Argument Structure Constructions and the Argument-Adjunct Distinction*

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Abstract

English 'dative-movement' or 'ditransitive' phenomena are examined within both a non-monotonic approach to Construction Grammar (CG) influenced by Cognitive Linguistics and a monotonic CG approach. It is argued that the latter gives better empirical coverage and is theoretically simpler. Also an account of the argument/adjunct distinction is developed within monotonic CG.

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1. Introduction

One purpose of the present paper is to compare a monotonic ('unification-based') constructional approach to argument structure (e.g., Fillmore 1988, Kay and Fillmore 1999) with a non-monotonic constructional approach influenced by Cognitive Linguistics (CL) (e.g., Goldberg 1995). A second purpose is to develop an account of the argument/adjunct distinction within a constructional framework. I will argue that with respect to the argument structure constructions illustrated in (1) and related phenomena the monotonic approach accounts for a wider range of semantic and syntactic facts with a more economical theoretical apparatus.

(1) a. The catcher threw Pat the bean bag.
b. The boss promised me a raise.
c. The administration always denies late arrivals permission to enter.
d. Aunt Maude bequeathed me a collection of risqué postcards.
e. The referee allowed Kim two free throws.
f. A famous sculptor carved my sister a soap statue of Bugs Bunny.

Goldberg (1995, hereafter G) provides valuable insights regarding the role of argument structure in grammar, in particular the advantages of treating aspects of argument structure as independent of particular lexical items. While the current study argues against details of G's analysis, many of the basic empirical insights used here come from that work and much of the general constructional approach is shared between us.

One of G's featured examples involves the family of related argument structure constructions (ASCs) which license the argument structures observable in (1). One reason for positing ASCs in such cases is that some of the arguments do not appear to be part of the minimal lexical entries for these verbs, as shown in (2).

(2) a. The catcher threw the bean bag.
b. A famous sculptor carved a soap statue of Bugs Bunny.

The same minimal verbs *throw*, and *carve* are present in (1) and (2). In some theories the variation in argument structure would be captured by one or more lexical rules that derive a verb in (2) from the corresponding verb in (1). In this paper ASCs are represented as lexical constructions comprised of a mother constituent with a single daughter.[1] The daughter unifies with an underived, or less derived, lexical item and the mother constituent provides an elaboration or alteration of the daughter. The minimal verbs *throw* and *carve* don't require

[1] Compare the treatment of affixation in Orgun (1996). See also Kay (1997).

recipient arguments, but in (1) *throw* and *carve* support recipient arguments. Something has to license these additional arguments. In a constructional grammar that will be an ASC. (Constituent structure aside, G's approach and the present one agree on everything so far.) We can be sure that the construction(s) – or whatever the relevant grammatical devices are – which add the recipient arguments in (1)a and (1)e affect only argument structure, not constituent structure or even grammatical function, because most of the sentences in (1) have passive counterparts, as illustrated in (3).

(3) a. Pat was thrown a bean bag (by the catcher).
   b. I was promised a raise (by the boss).
   c. Late arrivals are always denied permission to enter (by the administration).
   d. I was bequeathed a collection of risqué postcards (by Aunt Maude).
   e. Kim was allowed two free throws (by the referee).
   f. *My sister was carved a soap statue of Bugs Bunny (by a famous sculptor).[2]

I will refer to the ASC which licenses realization of the recipient as a core syntactic argument in both (1) and (3)a-e as the Recipient Construction (RC). This paper will attempt to build on G's observation that RC sentences produce systematically different sets of entailments depending on the semantic class of the verb. Examples (1)a and (3)a entail that Pat received the bean bag, (1)b and (3)b entail nothing about my receiving or not receiving a raise, and (1)c and (3)c entail that late arrivals do *not* receive permission to enter. Acknowledging these insights from G,

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[2]The possibility of dative shifted and passive phenomena co-occurring is seemingly not permitted by G, whose ASCs assign grammatical functions such as subj, obj and obj2 directly to semantic arguments, with the Distinguished Argument (logical subject) assigned subj function. This appearance of ruling out clauses that are both, say, dative-shifted and passive is deceiving. Goldberg (pc) has in mind foregoing underspecification as a mechanism to permit, for example, the same Passive and Middle ASCs to (possibly) occur in Caused Motion, Ditransitive, simple Transitive, Resultative, etc. contexts. Rather she posits an inheritance hierarchy of constructions with leaves such as Active Ditransitive, Passive Ditransitive, Simple Passive, Caused Motion Middle, and so on. In this approach the generalizations across, say, all passives, would be captured by inheritance rather than by underspecification. Thus, the constructions G presents as Ditransitive, Caused Motion, Resultative and so on, which assign subj function to the DA, would have been more descriptively named Active Ditransitive, Active Caused Motion, Active Resultative, etc.

the account to be developed here will claim certain empirical advantages, for example, accounting for the ungrammaticality of sentences like (3)f. It will also claim theoretical advantages in proposing a less complex theoretical machinery than G's – a monotonic architecture that depends only on structure sharing (unification) and does not incorporate either overriding or several other of G's CL-related devices. The approach to ASCs taken here will also motivate a discussion of the notion of *adjunct* in a constructional framework, establishing a three-way distinction between inherent arguments of a verb, added arguments and adjuncts.

Section 2 of this paper reviews G's analysis of the recipient (née 'dative shift') phenomenon. Section 3 gives an informal sketch of a monotonic CG analysis of these facts. Section 4 presents an implementation of the analysis sketched in section 3. Section 5 applies this style of implementation to the question of added arguments and adjuncts. Section 6 presents a brief conclusion.

2. G's Analysis

G posits six distinct *senses* of the ditransitive construction and presents its analysis as an example of *constructional polysemy*. These senses are illustrated in Figure 1. Each sense of the construction corresponds to a distinct set of entailments along the lines discussed above. Each sense of the construction also combines with verbs of a distinct semantic class or set of classes. For example, the 'central' sense (A) combines with verbs of giving (*give, hand, pass,...*), with verbs of 'instantaneous causation of ballistic motion' (*throw, toss,...)*, and with verbs of 'continuous causation in a deictically specified direction' (*bring, take, ...*). It will be argued below that positing various senses of the construction while also recognizing (sets of) semantic classes of verbs is largely redundant with regard to accounting for the differences in entailment. We will posit three maximal subconstructions (as against G's six senses) and in our analysis many of the distinctions in entailments will follow from the semantics of the verbs alone. One of our maximal subconstructions will be distinguished from the other two by syntactic, as well as semantic, behavior, thus yielding only two maximal subconstructions distinguished by semantics alone.

FIGURE 1 ABOUT HERE

In G's analysis, each of the non-central senses is *based on* the central sense and is related to it by a distinct *polysemy link*. (Other major categories of inter-constructional link in G's theory are *metaphorical extension links*, *subpart links* and *instance links*. 1995: 75.) Polysemy links 'capture the nature of the semantic relations between a particular sense of a construction and any extensions from this sense' (p. 75). Links themselves are considered *objects* in G's theory (p. 74 ff), that is, elements of the grammar. So the theory illustrated in Figure 1 posits six sets of verb classes, six senses of the ditransitive construction and five distinct polysemy links, each relating the central sense to one of the other five senses.[3]

G does not place any limits on the range of possible individual links within the four major types of link, perhaps considering the inventory of individual links to be unbounded, on the model of open class lexical items. Links can add or subtract predicates or logical operators and move things around in a quasi-logical form, apparently *ad libitum*. Table 1 summarizes G's characterization (p. 75) of the behavior of the six polysemy links at work in relating each of the non-central senses of the ditransitive construction to the central sense.

TABLE 1 ABOUT HERE

The link to sense B embeds sense A as the second argument of the added predicate IMPLY, the first (added) argument of IMPLY being 'Conditions of satisfaction'. The link to sense C negates the lower predicate of sense A. The link to sense D inserts ACT as the highest predicate in sense A. The link to sense E substitutes ENABLE for CAUSE in sense A. The link to sense F inserts INTEND as the highest predicate in sense A. Each of these links is posited to be an element of English grammar.[4]

3. Preliminary Sketch of the Maximal Subconstructions

I will propose three maximal Recipient constructions. The first, exemplified by (1)a and (3)a corresponds to G's Central Sense. The second, illustrated by (1)b-e and (3)b-e corresponds to G's senses B, C, D, and E. The third, illustrated by (1)f and (3)f

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[3]It should be noted that G proposes that these inter-sense (or inter-constructional) links reappear in other families of constructions. To the extent that this program can be carried out successfully, it will validate G's reification of interconstructional links.

[4]The links relating the senses of the ditransitive construction furnish one of G's featured examples of links which operate in more than one construction family. Related senses of G's caused motion construction are claimed to show a similar, but not identical, pattern of polysemy. G's polysemy pattern for the caused motion construction is displayed in Table 2.

INSERT TABLE 2 ABOUT HERE

Lines A, B, C, and D of Tables 1 and 2 are comparable, with MOVE appearing in Table 2 in the place of RECEIVE in Table 1. Lines D and F of Table 1 and line D of Table 2 are not comparable to any line of the other table. It is argued below that there is no caused motion construction in the grammar of English.

corresponds to G's sense F. It is convenient to discuss the last mentioned construction first.

3. 1 The Intended Recipient (Maximal) Construction

Two facts motivate a distinction between what we may call the Intended RC, G's sense F – illustrated in (1)f and (3)f, and the other two maximal recipient constructions. The first is the syntactic fact that the recipient argument can not in the Intended RC be realized as a passive subject.

(4) a. *He was baked a cake on his birthday.
    b. *Janet was written a beautiful sonnet (by Clarence).
    c. *I've never been picked flowers before.

The second is the semantic fact that the intended recipient must be understood as benefiting from the (projected) receipt of the theme, as indicated by the contrasts in (5) and (6).

(5) a. I got the cats some medicine.
    b. #I got the rats some poison. (Intended interpretation: I plan to use the poison to kill the rats.)

(6) a. Claudine is mixing the neighbor a potion to cure him.
    b. #Claudine is mixing the neighbor a potion to murder him.

This ASC entails that the actor obtain the theme in some way with the intention of transferring it to the intended recipient, but it does not entail that the intended recipient receive the theme. For example, the a versions of (5) and (6) might unproblematically be followed by a report of lost medecine or a spilled potion. The lack of a reception entailment is not, however, unique to this subconstruction; it is also present in the Modal RC, to be discussed in section 3.3.

3.2 The Direct Recipient Construction

The Direct RC (1a, 3a) is distinguished from the other maximal RCs in entailing that the actor intentionally causes the undergoer-theme to move and that the putative recipient actually receives the theme. Thus, the following anomalies.

(7) a. #I gave/tossed/took him the package but it didn't move.
    b. #I gave/tossed/took him the package but he didn't get it.

A glance at the verbs listed in any of the boxes other than A in Figure 1 should satisfy the reader that the kind of semantic anomalies illustrated in (7) do not arise in recipient sentences employing these verbs.

3.3 The Modal Recipient Construction

The remaining cases, examples (1)b-e and (3)b-e lack the constraints barring passive and requiring beneficiary semantics of the Intended RC but share with it the lack of a reception entailment. In each of these cases, the act performed by the actor embodies an intent that involves in some way the recipient's reception of the theme, but in each subcase the reception event is subject to one or another modality or qualification. In case B (*guarantee*, *promise*,...) the receiving event is subject to an OBLIGATION of the actor. In case C (*refuse, deny, spare,...*) the receiving event is subject to NEGATION. In case D (*leave, bequeath, allocate,...*), the receiving event is subject to FUTURITY. In case E (*permit, allow,...*) the receiving event is subject to POSSIBILITY. The differences in entailment among G's senses B, C, D, and E, all of which are grouped in the present analysis under the Modal RC, can be seen to follow from the meanings of the verbs, with no further multiplication of constructions (or senses thereof) required. Each verb unified with the Modal RC furnishes it's own particular modalization of the reception event. The postulated constructions are related as shown in the following (monotonic) inheritance hierarchy.

(8) Abstract Recipient Construction

Direct RC (*give, throw,...*)

Indirect RC (*bake, buy,...*)

Modal RC (*refuse, promise, allow,...*)

4. Representation of the RC Constructions.

The recipient constructions will be represented in monotonic CG along the lines of Kay and Fillmore (1999), employing a form of Minimal Recursion Semantics (MRS) (Copestake et al. 1995, Copestake et al. 1999).

FIGURE 2 ABOUT HERE

The major component of an MRS representation is a list of minimal frames or relations (rels), represented here as AVMs, whose scopal relationships are displayed by structure sharing (unification) between the handle value of an embedded frame and the value of some (non-handle) attribute of the embedding frame.[5] This list is

[5] The handle feature simply gives a way of identifying and referring to a frame. Incompletely specified scopal relations, which arise in the treatment of quantification, require an additional MRS device that need not be discussed here.

given as the value of the path sem(antics)|cont(ent)|list.[6] Frames or rels are assumed to constitute a type hierarchy of the kind familiar from HPSG. Thus, an *intentional-act* frame can unify, for example, with an *intentional-cause* frame, since the latter is by definition a subtype of the former.

4.1 The Abstract Recipient Construction

The Abstract RC is shown in Figure 2. It displays those properties that are common to the three maximal recipient constructions.

Syntactically, the construction presents a 'two-storied' template for a derived lexical verb. The upper box represents the mother and the lower box the daughter. The mother's syntax value is [cat v, lex +, min –]. The daughter constituent will unify with a possibly minimal lexical verb. [7]

The mother constituent displays the properties of the derived form. Semantically, in the list value, the main frame is of the type *intentional-act*. This frame is primary in the sense that its handle value $\boxed{1}$ and its event value $\boxed{4}$ unify with the exterior handle and index values[8]. In addition to the handle and event attributes the *intl-act* frame has actor $\boxed{2}$, undergoer $\boxed{3}$, and intended-result features. The intended result value is indicated simply by the type designation *handle,* which allows the handle value of some other frame to unify with this argument of the *intentional act* frame.[9] Specifically, we will see below that in the Direct RC construction the *receive* frame is the intended result of the intentional act frame while in the Indirect RC and Modal RC constructions it is not. The *receive* frame itself has theme and recipient values, $\boxed{3}$ and $\boxed{5}$ respectively. The theme $\boxed{3}$ unifies with the undergoer of the *intentional-act.*

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[6]The remaining attributes of the semantic content value are 'handle' and 'index'. The former permits reference to the entire content of the list value. The latter makes the event variable of the list value available to larger structures.

[7]Recursion is blocked by a non-identity constraint on mothers and daughters of lexical constructions (Kay 1997).

[8] An index is a referential pointer. It can be construed as pointing to something in a discourse representation.

[9]The *handle* notation is here effectively equivalent to the unspecified FS notation, [ ], of Fillmore and Kay (1995).

In the valence list, there are three NP feature structures. Reading from the left, the first, whose semantics|instance value is $\boxed{2}$, provides the actor value of the main semantic frame.[10] The second member of the valence set, although a noun phrase syntactically, bears an oblique grammatical function. This combination is the monotonic CG equivalent of the OBJ2 grammatical function in LFG and in Goldberg's CL-based CG. Semantically this valence element unifies with the undergoer argument of the main frame and the theme argument of the *receive* frame. The final valence element is the recipient. Like the actor element, it is not accorded a gf value by the Abstract RC. Unification with the Transitive or Passive linking constructions will decide the gf values of the recipient and actor arguments.[11]

The daughter constituent's semantic content $\boxed{0}$ unifies with that of the mother. The daughter's syntax indicates that it is a lexical verb and the valence value shows that the distinguished argument of the daughter is also that of the mother.

4.2 The Direct Recipient Construction

The Direct RC, corresponding to G's central sense A, inherits all the information of the Abstract RC and supplies some information of its own. In Figure 3, the new information is shown in boldface.[12] The main frame is of type (intentional) *cause-to-move*, defined as a subtype of *intentional-act*. The *receive* frame is unified with the intended result of the main frame, via $\boxed{6}$, and the event features of the main and receive frames are unified, via $\boxed{4}$. Event variables in MRS furnish an intuitively satisfying formal device for distinguishing the semantics of the Direct RC from the other RC constructions. If I give or throw you something my action on the gift or missile and your reception of it constitute a single event. If I

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[10]By convention, the first member of every valence list is the distinguished argument (logical subject). This is the semantic argument which is assigned by various linking constructions the subject function in active contexts, an optional by-oblique function in passive contexts and non-realization with generic construal in middle contexts. The order of the valence list does not correspond (except accidentally) to any ordering of constituents, since the relevant constituents will be ordered differently in, for example, inverted, non-inverted, extracted, etc. structures.

[11]The Indirect RC blocks unification with Passive, as will be shown below.

[12]This practice is maintained in further figures.

promise you something or bake you something my act of promising or baking constitutes an event in itself, distinct from the merely potential event in which you receive the object of my promise or the product of my oven. Unification of the event variables of the *cause-to-move* frame and the *receive* frame implements the observation that in the Direct RC actual receipt of the theme by the recipient is entailed.

The daughter's valence in Figure 3 shows that input verbs to the Direct RC must have at least two valence elements.

FIGURE 3 ABOUT HERE

4.3 The Intended RC

The Intended RC, shown in Figure 4, corresponds to G's sense F. It elaborates the semantics of the Abstract RC in several ways. First, the main frame (or rel) is of type *obtain-act*, another subtype of *intentional-act*. Secondly, the intended result $\boxed{6}$ of the *obtain-act* is that a certain *benefit-frame* $\boxed{6}$ will befall a beneficiary $\boxed{5}$, whose benefit $\boxed{3}$ is the theme of the *receive* event and the undergoer of the *obtain-act*.[13] Finally, the event variables of the *benefit* and *receive* frames are unified $\boxed{8}$ and are marked as necessarily distinct $\boxed{\neg 4}$ from the event variable of the *obtain-act*.

The valence structure of this construction also stipulates something beyond that of the Abstract RC, namely the impossibility of co-occurrence with passive. In Figure 4 the mother's valence structure shows that subject gf is assigned to the distinguished argument NP, which prevents unification of this structure with the passive or middle linking constructions.

FIGURE 4 ABOUT HERE

4.4 The Modal RC

In the Modal RC, shown in Figure 5, the intended result $\boxed{6}$ of the *intentional-act* is a *modality* $\boxed{6}$, which is applied to an eventuality $\boxed{7}$ that corresponds to the familiar *receive* event $\boxed{7}$. The Modal RC differs from both the Direct RC and the Intended RC in its event composition. In the Direct RC the *cause-to-move* and *receive* events are the same. In the Intended RC the *benefit-frame* and the *receive* frame denote a single event and this event is distinct from the *obtain-act*

[13]It is likely that the benefit semantics of the Intended RC should be treated as presuppositional. I have deliberately overlooked that possibility here to keep the representations as simple as possible.

event. In the Modal RC neither identity nor non-identity is specified between the *intentional-act* and *receive* events, since different verbs affect this outcome differently. For obligation verbs like *promise* the *intentional-act* and *modality* (i.e., *obligation)* frames share an event variable while the *receive* frame constitutes a distinct event. For futurity verbs like *bequeath* and permission verbs like *allow* the event variables of the *modality* and *receive* frames are identified and that of the *intentional-act* frame is distinct. For negation verbs like *deny* all three event variables are unified, that is, there is just one event, as in the case of the Direct RC.

FIGURE 5 ABOUT HERE

5. Lexical Verbs Unifying with the Modal RC

The differing entailments corresponding to boxes B, C, D, and E in Figure 1 do not require different senses of the RC but simply arise from the subtype of modality provided by a verb when it unifies with the Modal RC. Figure 6 shows a proposed minimal lexical entry for the verb *promise*. To promise is to perform a speech act that obligates the actor to the occurrence of some eventuality. Figure 6 correspondingly provides a *speech-act* frame which can unify with the *intentional-act* frame of the Modal RC, an *oblige* frame which can unify with the *modality* frame of the Modal RC, and an *eventuality* frame which can unify with the *receive* frame of the Modal RC. The eventuality frame $\boxed{7}$ unifies with the obligation of the *oblige* frame. The event variables identify the *speech-act* and *oblige* frames $\boxed{4}$ and specify that the *eventuality* frame $\boxed{7}$, which corresponds to the obligation $\boxed{7}$ of the *oblige* frame, constitutes a separate event $\boxed{\neg 4}$.[14]

FIGURE 6 ABOUT HERE

Figure 7 shows the structure resulting from unification of the daughter constituent of the Modal RC with minimal *promise*. All the semantic information that the daughter acquires by unification with minimal *promise* is passed up to the mother by the unification $\boxed{0}$ of the two sem|cont values. The external (mother)

[14]The valence list shown in Figure 6 does not provide for the realization of the promised eventuality. When unified with the Modal RC, the latter construction fills this gap. For non-recipient sentences such as (i) or (ii), one assumes that other linking constructions provide for eventuality complements to be realized as various kinds of clauses or non-finite VPs.

(i) He promised to help you.

(ii) You promised that it would not rain.

structure cannot be a minimal lexical entry but it is not a maximal word either because it lacks both inflectional information and a fully linked valence. For example, the structure in Figure 7 can unify with either transitive or passive constructions and with various morphological constructions which determine the verb's inflectional properties.

FIGURE 7 ABOUT HERE

Figure 8 shows the minimal lexical entry for *allow*. To (intentionally) allow an eventuality e is to intentionally cause e to be possible. As with *promise*, this diagram represents an ordinary verb (intentionally) *allow,* which when unified with Modal RC, can licence sentences like (1)e and (3)e.

FIGURE 8 ABOUT HERE

Unlike *promise* and *allow*, a few verbs used with the Modal RC have quite distinct senses from their ordinary uses and thus require lexical entries on their own. This is most clearly the case for the negative verbs, such as *deny* and *refuse*. *Deny,* for example, when not used in a recipient context takes a propositional complement. The minimal lexical entry for *deny* shown in Figure 9 is thus not a representation of the familiar, proposition-rejecting verb *deny*, but a special, reception-prevention *deny* that appears only in recipient contexts.

FIGURE 9 ABOUT HERE

To summarize the argument so far, there are three maximal subconstructions of the Abstract RC. The Direct RC unifies the *cause-to-move* intentional act and *receive* events and makes the *receive* event the intended result of the *cause-to-move* frame. It allows passive. The Indirect RC stipulates non-identity of the *obtain-act* and *receive* events. It identifies both the *benefit-frame* and the *receive* frame as intended results of the *obtain-act*. The Indirect RC blocks passive. The Modal RC specifies neither identity nor non-identity of the *intentional-act* and the *receive* events. It provides a *modality* frame which unifies with the intended result of the *intentional-act* and whose *eventuality* argument unifies with the *receive* frame. The particular modality (negation, possibility, obligation, etc.) is provided by the semantics of the minimal verb. This is the mechanism by which the entailment distinctions between G's senses B, C, D, and E are provided by the lexical verbs, obviating the need to posit constructional polysemy and inter-constructional links. The Modal RC permits passive.[15]

5. Inherent Arguments, Added Arguments and Adjuncts

In contrast to the phrase-structural view of adjuncthood characteristic of the GB tradition, I will take a more traditional approach to the argument/adjunct distinction. In GB usage an adjunct is a major constituent that cannot be accomodated under the X-bar schema as a head, complement or specifier. Apart from the X-bar tradition, there are both distributional and semantic considerations associated with the notion of adjunct. Distributionally, an immediate constitutent of a clause or VP that is neither the main predicator nor a constituent licensed by the main predicator is ordinarily considered an adjunct.[16] Semantically, arguments complete the meaning of a predicator while adjuncts add something to a completed predication. Ideally these two conditions match, the semantic elements required to complete the meaning of the predicator corresponding one-one with the constituents required by the syntactic valence of that predicator. As with many ideals, this one is honored as often in the breach as the observance. The most obvious breaches are semantically required elements that are successfully construed without being syntactically realized (Fillmore 1986) and syntactically required elements that play no semantic role in their clause (e.g., expletives and raised constituents). There are subtler problems as well, one of which is insightfully addressed by G. There are constituents which give every appearance of being arguments but which are not required, either semantically or syntactically, by the minimal valence of the verb. Examples, (1)a,f and (2)a,b (repeated), as compared to examples (9) and (10) illustrate this phenomenon.

(1) a. The catcher threw Pat the bean bag.
    f. A famous sculptor carved my sister a soap statue of Bugs Bunny.

(2) a. The catcher threw the bean bag.
    b. A famous sculptor carved a soap statue of Bugs Bunny.

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[15]For completeness, Figures 10, 11 and 12 show lexical entries for *give, throw* and *pick*, respectively. Both *give* and *throw* can unify with the Direct RC although they contain quite distinct sem|cont|list and valence structures. As a verb of obtaining, *pick* exemplifies verbs compatible with the Indirect RC.

[16]Ignoring complementizers, markers, conjunctions and perhaps and a few other things that are licenced by non-valence constructions. Since NP-internal modifiers are not immediate constitutents of VPs or clauses their adjunct status is not at issue here.

(9) a. The butcher gave Kim the shopping bag.
b. Agent Bond slipped Ms. Galore a photo of the spy plane.

(10) a. *The butcher gave the shopping bag.
b. *Agent Bond slipped a photo of the spy plane.

Since the constituents *Kim* and *Ms. Galore* are unquestionably arguments in (9), there seems to be no reason not to consider *Pat* and *my sister* arguments in (1), despite their not being required by the minimal valence of their governing verbs. The constituents in (1) seem to play semantic roles analogous to those of the corresponding constituents in (9). Further, these items are realized as direct objects and could appear as passive subjects, the last places we would expect to find constituents we could confidentally call adjuncts. As we have seen, ASCs allow us to expand the valences of verbs to accomodate valence elements that are not required by the minimal verb but which nevertheless behave both semantically and syntactically like arguments.

5.1 Caused Motion Phenomena

We will come to the conclusion that prepositional adjuncts are distinguished from prepositional arguments semantically as follows: an adjunct modifies the predication arising from the main predicator while an added argument, as the name indicates, simply augments the list of arguments of the predicator. We will implement this in the adjunct case by treating the index of the verb as an argument of the adjunct. To flesh out this arid claim somewhat, we consider first the phenomena that lead G to posit a three-argument caused motion construction.

Partially on the basis of examples such as (11-13), in which the moved theme cannot occur without the path expression, G posits a caused motion construction with several properties similar to those of the ditransitive construction.

(11) a. They laughed him off the stage.
b. *They laughed him.

(12) a. Frank sneezed the tissue off the table.
b. *Frank sneezed the tissue

(13) a. Sue let the water out of the bathtub.
b. *Sue let the water.

Additional motivation comes from examples like (14), in which the verb does not have a caused-motion meaning unless the path expression is present.

(14) a. Mary urged Bill into the house.
b. Sam helped him into the car.
c. Frank squeezed the ball through the crack.

The hypothesized caused motion construction is then assumed also to license sentences such as (15)a,c,e, where the verb can occur in a caused motion meaning without the path expression, as shown in (15)b,d,f.

(15) a. They chased the poor guy out of the room.
b. They chased the poor guy.
c. Frank threw the key on the table.
d. Frank threw the key.
e. The engine was leaking oil onto the driveway.
f. The engine was leaking oil.

There are reasons, however, not to posit a caused motion construction, but instead to posit an Added Path Argument construction. Consider the examples in (16).

(16) a. The top was spinning.
b. Kim was spinning the top
c. The top was spinning off the table.
d. Kim was spinning the top off the table.

To capture the relation between intransitive *spin* in (16)a and transitive *spin* in (16)b there must be a causative ASC that adds a causative agent to the semantics and valence of an intransitive verb *(spin, boil, walk, melt, ...)*. To capture the relation between pathless intransitive *spin* in (16)a and path-augmented intransitive *spin* in (16)c, there must be an ASC that adds a path argument to intransitive verbs.[17] If we now posit a caused motion construction in addition to the causative agent ASC and the path augmentation ASC, a sentence like (16)d will be given a spurious ambiguity, with agentive path-augmented *spin* licensed either by the caused motion construction alone or by the other two constructions in combination. Another way to see the same facts is that once we have a path-augmentation ASC and a causative agent ASC, both of which are required independently of three-argument verbs, we have no use for a three-argument, caused motion ASC.

A second problem with the caused motion construction is that it overgenerates. If there is a caused motion construction that licenses examples like

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[17]G in fact posits such an ASC.

(11) and (12), it will also license examples like (17), which are ungrammatical although readily understandable.

(17) a. *She screamed him out of her apartment.
b. *He bragged her to sleep.
c. *The bomb went off/detonated the desk through the window.
d. *The storm raged water into our basement/the roof off the house..
f *The lion roared the gazelle into the thicket.
g. *They coughed him off the stage. (Cf. 11)

So we have strong reason to reject the hypothesis of a caused motion construction. But if there is no caused motion construction, then what licenses the argument structures of sentences like (11-13), where the minimal verb doesn't license a theme argument, or sentences like (14), in which the ordinary transitive (or passive) use doesn't have a caused-motion meaning? I would suggest that what is at work here is not a construction, an active part of the grammar, but what Charles Fillmore (pc) has called a pattern of coinage. A different example of a pattern of coinage is the formula implicit in many expressions denoting an extreme degree of a scalar adjective. This pattern is exemplified by the expressions in (18) and can be summarized 'A as NP'.

(18) a. light as a feather
b. heavy as lead
c. quick as a wink
d. slow as molasses
e. hard as a rock/nails
f. old as the hills/Methuselah
g. dark as night
h. bright as a penny
i. rich as Croesus
j. high as a kite
k. happy as a lark
l. easy as duck soup/pie
m. *easy as goose fritters/cake
n. *young as a chick

Examples m and n are not English now, but who knows if they will become so. Examples l might have sounded as strange to their first hearers as examples m do now. Example n seems a promising candidate. A chick is perhaps as evocative an image of youth as any, and to my knowledge English doesn't yet have a *young as an* *x* collocation. I suggest that the caused motion phenomenon is not a construction of English grammar but a coinage template, similar to the 'A as NP' template, not part of the grammar but a potential source of analogical neolgisms.

Returning to the problematical examples (11-14), the contrast between unexceptionable (11), with *laugh,* and unacceptable (17)d, with *cough,* suggests simply that the coinage pattern has been lexicalized with the former but not with the latter, just as it has with (18)l rather than (18)m. Examples like (12) may represent nonce applications of the pattern. *Sneeze* used as a caused motion verb might be the kind of expression one could find once or not at all in a very large corpus.[18] The other examples in this group represent, on this view, further, more or less idiosyncratic, lexicalizations using the coinage pattern. Liquids, gasses and moving masses can be *let in, into, out,* and *out of* containers but not *under, behind, onto, to, at,* etc. objects and surfaces in general. There appears to be no productive caused motion construction. Rather the relatively small number of attested caused motion expressions that are not licensed either by independently motivated ASCs or by semantically triadic minimal lexical entries (such as *give*) may represent a pattern of coinage reflected in a rich maze of lexicalizations.

5.2 Representing Added Path Argument and Setting Adjunct ASCs

Added arguments, as judged on semantic grounds, are sometimes more resistant to fronting than setting adjuncts.

(19) a. In the closet, the top was spinning
b. *Off the table, the top was spinning.
c. In the closet, Kim was spinning the top.
d. *Off the table, Kim was spinning the top.

[18]For instance in the British National Corpus of 100 million words, out of 134 hits for *sneeze* only two can remotely be considered candidates for a caused motion use and neither is a convincing candidate.

(i) Right in the center is one person with a streaming cold who is sneezing his head off.

(ii) ..., until a pollen-laden grass flower tickled his nose and he sneezed himself back to life.

Example (ii), containing a so-called fake reflexive, is clearly a better candidates for the resultative coinage pattern than the caused motion pattern. This is probably also the case with example (i), which moreover illustrates a familiar collocation. I am indebted to Charles Fillmore for the BNC data on *sneeze*. Nonetheless, I am informed by Adele Goldberg (pc) that '*He sneezed his tooth right across town* [appears] in a kids book by Robert Munsch.'

A semantic correlate of this distributional difference seems to be that in the adjunct cases (19)a,c *in the closet* characterizes an entire motion event: a top spinning, while in the added argument cases (19)b and (19)d *off the table* denotes the path traversed by a theme within a motion event. This unoriginal observation is compatible with the existence of sentences containing both added path arguments and setting adjuncts, such as those in (20).

(20) a. In the closet, the top was spinning off the table.

b. In the closet, Kim was spinning the top off the table.

c. The ball can't bounce in(to) the dugout in this ballpark.

Figures 13 and 14 display Added Path Argument and Setting Adjunct constructions, respectively. Figure 13 presents a now familiar 'two-story' lexical construction where the daughter constituent unifies with a minimal verb, e.g., *spin*. Accordingly, the daughter's syntax includes [cat v] and [lex +]. The daughter's semantics list $\boxed{3}$ contains the main frame contributed by the verb, e.g., *spin*. The event variable of this element $\boxed{4}$ is unified with the index value; that is, $\boxed{4}$ denotes the main event reference of the underived verb. The theme argument $\boxed{2}$ of the main frame corresponds to the instance value $\boxed{2}$ of an NP member of the valence list $\boxed{1}$. In our running example, $\boxed{2}$ denotes the reference of *the top*.

The mother constituent in Figure 13 adds both to the sem|cont|list and to the val(ence)|list of the daughter an appropriate representation of a path element. The sem|cont|list is the concatenation of the daughter's sem|cont|list $\boxed{3}$ and a singleton list $\boxed{5}$ containing a path frame. The upstairs valence list is the concatenation of the daughter's valence|list $\boxed{1}$ and a singleton list whose unique element's sem|cont|list $\boxed{5}$ unifies with the added path list and whose syntax is unspecified with respect to category.[19] The event value $\boxed{4}$ of the path element is the same as that of the main lexical frame, e.g., *spin,* and the lower index. The index value of the daughter constituent $\boxed{4}$ is unified with the index value of the mother constituent, which means that the event denoted by the derived verb is the event denoted by the underived verb.

Figure 14, represents a setting adjunct construction. It differs only slightly from the added path argument construction of Figure 13, the differences highlighted in boldface. Nothing about the lower constituent, representing the underived lexical item, is changed. In the mother constituent, the unique member of the list $\boxed{5}$ appended to the mother's sem|cont|list is of type *setting* rather than *path*. The *scene* argument of this element is not, as was the case with the theme argument in Figure 13, an argument of the underived verb, but rather the index $\boxed{4}$ of the underived verb. In this way the setting takes the whole event denoted by the verb as its argument. Finally, the event variable of the setting adjunct $\boxed{6}$, rather than that of the underived verb $\boxed{4}$, is unified with the index of the derived verb.

6. Conclusion

We have compared a monotonic construction grammar approach with a non-monotonic, CL-based constructional approach to recipient argument structures. We have found that several of the senses posited in the CL-based analysis are superfluous, as are the non-monotonic links posited to exist between the different maximal recipient constructions. More generally, we have found that overriding is unnecesary, as is the concept of constructional polysemy. A monotonic approach

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[19]In addition to ordinary path PPs, it seems that an expression of any syntactic category expressing a path will serve.

(i) She sailed/steered the boat

away/around.
here/there.
farther (than...).
hither.
home.
where she had always hoped to.
seaward.
from the island back to the dock.

was found sufficient to account for all the entailment differences motivating the CL-based approach. In addition the monotonic approach permitted an account of syntactic facts, such as the passive possibilities, not covered in the CL-based approach.

We then saw that the formal machinery employed in dealing with recipient and similar argument structure phenomena could be used to establish a distinction between added argument constructions, which simply agument the list of arguments of a predicator, and true semantic adjuncts which take whole predictions as arguments. In particular, we found MRS event variables useful in capturing both some fairly subtle distinctions in the semantic structures of the different maximal RC constructions and in the semantic structures induced by individual verbs when combined with the Modal RC. Moreover, event variables played a role in distinguishing the semantics of added arguments from those of setting adjuncts.

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Figures and Tables

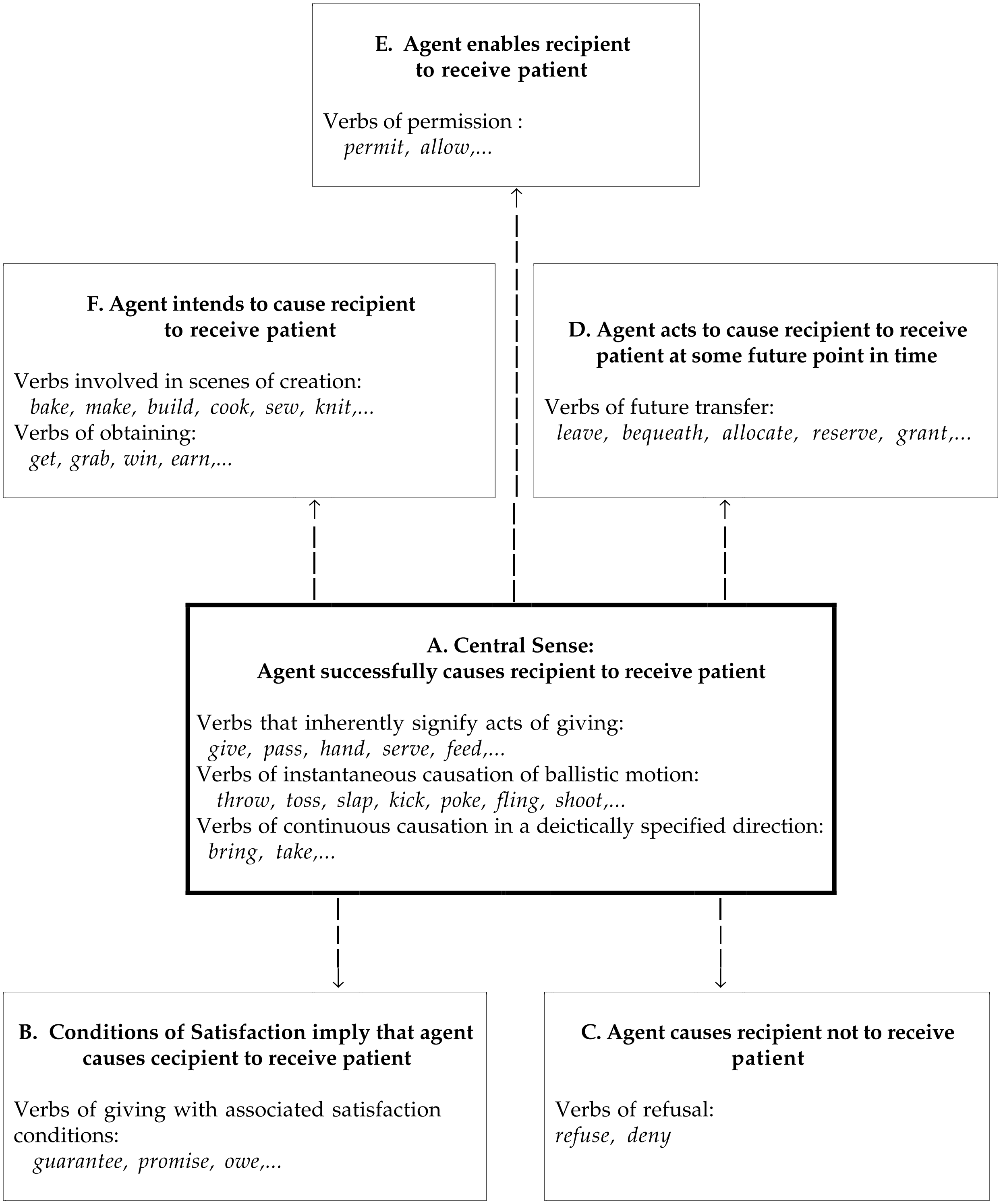

Figure 1. G's Six Senses of the Ditransitive Construction
Adapted from Goldberg, Adele E. *Constructions*. 1995. Chicago: U. Chicago Press. Figure 2.2, p. 38

A. 'X CAUSES Y TO RECEIVE Z' (central sense) Example: Joe gave Sally the ball.
B. 'Conditions of satisfaction imply 'X CAUSES Y TO RECEIVE Z' Example: Joe promised Bob a car.
C. 'X CAUSES Y NOT TO RECEIVE Z' Example: Joe refused Bob a cookie.
D. 'X ACTS TO CAUSE Y TO RECEIVE Z at some future point in time' Example: Joe bequeathed Bob a fortune.
E. 'X ENABLES Y TO RECEIVE Z' Example: Joe permitted Chris an apple.
F. 'X INTENDS TO CAUSE Y TO RECEIVE Z' Example: Joe baked Bob a cake.

Table 1. Illustration of Effects of Polysemy Links in Senses of the Ditransitive Construction, adapted from Goldberg 1995: 75

A. 'X CAUSES Y TO MOVE Z' (central sense) Example: Pat pushed the piano into the room.
B. 'Conditions of satisfaction imply 'X CAUSES Y TO MOVE Z' Example: Pat ordered him into the room.
C. 'X CAUSES Y NOT TO MOVE FROM [sic] Z' Example: Pat locked Chris into the room.
D. 'X HELPS Y TO MOVE Z' Example: Pat assisted Chris into the room.
E. 'X ENABLES Y TO MOVE Z' Example: Pat allowed Chris into the room.

Table 2. Illustration of Effects of Polysemy Links in Senses of the Caused Motion Construction, adapted from Goldberg 1995: 76

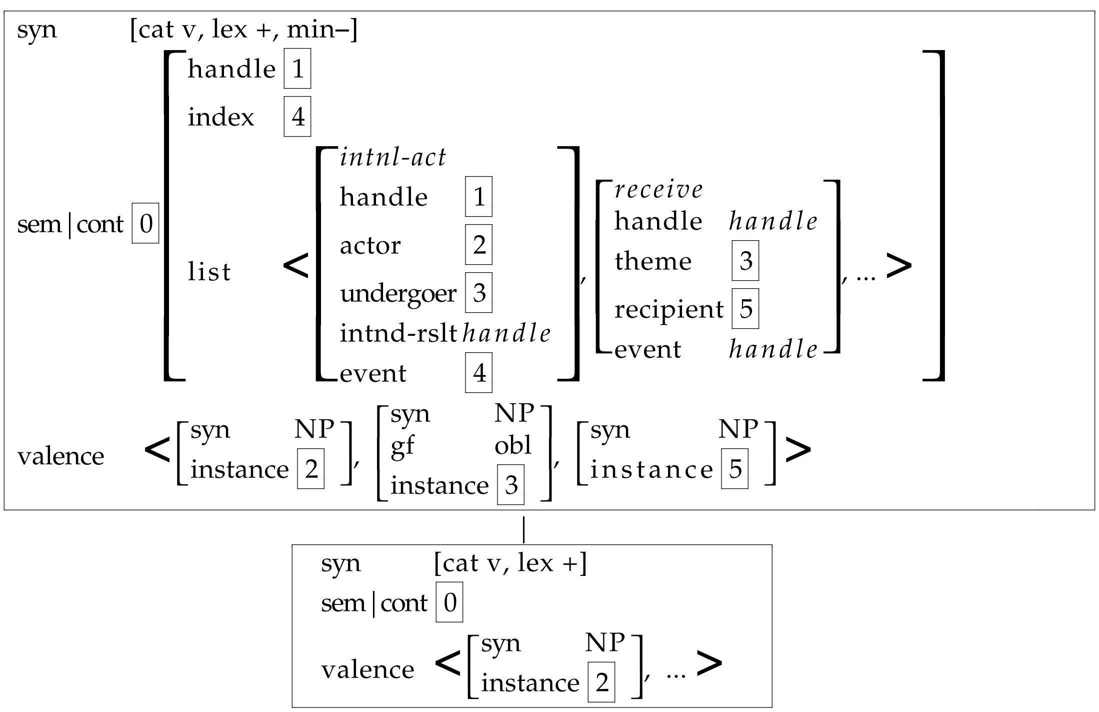

Figure 2. Abstract Recipient Construction

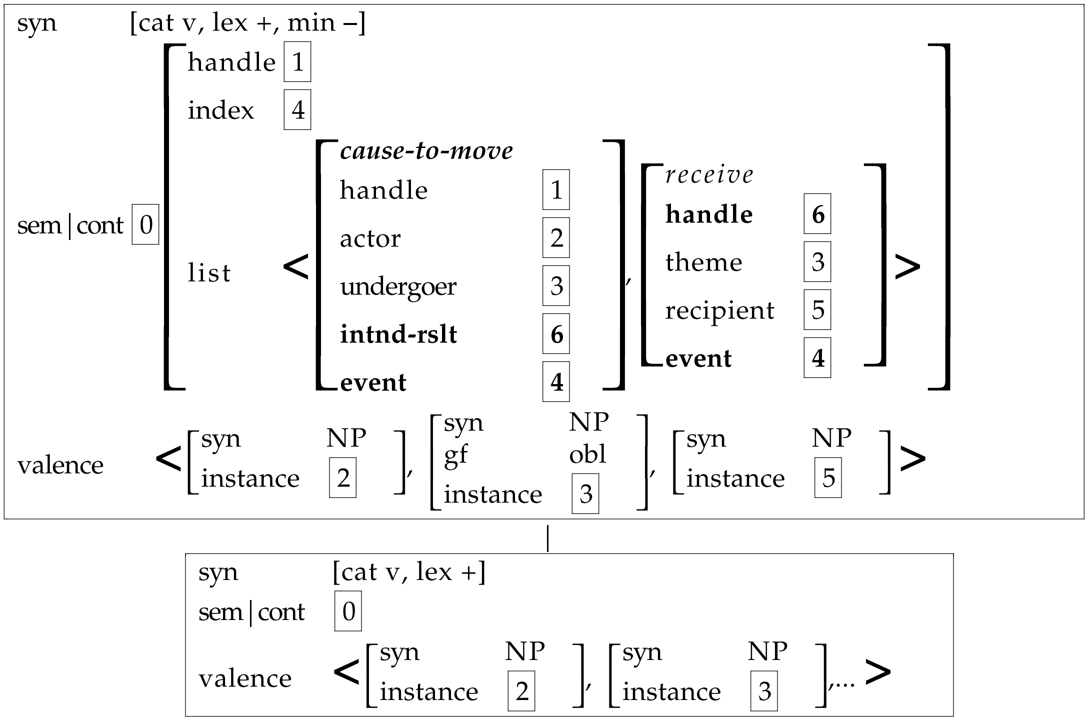

Figure 3. Direct Recipient Construction

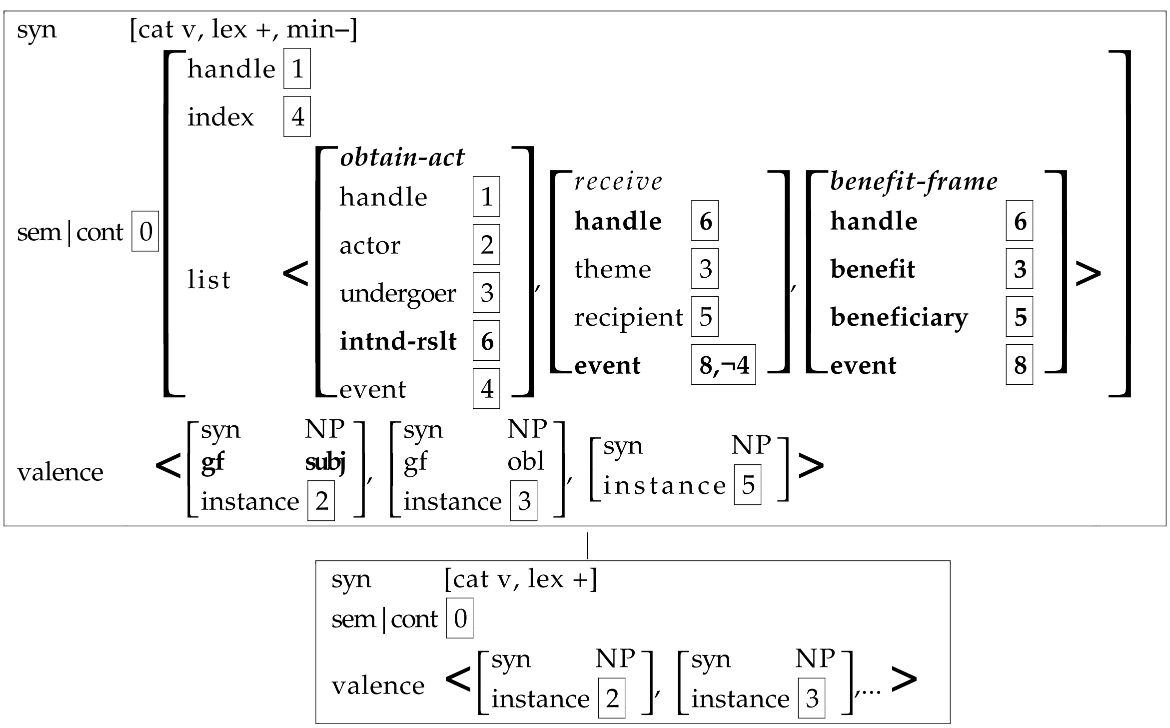

Figure 4. Intended Recipient Construction

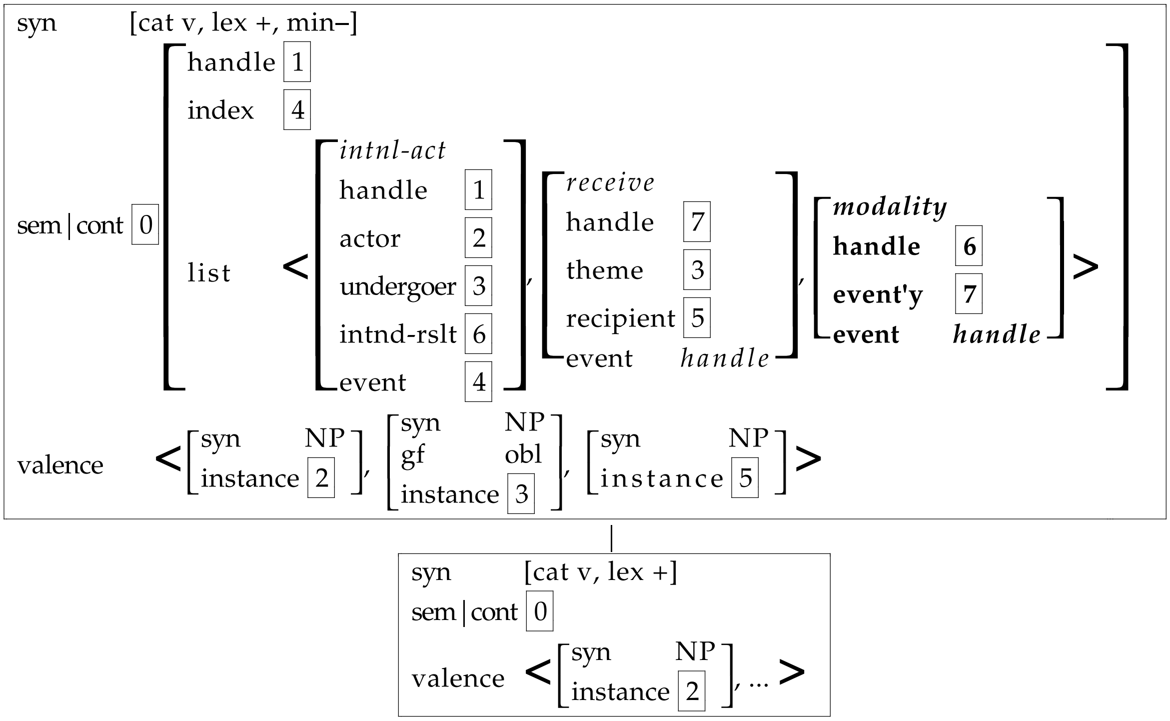

Figure 5. Modal Recipient Construction

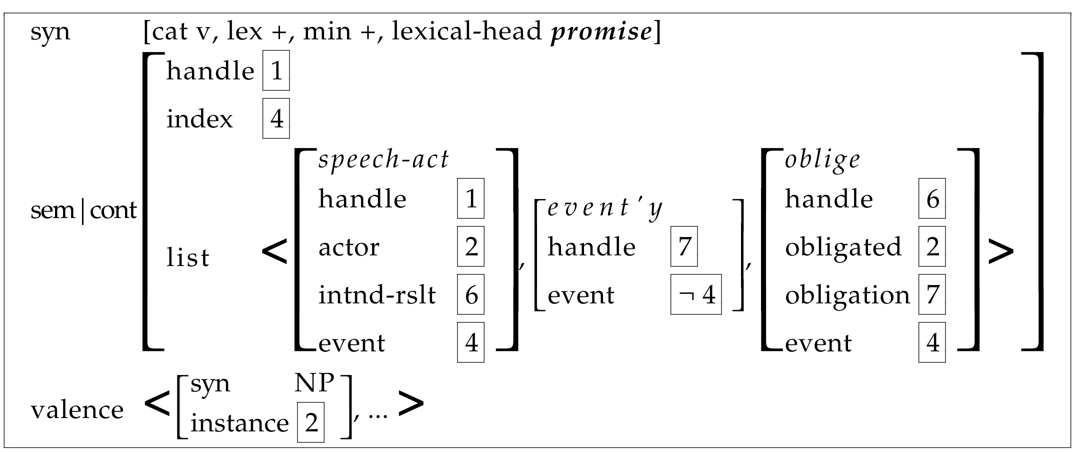

Figure 6. Minimal Lexical Entry for *promise*

$$
\begin{array}{ll}
\text{syn} & [\text{cat v, lex +, min–, lexical-head } \textbf{\textit{promise}}] \\
\text{sem}\,|\,\text{cont } \boxed{0} & \left[\begin{array}{ll}
\text{handle} & \boxed{1} \\
\text{index} & \boxed{4} \\
\text{list} & \left\langle
\left[\begin{array}{ll} \textit{intnl-act} & \\ \text{handle} & \boxed{1} \\ \text{actor} & \boxed{2} \\ \text{undergoer} & \boxed{3} \\ \text{intnd-rslt} & \boxed{6} \\ \text{event} & \boxed{4} \end{array}\right],
\left[\begin{array}{ll} \textit{receive} & \\ \text{handle} & \boxed{7} \\ \text{theme} & \boxed{3} \\ \text{rcpient} & \boxed{5} \\ \text{event} & \textit{handle} \end{array}\right],
\left[\begin{array}{ll} \textbf{\textit{oblige}} & \\ \textbf{handle} & \boxed{6} \\ \textbf{obligated} & \boxed{2} \\ \textbf{obligation} & \boxed{7} \\ \textbf{event} & \boxed{4} \end{array}\right]
\right\rangle
\end{array}\right] \\
\text{valence} & \left\langle
\left[\begin{array}{ll} \text{syn} & \text{NP} \\ \text{instance} & \boxed{2} \end{array}\right],
\left[\begin{array}{ll} \text{syn} & \text{NP} \\ \text{gf} & \text{obl} \\ \text{instance} & \boxed{3} \end{array}\right],
\left[\begin{array}{ll} \text{syn} & \text{NP} \\ \text{instance} & \boxed{5} \end{array}\right]
\right\rangle
\end{array}
$$

$$
\begin{array}{ll}
\text{syn} & [\text{cat v, lex +, lexical-head } \textbf{\textit{promise}}] \\
\text{sem}\,|\,\text{cont} & \boxed{0} \\
\text{valence} & \left\langle \left[\begin{array}{ll} \text{syn} & \text{NP} \\ \text{instance} & \boxed{2} \end{array}\right], \ldots \right\rangle
\end{array}
$$

Figure 7. Modal Recipient Construction Unified with Minimal *promise*

$$
\begin{array}{ll}
\text{syn} & [\text{cat v, lex +, min +, lexical-head } \textbf{\textit{allow}}] \\
\text{sem}\,|\,\text{cont} & \left[\begin{array}{ll}
\text{handle} & \boxed{1} \\
\text{index} & \boxed{4} \\
\text{list} & \left\langle
\left[\begin{array}{ll} \textit{intnl-cause} & \\ \text{handle} & \boxed{1} \\ \text{actor} & \boxed{2} \\ \text{intnd-rslt} & \boxed{6} \\ \text{event} & \boxed{4} \end{array}\right],
\left[\begin{array}{ll} \textit{event'y} & \\ \text{handle} & \boxed{7} \\ \text{theme} & \boxed{3} \\ \text{rcpient} & \boxed{5} \\ \text{event} & \textit{handle} \end{array}\right],
\left[\begin{array}{ll} \textbf{\textit{possible}} & \\ \textbf{handle} & \boxed{6} \\ \textbf{event'y} & \boxed{7} \\ \textbf{event} & \boxed{4} \end{array}\right]
\right\rangle
\end{array}\right] \\
\text{valence} & \left\langle \left[\begin{array}{ll} \text{syn} & \text{NP} \\ \text{instance} & \boxed{2} \end{array}\right], \ldots \right\rangle
\end{array}
$$

Figure 8. Minimal Lexical Entry for *allow*

$$
\begin{array}{ll}
\text{syn} & [\text{cat v, lex +, min +, lexical-head } \textbf{\textit{deny}}] \\
\text{sem}\,|\,\text{cont} & \begin{bmatrix}
\text{handle} & \boxed{1} \\
\text{index} & \boxed{4} \\
\text{list} & \left\langle \begin{bmatrix}
\textit{intnl-act} & \\
\text{handle} & \boxed{1} \\
\text{actor} & \boxed{2} \\
\text{undergoer} & \boxed{3} \\
\text{intnd-rslt} & \boxed{6} \\
\text{event} & \boxed{4}
\end{bmatrix}, \begin{bmatrix}
\textit{event'y} & \\
\text{handle} & \boxed{7} \\
\text{theme} & \boxed{3} \\
\text{rcpient} & \boxed{5} \\
\text{event} & \textit{handle}
\end{bmatrix}, \begin{bmatrix}
\textbf{\textit{negation}} & \\
\textbf{handle} & \boxed{\textbf{6}} \\
\textbf{event'y} & \boxed{\textbf{7}} \\
\textbf{event} & \boxed{\textbf{4}}
\end{bmatrix} \right\rangle
\end{bmatrix} \\
\text{valence} & \left\langle \begin{bmatrix} \text{syn} & \text{NP} \\ \text{instance} & \boxed{2} \end{bmatrix}, \ldots \right\rangle
\end{array}
$$

Figure 9. Minimal Lexical Entry for *deny* [special for Modal RC]

$$
\begin{array}{ll}
\text{syn} & [\text{cat v, lex +, min +, lexical-head } \textbf{give}] \\
\text{sem}\,|\,\text{cont} & \begin{bmatrix}
\text{handle} & \boxed{1} \\
\text{index} & \boxed{4} \\
\text{list} & \left\langle \begin{bmatrix}
\textit{cause-to-move} & \\
\text{handle} & \boxed{1} \\
\text{actor} & \boxed{2} \\
\text{undergoer} & \boxed{3} \\
\textbf{intnd-rslt} & \boxed{\textbf{6}} \\
\text{event} & \boxed{4}
\end{bmatrix}, \begin{bmatrix}
\textit{receive} & \\
\textbf{handle} & \boxed{\textbf{6}} \\
\text{theme} & \boxed{3} \\
\text{recipient} & \boxed{5} \\
\textbf{event} & \boxed{4}
\end{bmatrix} \right\rangle
\end{bmatrix} \\
\text{valence} & \left\langle \begin{bmatrix} \text{syn} & \text{NP} \\ \text{instance} & \boxed{2} \end{bmatrix}, \begin{bmatrix} \text{syn} & \text{NP} \\ \text{instance} & \boxed{3} \end{bmatrix}, \begin{bmatrix} \text{syn} & \text{NP} \vee \text{PP} \\ \text{instance} & \boxed{5} \end{bmatrix} \right\rangle
\end{array}
$$

Figure 10. Minimal Lexical Entry for *give*

$$\begin{array}{ll}
\text{syn} & [\text{cat v, lex +, min +, lexical-head } \textbf{throw}] \\
\text{sem}\,|\,\text{cont} & \left[\begin{array}{ll} \text{handle} & \boxed{1} \\ \text{index} & \boxed{4} \\ \text{list} & \left\langle \left[\begin{array}{ll} \textit{throw-act} & \\ \text{handle} & \boxed{1} \\ \text{actor} & \boxed{2} \\ \text{undergoer} & \boxed{3} \\ \textbf{intnd-rslt} & \boxed{\mathbf{6}} \\ \text{event} & \boxed{4} \end{array}\right], \ldots \right\rangle \end{array}\right] \\
\text{valence} & \left\langle \left[\begin{array}{ll}\text{syn} & \text{NP}\\ \text{instance} & \boxed{2}\end{array}\right], \left[\begin{array}{ll}\text{syn} & \text{NP}\\ \text{instance} & \boxed{3}\end{array}\right], \ldots \right\rangle
\end{array}$$

Figure 11. Minimal Lexical Entry for *throw*

$$\begin{array}{ll}
\text{syn} & [\text{cat v, lex +, min +, lexical-head } \textbf{pick}] \\
\text{sem}\,|\,\text{cont} & \left[\begin{array}{ll} \text{handle} & \boxed{1} \\ \text{index} & \boxed{4} \\ \text{list} & \left\langle \left[\begin{array}{ll} \textit{pick-act} & \\ \text{handle} & \boxed{1} \\ \text{actor} & \boxed{2} \\ \text{undergoer} & \boxed{3} \\ \textbf{intnd-rslt} & \boxed{\mathbf{6}} \\ \text{event} & \boxed{4} \end{array}\right], \ldots \right\rangle \end{array}\right] \\
\text{valence} & \left\langle \left[\begin{array}{ll}\text{syn} & \text{NP}\\ \text{instance} & \boxed{2}\end{array}\right], \left[\begin{array}{ll}\text{syn} & \text{NP}\\ \text{instance} & \boxed{3}\end{array}\right], \ldots \right\rangle
\end{array}$$

Figure 12. Minimal Lexical Entry for *pick*

$$
\begin{array}{ll}
\text{syn} & [\text{cat v, lex +, min –}] \\
\text{sem}\,|\,\text{cont} & \left[\begin{array}{ll}
\text{index} & \boxed{4} \\
\text{list} & \boxed{3} \oplus \boxed{5} \left\langle \left[\begin{array}{ll}
\multicolumn{2}{l}{\textit{path}} \\
\text{handle} & \textit{handle} \\
\text{theme} & \boxed{2} \\
\text{event} & \boxed{4} \\
\multicolumn{2}{l}{\boxed{\text{off the table}}}
\end{array}\right] \right\rangle
\end{array}\right] \\
\text{val} & \boxed{1} \oplus \langle [\text{sem}\,|\,\text{cont}\,|\,\text{list } \boxed{5}\,] \rangle
\end{array}
$$

$$
\begin{array}{ll}
\text{syn} & [\text{cat v, lex +}] \\
\text{sem}\,|\,\text{cont} & \left[\begin{array}{ll}
\text{index} & \boxed{4} \\
\text{list} & \boxed{3} \left\langle \left[\begin{array}{ll}
\multicolumn{2}{l}{\textit{action}} \\
\text{handle} & \textit{handle} \\
\text{theme} & \boxed{2} \\
\text{event} & \boxed{4} \\
\multicolumn{2}{l}{\boxed{\text{spin}}}
\end{array}\right], \ldots \right\rangle
\end{array}\right] \\
\text{val} & \boxed{1} \left\langle \ldots, \left[\begin{array}{ll}
\text{syn} & \text{NP} \\
\text{sem}\,|\,\text{cont}\,|\,\text{list} & \left\langle \left[\begin{array}{ll}
\multicolumn{2}{l}{\textit{entity}} \\
\text{instance} & \boxed{2} \\
\multicolumn{2}{l}{\boxed{\text{the top}}}
\end{array}\right] \right\rangle
\end{array}\right], \ldots \right\rangle
\end{array}
$$

Figure 13. Added Path Argument Construction

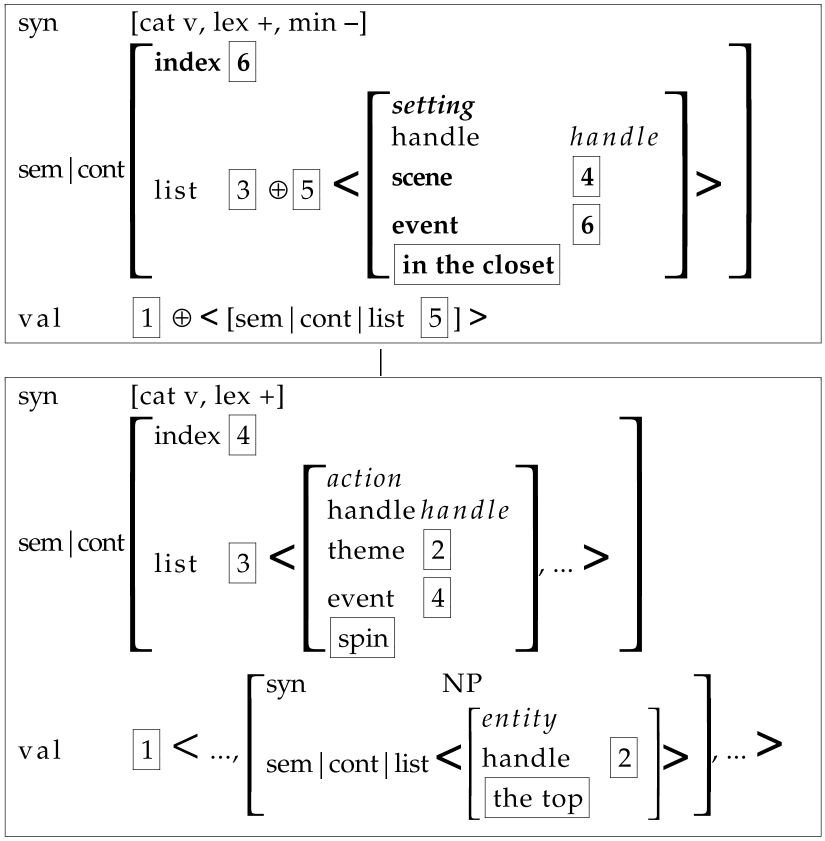

Figure 14. Setting Adjunct Construction