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ASPECTUAL ENTITIES AND TENSE IN DISCOURSE

CARLOTA S. SMITH

1. INTRODUCTION: LINGUISTIC STUDY OF DISCOURSE

Linguistic expressions form interesting patterns in discourse.¹ In the domain of temporality, the morphemes of tense and aspectual viewpoint pattern significantly within a discourse. Shifts of viewpoint and tense are often associated with shifts of direction, and with the distinction between foreground and background.² One important reason for this effect is that aspectual viewpoint and tense form closed sub-systems in language. In a closed system, choice of one term implies contrast with the other possibilities. The element of choice and its contrastive significance allows for more than one level of discourse meaning.

This article is concerned with the patterning of covert linguistic categories in discourse. I will show that aspectual situation categories such as event and state pattern together to establish discourse units at the relatively local level of the passage. The situation categories also form a closed system. As an introduction to the research, I would like to address a very general issue about the linguistic study of discourse.

For the linguist interested in discourse, the most fruitful level for study is not always clear. Typically researchers have focused on discourse of particular genres, from conversation to elicited personal narratives to highly structured written materials. This is a reasonable strategy, because each genre represents an activity with its own purpose, structure and conventions. The various genres are different 'activity types' in which language plays a key role, as Levinson 1979 emphasized. People make sense of a discourse mainly on the basis of convention and expectation, rather than on particular linguistic form. Indeed, the global structure of a discourse is often not presented directly in the text. What this suggests is that genre is the wrong level for close linguistic study of discourse, due to its strong pragmatic basis.

I will work at the more local level of the passage. Within a text one recognizes stretches that are intuitively of different types, e.g. narrative, description, argument, commentary. These stretches tend to have a particular force and a characteristic cluster of linguistic features and interpretations. I shall say that they realize different "discourse

modes.” I posit five modes: Narrative, Report, Description, Informative, and Argument. Each makes a different contribution to the text. The list is not exhaustive—it omits conversation and procedural discourse, for instance—but includes the modes that commonly appear in written texts. The list of modes should be relatively short if it is to capture significant generalizations. I will assume that the modes vary in point of view. I do not consider persuasive discourse a separate mode or genre: persuasion appears in texts of many kinds.

Many factors are the same for both the spoken and written modalities; for the work reported on here I consulted written material only. The generalizations and examples are based on a group of about 30 texts that I examined carefully for this work. They vary in genre, length, and venue, including newspaper articles, essays in journals, short stories, novels. I use the term ‘discourse’ for both spoken and written material, and ‘text’ for written. The discussion is confined to English. I think that the analysis will hold across languages, although some details will differ for different languages,

Section 2 gives a general characterization of the modes. 3 discusses situation entities; 4 discusses principles of text progression, with examples from each mode; 5 concludes.

2. DISCOURSE MODES

To introduce the modes and the intuitive distinctions between them, I present two text passages. In each there is a shift from one mode to another. Consider first the passage in (1), from a newspaper editorial. The original paragraphing is preserved. The provenance of the natural examples is given at the end of the article.

(1) Argument to Narrative

1 I feel reasonably certain of the final verdict on the current impeachment affair because I think history will see it as the climax of a six-year period marred by a troubling and deepening failure of the Republican party to play within the established constitutional rules.

2 It was on Election Night 1992, not very far into the evening, that that the Senate minority leader, Bob Dole, hinted at the way his party planned to conduct itself in the months ahead: it would filibuster any significant legislation the new Democratic President proposed.

This passage begins quite abstractly in the mode of Argument, and shifts at the second sentence to Narrative. The shift occurs with introduction of a particular time, place, and individual; and a dynamic event (*Bob Dole hinted ...*) in the second sentence. The cleft sentence is a typical scene-setting device for a story in genres such as fairy tales, which gives it an ironic flavor in this context.³

The second example also involves a shift to narrative. The first two sentences express generalizations, typical of the Informative mode. Then with the specifics of S3, the mode of the passage shifts to Narrative.

- (2) Informative to Narrative
 1 When a big whale dives, currents set in motion by the passage of so many tons of flesh come eddying back up in a column that smooths the restless surface of the sea. 2 Naturalists call this lingering pool of glassy water the whale's footprint. 3 Out between the Hawaiian islands of Maui and Lanai, Jim Darling nosed his small boat into a fresh swirl. 4 The whale that had left it was visible 40 feet below, suspended head down in pure blueness with its 15-foot-long arms, or flippers, flared out to either side like wings.

Such shifts are common in actual texts.

There is normally some variation within texts of a given genre. Narrative fiction, for instance, expresses events and states in sequence, bound together more or less closely by a unifying theme. But narratives rarely consist entirely of such sequences. They also have descriptive passages, and sometimes commentary. In expository texts one often finds, in addition to the exposition, narrative sequences which depart from the argument line. The point here is simply that texts of almost all genre categories are not monolithic, but rather have passages of different modes. This may be the reason that genre-based searches for linguistic regularities have not been particularly successful. The main exception would be texts in highly scripted genres in which variation is not allowed.

Two linguistic features characterize the modes, both involving temporality in the larger sense. The first is the type of situation—events, states, and others discussed in the next section—that a text passage introduces into the universe of discourse. The second linguistic feature is the principle of text progression that holds for a mode. Three of the modes are temporal: Narrative, Description, and Report. Text passages in these modes progress by principles of temporal or spatial change. In the atemporal modes of Informative and Argument, the situation entities are primarily non-dynamic. Their principle of text progression cannot involve change in the same sense as the temporal modes. Atemporal texts progress with metaphorical changes of location through the information space of the text.

3. SITUATION ENTITIES AND THE DISCOURSE MODES

Texts introduce individuals, concepts, and times into the universe of discourse. They also introduce situations such as events and states, which are familiar from aspectual studies. In formal accounts, individuals, times, and situations are represented as different types of

entity in the representation. Each entity is licensed by information in a text. The analysis that I sketch in this article is developed more formally in the framework of Discourse Representation Theory in Smith, in press.

I propose here a new classification of situation entities that recognizes several types of non-dynamic, stative situations. This extended notion of situation entities distinguishes the five discourse modes and is perhaps their most important feature. There are three main types of situation entity: Eventualities, or specific events and states; General Statives, or generics and states that involve a pattern or regularity; and Abstract entities, facts and propositions. I will argue that the three types are distinct on conceptual grounds, and that they have distinguishable linguistic characteristics.

Situation entities are conceptual categories, expressed linguistically at the level of the clause. They are realized by verb constellations and nominal forms (Smith 1991/7). The sentences in (3) exemplify members of the category of Eventuality:

- (3) Eventualities (particular)
- a. The lobster won the quadrille. Lee rehearsed. (Events)
 - b. The cat is on the mat. The Colonel owns the farm. (States)

The semantic property of dynamism distinguishes events and states. Clauses expressing events have distributional and interpretational properties associated with dynamism, whereas those of states do not. The properties are quite familiar, and I shall not discuss them here. Nor will I discuss finer distinctions among events and states, also familiar and not directly relevant to the discourse modes. The verb constellations that express events and states have distinct distributional properties, as shown in Vendler 1957, Verkuyl 1972 Dowty 1979. They are therefore covert categories of grammar in the sense of Whorf 1956, and can be considered part of a speaker's knowledge of the language.

There are many types of states. Particular states such as those expressed (3b) hold at a particular time and place; they may last for a long or short period. I now consider some other types of non-dynamic situation categories.

The class of General Statives includes Generalizing and Generic sentences, as exemplified in (4):

- (4) Statives (general)
- a. The lion has a bushy tail. (Generic: kinds)
 - b. Mary often fed the cats last year. (Generalizing: patterns of situations)
 - c. John speaks French. "

Generalizing sentences express regularities, patterns of situations rather than particular events or states. They are also known as gnomic, dispositional, general, and habitual. The latter two labels reflect the fact such sentences often have a frequency adverbial (*sometimes, always, never*). One test for whether a sentence is of the Generalizing type is whether it allows a frequency adverbial without disturbing the syntax or interpretation. If it does allow a frequency adverbial, it is almost certainly a generalizing sentence. Krifka et al 1995; use the term ‘characterizing’ for the class that I call Generalizing sentences.

The generalizing interpretation of sentences like (4c) is due to a pragmatic constraint on bounded events that prevents them from being located in the Present. In the Present, events must be presented as ongoing, e.g. *John is speaking French, Mary is drawing a circle*. We cannot talk about a bounded event in the present, due to a general pragmatic constraint, which I will call the Bounded Event Constraint. The constraint is due to a principle of communication that holds in language generally: speakers follow the convention that communication is instantaneous. The perspective of the Present is thus incompatible with a bounded event, because the event—even an instantaneous event—would go beyond that perspective (Kamp and Reyle 1993).⁴

In English, a present tense clause with an event verb constellation and the simple, perfective viewpoint is taken as semantically stative, conveying a general pattern rather than a particular event, as in (4c). There are well-known exceptions, notably performatives (*I hereby christen this ship the 'Queen Elizabeth'*) and sports-announcer reports (*Now Jones throws the ball to third base*). A different kind of exception is the fictional narrative entirely set in the present, which has its own conventions. Languages have different ways of dealing with the Bounded Event Constraint. In Russian, for instance, bounded event sentences in the present tense are systematically taken as Future; in some languages the present tense has only an imperfective viewpoint value.

Although generalizing sentences lack the dynamism of particular event sentences, they have some distributional properties of dynamism (Smith 1991/7). They can appear with forms associated with agency and control, and with pseudo-cleft *do*:

- (5)
- a. John deliberately plays tennis every Friday.
 - b. I persuaded John to play tennis every Friday.
 - c. What John does is to play tennis every Friday.

These distributional facts reflect the hybrid nature of generalizing sentences. Although stative, they often have dynamic verb constellations (e.g., *play tennis*) and they involve a pattern of dynamic events. Of course, stative generalizing sentences exist as well: *John is often in love, Mary usually knows the answer*, etc.

Generic sentences refer to kinds rather than individuals. In a sentence like *The lion has a bushy tail* the subject NP denotes the entire class of lions, not a particular lion or lions. Definite NPs (*the lion*) and bare plurals (*lions*) are the main types of NP that are taken as kind-referring. Characterizing generic sentences by syntactic means alone is difficult, but there are typical forms and interpretations; see Carlson & Pelletier 1995.

Generic and Generalizing sentences are derived by coercion from verb constellations that express specific eventualities at the basic level of categorization. For instance, the verb, object argument and adverbial of examples (2b-c) above (*speak French, feed the cat*) express specific events. In context with a definite NP subject, simple viewpoint, and present tense, however, they have the generalizing interpretation. Similarly, generic sentences may have event verb constellations, as in *The lion eats meat*. Verb constellations that express states at the basic level also appear in general statives, as in (3) above, *have a bushy tail*.

I will assume that General statives—generic and generalizing sentences—can be recognized by their distributional and semantic properties, and are also covert categories in the grammar. This is somewhat optimistic, since these sentences are notoriously difficult to characterize in terms of their linguistic. For generalizing sentences the strongest properties are the presence and/or possibility of frequency adverbs, and the combination of present tense, perfective viewpoint, and event verb constellation. Past generalizing sentences are more difficult to characterize linguistically.

Now consider the abstract entities of Facts and Propositions. They are situation entities introduced by verb constellations in clausal complements of certain predicates.

- (6) Abstract entities
 Facts: objects of knowledge
 a. I know that Mary refused the offer.
 b. Mary's refusal of the offer was significant.
- Propositions: objects of belief
 c. I believe that Mary refused the offer.
 d. Mary's refusing the offer was unlikely.

Clausal complements referring to facts and propositions have characteristic distributional and other linguistic features, and thus function as covert linguistic categories. Vendler showed this in his article "Facts and Events" (1967); the ideas are further developed in Asher 1993, Peterson 1997. Abstract entities differ from the other types of situations in how they relate to the world. Eventualities and general statives are located spatially and temporally in the world; abstract entities are not.

Facts are the objects of knowledge, while Propositions are the objects of belief. Conceptually Facts and Propositions can be distinguished from eventualities, which are spatiotemporally located and have causal powers. Facts are not so located, yet they are contingent for truth on situations being a certain way and arguably have causal powers. We point out a fact, regret or rejoice in a fact. The class of Factive predicates includes emotives (*regret, resent, deplore*), verbs of communication (*say, tell, show, indicate*), verbs of conjecture (*guess, predict*, etc), possibilities. Questions of fact are empirical questions although facts are not part of the furniture of the world.

Propositions are the objects of belief, the contents of mental states like beliefs, expectations, decisions, intentions. Propositions are not located, are not contingent, and do not have causal powers. They are typically expressed by clausal arguments of verbs of propositional attitude and other predicates. Propositions are referentially opaque; Vendler points out that this property reveals their subjectivity. This notion of proposition should not be confused with the more general use of the term, in which a proposition is the content that a sentence expresses, the sense of the sentence. Typically propositions appear as clausal arguments of such predicates as *believe, doubt, fear, hope, want, think, affirm, deny; be unlikely, consistent*, etc.

Linguistically, Fact complements can be distinguished from Propositions and clauses referring to Eventualities. Peterson 1997 offers two relatively simple tests for identifying clauses of the different types. The tests are (i) grammaticality of 'That S' clausal complements and (ii) grammaticality of indirect question clausal complements. To use the tests, we take a sentence with a clausal complement, and 'that S' and indirect questions as tests. Hence, the tests are essentially of the substitution variety. Following Peterson, note that a clausal complement refers to an Eventuality, an Event or State, if both of the tests destroy grammaticality. (7) illustrates; the clausal complement is gerundive or substantive:

- (7)
- a. Mary's refusing/refusal of the offer was followed by silence.
 - b. *That Mary refused the offer was followed by silence.
 - c. *What Mary refused was followed by silence.

While (7a) is grammatical, neither type of substitution preserves grammaticality. This shows that the complement of (7a) refers to an Eventuality.

A clausal complement refers to a Fact if both tests preserve grammaticality:

- (8)
- a. Mary's having refused the offer was significant.
 - b. That M refused the offer was significant.
 - c. What Mary refused was significant.

All three versions are grammatical, showing that the complement of (8a) refers to a Fact.

And finally, a clausal complement refers to a Proposition if the first substitution test preserves grammaticality and the second does not.

- (9)
- a. Mary's having refused the offer was inconsistent.
 - b. That M refused the offer was inconsistent.
 - c. *What Mary refused was inconsistent.

While (9a) and (9b) are grammatical, the substitution of an indirect question destroys grammaticality. This shows that the complement of (7a) refers to a Proposition.⁵

These tests are sometime difficult to apply. They may require initial changes in a sentence in order to obtain the appropriate base form. Thus Peterson refers to 'venderization', a pseudotransformation that derives a nominal complement from an underlying full-sentence structure; and its opposite, a way of obtaining the underlying full-sentence structure (1997:75). The pseudo-transformations may require changes in structure that go beyond the standard notion of transformation. Although there are some difficulties with these tests, they are quite effective together with the distributional patterns of abstract entities. Further, a quantificational test that can distinguish complements referring abstract entities is proposed in Asher 1993.

It's important to note that sentences directly expressing facts and propositions are not distinct linguistically. The characterization presented here is limited to clausal complements that refer to these abstract entities. In spite of the limitations, the category is useful in distinguishing the atemporal discourse modes.

This completes the list of types of situation entities. What is important for this discussion is that different types of entities predominate in passages of different modes, as summarized below:

- (10)
- Predominant situation entities and discourse modes
 - Narrative - eventualities
 - Report - eventualities, general statives
 - Description - states, ongoing events⁶
 - Informative - general statives
 - Argument - abstract entities, general statives

4. TEXT PROGRESSION IN THE DISCOURSE MODES

All texts advance through a structure. We advance through the episodes of a story, the stages of an argument, the classifications of an informative text. Passages of the temporal modes advance as location—temporal or spatial—changes. The text modes of

Argument and Information are not temporally organized, though they may include eventualities that have temporally location. Atemporal texts progress with metaphorical changes of location through the information space of the text. (11) gives a classification of the modes as temporal or atemporal, according to the types of entities that predominate in them:

(11)	Temporality of the modes	
	Temporally located, dynamic:	Narrative, Report
	Temporally located, static:	Description
	Atemporal:	Informative, Argument

Narrative advances through narrative time, with situations related to each other. Description is static temporally; it advances by changes in spatial location, within the scene described. In Reports, situations are related to the time of report, often the present (Speech Time) and advancement involves a change of time.

There are three principles of tense interpretation, according to the discourse mode of a passage: Continuity, Anaphora, and Deixis. In Narrative, situations are related to each other, and tense conveys continuity. In Report, situations are related to Speech Time and tense is deictic. In Description, situations are related to an already-established time and tense is anaphoric. Tense interpretation in the atemporal modes is deictic.

The principles of interpretation are modeled using an extended Reichenbach framework. In texts with the principle of tense continuity, Reference Time advances according to bounded events or temporal adverbials; see 4.1.1 below. In texts with the principle of deictic tense, Reference Time changes with different relations to Speech Time; see 4.1.2. In texts with the principle of tense anaphora, Reference Time is simultaneous with a previously established time; see 4.1.3. To calculate temporal location in a discourse passage one must have access either directly or indirectly to the discourse mode of the passage. I do not have space to develop the formal analysis here; see Smith (in press) for a detailed account.

To understand text advancement in the atemporal modes we need something other than dynamism. We can find such a principle in the notion of a spatial domain that underlies all others. I will use the notions of metaphorical location, and metaphorical motion. The semantic domain of an atemporal discourse can be seen as terrain to be traversed: a metaphorical space. The discourse advances as key reference moves metaphorically from one part of the domain to another. We need the complexity of space to model metaphorical motion. Space isn't unidimensional, like time: rather, it allows directions of various kinds. Similarly direction in a text domain can be hierarchically up or down, lateral, etc. Texts are organized according to the domain and the particular focus of a given text. There are conventional organizing principles such as hierarchy,

geography, chronology, cause. Understanding the way domains are organized is itself an interesting and difficult problem, beyond the scope of this discussion.

I will identify for each clause a key referent that is semantically central; I then look for the metaphorical location of that referent, called the Primary Referent. The Primary is the central referent in a clause. For events the Primary is that referent that moves or changes; for states, it is the referent to which a property is ascribed or location maintained. This approach owes a great deal to the work of Talmy (1985, 2000). Motion and location may be literal or metaphorical. States are maintained rather than changed, focusing on what is predicated of the primary figure and how the components of the situation pertain to the figure. Similar ideas were put forth by Gruber (1965), and developed in localist theory. The basic insight is that "...the formalism for encoding concepts of spatial location and motion, suitably abstracted, can be generalized to many other semantic fields" (Jackendoff 1990:25). Examples of the parallelism between the spatial and other semantic fields include possession (*The inheritance went to Philip*), ascription of properties (*The light changed from green to red*), and scheduling (*The meeting was changed from Monday to Tuesday*); the examples are Jackendoff's.

The notion of primary referent is not dependent on surface structure. Rather, it depends on the type of situation expressed in a text, factoring out the linguistic features that depend on presentation or perspective. Thus the primary referent of a clause is the same whether the clause is active or passive. In *Mary opened the door* and *The door was opened by Mary*, 'the door' is primary referent in both cases.

I list some criteria for identifying the primary referent of a clause, based on the intuitive notions given above. Examples are taken from the texts of this study.

- (12) Criteria for Primary referent of Events
The primary referent is that entity in an event which
- (a) Undergoes a change of state
The high school outsider becomes *the more successful adult*.
 - (b) Is causally affected by another participant
The national outpouring has forced *us* to confront the situation.
 - (c) Doesn't exist independently of the event
High school students present and past have come forward with *stories about cliques and an artificial world*.
 - (d) Moves or otherwise changes
- (13) Criteria for state primary referent
The entity in a state which is
- (e) Literally or metaphorically located
Dragons are usually arranged almost heraldically round a conceptual center point.

- (f) Dependent on the situation for existence
The predominant output was *the white ware* with transparent ivory toned glaze which made the kilns famous.
- (g) Figure relative to a Ground
A group of kilns is northeast of Ch'ang-an, the capital city of the T'ang Dynasty.
- (h) Has a property ascribed to it
The most important kilns are *those at Tao-chu in Shensi*.

The more specific criteria are applied before the general. Criterion (h) for instance, holds of the subject in any state sentence.

Primary referents can usually be identified in clauses according to the semantic-syntactic notion of thematic role. The primary referent usually coincides with the Theme, or Patient, argument. I assume that information about the Theme argument is available in the analyzed surface structure of a sentence, along with information about verb class and other features. Analyzed surface structures are the input to the construction rules of Discourse Representation Theory.

4.1. *Passages of the discourse modes*

In this section I demonstrate the analysis outlined above for each of the modes. The examples have situation entities and text progression characteristic of the mode in question.

4.1.1 *Narrative*

The main types of entity introduced in a narrative are eventualities, specific events and states: Eventualities are related to each other, either in sequence or simultaneous. Narrative presents a sequence of consequentially related events and states, and the order in which they occur is crucial for understanding (Moens 1987). The essence of a narrative is dynamism: narratives consist of events that occur in one after the other in time. Sequential interpretations are due to linguistic forms which convey that the initial endpoint of one situation follows the final endpoint of another. Narrative time advances with perfective event sentences, and with explicit temporal adverbials, and fails to advance otherwise. This is the basic finding of discourse dynamics (Hinrichs 1986, Kamp & Rohrer 1983, Partee 1984). I take it that the default is sequence; for simplicity I ignore flashbacks, changes of scale, etc.

Bounded events are conveyed by event verb constellations and the simple, perfective verb form in English. Unbounded eventualities are ongoing events—in the progressive—and states. For discussion see Smith 1991/7. (14) is an example of a narrative with the relevant information displayed. Events and states are indicated by

subscripts for each clause. The tensed clauses are numbered; in sentences with more than one clause, the clauses are lettered. Clauses that advance narrative time are marked with an arrow →:

- (14) $1_E \rightarrow$ A few days later I called on Dr P and his wife at home, with the score of the Dichterliebe in my briefcase and a variety of odd objects for the testing of perception. $2_{aE} \rightarrow$ Mrs. P showed me into a lofty apartment, b_S which recalled fin-de-siècle Berlin. 3_{a_S} A magnificent old Bösendorfer stood in state in the centre of the room, and b_S all around it were music stands, instruments, scores. $4_{aE} \rightarrow$ Dr. P came in, a little bowed, b_E and \rightarrow advanced with outstretched hand to the grandfather clock, c_E but, hearing my voice, \rightarrow corrected himself, d_E and \rightarrow shook hands with me. $5_{aE} \rightarrow$ We exchanged greetings b_E and \rightarrow chatted a little of current concerts and performances. 7 Diffidently, $a_E \rightarrow$ I asked him b_S if he would sing.

The continuity interpretation of tense is indicated in below, considering only events that advance the narrative. Tense is conventionally past in narrative, with changes only to past perfect or future-in-past. The first clause of a narrative indicates a Reference Time (RT) that precedes Speech Time ($< SpT$). After that, a bounded event advances the narrative, so that one RT follows another ($RT2 > RT1$):

- (15) Continuity interpretation of tense
 $E1 \dots \dots \dots E2 \dots \dots \dots E3 \dots \dots \dots$
 $RT1 < SpT \quad RT2 > RT1 \quad RT3 > RT2$

States and ongoing events do not advance RT and are not treated here. They are interpreted by a limited version of the principle of tense anaphora, presented below.

4.1.2 Report

In Reports, eventualities or general statives are related to Speech Time rather than to each other. Time and space adverbials are common in reports, as are changes in tense. Significantly, the events of a report could appear in different order without making a real difference - quite unlike narrative (Caenepeel 1995) Tense and adverbials are Deictic, oriented to Speech Time. Below is a time line giving the deictic interpretation of tense.

- (16) $1_E \rightarrow$ A week that began in violence ended violently here, with bloody clashes in the West Bank and Gaza and intensified fighting in Southern Lebanon. $2_E \rightarrow$ Despite the violence, back-channel talks continued in Sweden. $3_S \rightarrow$ Israeli, Palestinian and American officials have characterized them as a serious and constructive effort. 4_S Israel is offering as much as 90 percent of the West Bank to Palestinians.

- (17) Deictic interpretation of tense
 E1.....E2.....S1.....S2..... ..
 RT:<SpT <SpT =SpT =SpT

The deictic interpretation maintains Speech Time as the center, and there are changes in time with changes in tense.

4.1.3 Description

Time is static in description. Typically, there is a spatial adverbial in a descriptive passage with scope over the whole, as in this example. To capture the static nature of description and explain its properties, I posit a tacit durative time adverbial as well. (18) illustrates:

- (18) 1a_E On the big land below the house a man was ploughing and shouting admonitions to the oxen who b_E dragged the ploughshares squeaking through the heavy red soil. 2a_E On the track to the station the loaded wagon with its team of sixteen oxen creaked and groaned while b_E the leader cracked his whip that reached to the horns of the leader oxen and c_E yelled on a note only they understood. 3_E The birds twittered and sang. 4a_E The wind sang not only in the wires, but through the grasses, and b_E the wires vibrated and twanged.

The interpretation of tense is anaphoric in descriptive passages. The time of a description is the same as a previously established time. In terms of a time line, Reference Time is unchanged: in other words, an earlier Reference Time is maintained, as modeled in (19). E0 indicates an earlier event which sets the reference time—RT 1—for the descriptive passage. S1 and E1 are eventualities in the description, all at RT1.

- (19) Anaphoric interpretation of tense
 E0.....S1.....E1.....
 RT1< SpT RT2 = RT1 RT3 = RT1

This passage includes states, ongoing events, and Activity events. Activity events are dynamic and atelic, e.g. ‘the wagon ...creaked and groaned’, ‘the birds twittered and sang’.⁶ Yet all are taken as static, part of the description.

There are two points to make to understand how such a passage works. The first point has to do with perfective Activity sentences. Such sentences convey a temporal unit of an Activity, whose bounds may coincide with the initial and final endpoints of the event. They need not do so however. In descriptive contexts, we infer that an Activity event continues, so that its endpoints do not coincide with the unit expressed; see Smith 1999 for discussion.

Secondly, the tacit durative adverbial has scope over the entire passage, so that description has neither telicity nor dynamism. To see this, consider the following variant of (19): sentence 3 has a telic verb constellation (*walk to school*):

- (20) 1 On the big land below the house a man was ploughing and shouting admonitions to the oxen. 2 On the track to the station the loaded wagon with its team of sixteen oxen creaked and groaned. 3 A group of children walked to school. 4 On the telephone wires the birds twittered and sang

Strikingly, there is no sense of dynamism in this passage. The reason is that the telicity of S3 is neutralized, or shifted: S3 is atelic by coercion, due to the tacit durative adverbial. This is consistent with the well-known effect of durative adverbials on telic sentences. Within the scope of a durative time adverbial telic verb constellations regularly shift to atelic, as in the standard examples of (21).

- (21) a. Mary read a book for an hour.
b. The children walked to school for an hour.

We understand the events of these examples as atelic, due to the adverbial: Mary did some book-reading, the children walked in the direction of school.

4.1.4 Informative

Informative texts are atemporal. Typically they have many situation entities of the general stative type. In this example almost all the sentences are generalizing statives, expressing a pattern or generalization rather than specific events or states. The tensed clauses are subscripted with **Ge** for Generalizing stative. Advancement in this passage is by primary referent. The primary referents are underlined; they are determined by the criteria given in section 3.

- (22) 1_{a_{Ge}} When people try to get a message from one individual to another in the party game telephone, b_{Ge} they usually garble the words beyond recognition. 2_{a_{Ge}} It might seem surprising, then, b_{Fact} that mere molecules inside our cells constantly enact their own version of telephone without distorting the relayed information in the least. 3_{Ge} Actually, no one could survive without such precise signalling in cells.

At clause level the primary referent of S2 is the complement; I have also underlined the primary referent within the complement clause. In S3 I assume that the nominal complement can be interpreted as clausal. There is an intuition of metaphorical motion in this passage, I believe, from the general to the particular case under discussion. Thus the primary referents deliver the hierarchical structure typical of discursive texts.

4.1.5 Argument

The mode of argument discusses states of affairs, facts, and propositions. The text may ascribe a certain significance to a state of affairs; give the author's personal opinion; ask a question; make a prediction. Often an Argument text brings something to the attention of the reader, or makes a claim and supports it in some way. Claims themselves don't have a particular linguistic form: they appear in all sorts of linguistic structures. Note for instance clause 1c in the example below. It is a striking claim, but not distinguishable by its linguistic form from a banal statement.

The passage introduces abstract entities in positions of prominence, as is typical of the argument mode; primary referents are underlined.

- (23) $1a_E$ $_{Fact}$ [The national outpouring after the Littleton shootings] has forced us to confront something b_{Ge} that we have suspected for a long time: c_{Prop} the American high school is obsolete and should be abolished. a_E In the last month, high school students present and past have come forward with stories about cliques and the artificial intensity of a world defined by insiders and outsiders, b_{Ge} in which the insiders hold sway because of superficial definitions of good looks and attractiveness, popularity and sports prowess.

The primary referents suggest a hierarchical structure in this case also: we go from 'the American high school' to specifics about the schools.

5. CONCLUSION

I have shown that the Discourse Modes are an interesting level of text structure. They can be identified linguistically if we extend the class of situation entities to include General Statives, and Abstract Entities, in addition to Eventualities. The different modes introduce typical situation entities into the universe of discourse, and have different principles of advancement. Three patterns of tense interpretation are needed: continuity, anaphora, deictic. The deictic is the default pattern.

Most features of this analysis can be stated in Discourse Representation Theory. The identification of types of situations entities, and the three interpretations of tense, can be formally stated with the rules and representations of the theory. However, there are two points which depend on lexical and pragmatic knowledge and cannot be analyzed in this way. Interpreting spatial advancement in Description, and determining whether primary referents advance through the domain of the text, require a different kind of knowledge and cannot be stated in construction rules. The implementation of the analysis in Discourse Representation Theory is beyond the scope of this article; see Smith (in press).

EXAMPLE SOURCES

- (1) Alan Ehrenhalt, "Hijacking the Rulebook". *New York Times* December 20, 1998
- (2) Douglas H. Chadwick, "Listening to Humpbacks". *National Geographic*, July 1999.
- (12) Leon Botstein, "Let Teenagers Try Adulthood". *New York Times*, May 1999.
- (13) Margaret Medley, *The Chinese Potter*. London: Phaidon, 1989
- (14) Oliver Sacks, *The Man who Mistook His Wife for a Hat*. New York: Harper & Row, 1970.
- (16) News story, *New York Times* 1998
- (19) Doris Lessing, *Under My Skin*. New York: Harper Perennial, 1994.
- (22) John D. Scott & Tony Pawson, "Cell Communication". *Scientific American* 2000.
- (23) Leon Botstein, "Let Teenagers Try Adulthood". *New York Times*, May 1999.

NOTES

¹ I would like to thank the organizers of the workshop, and the audience, for helpful questions, comments, and discussion.

² Aspectual viewpoints in texts have been studied by Hopper 1979, Fleischman 1991, among others. In studies of Romance languages, of course, aspectual viewpoint is coded together with tenses, e.g. in the French *imparfait*, *passé simple*, and *passé composé*.

³ The fairy-tale evocation is strengthened by this phrase a few paragraphs later in the text: "...but the Republicans were already on the road to further adventure."

⁴ The Bounded Event Constraint is very close to the 'punctuality constraint' proposed in Giorgi and Pianesi 1997, as Nina Hyams pointed out to me in the discussion at the workshop.

⁵ Peterson 1997 gives evidence from various languages that the distinction between eventualities, facts, and proposition is universally found at the linguistic as well as the conceptual level. He shows that essentially the same properties/tests support the distinction in Arabic, English, French, German, Hebrew, Hindi, Kannada, and Marathi.

⁶ Activities are a sub-type of events, with the temporal features dynamic, durative, atelic. They do not have a goal or natural endpoint, whereas telic activities do have them. For instance, contrast *Mary walked in the park*, which expresses an atelic event, with *Mary walked to school*, which expresses a telic event.

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