Definiteness distinction in Salish.

...and English determiners, such as the absence of a definitive distinction in Salish.

Lisa Matthewson proposes an account of common ground parameter, which means that Salish determiners may not access the common ground of the discourse. This parameter also derives several other differences between Salish and English determiners, such as the absence of a definiteness distinction in Salish.

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THE SYNTACTIC REPRESENTATION OF LINGUISTIC EVENTS

Sara Thomas Rosen

The terms aspect, event, and eventuallyality have all been used in different ways in the literature, and it is sometimes difficult to sort out exactly what is meant in a given use of each term. The term “aspect” has been used in two distinct ways, and only Smith (1991) has clearly delineated the two uses. In her terminology, viewpoint aspect focuses on a temporal perspective of the event, and includes the progressive and (im)perfective. Situation aspect refers to the atemporal contours of the event, such as whether the event has a natural terminus; situation aspect is atemporal because the timeframe is irrelevant to the natural unfolding of the event. In order to keep distinct these two notions of viewpoint and situation, I will reserve the term “aspect” for viewpoint aspect and “event structure” for situation aspect. I will have very little to say about viewpoint aspect, except to suggest at the paper’s end that (viewpoint) aspect may in fact be related to event structure in ways that research has not yet fully identified.

Within investigations of event structure, the term event is usually used to refer to all non-statives, but it may also be used more narrowly to refer to events with a terminus or delimitation (for example Parsons 1990). I will use the term “event” to refer to all non-statives, regardless of terminatio.

The most influential work on event classification is that of Vendler (1967). Vendler proposed that all verbs can be classified into one of three main possibilities for where events are encoded: within the lexicon, the semantics, or the syntax. Most research on the linguistic representation of events has associated events with either of the two modules that link language to conceptual experience:

1. The lexicon. The earliest thinking about events suggested that events had to do with lexical category: insofar as nouns denote things and verbs denote actions (it was thought), verbs should encode events. More currently, argument structure theory assumes that the verb controls the “what’s happening” of the sentence, insofar as the theory asserts that the verb determines the participants in the event (i.e., its arguments).

2. The semantics. The semantic component of language represents meaning. Sentence meaning is tightly connected to the characteristics of the event; therefore, the event is represented in the semantics.

Work during the last several years has suggested that a third possibility, that of event structure, is encoded:

3. The syntax. Recent work on events demonstrating that syntactic operations are sensitive to event properties implies that the event is encoded in the syntax. In particular, event initiation and termination are intimately connected to the purely syntactic functions of Case and agreement, and therefore the event might best be represented in the syntax where Case and agreement are represented.

This paper examines the more significant work done within each of the three main possibilities for event representation — the lexicon, the semantics, and the syntax.

The main body of the paper reviews the various attempts to explain how and where language represents events. Section 2 reviews the semantical approaches to event structure; semantic approaches identify the event as a primitive element in the logical semantics of a sentence. Section 3 reviews lexical approaches to event structure; lexical approaches identify the elements of the event with the particular lexical arguments of the verb. Finally, Section 4 reviews the evidence that the clausal functional projections in the syntax encode specific components of the event; prior to the encoding of events, models of events have provided the crucial insights that led to recent models in which events are encoded in the syntax.

The final section of the paper discusses the interactions among the lexical, syntactic, and semantic approaches to event interpretation.

A crucial difference between activities and performances turns out to be one of delimitation. A delimited event is one that has an inherent or natural end. Delimitation is the characteristic of performances (that Kenny’s test is sensitive to).

Perhaps the most influential work on event classification is that of Vendler (1967). Vendler proposed a four-way classification, which, together with Dowty’s (1979) set of diagnostics, makes up the most widely-cited classification system. Vendler proposed that all verbs can be classified as denoting states, activities, achievements, or accomplishments. Each is defined in (2) below and exemplified in (3) through (6):

1. Activity
2. Activity-event
3. Activity
4. Accomplishment
5. Accomplishment
6. State

Smith (1991) proposed the same four verb classes and added a fifth class called semelfactives (instantaneous events), as exemplified by the sentences in (7).

The more recent philosophers Ryle (1949) and Kenny (1963) adopted Aristotle’s description of the range of events that language can denote, and then examined events in more detail. Kenny in particular elaborated the Aristotelian three-way classification by listing verbs belonging to each of the three classes, and developing diagnostics for membership within each. Kenny adopted the same three classes as Aristotle, but used his own class labels: states, activities, and performances (actions with terminal state). Kenny’s main diagnostics are based upon semantic entailments about whether the event can be construed as having taken place when it is still in progress. For example, at any point during the unfolding of an activity, the event described by that activity has taken place, but the same is not true of a performance. The examples in (1) illustrate the distinction between an activity and a performance.

1. Activity
   a. Activity
   b. Performance

2. Activities
   a. Activities that go on for a time, but do not necessarily terminate at any given point.
   b. Accomplishments: events that proceed toward a logically determined goal.
   c. Achievements: events that occur at a single moment, and therefore lack continuous tenses (e.g., the progressive).

3. Accomplishments
   a. Accomplishments that could go for some period of time but lack continuous tenses.

4. Achievement
   a. Terry built five houses in two months.
   b. The child is drawing a circle.

5. Achievement
   a. Terry built five houses in two months.
   b. The child is drawing a circle.

6. State
   a. Terry knows the answer.
   b. Terry resembles his brother.
achievements (see (5) above), semelfactives (such as those in (7)) result in no change of state.

(7) SEMELFACTIVES
a. Terry knocked at the door.

b. The child coughed.

1.2. Extra-verbal factors in event classification
In their early work on event classification, Aronoff, Ryle, and Vendler all assumed that the object of classification is the verb: because the verb determines the class membership of a predicate, it is the verb that must be classified. Classification of verbs is also found in the works of Buch (1987) and Piñón (1995). However, it has been noted again and again that characteristics of the object, adjuncts, and other materials in the clause contribute to the event type of the entire clause. Thus, Verkuyl (1972), Dowty (1979; 1991), Tenny (1987; 1994), and Ritter & Rosen (1996) all argued that classification must be compositional, not exclusively verb-based. In Rosen (1996), I pointed out various problems with attempts to classify verbs into lexical semantic groups; much of the criticism there is relevant to event classification efforts as well. My most telling criticism consisted of verbs that seemed to belong to one semantic class as used in one sentence, but to a different semantic class as used in another. The same problem afflicts event classification efforts: many verbs cannot be assigned rigidly to one and only one event class, as their behavior is variable and context-dependent.

Substantial evidence indicates that sentence material other than the verb can change the overall event type. The direct object affects the event type in at least four different ways. First, the examples in (8) through (11) taken from Ritter and Rosen (to appear), show that the addition of an object can affect the event type.

<table>
<thead>
<tr>
<th>(8) ADDITION OF DIRECT OBJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Bill ran for 5 minutes in an hour. activity</td>
</tr>
<tr>
<td>b. Bill ran for 5 minutes in an hour. accomplishment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(9) CONJUNCT OBJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Terry sang for an hour in an hour. activity</td>
</tr>
<tr>
<td>b. Terry sang for an hour in an hour. accomplishment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(10) X'S WAY CONSTRUCTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Terry took an apple for 10 years. activity</td>
</tr>
<tr>
<td>b. Terry took an apple for 10 years. accomplishment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(11) FALSE REFLEXIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Terry sang for an hour in an hour. activity</td>
</tr>
<tr>
<td>b. Terry sang for an hour in an hour. accomplishment</td>
</tr>
</tbody>
</table>

Second, the examples in (12) through (14) illustrate that event class varies on the basis of the internal characteristics of the direct object.

<table>
<thead>
<tr>
<th>(12) SPECIFICITY OF OBJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Bill wrote the letter for an hour in an hour. activity</td>
</tr>
<tr>
<td>b. Bill wrote the letter for an hour in an hour. accomplishment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(13) COGNATE OBJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Bill drank a cup of coffee for an hour in an hour. activity</td>
</tr>
<tr>
<td>b. Bill drank a cup of coffee for an hour in an hour. accomplishment</td>
</tr>
</tbody>
</table>

Moreover, object Cases can lead to different event interpretations of the predicate. Finnish, as illustrated in (14), marks a morphological distinction between accusative and partitive Case objects. If the object is marked accusative, then the predicate receives an accomplishment reading, as in (14a); but if it is marked partitive, then the predicate is an activity, as in (14b) (Kiparsky 1988, 2-3, 5).

(14) OBJECT CASE
a. Haus kirjoitti kirjoit-i letter-PL-3SG acted
b. He/she wrote the letters (...and left!).

```
a. Hän kirjoitti kirjoit-i letter-PL-3SG acted
b. He/she was writing the letters (...when I came!).
```

Finally, the conative alteration and the antipassive alternation can also change the event classification of a verb. Both alternations demote the direct object to an oblique object; eliminating the direct object simultaneously eliminates the delimitation. Examples appear in (17) and (18). Example (18b) has an imperfective or atelic reading.

<table>
<thead>
<tr>
<th>(17) CONATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Terry ate the apple for 10 minutes in an hour. activity</td>
</tr>
<tr>
<td>b. Terry ate the apple for 10 minutes in an hour. accomplishment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(18) ANTIPASSIVE (Inuit, Bittner &amp; Hale 1996, 36)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Juuna-p Anna kunip-p-a-a. accomplishment</td>
</tr>
<tr>
<td>b. Juuna kissed Anna.</td>
</tr>
<tr>
<td>c. Juuna kissed Anna (Anna-mik). kusin-si-raj-a. activity</td>
</tr>
<tr>
<td>d. Juuna kissed Anna (Anna-mik). kusin-si-raj-a. accomplishment</td>
</tr>
</tbody>
</table>

The various examples of the compositionality of event type necessitate two conclusions: (a) not only the verb determines event type, and (b) systematic relations link sentence structure and event type. It is not yet entirely clear how the syntax relates to event type, but the direct object is involved (Tenny 1994, for example, pioneered work on the relation between event type and direct object). One solution to the problem of how event type is compositional is to classify the predicate or even the whole clause, thereby finesing the issue of how event type is determined. This is essentially Dowty's (1979) tack. Although classifying the entire predicate or clause instead of the verb alone may solve some of the descriptive problems with event classification, classification still suffers from a much more serious shortcoming: even if the resultant classes accurately describe the eventuality that language encodes, the classification approach is inherently non-explanatory, and the classes themselves are not necessarily the primitive elements involved. Thus, however useful classification schemes are in describing clause types, they are not aimed at explicating the basic elements of events at the disposal of natural language, and they do not bring us closer to understanding how and where in the grammar events are encoded. We should not and need not be satisfied with description alone.

1.3. Parameters underlying event classes
A large body of work examines the specific characteristics of predicates that place them in one event type or another. One of the aims of this endeavor is to show that the classification of a verb or clause into an event type is attributable to a more basic set of underlying features: each particular classification is dependent on more basic primitive characteristics of the event. Explanations of the parameters underlying classifications go beyond pure description by digging beneath the surface of the event classes. Investigations of parameters have thus identified a set of characteristics of events that any theory of event structure must capture. We will see that the lexical and syntactic theories of events largely try to explain the characteristics identified by this research.

Individual attempts at defining the underlying characteristics of the event focus on different characteristics, but all seek to establish sets of parameters that make up the Vendlerian classification. I will call efforts to derive the parameters underlying classification the neo-Vendlerian approach. I will briefly run through a few neo-Vendlerian proposals for this primitives-based approach. The main goal of neo-Vendlerians has been to see in later sections that the event characteristics identified by the neo-Vendlerians have influenced what it is that event theorists try to explain.

Verkuyl (1993), in reviewing Vendler's classification system, argued that event classes themselves are not primitive. Instead, classification is based on deeper characteristics of the event. He identified a few atomic predicates underlying the Vendlerian classification diagnostics (for example, whether the diagnostics test for continuousness, an event characteristic, or for agentivity, a semantic characteristic), the variation in event type found across the different uses of many verbs (as the examples in (8) through (18) illustrated), and the non-structural, lexical nature of the punctuality of achievements. Verkuyl concluded that classification itself is not attempting to identify the parameters that make up the classes. He suggested that combinations of two binary features generate the four Vendler classes: continuousness, or whether the event has duration, and boundedness, or whether the event has a terminal endpoint. Activities and accomplishments take place over a period of time, states and achievements do not. Accomplishments and achievements have a terminal binding, states and activities do not. The four classes and their relations are described in (19).

(19) VERKUYL'S (1993) PARAMETERS OF EVENT CLASSES
a. state--bounded, --continuous
b. activity--bounded, --continuous
c. achievement--bounded, --continuous
d. accomplishment--bounded, --continuous

Carlson (1981) took much the same approach of analyzing the Vendlerian system as binary features of predicates. She argued that three parameters define the event properties of adverbials, verbal aspect, and quantified objects, all of which are elements that affect event structures. Her three parameters were point, extended, and continuous. In fact, her parameters “point” and “extended” seem to be simply opposing values of a single feature: point refers to momentaneous events, and extended refers to events with duration. Her continuous parameter refers to whether culmination is inherent in the event. Carlson’s “continuous” is parallel to Verkuyl’s “bounded” and Carlson’s “point” and “extended” are parallel to Verkuyl’s “continuous.”

(20) CARLSON’S (1981) PARAMETERS OF EVENT CLASSES
a. state--continuous, --extended
b. activity--continuous, --extended
c. achievement--continuous, --extended
d. accomplishment--continuous, --extended

Moens (1987) refined Vendler’s classes by adding a class much like Smith’s (1991) semelfactives. Moens also considered the underlying features of his various classes. He suggested that, in addition to states, there are four event types based upon two binary features: consequence (termination or culmination) and extended versus atomic (momentaneous or pointed) events.

(21) MOENS’ (1987) PARAMETERS OF EVENT CLASSES
a. culmination--continuous, --pointed
b. culminated process--continuous, --extended (build a house)
Moens further proposed that the event classes in (21) are made up of smaller atomic units: a “culminated process” is a process with a consequence. The notion that events can be decomposed into sub-events becomes important in much of the work on the lexical analysis of events, e.g. in Pustejovsky (1991; 1995). Further, van Voorn (1968), Grimshaw (1990), and Tenny (1994) all claimed that even though the event is bounded, the relation between sub-events is not.

Finally, Hoeksema (1983) and Mourelatos (1979) both maintained the notion of the countability of an event. They likened countability to the basis of the two features — mass/count distinction in nouns: terminating activities and non-terminating processes have duration, states and achievements do not. Whether the event is countable or not is determined by the existence of a whole, non-terminating part of the event. As long as the event is terminated, it is countable.

Mourelatos’ arguments regarding countability, argued whether instances of an event can be counted: the term mass/count distinction in nouns: terminating events can be counted but non-terminating processes cannot. Hoeksema, (1983), following Mourelato’s arguments regarding countability, argued for a redefinition of the four event classes on the basis of the two features (count and duration), as summarized in (22).

The overall goal of the neo-Vendlerians has been to identify the features that make up the Kenny or Vendler description of event types. The most common features identified are extension over time and having a culmination or terminus:

a. state: –count, –duration
b. activity: +count, –duration

c. achievement: +count, +duration

The work of ter Meulen (1983; 1995) suggested a redefinition of the Vendler classes on very different grounds. She defined the four Vendler classes on the basis of their semantic entailments rather than on whether they have duration or whether they culminate. She defined states as meeting an “upward closure condition”, that is, one must look outside the state to see that it is a state. States have no internal structure or change. Events, on the other hand, meet “downward closure conditions” in that they are defined on the basis of their parts. Ter Meulen’s event classes are summarized in (24).

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Te Meulen’s (1983) EVENT CLASSES

2. Events in logical semantics: the Davidsonian [e]

2.1.  [e] in the logical semantics

Panini (B.C.E.), as cited by Parsons (1990), observed that verbs denote particular actions and nouns denote things that relate to these actions, either by being the agent or by being the object or instrument of the action. Plato (366 B.C.E.) made the same syntactic distinction between actions and non-actions: he observed that a verb denotes an action, whereas a noun denotes the thing that performs an action. He stated that a sentence is constructed of an action (verb) plus a result (presumably the object nominal).

These early works on events claim that language encodes two basic sorts of information: actions and non-actions — and that the distinction between actions and non-actions is encoded in the lexical category of words: nouns represent things and verbs represent actions. Davidson (1967) refined the notion of “action” by proposing that action sentences include an event variable in their logical semantics. His proposal and subsequent work building on his proposal constitute the Davidsonian approach to the encoding of events in language. The Davidsonian approach looks at the relation between the event denoted by the verb and other constituents in the sentence, such as modifiers. Davidson argued that events logically are like “things” in that they introduce a variable that can be modified and quantified over. He discussed a problem first pointed out by Kenny (1963) with determining the valence of event predicates. Event predicates can include an unspecified number of arguments, including time, place, manner, and instrument. Just as nominal modifiers modify the noun, event modifiers modify the event. However, one would not want to posit that a verb like consume is synonymous with a two, three, four, five, etc., place predicate (the example is from Davidson 1967), which is a possible consequence of the logical semantics of the modification in these sentences. In fact, adjuncts freely modify, and any number of adjuncts can be added to a predicate. A system that treats the verb butter differently in each case would not capture the right generalizations about adjunct modification in language.

6. Events in logical semantics: the Davidsonian [e]

Ter Meulen viewed the four Vendler classes as a semantic hierarchy: achievements are a special case of accomplishments, accomplishments are a special case of actions, and activities are a special case of states.

In her later work, Ter Meulen (1995) examined the event classes in terms of the dynamic discourse interpretation that each accords. (See also Hinrichs 1985 for a discourse-oriented approach to event classes.) She defined three characteristcredentials of events, corresponding to the three event classes: holes (activities) are homogeneous events, filters (accomplishments) are heterogeneous and no part is identical to the entire event, and plugs (achievements) have no distinction.

The sentences in (28a) follows from (28a), b) because the quantification over the burning in (28a) is logically related to (28b) and (28c). In the logical semantics of (28c), the consuming of oxygen follows from the quantification in (28a) and the specific event in (28b).

The sentence in (28c) follows from (28a), b) because the quantification over the burning in (28a) is logically related to (28b) and (28c). In the logical semantics of (28c), the consuming of oxygen follows from the quantification in (28a) and the specific event in (28b).
Various uses of the Davidsonian [e] have been made in the literature, and the different treatments can be classified into the Davidsonian and neo-Davidsonian camps. The Davidsonian analysis of a given event [e] argument in the main predicate of the clause, and distributes it among the different nodes of the clause in the logical representation (Davidson 1967; Bayer 1997, for example). The neo-Davidsonian treatment carries this out in a more fine-grained way, assigning argument not only the modifiers, but also among the individual arguments of the predicate: neo-Davidsonians also tend to represent each thematic argument of the predicate along with the event argument (Kratzer 1989, 1990; Parsons 1990, to name a few). Although the various proposals are interesting in their own right, and although they vary substantially, many of them focus on details of the logical semantics of predicates and events and thus are not of particular relevance to the present paper. I will focus on the syntactic representation of events and its effects on interpretation. Therefore, I will give the various Davidsonian and neo-Davidsonian analyses unfair short shrift, in order that I might focus on the relation between events and the syntax.

I would like to highlight one neo-Davidsonian analysis of expressive verbs that combines verb classification and neo-Davidsonian event variable approaches. Parsons (1990) included in his neo-Davidsonian logical representation an extra term corresponding to the event type of the predicate. He identified two different types of eventuality types: eventualities that culminate, called Cul (achievements and accomplishments) and those that do not, called Hold (states and activities). Parsons’ (1990, 25) attempt to combine the (neo-)Davidsonian logical analysis with event classification was quite interesting. In adding a logical argument that refers to the event type (Cul versus Hold) to the logical semantics of the sentence, Parsons implied that the event type is itself a semantic entity separate from the event and the separate arguments and modifiers. We will see in Sections 3 and 4 that the lexical and syntactic approaches to events have associated the arguments of the verb with the event type, albeit in very different ways; in certain respects the arguments define the event and the event type.

2.2. [e] in the syntax

For the purpose of understanding the relation between the syntax and the semantics of events, the most interesting use of the Davidsonian argument is the proposal that events are represented in the argument structure of the verb. The proposal, attributed separately to Higginbotham (1984) and Kratzer (1989) (which must be satisfied) to the syntactic representation, I will discuss two theories, which differ in the details of which verbs have this argument, and how the argument is syntactically satisfied. Higginbotham (1984) postulated that the Davidsonian [e] appears in the argument array of all verbs, including event-denoting verbs and non-event denoting statives. Because [e] is an argument of the verb, in parallel with the verb’s thematic arguments, [e], like thematic arguments, must be syntactically satisfied (as a consequence of the Theta Criterion, see Chomsky 1981). Higginbotham suggested that [e] is satisfied through argument binding (a more current phrase structure). The example in (32) shows Higginbotham’s mechanism of argument satisfaction (Higginbotham 1985, 554-556). In (32b), the numbers within the brackets refer to the thematic arguments of the verb, presumably annotat-

ed with semantic role labels such as experiencer or theme; the E refers to the Davidsonian argument in the logical semantics of the sentence.

(32) a. John saw Mary.
   b. (32a) e, see, v, X, Ni, c,2,E, v
   (3c) see (John, Mary, e)

Because the [e] is an argument of the verb, it must be syntactically satisfied. Higginbotham suggested that [e] corresponds to theta binding: the [e] argument is bound by the inflection node (1), just as the referential argument of a noun is bound by the D node. Binding of the [e] results in existential closure of the event.

Kratzer (1989) also suggested that the Davidsonian [e] is an argument of the verb, in Kratzer’s case, syntactically satisfied by Tense. Unlike Higginbotham, however, Kratzer posited that only some verbs have [e] as an argument. She proposed that there is a syntactic distinction between stage level predicates (denoting events and temporary states) and individual level predicates (denoting relatively permanent properties), a semantic distinction that Carlson (1977) first noticed. Kratzer argued that only stage level predicates have an [e] in their argument structures. She went so far as to claim that the subject of stage level predicates, but not the subject of individual level predicates, is projected internal to the VP (cf. Diesing 1988), and that the [e] argument functions as the (implicit) external argument of the verb.

The Higginbotham/Kratzer uses of the Davidsonian [e] made two claims about the representation of events that substantially advanced lexical and syntactic analyses of events. First, Higginbotham noted that there are different mappings (Rosen 1996). Simple semantic (thematic) argument representation Hovav, 1995; Pinker, 1989). The ultimate goal of semantic classification is that, a problem with semantic classification is that, in apparent contradiction to its core U/T/AH assumption, no theory of the lexicon/syntax mapping has been able to account for the differences in semantic content between the semantic meaning of a verb and its syntactic behavior. Semantically similar verbs may behave differently across languages (C. Rosen 1984), even given the same distribution across multiple syntactic realizations (C. Rosen 1984; S.T. Rosen 1996), and semantically similar verbs may allow different mappings (Rosen 1996). Simple description shows that verb behavior is variable and context dependent. This context-based variability directly contradicts hypotheses about semantically-based universal alignment. More critically, a verb classification model would claim that (by

3. Events in the lexicon/syntax mapping

Linguistic research has found a tight relation between the lexical entry of a verb and the syntactic structure that is used in the omni-presence of the lexicon/syntax mapping. The lexicon/syntax mapping has included the exploration of the limits and constraints on the behavior of lexical items in the syntax, resulting in the development during the last decade and a half of theories of the lexical-syntactic interface.

Recent work looking at the mapping between the arguments of events developed from two sources: work on argument structure, and work on event classification and the logical semantics of events. Lexical analyses of events and argument mapping analyses generally do not address the argument mapping between verb meaning (qua event interpretation and argument interpretation respectively) and the syntactic realization of arguments.

3.1. What a mapping theory must explain

The tendency for specific semantic (thematic) arguments to have characteristic syntactic positions has led to two major proposals regarding universal mapping relations: Perlmuter & Postal’s (1984) Universal Alignment Hypothesis (U/AH) and Baker’s (1988) Uniformity of Theta Assignment Hypothesis (UTHA). The U/T/AH states that specific thematic arguments are mapped to syntactic positions, and that there is a one-to-one mapping between semantic argument and initial syntactic position. Universal alignment predicts identical mappings of arguments into syntactic argument positions.

Any theory of the relation between the lexicon and the syntax must explain many phenomena concerning argument mapping. One phenomenon is the near-universality of certain mappings across languages. The tendency, perhaps the only universally agreed-upon) of the various mapping universals is that agents appear in subject position in all languages, at least as far as we know. No other arguments appear so predictably. Thus, theme can appear in object, subject, or indirect object position, and experiencer can appear in subject or object position. The qualification “near” in the term near-universality suggests two research agendas: (a) we must understand and explain the observed regularities in number and position of arguments across the syntactic structures of all languages, and (b) we must understand and explain why the number and order of arguments vary across different syntactic structures in all languages across all arguments.

A lexicon-to-syntax mapping theory must also explain the existence of argument alternations. Given that a semantic class maps to a set of different syntactic positions for the same verb, then either mapping is not universal, or accounts of argument mapping based on the logical semantics of the verb are mistaken in their assumptions about what controls mapping. A common solution to the failure of U/T/AH to explain the evident variability of the syntactic positions of semantic roles is to posit the existence of semantically-defined classes of verbs. By hypothesis, each class of verbs defines a set of mapping relations and a set of argument alternations that derive new lexical items with new mappings (e.g. Levin, 1993; Levin & Rappaport Hovav, 1995, Pinker, 1989). The ultimate goal of semantic classification is that, a problem with semantic classification is that, in apparent contradiction to its core U/T/AH assumption, no theory of the lexicon/syntax mapping has been able to account for the differences in semantic content between the semantic meaning of a verb and its syntactic behavior. Semantically similar verbs may behave differently across languages (C. Rosen 1984), even given the same distribution across multiple syntactic realizations (C. Rosen 1984; S.T. Rosen 1996), and semantically similar verbs may allow different mappings (Rosen 1996). Simple description shows that verb behavior is variable and context dependent. This context-based variability directly contradicts hypotheses about semantically-based universal alignment. More critically, a verb classification model would claim that (by
assumption) two verbs are semantically similar only if they are syntactically identical. And so, whenever two verbs behave differently in the syntax, one must posit more and more detailed semantic classes. Should the syntactic data demand it, they could end up with placing every verb in a different class (this sometimes happens—see the semantic classes in Pinker 1989). Because there are no a priori semantic criteria restricting verbs to a given semantic class, classification based on classification cannot be disproved, because verb classification proponents need only add more and more verb classes as needed to fit the available data.

3.2. Theta roles don’t determine the mapping  

In recent work, several researchers have suggested that the role an argument plays in the event described by the verb determines how and where the argument is mapped into the syntax (Dowty 1991; Grimshaw 1990; Tenny 1994; Ghomeshi & Massam 1994; Rosen 1996; van Voorst 1988; van Hout 1993, 1996). These researchers have concluded that semantically based verb classes and thematic roles at best partially determine the mapping. Instead, syntactic arguments identify participants in the event, and the work that event representation has posed a set of event roles, which determine the position of the arguments in syntax. Event role mapping theories postulate that the verb lexically determines a set of event roles, and each event role maps to a particular syntactic position.

Some examples of event roles, taken from Grimshaw (1990), Tenny (1994), and van Voorst (1988), are given in (33). Event roles describe the part of the event that the argument is linguistically involved in. For example, an originator (cf. van Voorst) begins, or instigates an event; a delimiter (cf. Tenny, van Voorst) determines the extent, or unfolding of the event; a terminus (Tenny) determines the endpoint of the event.

(33) a. Not(assigned), the apple. destination
    Fred assigned the cart to the gas station. 

Crucially, event roles are independent of semantic roles. (This statement isn't quite true for Grimshaw, who argued that an event role hierarchy and a semantic role hierarchy jointly determine argument structure.) For example, instruments and locatives generally appear in oblique position, but if an instrument is interpreted as an originator, it will map to subject position (the key opened the door), and if a locative delimits an event, it will map to the event object position (The farmer loaded the truck with hay). Tenny proposed that the mapping of verbal arguments is constrained by the event rather than by thematic roles:

(34) AGRUMENT INTERFACE HYPOTHESIS (AIH)  
The universal presupposition of mapping between thematic structure and syntactic argument structure are governed by aspatial properties. Constraints on the aspatial properties associated with direct internal arguments, indirect internal arguments, and external arguments in syntactic structure constrains the kinds of event participants that can occupy those positions. Syntactic argument structure is visible to the universal linking principles. (Tenny 1994, 2)

The AIH explicitly denies that semantic or thematic roles play any part in determining the mapping of arguments into the syntax. Tenny proposed a set of lexico-syntactic mapping principles that determine the syntactic-to-event argument mapping based primarily on the role that each argument plays in delimiting the event.

Van Voorst (1988) arrived at the same conclusion that the direct object plays a role in delimitation. He also suggested that originations maps to a particular position in the syntax—the subject. Van Voorst represented Event Structure as a line bounded at one end by a point that marks the originisation (initiation) of the event and at the other by a point that marks the event’s termination. He identified the initiation point with “the object of origin or actualization” (i.e., with the participant responsible for launching or effecting the event), and he identified the end point with “the object of termination” (i.e., the participant that terminates or consummates the event). A set of Event Structure Correspondence Rules implied by the diagram in (35) maps the object of origin or actualization to the D-structure subject, and the object of termination to the D-structure object.

(35) \[ \text{object of origin/actualization} \rightarrow \text{subject} \]
    \[ \text{object of termination} \rightarrow \text{direct object} \]

Van Voorst used event structure to represent the three (non-stative) event types in the Vendler event classification system. (Only non-stative sentences have an event structure.) As shown in (36), activities or processes have no inherent endpoint, so their event structure representation lacks an object of termination. Van Voorst assigned the structure in (36) to achievements as well, because their objects are non-delimiting. Accomplishments, on the other hand, always have an inherent endpoint, though they may or may not have a beginning point. Consequently, their event structure representation contains only an object of termination as in (38), or else contains both an object of termination and an object of origin/actualization as in (37).

(36) ACTIVITIES \[ \text{object of origin/actualization} \rightarrow \text{event} \]

(37) TRANSITIVE ACCOMPLISHMENTS \[ \text{object of origin/actualization} \rightarrow \text{event} \]
    \[ \text{object of termination} \rightarrow \text{event} \]

(38) INTRANSITIVE ACCOMPLISHMENTS AND ACHIEVEMENTS \[ \text{object of termination} \rightarrow \text{event} \]

Tenny (1987, 1994) linked the terminal point of a delimited event and the direct object. Van Voorst (1988) made the same point, and both he and Grimshaw (1990) further hypothesized that origination or causation is associated with the subject of the clause. We can thus (informally and non-technically) postulate that there are two event boundaries that are identified with the underlying subject and object.

The event role mapping approach generally assumes that event information appears in the lexical semantics of a verb. The works just discussed imply that the lexical semantics of the verb determines (a) the event roles of its arguments, and therefore also determines (b) the mapping of the event arguments into the syntax. However, these several works are not explicit about the lexical representation of these event roles. In contrast, Pustejovsky (1991; 1995) and Jackendo (1990) have proposed specific representations for the event in the lexical semantics of the verb.

Pustejovsky (1988; 1991) makes two claims about the structure of events: (a) events have internal structure that can be decomposed into smaller parts, and (b) traditional thematic roles can be redeﬁned in terms of the internal analysis of events. Pustejovsky identiﬁes three temporal subperiods — initial, internal, and ﬁnal — which identify three underlying properties of event classiﬁcation. He uses these temporal periods to deﬁne three event types — states, processes and transitions (Pustejovsky 1991, 56).

(39) \[ \text{STATE} (S): \text{a single event, which is evaluated relative to no other event} \]

(40) \[ \text{PROCESS} (P): \text{a sequence of events identifying the same semantic expression} \]

The denoted by the event structure is then cross-referenced with an [e] argument in the so-called qualia structure. The qualia structure contains in essence the word meaning (including the constituent parts of the word), how the item ﬁts into the larger domain, the item’s purpose or function, and its origin. The crucial point is that event structure is represented directly as a qualitative representation of the verb. Compositionality is represented by combining the lexical representa- 
tions into larger conceptual structures.

Like Pustejovsky, Jackendo combined LCS representations into more complex conceptual struc- 
tures (CS) representations. Also like Pustejovsky, Jackendo placed event information within the LCS of a verb, but Jackendo did not differen-
tiate event information from the thematic informa-
tion as clearly as did Pustejovsky. Jackendo’s LCS representations include a code for EVENT versus STATE, but the particular event type is determined by the internal structure of the lexical representation. Jackendo divided the LCS repre-
sentation into two components, called tiers. The Thematic Tier contains thematic role informa-
tion. One could view a portion of the thematic tier as being more event-like than thematic in that it includes entities like CAUSE (akin to event origination), and includes information about goals (which might be event delimiters). The Action Tier, contains information concerning agency (essentially who caused the action), and includes information about patient (less smoothness. Despite the name Action Tier, it is not entirely clear that it does contain event information. Instead, it seems to include semantic infor-
mation embellishing the event information that exists in the Thematic Tier.

The lexicon-based and argument-oriented approach to event structure espoused by Tenny and van Voorst clarifies a number of syntactic constructions, argument alternations, and their interpretations in a variety of languages. For example, the approach makes sense of the fact...
that a semantic theme maps to object position only if it delimits the event and otherwise maps elsewhere. In general, the approach allows thematic roles to appear anywhere in the syntax, but event roles are restricted to argument positions. In addition, event mapping recognizes that the entire predicate determines the event type and not the verb itself. By allowing all constituents of the predicate, including arguments and adjuncts, to play a role in event mapping, Ritter & Rosen made it possible to determine the event type, event mapping goes a long way toward recognizing the syntactic influence on events. However, although the event mapping approach explicitly recognizes the compositionality of events, it has not provided a systematic account of the compositionality. Given that the parameters controlling the event are assumed to be encoded in the lexicon, less compositionality and more lexical control are suggested.

Ritter & Rosen (1996) argued that the lexical semantics of the verb has limited influence on the syntactic behavior of the arguments or the semantic interpretation of the clause. Whereas event mapping models claim that verb semantics tightly controls the syntax, we showed that the syntactic position of the arguments and the specific semantics of the arguments themselves plays a large role in determining the event. In at least one case, Ritter & Rosen explained that the syntax allows them to mean. We further showed that, in contrast to the lexical models, (at least many) verbs have variable argument realizations, the extent of argument variability differs across verbs. Ritter & Rosen pointed out that just how detailed a particular verb's lexical representation is. The less detailed a given verb's semantic specification, the more variability the verb allows in its argument realization and event interpretation. The more syntactic and semantic constraints are involved in the interaction of the syntactic and semantic factors, the more variability is expected. The model of event structure, therefore, allows for some variability.

The three models differ in the range of functional projections that encode event information as well as in the exact connections between event information and Case/agreement. But all three models encode the event properties (e.g. initiation and delimitation) within the clausal functional projections. Borer explained her observation of variability by developing a syntactic account of events and argument projection, one in which the variable behavior is fully expected. In stark contrast to the lexical approach, the syntactic approach maintains that variable behavior is the norm.

A fundamental assumption of Borer's work is that the verb projects with any number of unencoded arguments, and that verbs are not constrained by the same functional heads. This is also the position in which accusative Case is assigned in SpecTP. If AspEP is projected, its Spec will be empty.

A further feature of Borer's model is that both AspP's in (44) are optional, but when they are present, their Spec's must be filled by an argument. If AspP is projected, there will be an argument in its Spec, which is the "subject of result". This is also the position in which accusative Case is assigned or checked (though not all subjects of result states receive accusative Case). Consequently, accusative Case is only available when the predicate denotes a delimited event. Similarly, if AspP is projected, its Spec will be filled by the "subject of process" argument. However, because all clauses must have a subject, and because nominative Case may be assigned independently of this event role, Benua & Borer assumed that nominative Case is assigned in SpecTP.

Travis (1994; 1997; to appear) independently proposed that events are encoded in the clausal functional projections and are related to the mechanism of agreement. Working largely with Malagasy and Tagalog, he argued that two functional projections encode the event — an Event Phrase (EP) dominated by T, and an AspP sandwiched between a VP shell (containing transitivizers, causatives, and other such light "verbs") and the lexical head VP. The details concerning the exact position of these functional projections have changed throughout the development of Travis' work, but the basic function of these projections has remained the same. In the most recent version of her work, AspP encodes delimitation or telicity and EP binds the Davidsonian [e] of the verb's argument array and provides event information. Travis (to appear: 163) proposed the structure in (45).

The work of Ritter & Rosen (1998; to appear) built on Borer's and Benua & Borer's work and is consistent with Travis' overall approach. Like Benua & Borer and Travis, Ritter & Rosen suggested that the event structure notions of initiation and delimitation are encoded in the clausal functional projections. We further suggested that AgrP — the functional projections responsible for Case and agreement — assigns the event roles of initiation and delimitation. For a canonical event (one with both initiation and delimitation), the subject moves to SpecAgrS and identifies the originator of the event; the object moves to SpecAgrO and identifies the delimiter of the event. Ritter & Rosen's syntactic model appears in (46).

The recent work of Borer (1994; 1996), Benua & Borer (1996), Travis (1994; 1997; to appear), and Ritter & Rosen (1998; to appear) incorporated the findings of the argument-based studies of events showing that subjects encode initiation and objects encode delimitation. The same work extended argument-based efforts by proposing a syntactic representation of events that explains the relation between subjects and initiation and between objects and delimitation. In particular, the syntactic approach holds that the clausal functional projections determine the event structure of the sentence, and, with some variation across theories, that DP's receive both Case/agreement and event roles in the Spec of these functional projections. In other words, the syntactic approach to event structure equates the functional mechanisms of Case and agreement with the interpretive mechanisms of the components of the event — nominative Case subjects are interpreted as initiators and accusative Case objects are interpreted as delimiters. Events are seen as being specified in the syntax.

I will discuss three different syntactic models of event structure, those of Borer (1994; 1996; Benua & Borer 1996), Travis (1994; 1997; to appear), and Ritter & Rosen (1998; to appear). The three models differ in the exact details of the range of functional projections that encode event information as well as in the exact connections...
Ritter & Rosen (to appear) further argued that, in representing eventhood, a given language only activates one of the FPs, either the initiating FP (AgrS) or the delimiting FP (AgrO). Languages vary as to whether activation of the initiating or the delimiting function triggers an eventive interpretation of the clause: some languages treat any clause with an initiator as eventive, whereas other languages treat any clause with a delimiter as eventive. In some languages, activities and accomplishments have the syntax of events because both have an initiator; in delimitation (D-languages), accomplishments and achievements have the syntax of an event because only accomplishments and achievements have a delimiter. Ritter & Rosen showed that languages make a structural distinction between eventive and non-eventive clauses, but what constitutes an “event” varies from language to language. We presented evidence that the classification of a clause as eventive is overtly marked through the Case and agreement features of the language, as detailed below.

D-Languages

Delimitation determines eventhood: accomplishments and achievements

I. Sensitive to semantic and syntactic properties of the object including
   - specificity or definiteness
   - case marking
II. Accusative Case may be restricted to delimiting objects
III. Ergative splits on the basis of perfective aspect/past tense
IV. Object agreement not specified for person features

I-Languages

Initiation determines eventhood: accomplishments and activities

I. Sensitive to semantic and syntactic properties of the subject including
   - animacy
   - person
II. Make a grammatical distinction between topic and subject
III. Ergative splits on the basis of the properties of the subject
IV. Subject and object agreement specified for person features
V. Quirk or non-objects
VI. Animacy hierarchies

Ritter & Rosen hypothesized that a predicate in a D-language is eventive if and only if it is delimited; the delimiting FP (AgrOP) is specified. Accordingly, AgrOP is part of the syntactic representation of the event in a D-language and, in order for the clause to be syntactically eventive, a DP must raise into the specifier of AgrO. Because AgrO also contains the features for object agreement and accusative Case, these features are checked with those of the DP in SpecAgrO. Ritter & Rosen argued that a non-delimiting object must remain inside the VP, where it receives inherent (e.g. partitive) Case. We suggested that AgrS in a D-language is not inherently specified with eventive content, so that initiation is only possible in the context of delimitation (Ritter & Rosen, to appear). In other words, in a D-language, an argument in SpecAgrO may be interpreted as initiating an event only if the clause is eventive, that is, only if SpecAgrO is filled. In contrast, a predicate in an I-language is eventive if and only if it has an initiator (AgrS) or a specifier (AgrOP) that is not inherently specified for eventive content. Consequently, a clause will be interpreted as eventive if a DP appears in SpecAgrS. In an I-language, AgrOP (the delimiting FP) is not inherently specified for eventive content, so delimitation is an option when initiation is present. On this analysis, an argument in SpecAgrO will be interpreted as delimiting an event only if the clause is eventive, that is, only if SpecAgrS is filled.

Ritter & Rosen (to appear) presented case-linguistic evidence showing that a host of character-istics of Case, agreement, verbal aspect, and object position follow from our analysis of the typology of languages and how the syntax encodes events. Regarding D-languages, we argued that D-languages have the same set of functions as A-grS and AgrO, that is, both object and the availability of causatives correspond to the specification of delimitation in the language. Such grammatical characteristics include the restriction of causatives to delimiting predicates in Finnish (Kiparsky 1998), and the availability of delimiting objects to undergo object shift in Chinese (Cheng 1988). In general, languages that have a delimiting basis for AgrS are sensitive to properties of the object such as definiteness, specificity, the mass/count distinction, and perfectivity. Regarding I-languages, we suggested that the syntactic characteristics of the subject correspond to the specification of initiation in the language. Such grammatical characteristics include restrictions on nominative Case resulting in Quirky Case subjects of non-eventive predicates in languages like Icelandic, ergative subjects in languages like Dyrbal and Inuit, VP internal subjects in Irish, and PP subjects in Japanese. Animacy restrictions on subjects, as found in many languages, is a further indication of initiation orientation. In general, I-languages, which determine eventhood on the basis of AgrS, are sensitive to properties of the subject, including person, animacy, and agentivity.

The event structure as developed by Borer, Travis, and Ritter & Rosen offers several advantages over non-syntactic analyses. First, its syntactic nature provides a natural explanation for the compositional character of events. It has been noted repeatedly that the entire event predicate, including the verb, its arguments, and adjuncts, determines the event interpretation. For example, Dowty (1979) and Verkuyl (1993) said this within an exemplar framework. For an event to be compositional, an [e] was in part developed to take into account the role that modifiers play in the event, and Tenny (1994), Pustejovsky (1995) and others have argued that theories of the lexical mapping of events must take into account the event structure.

The fact that event interpretation is compositional suggests that events are encoded somewhere in the syntax.

Second, the event syntactic approach implies that the grammatical properties of Case and agreement correspond to interpretative material. The claim that the event is represented in the clausal functional structure of the subject and object, the availability of causatives correlates with the fact that the subject and object in part determine the properties of the event is now explained.

Fourth, the event syntactic approach organizes the fact that event structure is syntactically represented: the term "aspect" refers to viewpoint (e.g. perfective or progressive). For the most part, event structure research has ignored viewpoint aspect. Recent work, however, has suggested that viewpoint aspect may be related to delimitation, which is, as we have seen, central to the analysis of events. For example, Kiparsky (1998) suggests that the perfective in Russian is tightly associated with delimitation. He shows that when the perfective appears on the verb, the predicate is interpreted as delimited; when the imperfective appears on the verb, the predicate is interpreted as non-delimited. Further, Vlach (1981), Borner (1990), Demirdache (to appear) and others have shown that progressive predicates are static rather than eventive: a stative generally cannot take the progressive, presumably because the progressive expresses an event as a stative, whereas the progressive expresses an event as a process. Accordingly, the progressive aspect must yield the same interpretation as other stative and non-delimited predicates in the so-called "out of control" morphology in Salish (a language of anti-causative). Although "out of control" morphology may allow two readings, an ability reading and an accidental reading, it is only delimited predicates that are in fact ambiguous: non-delimited predicates allow only the ability reading. Critically, Demirdache reported that verb aspect affects delimitation: when the progressive morphology appears on an otherwise delimited verb, only the ability reading is available. In effect, progressive morphology takes away the delimitation.

And so the question that needs to be asked is: What is the relation between viewpoint aspect and event structure? Demirdache & Uribe-Etxebarria (1999) have proposed a set of clausal functional projections that encode viewpoint aspect. In particular, the fact that viewpoint aspect has the capacity to affect event structure (e.g., event/state or delimit-ed/non-delimit-ed distinctions) is good evidence that event structure is encoded in the syntax, not just noted. Because viewpoint aspect is introduced in the syntax, its interpretation on the event must be realized in the syntax. If indeed event structure is represented in the clausal functional projections, then what is the functional structure of viewpoint aspect that causes it to interact with event structure?

Demirdache (to appear) also showed that...
negation, generic adverbs (“always”), and modal operators (“will/might”) affect the “out of control” interpretation of delimited predicates in Salish. Again, clausal functional elements interacting with event structure (e.g., because) affect the interpretation of the predicate. Any theory of events must be syntactic (at least in part), and any syntactic theory of events must take into account the relation between the event and the other functional elements.

A related question concerns the relation between the characteristics of the direct object and the event structure. One particular set of phenomena to be explicated is how the characteristics of the direct object interact with the syntactic mechanisms that control event structure. The semantics literature has clearly established that characteristics of the direct object — the mass/count distinction, definiteness or specificity, bare nominals, generics, quantified noun phrases — influence delimitation and thus influence the event classification of the predicate. For example, Krifka (1989; 1992) worked out in detail the semantic relation between event classification and object reference, and Schein (1993) discussed the relation between events, parts of events, and plurality. Properties of the direct object, such as specificity, genericity, etc., are characteristics of the functional projections surrounding the nominal projection. The question this raises is: What is the relation between the functional properties of the object (the nominal functional projections) and the functional properties of the event (the clausal functional projections)? Future work by Ritter and Rosen will address some of these questions.

Turning to semantic issues in the use of thematic roles, Parsons (1990) raised the question: Are thematic roles identical across verbs? Consider subjects, for example: although we call the subject of many verbs an “agent” (or, perhaps more accurately, an instigator of the action) is the same across verbs, for purposes of the functional projection encodes the initiating role). For example, the verb’s LCS somehow determines the normalness of the different constructions, and so pour is specified as not allowing the location to delimit the action. The LCS of a verb can constrain the syntactic structure, the event type, and the number and interpretation of the arguments. How and in what ways?

Another set of questions that this area must face is how syntactic studies of event structure will incorporate some of the advances made within the field of event classification. In particular, the features of initiation and delimitation do not quite correspond to Vendler’s classification system: Are syntactic and thematic properties of the event representation? In particular, Davidson and his followers proposed that eventive sentences behave semantically as if there is an entity in their semantic representation that can be modified, quantified over, etc. Is there something in the syntax of events (perhaps a functional head of a some sort) that translates into the Davidsonian [e]? Would the precise functional head differ across languages, perhaps in a manner consistent with the cross-linguistic variation pointed out by Ritter & Rosen?

In this paper, I have reviewed three approaches to the problem of how events are represented. The three approaches differ with respect to what they try to represent. Semantic theories of event structure represent the event itself: the [e] included in the logical semantics of the predicate treats the event as a primitive semantic entity. Other approaches claim that events are composite and therefore try to decompose them, either by identifying sub-events (Pustejovsky; Grimshaw) or sub-properties of events (neo-Vendlerian classification approaches). Still other approaches associate the event with lexical or syntactic units, such as arguments (Tenny, van Vooren, Grimshaw) or functional projections (Borer, Travis, Ritter & Rosen).

Where, then, are events (possibly including sub-events and the properties of events) encoded? If the event can be quantified, and if quantification is calculated in the logical semantics, some form of event representation must be encoded in the semantics. If the meaning of the verb constrains event types, some form of event representation must be encoded within the lexicon of the verb. If the syntactic functional features are sensitive to the event, some form of event representation must be encoded in the syntax. Thus it is possible that events are represented in all three components of the grammar. The relations among the separate representations in the three components remain to be discovered.

Acknowledgements

This work was funded in part by a grant from the Social Sciences and Humanities Research Council of Canada #410-94-0478 to E. Ritter at the University of Calgary. I thank Mary Linn for her help in compiling the bibliography and reviewing the literature, and Betsy Ritter and John Rosen for comments, discussion, and intellectual inspiration.

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Time was when one could write a book about language learning or the evolution of language without taking into account the linguistic theories of Noam Chomsky, thanks to the work of Noam Chomsky over the past forty years, and to writers like Ray Jackendoff (1994), David Lightfoot (1982), and Steven Pinker (1994), whose books have established the relevance of linguistic theory to mainstream discussions of human psychology and the nature of the mind. Judging from a recent book by Terrence Deacon, however, there is still a long way to go before the actual contents of linguistic theory penetrate beyond the circle of its practitioners and become common currency in the wider intellectual culture.

Deacon's *The symbolic species: The co-evolution of language and the brain* is an impressive tour de force through neuroscience, ethology, paleoanthropology, anthropology, evolutionary theory, and much else. The blurbs on the back cover proclaim this to be a "superb and innovative look at the evolution of language" and "the best book yet written on the evolution of language." "The *Symbolic Species* should transform the foundations of the human sciences." Ralph L. Holloway, an anthropologist who has reviewed the book in *American Scientist*, notes that it is "a nonpareil," "just leaps and leaps above other evolution-of-language books published during the past five years.

Despite its brilliance, Holloway imagines that there will be parts "picked at by linguists", and no wonder. Before we have even opened the book we read that "Deacon has mounted a serious challenge to the neo-Chomskian... This is theoretical dynamite, planted deep under the walls of the neo-Chomskian fortress." The picking, not to mention the hurling down of arrows, stones, and burning oil, is well underway in Derek Bickerton's review in *New Scientist*. Needless to say, it will continue here.

Deacon's book is divided into three parts. The first part, to which we will return shortly, is on language. Part two is full of interesting information about the human brain and a survey of the neural bases of language and speech. Part three, "Co-Evolution," is quite literally science fiction in the strict sense of the term, in which Deacon advances a scenario for how the transition to language and symbolic reference might have occurred in early hominid communities.

With respect to language, Deacon (102 ff.) accepts the claims of linguists that language learning presents a very difficult problem, and he presents a respectable version of the argument from the poverty of the stimuli that children's experience does not suffice to account for their acquisition of language. Nevertheless, he believes that "innate Universal Grammar is a cure that is more drastic than the disease." Though he agrees that "human brains come into the world specially equipped" to acquire language, he rejects the "preformationist" interpretation of innateness as involving an innate "language competence", or "rules in the brain."

If neither experience nor innate principles explain language acquisition, where else can the reconstructionist turn to? Deacon proposes (105) that "the extra support for language learning is vested neither in the brain of the child nor in the brains of parents and teachers, but outside brains, in language itself." In other words (109), "Children's minds need not innately embody language structures, if languag- 

宅

Why did nobody think of this before? Perhaps because it is so patently untenable, not to say absurd, consequences. Deacon is unde-

Deacon invokes the name of August Schleiche-

The blurs on the back cover proclaim this to be a "superb and innovative look at the evolution of language" and "the best book yet written on the evolution of language." "The *Symbolic Species* should transform the foundations of the human sciences." Ralph L. Holloway, an anthropologist who has reviewed the book in *American Scientist*, notes that it is "a nonpareil," "just leaps and leaps above other evolution-of-

language books published during the past five years.

Despite its brilliance, Holloway imagines that there will be parts "picked at by linguists", and no wonder. Before we have even opened the book we read that "Deacon has mounted a serious challenge to the neo-Chomskian... This is theoretical dynamite, planted deep under the walls of the neo-Chomskian fortress." The picking, not to mention the hurling down of arrows, stones, and burning oil, is well underway in Derek Bickerton's review in *New Scientist*. Needless to say, it will continue here.

Deacon's book is divided into three parts. The first part, to which we will return shortly, is on language. Part two is full of interesting information about the human brain and a survey of the neural bases of language and speech. Part three, "Co-Evolution," is quite literally science fiction in the strict sense of the term, in which Deacon advances a scenario for how the transition to language and symbolic reference might have occurred in early hominid communities.

With respect to language, Deacon (102 ff.) accepts the claims of linguists that language learning presents a very difficult problem, and he presents a respectable version of the argument from the poverty of the stimuli that children's experience does not suffice to account for their acquisition of language. Nevertheless, he believes that "innate Universal Grammar is a cure that is more drastic than the disease." Though he agrees that "human brains come into the world specially equipped" to acquire language, he rejects the "preformationist" interpretation of innateness as involving an innate "language competence", or "rules in the brain."

If neither experience nor innate principles explain language acquisition, where else can the reconstructionist turn to? Deacon proposes (105) that "the extra support for language learning is vested neither in the brain of the child nor in the brains of parents and teachers, but outside brains, in language itself." In other words (109), "Children's minds need not
THE PHONOLOGY AND MORPHOLOGY OF ROMANIAN GLIDES AND DIPHTHONGS: A CONSTRAINT-BASED APPROACH

by Ioana Chitoran
reviewed by François Dell

Summary

by the author

This dissertation provides a comprehensive descriptive analysis of the synchronic phonology and morphology of Romanian, focusing on vocalic segments (vowels, glides, and diphthongs). The analysis proposed is couched in the framework of Optimality Theory (OT) (Prince & Smolensky 1990a; Prince & Smolensky 1993). Unlike the majority of studies written in this framework, which compare similar facts across languages, the present research is a in-depth investigation of one linguistic system with all its complexities, thus testing predictions made by the theory, and its ability to account for a wide range of different phenomena within one language.

I begin in section 1 by introducing the data which will be accounted for. In section 2 I summarize the analysis I propose for the stress system of Romanian, crucial for the understanding of glide-vowel alternations. In section 3 I investigate the vowel alternations. In section 4 I account for the distribution of glides and diphthongs and their effects on the phonological and morphological representations.

The phonology of Romanian

The data

The vowel inventory of Romanian is given below.

(1)

vowels:

\[ i \quad a \quad o \quad u \]

glides:

\[ j \quad w \]

diphthongs:

\[ ie \quad ao \]

I argue that the glides and diphthongs do not have phonemic status.

Alternations between vowels, glides, and diphthongs are very pervasive in Romanian, and are involved in the most salient phonological processes of the language. There is an asymmetry between [j] and [w] with respect to syllable structure. I note the more restricted distribution of the back glide [w] relative to [j]. As shown in (2), [j] surfaces as a coda only preceded by a consonant and only in a series of loanwords, followed by [a]. It surfaces as a coda only word-finally.

(2)

onset [j] coda [j]

\[ ja \rightarrow 'winter' \]

\[ po\rightarrow 'governo' \]

\[ pa\rightarrow 'know' \]

\[ mi\rightarrow 'afternoon' \]

The back glide [w], however, surfaces only in a subset of the environments in which [j] is found. Thus, [w] is a word-initial onset only when preceded by a consonant and only in a series of loanwords, followed by [a]. It surfaces as a coda only word-finally.

The stress system of Romanian

Romanian stress is described in traditional grammars as being entirely lexical. I argue against this view, showing that it is to a large extent predictable, with a small set of lexically marked exceptions. The complexity of the system is due primarily to its close interdependence with the morphology of the language, to mismatches between prosodic and morphological constituents.

In the case of primary stress, there is evidence that no foot structure is built, but that stress is assigned by right edge prominence. The analysis of secondary stress is independent from that of primary stress. In particular, there is evidence that secondary stress does make use of feet. Neither type of stress is weight-sensitive. The stress domain includes the stem (root and derivational material), and excludes inflections.

Stress falls on the final or penultimate syllable of the stem, as illustrated in (6a) for verbs, and in (6b) for nouns and adjectives.

(6)

a. Verbs

\[ root\text{-}theme \text{stress} \]

\[ (dipthongs: e \rightarrow a) \]

\[ (glides: j w) \]

\[ jerra\rightarrow 'you gather' \]

\[ jera\rightarrow 'you defend' \]

b. Nouns and adjectives

\[ root\text{-}derivative \text{stress} \]

\[ (a) \]

\[ kumia\rightarrow 'shirt' \]

\[ kaal\rightarrow 'shirt dim.' \]

\[ kiplo\rightarrow 'watermelon' \]

\[ glibin\rightarrow 'yellow' \]

Lexical items with penultimate stress on the root are fewer and less productive than those with root-final stress. I therefore consider the latter pattern to be the unmarked one. It is predicted by the constraint ranking Rightmost(\text{\textit{d}}) >> Non-Finality. Rightmost(\text{\textit{d}}) (Cohn & McCarthy 1994) requires that the main-stressed syllable be final in the prosodic word. Non-Finality (Prince & Smolensky 1993) predicts the last syllable of the prosodic word from bearing stress.

The marked pattern is reminiscent of the extrametricality rule (Hayes 1981, 1995). I argue that the marked pattern with penultimate stress is lexically marked for no prominence on the final syllable. To account for it, I propose an Identity constraint, \textit{Ident}>>\textit{d}, which ensures that the lexical marking in the input form is maintained in the output. In this particular case it requires that a syllable underlyingly specified as non-prominent should not surface with prominence. A single constraint ranking accounts for the marked and unmarked patterns of Romanian stress:

(7)

\[ \text{Ident} >> \text{Rightmost} \]

In longer words, secondary stress falls on the initial syllable, whether light or heavy, and on alternating syllables up to the main stress, avoiding clash.

The representation in (4a) predicts that either the onset or the nucleus part of the diphthong may participate separately in alternations. The fact that in most cases, the diphthongs alternate morphologically with the vowels [e] and [o] argues against (4a). The representation in (4c) predicts that syllables containing diphthongs have extra weight. This prediction is not supported by any independent evidence.

I argue that (4b) captures the phonological facts, notably that the diphthongs functions as a single unit. The representation is supported by the distinction in syllabic structure between diphthongs and glide-vowel sequences, similar to the one found in French. Obstruent-liquid glide (OLG) onsets are disallowed in French. Existing OLG syllables have been explained by treating the GV portion as an underlying diphthong contained in the nucleus. The same restriction on OLG onsets is found in Romanian:

(8)

\[ \text{French} \]

\[ \text{Romanian} \]

\[ [br] \rightarrow 'throw' \]

\[ [tr] \rightarrow 'triumph' \]

\[ [pi] \rightarrow 'pronounce' \]

\[ [ penetrated] \]

These data support the syllable structure proposed in (4b), where [e]a and [oa] constitute diphthongal syllable nuclei.

In the following sections I present the analyses I propose to account for the distribution of glides and diphthongs in the type of data illustrated here. I begin by investigating the stress system of Romanian.

3. The distribution of glides

Some of the surface glides in Romanian are derived from underlying high vowels, and some are extrathematic, homorganic with one of the underlying vowels in the sequence. In either case, the role of glides is to prevent hiatus in an underlying sequence of two or more vowels. The presence of glides is predicted by the high ranking constraint ONS, which requires all syllables to have an onset.
In most cases the choice between an epenthetic or non-epenthetic glide is determined by the location of stress. Thus, in (10a) /a/ in the final syllable of the root is stressed, and hiatus is resolved by a homorganic glide. In (10b) hiatus is resolved by gliding unstrated /i/. A set of very common vowel alternations is found in the native vocabulary of Romanian, involving mid and low vowels, and the diphthongs [ea] and [ga]:

\[
\begin{array}{c|c}
\text{vowel} & \text{diphthong} \\
\hline
\text{a} & \text{ea: book} \\
\text{e} & \text{ea: book (corrective)} \\
\text{oi} & \text{oi: gate} \\
\text{ou} & \text{ou: portar} \\
\end{array}
\]

We see a tendency for the stressed vowel to be low. Previous synchronic accounts of the diphthongs are based on their historical analysis, thus missing an important generalization. I depart from these analyses, and I treat [ea] and [oa] as low vowels, arising from the lowering of mid vowels under stress. As such, the diphthongization of mid vowels is no longer a singular phenomenon in the phonology of Romanian, but is part of a more general process of vowel lowering.

I argue that synchronic stress is sensitive not only to the distance from the edge of the prosodic word, but also to the inherent acoustic salience of vowels. To capture the generalization that stress placement affects vowel quality, I propose a series of three binary constraints, whose relative ranking predicts the preference for low vowels under stress:

\[
\begin{align*}
\text{prosodic constraint} & \rightarrow \text{stress constraint} \\
\text{stress constraint} & \rightarrow \text{vowel constraint}
\end{align*}
\]

These facts are accounted for by the interaction of three constraints in the Peak Hierarchy and with two harmony constraints (Harmony [+hi], Harmony [-e]). The analysis I propose relies crucially on the simultaneous evaluation of surface stressed vowels by these three sets of constraints. The resolution of the three conflicting pressures is more easily captured in a constraint-based analysis, while a derivational account is more problematic.

5. The phonetics of glides and diphthongs

Two phonetic studies are carried out. One is primarily an acoustic description of glides and diphthongs. I begin with a preliminary study of the high vowels [i] and [a], and of glides in different environments. I compare the formant values of [i] and [j]. F1 is significantly lower for [j] than for [i], suggesting a narrower constriction in the articulation of the [j]-glide.

A comparison of epenthetic and non-epenthetic glides reveals a statistically significant difference in vowel-to-glide intensity ratio. Epenthetic glides have a significantly lower ratio, thus their own intensity is higher than that of vowels.

The second study is an integrated perception-production study of [ga] and [oa], which tested native speakers' ability to distinguish between the two diphthongs and the very similar glide sequences [ja] and [wa], respectively. The acoustic study revealed duration differences and differences in the overall spectral shape between diphthongs and glide-vowel sequences. [e] in [ga] is significantly shorter than [j] in [ja]. This suggests that [e] is not a vowel, a separate segment. Phonologically, this can be interpreted as meaning that [e] is sharing the same position in the syllable structure with another segment, supporting the representation proposed in (4b), and the phonological analysis in section 4.

The perception experiment showed that native speakers can correctly identify the sequences [ja] and [ga], but not [wa] and [oa]. The phonological difference between [ja] and [oa] is therefore reflected in the phonetics, but not the one between [wa] and [oa]. The acoustic parameters in which a significant difference was found between [ja] and [ja] were total duration, the P2 onset value, and its transition rate. No significant differences are found in these parameters for [wa] and [oa]. I argue that this neutralization is due to the shorter distance between the back vowels [u] and [o], compared to [i] and [e]. It may be that the acoustic difference between the front vowels allows sufficient acoustic space for two front glides, [j] and [e], but among back vowels there is only enough space for one round glide [w]. The effect of lip rounding reduces the distance between the first two frontants, further limiting the acoustic space.

6. Conclusions

Three major issues emerge from the systematic study of one linguistic system: the status of exceptions in language, the implications of the proposed analysis for phonological theories, and the usefulness of an integrated phonetic and phonological study of the data.

When dealing with only one phonological system, exceptions are more visible, and the need to account for them is more compelling. In the present study I come across two major kinds of exceptions: one in the stress system of Romanian, the other in the surface realization of glides. In my analysis of the stress system (section 2), I identify a marked and an unmarked pattern of primary stress in monomorphic words. I explain the data by postulating lexical prespecification (cf. Inkelas, Orphan Orgun & Zoll 1994) of the root-final syllable in the marked pattern, and by assuming that a specific...
to that found in Spanish, where it is necessary to presuppose the syllability of certain high vowels in the lexical representations (see e.g. Roca 1997). Whether Chitoran actually succeeds in avoiding lexical prespecification of syllability for Romanian will depend in the end on the viability of her use of lexical strata and on the ability of her account to accommodate the exceptions which she dutifully records at various points of her text (see e.g. pp. 32, 41, 143, 197, 211) but does not try to fit into her analysis.

Denying herself the comforts of an underlying contrast between high vowels and glides forces Chitoran to scrutinize very closely her data for regularities. The general framework within which she operates is that of Optimality Theory. Although one tenet of OT, as expounded in Prince & Smolensky’s (1993) monograph, is that constraints are universal, the author devotes little space to discussions of whether the constraints she invokes reflect cross-linguistically favored patterns. Some of the new constraints she proposes are actually quite parochial (e.g. the harmony constraints of pp. 258–262) and it is clear that they are intended primarily as descriptive devices. Rather than to improve the theoretical framework she is working with, it seems that Chitoran’s concern has been to use lexical prespecification of syllability as systematically and insightfully as possible, and in the process she provides detailed data on various phenomena of general interest, for instance the assignment of primary and secondary stress by independent mechanisms, the dependencies between the quality of the hiatus-breaking glides and that of the adjacent vowels, gliding and its interaction with primary and secondary stress, the greater propensity of /i/ than /a/ for gliding or becoming a secondary articulation in consonants, diphthongization as a special case of lowering in stressed syllable and its inhibition by vowel harmony, the fact that /o/ is perceptually distinct from the diphthong /oa/ while /a/ is not from the diphthong /ae/, lexical strata due to borrowings from various languages. Theoretical linguists of all persuasions should find much interesting material to mull over in Chitoran’s excellent study.

1. Spreading onto onsets in moraic representations
To characterize syllable structure Chitoran adopts moraic representations in which codas that do not contribute to syllable weight and onsets are linked directly to syllable nodes. The representation of hi-jna ‘coust’, for instance, is that given in (1).

\[
\begin{array}{c}
\text{h} \text{j} \text{n} \text{a} \\
\text{2} \text{2} \text{2} \text{2}
\end{array}
\]

In this mode of representation the only thing which distinguishes onsets from other nonmoraic segments is their relation of precedence in time with respect to the segments linked to μ. In the first syllable in (1) h is an onset because it precedes a, which is linked to μ, while i is not an onset because it does not precede a.

In Romanian the epenthetic glides which break up vowel sequences always borrow their features from one of the vowels in contact, e.g. /a/ → /jo/ → /o/, /oa/ → /awa/, /ow/ → /oje/. This is good justification for considering glide epenthesis as the result of feature spreading. According to Chitoran the representations of /jo/ (from /i/) and /wj/ (from /u/) are as given below in (2a) and (2b).

\[
\begin{array}{c}
\text{a} \text{a} \text{a} \\
\text{2} \text{2} \text{2}
\end{array}
\]

In (2a) and (2b) the presence of an epenthetic yod is represented by the association line between i and node o2.

In Chitoran’s analysis the constraint which plays a decisive part in the insertion of hiatus-breaking glides is ONS, which requires syllables to have onsets. It is clear that the second syllable in (2b) is unlinked because it has no onset, while the second syllable in (2b) Recall that in the representations adopted by Chitoran, to be an onset a segment must be linked directly to a φ node and precede a segment linked to a mora dominated by the φ node. i meets these conditions in σ1 in (2a): it is linked directly to σ2 and it precedes a, which is linked to μ2, a mora dominated by d. But what about i in (2b)? i is indeed linked directly to σ2 but does it precede a segment linked to μ2?

For the answer to be “yes” we must assume that i precedes itself, i.e., that in the sense relevant here “precede” is a reflexive relation. Now syllable σ2 has on onset. That syllable is reproduced in (2c), together with its mirror image. That the two diagrams in (2c) differ in their left-right orientation is irrelevant from the point of view of linguistics. They are but equivalent ways of depicting the same phonological object (the same phonological representation) in a two-dimensional plane. For the same reason as it must be considered as having an onset, that object must be considered as a closed syllable in which i acts as a whole onset (co-adjoined) and is represented as a complex mora in hi-jnα (see (1)). The two interpretations of the direct link between i and the σ node (onset yod and coda yod) must be exclusive of one another for otherwise the diagrams in (2c) would have to be equivalent ways of representing the syllable /jii/. and we would not be left with any means of representing a syllable whose peak shares its associated feature bundle with only one margin (i.e., /jii/ or /jj/).

Sum up, the two diagrams in (2c) are equivalent graphic depictions of a phonological representation in which a feature bundle is linked at the same time to a μ and to the σ dominated by μ. For such a representation to make sense, there must be no contradiction involved in taking the relation of precedence in time between bundles of distinctive features (i.e., between the root nodes of feature-geometric trees) as a reflexive relation. The representation can then be construed as corresponding either to /jii/ or /jj/ two options which exclude one another. If taking “precede” as a reflexive relation leads to contradictions, one way to avoid this would be to think of the moraic representations as like those advocated in Hayes (1989), in which only the segments in the onset are linked directly to the σ node; the segments which follow the syllable peak and do not contribute to syllable weight are linked to the last mora of the syllable rather than to its σ node. This change would presumably require significant modifications in Chitoran’s analysis since in that analysis as it presently stands morae linked to two segments are only used to represent the diphthongs /oa/ and /ea/. In any case Hayes’s moraic representations also pose problems of their own when they are used to characterize successive positions in a syllable which are linked to the same feature bundle, see Rubach (1998).

When the vowel which projects a hiatus-breaking glide is nonhigh, its [-high] specification does not spread to the onset because glides are [+high]. (3a) and (3b) are the representations resulting from glide epenthesis in /iia/ and /eaw/ according to Chitoran (pp. 130 and 135).

\[
\begin{array}{c}
\text{(3a) a} \\
\text{a} \text{a}
\end{array}
\]

Chitoran gives diagrams (3a) and (3b) as characterizations of optimal outputs in her OT tableaux. As in (1) and (2) the phonetic symbols a, o, and e are stand-ins for bundles of distinctive features.

Review by François Dell
After a general assessment of the work under review, I concentrate on two points which raise questions of interest for linguistic theory. The first concerns the characterization of hiatus-breaking glides within moraic representations of a particular kind. The second point deals with one aspect of the interaction between stress and gliding which suggests that intermediate levels of representation are needed in phonology.

Ioana Chitoran presents a synchronic account of moraic structure in the less well-studied Romanian. Her exposition is very well organized and should be easy to read even for people who, like the present reviewer, are without any previous knowledge of Romanian. The facts are usually laid out in a clear and systematic fashion, and discussions of the previous literature on Romanian phonology and morphology at various points of the text enable the reader to get an idea of the current state of research on the phonology of Romanian. This careful empirical study should make very profitable reading for anybody interested in the phonology of vocoids or that of Romance languages.

Since in Romanian the surface distribution of glides and that of diphthongs are shaped by prosodic structure, Chitoran’s discussions on these topics are preceded by investigations of syllable structure and stress assignment. Before showing that the location of primary stress in words is to a large extent predictable from their morphological makeup, she provides in a few pages (pp. 47–64) an outline of Romanian inflectional and derivational morphology which is a model of clarity.

The author sets out to derive all the high vowels and glides which occur in the surface forms of Romanian from an underlying segment inventory which only contains /a/ and /i/; all the input forms in her analysis are strings of phonemes with no presupposed prosodic structure. The task is quite a challenging one. The situation in Romanian is of an order of complexity comparable...
The insight which guides Chitoran’s account of glide epenthesis in Romanian is that it uses as much as possible feature specifications already present in the input representations. The diagrams in (3a,b) which illustrate two questions. First, how do they represent the fact that the epenthetic glides are [+high]? The sequence oge (from /oe/) portrayed in (3b) is presumably homophonous with the sequence oge which derives from /a⁄ ([p. 206]) and in the latter sequence the medial segment is [+high] both in the input and in the output (for the features of vocoids in Chitoran’s analysis see p.242). Second, and more important, the diagrams in (3a,b) imply that the voicing and moraic status of the epenthetic glides and the individual feature specifications need not be mediated by the roots of feature trees, which widens enormously the range of representations allowed by Uniting. Can we avoid such a proliferation while preserving Chitoran’s insight about glide epenthesis?

We can by taking (3c) as the representation of je, in the realization of /oe/. Only the nodes which are relevant here are displayed in (3c). “Re” stands for the root node of a feature tree. The appearance of [+high], which is absent from the input /oe/, can be seen as a consequence of the high ranking of the family of constraints *M/u>>M/o, which Chitoran invokes to exclude nonhoo vocoids from syllable margins (p.146). The syllable in (3c) has an onset even if the relation of precedence between root nodes is not taken into account. The only difference between the epentheses in uj/i (from /ai/) and oge (from /oe/) is that the [+high] specification of /e/ cannot be carried over into the glide because glides must be [+high]. Could one not attribute to /e/ in /ui/ to a different representation (3c), i.e., a representation in which /i/ would have an onset even if the relation of precedence between root nodes is not reflexive? This is not possible, because in (2c) “e” symbolizes itself for a root node. On the other hand, attributing parallel realizations to the surface reflexes of /ai/ and /oe/ would not present any problem if we were using representations of syllable structure such as those advanced by Levin (1985), in which the relation between the bundles of distinctive features and syllable structure is mediated by a sequence of skeletal slots.

2. The interaction between primary stress and gliding

One of the major conclusions that Chitoran draws from her work is that OT is superior to other approaches in accounting for the differences in the OT eliminates the need to posit intermediate representations. Since Chitoran does not back her contention by comparing the merits of the competing frameworks over some specific set of data, it is up to the readers to scour her text for areas which might provide suitable testing grounds.

One area where the odds seem to be in favor of OT is the set of regularities which relate the feature content of a hiatus-breaking epenthetic glide to the quality of the abutting vowels (pp.117–142). Another is the interaction between secondary stress and gliding (pp.164–176), which involves a case of “anti-bottom-up construction” akin to the other cases studied by Rosenthal (1997). On the other hand the interaction between gliding and primary stress provides evidence in favor of levels of representation intermediate between the input and the output, as I will now argue.

In a word primary stress is either on the last syllable of the stem or on the penultimate. There is a lexical distinction between two classes of morphemes (a) those whose last syllable is to be stressed, and (b) those which do not. The latter receive their stress on their penultimate syllable when they occur as the last morpheme in a stem. Chitoran invokes a constraint Rightmost(voice, (p.75), which in effect requires the stressed syllable to be as near as possible to the end of the stem. The morphemes of class (b) have their rightmost vocoid marked in the lexicon as nonprominent. Vocoids so marked in the lexicon as nonprominent. Vocoids so as near as possible to the end of the stem. The difference between the words with stem-final stress and those with stem-penultimate stress is illustrated in (4) and (5).

A right bracket indicates the end of the stem and vocoids which are lexically marked as nonprominent (i.e., unable to bear primary stress) are encosed in angled brackets. The two high vocoids do not behave in the same way in the environment N–C. In that environment /u/ surfaces as a vowel regardless of the location of stress, see (5), where the glide before /e/ is epenthetic in the same environment /i/ surfaces as a vowel if it is stressed and as a glide otherwise, as illustrated in (6).

Dots stand for syllable edges. Steriade’s analysis has been modified slightly for the sake of expository convenience but the modifications have no bearing on the issue in discussion. Like Chitoran, Steriade does not posit an underlying contrast between high vowels and glides. The input strings must first undergo syllabification so as to enable the stress rule to operate. The output of the stress rule is inserted to a glide which de syllabifies certain high vowels and makes them part of the preceding syllable. Only unstressed vowels can be affected by the rule, which is why i is de syllabified in h b i . n a but not in h a . i . n o (the reason why a does not undergo de syllabification in d u . a n o needs not concern us here). Other rules apply subsequently, among them glide epenthesis, which breaks up certain vowel sequences.

Chitoran and Steriade agree that the difference between tri syllabic h a . j /a/ and disyllabic h j /a/ must ultimately be traced to a lexical identification different to that in pairs (4) and (5), and the evidence for that assumption is compelling. In Steriade’s account the stem of h j /a/ “coat” is indeed disyllabic and stressed on the penultimate syllable of the stem at that earlier stage of the derivation. As a result of de syllabification stress is located on the last syllable of the stem in h j /a/, as it is in all naïve language.

In the OT framework, which does not allow intermediate representations, the fact that at the surface level stress occurs on the last syllable of the stem is not part of the information which Chitoran’s account leaves unexplained, as we shall now see. In Chitoran’s analysis of Romanian all syllables are moraic, i.e., only syllable peaks are associated with a mora. High vowels are moraic while glides are not. The pressure for high vocoids to surface as glides is due to constraint ONS, which requires syllables to have onsets, and to

*STRUC, a constraint which incurs a violation for every occurrence of μ in a representation. *STRUC is at loggerheads with constraints *M/u and *M/i, which incur a violation for every occurrence of /u/ and /i/, respectively, and are ranked against ONS, which is highly ranked. The difference between (6b) and (5b) comes from the fact that /M/u is ranked below *STRUC whereas /M/i is ranked above it. Whereas the constraint against nonmoramic /u/ is stronger than that against creating morae, the latter overrides the constraint against nonmoramic /i/, /h/ ə c ə n /ə yields h j /a/ rather than h a . j /a/ (the output parallel to h a . j /a/ is a better candidate than h j /a/, h a . j /a/ incurs a fatal violation of *STRUC.

We can now turn to (6a), which is problematic for Chitoran’s analysis. Contrary to what the author writes (see esp. tableau (210) on p.149) the constraints and their rankings in her analysis do not predict h a . j /a/ as the surface form of h a . j /a/ for there exists a better candidate, viz h /h/ ə j /a/, the same surface form as that in (6b), whose prosodic structure, minus stress, is displayed in (1). The relevant tableau for (6a) is (9).

To circumvent this problem the author proposes the high-ranking constraint PARSE(μ), “which ensures that stressed vocoids do not glide” (p.143). The configuration prohibited by PARSE(μ) is one in which a stressed μ dominates an unparsed μ. Contrary to what we read on pp.148–149, ranking PARSE(μ) above *STRUC does not make h a . j /a/ a better candidate than h j /a/, h a . j /a/ does not contain the configuration prohibited by PARSE(μ): (1) does not contain any unparsed μ. It is difficult to see how constraint PARSE(μ) could be reformulated to satisfy the author’s needs.

What constraint PARSE(μ) is meant to achieve is to prevent a stressed vowel from becoming a glide, i.e., to prevent the peak of a stressed syllable from losing its mora. This goal is a meaningful one in a framework with serial derivations, in which a segment can acquire a mora at one stage in the derivation and lose it at a later stage. But things are different in a framework in which intermediate representations do not exist. In (9), given that i is stressed neither in the input nor in the possible output (b), the presence of stress on (a syllable whose peak is i) is simply not a factor which can be taken into consideration in evaluating candidate (b). Analogues of the Romanian situation should not be too difficult to find in other languages. A similar challenge to the OT framework would be posed by any language in which (i) stress is not already specified in lexical representations, and (ii) in a given context de syllabification (i.e., gliding or deletion) affects all the occurrences of a certain vowel except those under stress.

Two questions. First, will the review cast doubt on views held at present by many people about moraic representations and about the nature of phonological derivations. Chitoran’s dissertation, and the vocoids of Romanian, will have a role to play in discussions of these issues in coming years.

Acknowledgment

I thank Morris Halle for his comments and suggestions.

References

Amherst and Rutgers University.

Since Chomsky (1982), the licensing of small pro has generally been related to inflection. It was proposed that subject pro was only possible in languages with a rich enough inflectional system, so that the inflection could provide the grammatical features of the missing subject.

The licensing of pro by rich inflection approach has been adopted by several linguists to explain noun ellipsis facts (see, among others, Kester 1996). It was proposed that adjectival inflection could license ellipted nouns. This claim was especially made for the Germanic languages, in which the noun can very easily be left out in the presence of an inflected adjective. Consider the Dutch examples (1a) and (1b):

(1) a. Ik nam de oud (auto).
   b. Ik heb een oud *(huis).
   a. I took the old car.
   b. I have an old *(house).

In this dissertation, it is claimed that besides licensing by rich inflection in the Germanic languages, there is another way of licensing pro in the case of noun ellipsis, operative in at least the Romance languages and in English.

The dissertation focuses on French. In French, inflected adjectives do not always allow noun ellipsis:

(2) *De ses garçons, Paul est le plus intelligent.
   *with so many children, Paul is the most intelligent

Noun ellipsis in French is also licensed by quantifiers. In the dissertation, it is therefore claimed that in French only elements with a partitive meaning, i.e. elements which create a subset, license empty nouns. A distinction is made between two kinds of partitives: inherent partitives, which have the function of creating a subset and non-inherent partitives, which denote a set themselves, which is not necessarily a subset. Non-inherent partitives are color adjectives and qualifying adjectives such as grand and petit. It is shown that the qualifying adjectives that license noun ellipsis in French are semantic primitives that make cognitively relevant distinctions (Dixon 1977), which make the adjectives partitive enough to license noun ellipsis. All other adjectives enumerated above and quantifiers are inherit partitives.

It is shown that noun ellipsis can only be licensed by elements that properly govern the empty noun. It is therefore assumed that the elements that license empty nouns are generated in functional projections of NP. Since in French noun ellipsis constructions, the postnominal (5) adjectives such as the color adjectives can also license noun ellipsis, it is assumed (following Valois 1991 and others) that these are also generated in a functional projection of NP, where they can license the empty noun. The postnominal position of adjectives in French is the result of the movement of a lexically filled noun.

In the thesis, pronouns such as celui ‘this one’, que ‘which one’, tel que ‘which one’, etc., are also analyzed as cases of noun ellipsis. It is proposed that the pronouns themselves are generated in functional projections of NP, where they license the empty noun just as cardinals and a small group of adjectives in French do, viz. by partitivity. It is argued that pronouns are inherent partitives. They necessarily create subsets. A distinction is made between inherent partitives that create a proper subset, such as quelques-uns ‘some’, and inherent partitives that create an improper subset, such as tous ‘all’.

It is claimed that in English, Italian and Spanish noun ellipsis is also licensed by partitivity. But whereas in French a small group of qualifying adjectives can license empty nouns, it is shown that in English, Italian (at least in some varieties) and Spanish, noun ellipsis is only licensed by inherent partitives.

Italian and Spanish both have two noun ellipsis constructions. In the first construction, the same inherent partitives as in French license noun ellipsis:

(4) a. Un altro pro è sulla tavola.
   another one is on the table
   b. Tomo un otro intelectual.
   I take another intellectual

It is argued that in the second construction the pronouns quello or uno in Italian or el or uno in Spanish, which are inherent partitives generated within the functional system dominating NP, license the empty noun, with the adjective being generated in the position of a DP-internal predicate (see also Rizzi 1979, Cinque 1990). Since it is the pronoun and not the adjective that licenses the empty noun, this construction allows all kinds of adjectives, as opposed to the first construction:

(5) Preferisco quello pro intelligente:
I prefer the intelligent one

Even for the Germanic languages it is proposed that adjectival inflection, partitivity can license empty nouns. This happens in the case of quantifiers, such as cardinals, which do not inflect.

The licensing requirement on empty nominals consists of two parts. The empty noun has to be formally licensed and has to be identified (Rizzi 1986). In the thesis, it is proposed that empty nouns in French are formally licensed if they are properly governed by an element with a partitive meaning. As for the identification, it is proposed that only elements with a "specific" interpretation are able to identify empty nouns, because only a specific interpretation makes linking to a superset in the domain of discourse possible, so that the semantic content of the missing noun can be recovered. In French, indefinite subjects generally have a "specific" interpretation but indefinite objects do not (Dessing 1992). This accounts for
the fact that noun ellipsis is possible in indefinite subjects but not in indefinite objects, unless a partitive PP is added, which makes the DP "specific", see Eng (1991):

(7) * Trois pro étaient absents.
three pro were absent.

It is proposed that besides a partitive PP, the quantitative pronoun(en) in French can also make a DP specific. It is shown that the quantita-
tive pronoun is also licensed by elements with a partitive meaning. Therefore the claim is made that the quantita-
tive pronoun en is the specific counterpart of NP pro; both are licensed by parti-
tivity. The quantitative pronoun is used if a deri-
vation with pro is not possible, which is the case if pro cannot be identified because it is within a non-
specific DP. This explains why the quantitative pronoun is only used in combination with DPs introduced by a "weak" determiner or pronoun, but not in combination with a "strong" determiner or pronoun:

(8) a. Je connais trois pro (de ces livres).
I know three (of those books).

b. Je connais trois pro (de ces livres).
I know three (of those books).

In languages without a quantitative pronoun, such as English or Spanish, there is no subject/ object asymmetry. It is argued that in languages that lack an overt quantitative pronoun to make inde-
finite nounless DPs specific, indefinite DPs containing NP pro can get a specific interpretation even in object position, because the empty noun has to be linked to an antecedent:

(9) a. I have taken two pro. one
b. Quiero dos pro.
I want two pro.

Finally, it is proposed that even at the level of the word, empty nouns in French are licensed by adjectives with a partitive meaning. It is proposed that "substantivized" adjectives such as le malade 'the sick person' have a word-internal syntactic structure, consisting of an adjective and an empty noun, which is also shown even at the level of the word, adjectives need to have a partitive meaning (in an extended sense) in order to be able to li-
cense the empty nominal head of the word.

Review

by Yves Roberge

Peta Sleeman's dissertation constitutes an impor-
tant contribution to the study of missing syntactic constituents in general and to the concept of ellipsis in particular. Concentrating on empty nouns, it also provides a detailed examina-
tion of the internal structure of DPs especially with respect to the positions occupied by adjec-
tives. One should not be misled by the title of this dissertation which only makes reference to French. This dissertation is much more than a simple analysis of French nounless DPs, it judi-
ciously includes many Romance and Germanic languages and provides detailed and sound ac-
counts of the variation observed among them. The extended abstract of the dissertation given above provides a summary of the main conclusions. For my part, I would first like to present an outline of the five chapters which make up the dissertation before discussing some specific aspects.

Chapter one lays down the theoretical as-
sumptions on which Sleeman has built her analy-
ses. The DP-hypothesis is discussed in detail and a multi-headed structure is adopted, following work by Abney (1987) and others. This structure pro-
vides for an NP dominated by various functional projections such as, among others, DP, QP and NumP. Adjectives being among the putative licens-
ers for empty nouns, the question of their base position takes on a central importance. Following Cinque (1990) Sleeman assumes that all adject-
ives are generated within the Spec of functional projections structurally related to the NP. Chapter one also provides a short section on the licensing and identification of pro based on Rizzi (1986) and Lobeck (1993, 1995) who from the morphologically based phi-features, a more semantically based features, namely partiv-
ity can license pro as the empty noun within a DP. Chapter two represents the core of the disser-
tation. It deals with the different constructions in detail before providing an account of the various licensing options available in Italian, Spanish and some Germanic languages. Noun ellipsis is defined as a situation which can be recovered from the context (syntactically or through the discourse). Sleeman's aim is to deter-
mine under what circumstances a noun can be omitted. While in many Germanic languages the phi-features morphologically realized on adjectives are sufficient (as is the case of the verbal inflec-
tional morphology in null subject languages), this cannot be extended to French where adjectival phi-features and morphology does not seem to play a crucial role in the licensing of empty nouns. Rath-
er, it is shown, following others, that only a small class of adjectives and quantifiers can license empty nouns. Sleeman's main contribution is the generalization of adjectives and quant-
ifiers in French share a partitive meaning. Se-
mantically, a partitive element is one which can create a subset; syntactically, it is represented as the semantic feature [partitive]. This feature must appear on the noun that actually governs the empty noun. Lexical items can further be either inherent partitives (creating a subset) or non-inherent partitives (creating a set). Langue-
guages vary as to which or non-inherent, can license empty nouns. As for the identification of the empty noun, a distinction is introduced between syntactic identification and interpretation. Syntactic identification of the empty noun only depends on the parti-
tive element only if it has a "specific" partitive meaning. Its semantic interpretation is given by a discourse antecedent.

In Chapter three, Sleeman uses Corblin's (1990) description of nounless DPs to extend the analysis proposed in the previous chapter to the pronouns that can license empty nouns in French such as possessive and demonstrative and the interro-

gative/relative 'qui/lequel'. It is shown that these pronouns are all partitive and are generated in the Spec of functional heads above NP. Furthermore, only when these pro-

ouns have a "specific" interpretation can they license pro making linking to an antecedent pos-
bile. Personal pronouns are also discussed in this chapter. For Sleeman, they are also Determiners that license an empty noun through partitivity although they can identify this empty noun by their specificity in some cases or by a [±human] feature in others.

The last two chapters deal with the quantita-
tive French pronoun en and substantivized adject-
ives respectively. They address the phonological spell-out of pro in noun ellipsis con-
structions; it is used when some properties of the construction prevents the presence of pro such as a lack of specificity. The chapter on substantivized adjectives (lequel 'which one') shows that these must be analyzed as adjectives licensing an empty noun rather than as regular nouns. It is shown that the requirements stated in the previous chapters on the licensing and identification of pro apply also to substantivized adjectives but in the lexicon at the word level instead of the syntax.

Some aspects of Sleeman's work raise ques-
tions that are of central importance for syntactic theory. I consider some of them here.

Sleeman correctly points out in the first chap-
ter that some researchers object to the DP hypoth-
sis by pointing out that the head of a noun phrase is N, not D. According to this view, D should not project. To this objection, Sleeman answers following Grimshaw (1991) that both N and D must be heads, i.e. "the N-D system is a mixed system..." (Sleeman 199). This is a perfectly valid and motivated approach; after all, a similar view has been put forth in the literature with respect to clause structure where I and V combine to create the familiar IP-VP sen-
tence structure. However, as IP can be "exploded" in various functional projections each with its own head, the DP in Sleeman's work and others is assumed to dominate and be dominated by several functional projections. The multiplica-
tion of functional projections in languages such as English is indeed possible, as many syntacticians; cf. Janda and Kathman (1992) and one of the goals of current research is to provide clear criteria or principles following with which to decide whether one or another functional projection dominates.

In this study, I will assume that categories forming non-clausal possessive noun phrases indeed possess both, the functional system dominating NP, at least in the Spec of functional projection. This assumption allows DPs themselves QP and AP, after the specifier that they contain, but it might also be possible to give them another name. In any case, their head is (phonologically) empty (p. 16)

One would have wished for a discussion of the implications of these assumptions. Nevertheless, her central proposal that the elements she defines as having a partitive meaning are in a sense responsible for the omitted noun is certainly sound and on the right track and could be recast within a different DP or NP structure.

Another objection is to determine whether nounless DPs do contain a syntactically represent-
ed noun as pro or another empty category. Sleeman (30-31) discusses in some detail the nature of the missing noun as an N. N or NP. The basic question (must the missing noun be represented by an empty category?) is not ad-
dressed directly (except in the case of quelqu'un 'someone' in chapter three). Within recently pro-
posed approaches to syntax, for example Bouchard (1995), the semantic property of the licensing element, its partivity, would be sufficient to account for the ellipted interpretation of nounless DPs, making it superfluous to merge an empty category with the licensing [±human] property (internally) to assume that pro corresponds to the missing noun, it would also have been preferable to provide independent empirical evidence to support the assumptions of the thesis. Sleeman's postulation that pro is the missing noun allows her to contribute in a significant way to the study of missing elements in general.

The notion of partivity plays a crucial role in Sneeman's view of the licensing of pro in nounless DPs. Most of the previous analyses of missing arguments, more specifically null subjects and objects, similarly rely on features for the licensing and identification of pro. The features normally used are phi-features as the Licensing Feature Case. More to the point, the features used are usually morpho-
logically based, i.e. they are at least in part morphologically realized on the licensing element. As we have seen, it is safe to say that the case in nounless DPs in certain Germanic lan-
guages, as in (1) in her summary where only the inflected adjective can license an empty noun. In French, on the other hand, adjectival inflectional morphology plays a secondary role in the empty noun play. Lobeck (1993, 1995), which Sleeman uses as a point of departure, shows that the features [-plural] and [-possessive] licensee noun ellipsis in English. For her, the distinction between NP as the feature [partitive] which she assumes to be simply a semantic feature. We thus see a departure from most previous accounts of the licensing of pro from agreement morphology to plural and possession to partitivity. This is a sig-
ificant shift since Lobeck's features maintain a

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certain morphological basis while Sleeman’s feature is purely semantic. Again, while this is not problematic in itself and will probably lead to the discovery of other semantically based licensing features, it does deserve further discussion toward at least two levels. First, the question of acquisition, or how a native speaker internalizes the fact that some elements with a partitive meaning can license pro. Is there independent evidence for the claim that acquisition comes about within the Minimalist Program (Chomsky 1995) relies heavily on features and feature checking to motivate syntactic operations and properties. I therefore look forward to further work by Sleeman on the exact nature of the partitive feature within a Minimalist framework. What is the relevance of the partitive feature at the interface levels compared to Chomsky’s formal features? Is one feature on the licensing element sufficient or is a checking relationship involved? It could be the case, for example, that the partitive feature must enter into a formal relationship with another element (the empty noun) as is proposed for the semantic feature NEG in Haegeman (1997). In other words, Sleeman has opened a possibility that needs further development. Rizzi’s (1986) study of null objects in Italian shows that only “affected” objects can be null and of course not all objects “affect” their object. This is reliance on the semantic notion of affectedness is also quite a departure from licensing by agree-...
The presence of a Numeration in the theory of grammar is not necessarily in the same way that the lexicon and the PF and LF interfaces. The lexicon is a purely grammar-internal structure that is observed only through its (sometimes subtle) consequences for the observable structures generated by the grammar. In a Nonumbinarian view, a clear departure from minimalist assumptions, unless it can be shown that there is strong empirical evidence for it. Elimination of Numeration will thus be very minimal.

However, it is not necessarily impossible to eliminate Numeration under global economy. It will become possible if it is assumed that the reference set is determined by something else. We may avoid the difficulty, often considerable or extreme, as is well known. Nevertheless, it makes sense to expect language design to limit such problems. (p. 201)

An elementary empirical condition on the theory is that expressions “usable” by the performance systems be assigned. (For proposals along these lines, see for example Oka 1993a, b, 1995, Collins 1994, and Ura 1995.) Or we might be able to eliminate Numeration while maintaining the assumption that it determines the reference set. Suppose we say that, as Collins proposes, lexical items can in principle be freely introduced to a derivation directly from the lexicon at any point of the derivation and that economy conditions only compare derivations converging at the same LF or at some LF that is similar in a manner to be precisely defined. (For proposals along these lines, see for example Oka 1993a, b, 1995, Collins 1994, and Ura 1995.) In a Nonumbinarian view, a clear departure from minimalistic assumptions, unless it can be shown that there is strong empirical evidence for it. Elimination of Numeration will thus be very minimal.

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Asymmetric c-command imposes a linear ordering of terminals. If we have a ternary phrase, for example, the ordering will not be total with some terminals remaining unordered with respect to each other by virtue of failure of asymmetric c-command. Even if Merge is not assumed to be subject to Minimality, the LCA can make it possible to define Merge in the unrestricted form without any stipulation to permit merging one or two elements. However, it should be noted that the LCA as an independent principle so as to give a natural explanation to the Strict Cycle. The binary nature is now redundant explained by the LCA and Minimality, which strongly suggests that one of these two principles should be abandoned. Considering independent motivations for the LCA, it doesn’t seem unreasonable, contrary to Collins’ claim, to exclude the assumption that Minimality is a general principle to apply to any operations, and therefore to Merges as well.

Let us turn back to Integration. Collins argues that Integration, which applies at every step in the derivation, is an independent condition that is not derived from any semantic requirement or from the LCA, which Chomsky (1995) has reformulated as a condition following Spell-Out. However, Integration can be considered to be in essence built in the Merge itself. Given the definition (7), Last Resort is violated under Integration just in one trivial case. Suppose that the set $\Sigma$, the argument of Merge, is an empty set. Then no element is merged in this operation and therefore there is no element that can be claimed to satisfy any property for Integration, so that Last Resort is violated. This operation does not change the input $\Sigma$ and is not detected at the LF and PF interfaces. (Note also that it will be inapplicable in the first place, given Collins’ stipulation that Merge has a requirement that the set $\Sigma$ it takes as an argument has two or more elements.) Apart from this case, Merge is designed to necessarily satisfy the reason for all of this is that Integration is just a reflex of the irreducible fact that linguistic expressions are composed of one or more lexical items. In other words, linguistic expressions are organized into larger ones. Let us refer to this as the compositionality property of language. It is this compositional property that motivates the existence of Merge in the computational component of language. Given minimal assumptions, Merge should be motivated for the same reason. Given the necessity as the lexicon and the LF and PF interactions are motivated. The best way to guarantee that Merge is indeed motivated by the compositional property is the definition in such a way that it incorporates this property but eliminates as much as possible. Is it necessary to motivate application of Merge in basically the same way as its existence is motivated? It is not. It will just yield redundancy. Now the assumption that Merge is subject to Last Resort is dubious, too. Excluding this assumption, Integration will become unnecessary for the theory, which is desirable because this property is merely a reflex of a more fundamental one and its presence in the course of derivations is not justified on independent grounds.

There is one more thing to consider to keep this line of argument. It is internal merger. Since it is defined as the movement involves merger and applies to constituents embedded in larger constituents, Collins redefines the definition of Merge as in (11).

(11) Given a set $\Sigma = \{S_0, S_0, \ldots, S_n\}$ and a set $\Sigma$ every member of which is a member of $\Sigma$ or constituent dominated by a member of $\Sigma$, Merge (T) is defined as the following operation:

1. make $T$ as a member of $\Sigma$
2. define Head (T) = Head (SO) for some SO in T (SO = that | syntactic object)
3. remove the elements of T from (p. 82)

Now there arises another way in which Last Resort is violated by Merge, which Collins simply does not discuss. Suppose, for example, that $T = (E, F)$, where $E$ and $F$ are internal constituents of some SO. This merger is illustrated as in (12).

(12) D E F G H I J K

Last Resort is violated because both E and F already satisfy Integration prior to Merge. If the derived structure has to be ruled out but there is no way to do it with the LCA itself, the only way to derive in the first place, it will provide an argument for Collins.

Note however that the newly created phrase H must be ultimately contained by some phrase containing the phrase A, since both A and H are roots at this point and the derivation cannot converge until it yields one and only one root. The simplest way to accomplish that is to directly merge A and H, yielding the structure (13).

(13) D E F G

There is no obvious reason to rule out this structure by semantic interpretation. Ordering of terminals will be unsuccessful, however. H asymmetrically c-commands the constituents of A, or asymmetrically c-commands the constituents of H, depending on whether I is projected from A or H, given Chomsky’s (1995) phrase structure theory. Thus it must be the case that the terminals of H either precede or are preceded by those of A, given the LCA. But E and F are constituents of A and H at the same time. As a consequence, regardless of whether E and F are terminal or non-terminal, there will be some terminal preceding itself and some pair of terminals preceding each other, a contradictory ordering. Even if A and H are not immediately merged but incorporated later in the same phrase, the same result will obtain. As far as A and H are not in domination and E and F are dominated by both A and H at the same time, we cannot avoid a contradictory ordering of the terminals of E and F since it will be the case that some phrase dominating E and F asymmetrically c-commands another phrase dominating E and H. There are similar cases involving internal merger, but in any case terminals of an internally merged elements are not successfully ordered, aside from the case of movement, which avoids the problem by making a commitment. Thus internal merger does not provide a strong argument for the proposal that Merge is subject to Last Resort with respect to Integration.

3. Economy under Minimalism

Suppose that Merge is not subject to Minimality because an independent condition yields the same result as desired, and that it is not subject to Last Resort because the effect of Last Resort follows from the very nature of Merge itself. Then it is reasonable to expect that these two conditions will be made unnecessary as independent economy conditions in the case of Merge.

This essential operation for movement derives the effect of the operation of applying to formal features. This makes it possible for the theory to express more directly the minimalist ideal of Chomsky that the displacement property of language is reduced to the existence of (interpretable) formal features. If an argument for formal features, Attract is constrained in terms of closeness, deriving the effect of Minimality.

Collins, in contrast, insists that Last Resort and Minimality are general principles so that they should apply to both movement and pure merger, and claims,

If Last Resort and Minimality were parts of the definition of Attrac (supplanting Move), then they would independently have to be part of the definition of Merge. Such a result would be odd. Both Attract and Merge would have exactly the same conditions built into them. (p. 25)

However, as we already know, his idea is not so well implemented. Though both conditions are claimed to be general, their conditions are applied to different types of operations in so different manners. Last Resort refers to feature checking for Move, and to Integration for Merge. Minimality refers to the relative distance of movement, or to the number of merged elements. The computational system looks at an operation and compares it to any operation with which it can be compared along the same dimension (shortest path, least number of elements, and position of other dimension). (p. 25)

However, the manners in which Minimality applies are so specific to the operations it applies to, that there will arise no significant case in which Merge blocks Move or Move blocks Merge under Minimality. If there were such a case, Minimalism, comparing applications of two different kinds of operations, would be provided a justification for its generality. (Note that such an argument is found in Chomsky (1995), where it is proposed that Merge (Attract + Transform + Merge) is distinct from postulating otherwise unnecessary conditions. Collins’ approach is also minimalist in that it reduces the class of possible conditions by barring the postulation of global economy conditions. An approach that would be more minimalistic than these two is to exclude local and global economy conditions altogether. This is not a trivial matter at all. It requires that we discover and understand economy properties of derivations in a completely different way.

It seems more challenging, given the amount of already purposed economy properties, but some of them have already been starting to be recast. Thus, the notion of Last Resort is not properly defined as a substantial condition on application of operations, but rather it may be better regarded as just expressing the minimalist idea that any postulation of a condition or structure gains support from the economy condition.

The condition on the internal process of Attract. This condition can be considered as a specific form of locality, an essential notion that assumes various forms in various areas of language. One of the most influential global properties that have been discussed in Chomsky (1995) and others is Procrustean. Collins does try to view this condition from a different angle, though I will not discuss his proposals for reasons of space. So much is left for future research, but I hope that an optimal design of language will be that a minimal set of perfectly defined operations derive expressions by themselves, reminding us of the image of a Self-playing Cello on the cover of The Minimalist Program.

References


The third annual conference of the Gesellschaft für Semantik “Sinn und Bedeutung 1998”

University of Leipzig, December 11-13, 1998

by Susan Olsen

The third annual conference of the Gesellschaft für Semantik Sinn und Bedeutung 1998 took place in mid-December at the University of Leipzig. The conference was organized by Anita St crude, Hannes Baumgarth (Department of General Linguistics) and Susan Olsen, Holden Härter and James Witt (Department of English Linguistics).

Alice ter Meulen (Groningen), who spoke on the topic “Three degrees of dynamic involvement: the case of temporal reasoning”. In this talk ter Meulen presented her concept of dynamic aspect trees (DATs) designed to accommodate three types of information including static descriptive information (informational update), the creation of new structures or chronoscopes (temporal update) as well as the movement of the point of update activity (perspectival update). As an example of a temporal update ter Meulen discussed the representation of the content of a past tense clause in a given linguistic context. If the clause refers to an event, as opposed to a state, a move into a state other general by introducing a new node dependent on the current open node under the condition that the information is consistent with present information. If this consistent situation is the case then the construction rule must search for the lowest node dominating the current node which contains compatible information. It then allows attachment of the information to a right sister. This procedure amounts to a revision of belief in which the architecture of a given DAT allows only a minimal change in the adjustment of the perspective on the information contained in the former chronoscope. This is one of the different possible algorithms for running DATs as to specify exactly how much informational update is computed in understanding language, as well as where and when such an informational update occurs.

After lunch the conference continued with the contributed talks distributed over three parallel sessions running Friday afternoon, all day Saturday and Sunday morning. The sessions were broken up with the talks of two further invited speakers and an additional lecture in honor of Gotthorb Frege on the occasion of the 150 anniversary of his birthday this year. Peter Gärdenfors (Lund) proposed in his invited talk late Saturday afternoon on “Concept combination”, a geometrical model of concept combination based on conceptual quality of argumentation displayed, one talk per session and an idea of the breadth of topics handled and the structure meaning framework of Hull, Hauesser and Ginzburg, on the other hand, is that this approach can't provide an elegant way of measuring for embedded questions. Krifka proceeded to demonstrate how this putative problem could be solved by discussing assumptions about lexical and alternative questions and that this doesn’t allow for the proper formulation of one type of multiple questions. The problem often cited with this is the fact that the perspective on the information is too narrow, and therefore, accounts for information structure which determines the syntactic representation of the construction as either elliptical or as an ATB structure.

Following Rooth’s 1992 theory of focus interpretation an additional idea that focused constituents must be beyond the actual coordination structure. A shared focused constituent may therefore refer uniquely. In addition, the indefinite expression may also have a distributive reading. She then discussed empirical evidence supporting these claims.

Dorit Abusch and Mats Rooth (Stuttgart) discussed empty-domain effects for presuppositional and non-presuppositional determiners. The sentence “A detective was found at the party” is viewed as very relative to the knowledge that America has no nobility. However a sentence like “Two American princes were at the party” can be rejected (cf. Certainly not, only women attended) by evaluating it relative to a limited set of facts about the party ignoring the stable global fact which causes the presupposition to fail. The sentence cannot be rejected in the same way because of the non-monotonicity in the truth value of empty domains. Rooth is arguing for a conceptual theory of adjectival meaning and against theories of polysemy, explained the clash between the adjective and head noun in “der runde Weg/*the round way” by making reference to conceptual principles which constrain the applicability of shape terms to nouns denoting concrete objects. The adjective rund contains information relevant only to the contour of objects and not to the properties of the object’s axis. Consequently, rund differs from adjectives like gebogen ‘bent’ and falls into the class of adjectives like eckig ‘angular’ which also cannot be applied to the shape of the maximal axial object of an object (cf. der eckige Deich ‘the angular dyke’).

In the final session of the conference on Sunday morning, Carla Umback (Berlin/Hildesheim) focused on the meaning of aber ‘but’, the most neutral element used to contrast two propositions. Partly the question is how aber is contrasted when aber is used to connect two propositions, Umbach shows that aber interacts with the topic-focus structure of the conjuncts and proposes a focus-semantics analysis that allows for a general statement of the following kind: aber is able to maintain its classical monotonocity: in the second conjunct, another alternative is introduced to the alternative set given by the focused first conjunct. Thus the expression is not exclusively implied by the first conjunct or explicitly excluded as the topic of the first conjunct.

The conference concluded with a general meeting directed by the founding member of the Gesellschaft für Semantik, Armin von Stechow (Tübingen), in which it was decided that the next conference will be held at the University of Düsseldorf.
SPEAKER-ORIENTED PARTICLES IN DUTCH IMPERATIVES

by Marcel den Dikken

1. The basic data

In a Dutch imperative like (1a), featuring the triadic verb geven ‘give’ in a prepositional dative construction, the dative prepositional phrase can be replaced with the locative R-word (Van Riemsdijk 1978) hier ‘here’, as seen in (1b). The semantics of the two examples in (1) is identical; the locative R-word is a perfect replacement of the dative PP.

(1) a. geef dat boek eens aan mij!
   give that book once to me

   *geef dat boek eens aan hem!
   give that book once to him

   *geef dat boek eens hier/daar!
   give that book once here/there

   (2) a. geef dat boek eens aan hem!
   give that book once to him

   h. *geef dat boek eens aan mij!
   give that book once to me

This is unlike the case with verbs of communication (e.g., (9b)) and ‘real’ particles (e.g., (10b)), for which the dative PP is not acceptable.

2. Analysis

The incompatibility of op qua dative replacer with verbal particles is not particularly surprising
in view of the fact that it is impossible in general to combine two verbal particles in a simple sentence — attempts at combining op and door such as (16a,b) all fail miserably, while (16c,d) are fine.

(16)

a. ik heb de controles op door gevoerd
b. ik heb de controles door op gevoerd
c. ik heb de controles op gevoerd
d. ik heb de controles op door gevoerd

We can understand the deviance of the examples in (16a,b) on the assumption (argued for in detail in Den Dikken 1995) that head-sentences have heads of small clauses in the complement of a verb. As a consequence, there will be at most one verbal particle per simple clause. This account of (16a) extends the view that we are dealing with in (5a), as a ‘replacement’ of the dative PP, is as follows: a verb phrase with a particle, headed by the dative preposition: in which the verb takes a small clause (SC; categorisations in terms of a complex small clause structure

in our discussion of ‘speaker-oriented’ particles: on the assumption that the ‘plain’ dative phrase is like *come to me here/*up to me

On a par with (18), attempts at combining ‘speaker-oriented’ hier and op in a single particle (this is headed by bij op (15a)) that whenever a form is licensed, it has to be used instead of the overt form, hier/opp will then prevent a dative PP from occurring (cf. (18)). The impression that *hier* replaces the dative PP is merely an illusion on this view; what hier/opp do is sanction (and hence force) the absence of the dative PP.

(18)

> gaaf caan mij! hier/op caan mij! dat book! give me here/up to me that book

> kem schj mij! hier/op schj mij! come here/up to me

On a pair with (18), attempts at combining ‘speaker-oriented’ hier and op with a first-person PP (this is headed by bij hier op (15b)) that in any case (cf. Broekhuis & Corsnips 1997 for cogent arguments to the effect that by-PPs, like aan-PPs, are deeply embedded SC predicates). A consequence of this assumption is that komen is like gevoren in systematically taking a particle-headed SC complement. This is independently plausible (cf. also Moro 1997:229ff). Komen is like the particle verbs aankomen ‘arrive’ and binnenkomen ‘enter’ in denoting a temporally delimited event or process, in contrast to the two in (5a) and (5b) not explicitly realising the end-point of the event. On the assumption that ‘plain’ komen takes an abstract particle as its complement, its parallels with the abstract particle (also with respect to zijn be ‘selection in the perfect’) are straightforward.

3. Further consequences and questions

In (5a)–(8) I observed that transitive imperatives with ‘speaker-oriented’ op have a strong predilection for dative objects. This cannot be a matter of heaviness: the object in (5) is obviously not heavy. So the ungrammaticality of the x-examples in (5a)–(8) seems due instead to a peculiarity of the complement for the NP.

On the assumption that the ‘plain’ dative phrase is like *come to me here/*up to me

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The ungrammaticality of (19) follows on the assumption that the ‘speaker-oriented’ particle takes prominence in the shape of a small clause in the direct object. This is confirmed by the fact that (esp. Flemish) speakers who do not accept right-peripheral object placement in imperatives also turn out to lack ‘speaker-oriented’ op (and to reject (2b) and (2c) with hier as well, of course). Op’s predilection for null-operator imperatives also seems responsible for the fact that clauses of objects like zeggen show up as root clauses (‘direct’ speech) rather than as dative clauses whenever ‘speaker-oriented’ op is used. The examples in (20) illustrate this: the x-example, which features an indirect/reported speech clause, is bad with op (but perfect with left out or replaced with a dative).

(20)

a. zeg op/me! waar heb je gezeten? say up/me! where have you been
b. zeg op/me! waar heb je gezeten! say up/me! where you have been

In indicative clauses, direct speech complements can occur in either the Mittelfeld (as in Jan zei op/me! waar heb je gezeten?) or in the Extremfeld (as in zeg op/me! waar heb je gezeten!); and they alternate with indirect speech clauses, which show up at the right edge in Dutch. ‘Speaker-oriented’ op imperatives, only right-dislocated, are possible, yet indirect speech complements are excluded. We can make sense of this paradox by supposing that direct speech clauses are construed with an empty-headed object noun phrase. In indicative clauses, this object–NP is found in its normal Mittelfeld position; the direct speech clause either forms a constituent with it or it is in ‘extraposed’ position — a possibility common to all clauses construed with ‘speaker-oriented’ op, the object is a null operator, and the NP with which the direct speech clause is construed is a right-dislocate. The direct speech clause hence has no choice but to surface in right-peripheral position. The ungrammaticality of indirect speech clauses in imperatives with op (20b) then follows on the further assumption that such CPs can be construed neither with an NP nor with a null operator — reported speech clauses are never noun-dependent or right-dislocates: they are always complements of verbs.

These are some interesting results. But clearly, the discussion of ‘speaker-oriented’ particle constructions in particular (and in my knowledge, have not figured in the literature of either imperatives or dative constructions so far) has only scratched the surface of what will no doubt prove to be an iceberg of questions — Why only in (a subset of) ‘speaker-oriented’ op particles? Why only in (northern) Dutch? Why doesn’t (standard) English, which has ‘speaker-oriented’ here and on in come here/on!, generalise then too to imperatives? (While non-standard English apparently does use here there, as Richard Kayne and Janet Fodor tell me?) Why op rather than some other particle?

Let us briefly consider this last question in closing. From the point of view of the pragmatics of imperatives, the choice of op makes perfect sense. The type of imperative sentence in which op can figure is the direct, ‘unpolished’ imperative, used as a command. Social contexts in which commands are used are characterised by a hierarchical relationship between the speaker (the commander) and the hearer. The use of op ‘rather than’ its alternatives (as of no ‘down’ matches this hierarchical relationship — the speaker positions him/herself in space in a position above the hearer, as a result of which the hearer will have to give, speak, ask or come ‘in an upward direction’, towards the speaker. The nature of the speech act, then, naturally leads to the selection of the particle op rather than any other verbal particle.

Particles marking social hierarchical relationships are otherwise familiar from other language families — and in effect, in Japanese the honorific marker used in command contexts the type discussed in the foregoing is an element meaning ‘my superior’. Of course we customarily think of Dutch as a language featuring ‘honorific’ elements, but our discussion of ‘speaker-oriented’ op suggests that in fact Dutch has these elements, too.

References


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In functional phonology, Paul Boersma develops a theory that seeks to explain and describe the data of the languages of the world from general capabilities of human motor behaviour and perception. By separating the study of the sound patterns in a language from the phonological operations of spreading and the Obligatory Contour Principle. In functional phonology, Paul Boersma develops a theory that seeks to explain and describe the data of the languages of the world from general capabilities of human motor behaviour and perception. By separating the study of the sound patterns in a language from the phonological operations of spreading and the Obligatory Contour Principle.