹

⁹ There is an alternative possibility which should not be lost sight of, namely, that secondary predicates “associate” with the highest internal argument. If there is only one, then of course that will be the highest. If this is the true generalization, then we cannot maintain the analysis suggested in this paper. From our perspective, we take this as a challenge to show that all cases of observed secondary predication of a single internal DP argument implicate, in reality, a more complex basic argument structure in which the subject of the secondary predicate occupies a position from which it can at once exclude and c-command the predicate. Predication of a simple DP complement in an (a)-type structure is an obvious test case. But these are verbs of creation, and depictive (as opposed, say to “resultative”) secondary predication is, so far as we can tell, generally of a preexisting entity, or preexisting condition, making the test difficult to apply.

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