

ASPECTUAL MEANING AS CONSTRUCTION MEANING

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## Abstract

Coercion effects, including aspectual ones, appear to indicate a modular grammatical architecture, in which the process of composition may add meanings absent in the syntax in order to ensure that certain functors, e.g., the progressive operator, receive suitable arguments (Herweg 1991, Jackendoff 1997, De Swart 1998). In this paper, coercion effects are instead taken as evidence for the existence of symbolic rules of morphosyntactic combination, which can, in cases of semantic conflict, shift the designations of lexical items with which they combine. On this account, enriched composition is a by-product of the ordinary referring behavior of constructions. Thus, for example, the constraint which requires semantic concord between the syntactic sisters in the string *a bottle* is also what underlies the coerced interpretation found in *a beer*. If this concord constraint is stated for a rule of morphosyntactic combination, we capture an important generalization: one combinatory mechanism underlies both coercion and instantiation. Since both type-selecting constructions (e.g., the French imperfective) and type-shifting constructions (e.g., the English progressive) require semantic concord between sisters, we account for the fact that constructions of both types perform coercion. Differences in the functional ranges of tense constructions in English and French are attributed to differences in coercion potential rather than differences in constructional semantics *per se*. Coercion effects are taken as evidence that aspectual sensitivity defines not only the French past tense, as described by De Swart (1998), but also tenses in general, including the English past and present tenses.

## 1. Introduction

Theories of sentence meaning describe the relationship between the meaning of a sentence and the meanings of the words of that sentence. These theories have long focused on the connection between the semantic requirements of a lexical head and the type denoted by syntactic projections of that head. Models of this connection are based upon an assumption which I will call LEXICAL LICENSING. Lexical licensing holds that content words constrain potential sisterhood relations by listing the types of complements, adjuncts and specifiers which they either require or welcome. Rules of syntactic combination assemble heads and their dependent elements into phrases. These rules do not add conceptual content to that contributed by the words. They do not denote anything, and therefore they do not alter the combinatory potential of words.

The principle of lexical licensing has proven difficult to reconcile with cases in which linguistic interpretation requires the interpolation of ‘extra’ meaning—what Jackendoff (1997a) refers to as ENRICHED COMPOSITION. The effects in question are the products of a mechanism which is commonly called COERCION. Coercion, according to De Swart (1998:360) is “syntactically and morphologically invisible: it is governed by implicit contextual reinterpretation mechanisms triggered by the need to resolve [semantic] conflicts”. Coercion effects have been identified in nominal syntax (Talmy 1988), verbal aspect (Pustejovsky 1991, Verkuyl 1993, De Swart 1998), verbal argument structure (Goldberg 1995), and pragmatically specialized sentence types (Michaelis & Lambrecht 1996).

Coercion effects are of essentially two types. The first type, which I will refer to as ENDOCENTRIC, involves the resolution of conflict created by an apparent violation of selectional restrictions imposed by a lexical head, e.g., a verb. A simple example is that in which a semantic feature of an argument is overridden by the verb semantics, as in the sentence *I bent the rock*. Here, the rock is necessarily construed as a nonrigid object, as required by verbal semantics. More complex examples of this type are those in which nominal arguments receive metonymic construals in conjunction with certain verbs, as in examples like *I began the book*, where *the book* is construed as an activity prototypically associated with books (Pustejovsky & Bouillon 1995). The second type, which I will refer to as EXOCENTRIC, is that in which a nonhead, say a determiner, does something that usually only a head does—semantically restrict the elements which are candidates for sisterhood (Zwicky 1985, Croft 1996). For example, a mass noun like *beer* receives a count construal when it is paired with the indefinite article, as in *a beer*.<sup>1</sup> These two classes of coercion effects have often been treated together, since both are problems of functional application, but they have distinct implications for the syntax-semantics interface. The endocentric cases are in essence merely extended cases of lexical licensing: the relevant semantic effects on arguments can be attributed to the imposition of semantic requirements by the lexical head. Exocentric coercion cannot be modeled as lexical licensing. Therefore, it presents a significant challenge to theories of sentence semantics based upon the projection properties of lexical words.

The relevant phenomena find a natural account in models based on representational modularity, e.g., Jackendoff 1997, since in such theories constraints on argument-functor combinations do not reference syntactic categories like head. There is, however, a broader construal of exocentric licensing in which the label applies to cases in which no functor-argument relation can be identified in the syntax. A simple example of this type involves the interpretation of adjectives in pre- and post-nominal position in Romance languages, including French and Italian. When not subject to idiomatic readings, pronominal modifiers are nonrestrictive;

postnominal modifiers are necessarily nonrestrictive, requiring that the cardinality of the set denoted by the head noun be greater than one. In French, for example, prenominal placement of the adjective *vieux* ('old') in the NP *mon vieux papa* ('my old dad') yields the appropriate nonrestrictive reading, whereas postnominal placement yields an anomalous restrictive reading, in which my old father is being contrasted with my other fathers. There is nothing here, other than a syntactic pattern, which can be held responsible for the effects at issue.<sup>2</sup>

While aspectual coercion effects, both endocentric and exocentric, uniformly involve functor-argument combinations, any model which extends to 'templatic' or functor-free coercion will *a fortiori* provide a mechanism for representing those (syntactic) sisterhood relations which map to (semantic) functor-argument relations. The model of aspectual meaning which I will propose here is based upon templates of varying degrees of specificity, in the sense that these templates may invoke (a) particular grammatical or lexical words or (b) grammatical categories or (c) both words and grammatical categories. In this model, rules of morphosyntactic combination can shift the designations of words and alter their combinatory potential.

This model is based upon CONSTRUCTION GRAMMAR (CG) (Fillmore et al. to appear, Kay & Fillmore 1999, Zwicky 1994, Goldberg 1995, Michaelis & Lambrecht 1996, Michaelis 1998, Koenig 1999). CG is a sign-based theory of grammar, in which syntactic structures are directly associated with meanings. Semantic and pragmatic information is provided in the formal representations of constructions (as typed feature matrices). Syntactic constructions mean what they mean in the same way that words mean what they mean: they denote. Since word and construction may denote different types, the meaning of a syntactic construction may conflict with that of a lexical item with which that construction is combined. In a symbolic model of syntax, coercion is not merely the resolution of semantic conflict, but is instead the resolution of conflict between constructional and lexical requirements.<sup>3</sup>

A compelling treatment of exocentric coercion within a construction-based framework is Goldberg's (1995) study of verbal argument-structure constructions, which focuses on predications like that in the last sentence of (1):

- (1) When a visitor passes through the village, young lamas stop picking up trash to mug for the camera. A gruff 'police monk' **barks** them back to work. (*Newsweek* 10/13/97)

This example instantiates a trivalent linking pattern which Goldberg refers to as the Caused Motion construction. This construction denotes a schematic event in which an agent acts upon a theme, moving it to a new location. Goldberg argues that examples like (1) undermine the prevalent assumption that argument structure is projected into syntactic representation from the lexical verb. The verb *bark*, unlike, e.g., the verbs *put* and *push*, subcategorizes for neither a theme argument nor a goal argument. Instead, it is a single-argument verb of 'sound emission'.<sup>4</sup> In the context of the Caused Motion pattern, however, the verb *bark* receives a construal compatible with the event type denoted by the construction: barking (or, rather, a single bark) is construed as the MEANS by which the workers are (metaphorically) propelled from one location (or state) to another. This construal is compositionally derived, since it involves relating the respective event types denoted by verb and construction through an INTEGRATION RELATION which belongs to a constrained (and universal) set. One such relation is the INSTANCE relation. This relation holds when the verb denotes an instance of the event type denoted by the construction, as when the verb's argument structure is identical to that of the linking construction with which it is

combined. The verbs *put* and *push* bear an instance relation to the Caused Motion construction. As mentioned, another possibility exists: the verb and construction together may denote a single complex event type, as when the verb bears a means relation to the event type denoted by the construction. A necessary condition upon the means relation is proper inclusion of the verb's valence set by the construction's valence set, as when monovalent *bark* is combined with the trivalent Caused Motion construction.

Goldberg's framework appears to provide a more parsimonious account of examples like (1) than do those based on lexicalization (conflation) patterns, as proposed by Talmy (1985) and assumed by Pinker (1989). Rather than analyzing *bark* in 1 as a coinage—a new causative verb—or assuming a generative (and therefore infinitely expandable) lexicon, the constructional account assumes only a single verb *bark*, whose projection properties remain constant across syntactic contexts. This style of account is possible only insofar as rules of combination are viewed as meaningful: the event structure denoted by the syntactic pattern is what augments the repertoire of roles associated with the verb.

The domain of aspect, like that of argument structure, provides examples which are troublesome to models based on lexical-head licensing and which create difficulty when theorists attempt to provide semantic definitions for aspectual operators like durational adverbials or the progressive. Coercion effects in the domain of aspect involve the two major categories EVENT and STATE (or, equivalently, PERFECTIVE and IMPERFECTIVE). These effects arise from combinations which are unpredicted by the Aktionsart (inherent lexical aspect) of the lexical verb or its projection.<sup>5</sup> Examples are given in (2-4):

- (2) I was outside twice today.
- (3) They were bored in ten minutes.
- (4) I am living on Pearl Street.

In each of these examples, we find a stative predication (*I be- outside, They be- bored, I live-on Pearl Street*) combining with an operator that is logically compatible only with an eventive predication. In accordance with Herweg's (1991: 976) analysis of frequency adverbials, we can describe the conflict in (2) as involving applications of a characterizing predicate to an interval. As per the model, we interpret stative predications as properties of the intervals for which they are asserted to obtain:  $P(t)$ . Since *I be- outside* is a SUBINTERVAL predication (in the sense of Bennett & Partee 1973), the predicate can apply infinitely to the interval which is its argument, since all subintervals of the argument interval have subparts as well. Therefore, the application of the predicate to the interval is infinite and cannot be enumerated, as by a frequency adverb.

The conflict in (3) involves a clash between the semantics of state predications and the semantics of time-span adverbs. Time-span adverbs are interpreted according to the logic of containment; the containment schema licenses upward entailment and downward compatibility. If, for example, I finished a particular task within ten minutes, I also finished it within 20 minutes. And if in fact I finished the task within five minutes, I could still truthfully assert that I had finished it in ten minutes. This pattern of reasoning is inverted in the case of assertions involving intervals of states, which are downward entailing and upward compatible. It is upward compatibility which is crucial here. Owing to the subinterval property, any interval at which a state holds can also be a subinterval of a larger interval at which that same state holds. For example, the sentence *He was in London yesterday* can always be interpreted in such a way that the state of his being in London is not circumscribed by (and in fact contains) the temporal

boundaries denoted by *yesterday*. The *in*-phrase of duration entails—by the logic of containment—that the situation denoted is circumscribed by the expressed interval. Since state predications can always overflow the boundaries of an interval, they cannot be ‘contained’. They are therefore logically incompatible with *in*-phrases of duration.

Sentence (4) exemplifies a classic problem in the analysis of the progressive. It is generally accepted that the progressive is a stativizer; stativity tests like those offered by Vlach (1981) substantiate this view. For example, a progressively reported situation in a past-tense main clause is necessarily viewed as having obtained prior to a past action reported in a *when*-clause. This is shown in (5), which can be compared with both (6) and (7):

- (5) We were playing cards when she came in.
- (6) We were asleep when she came in.
- (7) We got up when she came in.

The progressive main clause in (5) entails that card playing was going on prior to her arrival. This entailment is analogous to that of the stative main clause in (6): sleeping was going on prior to her arrival. Sentence (7) contains a perfective main clause. Accordingly, it does not denote a situation which began prior to the past reference time: the getting-up event FOLLOWS her arrival. Hence, progressive sentences can be modeled as imperfective sentences. As a phase-denoting aspect in the sense of Coseriu 1976, the progressive picks out a proper subpart of an event. In accordance with Mittwoch (1988), I assume that this subpart is a portion of a PROCESS. This process may be an activity (like playing cards), in which case it is denoted by the gerundial VP complement, or it may be the process which leads up to a change of state, in which case it is entailed by the semantics of the event denoted by the VP complement. In either case, the proper subpart of the process which the progressive predication denotes counts as a state, since it is construed at a level of granularity which secures its internal homogeneity (see Langacker 1991 for a visual analogy). All times at which this state holds are times at which the process goes on.<sup>6</sup> Since processes are event-type predicates, the analysis that I have just given is compatible with the generally accepted model of the function of the progressive: it maps an event predication into a state predication which represents a subpart of that event. On this understanding, a stative predication like *I live- on Pearl Street* does not provide the proper input for the progressive operator.

The problem, of course, is that the examples in (2-4) are well-formed sentences of English. These examples appear to invalidate the idea that aspectual operators like frequency adverbials have a unitary function. If frequency adverbials number applications of an event-type predicate, they require event predications as arguments. How can we prove that they are so constrained in the face of examples like (2)? There are four crucial observations to be made about the examples in (2-4).

First, the application of a given aspectual operator is not contingent upon the presence of an appropriate situation-type argument, since the argument can adapt to the requirements of the functor. This fact makes it difficult for us to understand the functor-argument relationship in terms of ‘fit’, since it forces us to discard certain otherwise appropriate analogies—keys, for example, cannot in general alter the shapes of locks. The context-creating effect of aspectual operators is a special case of coercion which Herweg (1991) describes as IMPLICIT QUANTIZING. Implicit quantizing is a type of enriched composition in which the particular aspectual operator

takes as input a pragmatically enriched representation (see also Bickel 1997). Herweg contrasts implicit and explicit quantizing as follows:

There are two means of quantizing a state: either by explicitly assigning a duration to the state or by implicitly taking a maximum period at which the state continuously holds. I call such a maximum period of a state a ‘phase’ of a state. Explicit quantizing is done with the help of durational adverbials. [...] It is part of the semantics of durational adverbials that they map state predicates into event-type predicates. [...] In contrast, the latter, implicit, way of quantizing is noncompositional in nature. It is in general forced by the presence of expressions semantically restricted to event-type expressions as arguments, such as count adverbials [...], and serves to adjust the interpretation of a state expression to the context in which it is embedded. (p. 976)

Implicit quantizing allows us to preserve restrictive input conditions on the three aspectual operators, but the cost appears to be circularity, since a given aspectual operator must not only operate on the output of an inference rule, but also trigger the very inference rule which is responsible for its ability to apply. Bickel’s account of aspectual coercion effects appears to eliminate this circularity by providing an independently motivated characterization of the associated inference patterns—as Gricean informativeness or quality implicatures (1997: 118)—and yet implicit quantizing as exemplified in (2-4) is not plausibly analyzed as originating in a generalized implicature: as an implication it is neither detachable nor obviously defeasible.

Second, coercion cases involving temporal adjuncts (frame and frequency adjuncts), as in (2-3), suggest that lexical-head licensing is too restrictive as an account of the aspectual data, and that a reverse direction of licensing is required as well. In the case of (2), for example, it would make no sense to claim that the stative lexical head *be* (or any of its syntactic projections) licenses the frequency adjunct *twice*, because the Aktionsart of *be* conflicts with the aspectual requirements of the adjunct. Instead, it appears that the adjunct selects for a particular Aktionsart class, and modulates the aspectual construal of the verb accordingly.

Third, the examples in (2-4) show that aspectual coercion effects are both exocentric (as in the case of the temporal adjuncts) and endocentric, as in the case of the progressive. In the case of the progressive, the auxiliary head *be* selects for a gerundial VP complement of the appropriate aspectual class, forcing a perfective (activity) reading in cases like (4). The conclusion we can draw from this is that aspectual operators do not have a uniform syntactic characterization: the semantic head of a construction may be the syntactic head, as in (4), or it may not be, as in (2-3).

Fourth, the examples in (2-4) show that coercion effects arise from two distinct types of aspectual operators. The first class of operators, which De Swart views as type selectors analogous to determiners (pp. 368-369), do not change the aspectual class of the verb or its projection, but merely requires an argument of a given situation type. This type is exemplified by the two temporal adjuncts in (2-3). The second type belongs to the system of operators described by Herweg (1991: 969) as mapping “state types onto event types and vice versa”. This type is exemplified by the progressive. What is important for our purposes is that both aspect-shifting operators and aspect-selecting operators can modulate the aspectual properties of the situation radicals with which they are combined.

It is my contention here that the constructional model captures each of these facts in a general and revealing way. It does so by bringing syntax and semantics together. First, the constructional framework provides an integrated (nonmodular) account of the mechanism through

which aspectual operators create interpretive contexts: implicit quantizing is the result of reconciling the meaning of a morphosyntactic construction with the meaning of the verb which combines with that construction. Both the verb and the construction denote situation types, and the verb shifts its designation as the construction requires. As a result, the constructional account of coercion is highly parsimonious: rather than representing a special form of composition (as per Jackendoff 1997a), coercion effects are by-products of the ordinary significations of constructions.

Second, the constructional account avoids the need for the kinds of semantico-pragmatic ‘patches’ required by the lexical-licensing model, since it is the construction, rather than a lexical head, which determines combinatory possibilities for a given open-class element. Thus, for example, the template which licenses frequency adverbs combines with a perfective verb. While the frequency-adverb construction ‘counts’ as a verbal projection (and has a verbal head), the verbal head merely determines (external) syntactic category, not (internal) subcategorization. In place of (unilateral) subcategorization, there is (bilateral) semantic concord. In the frequency-adverb construction, the adverbial adjunct calls for a perfective sister, just as the verb licenses a frequency adverbial within its valence set. The formal mechanism which represents this mutual ‘calling for’ or invocation function is unification. In the particular case of the frequency-adverb construction, unification indices connect the lexical verb with an event variable in the semantic representation of the adverb, ensuring semantic concord between the verb and its adverbial sister.

Third, the constructional model captures the two types of coercion effects, exocentric and endocentric. As stated above, there is no necessary relationship between being a syntactic head and being a semantic functor, and licensing behavior is not taken as a priori evidence of syntactic head status. What counts is the aspectual restriction placed by the construction on the verb with which it combines. Since combination in unification grammar has nothing *per se* to do with phrase building, the syntactic head is not privileged in the sense of being a ‘core’ constituent.

Fourth, the fact that there are two sources of coercion effects is a highly motivated fact, when we consider the properties which are shared by type-selecting constructions (like Indefinite Determination) and type-shifting constructions (like the Progressive). Both kinds of constructions denote types, whether entities or events, and place constraints upon the lexically expressed types with which they combine. These constraints give rise to type shifts when conflict resolution is required: word meanings accommodate to the meanings of constructions with which they are combined.

In order to more fully motivate the constructional account of aspectual coercion, I will contrast it to a compelling modular model of aspectual coercion effects which involves the interpolation of coercion operators in semantic representation. I will focus upon accounts of this nature offered by Jackendoff (1997a) and De Swart (1998). In section 2, I will argue that although such accounts avoid the pitfalls of lexical-licensing approaches, they do not provide a constrained model of coercion, since they are not anchored in morphosyntax. In section 3, I will describe the alternative, construction-based model and its unification-based implementation, choosing as illustrations both constructions which build phrases, e.g., noun phrases, and those which merely determine lexical valence, e.g., argument-structure constructions. Many such constructions are templatic, in the sense that they lack all lexical content, and therefore cannot be said to express any functor-argument relation. For this reason, I will argue, coercion by construction is not merely the syntactic analog of coercion by operator interpolation. However, as we will see, the combination of a construction and a lexical item is analogous to application of a functor to an argument in a more general sense: in cases of semantic conflict, the latter accommodates to the



former, rather than vice versa. This fundamental asymmetry is captured by an interpretive constraint which I will formulate as the Override Principle. In section 4, I will model a representative set of aspectual constructions, focusing not only on aspectual adjuncts (e.g., frequency adverbials) and periphrastic aspects (e.g., the Progressive and Perfect constructions), but also inflectionally expressed aspectual categories like the French *Imparfait*, as described by De Swart (1998) and Michaelis (1998). Following De Swart, I will treat these inflectional categories as aspectually sensitive tenses. However, I will reject the view—implicit in De Swart’s model—that aspectual sensitivity is a property of certain tense operators in certain languages. Instead, I will argue, aspectual selection is what tense constructions—including, for example, the English past tense—intrinsically do. In section 5, I will conclude with observations about the relevance of the constructional model to semantic theory, and in particular to the question of whether coercion effects are or are not compositional.

## 2. Coercion as Operator Insertion

Jackendoff (1997a: 49) proposes that syntactically transparent composition, as represented by the lexical-licensing approach, is a default within a wider array of options, which he refers to as ENRICHED COMPOSITION. The aspect of enriched composition which pertains to the modeling of coercion effects is described as follows:

The conceptual structure of a sentence may contain, in addition to the conceptual content of its LCSs [lexical-conceptual structures], other material that is not expressed lexically, but that must be present in conceptual structure [...] in order to achieve well-formedness in the composition of the LCSs into conceptual structure. (ibid)

This model provides an elegant way of talking about coercion cases like that involving the indefinite article, e.g., *a beer*. When an entity in conceptual structure is not a suitable argument for a functor, F

The process of composition interpolates a “coercing function” G to create instead the structure F(G(X)), where X is a suitable argument for G, and G(X) is a suitable argument for F. (p. 53)

In the case at hand, the coercing function would have the effect of deriving a count type from a mass type, making *beer* a suitable argument for the operator represented by the indefinite article. The interpolated-function model successfully extricates the two head properties mentioned above—that of being a syntactic head, i.e., determining the distributional properties of the phrasal projection, and that of being a semantic head, i.e., calling for an argument of a particular type (Zwicky 1985, Croft 1996). In other words, the indefinite article, while it does not determine the syntactic distribution of its phrasal projection, can nevertheless be said to ‘ask for’ a nominal sister denoting a bounded entity. The interpolated function would have the effect of providing the required type of argument for the indefinite article. Thus, for example, the determiner *some*, which requires an unbounded entity as its argument, can trigger the interpolation of an operator whose effect is to derive an unbounded type from a bounded one, as in *some fish*. (De Swart’s 1998 model of coercion effects is relevantly similar.)

In representing the semantic constraints imposed by nonheads, enriched composition makes it possible to describe a wider array of interpretive phenomena than does strict composition alone. However, on Jackendoff's account, there is no obvious relationship between strict and enriched composition. The two models of interpretation are different in kind, since enriched representations do not appear to owe anything to the syntactic configurations in which the particular functor appears. Jackendoff makes clear that enriched composition is an operation which occurs at conceptual structure—one which he admits considerably complicates the interface between syntactic structure and conceptual structure (p. 50). The enriched-composition model therefore appears to violate a criterion on semantic theory that Jackendoff himself has advocated: the GRAMMATICAL CONSTRAINT. This constraint holds that syntactic structure encodes semantic structure efficiently, and that therefore the two levels should be represented isomorphically (Jackendoff 1983: 14).

If we abide by the grammatical constraint, we must assume that enriched composition, like strict composition, is a direct product of the interpretive instructions provided by syntax. That is, we would assume that the constraint which requires semantic concord between the syntactic sisters in the string *a bottle* is also what underlies the coerced interpretation found in *a beer*. If this concord constraint is stated for a rule of morphosyntactic combination, we capture an important generalization: one combinatory mechanism underlies both coercion and instantiation. Under the proposal that enriched composition is syntactic, the operation of coercion effects is constrained in a way that it is not otherwise. Jackendoff recognizes the constraint problem. He observes that there is a need to delimit the class of coercion operators and constrain their operation. In particular, he observes:

In designing a logical language, it would be bizarre to sprinkle it so liberally with special purpose devices. What is it about the design of natural language that allows us to leave so many idiosyncratic bits of structure unexpressed, using, as it were, conventionalized abbreviations? (p. 67).

He also raises the possibility that rules of enriched composition might “insert arbitrary material into arbitrary arrangements” (ibid). De Swart (1998:361) seeks to avoid such overgeneration by assuming that a coercion operator is introduced only when there is a trigger for it. This strategy leads one to question what the triggers are. De Swart does not identify them, but throughout her exposition the triggers are specific linguistic expressions, e.g., durational adverbials like *for eight hours*, which when combined with a perfective predication like *John play- the sonata* trigger the insertion of an imperfectivizing operator, whose natural interpretation in this context involves iteration. Another trigger assumed by De Swart is progressive morphology. Progressivized statives, like *Susan is liking this play*, require the interpolation of a coercion operator,  $C_{sd}$ , which converts the state radical *Susan like- this play* into a dynamic one. The dynamic variable obtained by coercion is appropriate input for the progressive operator, while a state variable would not be (p. 363).

The operator-based model of coercion provides an explicit model of the relevant effects using type-shifting operators of a motivated nature. As De Swart observes (p. 360), linguists generally refer to mappings between the two “supercategories” of event and state when describing the functions of aspectual expressions like the progressive and perfect periphrases and durational adverbials (see also Herweg 1991). The operator-based model also allows for a compositional semantics of coercion, although not one based on strict lexical licensing, in which

elements within a phrase are licensed only by a syntactic head, as a perfective verb licenses a frequency adverbial like *twice*. The primary problem with operator-based models of coercion is the extremely powerful indexing mechanism which they seem to require. By enabling a given (linguistically expressed) operator to invoke a given coercion operator on an ‘as needed’ basis we do not thereby ensure that that this coercion operator will appear *only* where needed. What, for example, is to prevent an imperfectivizing operator from applying to an event radical where it should not? What is to prevent us from proposing, for example, that it has applied in the interpretation of a sentence like *John played the sonata last night*, yielding a (highly implausible) iterative reading? Coercion effects may be morphosyntactically invisible, but if their representation owes nothing to morphosyntax it is not obvious how one can constrain the application of the operators used to model the effects.

An additional aspect of the indexing problem involves GAPS in the system of coercion operators. The modular approach to coercion cannot obviously account for the failure of a given language to employ a given aspectual coercion operator. De Swart points out (p. 363, fn. 12) that English lacks an ‘imperfectivizing’ coercion operator  $C_{ds}$ , and attributes this gap to the fact that English lacks grammatically expressed aspectual operators that require nondynamic eventualities as input. If an approach is truly modular, however, the existence of an element of semantic representation should not depend upon facts about the grammatical inventory. Modularity further prevents us from using morphosyntactic facts as a basis for distinguishing among elements of semantic representation. While De Swart draws several principled distinctions between morphosyntactically expressed eventuality-type shifters (e.g., the progressive) and coercion operators (p. 360), in semantic representation the two types of functors are per force identical, whatever ad hoc notational conventions one might use to distinguish them. In light of the foregoing considerations, it seems reasonable to abandon approaches in which coercion takes place in a ‘semantics module’. Since construction-based models of syntax have already been shown to provide concrete models of exocentric licensing phenomena, including those involving argument structure, it is a short intuitive leap to the conclusion that aspectual coercion effects arise from the interpretive instructions provided by symbolic syntactic patterns.

### 3. Coercion via Construction: Concord and Shift Constructions

My central claim in this paper is that coercion effects, including aspectual ones, come from the modulation of lexical meaning by constructions with which those lexical items combine. The mechanism used to model the combination of constructions with lexical items is UNIFICATION, as described by Fillmore et al. to appear, and Kay & Fillmore 1999. Unification of constructions can grossly be described in terms of a metaphor involving the superimposition of slides. A lexical entry can be superimposed upon a construction (or vice versa) as long as the semantic and syntactic specifications on each slide “show through”—that is, provided there is no conflict among the specifications on the slides in the stack. The specifications take the form of attribute-value matrices: a list of syntactic (*syn*) and semantic (*sem*) attributes (both relational and intrinsic) with exactly one value assigned to each (including the value [ ], or unspecified).<sup>7</sup> Among the values of the *sem* attribute are the attributes INDEX and FRAME. The value of the *index* attribute is the referential index of the expression. The value of the *frame* attribute is the set of relations and participant roles which jointly define the type of the expression. The constructions themselves are represented as box diagrams. Each box corresponds to a node in a tree-structure

representation, and contains an attribute-value matrix. In a branching construction, a lexical entry unifies with a single daughter box within the construction. The topmost attribute-value matrix of the construction represents the external syntax and semantics of the construction—that is, what instances of this construction “count as”. The traditional conception of a lexical head—as the determinant of the syntactic category and semantic type of its projection—plays a limited role in this model, as a default.<sup>8</sup> Accordingly, lexical licensing is replaced by constructional licensing; constructions, rather than lexical items, are the determinants of valency.

Unification is used to represent a semantic dependency between two or more types which figure in the statement of a construction. When there is a concord requirement within a branching construction, the two daughter boxes will contain identical atomic values for the relevant attributes. When a range of values is possible, a concord requirement will be indicated by a unification variable, a numbered pound sign # preceding the empty brackets, e.g., #1. For example, each of the two daughter constituents in the Determination construction (the article and the nominal head) carries the attribute-value pair *plural #[ ]* (Fillmore et al. to appear: ch. 3). This concord requirement rules out such tokens as *\*these person* and *\*this persons*. Functor-argument relations are represented by the VALENCE attribute. The value of the valence attribute is the set of arguments which a lexical daughter (or its projection) requires, with intrinsic and relational information given for each member of the valence set. An argument of a functor (e.g., a verb) is represented as the daughter which unifies semantically with a member of the valence set of its sister, the functor. In the case of functors which are expressed by nonprojectable syntactic categories, e.g., affixes and determiners, the valence set will have a cardinality of one. While some implementations of unification-based Construction Grammar, e.g., Kay & Fillmore 1999 (as described in fn. 3), equate any failure of unification with ill formedness, I assume a coercion mechanism whereby constructional requirements (e.g., semantic constraints upon the head daughter) ‘win out’ over lexical features when the lexical item and construction have different values for a given attribute. This accommodation mechanism will be described as the Override Principle below.

As mentioned in section 1 above, we distinguish between two major types of constructions: those which SELECT for a particular lexical category and those which SHIFT the designation of a particular lexical category. I will refer to constructions of the former type as CONCORD CONSTRUCTIONS, and constructions of the latter type as SHIFT CONSTRUCTIONS. This distinction is based on Talmy’s seminal 1988 paper, “The Relation of Grammar to Cognition”. In that paper, Talmy focuses on universal differences in the inventory of concepts expressed by open- versus closed-class elements, and in particular on the nature of the semantic interaction between grammatical and lexical elements. Three major claims of that paper are relevant here. First, grammatical (closed-class) forms (e.g., determiners, inflectional markers) are meaning-bearing elements. Second, their meanings are distinct from those of open-class (lexical) elements. And third, their meanings may CONFLICT with those of open-class elements with which they are combined. Examples of conflict involving determination are given in boldface in (8-9):

- (8) She had **a beer**.
- (9) Give me **some blanket!**

In each of these examples, a functor takes an inappropriate argument, e.g., a count term in (9), but the result is coherent. Since we presumably do not wish to admit unrestrained lexical polysemy,

we avoid positing special *ad hoc* noun senses in such cases, e.g., a mass term *blanket* in the case of (9). Talmy, and many others, have proposed a general principle which I will describe here as the OVERRIDE PRINCIPLE. This is given in (10):

- (10) **The Override Principle.** If a lexical item is semantically incompatible with its syntactic context, the meaning of the lexical item conforms to the meaning of the structure in which it is embedded.

Principle (10) underlies the interpretive phenomenon which Talmy refers to as IMPLICIT CONVERSION. Implicit conversion is a SIDE EFFECT of the ordinary semiotic function of grammatical markers like the indefinite article. On this understanding, implicit conversion is identical to the coercion effects described by Jackendoff, De Swart and others. However, principle (10) targets a broader array of phenomena than does Talmy's model or those models which are based on the interpolation of coercion operators. Notice that principle (10) refers to semantic incompatibility between a lexical item and its syntactic context, rather than merely to the lack of conformity between a particular lexical item and a given grammatical formative, e.g., the indefinite article. If, as in construction-based semantics, grammatical formatives like the indefinite article are seen as the semantic heads of (partially lexically filled) constructions (see Figure 1 below), then grammatical formatives are also grammatical constructions, and the Override Principle subsumes the classic cases of coercion (implicit conversion). However, the principle in (10) is also intended to apply to cases of coercion which cannot plausibly be analyzed in terms of functor-argument relations. One such case is given in (11):

- (11) You have **apple** on your shirt.

In (11), the word *apple* denotes a mass type which it would not ordinarily denote. What is the source of that coerced interpretation? There is no determiner or modifier which calls for it. The verbal sister of the nominal, *have*, cannot be said to coerce the mass interpretation either, since this verb does not select for a mass type. Instead, the coerced interpretation arises from the fact that a grammatical-function role assigned by the verb is filled by a bare nominal. The licensing relationship between a given verb and a nominal which expresses an internal argument of that verb is represented by the VP construction, described by Fillmore et al. to appear: ch. 5. The VP construction licenses combinations containing a lexical head verb and one or more phrasal complements, whether these are arguments or adjuncts. The VP label is taken literally: an intransitive verb like *disappear*, would, in the absence of adjuncts, simply unify directly with the Subject-Predicate construction (*The problem disappeared*) rather than representing both a lexical verb and a verb phrase, as required by traditional X'-based models. The VP construction captures lexical projection by providing that the valence set of the lexical verb is a subset (potentially a proper subset) of the valence value of the VP construction. The VP construction requires that all sisters of the head verb represent MAXIMAL categories.<sup>9</sup> Maximal nouns are those which refer, in the sense of introducing existentially quantified or anaphorically linked variables into semantic representation. Since maximality is a lexical feature, a noun will be marked for one of three maximality values in the lexicon, depending upon lexical class. If a lexical noun is to unify directly with the VP construction, it must either bear the lexical feature [+maximal] (as does a pronoun) or have no value for the maximality feature. The only lexical nouns which are unmarked for maximality are those which denote mass types (Fillmore et al. to appear: ch. 3). Via feature co-

occurrence restrictions, a negative value for the feature BOUNDED entails an UNSPECIFIED value for maximality. This type of underspecification is used to capture the fact that a mass noun may serve either as a grammatical function via direct unification with one of several instantiation constructions, e.g., the VP construction, or as a sister in one of several determination constructions, e.g., Definite Determination. What this means is that a noun can combine the VP construction only if this noun designate an unbounded (mass) type. Since the noun *apple* designates a bounded type, it must shift its designation in order to unify with the VP construction, as in (11). Thus, the mass interpretation in (11) involves the resolution of conflict between the meaning of a word and the meaning of a syntactic pattern. This conflict is resolved in favor of the meaning of the syntactic pattern, as per the Override Principle. It is the construction, rather than the semantic valency of a particular functor, which instructs the interpreter to construct a mass interpretation of *apple* in (11).

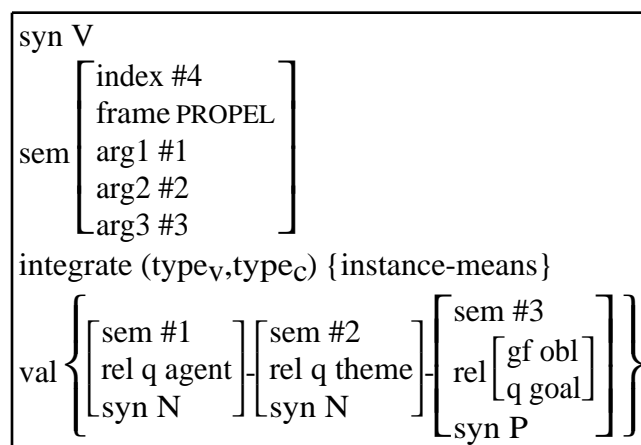
Another type of licensing relationship which is mediated by a construction within the CG framework is the relationship between a verb and the thematic roles which that verb assigns. The relevant constructions are the argument-structure constructions, as described by Goldberg (1995) and discussed in section 1 above. These constructions are the source of mismatches between the event type denoted by the head verb and the event type denoted by the sentence. An example of such a mismatch is given in (12):

(12) It worked, sir! We bored them right out of the game. (Marcie, *Peanuts* 10/97)

In (12), the verb *bore*, which is otherwise a bivalent verb licensing stimulus and experiencer roles, assigns an agent, a theme, and a goal. Accordingly, the sentence has a construal in which boring people is the means by which their motion is effected. Under Goldberg's model, this meaning results from the combination of the verb *bore* with an argument-structure construction which denotes causation of a change of state. The valence set licensed by this construction properly includes the valence set licensed by the verb. The combination of verb and construction results in augmentation of the verbal valence, and reconstrual of the verb's arguments according to the Semantic Coherence Principle: compatible thematic roles are fused. The nonfused thematic roles are those contributed exclusively by the construction (Goldberg 1995: 50-51). It is only once we accept the idea that a syntactic pattern may denote an event type that we can speak of such a pattern as assigning thematic roles above and beyond those contributed by the verb.

While we have focused on mismatches like (12) in motivating Goldberg's theory, INSTANCES play a crucial role as well. Instances are predications in which the projection properties of the verb and of the construction are identical. Instances constitute no challenge to lexical-head licensing. In the case of the causative construction exemplified in (12), predications whose head verb is the causative verb *put* are instances, as in, e.g., *She put them outside*. The argument structure of *put* is identical to that of the construction. The very fact that instances exist suggests that mismatches are appropriately treated as cases of coercion. This in turn suggests the appropriateness of an analogy between argument-structure constructions and functors like the indefinite article—an analogy which Goldberg exploits when she identifies constructions with closed-class expressions (pp. 39-43). For our purposes, the fact that argument-structure patterns create coerced interpretations provides further evidence that the Override Principle is best stated in terms of word-construction interactions, rather than functor-argument relations alone. There is no particular functor involved in coercion cases like (12). Instead, the modulation of meaning is the result of the verb's conformity to a linking pattern.

Formally, these linking patterns are verb-level constructions which are ‘superimposed’ upon the lexical entries of verbs. This unification has the effect of augmenting what Fillmore et al. (to appear) refer to as the MINIMAL VALENCE of the verb (the repertoire of semantic roles licensed by the verb). When a verb’s lexical entry unifies with one or more linking constructions the result is a FULLY SPECIFIED verbal valence, in which each semantic role of the verb is assigned a grammatical function. Crucially, as we have seen, the theta frame licensed by the construction may properly include that licensed by the verb. Figure 1 combines compatible proposals of Fillmore et al. (to appear: ch. 8) and Goldberg (1995: ch. 7):



**Figure 1. The Caused-Motion construction**

As shown in Figure 1, the Caused-Motion construction specifies only one argument linking: the thematic role of *goal* is linked to an oblique grammatical function. The linking of the remaining arguments depends upon whether this construction unifies with the Passive construction or the Active construction. These two linking constructions are mutually incompatible. The Passive construction requires that the highest-ranking thematic role be linked to an oblique grammatical function. The Active construction requires that a nondistinguished argument (i.e., non highest-ranking argument) be linked to the Object grammatical function. In either case, the highest-ranking unlinked role will receive the Subject grammatical function, which must be assigned to one argument, as per the Subject Principle (Fillmore et al. to appear: ch. 8). What is relevant for our purposes here is the attribute *integrate*, whose value is the set of verb-construction integration relations licensed by the construction. As described by Goldberg (1995: ch. 7), the Caused-Motion construction permits both *instance* and *means* relations. The particular relation selected is determined by the verb itself. As mentioned, verbs which are instances of the constructional semantics, e.g., *make*, license a theta frame identical to that of the construction. Verbs which have a means relation to the construction license a valence set which is properly included by the construction’s valence set. This is the case in (12). We view (12) as a case of coercion simply because the Caused-Motion construction, like the indefinite article, can and typically does merely exhibit semantic concord with the open-class element which combines with it. In (12), concord is ‘forced’, via the Override Principle, as is the count reading of the noun *pudding* in the nominal construct *a pudding*. Concord, or the achievement of concord, involves valence matching in the argument-structure case. This means that we must recognize concord requirements as facts about grammatical patterns, not merely functors. Accordingly, we will view coercion effects through the lens of the constructional framework, while understanding that many such effects can also be

seen as involving the resolution of conflict between the requirements of a given functor and the particular element with which that functor is paired.

Whether framed in terms of constructions or functor-argument relations, a theory of coercion must capture the difference between implicit and explicit type shifting, the latter of which is referred to by Talmy as EXPLICIT CONVERSION. Explicit conversion is not a side effect but a function that the grammatical construction is designed to perform. Explicit conversion is described in (13):

- (13) **Explicit conversion.** A shift in the designation of a lexical item (or its projection) by a grammatical construction with which that lexical expression is conventionally combined.

Examples of explicit conversion are given in (14-15):

- (14) She took **a piece of bread**.  
 (15) They bought **pencils**.

In (14), the Partitive construction is used to express a count type which constitutes a portion of a mass type.<sup>10</sup> In (15), the Plural construction is used to denote an unbounded plexity whose subunits are of the type denoted by the syntactic head. In construction-based syntax, Talmy's meaning-bearing grammatical units like the plural suffix are seen as the semantic heads of PARTIALLY LEXICALLY FILLED CONSTRUCTIONS.

Again, as in the case of implicit conversion, we have reason to describe explicit conversion with respect to constructions rather than merely with respect to functor-argument relations. The reason again involves argument-structure constructions. The *Way*-construction, described in detail by Levin & Rapoport (1988), Jackendoff (1990), Goldberg (1995) and Israel (1996), among others, provides an example of explicit conversion involving the augmentation of verbal valency. Examples of this construction are given in (16-17):

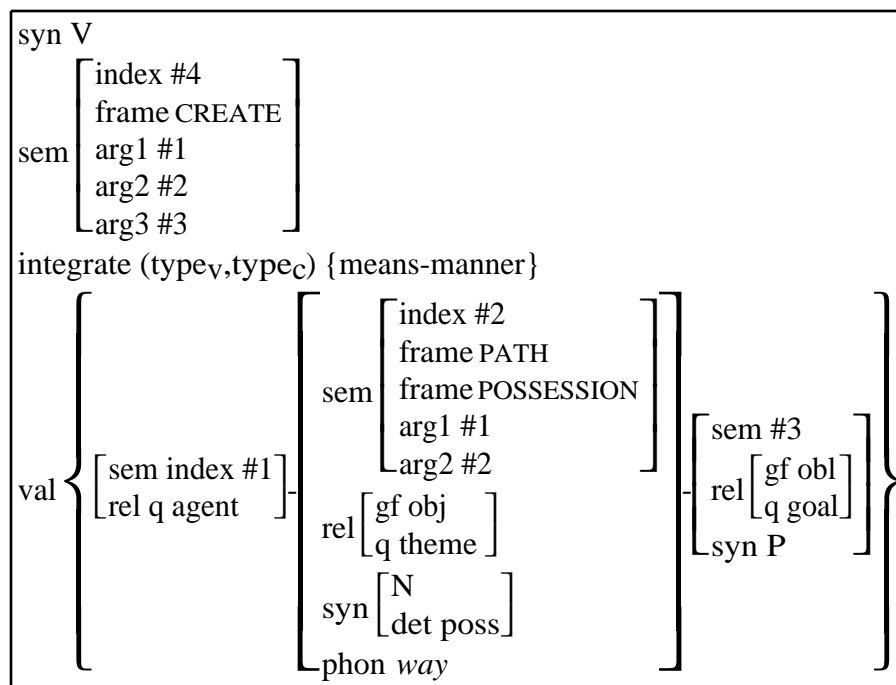
- (16) She talked her way into the shareholders' meeting.  
 (17) [A]nyone who has ever had the occasion to observe the average American family as they snack their way toward the departure gate[...] (Fran Lebowitz, *Vanity Fair* 10/97)

The meaning of the *Way*-construction, as described by the aforementioned authors, involves the motion of an agent creating a path by means of some activity or in a particular manner—in the case of (16-17), talking and snacking, respectively. The verbal head, an intransitive, denotes an activity which does not involve directed motion (e.g., neither talking nor snacking involve directed motion). The event denoted by the construction is an act of motion along a path. There is no verb which licenses a theta frame identical to that of the *Way*-construction. In fact, verbs which *do* denote directed motion inherently are not welcomed by the construction, as shown in (18-19):

- (18) ??He walked his way into the meeting.  
 (19) ??She ran her way along the shore.



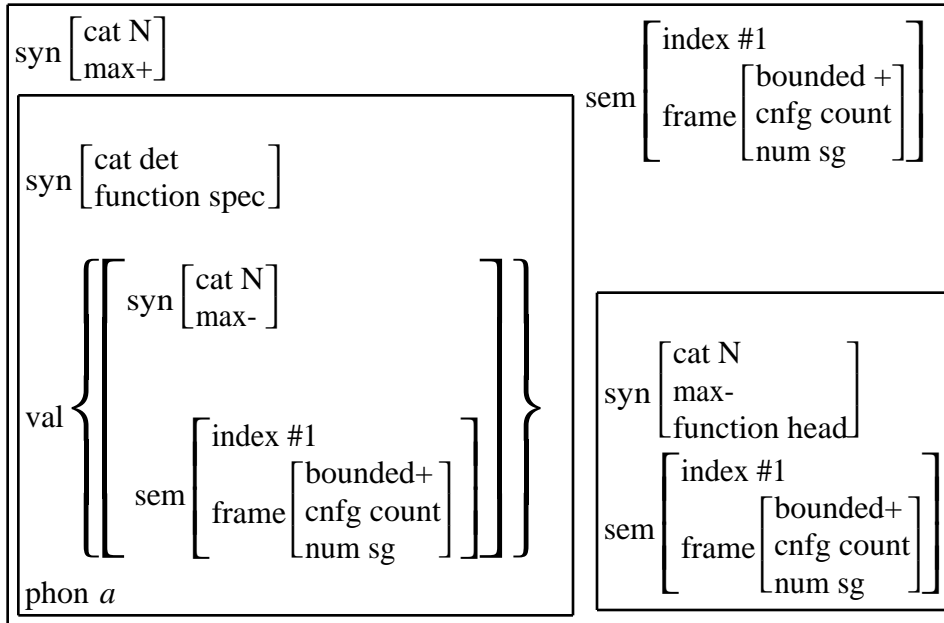
What this means is that the *Way*-construction is inherently a type-shifting device, since the event type denoted by the construction is always distinct from that denoted by the verb with which the construction combines. In Figure 2, I give a representation of the *Way*-construction which reflects its role as a type-shifting device: the set of verb-construction integration relations does not include the instance relation:



**Figure 2. The *Way*-construction**

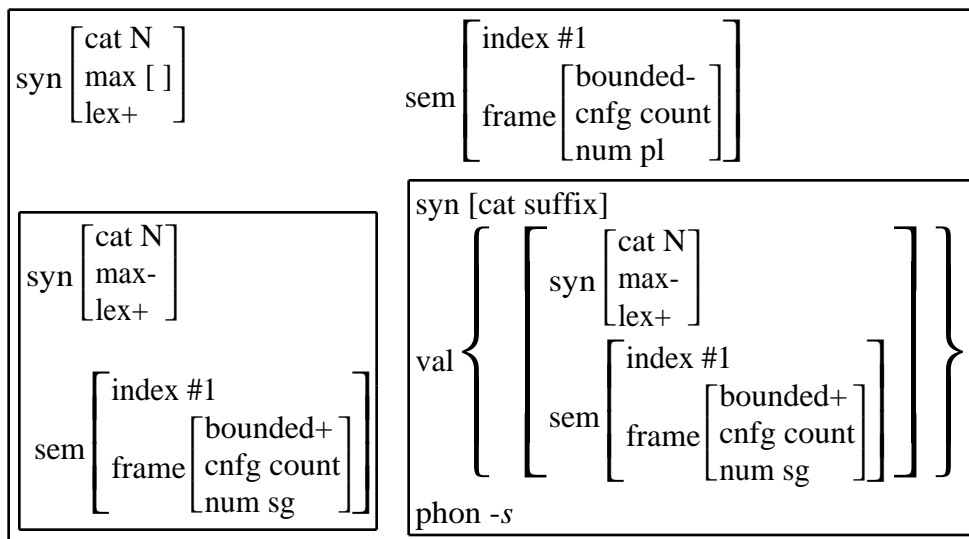
We will have cause to observe that constructions which perform explicit conversion typically perform this function in a quasi-iconic fashion. These constructions are generally phrasal, and the phrase contains a head and a complement of distinct types. The head determines the type denoted by the construction. The Partitive and Progressive constructions, as we will see, conform to this description. However, our brief examination of the *Way*-construction has shown that explicit conversion via construction does not require the existence of a sisterhood relation. Explicit conversion entails only that the construction denotes a type distinct from that denoted by the lexical (open-class) expression with which the construction combines.

Keeping in mind the broader picture of type shifting which we have developed in our examination of two argument-structure constructions, we can now turn to those (branching) constructions which most closely resemble aspectual constructions, nominal constructions. I will briefly discuss three representative constructions: INDEFINITE DETERMINATION, PLURAL and PARTITIVE. These formulations are based on those in Fillmore et al. (to appear: ch. 3).



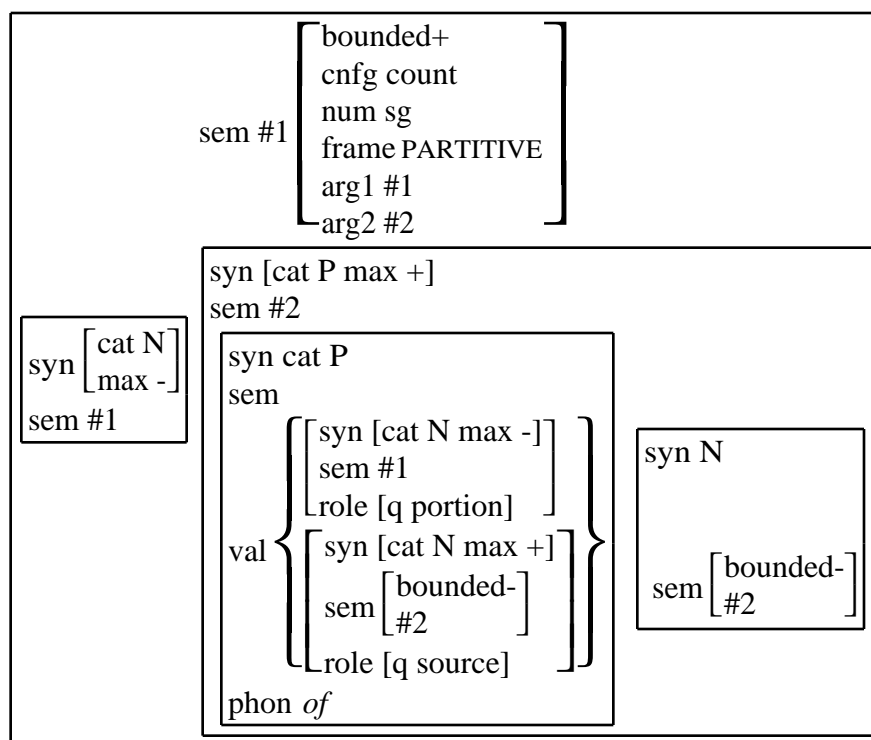
**Figure 3. The Indefinite Determination construction**

The Indefinite Determination construction is shown in Figure 3. The article has a valence requirement calling for a noun which carries certain values for the attributes boundedness, configuration and number. These values must match those of the nominal sister. The nominal sister is the syntactic head, but the article restricts the semantic type of its nominal sister. How do we represent a NP like *a bottle*? We say that this string instantiates the construction: the input lexical item shares semantic feature values with the construction. How do we model a coercion effect like the NP *a beer*? This is a case in which the concord requirement holding between the daughters is violated. In accordance with the Override Principle, the relevant feature values of the input noun will change to those required by the construction. The means that a nominal like *beer* will receive a [count+] value in combination with the Indefinite Determination construction.



**Figure 4. The Plural construction**

The Plural construction is shown in Figure 4.<sup>11</sup> The plural suffix, like the indefinite article, has a valence requirement which calls for a nominal having particular values for the attributes boundedness, configuration and number. The nominal sister shows these same values. Here, the functor's requirements are captured through unification of the semantic features of functor and argument. However, there is no case in which the input lexical item and the construction itself will share all values for the relevant *sem* features. (By *relevant* here I mean the set of *sem* features which excludes the referential index.) This construction shifts the BOUNDEDNESS value of the input noun to [bounded-], producing forms like *bottles*. However, this construction has something crucial in common with constructions like Indefinite Determination: it requires semantic concord between its two daughters with regard to the boundedness, configuration, and number attributes. When the input noun does not match the semantic feature values requested by the plural suffix, we have coercion, as in *beers*. As per the Override Principle, conflict is resolved in favor of grammatical meaning. A similar point can be made with regard to the Partitive construction, whose representation is given in Figure 5:



**Figure 5. The Partitive construction**

This construction denotes a count type which is a portion of a mass type. The mass type is expressed by an undetermined nominal which is a prepositional object. Thus, for example, the NP *a cup of tea* expresses a unit of what would otherwise be a mass type. This is explicit conversion. This construction also performs implicit conversion, as a predictable side effect of semantic unification requirements. Implicit conversion (or, equivalently, coercion) is illustrated by constructs like *a shred of blanket*. The noun *blanket*, ordinarily a count noun, is implicitly reconstrued as a mass type in the context of the Partitive construction. This is so because the partitive preposition *of* has a valence requirement calling for a nominal type which is [bounded-].

Concord between the ‘input’ nominal and the valence requirement of the preposition *of*, which is mandated by the Partitive construction, requires an override of the [bounded+] value of the input nominal. This results in the mass construal, as per the Override Principle.<sup>12</sup>

Constructions that inherently perform type shifts differ from those which do not inherently do so. We capture this difference by assuming the aforementioned distinction between concord constructions and shift constructions. These two categories are defined in (20-21):

- (20) **Concord construction.** A construction which denotes the same kind of entity or event as the lexical expression with which it is combined. In the case of branching constructions, the construction and its lexical daughter have the same values for the relevant semantic features. **EXAMPLES:** The Caused-Motion construction, Indefinite Determination, *some*-determination.<sup>13</sup>
- (21) **Shift construction.** A construction which denotes a different kind of entity or event from the lexical expression with which it is combined. In the case of branching constructions, the construction and its lexical daughter have different values for the relevant semantic features. **EXAMPLES:** The *Way* construction, Partitive, Plural.

Table 1 compares the two types of constructions. It shows that the two types overlap in function, since both types perform implicit conversion. Why should this overlap exist? In the case of functor-argument relations, as represented in the construction-based framework by sisterhood, the basis of this overlap is easy to see. Both concord and shift constructions have unification requirements which involve semantic agreement between daughters.<sup>14</sup> Since the Override Principle, as a constraint on conflict resolution, is potentially operative wherever a construction cross-lists semantic requirements, the principle necessarily applies to shift constructions as well.<sup>15</sup>

CONSTRUCTION TYPE	Implicit conversion	Explicit conversion
Concord constructions	yes (via (10))	no
Shift constructions	yes (via (10))	yes

**Table 1. Comparison of the two types of constructions**

The nominal constructions discussed in this section involve fundamental properties of an entity’s distribution over space. Given the fundamental analogy between space and time (Jackendoff 1983, Talmy 1988), aspectologists have been inclined to exploit the parallels between entities, which occupy space, and situations, which obtain or occur over time. The proposal that there are parallels between mass entities and states, on the one hand, and count entities and events, on the other, has been fundamental to aspectual theory (Mourelatos 1978, Langacker 1987, 1991). And since nominal syntax is used to perform both implicit and explicit conversion, it is plausible to propose that aspectual syntax functions in this way as well. In the next section, we will explore the constructional model of those coercion effects which involve the event-state distinction.

### 3. The Aspectual Data

The construction-based model of syntax which was outlined in the previous section provides a unified and straightforward account of aspectual coercions produced by both shift and concord constructions. As we have seen, both shift and concord constructions contain concord requirements. The bilateral nature of concord entails that both syntactic heads and nonheads are licensors. Accordingly, all coercion effects, whether endocentric or exocentric, have a single source in semantic representation: a constructional concord requirement. Further, both coercion and instantiation are subsumed under a single model of semantic composition, since both strict and enriched modes of composition are represented as concord requirements in constructions. Finally, since shift and concord constructions behave identically with respect to the Override Principle (10), we predict overlaps in function which in fact occur. That is, when a concord construction and a shift construction denote the same semantic type, the two constructions can be used to perform the same type shift. In the domain of nominal syntax, both the Partitive construction and Indefinite Determination can be used to denote portions, as in *a cup of coffee* versus *a coffee*. In the domain of aspectual syntax, there are analogous functional overlaps. These can be identified not only within the grammar of a given language but also typologically. As I will argue, the shift-concord distinction provides a revealing model of partial overlap between exponents of imperfectivity in English and Romance.

Let us now turn to the treatment of aspectual coercion effects in the constructional model. This discussion will presuppose the general characterization given in the introduction to the coercion cases exemplified in (2-4). These examples are repeated here as (22-24):

- (22) I **was outside** twice today.
- (23) They **were bored** in ten minutes.
- (24) I am **living** on Pearl Street.

I will now add a fourth example to this data set, involving an aspectual operator—the English perfect—which has not generally been viewed as performing implicit conversion. This example is given in (25):

- (25) I've **been rich** and I've **been poor**.

The English perfect, as described by Herweg (1991), De Swart (1998), Michaelis (1998) and others, performs explicit type shifting. In the terms developed here, it is a shift construction. There is general accord in the literature concerning the type shift performed by the perfect aspect, which can be formulated as follows: perfect predications denote that state which follows the culmination of the event denoted by the participial VP, as in, e.g., *The Eagle has landed*. Various stativity diagnostics, including the *when*-clause interpretation test exemplified in (5-7) above, confirm the stativity of perfect predications. The examples in (26-28) show contrasts yielded by the *when*-test:

- (26) We had finished our discussion when she came in.
- (27) We were asleep when she came in.
- (28) We finished our discussion when she came in.

The past-perfect main clause in (26) entails that discussion was going on prior to her arrival. This same type of entailment is associated with the stative main clause in (27): sleeping was going on prior to her arrival. By contrast, the perfective main clause in (28) could not describe a situation which began prior to the past reference time: the finishing event is subsequent to the arrival. What this shows is that perfect sentences, like progressive sentences, are imperfective sentences.

The perfect, however, presents certain analytic complexities which go beyond its role as a stativizing device. The first such complexity is the apparently noncompositional interaction of tense (as expressed by the auxiliary) and anterior aspect (as expressed by the past-participial VP) in the case of the ‘resultative’ present perfect, as reflected in constraints involving adverbial time-specification, temporal discourse, and focus-presupposition constructions (see Comrie 1976, Klein 1992, Michaelis 1998: ch. 5, *inter alia*). For example, present-perfect predications are incompatible with adverbial specification of event time, as in \**He has been born in 1973*, although nothing in the semantics would seem to bar this.<sup>16</sup> The present perfect is not a true relative tense, since it expresses anteriority with respect to the present, a deictically fixed interval. If the present perfect, on its resultative reading, cannot be distinguished from the simple past on truth-functional grounds, their divergent behaviors require a discourse-pragmatic explanation (Heny 1982: 154).<sup>17</sup> One such explanation involves a privative opposition between the present perfect and simple past. For example, Michaelis (1998: ch. 5) proposes that the present perfect requires existential rather than anaphoric binding of the relevant event variable, while the past tense allows either form of binding.

The second analytic problem presented by the perfect involves the appropriate characterization of the ‘current relevance’ implication commonly associated with the perfect-form predications. Although some authors, including De Swart (1998: 354), identify this implication with a resultant-state entailment, two widely recognized usages of the perfect, the existential and continuative uses, lack this entailment. These two usages, along with the resultative usage, are exemplified for the present perfect in (29-31). For each usage, an example sentence is given in (a), a prose description of the usage is given in (b), and a semi-formal semantic representation, based upon McCawley (1971, 1981), is given in (c):

(29) **Resultative**

- a. The persons responsible have been terminated.
- b. ‘A result of a unique past event obtains now.’
- c.  $\_!e$ : Event (e)  $\_!t$ :  $t < \text{now}$  [Culminate-at (e, t) & ‘e’s result state holds now’]

(30) **Existential**

- a. We’ve have this argument before.
- b. ‘One or more events of a given type culminated within a time span whose upper boundary is the present.’
- c.  $\_e$ : Event (e)  $\_t$ :  $t < \text{now}$  [Culminate-at (e,t)] & ‘e is repeatable at present’]<sup>18</sup>

(31) **Continuative**

- a. We've been sitting in traffic for an hour.
- b. 'A state obtained throughout an interval whose upper boundary is the present.'
- c.  $\_!e$ : State-phase (e)  $\_!t$  [Culminate-at (e,t) & 't immediately precedes the present']<sup>19</sup>

The common denominator of 'current relevance' is here seen as a semantico-pragmatic variable whose values are distinct conventional implicata involving the present. These implicata are represented by the conjuncts in single quotes in (c). In accordance with McCawley (1971), I assume that the perfect construction can be characterized as ambiguous with respect to these meanings. A given instance of the construction may be ambiguous, e.g., with regard to continuative and existential readings, as in the Groucho Marx line *I've had a wonderful evening, but this wasn't it*. The potential for such ambiguities strongly suggests (*pace* Brinton 1988 and Klein 1992) that the distinct perfect uses in (29-31) are not merely inferences from context, e.g., particular combinations of adverbial meaning and Aktionsart.<sup>20</sup> While adverbs like *before* and *twice* are hallmarks of existential meaning, the presence of a frame or frequency adverb is not a necessary condition upon the existential interpretation, since, for example, the existential sentence *I've met the Governor* lacks any adverbial. By the same token, while the continuative meaning entails imperfective aspect, imperfective aspect is not sufficient to induce the continuative reading, since a sentence like *I've had the German measles*, in which the VP complement denotes a state, has a resultative reading (e.g., the speaker now has immunity) a continuative reading (the illness lasted at least until now) and an existential reading (e.g., the speaker is listing events which qualify as tokens of the 'illness episode' type).<sup>21</sup>

Given the foregoing analysis of the perfect, we can resolve a paradox which arises from De Swart's treatment of the perfect form (1998: 354). In that discussion, she makes two claims which are each apparently valid but which also appear to be mutually incompatible. First, she refers to the perfect as "an extensional operator, which asserts the existence of both the event *e* and its consequent state *s*". Second, she asserts that "the Perfect operates on eventualities of any aspectual type". The second claim is certainly correct, since, as we have seen, existential perfect predications may have either imperfective or perfective VP complements. But in what sense can a stative eventuality like being rich or being poor in (25) also be an event with a period of aftermath, as required by the first assertion? The answer involves implicit conversion.

Let us assume, in accordance with Michaelis (1998: ch. 5), that the three perfect meanings described in (29-31) represent three distinct aspectual constructions.<sup>22</sup> The semantics of these constructions will be roughly as given in (29c), (30c), and (31c). These constructions share those aspects of the syntax-semantics mapping which correlate with the function of explicit conversion: the situation type denoted by the construction is a state, and the situation type denoted by the VP complement is an event. The three readings are not predictable from the existence of a perfect construction; the continuative reading, for example, is a relatively recent innovation, which accompanied a narrowing in the function of the simple present. These readings do, however, jointly contribute to *post hoc* generalizations about the pattern upon which they are based, and they are therefore candidates for inclusion in an associative network, in which shared properties are captured by relations of family resemblance to an abstract constructional schema (to be described in Figure 9 below).<sup>23</sup>

The perfect construction on its existential reading is used to assert the existence of one or more events of a given type within a time span whose upper boundary is identified with

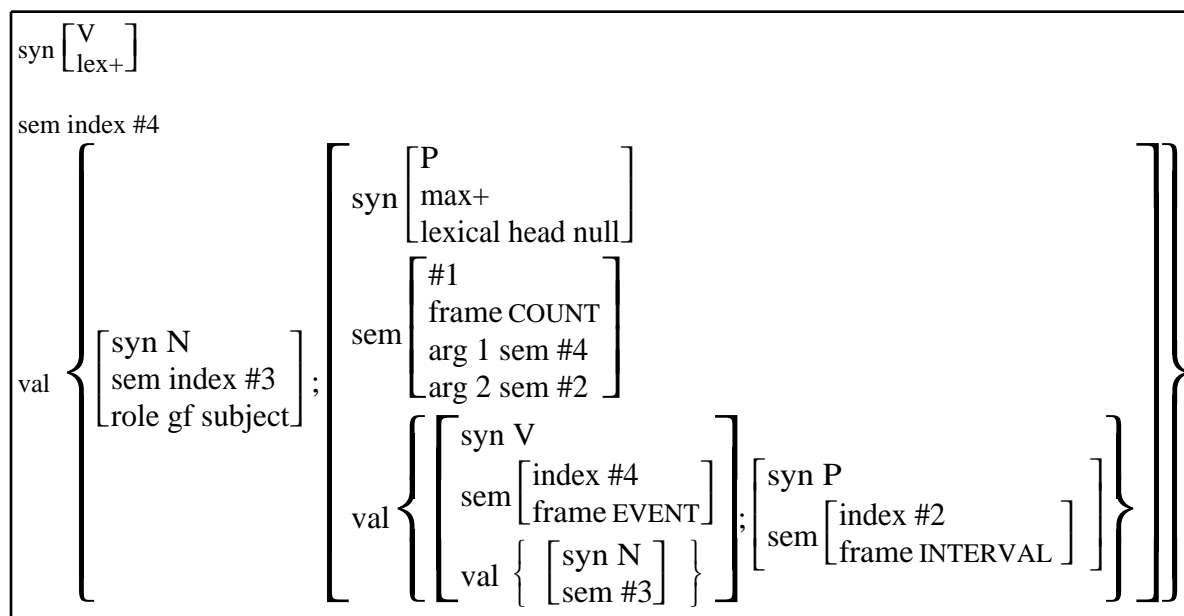
reference time. As we know, a state phase qualifies as an event (see fn. 14). Because the event type denoted by an existential-perfect sentence may be a state phase, one can construct perfect-form sentences which are ambiguous with respect to the existential and continuative readings, as shown by the example given above, *I've had the German measles*. The example given in (25), *I've been rich and I've been poor*, was chosen because it is unambiguously existential; a continuative reading would be semantically incoherent. Both examples, however, illustrate the ability of the perfect construction to coerce perfective (state phase) readings of lexically imperfective complements.<sup>24</sup> The particular reading in play will fix the relation of this state phase to the reference time; if the state phase is a unique event, its right boundary is identified with reference time. The fact that the perfect construction performs both explicit and implicit conversion follows from the fact that it is a shift construction (see Table 1).

An aspectual model based upon head licensing would, of course, fail to predict that the functor-argument combinations in (22-25) are possible, let alone meaningful. The coherence of these combinations makes sense only under the general presumption that aspectual operators like frame and frequency adverbials, the progressive, and the perfect (on its various readings) ensure that they receive the proper arguments. Different proposals are offered as to the means by which aspectual operators accomplish this. On one type of account (that offered by Jackendoff and De Swart), coercion operators bridge the gap between the functor's requirements and the argument's semantics. On another type of account, the construction-based model, constructions can alter what words (and their syntactic projections) designate. In the first type of model, coercion is taken as evidence of modularity, since the representation of a coerced meaning will always contain something which has no reflex in the relevant rule of morphosyntactic combination. In the second type of model, the representation of a coerced meaning will never contain anything that the rule of morphosyntactic combination does not. The relationship of a functor to its argument is a variable in the modular approach, since it may be mediated by an additional operator; it is a constant in the constructional approach. Lexical meaning is a constant in the modular approach, while it is a variable in the constructional approach. This variability is captured by the Override Principle. However, a sentential construct—a unified combination of words and constructions—will not reveal the occurrence of a type shift. For this reason, sentences like (22-25) have representations which are isomorphic to those of sentences like (32-35), where the relevant aspectual constructions have contributed nothing to construal that is not contributed by the words of the sentence:

- (32) Julia called twice today.
- (33) They got bored in ten minutes.
- (34) I am fixing the problem.
- (35) I have installed track lighting.

The four aspectual constructions which (in combination with other constructions) license the coerced readings in (22-25) and the instances in (32-35) are, respectively, the Frequency Adverbial construction, the Frame Adverbial construction, the Progressive construction, and the Perfect construction.





**Figure 6. The Frequency Adverbial construction (concord)**

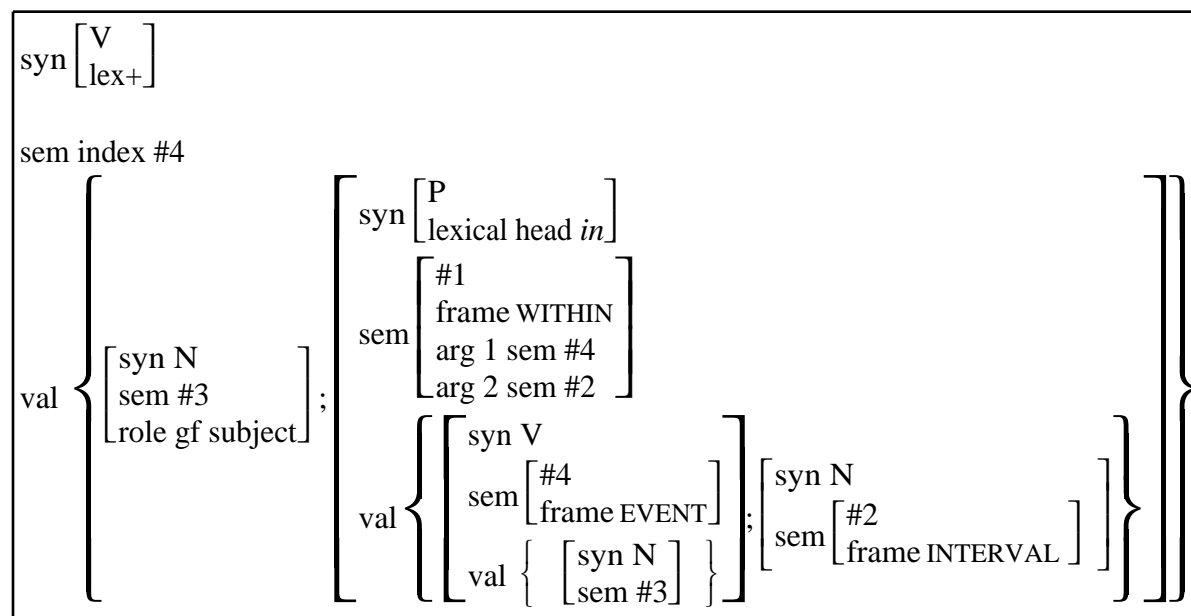
EXAMPLES:

Instantiation: *She visited twice.*

Implicit conversion: *I was outside twice today.*

The Frequency Adverbial construction is shown in Figure 6. This construction is an adjunct-licensing construction as described by Kay & Fillmore (1999:11-12). Adjuncts and arguments are licensed in distinct ways in this model. While arguments are valence elements of the minimal lexical verb, adjuncts are contributed by particular constructions which unify with a lexical verb entry, augmenting the verbal valence. The result is a verb entry, rather than a branching structure. This flat representation appears justified in light of the fact that we find no strong evidence for the recursive branching V' structures that have traditionally been used in X-bar models to represent strings of adjuncts. In Figure 6, we see that the Frequency Adverbial construction adds an adverbial expression to the valence set of the lexical verb. This valence set minimally contains one additional valence member, that element whose grammatical function is subject. The adverbial element (modeled as a null-headed preposition phrase) itself has a valence structure. The first member of the valence set is an event expression, whose semantic index is identical to that of the verb itself. The second valence member is an oblique expression denoting an interval. The semantic frame expressed by the adjunct is one in which event occurrences are counted. This construction is a concord construction. The construction denotes a perfective event<sup>25</sup> and the valence set of the adverbial element calls for an event of this same type. This construction is unlike, say, Indefinite Determination, in that it is nonbranching (there are no boxes within it). Nonetheless, this construction projects a sisterhood relation and constrains this relation via an aspectual concord requirement, making it analogous to constructions like Indefinite Determination. As a concord construction, the Frequency Adverbial construction licenses constructs which are instances, as in *She visited twice*. Cases of coercion are explicable according to the Override Principle. A stative verb will, when combined with this construction, receive an episodic construal, as in *I was outside twice today*. This episodic construal reflects the

interpreter's ability to reconcile the stative Aktionsart of the verb with the perfective feature required by the construction.



**Figure 7. The Frame Adverbial construction (concord)**

EXAMPLES:

Instantiation: *She solved the problem in ten minutes.*

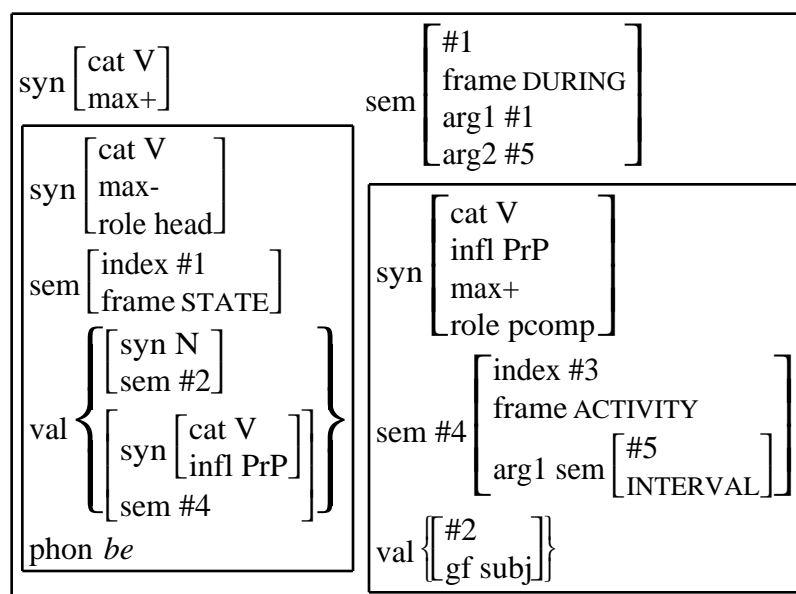
Implicit Conversion: *They were bored in ten minutes.*

The Frame Adverbial construction is shown in Figure 7. It is an adjunct construction akin to the Frequency Adverbial construction, and as such augments the valence of the lexical verb. The adjunct which is added to the verbal valence, a preposition phrase headed by *in*, is interpreted according to the logic of containment, as described in section 1. The relevant semantic structure is captured elliptically here by the frame label WITHIN. This frame has two arguments: an event and an interval. These arguments are coindexed with linguistic expressions listed in the valence set of the preposition phrase. The Frame Adverbial construction is a concord construction, and as such licenses instances, e.g., *She solved the problem in ten minutes*. In this example, the perfective Aktionsart of the verb matches the perfective type called for by the valence of the frame adverbial. Via the Override Principle, this construction also performs implicit conversion, as in the example *They were bored in ten minutes*. In this example, a stative verb receives an inchoative construal: the event denoted is the onset of boredom. This construal reflects the reconciliation of a unification conflict between the verbal Aktionsart and the constructional semantics (in favor of the latter). Why do we find an inchoative reading in this case and an episodic reading in the case constructs licensed by the Frequency Adverbial construction? In accordance with De Swart (1998: 364), I assume that there is some degree of latitude in the interpretation of perfectivized state predications, whether these predications are 'implicit perfectives', as in the present case, or morphologically encoded perfectives, as in the following example, from Classical Latin. The narrative concerns a dinner party. The guests are discussing the potentially harmful effects of daily bathing, and at this juncture one of them attempts to turn the conversation in another direction:

(36)	<i>Exceptit</i>		<i>Seleucus</i>	<i>fabulae</i>	<i>partem</i>	<i>et</i>
	took-up:3sg:perf:act:ind		Seleucus:N	story:G	part:A	and
	“ <i>Ego</i> ”	<i>inquit</i>	“ <i>non</i>	<i>cotidie</i>	<i>lavor.</i>	
	“I:N”	says	“not	everyday	bathe:1sg:pres:act:pass.	
	<i>Fui</i>	<i>enim</i>	<i>hodie</i>	<i>in</i>	<i>funus.</i>	
	Be:1sg:perf:act:ind	anyway	today	in	funeral:N.	
	<i>Homo</i>	<i>bellus, tam</i>	<i>bonus</i>	<i>Chrysanthus,</i>		
	Man:N	fine:N so	good:N	Chrysanthus:N		
	<i>animam</i>	<i>ebuliit.</i> [...]				
	spirit:A	bubble-out:3sg:perf:act:ind				
	<i>Modo,</i>	<i>modo me</i>	<i>apellavit.</i>		[...]	
	Lately,	lately me:ACC	call:3sg:perf:act:ind.			
	<i>Heu, eheu.</i>	<i>Utres</i>	<i>inflati</i>	<i>ambulamus.”</i>		
	Alas, alas.	Bladders:N	inflated:N	walk:1pl:pres:act:ind.		
	<i>Molestus</i>	<i>fuit,</i>	<i>Philerosque</i>			
	Annoying:N	be:3sg:perf:act:ind	Phileros:N-and			
	<i>proclamavit:</i>	“ <i>Vivorum</i>	<i>meminerimus.</i> [...]			
	shout:3sg:perf:act:ind:	“Living:G	remember:1pl:perf:act:subj!”			

“Seleucus took up his part of the story and said: ‘I myself don’t bathe every day. [...] I **was** at a funeral today, anyway [so I couldn’t bathe]. A fine man, the very good Chrysanthus, has bubbled up his soul. Just the other day he greeted me. [...] Alas, alas. We humans are nothing but inflated balloons walking around.’ [...] He [Seleucus] **became** annoying, and Phileros shouted: ‘Let us remember the living!’” (Petronius, *Satyricon* 42-43)

In (36), the direct quote from Seleucus contains a perfective form of the verb *esse* (‘to be’), *fui*, which denotes an episode (that of being at the funeral). The narrative related by Seleucus (abridged here) is long, discursive and dour, and the same perfective form of *esse* is used later in this passage to denote an inchoative event—Seleucus starts to annoy the assembly—which temporally succeeds the event denoted by the first sentence of this sequence (*exceptit Seleucus...*). This example shows that a single perfective verb form may have both episodic and inchoative interpretations, depending only on discourse context. The situation we find in the case of the two adverbial constructions is quite different. In this case, perfectly interpreted stative predications receive exclusively episodic readings when combined with the Frequency Adverbial construction and exclusively inchoative readings when combined with the Frame Adverbial construction. We presume that such interpretive constraints are stated at the level of the particular construction, since the purpose served by aspectual coercion is distinct in the two cases.



**Figure 8. The Progressive construction (shift)**

EXAMPLES:

Explicit conversion: *We were playing cards.*

Implicit conversion (stative input): *We were living in Boulder.*

Implicit conversion (telic input): *They were baking a cake.*

We now come to branching constructions of the shift type, the Progressive and Perfect constructions. These constructions specify not only valency, as in the case of the aspectually sensitive adverbial constructions just discussed, but also constituency, since they specify a sisterhood relationship between a head verb and a VP sister. The Progressive construction is shown in Figure 8. It is an instance of the COINSTANTIATION construction, as described by Kay & Fillmore (1999:22-23). The Coinstantiation construction captures both raising and control phenomena by requiring unification of the INTRINSIC (nonrelational) semantic values of an argument of the head verb and that valence member of the VP complement whose grammatical function is subject. In Figure 8, the coinstantiation formula captures the ‘raising’ property of the auxiliary head *be*. The Progressive as depicted in Figure 8 is a shift construction: its VP complement denotes an event of the ACTIVITY Aktionsart type<sup>26</sup> and the construction denotes a state which holds during the interval for which the activity goes on (this period is represented as an argument of the ACTIVITY frame). The construal associated with the Progressive can be identified with the ‘zooming out’ function described by Talmy (1988): an activity (e.g., playing cards) is construed at a level of granularity which renders its distinct subcomponents identical, strengthening the subinterval entailment. While we have said nothing here about tense, the interaction between the Progressive construction and a given tense construction is straightforward. A sentence which is licensed by the combination of the Progressive construction and a tense construction (e.g., the past tense) has an interpretation which is identical to that of a simplex state predication of the same tense. As per Partee (1984), we assume that states include the reference time for which they are asserted, accounting for their ability to overlap with prior and subsequent events in a temporal discourse. Events, by contrast, are included within the

reference times for which they are asserted, accounting for our intuition that events succeed one another in a temporal discourse.<sup>27</sup>

The Progressive, as a stativizing device, triggers coercion when combined with a stative complement VP: the VP receives a perfective construal as per the Override Principle. The concord feature in play here is the feature ACTIVITY, a value of the *frame* feature which expresses the semantic type of the VP complement and of the second valence member of the auxiliary *be*. The activity feature ‘wins out’ over the stative feature of the input lexical item. By analyzing the VP complement of the Progressive construction as denoting an activity, we capture the intuition that stativized progressives, e.g., *We were living in Boulder*, express ‘temporary states’. What is a temporary state but an activity? Predicates which denote episodes of stasis, i.e., states which are conventionally construed as delimited, qualify as activities, as evidenced by the ill-formedness of present-tense reports such as the following (where the # indicates infelicity on the ‘ongoing right now’ reading, rather than, e.g., a habitual one):

- (37) She’s the one in the corner. #She wears a Fendi blazer.
- (38) Try to be quiet! #The baby sleeps!
- (39) Wow. #It snows.
- (40) #The clothes lie all over the floor.

The complement VPs in progressive sentences like *We were living in Boulder* denote internally homogeneous activities akin to those which require the progressive form in (37-40). The fact that verbs like *sleep*, which denote temporally delimited states, belong to the activity class substantiates the claim that the Progressive requires input verbs of this class. Progressivized statives do not denote accomplishments or achievements, but rather state phases identical to those which certain activity verbs express. Instances of the Progressive construction denote states, whatever the Aktionsart of the lexical complement. Thus, an apparent paradox—a stativizing construction accepts stative input verbs—dissolves when we recognize that this stative verb has—by the very fact of its combination with the Progressive construction—come to denote that type which warrants the use of the Progressive construction.

By treating the VP complement of the Progressive as denoting a process rather than a telic event, we solve a problem of semantic representation which otherwise requires recourse to stipulation. As is well known, the semantics of the Progressive are intensional (see, e.g., Dowty 1977). While the Progressive combines with both telic predicates and process predicates, in the former case the culmination of the event denoted by the predicate is only a potential. For example, a progressive sentence containing a verb of creation, e.g., *She was knitting a vest*, entails nothing about the knitting event having reached its logical endpoint or about the existence of the vest. As De Swart describes this situation, “The progressive picks out a stage of [a] process/event which, if it does not continue in the real world, has a reasonable chance of continuing in some other possible world” (1998:355). This view presents a paradox, since we cannot obviously provide a semantic representation for a stage of an event while preventing the variable which represents this event from being existentially bound. It is as though we had to represent the semantics of a Partitive NP, e.g., *an engine from an old Volvo*, while ensuring that the entity corresponding to the term *an old Volvo* is not part of the discourse model. This would make little sense; we cannot extract a portion from a type that does not exist. A possible solution to this problem is to propose that the event exists but that it is “stripped” of its culmination point (De Swart 1998: 355). It is not clear what this proposal would gain us, since the very

existence of a telic event entails its culmination. De Swart's particular approach to the intensionality problem is to ensure through embedding that the event variable upon which the progressive operates is not added to the discourse model (pp. 354-355). This solution does not seem to generalize, however, because event variables representing processual events (e.g., *She was talking with her friends*) clearly are existentially bound. How will the rule which constructs a discourse representation from a progressive sentence know the difference between an event which should 'pop up' to main box of the representation and that which must not? The solution adopted here—to assume that the 'input' event type is inherently processual—avoids such problems.

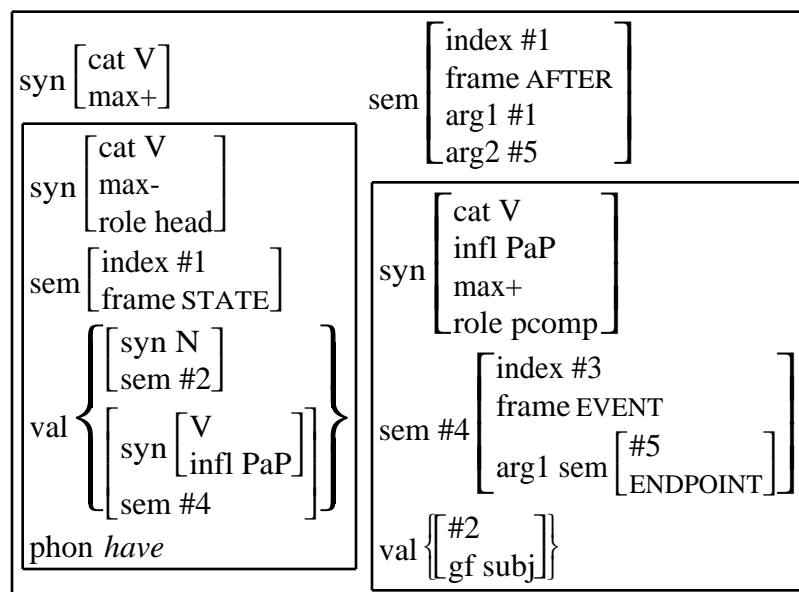
Under the present proposal, a progressive sentence like *She is drawing a circle* denotes a state which is a subpart not of the accomplishment type *She-draw a circle* but of the activity type which is entailed by the semantic representation of the accomplishment type. Since this activity can be identified with the preparatory activity that circle-drawing entails, circle-drawing can be distinguished from square-drawing etc. within the narrow window afforded by a progressive assertion. The only event variable which is added to the discourse model by a progressive assertion is the processual event denoted by the VP complement of the Progressive construction. Because of the subinterval property, any instance of this processual event is sufficient to verify the occurrence of that event. The ontological nature of the situation type added to the model, and thus the nature of the commitment made by a speaker who employs a progressive sentence, is expressed by the semantics of the Progressive construction: this construction denotes a state which holds during the time that a particular activity goes on.<sup>28</sup> If I make an assertion that preparatory activity (e.g., circle drawing) was going on at some point, I say nothing about whether or not that preparatory activity led to its logical culmination (a completed circle).

But of course the representation of the Progressive construction given in Figure 8 predicts that we will induce a unification violation when we attempt to combine a telic verb or VP like *draw- a circle* with the construction, since the construction requires a verbal complement denoting a processual event. Only an inherently processual complement like *play- cards* or *dance-* would seem to unify with the Progressive construction as represented here. This poses a problem, since clearly telic VP complements are welcomed by the Progressive, as in *They were baking a fruitcake*. The solution to this problem depends upon the Override Principle. I postulate that progressive sentences containing telic VP complements are instances of coercion. In the case of a sentence like *They were baking a fruitcake*, the interpreter must derive an interpretation of the VP complement which is compatible with the processual feature that the construction places on its complement daughter. Since accomplishment predicates like *bake- a cake* entail processes, the compromise interpretation will be one in which the VP complement *baking a fruitcake* denotes the preparatory process which leads to the presence of a fruitcake. As we observed above, this preparatory process can be verified under the same circumstances that lead to verification of the state which the progressive sentence denotes. The particular Aktionsart-based coercion assumed here, in which an accomplishment predicate receives a processual construal, finds a precedent in coercions performed by durational adjuncts like *for ten minutes*. For example, the accomplishment predicate *walk home* receives an activity construal in the sentence *She walked home for ten minutes and then decided to take the bus*. As in the case of the progressive sentence *They were baking a fruitcake*, the activity denoted is entailed by the predicate's Aktionsart.

What of the combination of the Progressive and an inchoative (achievement) verb, as in *She was winning the race*? This combination again yields a coerced processual interpretation of the VP complement. Our intuitions suggest that progressivized achievements denote a preparatory phase which is not entailed by the corresponding preterite-form predication (*She won the race*). Dowty (1986), for example, describes achievement verbs as “those kinesis predicates which are not only typically of shorter duration than accomplishments, [but also not ordinarily understood] as entailing a sequence of subevents, given our usual everyday criteria for identifying the events named by the predicate” (p. 43). Our intuition that sentences like *She was winning the race* stretch out the temporal profile of an achievement to reveal its subevents makes sense only if we recognize such sentences as instances of coercion. Since the Progressive requires that its lexical complement denote a process, the interpreter of a progressivized achievement predication is induced to ‘find’ an activity phase within an event which would otherwise represent a momentaneous transition. An achievement which includes a preparatory activity is for all intents and purposes an accomplishment; the sentences *She was winning the race* and *She was fixing the fence* are identical so far as the contribution of the Progressive is concerned.

The present analysis of progressivized achievements is a departure from standard accounts, since progressivized inchoatives and semelfactives are generally said to require iterated readings, as in *She was blinking* (Herweg 1991, Langacker 1991, Bickel 1997). However, such iterated readings are generally required only insofar as the noniterated reading requires unusual background assumptions, for example that a single blink can be ‘tracked’ during the time that it occurs. Further, the interpretive potential represented by the iterated reading is not unique to progressive sentences containing VP complements of the achievement class. Perfective verbs of all Aktionsart classes allow iterated readings in progressive sentences. For example, the progressivized accomplishment sentence *She was fixing the fence* and the progressivized activity sentence *She was running* both welcome habitual readings, e.g., in conjunction with frame adverbials like *that summer*. Habitual predications, like generic predications, count as state predications via various stativity diagnostics. For example, they are construed as including speech time or any other punctual interval, and simple present-tense habitual sentences have reportive or ‘ongoing now’ interpretations. Therefore, we can conclude that progressive sentences which contain habitual or generic VP complements are instances of coercion: the sentence *They are picking up donations on Tuesdays* denotes a state which is included within an period of stasis, just as does the sentence *We are living on Pearl Street*. The episodic reading in both cases is imposed by the Progressive construction, which restricts the type of its VP complement to homogeneous activities.

In the present analysis of the Progressive construction, coercion plays a larger role than it is generally thought to, since here type shifts are assumed to have occurred not only in the case of ‘progressivized statives’ but also in the case of progressive tokens whose complements are accomplishment and achievement VPs. By recognizing these additional coercion effects, we achieve a refined picture of the combinatory constraints upon the Progressive construction. As I have argued, the Progressive requires a particular Aktionsart class (the activity class) as its complement type. When the Aktionsart of input verb does not match that required by the construction, coercion results, giving the false impression that the construction is unselective with regard to the telicity feature. The problem of apparent unselectivity also arises with regard to the Perfect, a stativizer which, like the Progressive, appears to apply vacuously when combined with stative complement VPs. The Perfect construction is represented in Figure 9:



**Figure 9. The Perfect construction (shift)**

EXAMPLES:

Explicit conversion: *The Eagle has landed.*

Implicit conversion (existential semantics): *I've been rich and I've been poor.*

Implicit conversion (continuative semantics): *I've been living here since 1993.*

The Perfect, as argued above, accepts both imperfective and perfective complements. As shown in Figure 9, however, the Perfect requires its VP complement to denote an event. The construction itself denotes a state which begins after the occurrence of an event of the type referred to by the complement. The Perfect, unlike the Progressive, entails that this event reached a terminal point (either intrinsic or extrinsic). Perfect-form predications function as double assertions: they assert the occurrence of an event by asserting the presence of a contingent state at the reference time. In the case of the resultative reading of the Perfect, exemplified by the sentence *The Eagle has landed*, we see straightforward adherence to this generalization; the sentence counts as a state predication (see the discussion of (26) above), while the type of the VP complement is perfective.<sup>29</sup> When the type of the VP complement is not so constrained, we must recognize the operation of the Override Principle. Both the existential and continuative subtypes of the Perfect construction coerce state-phase readings of imperfective VP complements with which they are combined. The two subtypes differ in the manner in which they constrain the AFTER relation, as it is represented in the external semantics of the construction shown in Figure 9. In the case of the continuative perfect, the beginning of the state denoted by the construction is necessarily identified with the terminal point of the state phase denoted by the VP complement.<sup>30</sup> While De Swart (1998:354) views this contiguity condition as a general interpretive constraint upon the Perfect, it does not appear to be, since no such constraint is operative in the interpretation of existential-perfect sentences. For example, a speaker who asserts *I've been rich and I've been poor* may be speaking of states which held only in the remote past. As in the case of the Progressive, we see that shift constructions, like concord constructions, are in the business of coercion.

The two shift constructions which we have just discussed are traditionally viewed as instances of grammatical aspect, but it is difficult to justify this categorization typologically.



While Progressive sentences are imperfective, the Progressive is not directly analogous to imperfective aspect, as found, e.g., in French. The Progressive is neutral with regard to tense, and combines freely with the tenses, while imperfective morphology inherently expresses the past-tense relation. However, as Smith (1991), De Swart (1998), and Michaelis (1998) have observed, the two constructions overlap in some contexts. One overlap context is shown in (41). Here, a French imperfective sentence is translated by an English progressive sentence:

- (41) C'est quand je suis passé devant le magasin! Il y avait un type qui **faisait** une démonstration pour aguicher la clientèle.

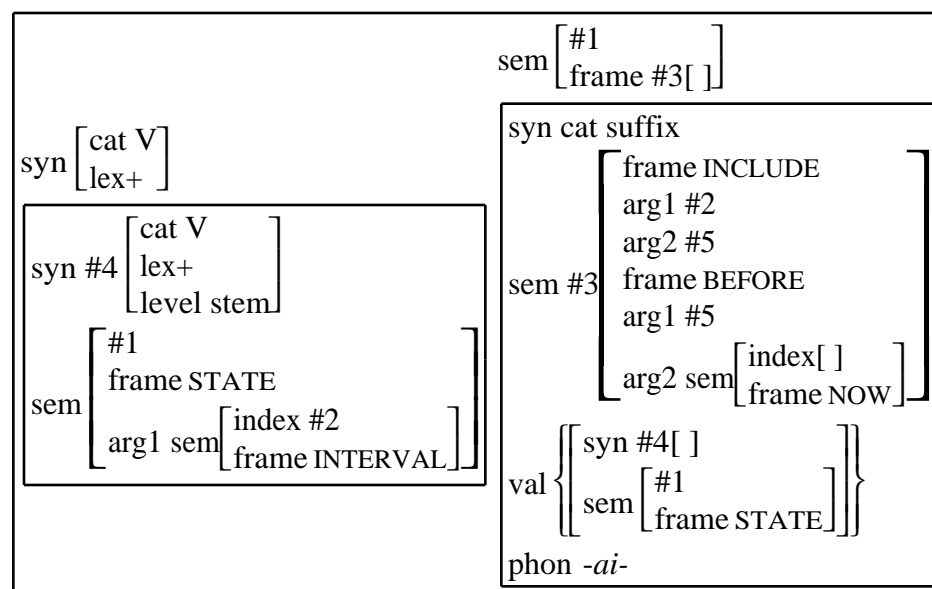
“It’s when I went past the store. A guy was **doing** a demonstration to rope in customers.” (Binet, *Les Bidochon* 8, p. 14)

However, Progressive and Imperfective do not have identical functions; notice (42):

- (42) Tiens, ils **avaient** des lacets, les préhistoriques?

“Huh! They had shoelaces, prehistoric people?” (Binet, *Les Bidochon* 2, p. 30)

If (42) were translated by a progressive sentence, the result would be an anomalous English sentence: \**They were having shoelaces*. The pattern in (41-42) is explained when we assume that the English Progressive is a shift construction, while the French Imperfective is a concord construction. The latter construction is represented in Figure 10:



**Figure 10. The Imperfective construction (concord)**

EXAMPLES:

Instantiation: *Ils **avaient** des lacets.*

Implicit conversion: *Il y avait un type qui **faisait** une démonstration.*

Since the Imperfective construction signifies a past-tense relation, the *sem* value of the suffix includes the frame BEFORE. This frame has two arguments, a REFERENCE TIME (indexed by the unification variable #5) and the (deictically indexed) time of speaking. The verbal head of the construction denotes a state, as indicated by its frame value. The STATE frame has one argument, an interval, since states are appropriately represented as (homogeneous) properties of times (Herweg 1991). As a past tense, the Imperfective construction relates the state type to a past reference time. The INCLUDE frame in the semantics of the suffix and the construction requires that the reference time be included within that state. The INCLUDE frame represents an inference pattern licensed by past-tense state predications: the past interval at which the state is asserted to obtain need not exhaust the tenure of that state, since, for example, a speaker who asserts, upon arriving at a destination, *My cabbie was Latvian* is only ‘sampling’ a *relevant* portion of a permanent state (see Partee 1984, Herweg 1991, Klein 1992, *inter alia*).

The concord restriction upon the Imperfective is represented in Figure 10: the verbal head and the construction denote the same situation type, a state. That is, the Imperfective can and typically does simply flag the inherent stativity of the lexical head. However, since all concord constructions trigger implicit conversion via the Override Principle, as given in (10), the Imperfective can also be used for aspectual type-shifts, as in (41). French and English both imperfectivize, but the mechanism is a different construction in each language.<sup>31</sup>

The foregoing discussion has implied that aspectually sensitive tenses should be postulated only when differences in the aspectual requirements of a given tense category are expressed morphologically. I wish to suggest, however, that all tenses are aspectually sensitive. In particular, I will suggest that the English past and present tenses, as well as the French present tense, are concord constructions which contain aspectual unification requirements and accordingly trigger coercion effects. This means that our treatment of the English past tense will be analogous to that of the French past tense(s). This extension is justified, since it seems inappropriate to assume that direction of inclusion distinguishes past tenses of events from past tenses of states just in case this difference is morphologically expressed (as it is in French). Why should we not also assume two past-tense constructions for English, which happen to be homophones?

One argument against this approach is to say, as most do, that the English past tense does not take issue with the inclusion relationship, which is instead determined by the aspectual classes themselves. On this view, essentially adopted from Reichenbach (1947), the past tense specifies only that reference time is prior to speech time (and possibly also that reference time is an anaphorically indexed interval). The problem with this view, as I see it, is not only that it makes aspectual sensitivity something which English tenses inexplicably lack, but also that it requires one to presume that verbal semantics contains a constraint related to reference time—a discourse-pragmatic concept (see Klein 1992 for argumentation to this effect). My solution, then, is to propose that English has two phonologically identical past-tense constructions which are identical to the Perfective and Imperfective semantically, in that the INCLUDE frame in each of the two constructions specifies a distinct direction of inclusion for reference time.

To presume aspectual sensitivity among past tenses leads us to predict the existence of coercion effects in accordance with the Override Principle. We have seen such effects in Imperfective and Perfective constructs in French and Latin, and we thereby predict their existence in the case of English past-tense predications. In fact, this prediction is borne out. Cases of coercion involving the English past tense are given in boldface in (43-44):

- (43) I **remembered** my early childhood.
- (44) a. I glanced into the room. Clothing **lay** all over the floor.  
 b. At that point they **accepted** every applicant.

In (43), if construed as an instance of perfective coercion, a stative verb (*remember*) has an inchoative interpretation. In (44), a perfective verb (*lie*) has a stative interpretation: as indicated by the availability of the inference that the clothing was lying on the floor prior to the point at which the narrator glanced into the room. While the verb *lie* denotes an episode of stasis and thereby appears to be intrinsically imperfective, its perfectivity is demonstrated by the infelicity of present-tense reporting, as in #*Their clothing lies on the floor*. Telic verbs like *accept*, as in (44b), exhibit a distinct type of coercion effect. Here, the imperfective construal entails a habitual reading of the verb. Notice that this habitual reading cannot be attributed to the semantic effect of the adverbial expression *at that point*, since this expression has both punctual and interval readings: (44b) is perfectly compatible with a reading in which a single accepting event occurred at a particular point in time. One could not account for the existence of these coercion effects without presuming that the past tense construction ‘requests’ a particular aspectual class. The otherwise paradoxical fact that two different aspectual type shifts are represented by the same tense form can be attributed to the existence of two distinct past-tense constructions in English. Under this proposal, English and French have analogous, although not identical, devices for past-tense reference. Put differently, aspectual sensitivity is part of both systems.

Typologically, the construction-based treatment of tense leads us to expect idiosyncratic differences in the functional range of a given tense form in various languages. Such differences may be motivated in terms of the division of labor in the grammar of a particular language. For example, the French present-tense construction has a wider range of uses than its English counterpart. In French, the present tense expresses a progressive meaning in combination with a perfective verb (e.g., *Il tombe* ‘It’s falling’) and a present-perfect meaning in combination with either imperfective verbs or perfective verbs, as in, respectively, *Elle est ici depuis midi* ‘She’s been here since noon’ and *Elle travaille depuis midi* ‘She’s been working since noon’ (see Waugh 1983 for thorough discussion of these meanings). Neither of these meanings is expressed by the present tense in English, which provides a more specialized construction for each of them.

What this suggests is that the present tense is an aspectually sensitive tense in both French and English. In both languages, the present-tense construction requires an imperfective verb. More specifically, the construction fixes the reference time as the time of speaking and requires that this reference time be included within the time at which the situation denoted by the verb obtains. Unlawful combinations are ‘amnestied’ as per the Override Principle. In the case of French, the combination of the present-tense construction with a perfective verb induces coerced readings corresponding to the progressive and perfect meanings discussed in the preceding paragraph (see also De Swart 1998:382, fn. 17). While the English present tense does not yield these coerced interpretations, it appears plausible to regard habitual and generic readings of event predications, as in (44b) above as coerced readings, since here the reference time is included within the time at which the state holds, as required by the construction.

The present proposal differs from previous attempts to address the source of typological variation in the semantic range of the present tense. Cooper 1986, for example, argues that the English present tense is “exotic” in requiring a higher degree of coincidence between speech and

situation times than does present-tense inflection in other languages: “the semantic location of the present in other languages requires the discourse [time] to temporally overlap the event [time] rather than be identical with it” (p. 29). The current proposal locates the relevant typological variation elsewhere. Under this proposal, the French and English present-tense constructions are identical with regard to the relationship between reference and situation times: both present-tense constructions require that the situation time include the reference time. This inclusion constraint reflects a logical constraint upon the interpretation of state predications: the present tense takes a momentaneous sample of a situation, and only a state can be verified from such a sample, since only states are homogeneous properties of times. This proposal—that the present tense is a punctual ‘sampling device’—makes the present-tense construction of English far less anomalous cross linguistically. The difference between the English present tense and that of other languages comes down to the amount of interpretive latitude that each of the cognate constructions allows: while all of the present-tense constructions denote stative types, the English version of the construction limits the type shifts that event verbs can undergo. Why should a construction impose such limitations?

Restrictions upon the range of coercion functions performed by a given construction are explicable according to Panini’s Law: the specific (the particular construction) takes precedence over the general (the Override Principle). Such restrictions, as mentioned, are not wholly idiosyncratic, since they can be attributed to the effects of quantity-based inference. Where shift constructions are available to perform a given type shift, as is the Perfect in English, this type shift is unlikely to be performed by a less specialized concord construction, e.g., the present tense. While the present tense was used to express continuative-perfect meaning through Middle English (Michaelis 1998:124), it appears that this function was eventually lost through a process of semantic narrowing. Since constructions denote in the way that words denote, we expect that constructions, like words, will extend their functional ranges at the expense of forms with which they overlap semantically. Further research might profitably target the pragmatic factors which conspire to constrain the operation of the Override Principle.

## 4. Conclusion

The construction-based model brings syntax and semantics together, in the form of a repertoire of Saussurean signs, and provides a picture of the syntax-semantics interface that is both revealing and parsimonious: one combinatory mechanism, the construction, is used to model both instantiation (strict composition) and type shifting (enriched composition). The coercion phenomena which have been taken as evidence of modularity, since they entail the presence of meanings which are not linguistically expressed, are here taken as evidence that syntactic patterns are inherently meaningful—these patterns, like words, denote types of entities and types of events. We assume that the set of types denoted by constructions is a universal inventory, with typological differences arising from the variegated restrictions which constructions within a given semantic domain place upon the lexically expressed types with which they can unify. On this assumption, it makes sense to ask why two constructions which denote the same type, e.g., the English Progressive and the French Imperfective, exhibit the patterns of overlap and divergence that that they do. The relevant usage patterns follow from the distinct functions of shift constructions and concord constructions.

In sum, sign-based syntax can be taken as freeing semantics from the limitations of lexical licensing, while retaining a constrained form of semantic composition. The enriched representations predicted by the Override Principle do not come from a special form of composition, but are instead straightforward outcomes of the competition between lexical and constructional meanings. On this account, coercion is the resolution of conflict between linguistic cues which do not ordinarily compete during interpretation. As in other cases of formal conflict resolution (e.g., those involving disparate acoustic cues in auditory perception, as described by Ohala 1996, *inter alia*) the outcome of the competition is biased in favor of a particular cue, syntactic form. Coercion provides the dissociation which confirms that syntactic form is a nonderivative component of meaning construction.

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## Endnotes

<sup>1</sup> I am here adopting the plausible and yet relatively controversial assumption that the nominal *beer* is the head of the phrase *a beer*. While determiners are currently treated as heads in some syntactic theories, I presume that this treatment is at least partially motivated by the observation made here, and in Croft 1996, that syntactic and semantic head properties, which coalesce under ordinary circumstances, are distributed over two sisters in cases like *a beer*. In other words, *beer* remains the syntactic head, while the determiner *a* acts like a semantic head in the sense that it is a trigger for semantic coercion.

<sup>2</sup> Admittedly, operators need not represent pieces of language, since they may be used to represent sublexical components of meaning, as a set of functors is used to model inherent lexical aspect, e.g., BECOME and CAUSE. In such cases, linguistic diagnostics, e.g., adverbial scope, provide evidence for the existence of a particular argument for the relevant functor. For example, there is a salient reading of the causative sentence *She put the beer in the fridge for two hours* in which the durational adverbial *for two hours* must be viewed as modifying a state radical in the decomposed structure. It is only by decomposing meanings into functor-argument relations that we can represent the argument to which the durational adverbial applies. The use of a functor to represent a given modifier position has no analogous justification and therefore appears to promote circularity.

<sup>3</sup> The idea that constructional requirements may override lexical requirements in the case of NPs like *a beer* is not part of the conception of Construction Grammar put forth in Kay & Fillmore 1999. In those versions of the model, conflict of this type would represent a unification failure, since the [bounded-] feature of the noun *beer* would conflict with the [bounded+] requirement that the indefinite-article construction imposes upon its nominal daughter. In the afore-referenced works, the licensing of tokens like *a beer* necessarily involves TYPE-SHIFTING constructions. A type-shifting construction has an EXTERNAL SEMANTIC VALUE which is distinct from that of its sole daughter node. The Mass>>Count construction, for example, unifies with a mass noun like *beer*. Its external semantics is that of a count noun, which can thereby unify with the construction that licenses indefinite NPs (as the head daughter of that construction). Type-shifting constructions are essentially lexical rules, and as such fail to capture an important generalization, since type-shifted nominals are freely generated but not in any way indexed to the morphosyntactic contexts which trigger the relevant type shifts. Further, use of the ‘box-within-a-box’ constructions for type-shifting violates the spirit of a model which, in the interest of concreteness, eschews nonbranching domination in phrase structure. That is, in CG, no phrase consists simply of a noun. If a given lexical noun is of the appropriate semantic class, it will simply unify directly with any grammatical-function position in a construction. In accordance with Goldberg (1995), I therefore employ a version of the CG architecture which allows for unification with overrides, as per the Override Principle to be described in Section 3.

<sup>4</sup> I take the bivalent intransitive *bark* found in examples like *Our dog used to bark at the garbagemen* to be an instance of the CONATIVE pattern as described by Goldberg (1995: 63-64), rather than a distinct subcategorization possibility for the verb.

<sup>5</sup> With Dowty (1986), Van Valin & La Polla (1998), Smith (1991) and a host of other researchers, I assume that Aktionsart class characterizes predicate-argument complexes (tenseless propositions or situation-type radicals) rather than verbs *per se*. This assumption is based on the observation that the semantic type of a complement can influence aspectual class. For example, the verb *remember* can be either stative (*I remember her well*) or eventive (*I remembered my keys*) depending upon the semantic type of the object-denotatum.

<sup>6</sup> This treatment of the progressive appears at first glance to run counter to the insights of many semanticists, since clearly the progressive operator can combine with verbs whose inherent aspect is telic rather than processual (as in, e.g., *She was fixing the fence*). In section 3 below I will provide arguments in favor of the claim that the Progressive construction carries a unification requirement restricting its VP complement to a processual type. These arguments involve the interpretation of progressivized states as well as parsimony considerations related to the modeling of the intensional nature of progressive sentences.

<sup>7</sup> In a construct—a linguistic string licensed by a unified combination of constructions—any unspecified values (as for the maximality attribute of a mass noun) will be ‘filled in’, as Definite Determination imposes a [max-] value on its nominal daughter.

<sup>8</sup> See Zwicky (1995) for a discussion of construction-based grammar as a model of nonlocal licensing relationships (e.g., “niece licensing”, in Zwicky’s terms) and exocentric determination of syntactic category membership.

<sup>9</sup> The maximality-based model in CG targets the same combinatory constraint that X-bar syntax captures by requiring that sisters to lexical heads be phrases. However, while the term *maximality* suggests a model based upon phrasehood, being maximal is not equivalent to being a phrase. The maximal word *water* in *She drank water* is not ‘both’ a noun and a noun phrase. The syntactic context plays no role in determining whether the nominal *water* is more appropriately categorized as a phrase or as a bare noun. It is always merely a noun, whether it receives the value [max+], via unification with the VP construction, or the value [max-], via unification with the Definite Determination construction. See Kay & Fillmore (1999: 10) for discussion.

<sup>10</sup> I assume, in accordance with Talmy (1988), that this construction differs from that nominal construction in which the oblique nominal which denotes the ‘source’ of the portion is a bounded type, as in *my piece of the puzzle* and *a piece of a Roman column*.

<sup>11</sup> By modeling inflectional morphology as syntactic combination, we potentially incur violations of the principle of lexical integrity, as discussed by Bresnan & Mchombo 1995. This principle states that elements of morphological structure are not subject to syntactic processes, e.g., recursion. Thus, the plural suffix cannot be paired with a coordinate nominal head, although

nothing in the representation in Figure 4 would seem to prevent this. While I leave open the question of how constructions like Plural (and the Imperfective construction to be discussed below) might be brought into line with lexical integrity, I maintain that inflectional morphology is appropriately represented by constructions, since concord constraints upon sisterhood relations provide a model of coercion effects which exactly parallels that given for, e.g., Indefinite Determination.

<sup>12</sup> Implicit coercion may also be demonstrated with regard to the head (portion-denoting) nominal of the Partitive construction. Nouns which do not conventionally denote units or portions may do so when combined with this construction, as in, e.g., *a splash of coffee* or French *une larme de vin* (lit. ‘a tear of wine’).

<sup>13</sup> The label *SM-determination* refers to the construction which combines the unstressed determiner *some* with a nominal head denoting a mass type.

<sup>14</sup> As we will see in the treatment of aspectually sensitive adverbial expressions in section 3 below, semantic concord between sisters can be recognized even when there is no branching within a construction. The relevant adverbial constructions will be represented (as per Kay & Fillmore 1999) as valence-augmentation constructions—nonbranching structures which, when combined with a lexical verb, add to the valence set of that verb. Such constructions semantically constrain sisterhood relations in that same manner that a branching construction does, e.g., the construction for frame adverbials requires that the frame adverbial be paired with a perfective verb. Therefore, it appears appropriate to speak of valence-augmentation constructions as involving semantic agreement between daughters, although these daughters are not syntactic constituents within the construction, and the construction counts as a lexical verb rather than a verb phrase.

<sup>15</sup> The example of argument structure shows that the functional overlap between shift and concord constructions exists because constructions constrain the lexical types with which they combine, not because of concord between daughters per se. Linking constructions which are shift constructions perform coercion whether or not they express a functor-argument relation (as we have discussed, linking constructions of the type proposed by Goldberg do not involve such relations). The *Way*-construction is a shift construction, and as predicted it also performs implicit conversion (coercion). Since the verb which combines with the construction is necessarily construed as an activity (i.e., a process), verbs which do not otherwise have processual readings receive such readings in the context of the construction. Examples of implicit conversion involving the *Way*-construction are given in (a-b):

- (a) She blinked her way into the light.
- (b) He dove his way into the hearts of millions of viewers (??with a single dive).

While *blink* and *dive* have momentaneous (semelfactive or achievement) readings under ordinary circumstances, they are interpreted as iterated, and therefore processual events in the context of

the *Way*-construction: the subject-denotatum in (a) is necessarily construed as having blinked numerous times; the subject-denotatum in (b) is necessarily understood as having performed a series of dives. Since the construction requires that the input verb denote the means or manner of directed motion, rather than directed motion itself, verbs which inherently denote directed motion are not welcomed (see (18-19)). However, as Goldberg observes (1995: 205), verbs of directed motion are permitted in contexts in which “a basic-level motion verb is understood to imply motion despite difficulty”:

- (c) The novice skier walked her way down the ski slope. (=Goldberg’s (22a))

The explanation I offer for the relative felicity of (c) is compatible with Goldberg’s, but requires a further assumption about the construal of *walk*: it does not denote a verb of directed motion. In essence, the *Way*-construction is here stripping the verb *walk* of its directed-motion component, so that the construction’s addition of the directed-motion component makes sense. We will see the same combination of semantic theft and reimbursement in the case of progressivized statives. Notice, however, that the coercion effects found in (a-c) do not arise from an agreement requirement holding between two sisters. The requirement common to all shift constructions, branching and nonbranching, is that the open-class expression must provide the input that the shift requires. If the open-class form does not denote a type appropriate to the shift, coercion occurs. We know this because only the input type (the lexical expression), and not the output type (the construction’s denotatum), is changed in the resolution of a type mismatch.

<sup>16</sup> That event-time specification is semantically compatible with perfect-style stativity is suggested by typological data (Comrie 1976: 54), and by the fact that past-time adverbials may be used to fix event time in PAST-PERFECT sentences, e.g., *She had left at noon*. In this example, the adverbial expression *at noon* may fix either the reference time or the event time. See Klein 1992 for extensive discussion of these issues.

<sup>17</sup> In fact, as Visser (1966: 223) observes, the past tense and the present perfect were apparent free variants up through the time of Shakespeare. For example, in Act 5, Scene 1 of *Much Ado about Nothing* (1599), Borachio confesses to both Don Pedro and Claudio that he has given false testimony against Hero, beloved of Claudio. Upon hearing this confession, Don Pedro asks Claudio *Runs not this speech like iron through your blood?* Claudio replies *I have drunk poison while he uttered it*. In current English usage, Claudio’s response would be framed in the simple past, suggesting the development of a pragmatic division of labor between the two exponents of past-time reference. This development is English particular. Loss of one of the two competing pasts appears to be a more common outcome, as the present perfect is losing currency relative to the past in dialects of American English (Slobin 1992). When the perfect expands its range at the expense of the simple past, it may lose the aspectual properties which initially distinguished it from a past tense. In French, the present perfect—which, like its English analog, originated from a form of resultative secondary predication—has supplanted the simple past in spoken language and shows no symptoms of stativity (Waugh 1983, Waugh & Monville-Burston 1986).

<sup>18</sup> The event type must be one will could be repeated at present. McCawley (1981: 82) describes this requirement in the following way: “The speaker and addressee’s shared knowledge does not rule out the continued occurrence of events of the kind in question”. Evidence for this constraint is provided by appropriateness judgements, e.g., the question *Have you gotten to the Nordstrom sale?* is appropriate only if the sale is still ongoing and the addressee is presumed to be capable of attending it prior to closing day.

<sup>19</sup> What does it mean to say, as I have in (31c), that a state phase is an event type? It is widely accepted that state phases have perfective properties, including enumerability (*Anna was ill twice*) and incompatibility with the present tense on a reportive interpretation (*\*Anna is ill for two hours*). According to Herweg (1991:992), “a period *t* is a phase of a state *S* just in case *S* holds at *t* and *t* is not included in a period *t'* at which *S* holds as well”. On this definition, it would seem that paradoxically the atomic sentence *I be- sitting in traffic for an hour* does not denote a state phase, since it is always possible to cancel the upward-bounding implicature associated with the durational adverb: *I was sitting in traffic for at least an hour*. However, the cumulativity property which results in upward compatibility is not unique to states. Instead, cumulativity is entailed by the subinterval property, and is thereby a property of ACTIVITY predications as well as state predications. Thus, for example, an event of walking can be conjoined with a temporally contiguous phase of walking to yield a ‘superinterval’ of walking. A state phase, like an activity, is an event—an episode of stasis—which cannot be instantiated at a single moment alone. Because of cumulativity, termination of a state phase or an activity phase (e.g., *We walked around town for two hours*) does not entail termination of the state or activity from which that phase is selected. For this reason, the interpreter must use linguistic context and background knowledge about types of states to determine for perfect-form assertions like (31a) whether speech time is the terminus of the relevant state. The point here is that the upward compatibility of state-phase predications does not detract from their perfective character.

<sup>20</sup> See Michaelis (1998: 230-234) for extensive discussion of this issue.

<sup>21</sup> In his 1981 paper, McCawley retreats from a central contention of his 1971 paper—that resultative and existential uses of the perfect are semantically distinct—in part due to the observation that the two readings are indistinguishable under negation (p. 84). However, the two relevant readings of the perfect have idiosyncratic syntactic reflexes, suggesting ambiguity rather than vagueness, as per Zwicky & Sadock’s ‘added material’ diagnostic (1975: 12-14). For example, the resultative reading is preempted in certain syntactic contexts which welcome the existential reading, e.g., focus-presupposition constructions (Michaelis 1998: 246-251). For example, the *wh*-question *Where have the police arrested the suspect?* has only an existential reading, which entails numerous arrests of this same suspect. This question cannot be used to elicit the (unique) time at which the police arrested a suspect now in custody (the resultative reading).

<sup>22</sup> For our purposes here, it makes no difference whether these three constructions equate reference time with the present, as in the example sentences in (29-31), or do not include tense

specifications. As described above, it is only in the case of the resultative present perfect that the combination of tense and anterior aspect results in noncompositionally derived effects.

<sup>23</sup> See Goldberg 1995, Jackendoff 1997b, Kay & Fillmore 1999 and Michaelis & Lambrecht 1996 for various implementations of constructional inheritance networks. Inheritance networks are motivated by the same set of considerations which underlie Bybee's use of product-oriented schemas to describe patterns in inflectional morphology (Bybee 1995). In both systems, semantic and formal commonalities reinforce one another and contribute to emergent generalizations, which are captured as schemas (constructions or morphological templates). Members of a given product-oriented class are related to this schema via relations of family resemblance. Derivational relations play no role in the description of such generalizations.

<sup>24</sup> At first glance, it seems implausible to describe the continuative perfect as performing implicit conversion. Although the stative VP complement in the example *I've had German measles* has a perfective (state phase) reading, the source of this reading appears to be distinct from that of the very same perfective reading which is entailed by the existential interpretation of this sentence. In the case of the existential perfect, the construction ordinarily selects inherently perfective complements (as in, e.g., *I've seen you around*); the coerced perfective readings are manifestations of the same constraint that makes an inherently perfective complement the default choice. There is apparently no case in which the continuative perfect selects an inherently perfective complement. Implicit conversion appears inherent to the operation of this shift construction—an anomalous situation with respect to the data we have looked at. However, we do find cases of coerced iterative readings which suggest that the state-phase reading of continuative perfect complements is a coerced one. Notice (a):

- (a) The light has flashed since dawn.

This sentence is ambiguous between existential and continuative interpretations. On the existential reading, what is asserted is that there were one or more flashes within the present-inclusive interval whose left boundary is dawn. On the continuative reading, the light has flashed periodically within this interval. This iterated interpretation is a case of coercion. Clearly, an iterated event within a time span qualifies as a state phase. Further, it is the continuative perfect construction, rather than selectional restrictions of the adverb *since*, which is responsible for the iterated reading of *flash*, since *since* is also compatible with a perfective reading of this verb, as when (a) receives an existential interpretation.

<sup>25</sup> As observed by Dowty (1986:43-44) and Van Valin & La Polla (1997), among others, aspectual types are expressed by predicate-argument combinations, rather than lexical verbs. However, I will assume, following Dowty, that the aspectual type of the verb is derivable from the type of its projection, whether this projection be a verb phrase or sentence. Because all information conveyed by attribute-value matrices is available at every node in a construct (a licensed combination of constructions), the semantic type information contributed by the verb's arguments is in the valence set of the verb. Therefore, the information necessary to perform aspectual categorization will always be available at the level of the verb. Information sharing

obviates the need for us to propose that aspectually sensitive adjuncts are adjoined to sentences or VPs. This move would have no obvious rationale in the syntax and would serve solely to ensure that the adjunct has a sister to which the relevant aspectual features can accrue.

<sup>26</sup> While the complement of the progressive auxiliary *be* belongs to the syntactic category VP, its semantic type is that of event. Via coinstantiation, the subject requirement of the head verb of the VP complement is satisfied, i.e., ‘accounted for’, since it unifies with the NP which serves as subject of the finite auxiliary. Notice that we need not assume, as is traditional in the transformational tradition, that the complement of the auxiliary is ‘syntactically’ a sentence.

<sup>27</sup> The idiosyncratic nature of use conditions upon tenses both within English and across languages appears to indicate a construction-based treatment, since, e.g., the English present tense can express both an inclusion relationship relative to a stative predication (as in, e.g., *She is here*) and temporal succession of events (as in the so-called historical present). We will presume that these two uses of the present tense are licensed by two homophonous tense constructions.

<sup>28</sup> Dowty (1986:54-56) observes that the reference time of a progressive sentence cannot be construed as the INITIAL subinterval of the time for which the atomic clause of the progressive holds. That is, a progressive sentence can be said to be truthful only after the activity denoted by the VP complement has held for some period. He suggests that this condition is responsible (via quantity-based inference) for the fact that progressive sentences, unlike other stative sentences, do not have inceptive readings in temporal discourse, other than as reflections of a character’s belated recognition of an activity already in progress, as in, e.g., *Sarah looked down. Suddenly the water was rising*. Here, the reader presumes that the water has been rising for some time prior to Sarah’s noticing it. Accordingly, the semantics for the Progressive given in Figure 8 should be augmented so that the DURING relation is one of partial overlap: the activity denoted by the VP complement must begin prior to the inception of that state denoted by the construction.

<sup>29</sup> Telicity is not required, since, for example, the following perfect-form sentences count as resultative:

- (a) We now live in a world where **man has walked on the moon**.  
(Jim Lovell, *Apollo 13*)
- (b) I’ve **knocked** (so someone should be coming soon). [said by one party guest to another outside the host’s front door]

These examples show that the resultant state expressed by a resultative-perfect assertion is not identical to that entailed by the Aktionsart of a telic VP complement.

<sup>30</sup> As observed in fn. 18, the terminus of the state phase need not be construed as the terminus of the state from which that phase is selected, although it can be, as in the following quote from the comic strip *Cathy*:



My nails **have been decent**. Today I bit them off. My skin **has been fine**. Today it broke out. My demeanor **has been poised and professional**. Today I spilled coffee on my hair, ripped my pantyhose, broke my purse strap, and sat on the floor of 7-Eleven in my power suit and ate a bag of Cheetos (*Cathy*, 11/24/92)

<sup>31</sup> The same observations can be made, *ceteris paribus*, for the Perfective construction, which simply reverses the direction of inclusion that holds between the situation type and the reference time. As we have seen in the Latin example in (36), perfective coercions may have either episodic or inchoative readings. The appropriate representation of the French Perfective construction is complicated by the noncompositionality of its most typical expression, the *Passé Composé*. As discussed in fn. 16, this construction, as one can discern from its form, began life as a resultative (shift) construction with a stative head, but has become grammaticized to the point that it is simply a perfective marker. Notice that the following example, involving the combination of the *Passé Composé* with a stative main verb (*croire* ‘think’) and a durational adverb, is an instance of instantiation rather than coercion:

(a) *Mais pendant quinze ans j’ai cru que j’étais un superman, moi!*

“But for fifteen years I thought I was a superman!” (Binet, *Les Bidochon* 13, p. 17).

In this example, the Perfective (*viz.* the *Passé Composé*) combines with the Durational Adverbial construction. The Durational Adverbial construction is a shift construction which counts as a perfective verb. It is a valence-augmentation construction by which a verb is combined with a preposition-headed expression which in turn requires a stative verb as a valence member. Since the verb entry is perfective, the combination of the verb with the Perfective construction involves a ‘match’, *i.e.*, instantiation. The application of Durational Adverbial and Perfective construction is not ordered, but simultaneous. It is licensed when the two constructions receive valence members of the appropriate types.