

# Stative by construction

LAURA A. MICHAELIS

## *Abstract*

*Fundamental to narrative is the ability to indicate what events overlapped what other events. Crucial to this ability is stativization: only stative situations can include (as opposed to being included within) reference time. But how exactly are stative type-shifts effected, and what does it mean for an event to be “turned into” a state? There are two purported paths to stativity: use of a compositional type-shifting device, as exemplified by (i), and coercion, the creation of resolvable semantic conflict between a combinatoric pattern and an open-class word, as exemplified by (ii):*

- (i) The House is voting on the legislation.
- (ii) We talk on the phone every Sunday.

*What is the trigger for stative coercion in (ii)? According to de Swart (1998, 2003) and others, it would be the iterative adverbial every Saturday. But iteration is insufficient to secure stativity, as, e.g., activity verbs, which also consist of repeated actions, denote events rather than states. The stativity of progressive sentences is likewise mysterious under the standard analysis: while the progressive is typically said to highlight the pre-culmination portion of an event representation (Parsons 1990; Langacker 1987; Smith 1997), that portion is presumably an activity rather than a state. To resolve these paradoxes, I propose a selection-based model of two kinds of stative type-shifts: those effected by derivational means (e.g., the progressive construction) and those effected by inflectional means (e.g., the English present tense). I then provide a formal representation of the relevant constructions using conventions of Sign Based Construction Grammar (SBCG) (Sag 2010, Michaelis forthcoming). According to this model, stativizing constructions both denote states and select states in the Aktionsart representations of verbs with which they combine. This model relies on the existence of rests, periods of stasis entailed by the Aktionsart representations of dynamic verbs. I argue that by viewing stative type-shifts as the products of construction-verb combination, we can explain: (i) the relationship between a verb’s input and output representations, (ii) how tense inflections affect the Aktionsart representations of verbs with which they combine and (iii) the functions of the so-called relative past tense. In addition, I argue, that if we view stative type shifts as functions of constructions, rather than, say, the products of semantic rules, we can better understand differences in the combinatoric potential of a given tense inflection both across languages and over historic time.*

## 1. Introduction<sup>1</sup>

Some verbs are born states and others have stativity thrust upon them. What is (linguistic) stativity? It is a complex of inferential and grammatical properties whose conceptual foundations include the “covariant properties of [...] constancy and open-endedness”<sup>2</sup> (Langacker 1987: 261). A clause may be stative because it contains a stative verb (as in English *I prefer it* or Latin *Rubet* ‘it is red’) or because of its morphosyntactic marking, or both. Among the morphosyntactic markers of stativity are inflectional endings, like the French *imparfait*, which can, but need not, combine with state verbs. Thus, for example, the French imperfective sentence *Je remplissais le formulaire* ‘I was filling out the form’ is stative despite containing a dynamic verb, *remplir*. Stativity is both a perspective — viewing a situation from within — and a narrative strategy — one that enables the narrator to leave endpoints outside the temporal window of interest. In proposing this broad view of stativity, I am conflating two categories that aspectual theorists like Comrie (1976) and Smith (1997) have endeavored to keep apart: the situation type *state* and the grammatical aspect *imperfective*. In the present account, there are simply lexical states and grammatically derived states.<sup>3</sup> In other words, to add imperfective or progressive morphology to a

dynamic verb is to create a predication that *acts like a state clause*, in ways to be described in the next section. As a prelude to that discussion, let us consider the English sentence *She was filling out the form when her husband walked in*. The speaker of this sentence presents an open-ended situation akin to a state: neither the inception of the event nor its culmination appears within the temporal window defined by the husband's entrance. Lack of change within an interval and a narrator's decision to ignore a situation's endpoints amount to the same thing.

The view of stativity as a mode of narrative presentation is not new; it is prominent in truth-functional accounts of tense semantics connected to Discourse Representation Theory (Kamp and Rohrer 1983; Partee 1984; Dowty 1986). In such theories, a proposition has a truth interval — a time during which or at which it can be truthfully stated (see Kuhn and Portner 2001). This time period, referred to by Reichenbach (1947) as *reference time* and by Klein (1994) as *topic time*, is one that is jointly relevant to the interlocutors. Aspectual distinctions amount to differences in the way that a situation (or proposition) relates to its reference time. In particular, Partee (1984) argues, a stative predication includes its reference time, while a dynamic predication is included within its reference time. Klein (1994) makes a similar proposal, arguing that event time falls within topic time in the case of perfective predications, while topic time falls within event time in the case of imperfective predications. What this means is that the speaker of a stative sentence presents only part of a situation, vouching only for that portion that falls within reference time. In other words, one can truthfully and informatively assert that a state held at some time without knowing when it began or ended (or whether it has ended). By contrast, to assert an event is to assert that it began and ended within the reference time. The contrast in (1) and (2) illustrates this point:

- (1) ***Fred was at home on Tuesday**, so he has an alibi.*  
 (2) *Fred traveled home on Tuesday.*

The boldfaced portion of (1) is a state sentence; its reference time is the interval denoted by the PP *on Tuesday*. We say that the interval Tuesday is included within the state of Fred's being at home because the endpoints of that state fall outside the temporal window defined by Tuesday. The absence of transitions within the reference interval is the only condition on the assertion's validity. In fact, the transitions are irrelevant: for all either speaker or hearer knows, Fred could have been home on the prior Monday and remained there after Tuesday. In (2), by contrast, both the beginning and endpoint of Fred's journey are located within the Tuesday time frame. Thus, we say that in the case of dynamic situations, reference time includes or "exhausts" the situation described.

In sum, I adopt the following very general definition of stative situations, which is intended to include both lexicalized states and grammatically derived states: a state includes its reference time, and thus may hold at larger intervals than the one for which it is actually asserted (Dowty 1986). This is a consequence of the well known *subinterval property* of states (Bennett and Partee 1978): "[a]ny subpart of [a state's] duration [...] is sufficient to instantiate the category" (Langacker 1987: 259).

Stativization is a linguistic procedure through which a speaker creates a stative predication from one whose lexical verb or argument array, or both, requires a dynamic construal. Interpreters construe stativized predications by reference to an elementary event complex or *event nucleus*, described by Moens and Steedman (1988: 15) as "an association of a goal event, or 'culmination', with a 'preparatory process' by which it is accomplished, and a 'consequent state', which ensues" (see also Chang et al. 1998 and Croft 1998). For example, the resultant-state predication *She is gone* is

interpreted as the final state of a departure event (Nedjalkov and Jaxontov 1988). Following Moens and Steedman (1988: 15), we will assume that “[n]atural-language categories like aspects, futurates, adverbials, and *when*-clauses [can] change the temporal/aspectual category of propositions under the control of such a nucleic knowledge representation structure”. Compare, for example, the following two sentences, taken from a Wikipedia article about the Apollo 11 lunar mission in 1969:

- (3) *Three seconds later, **Eagle landed** and Armstrong said, “Shutdown”.*  
 (4) *Armstrong continued with the remainder of the post-landing checklist [...] before responding to Duke with the famous words, “Houston, Tranquility Base here. **The Eagle has landed**”.*

The verb *land* is an event verb, and the boldfaced predication in (3) denotes an event complex; this event complex consists of a process (each of the *Eagle’s* footpads touch the moon’s surface in turn), a transition event (the *Eagle* comes to rest on the landing site) and an end state (the *Eagle* is stationed on the landing site). Armstrong’s second statement in (4), however, reports not an event but a state. This state is a derivative state — it cannot be characterized without reference to the event of landing. Thus, construing a perfect-form predication is a form of inductive inference: confronted with both a state (denoted by the auxiliary *have*) and an anterior event (denoted by the past participial VP), the interpreter must determine what kind of state the event initiated (Hamm et al. 2006). Construed narrowly, the state reported in (4) is merely that of the *Eagle* being stationed on the moon’s surface. Construed more broadly, it is a state that determines what happens next: only once it begins can the astronauts exit the capsule, walk on the moon’s surface, etc.

Why do speakers stativize? If we confine ourselves to instances of stativization like (4), a reasonable answer is: “to report news”: the present-perfect predication in (4), like those in the parent-child interactions reported by Slobin (1994), signals “the completion of [an] action [that] provides the grounds for a subsequent action” (p. 122). But this analysis is too restrictive: consider that a past-tense version of (4), placed in a subordinate clause (e.g., *When the Eagle had landed...*), is no less stativizing than the present-perfect assertion. Instead, speakers create states to meet the demands of narrative. Telling a story requires us to indicate what situations overlapped, preceded or followed other situations. Stativization is the means by which we convey overlap: as described above, only stative situations can include (rather than being included within) an interval. Thus, if we wish to convey that one event was ongoing at the time of another, we must stativize the first. An example involving the French *imparfait* is given in (5),

- (5) *C’est la petite Cavinet! En remontant, tout à l’heure, je l’ai aperçue qui se **faisait** embrasser par le fils Martinez dans le garage à velos!*  
 ‘It’s the Cavinet girl. While coming upstairs, just a minute ago, I saw her getting kissed (*lit.* ‘making herself kissed’) by the Martinez boy in the bike shed.’  
 (Binet, *Les Bidochon* 3: 10)

In (5), the narrator (Raymonde) is recounting what happened before the Cavinet girl’s return to her family’s apartment upstairs. This short narrative consists of two events: the Cavinet girl kissed the Martinez boy in the bike shed and Raymonde saw the Cavinet girl. Without stativization, Raymonde could do nothing but report these two events sequentially. With stativization, she can indicate that the kissing event included the perception event — that is, the former was going on for some time prior to, and perhaps following, the latter. The stativizing device used here is the Imperfective construction, an inflection that is generally found on state verbs but in this case is attached to an event verb, *faire*. To make use of a visual metaphor, we can

say that while the Perfect picks out the final frame in the film of some event, the Imperfective in (5) selects a single frame from the middle of that film. In both cases, what is depicted (or denoted) is a static situation. But, despite what Comrie 1976 and Smith 1997 have implied, it is not the *function* of a stativizing construction to provide a stative perspective. The function of a stativizing construction is indicating temporal overlap when it would not otherwise be inferred.<sup>4</sup>

How exactly are stative type-shifts effected, and what does it mean for an event to be “turned into” a state? It is generally assumed that there are two routes to stativity: through the use of a dedicated type-shifting device, like the English Progressive or Perfect constructions (de Swart 1998, 2003; Herweg 1991; Michaelis 2004), and coercion, the creation of resolvable semantic conflict between a morphosyntactic pattern and an open-class word (Jackendoff 1997). The compositional strategy is illustrated by the Perfect predication in (2) above and the Progressive sentence (6):

(6) *The House is voting on the legislation.*

We say that the Perfect and Progressive are dedicated type-shifting devices because they function solely to shift the aspectual type of the open-class verb (from dynamic to stative). The coercion strategy is illustrated by the habitual sentence (7):

(7) *We talk on the phone every Sunday.*

What is the trigger for stative coercion in (6)? According to de Swart (1998, 2003) and others, it is the iterative adverbial *every Saturday*. But in what respect does an iterated event qualify as a state? In classifications based on inherent lexical aspect, or Aktionsart, a series of type-identical subevents, e.g., bouncing a ball, qualifies as a dynamic situation — an activity (Dowty 1986). Thus, it remains unclear why habitual situations should act like states: they do not qualify as such by their internal composition, which is analogous to that of iterated events.

The stativity of progressive sentences is likewise mysterious under the standard analysis. The progressive is typically said to highlight that portion of an event representation that follows the inception of the event but precedes its culmination (Parsons 1990; Langacker 1987; Smith 1997; *inter alia*). This medial portion is presumably an activity (what Croft 1998 would call the event’s *run-up process*) rather than a state. For example, the progressive predication in (6) describes vote-casting activity — clearly a dynamic situation rather than a stative one. While event frames include initial states and final states, they do not include medial states, so what state does a progressive sentence denote? Langacker (1999) suggests an optical analogy for the progressive that appears to provide a way out of this conceptual quandary:

[T]he homogenization effected by -ing is interpretable as the result of “zooming in”. We can readily identify a familiar visual object when its entire contour fits within our visual field. For instance, upon perceiving a certain well-known configuration of heads, legs, body, tail and udder, we can easily recognize a cow. Imagine, however, that for some reason you decide to approach a cow, coming closer and closer until finally you touch it with the tip of your nose. At some point in your approximation, the contours of the cow overflow the limits of your visual field, so that all you can actually see is an undifferentiated mass of cowhide. [...] It is not overly fanciful to suggest that the profile of an active participle is construed as homogeneous by an analogous mechanism. (Langacker 1999: 228)

Vision-based analogies provide apt ways to describe grammatical systems which, like aspect, argument realization and information structure, provide multiple ways of encoding the same situation. But when our focus is meaning composition, we are obligated to offer a theory of verb-construction interaction, as Goldberg (1995) does for argument-realization patterns. A compositional model of aspect should address how the semantic representation of a dynamic verb is rendered compatible with that of a state-denoting construction. If we believe, along with Jackendoff (1983: 14), that “language is a relatively efficient and accurate encoding of the information it conveys”, then the information encoded by verbs cannot simply be discarded during verb-construction integration. Stativizing constructions do not create states out of thin air. Rather, as I will claim, stativizing constructions evoke states that are contained in the event representations of verbs.

Accordingly, I will propose a selection-based model of stative type-shifts effected both by dedicated type-shifting constructions like the English progressive and by coercion, as in the case of habitual present-tense predications. According to this model, inspired by Bickel (1997), stativizing constructions not only denote states but also select states in the Aktionsart representations of verbs with which they combine.<sup>5</sup> I take Aktionsart representations to consist of states, transitions and state-transition combinations, or *event chains*. Because a transition is defined relative to a prior or subsequent state, all intervals that adjoin a transition, including those preceding onset transitions and those following offset transitions, are states, which I will refer to as *rests*. Because selection can target any rest in an event chain — initial, final or intermediate — it finds states within Aktionsart representations where none have previously been presumed to exist. For this reason, I will show, selection provides a transparent account of a wide variety of stative type shifts, including progressive, perfect, futurate present and habitual/generic construals. I will argue that by viewing stative type-shifts as the products of construction-verb unification, we can explain: (1) the relationship between a verb’s canonical and shifted representations, (2) how tenses alter Aktionsart representations, and (3) the functions of the so-called relative past tense (Declerck 1990, 1995).<sup>6</sup> In treating the English past tense, I will reject the prevailing view that it is aspectually neutral. I will argue instead that English, like Romance, has a state-selecting preterit tense, and that stative coercion underlies uses of simple-past predications in reported speech and other subordinate contexts.

The remainder of this paper will be structured as follows. Section 2 will describe several stativity tests, apply them to predications containing lexically stative verbs and then use those same tests to demonstrate the stativity of Perfect and Progressive predications. Section 3 will outline a theory of verbal Aktionsart based on Michaelis (2004) and describe the mechanism by which construction meanings combine with verb meanings: selection. A constraint on selection, the *shift constraint*, will be proposed. Section 4 will describe two English type-shifting constructions, the perfect and progressive. Section 5 will describe two type-selecting constructions, the English present and past. In this section, I will show that by assuming a state-selecting (or imperfective) past construction for English, we gain an elegant way of accounting for temporal backshifting in embedded clauses. I will provide formal representations of both type-shifting and type-selecting constructions using conventions of *Sign-Based Construction Grammar* (SBCG) (Sag 2010; Michaelis forthcoming). In Section 6, we will ask why a construction-based model of aspectual type shifting is preferable to one that does not assume constructions. The answer given is that if we view stative type shifts as the effects of constructions, differences in the range of interpretations associated with a given tense inflection both across languages and over historic time can be attributed to the idiomatic nature of

constructions: while, for example, the *present tense* connotes a conceptual category that is not expected to vary across language — any more so than does the concept of *now* — the present-tense *construction* denotes a conventionalized, language-specific form-meaning pairing with an idiosyncratic range of uses. Section 7 will be devoted to concluding remarks.

## 2. Stativity tests

In this section we will consider the aspectual properties of the two type-shifting constructions that will be our focus in Section 4: the progressive construction and the perfect construction. Using five stativity tests, we will verify that perfect and progressive predications count as state predications. This exercise is important because the two constructions appear to be aspectual hybrids: while both have stative auxiliary heads, both also (typically) have dynamic participial daughters. Further clouding the aspectual picture is the fact that perfect predications convey completion, a notion otherwise closely associated with event predications, while progressive predications appear to impart dynamicity to otherwise stative verbs, e.g., *She's really liking her new teacher*. However, both constructions are *headed constructions* in the sense of Sag (2010), and therefore their aspectual properties are determined by those of their auxiliary heads. Since both constructions have *stative* auxiliary heads, it stands to reason that the predications they license are stative as well.

### 2.1. *The when test*

Proposed by Vlach (1981), the *when* test, like the test to be described in 2.2., probes the “overlap” property of states. Contrasting diagnostic contexts are given in (8) and (9), respectively:

- (8) Stative predication (overlap): *When the phone rang, I was upstairs.*
- (9) Dynamic predication (no overlap): *When the phone rang, I walked upstairs.*

The *when* test asks whether the situation described by the main-clause predication is necessarily interpreted as overlapping that of the dynamic subordinate clause. If the answer is yes, the main-clause predication denotes a state. For example, in (8), I was upstairs prior to the phone’s ringing. If instead the main-clause predication must be interpreted as denoting a situation that begins *after* the subordinate-clause event, the main-clause predication denotes an event, as in (9). The *when* test shows that both perfect predications (in particular, past-perfect predications) and progressive predications are stative:

- (10) Perfect predication (overlap): *When the phone rang, I had walked upstairs.*
- (11) Progressive predication (overlap): *When the phone rang, I was fixing the fan belt.*

Sentence (10) conveys that the phone rang while the state resulting from walking upstairs was in force. Likewise, (11) conveys that the phone rang while fan-belt fixing was in progress. The *when* test thus reveals that perfect and progressive predications, despite containing dynamic participial complements, qualify as stative. Such predications can therefore be considered derived states: they act like states although they are not states by virtue of lexical Aktionsart.

### 2.2. *The indirect-discourse test*

Like the *when* test, the indirect-discourse test uses inclusion of reference time as a diagnostic of stativity. If the situation denoted by a reported statement can be interpreted as overlapping the time of the speech-act event in the matrix clause (i.e., the reference time), we view the reported statement as a stative predication. If by

contrast the situation denoted by the reported statement can only be construed as *preceding* the speech-act event, we view the reported statement as a dynamic predication. Examples (12)–(13) show this contrast:

- (12) Stative predication (overlap): *She reported that the door was open.*  
 (13) Dynamic predication (no overlap): *She reported that the door opened.*

While there is an “overlap” reading of (13), it requires a habitual construal of the predication *the door opened* — a reading that itself represents a stative type shift (see Section 5.1). The reading of (13) at issue here is that in which *the door opened* denotes a past-in-past event. Both perfect and progressive predications yield overlap readings according to the indirect-discourse test:

- (14) Perfect predication (overlap): *She reported the door had opened.*  
 (15) Progressive predication (overlap): *She reported that the door was opening.*

According to (14), the reporting event occurred while the door was open.<sup>7</sup> Likewise, (15) conveys that the door was opening at the time of the reporting event. Both of these readings qualify as overlap readings, and thus demonstrate the stativity of the two constructions at issue.

### 2.3. *The expansion test*

A past-tense state assertion, unlike a past-tense event sentence, is compatible with a present-tense conjunct clause asserting continuation of the situation to speech time. Such a clause may contain the temporal adverb *still*, indicating persistence over time (Michaelis 1993). The expansion test is based on Langacker’s (1987: 259–260) discussion of the contrast in (16)–(17):

- (16) Stative predication (expandable): *The Smiths had an agreement about that and in fact they still do.*  
 [Langacker’s 11a]  
 (17) Dynamic predication (not expandable): *\*The Smiths had an argument about that and in fact they still do.*  
 [Langacker’s 11b]

Langacker (1987) explains this contrast as follows:

Because an imperfective [situation] is infinitely expandable/ contractible along the temporal dimension, so that any subpart is representative of the category, existence of the Smiths’ arrangement through any positive span of time should constitute a valid instance of the [...] category *have an understanding*, regardless of whether it exhausts the full duration of the arrangement. [...] An inconsistency arises in the case of [17], however. A perfective category lacks the property that any subpart of an instance is also a valid instance [...]. Putting *have an argument* into the past tense therefore implies that this perfective event has been carried out in its entirety prior to the time of speaking. (Langacker 1987: 260)

In other words, as described in Section 1 above, a stative situation, unlike a dynamic one, may hold at a larger interval than that for which it is asserted. This is a consequence of the fact that a state includes its reference time: reference time does not exhaust the duration of the state. In (18)–(19) we see that both Perfect and Progressive predications are stative according to the expansion test:

- (18) Perfect predication (expandable): ***I have still never gone to Disney World.***<sup>8</sup>

- (19) Progressive predication (expandible): *She was watering her plants when and I left and **she still is now**.*

#### 2.4. The present-tense reporting test

According to this test, a predication is stative only if it can be reported as ongoing at speech time by means of the present tense. Otherwise, it is dynamic. Examples (20)–(21) exemplify this contrast:

- (20) Stative predication (ongoing at speech time): *Look! The baby likes the bouncy seat!*  
 (21) Dynamic predication (not ongoing at speech time): *\*Look! Nick runs by the house.*<sup>9</sup>

This test again yields the result that Perfect and Progressive predications are stative:

- (22) Perfect predication (ongoing at speech time): *Look! The book store has closed.*  
 (23) Progressive predication (ongoing at speech time): *Look! It's raining.*

Note that while (22–23) feature aspectual morphology, they are present-tense predications in the same way that (20–21) are, because their auxiliary head verbs are inflected for present tense.

An objection that may be raised to the present-tense reporting test is that it is applicable only to Modern English. In other languages, including other Germanic languages (and earlier stages of English itself), the simple present tense is used to report an event ongoing at speech time. Such reports are functionally identical to those conveyed by Modern English progressive predications. For example, Swedish *Sten äter ett äpple* is translated by the English present-progressive report ‘Sten is eating an apple’ (Giorgi and Pianesi 1997:153).<sup>10</sup> This typological variation is superficial: the present tense, in its basic reporting function, is a state selector by virtue of its meaning — a meaning that is common to all present tenses. It would make no sense to say, for example, that the present interval can accommodate an event in Swedish but not in English; the Swedish sentence *Sten äter ett äpple* does not report an event of apple consumption but merely some progress toward that outcome. It simply happens that in languages other than English, the present tense is capable of triggering a stative coercion identical to the type shift performed in English by the progressive.

#### 2.5. The complementation test

The complementation test is actually a pair of tests, both of which are owed to Katz (2000). The first test involves infinitival complements of the verbs *believe*, *know* and *think*. As Katz (2000: 6) observes: “stative predicates appear quite naturally as infinitival complements of *believe*, but eventive predicates do not ([...], setting aside generic/habitual readings)”. The contrast in (24)–(25) illustrates this point:

- (24) Stative predication: *I believe my senators to favor health care reform.*  
 (25) Dynamic predication: *\*I believe my senators to vote for health care reform.*

Both perfect and progressive predications are revealed to be stative by this complementation test:

- (26) Perfect predication: *I believe my senators to have voted for health care reform.*  
 (27) Progressive predication: *I believe my senators to be voting for health care reform.*

The second complementation test is an inferential one. It involves VP complements of the modal verb *must*. If the combination of *must* and a verbal complement typically

has an epistemic (as against deontic) reading, the VP complement is stative; if it necessarily has a deontic reading, the VP complement is dynamic (again we set aside generic and habitual readings). Sentences (28)–(29) exemplify the relevant contrast:

- (28) Stative predication (epistemic reading most likely): *Sue must like Vivaldi.*  
 (29) Dynamic predication (only a deontic reading possible): *Sue must cook dinner.*

While (28) conveys a conclusion based on evidence (of Sue's musical taste), (29) asserts a moral or legal obligation. When *must* is paired with a perfect or progressive complement, as in (30)–(31), respectively, the resulting predication has an exclusively epistemic reading:

- (30) Perfect predication (epistemic reading most likely): *Sue must have cleaned the house.*  
 (31) Progressive predication (epistemic reading most likely): *Sue must be cleaning the house.*

Thus, (30)–(31) illustrate the stativity of perfect and progressive predications.

The five convergent tests reviewed in this section show that perfect and progressive predications count as state predications, irrespective of the aspectual classification of their auxiliary complements. This finding in turn suggests that the perfect and progressive constructions function to provide a stative perspective on what would otherwise be a dynamic situation. The *stative perspective*, as discussed in Section 1, is an internal viewpoint, i.e., one in which the boundaries of the situation described do not fall within the reference interval. How is this perspective shift accomplished? In the next section, we will outline a simple system of temporal representation that describes the effect of perfect and progressive constructions on the Aktionsart representations of dynamic verbs with which they combine.

### 3. Temporal representation and selection

A system of temporal representation will be used here to capture the patterns of stasis and change that are characteristic of each situation type. Unlike the predicate- and operator-based lexical decompositions proposed by Dowty (1979) and elaborated in works by Van Valin and LaPolla (1997), Rappaport Hovav and Levin (1998), Levin and Rappaport Hovav (2005) and others, temporal representations do not represent relations among subevents like manner and means; nor do they capture semantic entailments of Aktionsart classes like causality and agentivity. In this respect, temporal representation is underspecified. As I will demonstrate, however, it provides an elegant and revealing way to represent the alterations of verbal Aktionsart that constructions trigger. Table 1 gives temporal representations for five of the six Aktionsart classes recognized by Michaelis (2004) (the category *state phase* has here been subsumed under *homogeneous activity*). This inventory includes the four situation types originally proposed by Vendler (1957) — states, activities, achievements and accomplishments — but, following Langacker (1991: 25-26), splits the class of activities into homogeneous types (like standing on the porch) and heterogeneous types (like pacing back and forth). To factor out the semantic contributions of verb morphology, each Aktionsart class is illustrated by an uninflected predication.

The representations shown in the second column use the two components of temporal representation proposed by Bickel (1997): *phases* ( $\phi$ ) and *transitions* ( $\tau$ ).<sup>11</sup> States are internally homogeneous situations that include no transitions (i.e., temporal boundaries). State representations lack onset and offset transitions. This is not because we do not infer states to have beginning and endpoints, but because a

speaker who asserts a state, as in e.g., *I like French films*, says nothing about those points. The reason is that states are atemporal: they can be verified on the basis of a single momentaneous sample (Bach 1986). Accordingly, a state is said to include the interval at which it holds (Partee 1984; Herweg 1991). Transitions are state-change events, and as such are isomorphic to achievements. However, the category of transitions is not limited to those inchoative events that are lexicalized as achievement verbs, since it also includes the events of inception and cessation. These events jointly define the endpoints of a situation. For example, the endpoints of sleeping, a homogeneous activity, are, respectively, the events of falling asleep and waking up.

Unlike states, transitions cannot stand alone, nor can they be iterated without the mediation of a state; accordingly, the representations  $*[\tau]$  and  $*[\tau \tau]$  are ill-formed (Bickel 1997: 126). By contrast, the representation  $[\tau \phi \tau]$  is well-formed; it corresponds to a homogeneous activity like wearing a sweater (recall that agentive properties are invisible to temporal representation). When the representation  $[\tau \phi \tau]$  is iterated, it corresponds to an *event chain* or heterogeneous activity. The representation corresponding to heterogeneous activities contains the sequence  $[\tau \phi]^+$ , denoting one or more instances of particular state change, e.g., that of crossing from one side of a room to another in the example of pacing. While both heterogeneous activities and homogeneous activities can be expanded indefinitely, the mechanisms are different in each case. In the former case, expansion involves repetition of subevents, while in the latter case expansion simply involves lack of change. Notice, however, that in neither case does expansion have any effect upon bounding: the initial and final transitions are present whatever intervenes between them. Further, both kinds of activity representations are magnitude-neutral. For example, while (32) denotes an iterated-event episode that may have lasted only seconds, (33) denotes an iterated-event episode that may have lasted for years. Both episodes, however, count as heterogeneous activities:

- (32) He dribbled the ball at the half-court line.  
 (33) He attended every home game played on a Sunday.

When a heterogeneous activity is embedded in an accomplishment representation, shown in Table 1 as  $[\tau \phi [\tau \phi] \tau \phi]$ , the offset transition of that activity is identified with the initial transition of the embedded achievement,  $[\tau \phi]$ . The rationale for this practice is that, for example, in an event of walking home, the threshold-crossing transition is also the final step of the walk.

<i>Aktionsart Class</i>	<i>Temporal Representation</i>	<i>Example predication</i>
<b>State</b>	$\phi$	<i>prefer- white wine.</i>
<b>Homogeneous activity</b>	$\tau \phi \tau$	<i>stand- on one foot</i>
<b>Heterogeneous activity</b>	$\tau \phi [\tau \phi]^+ \tau$	<i>pace- back and forth</i>
<b>Achievement</b>	$\tau \phi$	<i>stand- up</i>
<b>Accomplishment</b>	$\tau \phi [\tau \phi]^+ \tau \phi$	<i>drive- home</i>

Table 1. *Aktionsart classes in temporal representation*

As mentioned in Section 1, all intervals adjoining a transition event, including those that precede an onset transition and those that follow an offset transition, are states. Such states, or *rests*, are available for selection by a state-denoting construction.

I propose to represent the interaction between verbs and aspectually sensitive constructions (or, equivalently, between lexical aspect and grammatical aspect) as a form of unification, in which all exponents of grammatical aspect are constructions. These constructions express either state frames or event frames, according to their semantics, just as argument-structure constructions are directly associated with predicate-argument representations in Goldberg’s treatment of linking patterns (Goldberg 1995, 2006). A construction that denotes an event selects the appropriate transition from the temporal representation of the verb with which it combines, while a construction that denotes a state selects the appropriate phase from the temporal representation of the verb with which it combines.

We must keep in mind, however, that while selection is a convenient way to describe construction-verb interaction, it is a procedural mode of description that cannot be directly implemented in a declarative grammar like SBCG. Constructions consist of static constraints. Accordingly, we will describe selection in terms of identity constraints, which co-index arguments of distinct frames. In this model, to be described in Section 4, each aspectual construction specifies a particular relationship between the relevant component of temporal representation (be it an event or a state) and an interval, which I will call *topic time*, following Klein (1992, 1994). Some aspectual constructions, like the English Present-Tense construction, additionally constrain the relationship between topic time and speech time.

Keeping in mind that we will ultimately express our insights in terms of identity constraints within constructions, we can continue to use the selection metaphor to describe construction-verb interaction. The following sentences illustrate straightforward interactions:

- (34) **Transition selection:** *She started to run.*  
 (35) **Phase selection:** *Your soup is cooled.*

Sentence (34) illustrates an English inchoative construction; the head of this construction is the event verb *start*. In (35), the complement of *start* is the heterogeneous activity verb *run*. As shown in Table 1, the temporal representation of this verb contains an onset transition. It is this transition that the inchoative

construction selects. Sentence (34) illustrates an English resultative construction; the head of this construction is the state verb *be*. In (9), the complement of this verb is the intransitive achievement verb *cool*. As shown in Table 1, the temporal representation of this verb contains a final-state phase. It is this phase that the resultative construction selects.

The selection model as described thus far must be enriched to account for cases of coercion like (36):

(36) *I started to like the idea.*

While there is nothing unconventional about (36), interpreting the verb *like* in this context requires augmentation of its temporal representation. The temporal representation of *like* is that of a state, i.e., a phase. As we saw above, however, the inchoative construction requires a verb whose temporal representation includes an onset transition. The verb-construction mismatch in this case is resolved in favor of the construction, i.e., by the addition of an onset transition to the temporal representation of *like*. We will assume that coercion cases like (36) are governed by the constraint in (37):

(37) **The Shift constraint.** When a construction shifts the temporal representation of a verb, the resulting representation must be identical to that of some lexicalized Aktionsart class.

This constraint subsumes the selection, addition and concatenation operations described in Michaelis (2004). It allows any permutation of a verb's temporal representation that results in an already lexicalized representation, i.e., one associated with a verb class, e.g., the class of achievement verbs. Thus, the selection of a phase, as in (35), adheres to the Shift constraint: the resulting representation is simply that of a state. Similarly, the addition of a transition to a state representation, as in (36), obeys the Shift constraint, as the resulting representation is that of an achievement. Finally, the Shift constraint allows for iteration, as in (38):

(38) He kept raising his hand.

In (38), the combination of an achievement verb, *raise*, with the frequentative auxiliary *keep*, an activity selector, triggers an iterated interpretation of the verb.<sup>12</sup> Since this representation is isomorphic to that of a heterogeneous activity, it is legal according to the Shift constraint. An example of a shift ruled out by the Shift constraint is that which produces the sequence  $\phi\phi$ . Although nothing in the “syntax” of temporal representation prohibits a state from following another state (contrast the ill formed sequence  $*\tau\tau$ ) the sequence  $\phi\phi$  does not correspond to any lexicalized Aktionsart class.

In the next section, we will use the model of temporal representation developed here to describe type-shifting constructions.

#### 4. Type-shifting constructions

Type-shifting constructions alter the temporal representations of verbs. In the case of phrasal type-shifting constructions like the English Perfect and Progressive, this function is reflected in the make up of the construction: while the verb of the complement is dynamic, that of the auxiliary head verb is stative (*have* or *be*). Owing to their transparent semantics, these constructions are often referred to as *compositional* type-shifting devices (see Herweg 1991). Section 4.1 will describe the

type-shifting functions of the English Progressive, and the formal representation of this construction in SBCG. This section will also provide an introduction to the SBCG and the system of features it uses to represent linguistic signs and sign combinations. Section 4.2 will describe the type-shifting functions of the English Perfect and its formal representation in SBCG.

#### 4.1. *The English Progressive Construction*

The English Progressive is the translational equivalent of the French imperfective past tense in contexts like (39)–(40); this appears to suggest that the two constructions have equivalent functions:

- (39) *Il y avait un type qui **faisait** une démonstration pour aguicher la clientèle.*  
(Binet, *Les Bidochon* 8: 14)
- (40) *There was a guy who **was doing** a demonstration to attract customers.*

In (39), the dynamic verb *faire* appears in the imperfective past tense (*imparfait*), and the corresponding verb form in (40), the English translation, is progressive. Other contexts suggest, however, that the two constructions have distinct functions:

- (41) *Tiens, ils **avaient** des lacets, les préhistoriques?*
- (42) *\*So, they **were having** shoelaces, prehistoric people?*

As (41) shows, when the French imperfective past tense combines with a stative verb (*avoir* ‘have’), an English progressive translation is anomalous. While the French *imparfait* can (and typically does) combine with a stative verb, the English Progressive requires a dynamic verb as the head of the complement VP. Equating the English Progressive with the French *imparfait* seems even less appropriate when we consider that the latter is a past tense, while the time reference of the former varies according to the tense of its auxiliary head.

Why then are the Progressive and *imparfait* translational equivalents in (39)–(40)? It is because the context illustrated is a type-shifting context. Sentence (39) exemplifies coercion: we interpret the dynamic verb (*faire*) as denoting a state in order to resolve semantic conflict between that verb and the state-selecting construction, the *imparfait*, with which it is combined. Sentence (40), by contrast, exemplifies compositional type-shifting: the VP complement denotes an activity while the head verb denotes a state somehow related to that activity. While both French and English derive states from events, the two languages use distinct types of grammatical mechanisms to do this — a type-selecting (or *type-sensitive*) construction in the case of French and a type-shifting construction in the case of English (see de Swart 1998 for a thorough discussion of the distinction between type-shifting and type-sensitive constructions).

Given the association of the *imparfait* with stative verbs in contexts like (41), most would seem willing to accept the claim that it is a stativizer in contexts like (39). What seems counterintuitive is the claim that the Progressive is also a stativizer, because the Progressive appears to impart a *dynamic* construal to stative verbs in cases like (43)–(44):

- (43) *OK. I **am** really **liking** Windows 7.*
- (44) *More poor **are living** in suburbs, a Brookings study says.*

In both (43) and (44), we understand the relevant states (of liking Windows 7, of living in the suburbs) as subject to change. How can the Progressive perform both

stative type shifts, as in (40), and dynamic type shifts, as in (43)–(44)? The solution to this paradox is to acknowledge that type shifts of the latter sort are products of semantic conflict resolution. While the Progressive *denotes* a state (by virtue of its stative auxiliary head *be*) it *selects for* an activity verb as the complement of that auxiliary. The dynamic type shift exemplified in (43)–(44) is a by-product of the Progressive’s stativizing function: if the verb is of the wrong type to be stativized (i.e., is a stative verb) its type is shifted to a type (i.e., the activity type) that requires what the Progressive provides: stativity. In the context of (43)–(44) both *like* and *live* represent homogeneous activities: states bounded by onset and offset transitions. Therefore, while both the *imparfait* and the Progressive are coercion triggers, what is triggered in the first case is a stative type shift and what is triggered in the second case is a dynamic type shift. The addition of onset and offset transitions in the reconciliation process illustrated in (43)–(44) conforms to the Shift constraint in (37): it produces an already lexicalized Aktionsart representation — that associated with posture verbs like *sit*, *stand* and *lie*. We know that such verbs are dynamic because they yield nonoverlap readings when subjected to the *when*-test (see Section 2.1). This is shown in (45), as contrasted with the progressive (46):

- (45) **Event sequence:** *When the phone rang, Shira **sat** on the deck.*  
 (46) **Event overlap:** *When the phone rang, Shira **was sitting** on the deck.*

Other instances of coercion triggered by the Progressive are more subtle than those in (45)–(46) but nonetheless involve a coercive shift to the activity type. One such example is given in (47):

- (47) *He was dying when the paramedics arrived.*

In (47), coercion entails the addition of an activity representation (i.e., an event chain) to the temporal representation of *die*, an achievement. Following Michaelis (2004), we can view examples like (47) as the result of an indirect type shift in which the heterogeneous-activity type is the intermediate type: an achievement is augmented up to an accomplishment by the addition of heterogeneous activity, and the resulting activity representation provides the appropriate “input” type for the Progressive.

How exactly does the Progressive stativize? According to the selection model, it must find a state within the temporal representation of an activity, whether heterogeneous or homogeneous. Recall from Section 3 that both kinds of activity representations contain *medial rests*, states that hold between transitions (i.e., that are neither onset nor offset rests). I propose, as in Michaelis (2004), that the Progressive selects a medial rest from an activity representation. In the case of a homogeneous activity like standing on the porch in (45), this medial rest is simply the stationary phase that holds between the time of entering into the stance and the time of leaving it. In the case of heterogeneous activities like dribbling a basketball, the medial rest is simply any offset phase between bouncing events:

- (48) He was dribbling the ball at the half-court line.

Because temporal representation is magnitude-neutral (in the sense of Talmy 1988), medial-rest selection applies as well to habitual examples like (49):

- (49) I was drinking wine before it was all trendy.

In (49), the Progressive selects for a medial rest, as in (48). In (49), however, the participial complement denotes a series of identical episodes rather than a single cyclic event. In (49), the rests from which the Progressive selects are the periods that separate episodes of wine drinking, however long these rests might last (days, weeks, months, etc.) Thus, Progressive predications denote states that reside in the temporal representations of iterated events, whether the iterated event in question is an activity, as in (48) or an event series, as in (49).<sup>13</sup>

How can the state-selecting function of the Progressive be captured in the static representation of SBCG? As mentioned in Section 2, describing the interaction of grammatical and lexical aspect in a construction-based model like SBCG poses some challenges: SBCG uses frames rather than conceptual primitives like phases and transitions to describe construction semantics. We must therefore translate temporal representations into frame-based representations if we are to describe the semantics of aspectual constructions. Accordingly, we will represent situation types like *state*, intervals of time and the two components of temporal representation themselves as frames with appropriate arguments. Identity relations among these arguments will be used to describe the “handshake” between construction and verb semantics. Prior to presenting the Progressive constructions, I will provide a brief introduction to SBCG.

In SBCG, as described by Sag (2010), the basic object of grammatical description is the sign. A language is taken to be an infinite set of signs, and a grammar is taken to be a description of the recursive embedding of signs that constitutes the target language. While the term *sign* is understood in something close to its Saussurean sense, as a pairing of form and meaning, signs in SBCG are used to model not only words but also phrases. Signs are types of linguistic objects and are organized by means of a type hierarchy (e.g., the sign type *word* is a subtype of the sign type *lexical-sign*, as is the sign type *lexeme*). Formally, a sign is a feature structure that specifies values for the features listed in (50)–(53).<sup>14</sup>

- (50) SYN describes the grammatical behavior of a sign. Its values are the features CAT and VAL(ENCE). The values of CAT are complex syntactic categories, represented as typed feature structures, e.g., *noun*, *verb*, *preposition*. The VAL feature represents the objects with which a given sign can combine. The VAL value of pronouns, proper nouns and most common nouns is an empty list. The VAL value of a verb is its combinatoric potential; for example, the VAL value of a transitive verb is <NP, NP>.<sup>15</sup>
- (51) SEM describes the meaning of a sign; its values are the features INDEX and FRAMES. INDEX is the extension of a sign. The FRAMES feature is used to enumerate the predications that jointly specify the meaning of a sign. The value of the FRAMES feature is a “flat” list of frames, i.e., one without hierarchical organization. Frames are typed feature structures; the frame label is the feature-structure type (e.g., *eat-fr*); the features represent the frame’s participants (e.g., EATER and FOOD in the case of the verb *eat* or INST(ANCE) in the case of an frame that represents the semantics of an entity). The value of a feature like EATER or INST is an index, e.g., *i*. Such indices express identity relations between the arguments of different frames or between a frame’s argument(s) and items on the VAL list.
- (52) FORM is used to specify the morphological properties of a given sign; the value of FORM is a list of morphological entities. PHON describes the phonological phrase corresponding to a given sign.

- (53) CONTEXT is used to specify features of context that are relevant to the interpretation and use of a given sign.

Constructions in SBCG are descriptions of the possible signs (feature structures) in the target language. SBCG recognizes two kinds of constructions: *lexical-class constructions*, which describe properties common to sets of words and lexemes, and *combinatory constructions*, which describe *constructs* (Sag 2010). A construct can be viewed as a local tree licensed by a rule of the grammar, but because the SBCG description language does not include trees, it is more accurate to refer to a construct as a feature structure with a MOTHER (MTR) feature and a DAUGHTERS (DTRS) feature. This feature structure maps to the mother node in a tree-based representation. Like the phrase-structure rules of context-free grammar, combinatory constructions build phrases (e.g., VP), but they also do some work that phrase-structure rules do not: they build words (e.g., the third-person singular form of the lexeme *laugh*) and lexemes (e.g., the causative lexeme corresponding to the inchoative lexeme *boil*). Constructions of the former type are called *inflectional constructions* and constructions of the latter type are called *derivational constructions*.

Accordingly, the grammar is viewed as consisting of a lexicon — a finite set of lexical descriptions (descriptions of feature structures whose type is either *lexeme* or *word*) and a set of constructions. Figure 1 gives an example of a lexeme sign licensed by a lexical entry:

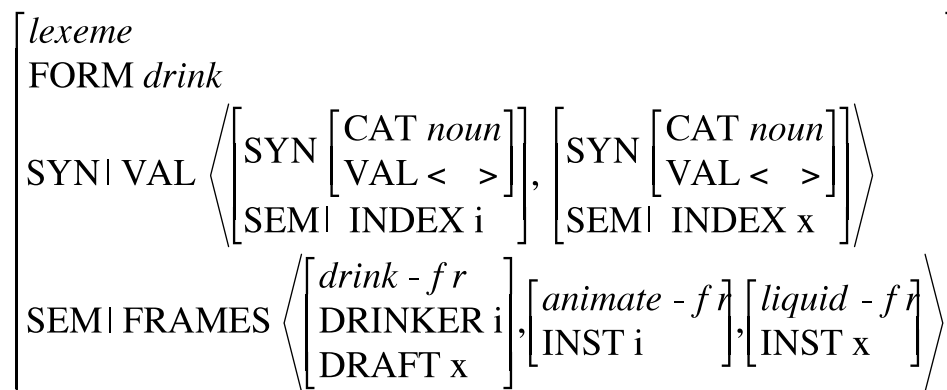


Figure 1. *The lexeme drink*

Figure 1 shows the English lexeme *drink*, as a typed feature structure. The semantic properties of this lexeme are represented by a series of frames (e.g., the frame abbreviated as *drink-fr*). Frames are used to capture the requirement that the drinker be animate and that the consumed item be a liquid. The combinatoric properties of this lexeme are represented in its valence set, which includes two noun phrases — the first of which is coindexed with the ‘drinker’ participant in the *drink* semantic frame and the second of which is coindexed with the ‘draft’ participant in the *drink* frame.

The SBCG representation that I propose for the Progressive construction is similar to that in Figure 1: it is a lexeme. This lexeme is an auxiliary verb, *be*, which combines with a gerundial complement. What licenses the combination of auxiliary and complement is the general-purpose Head-Complement construction described by Sag (2010). What is unique to the Progressive construction is expressed by the auxiliary alone.<sup>16</sup> Figure 2 shows the representation of the Progressive auxiliary. In this representation, *be* is shown to select two valence members: a nominal

complement bearing the semantic index  $i$  (indicated here as  $NP_i$ ) and a verbal complement in the present-participial form. As depicted here, progressive *be* is a “raising” verb: its subject argument ( $NP_i$ ) bears the same semantic index as the first argument of its gerundial complement; that is, the first valence member of auxiliary *be* is also the first valence member of the auxiliary’s second valence member. The participial complement bears the semantic index  $a$ , referring to an activity type, while the construction itself bears the index  $s$ , referring to a state type. The state-selection function of the Progressive is represented in Figure 2 by the FRAME values of the verbal complement and of the construction. The three frames that define the semantics of the verbal complement are: the *Onset* frame, the *Medial-rest* frame and the *Offset* frame. These frames jointly represent the components of temporal representation that define the class of activities. What is critical is the index of the argument of the *Medial-rest* frame,  $y$ . This index reappears in the FRAMES set of the construction: it is both the sole argument of the *State-frame* and the second argument of the *Include-frame*. This coindexation indicates (a) that the medial rest of the complement’s temporal representation is the same as the state denoted by the auxiliary head and (b) that this state includes the topic time (reference time) of the predication, whether that is past, present or future. In the case of (19), for example, topic time is the time at which the phone rang: the state that held during Sue’s stance includes this interval.

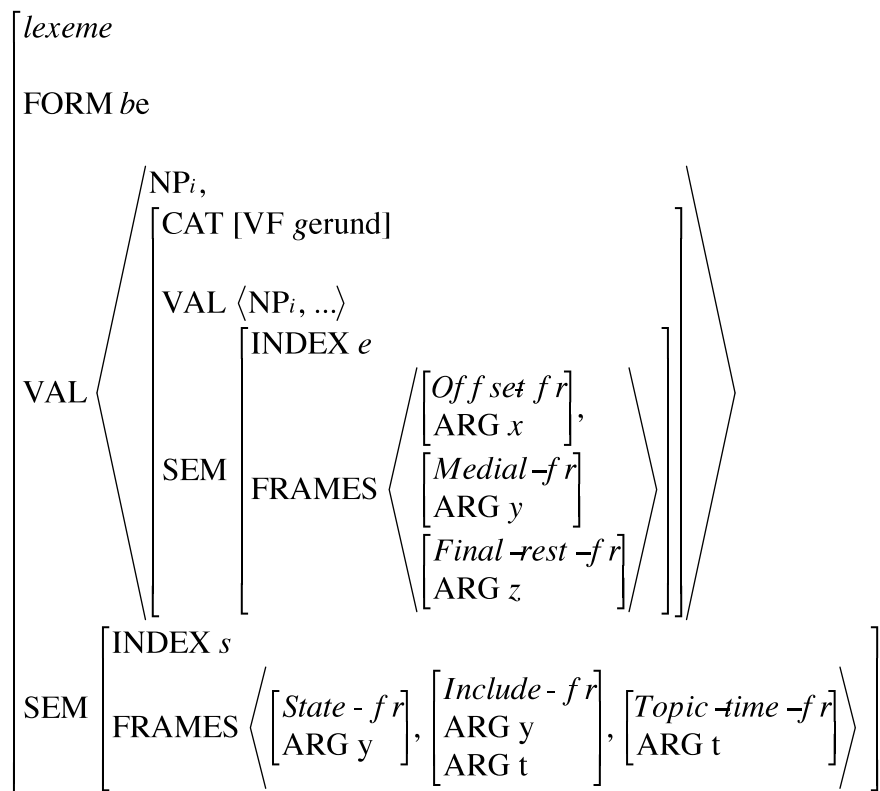


Figure 2. *The Progressive auxiliary be*

Thus, the interaction of activity semantics and state semantics that the Progressive achieves is captured in Figure 2 by the coindexation of frame participants. What is highlighted by such representations, and obscured by procedural descriptions, is that

type shifting, exploits, rather than obliterates, the aspectual representation of the “input” verb. This point will again be made in our discussion of the Perfect construction in Section 4.2.

#### 4.2. *The English Perfect Construction*

The Perfect construction, consisting of a finite form of the verb *have* (typically present tense) and a past-participial complement, has relatively subtle combinatoric restrictions. These conditions are subject to mutually incompatible characterizations. For example de Swart (1998) describes the Perfect as “an extensional operator, which asserts the existence of both the event *e* and its consequent state *s*” and later asserts that it “operates on eventualities of any aspectual type” (de Swart 1998:354). While it seems straightforward to infer the appropriate consequent state when we limit ourselves examples like (54), in which lexical verb (*lose*) entails an endpoint, it seems less straightforward when we consider examples like (55)–(56):

- (54) *We’ve lost our lease!* (radio ad for going-out-of-business sale)  
 (55) *We now live in a world where man **has walked on the moon.*** (Jim Lovell, *Apollo 13*)<sup>17</sup>  
 (56) *I’ve already knocked.* (said by one party guest to another outside the host’s front door)

Both (55) and (56) denote consequent states (achievement of a technological milestone and imminent arrival of the host, respectively), but these states are contextually computed rather than entailed by the Aktionsart representation of the complement, an activity. Further, it is even less clear what the consequent-state condition means for those Perfect tokens with stative complements, whether the verb of the complement is unbounded, as in (57) or bounded at both ends, as in (58):

- (57) *This project has been difficult.*  
 (58) *I’ve been coming here since I was a kid.*

The foregoing examples raise two questions: do type shifts performed by the Perfect obey the Shift constraint and do they have a consistent “input” type? In what follows, I will provide a positive answer to both questions. I propose first to eliminate the “consequent state” condition proposed by de Swart (1998), on the grounds that such a state can be produced only when the Aktionsart of the participial verb entails a resultant state (i.e., is an achievement or accomplishment verb).<sup>18</sup> Instead, I propose, the Perfect selects the final rest in the temporal representation of a verb, i.e., the state following the final transition in the verb’s representation. If that verb is a telic verb (i.e., one entailing a resultant state), the rest is identified with that resultant state. If that verb is an atelic verb — an activity, as in (55)–(56), or a state, as in (57)–(58) — this final rest is simply the state that follows the offset transition.

Second, I propose that, despite appearances to the contrary, the Perfect construction requires a event-denoting participial complement, and that tokens containing a stative participial complement, e.g., (57)–(58), are in fact contexts of state-to-event coercion. To see this, let us return to the claim that the Perfect selects the state following the final transition in the temporal representation of the verb. How does this apply to Perfect predications with stative complements, like (57)–(58)? As we saw in Section 2, states do not contain any transitions in their temporal representations. They evidently do, however, in contexts like (58), where the adverbial expression *since I was a kid* supplies an onset transition, and in (59), where the durational adverbial *all month* supplies both an onset and offset transition:

(59) Public opinion has fluctuated all month.

When no transitions are supplied, they are inferred: in (57), for example, we understand that a phase of difficulty has ended at speech time (although another one could begin thereafter).<sup>19</sup> This, I submit, is the result of coercion: a state's temporal representation is augmented up to that of a homogeneous activity, consistent with the Shift constraint in (37). On this analysis, the Perfect triggers the same form of state-to-event coercion that the Progressive does when the latter construction is combined with a stative complement. This is unsurprising, because the Perfect has a function similar to that the Progressive: like the Progressive, the Perfect both denotes a state (expressed by the head auxiliary) and selects a rest in the temporal representation of the lexical verb. The Perfect and Progressive constructions differ only in the position of the rest selected: it is a medial rest in the case of the Progressive and a final rest in the case of the Perfect. Figure 3 gives an SBCG representation of the Perfect construction.

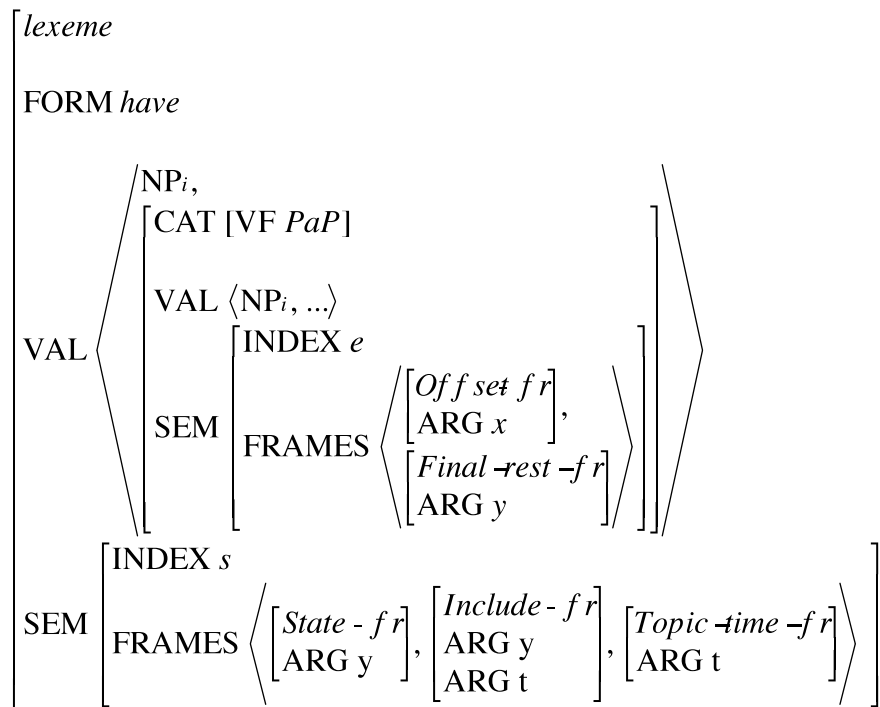


Figure 3. *The Perfect auxiliary have*

Figure 3, like Figure 2, is a lexeme entry; it represents the Perfect auxiliary *have*. This auxiliary, like the Progressive auxiliary, has two valence members: a NP subject and a participial complement. The Perfect auxiliary, like the Progressive auxiliary, is a raising verb, as indicated by the coindexation of the auxiliary's subject and the subject of its participial complement. As in the Progressive construction, the interaction of construction meaning and verb meaning is represented in the respective FRAME values of lexical verb and construction. The *Final-rest-frame* in the semantics of the lexical verb indicates that it is an event verb (as indicated as well by the semantic index *e*). The argument of the *Final-rest-frame* is coindexed with that of the *State-frame* in the construction's FRAMES list. This indicates that the final rest of the event denoted by the participial complement is the same as the state

denoted by the auxiliary head. As in the case of the Progressive construction, this state includes topic time, e.g., the time of speaking.

We have focused in this section on constructions that select, respectively, medial and final rests from activity representations. There are also, however, stativizing constructions that select *initial* rests. One is the Modal (or *will*) Future, shown in (60), and another is the Prospective future, shown in (61):

- (60) *Now we'll have to start all over again.*  
 (61) *Barack Obama is about to see a plunge in approval ratings.*

The type shifts effected by modal *will* and Prospective *about to* can be captured by constructional representations similar to those provided above for the Progressive and Perfect auxiliaries. If there is a moral to the story presented thus far, it is that states come cheap. Every transition within a verb's temporal representation must adjoin a state — whether that transition is initial, medial or final. Some of these states play a role in temporal representation, as do medial rests in the representations of activity verbs and final rests in the representations of telic verbs. Initial rests, however, play no role in temporal representation — they simply “come for free”. All rests, whatever their relevance to Aktionsart representation, are selectable by constructions that denote states.

## 5. Type-selecting Constructions

In this section, we will consider stative type shifts effected via coercion (semantic-conflict resolution) rather than by compositional type-shifting mechanisms. The coercion trigger in all cases to be considered here is a tense marker. However, it is important to recognize that coercion is not a special function of tense constructions — or, for that matter, of any construction. Coercion is instead a natural by-product of type selection. Any construction that selects for a specific lexical class or phrasal daughter is a potential coercion trigger. Type-selecting constructions range from aspectually sensitive tenses like the French *imparfait* to nominal constructions like the English partitive determiner *some*. The latter selects for a nominal daughter that denotes a mass (as in, e.g., *some wine*), and accordingly triggers count-to-mass coercion in examples like *some blanket*. We presume here that both compositional and coercive type shifts obey the Shift constraint: both produce semantic types otherwise denoted by some lexeme or lexeme class.

We start with the observation that many kinds of constructions, including those that are not strictly speaking aspectual, impose aspectual constraints on the verbs with which they combine. Take, for example, the evidential construction of English in which an accusative-infinitive complement combines with a verb of knowing or believing. This construction, which was used as the basis of one of the two stativity tests described in Section 2.5, is exemplified in (62)–(65):

- (62) *We know them to be safe and sound.*  
 (63) *We knew him to have participated.*  
 (64) *I know him to be playing a character here.*  
 (65) *#I know him to reject our offer.*

As discussed in Section 2.5, this construction requires the situation denoted by the complement clause to overlap the time frame of the matrix verb. That is, the infinitival verb must denote a state. If that verb is instead dynamic, stativizing constructions, like Perfect and Progressive, as in (63)–(64), can be used to derive a stative reading. If no stativizing construction is used, semantic-conflict resolution is

required, as in (65): the verb *reject* receives a habitual (stative) reading, in which rejection occurs periodically.

In much the same way, tense constructions, whose primary function is to relate topic time to speech time, may impose aspectual constraints on verbs. The French *imparfait*, a past-tense inflection for state verbs, is a case in point. I will argue here that the English Present and Past tenses also impose aspectual restrictions on the verbs with which they combine, and represent these restrictions by means of inflectional constructions. In Section 5.1, I will discuss the English Present tense, a state selector. In Section 5.2, I will propose that the English Past construction has both state-selecting and event-selecting subtypes. I will argue that this analysis yields an intuitive account of (a) the two countervailing patterns of aspectual coercion triggered by the Past and (b) the functions of the Past in reported-speech contexts.

### 5.1. *The English Present*

I assume, following Bach (1986), Cooper (1986), Herweg (1991), and de Swart (1998) that the core function of the Present is to report on a situation ongoing at speech time. The analysis presented therefore focuses on the reportive function, and is not intended to cover the specialized functions illustrated in (66)–(69):

- (66) **Speech-act:** *I **promise** you won't be disappointed.*
- (67) **Play-by-play:** *Calzaghe **stalks** and Jones **looks** to counter.* (Boxing, HBO, 11/15/08)
- (68) **Evidential:** *I **hear** you're going to join us.*
- (69) **Historic present:** *I **turn around** and it's gone.*

However, there are other uses of the Present, in particular the habitual use exemplified by (70) and the futurate use exemplified by (71), that will be analyzed as semantic extensions of the reportive use:

- (70) **Habitual present:** *The program **airs** in the late evening.*
- (71) **Futurate present:** *I **return** next week.*

Following Langacker (1991), and Smith (1997) *inter alia*, we will assume that the Present construction (in its core use) selects for a stative verbal daughter. This assumption makes sense on logical grounds: only an unchanging configuration can be verified at the moment of speech.<sup>20</sup> Owing to this aspectual restriction, the combination of dynamic verb and present-tense inflection triggers stative coercion. Stative coercion can produce different results according to the language and according to the construction. For example, the combination of aorist verb stem and present-tense inflection in Ancient Greek produces a futurate reading; compare, e.g., *paideuei* 'he/she teaches' (containing the present stem and present ending) and *epaideuse* 'he/she taught' (containing the aorist ending) to *paideusei* 'he/she will teach' (containing the aorist stem and present ending). A related case is that of the Egyptian Arabic active participle (Mughazy 2005: 139): sentences containing active participles derived from stative verbs have simple-present readings while sentences containing active participles derived from accomplishment verbs of motion ("translocatives") have futurate readings. Somewhat similar is the case of the English futurate present exemplified in (71). In all three cases, the stativization procedure needed for semantic-conflict resolution involves the selection of an initial rest from the verb's temporal representation; this initial rest is the period of stasis prior to the onset of the event denoted by the verb. Another option for resolution of conflict between dynamic verb and present-tense inflection is illustrated by the French example in (72):

- (72) *Il est 23h, elle est chez lui, ils bavardent depuis longtemps.*  
 ‘It’s 11 p.m. She’s at his house. They’ve been chatting for a long time.’

As we see in (72), the combination of a dynamic verb (*bavarder* ‘chat’), time-span adverbial (*depuis longtemps* ‘for a long time’) and present-tense inflection yields a reading akin to the English continuative present perfect. We presume that semantic conflict resolution in such instances involves the selection of a final rest (the state that holds after a span of activity has ended). A final option for conflict resolution is medial-rest selection. It produces generic-habitual readings like that in (73):

- (73) *The Supreme Court decides cases that are hard cases.*

It is important to notice that medial-rest selection is a case of indirect type shifting, like the interaction of an achievement verb and the Progressive illustrated by (47) above (i.e., *He was dying when the paramedics arrived*). Recall that indirect type shifts require an intermediate temporal representation. In the case of habitual interpretations like that in (73), this intermediate type is a heterogeneous activity. That is, the temporal representation of *decide*, an accomplishment, is shifted to that of a heterogeneous activity via iteration of its final transition-state sequence. The resulting representation is then subject to medial-rest selection by the Present.

What makes the English present unusual from a typological perspective is that it disallows an “in-progress” reading of present-tense predications in which the event denoted by the verb is ongoing at speech time (Cooper 1986: 29). Thus while (74) had a possible habitual reading, it lacks a reading in which the crowd-gathering event overlaps speech time:

- (74) #A crowd gathers outside.

By contrast, French present-tense predications allow both habitual and progressive readings, as illustrated by the ambiguity of (75):

- (75) *Les experts du climat se réunissent à Copenhague.*  
 ‘Climate experts gather/are gathering in Copenhagen.’

The in-progress reading also requires medial-rest selection, but in this case the target activity representation is the run-up process of an accomplishment, rather than a series of events. The fact that English disallows the in-progress reading suggests strongly that even those constructions that are apparently commensurate across languages differ with regard to what Michaelis (2004) refers to as *coercion potential*: the parts of temporal representation that an aspectually sensitive construction can select. We will return to this issue in Section 6.

Figure 4 shows the English Present construction. As depicted, it is an inflectional construction, which builds a word from a lexeme (Sag 2010). The feature structure shown as the value of the DTRS (daughters) feature represents the lexeme and the feature structure in the value of the MTR (mother) feature represents the word. This representation is realization-based rather than morpheme based. That is, rather than providing a specific FORM value for Present inflection, it assumes a function,  $F_{\text{pres}}$ , that “looks up” the inflected form (indicated by the index  $Z$ ) of the particular daughter lexeme (whose index is  $X$ ).

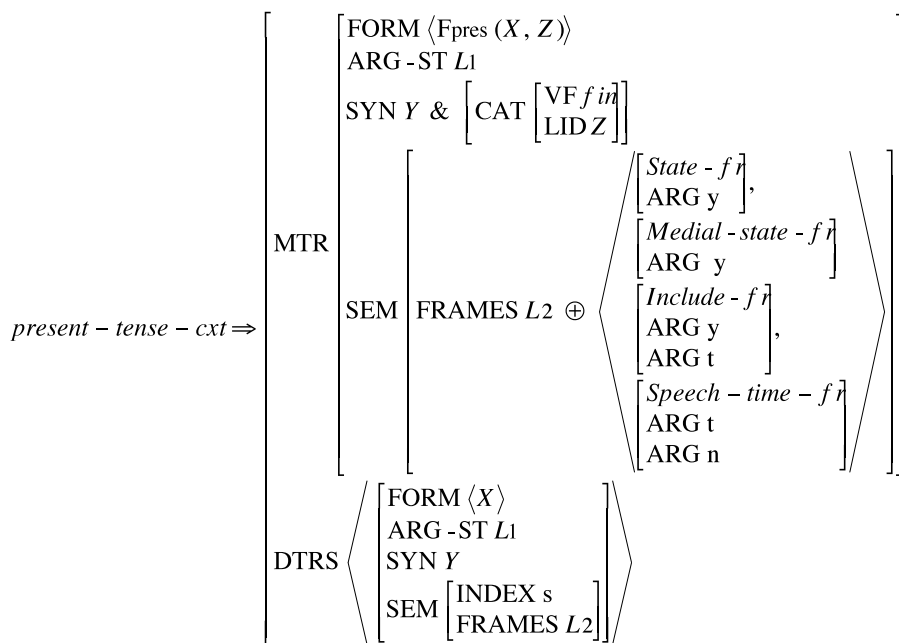


Figure 4. *The Present construction*

The Present-Tense construction denotes a state, as expressed by the MTR's FRAMES list. Crucially, this state is required to overlap speech time: the interval that it includes is identified with “now” by the *Speech-time-frame*. As a state-denoting construction, the Present is also a state selector, according to the constraint discussed in Section 2. Further, as indicated by the *Medial-State-frame* in Figure 4, the state selected must be a medial state. As discussed, this constraint is construction-specific, and reflects English-specific restrictions on present-tense coercion. The question of how such restrictions come about historically will be taken up in the conclusion.

### 5.2. *The English Imperfective Past*

Unlike past tenses in the Romance languages, the English Past construction is assumed to be aspectually neutral (de Swart 1998, 2003). I propose instead that the English Past is ambiguous: English has both state-selecting and event-selecting Past constructions. There are two lines of evidence for this claim. First, some past-tense predications feature distortions of verb Aktionsart that look identical to coercion effects. Second, past-tense predications feature two countervailing patterns of coercion. The examples in (76) and (78) illustrate eventive coercions (represented in each case by a rewrite rule). Each of the two examples is followed by an example of a past-tense predication in which the target verb's Aktionsart remains unaltered:

- (76) **State → achievement (addition of onset transition):** *She remembered where the money was hidden* [but only after some incentives were offered].
- (77) **Stative default:** *She remembered where the money was hidden* [but no one else did].
- (78) **State → homogeneous activity (addition of onset and offset transitions):** *He lied to me and I believed him.*
- (79) **Stative default:** *At that time, I believed him.*

The above contrasts can be described with regard to the temporal relation between situation and topic time. In (76), remembering is construed as an event included within topic time (the offering of incentives); in (77), by contrast, remembering is construed as a state that includes topic time. Similarly, in (78) believing someone is construed as state bounded in the past, while in (79) it is construed as a state that includes topic time.

The examples in (80), (82), (84) and (86) illustrate the opposite pattern of type shifting: stative coercion effects in past-tense predications. Each example is followed by one in which the Aktionsart of the target verb is unaltered:

- (80) **Activity → (Medial) State:** *Sue decided to look dramatic that day. She **wore** a pink Chanel suit and an Hermès scarf.*
- (81) **Eventive default:** *I studied Sue's elegant outfit. She **wore** a pink Chanel suit and an Hermès scarf.*
- (82) **Event → (Final) State:** *I opened my door and looked out. Thick smoke **filled** the corridor.*
- (83) **Eventive default:** *Thick smoke **filled** the corridor. In a matter of minutes, we could no longer see the exit signs.*
- (84) **Event → (Medial) State:** *At the time of the Second Vatican Council, they **recited** the mass in Latin.*
- (85) **Eventive default:** *They **recited** the mass in Latin.*
- (86) **Event → (Final) State:** *I already **ate** lunch.*
- (87) **Eventive default:** *I **ate** lunch.*

The coercion effects just illustrated are inexplicable if the English Past tense is aspectually neutral: to be a type shifter is to be a type selector. But even admitting an aspectually sensitive English Past is insufficient, as this tense construction, unlike the English Present, appears to trigger both stative type shifts (via state selection) and eventive type shifts (via transition addition). Thus, it seems reasonable to conclude that there are two Past constructions in English, and that these constructions are roughly analogous to the perfective and imperfective past tenses of Romance.

Figure 5 represents the English stative Past as an inflectional construction. This construction is identical to the Present construction shown in Figure 5, with one exception: the single argument of State-frame (an interval) is identified with a time anterior to speech rather than with speech time.

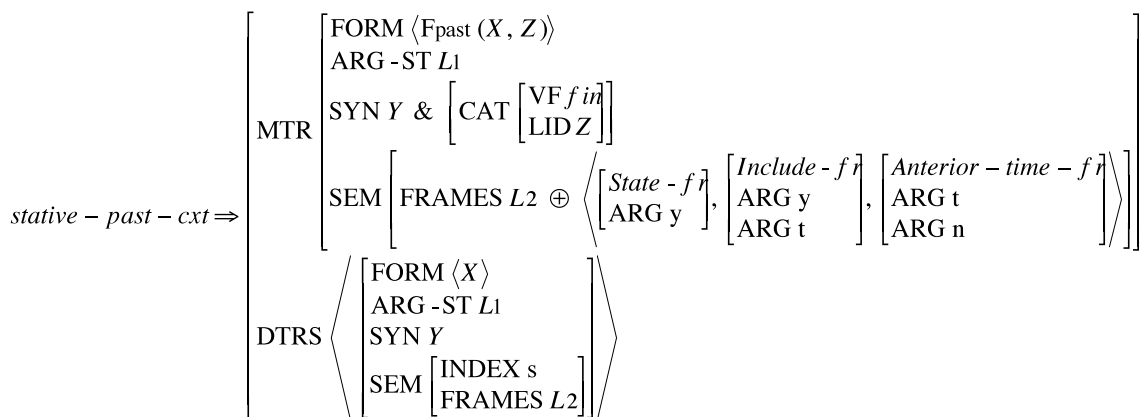


Figure 5. *The Stative Past construction*

Equipped with a Stative Past construction, we can provide a straightforward account of certain sequence-of-tense phenomena, in particular the “backshifting” that occurs in embedded contexts like (88):

(88) *Nancy said that she **was** exhausted.*

Backshifting occurs when a situation is related to a proxy speech time — a past time that is often the time of someone’s report. In the case of (88), we can presume that Nancy’s actual report took the form of a present-tense predication, *I am exhausted*. Because the state of exhaustion overlaps the past topic time (i.e., the time of Nancy’s report) the past tense replaces the present in (88). As Declerck (1990, 1995) observes, however, sentences like (88) have an additional, past-in-past reading, in which Nancy’s original report would be reconstructed as *I was exhausted*.

The ambiguity illustrated by (88) does not exist in Romance languages like French, where the past-in-past reading would be conveyed by the *plus-que-parfait* (Pluperfect) and the overlap reading by the *imparfait*. Nor does it exist in those English dialects that preserve the distinction between the Past and the Past Perfect. Such dialects, however, may be disappearing, at least in the United States: Barber (2010) found reported-speech sentences like (89) to be rare in the news corpus that he surveyed (abcnews.com), and concluded that simple-past predications are the preferred means of conveying past-anterior events:

(89) *Nancy said that she had been exhausted.*

From our perspective, the anterior reading of embedded simple-past predications in contexts like (88) is simply a case of stative coercion triggered by the Stative Past construction. In order to see how this works, let us first focus on a more straightforward case, involving an embedded dynamic verb:

(90) *He said that he **paid** \$2000 for his property in 1933.*

In (90), we understand the paying event to have occurred prior to the speaker’s report. The embedded past-tense predication of (90) can be viewed as a *covert perfect*, because it expresses anteriority without recourse to the Perfect form. I propose that the anterior reading of (90) is the product of a semantic clash between the Stative Past construction and the dynamic verb *pay*. Resolution of this semantic conflict requires selection of the event’s resultant state (the state that begins after the money

has changed hands). This explanation extends to covert perfect predications like (61), taken from the data analyzed by Barber 2010:

- (91) *Kelly **said** he really **didn't have** trouble with his nerves until his final putt on 18.*

Although the embedded verb in (91) is stative, the bounding adverbial (*until his final putt on 18*) ensures that this verb receives a bounded (homogeneous activity) reading. As an activity, the verb *have* is dynamic in this context, and again triggers a clash with the Stative Past. The covert perfect reading of the embedded verb in (88) permits a similar explanation, although the state of being exhausted is not overtly bounded.

Ambiguities are produced even in unequivocal stative coercion. In (92), for example, the use of harsh methods can be construed habitually, and thus as overlapping the time at which the lawmakers were briefed; it can also be construed episodically, i.e., as a covert perfect:

- (92) *Based on agency notes from the briefing, the two lawmakers were told the specific techniques "that had been employed" on Abu Zubaydah. **By then**, [the] C.I.A. already **used** a number of harsh methods on Mr. Zubaydah, including waterboarding.*

This ambiguity exists because, as we saw with respect to (80)–(87) above, resolving semantic conflict between dynamic verb and stative Past can involve the selection of either a medial rest, yielding a habitual reading, or a final rest, yielding an anterior (covert perfect) reading.

If, as we assume here, the English has both a perfective and imperfective past tense, there is a construction-based explanation for Declerck's (1990, 1995) observation that there are two forms of past-tense reference in English, relative and absolute. According to Declerck, if two situations are in the same pre-present sphere, there are two strategies for encoding the relationship between those situations. The first is the absolute strategy, in which both situations are directly related to speech time. This strategy can produce both anterior and posterior readings, as illustrated by (93–94), respectively:

- (93) *I once **fired** an employee who **embezzled** a settlement payment from a disabled worker.*  
 (94) *Craig eventually **hired** a contractor who **built** a 50-square-foot safe room off the back of his garage.*

In (93), we understand the main-clause event (the firing) to follow the event in the relative clause (the embezzlement). In (94), by contrast, we understand the main-clause event (the hiring) to precede the event in the relative clause (the construction of the safe room). However, as Declerck argues, the ordering that interpreters infer in such cases is based only on world knowledge: the speaker merely signals that each of the two events occurred prior to speech time, forcing the hearer to work out the relationship between them. In (93), for example, the event ordering is as it is because we understand that once terminated by a given company an employee has no further opportunities to embezzle from that company. In (94), the event ordering is as it is because we understand that a contractor's work begins only after he or she is engaged. Certainly, the contractor could have built this particular safe room prior to

being engaged for a *different* job, but this merely illustrates the point that the absolute strategy does no more than place two events in the past sphere, thus requiring the hearer to order those events in a manner that makes sense.

When speakers use the relative strategy, they relate one situation directly to speech time and the other to the first. Examples of this strategy, which we have previously referred to as *backshifting*, are given in (95)–(96):

- (95) *He said he was about to be evicted.*  
 (96) *He said he visited his probation officer regularly.*

In both (95) and (96), the reporting event is related directly to speech time and the reported situation is understood to overlap report time. As we know, of course, only states can overlap other events. In (95), the overlapping state is identified with the initial rest of the eviction event; this state is yielded by the Prospective construction. In (96), the habitual state is the product of stative coercion: the state that overlaps the reporting event is identified with a medial rest (the “down time” between visits to the probation officer).

Thus, on the present account, the absolute and relative strategies are produced by the aspectual-selection properties of the two Past constructions: The “anterior” (covert perfect) reading and the “overlap” reading are produced by the stative Past, while the “posterior” reading is produced by the eventive Past.

## 6. Coercion Potential and Constructional Idiosyncrasy

Thus far we have seen that a selection-based model of aspect provides a revealing way to describe type shifts produced both by type-shifting constructions and the conflict-resolution strategies that interpreters use to fix mismatches between a given verb and a given aspectually sensitive construction. The selection model is based on semantic primitives (states and transitions) and rules for combining those primitives that owe nothing to syntax. Why then should we use constructions to talk about type shifting? After all, when formal semanticists discuss type shifting, they speak only of operators, their arguments and semantic adjustment procedures that interpolate type-shifting operators between operator and argument (Jackendoff 1997; de Swart 1998, 2003). We need constructions because the coercion potential of an “operator” cannot be predicted solely based on its input and output types, and appears instead to be affected by the grammatical division of labor in a language. As a result, the coercion potential of a given construction may change over historic time and differ across languages. For example, as we have seen, the English Present, unlike its analog in French (and many other languages), prohibits the selection of a medial rest from an event representation:

- (97) *Eh bien, à présent, je me sens mieux. Le morale **revient**.*  
 ‘Well, now I feel better. My morale \*returns/is returning.’  
 (Binet, *Les Bidochon* 8: 42)

As (97) shows, English, unlike French, uses the Progressive rather than the Present to form reports of events ongoing at speech time. Similarly, the English Present, unlike its analog in French (and other languages), prohibits the selection of a final rest from an event representation:

- (98) *Ca fait dix minutes qu'elle nous **parle** de la moquette!*  
 'That makes ten minutes that she \*tells us/has been telling us about the carpet.'  
 (Binet, *Les Bidochon* 10: 17)

One could sensibly attribute the foregoing restrictions on the English Present to the fact that English already has two constructions (the Progressive and Perfect, respectively) dedicated to these particular type shifts. But the existence of explicit, or compositional, type-shifting constructions does not guarantee their use. While the first maxim of quantity, which promotes explicitness, favors the use of compositional type-shifting strategies, the second maxim of quantity, which promotes effort conservation, favors the use of coercive type-shifting strategies. In fact one development in American English suggests that a coercion strategy, involving the simple Past, is winning out over an explicit strategy: use of the Past Perfect. In his study of abcnews.com, Barber (2010) found that over 80% of anterior-event references in past-tense reported speech contexts used Past predications rather than Past Perfect ones:

- (99) Past Perfect: *A clerk at a Circuit City electronics store reported that some men had asked him to convert from video to DVD a movie that showed the men, and others, firing guns.*  
 (100) Past: *Nemtsov said that because of the media's "total blackout, total censorship" of his campaign, he had to rely on the door-to-door politicking common in many democracies but rare in Russia.*

The example in (99) illustrates the now atypical strategy for past-in-past reference in the corpus, while that in (100) illustrates the typical one. Looking at such data, we see no obvious reason why English, a language that otherwise favors auxiliary-headed aspectual constructions like the Progressive, should disfavor the Past Perfect, a construction that is not only closely connected in form and function to the well-entrenched Present Perfect construction but also reduces ambiguity in reported speech and other contexts. In other words, we know why speakers stativize, but we do not yet fully understand why they favor one stativization strategy over another. What is crucial in the present account is that stativization strategies are constructions — conventionalized pairings of form and meaning with idiosyncratic use conditions. Just as words may replace near synonyms, constructions may expand their functional range at the expense of other constructions.

## 7. Conclusion

This paper has offered a new way to look at Aktionsart, grammatical aspect and the interaction between the two. In many traditions of aspectual analysis, verbs (or, rather, predications) are classified according to an inventory of Aristotelian types, and markers of grammatical aspect are viewed as operators that (a) take tenseless propositions as arguments and (b) somehow alter the eventuality type expressed by the proposition. This tradition neglects semantic composition, as it leaves unclear how aspectual "operators" alter verb meanings. In the present framework, a verb's aspectual meaning is simple and transparent; Aktionsart representations consist of states and transitions, as per Bickel (1997). Markers of grammatical aspect, seen here as constructions, selectively bind to verb representations, permuting those

representations appropriately. In this paper, we have focused on stativizing constructions — constructions that both denote states and select states in the Aktionsart representations of verbs with which they combine. The analysis presented here relies on the existence of *rests*, periods of stasis entailed by the Aktionsart representations of dynamic verbs. Such periods, I argued, are selected by stativizing constructions like the Perfect, Progressive and Prospective. We have defined stativization as a linguistic procedure through which a speaker creates a stative predication from one whose lexical verb or argument array, or both, requires a dynamic construal. We have also asked why speakers perform such procedures. These procedures meet narrative needs, in particular that of indicating which situations overlapped within a text. Stativizing constructions confer narrative flexibility, ensuring that a verb's Aktionsart is not its sentential destiny.

*Received 2 April 2010*

*University of Colorado at Boulder*

*Revised version received 27 April 2011*

## References

- Bach, Emmon. 1986. The algebra of events. *Linguistics and Philosophy* 9. 5–16.
- Barber, Jared. 2010. The past tense in indirect speech. Unpublished Undergraduate honors thesis, Department of Linguistics, University of Colorado.
- Bennett, Jonathan & Barbara Partee. 1978. *Towards the logic of tense and aspect in English*. Bloomington, IN: Indiana University Linguistics Club.
- Bickel, Balthasar. 1997. Aspectual scope and the difference between logical and semantic representation. *Lingua* 102. 115–131.
- Chang, Nancy, Daniel Gildea & Srinivas Narayanan. 1998. A dynamic model of aspectual composition. *Proceedings of the 20th annual conference of the Cognitive Science Society*, 226–231. Hillsdale, NJ: Lawrence Erlbaum.
- Comrie, Bernard. 1976. *Aspect*. Cambridge: Cambridge University Press.
- Cooper, Robin. 1986. Tense and discourse location in situation semantics. *Linguistics and Philosophy* 9. 17–36.
- Croft, William. 1998. Event structure in argument linking. In Miriam Butt & Wilhelm Geuder, (eds.), *The projection of arguments*, 21–64. Stanford, CA: CSLI Publications.
- Declerck, Renaat. 1990. Sequence of tenses in English. *Folia Linguistica* 24. 513–544.
- Declerck, Renaat. 1995. Is there a relative past tense in English? *Lingua* 97. 1–36.
- Dowty, David. 1979. *Word meaning and Montague grammar*. Dordrecht: Reidel.
- Dowty, David. 1986. The effects of aspectual class on the interpretation of temporal discourse: Semantics or pragmatics? *Linguistics and Philosophy* 9. 37–61.
- Giorgi, Alessandra & Fabio Pianesi. 1997. *Tense and aspect*. Oxford: Oxford University Press.
- Goldberg, Adele. 1995. *Constructions: A construction grammar approach to argument structure*. Chicago: University of Chicago Press.
- Goldberg, Adele. 2006. *Constructions at work*. Oxford: Oxford University Press.
- Hamm, Fritz, Hans Kamp & Michiel van Lambalgen. 2006. There is no opposition between formal and cognitive semantics. *Theoretical Linguistics* 32. 1–40.
- Herweg, Michael. 1991. Perfective and imperfective aspect and the theory of events and states. *Linguistics* 29. 969–1010.

- Hinrichs, Erhard. 1987. Temporal anaphora in discourses of English. *Linguistics and Philosophy* 9. 63–82.
- Hoepelman, Jaap & Christian Rohrer. 1981. Remarks on *noch* and *schon* in German. In Philip J. Tedeschi & Annie Zaenen (eds.), *Syntax and semantics 14: Tense and aspect*, 103–126. New York: Academic Press.
- Hornstein, Norbert. 1991. *As time goes by: Tense and universal grammar*. Cambridge, MA: MIT Press.
- Jackendoff, Ray. 1983. *Language and cognition*. Cambridge, MA: MIT Press.
- Jackendoff, Ray. 1997. *The architecture of the language faculty*. Cambridge, MA: MIT Press.
- Kamp, Hans & Christian Rohrer. 1983. Tense in texts. In Rainer Bäuerle, Christoph Schwarze & Arnim Von Stechow (eds.), *Meaning, use, and interpretation of language*, 250–269. Berlin & New York: Mouton de Gruyter.
- Katz, Graham. 2000. On the stativity of the English perfect. Paper presented at the Workshop on the Perfect, Aristotle University of Thessaloniki.
- Klein, Wolfgang. 1992. The present perfect puzzle. *Language* 68. 525–552.
- Klein, Wolfgang. 1994. *Time in language*. London: Routledge.
- Kuhn, Steven & Paul Portner. 2001. *Time and tense*. In Dov M. Gabbay & Franz Guenther (eds.), *Handbook of philosophical logic*, vol. 6, 277–346. Dordrecht: Kluwer.
- Langacker, Ronald W. 1987. *Foundations of cognitive grammar*, vol. 1. Stanford, CA: Stanford University Press.
- Langacker, Ronald W. 1991. *Foundations of cognitive grammar*, vol. 2. Stanford, CA: Stanford University Press.
- Langacker, Ronald W. 1999. *Grammar and conceptualization*. Berlin & New York: Mouton de Gruyter.
- Levin, Beth & Malka Rappaport Hovav. 2005. *Argument realization*. Cambridge: Cambridge University Press.
- Michaelis, Laura A. 1993. Continuity across three scalar domains: The polysemy of adverbial *still*. *Journal of Semantics* 10. 193–237.
- Michaelis, Laura A. 1994. The ambiguity of the English present perfect. *Journal of linguistics* 30. 111–157.
- Michaelis, Laura A. 2004. Type-shifting in construction grammar: A unified model of aspectual coercion. *Cognitive Linguistics* 15. 1–67.
- Michaelis, Laura A. forthcoming. Making the case for construction grammar. In Hans Boas & Ivan Sag (eds.), *Sign-based construction grammar*. Stanford: CSLI Publications.
- Moens, Marc & Mark Steedman. 1988. Temporal ontology and temporal reference. *Computational linguistics* 14. 15–28.
- Mughazy, Mustafa A. 2005. Rethinking lexical aspect in Egyptian Arabic. In M. T. Alhawary & Elabbas Benmamoun (eds.), *Perspectives on Arabic linguistics*, 133–172. Amsterdam & Philadelphia: John Benjamins.
- Nedjalkov, Vladimir P. & Sergey Jaxontov. 1988. The typology of resultative constructions. In V.P. Nedjalkov (ed.), *Typology of resultative constructions*, 3–64. Amsterdam & Philadelphia: John Benjamins.
- Nishiyama, Atsuko & Jean-Pierre Koenig. 2008. The discourse functions of the present perfect. In Anton Benz & Peter Kuehnlein, (eds.), *Constraints in discourse*, 201–223. Amsterdam & Philadelphia: John Amsterdam.
- Partee, Barbara. 1984. Nominal and temporal anaphora. *Linguistics and Philosophy* 7. 243–286.

- Parsons, Terence. 1990. *Events in the semantics of English*. Cambridge, MA: MIT Press.
- Portner, Paul. 2003. The temporal semantics and modal pragmatics of the perfect. *Linguistics and Philosophy* 26. 459–510.
- Rappaport Hovav, Malka & Beth Levin. 1998. Building verb meanings. In Miriam Butt & Wilhelm Geuder, (eds.), *The projection of arguments*, 97–134. Stanford, CA: CSLI Publications.
- Reichenbach, Hans. 1947. *Elements of symbolic logic*. New York: Macmillan.
- Sag, Ivan. 2010. English filler-gap constructions. *Language* 6. 486–545.
- Sag, Ivan, Thomas Wasow & Emily Bender. 2003. *Syntactic theory: A formal introduction*. Stanford, CA: CSLI Publications.
- Slobin, Dan I. 1994. Talking perfectly: Discourse origins of the present perfect. In W. Pagliuca, (ed.), *Perspectives on grammaticalization*, 119–133. Amsterdam & Philadelphia: John Benjamins.
- Smith, Carlota. 1997. *The parameter of aspect*. Dordrecht: Kluwer.
- de Swart, Henriëtte. 1998. Aspect shift and coercion. *Natural language and linguistic theory* 16. 347–385.
- de Swart, Henriëtte. 2003. Coercion in a cross-linguistic theory of aspect. In Elaine Francis & Laura Michaelis (eds.), *Mismatch: Form-function incongruity and the architecture of grammar*, 231–258. Stanford, CA: CSLI Publications.
- Talmy, Leonard. 1988. The relation of grammar to cognition. In Brygida Rudzka-Ostyn (ed.) *Topics in cognitive linguistics*. 165–205. Amsterdam & Philadelphia: John Benjamins.
- Tasmowski, Lilianne. 1985. L'imparfait avec et sans rupture. *Langue française* 67. 59–77.
- Van Valin, Robert D. & Randy LaPolla. 1997. *Syntax: Structure, meaning and function*. Cambridge: Cambridge University Press.
- Vendler, Zeno. 1957. Verbs and times. *The Philosophical Review* 66. 143–60.
- Vlach, Frank. 1981. The semantics of the progressive. In Philip J. Tedeschi & Annie Zaenen (eds.), *Syntax and semantics 14: Tense and aspect*, 415–434. New York: Academic Press.

## Notes

- <sup>1</sup> This paper was originally presented at a theme session on coercion at the Third International Conference of the Association Française de Linguistique Cognitive at the Université de Paris Ouest in May of 2009. I hereby thank the organizers of that theme session, Peter Lauwers and Dominique Willems, as well as the other participants, for their feedback. I am also grateful to Ivan Sag, Charles Fillmore, Paul Kay, Nancy Chang, Srin Narayanan, Adele Goldberg, Hana Filip, Knud Lambrecht, Jean-Pierre Koenig and two anonymous reviewers for their insights and constructive criticisms. Correspondence address: Department of Linguistics, University of Colorado, 295 UCB, Boulder, CO 80309, USA. E-mail: [laura.michaelis@colorado.edu](mailto:laura.michaelis@colorado.edu).
- <sup>2</sup> A reviewer asks whether Langacker's definition of states could not also include activities. Activities comprise both "episodes of stasis" (e.g., sleeping, staying home) and repetitive routines (pacing the hall, conversing) and therefore may be described as having the property of constancy. However, activities are not open-ended; unlike states, they are not 'extensible' to the present (see Section 2.3). For example, while one can say, *The baby was asleep and in fact still is*, one cannot say *\*The baby slept and in fact still does*. The reason is that an activity assertion places the activity's endpoints within the topical interval, while a state assertion excludes endpoints from the topical interval.
- <sup>3</sup> This is not to say that the distinction between lexical aspect and grammatical aspect has been eliminated in the present account. Grammatical aspect "markers" are simply re-envisioned as constructions that select components of the semantic representations of verbs.

<sup>4</sup> As observed by a reviewer there are uses of the *imparfait* described by Tasmowski (1985) that lack the claimed overlap reading. One such use is a habitual use, in which a series of imperfective predications are inferred to be sequentially ordered:

- (i) *Il se levait à trois heures, prenait une douche et sortait*  
 ‘He used to get up at 3 AM, take a shower and leave.’  
 (reviewer’s example)

Another is a narrative use of the *imparfait*, in which sequential ordering is likewise inferred:

- (ii) *À une trentaine de kilomètres de l’arrivée, cinq coureurs parvenaient à fausser compagnie au peloton [...] Une erreur de parcours brisait l’élan des cinq fugitifs. Ils étaient rejoints à 5 km de l’arrivée.*  
 ‘With thirty kilometers to go, five racers managed to break out of the peloton. A deviation from the course broke the momentum of the five. They came back together with five kilometers to go.’ (reviewer’s example)

The habitual example in (i) is unproblematic in that the ordering among habitual events is presumably pragmatically inferred. The narrative example in (ii), however, appears to be a genuinely distinct usage from that in (5), in which imperfective predications function like simple-past predications. Such examples require us to acknowledge that the *imparfait*, like the English present tense, has a variety of uses (in the latter case, historical present, performative and play-by-play uses, among others). However, the existence of extended uses of tense constructions is compatible with our central goal here: to analyze core tense uses in a way that explains their role in aspectual type shifts.

<sup>5</sup> The distinction drawn here between verb meanings and aspectual constructions, which select components of those verb meanings, is akin to the traditional distinction between lexical aspect or Aktionsart and grammatical aspect. The current account differs from traditional accounts of this distinction only in providing a detailed (decomposition-based) description of precisely how the semantic representations of grammatical aspects (here viewed as constructions) combine with, and modulate, the semantic representations of lexical verbs.

<sup>6</sup> While other authors, including Giorgi and Pianesi (1997) and Hornstein (1991), offer accounts of sequence-of-tense phenomena, I assume the Declerck model here because it, like the present account, focuses on the ambiguity of the English past tense.

<sup>7</sup> While (13) appears synonymous with (14) on a past-in-past reading, (13) is awkward or ungrammatical for those speakers who use the Past Perfect.

<sup>8</sup> The choice of a negated existential perfect predication (Michaelis 1994, *inter alia*) in (18) is deliberate. As observed by Hoepelman and Rohrer (1981), perfect predications are not ordinarily compatible with temporal *still*: \**The Eagle has still landed*.

The reason, as they point out, is that once an event has occurred, its state of aftermath can never cease. Only a *non-occurring* event (i.e., one that does not hold at any point within an interval upper bounded by reference time) has a state of aftermath that is subject to cessation (once the event in question occurs).

<sup>9</sup> While this sentence has a possible habitual interpretation, such interpretations are excluded by the terms of the test, since a habitual assertion is true whether or not the event in question is happening at report time.

<sup>10</sup> Deictic there constructions preserve a ‘progressive’ use of the simple present, as in, e.g., *There she goes* (as opposed to \**There she is going*).

<sup>11</sup> An important difference between Bickel’s model and the one proposed here (which is essentially that of Michaelis [2004]) concerns the interpretation of phases. Bickel subsumes both activities and states under the category *phase*, while in the proposed model only states are phases — all activities, whether homogenous or heterogeneous, are assumed to contain transitions. The rationale for this assumption is that activity predications qualify as dynamic rather than stative predications according to various diagnostics. For example, unlike states activities cannot be reported by means of the simple present tense in English (\**Look! Harry runs by the house*). Like Bickel, however, we assume that activities contain ‘medial’ states (here called *rests*). As I will argue in Section 4, constructions like the Progressive, which pairs a stative auxiliary with an activity verb of the appropriate (gerundial) inflection, selects a medial rest from the activity verb’s temporal representation.

<sup>12</sup> We assume here that while the temporal representation of a verb like *raise* can only be determined when it is combined with its arguments, it is nonetheless the lexical representation of the verb that is at stake.

<sup>13</sup> The question arises of why, if the Progressive selects for a state, it cannot generally combine with state verbs, as illustrated by the ill-formedness of sentences like \**I am having two feet*. The answer is that the Progressive construction restricts the Aktionsart of the participial daughter: it must be an activity verb. That state denoted by the Progressive is identified with one within the Aktionsart representation of this activity verb.

- 
- <sup>14</sup> The list in (50)–(53) omits the feature ARG-ST (argument structure), a feature whose value is a ranked list of the predicator’s semantic roles, along with any lexically assigned case features. ARG-ST is the locus of binding constraints in Head Driven Phrase Structure Grammar and its allied framework SBCG (see Sag 2010; Sag et al. 2003), but since such constraints are not relevant to the present analysis, ARG-ST is omitted from the diagrams here.
- <sup>15</sup> The abbreviation NP is used to stand for a feature structure containing the CAT value *noun*, and an empty VAL list. The abbreviation NP<sub>*i*</sub> stands for such a feature structure that also contains the INDEX value *i*.
- <sup>16</sup> It is important to recognize that while the construction is a lexical entry (that of the auxiliary *be*) what this construction actually *licenses*, through the VAL feature of *be*, is the combination of the auxiliary with a gerundial complement that denotes an activity. The construction is not phrasal because the pairing of auxiliary and gerundial complement is licensed by an independently motivated combinatory construction, the Head Complement construction. The same remarks apply, *mutatis mutandis*, to the Perfect construction discussed in Section 3.2.
- <sup>17</sup> While (55) may appear to be an experiential rather than resultative perfect, a resultative analysis is more plausible for a couple of reasons. First, (55) describes a unique past episode, whereas experiential perfect sentences do not. For example, the sentence *I’ve walked to school* asserts one or more episodes of walking to school within an interval that abuts speech time. Second, while experiential-perfect sentences are compatible with time-span adverbials like *before* and frequentative adverbials like *occasionally* and *from time to time*, any such adverbial would be inappropriate in (55).
- <sup>18</sup> A reviewer points out that de Swart’s ‘consequent state’ condition need not be construed as requiring a lexically entailed resultant state. Portner (2003) in fact proposes that the Perfect has both current-relevance and resultant-state uses, with examples like those in (55)–(56) presumably falling into the former category. Portner’s analysis resembles the implicature-based account of Nishiyama and Koenig (2008). It also aligns with the ambiguity-based analysis of Michaelis (1994), in which the Perfect is viewed as having both resultant-state and time-span (existential and continuative) meanings — the latter requiring a contextually construed consequent state. I see no reason in principle that one could not recognize both aspectually entailed states and pragmatically construed ‘consequent states’. My only objection to this dual analysis is that a pragmatically construed consequent state lacks a representation in the verb’s semantics, and thus a compositional derivation, *unless* it is construed as a final rest, as in the present analysis.
- <sup>19</sup> Because of the cumulativity property of states (Herweg 1991), two state phases can be conjoined to produce a single, more inclusive state. This enables a speaker to say felicitously *This project has been difficult and will continue to be so*.
- <sup>20</sup> A reviewer questions whether the combinatory restriction in question can indeed have a logical basis, since languages other than English permit reports in which a dynamic verb combines with present-tense inflection. For example, as observed in Section 2.4, Swedish *Sten äter ett äpple* reports a situation ongoing at speech time, ‘Sten is eating an apple’. As I argued in that section, however, such data do not in fact support the claim that present tenses in other languages are aspectually neutral. The reason is that the sentence *Sten äter ett äpple*, as its English translation indicates, has a progressive construal (i.e., it does entail that the apple was consumed). As a progressive predication, this sentence counts as a stative predication (see Section 2). More crucially, it represents a product of a coercion — a case in which semantic conflict between a dynamic verb and its present-tense inflection produces a stative construal of the verb. What can be concluded from the foregoing is that in languages other than English, the present tense is capable of triggering a stative coercion identical to the type shift performed in English by the Progressive.