

Lecture 20: Tense, Aspect, and Events

0. Introduction	1
1. Classical tense logic	2
2. Early innovations: Reichenbach's reference times, Davidson's events	2
3. Montague	3
4. Aspect: basics	4
4.1. Lexical aspect, Aktionsart	4
4.2. Viewpoint aspect	5
5. More progress and issues in tense and aspect: a tiny sample	5
5.1. Stage-level and individual-level predicates	5
5.2. The ontology of entities and events	6
References	6

Recommended readings to learn more:

(Bach 1981, Bach 1986, Bennett and Partee 1972, Comrie 1976, Comrie 1985, Dahl 1985, Dowty 1979, Kamp and Rohrer 1983, Klein 1994, Landman 2000, McCoard 1978, Ogihara 1996, Parsons 1990, Smith 1991, Vendler 1957, von Stechow 1995)

0. Introduction.

One BIG topic we haven't discussed at all this semester is tense and aspect, and the semantics of event descriptions of various kinds, including tensed sentences. This lecture might be considered an "appetizer" – just a brief look at a few main ideas, with pointers to some interesting work.

This is one area in which there is very constructive and productive interaction among researchers with quite different backgrounds and interests – logicians, philosophers, theoretical linguists of different kinds, including both 'formal' and 'non-formal' semanticists, typologists, computational linguists, and others.

Outline:

1. Classical tense logic -- (Prior 1967). Related to classical modal logic (Hughes and Cresswell 1968, Hughes and Cresswell 1996). Tense and modal operators as operators on sentences; sentences true "at a time" and "in a possible world".
2. Early innovations from logicians and philosophers: Reichenbach (1947) and the notion of "reference time". Davidson (1967) and the idea that sentences are descriptions of events (or states, processes, etc.)
3. Montague (1970) combined tense and modality, combined (formal) pragmatics and semantics. Hans Kamp, in his dissertation under Montague's supervision (Kamp 1968) and the subsequent article (Kamp 1971), extended this approach in showing the distinction between *now* and the Present Tense.
4. Aspect: Early work by philosophers and logicians on "Aktionsart", or "lexical aspect": distinctions among predicates over various sorts of "eventualities" (Emmon Bach's term): events, processes, states (Kenny 1963, Vendler 1967).
5. Subsequent work involving linguists and drawing on a great deal of linguistic research on tense and aspect systems of natural languages has stimulated the development of richer theoretical frameworks, cross-linguistic study, and the interaction of formal and non-formal semanticists, syntax-semantics-morphology studies, more study of lexical semantics and its interaction with compositional semantics. Joint work on aspect by linguists and philosophers (Bach 1981, Bach 1986, Dowty 1979, Klein 1994, Parsons 1990, Smith 1991) (and many others)

leading to contemporary understanding of the distinction between “lexical aspect” and “viewpoint aspect” (Smith’s terminology). Linguists have made important contributions to the study of tense as well, and to the kinds of interaction between tense and aspect that are often found in natural languages.

1. Classical tense logic

Sentences are true at times. Tense operators are like quantifiers over times.

$\|\varphi\|^{M,g,t} = 1$ means that φ is true with respect to model M and assignment g at time t .

$\|\text{PAST } \varphi\|^{M,g,t} = 1$ iff there is some t' earlier than t such that $\|\varphi\|^{M,g,t'} = 1$

That is, PAST tense means something like “at some time in the past, φ was true”, where φ is the present tense version of the same sentence. (Present tense is not represented by any operator at all; it’s assumed to be the ‘basic’ form.)

$\|\text{FUT } \varphi\|^{M,g,t} = 1$ iff there is some t' later than t such that $\|\varphi\|^{M,g,t'} = 1$.

Future and past are treated symmetrically in standard tense logic.

(Whiteboard picture, showing the basic idea of “time of evaluation” vs. what we might call “event time”.)

Compare classical modal logic: a sentence is true at a given possible world; “Possibly φ ” is true at w iff φ is true at some world w' accessible from w . “Necessarily φ ” is true at w iff φ is true at every world w' accessible from w .

2. Early innovations: Reichenbach’s reference times, Davidson’s events

Reichenbach (1947) was a philosopher who noticed many aspects of natural language which were not adequately captured in first-order predicate logic augmented with tense operators, and in particular several of the mismatches between tense logic and the kinds of tense and aspect systems found in English and German. He proposed a tense logic that might be closer to natural language, for which he introduced the influential notion of “reference time”.

(Whiteboard): the 3-way distinction among Speech Time, Reference Time, and Event Time.

Examples: Simple present:	$S = R = E$	I see him.
Simple past:	$R < S, E = R$	I saw him.
Present perfect:	$R = S, E < R$	I have seen him.
Past perfect:	$R < S, E < R$	I had seen him

The idea helped, but didn’t solve all the problems linguists (and philosophers) could identify.

Davidson (1967) introduced the idea that sentences are indefinite descriptions of eventualities.

Davidson’s proposed analysis (within first-order logic) for (1) is (2)¹.

- (1) a. Jones buttered the toast
b. Jones buttered the toast slowly in the bathroom with a knife.
- (2) a. $\exists e [\text{BUTTER}(e,j,t) \wedge \text{BEFORE}(e, \text{now})]$
b. $\exists e [\text{BUTTER}(e,j,t) \wedge \text{SLOWLY}(e) \wedge \text{IN}(e,b) \wedge \text{WITH}(e,k) \wedge \text{BEFORE}(e, \text{now})]$

¹ I’ve added the last clause to indicate past tense; Davidson was focusing on the treatment of adverbial modifiers and not explicitly addressing tense.

This was the first introduction of the “event argument”, which adds one more argument to all (or perhaps not all) verbs. A verb like *butter* now has not just a subject and an object argument, but also an event argument. Two good books to read about the advantages the event argument provides and the new kinds of questions and issues it raises are Parsons (1990) and Landman (2000). There are many articles, books, and anthologies of works by linguists exploring issues related to the event argument as a real syntactic and semantic “argument”; see, for instance (Bach et al. 1995, Kratzer 1995, Kratzer 1998, Kratzer 2004, Partee 1984, Partee 1991a, Rothstein 1998, Tenny and Pustejovsky 2000).

3. Montague

Among Montague’s many important innovations, he combined tense logic and modal logic, and expanded them beyond application just to whole sentences, but to the full range of semantic types, through his typed intensional logic, of which we have seen little pieces. One can define an adjective like *former* in his system, for instance, and not only a sentence-level operator like Past Tense. Montague also built in some elements of formal pragmatics to be able to account for *indexical* elements like *I*, *now*, *here* and the Present Tense.

Indexicals: words or morphemes whose interpretation depends on the context of utterance. Indexicals are closely related to *demonstratives*, and the terms are not always sharply distinguished. For a demonstrative like *this*, *that*, *there*, *then*, *he*, *she*, one needs to know more than just the situation of the utterance but also the intentions of the speaker. But sometimes the intentions of the speaker are just considered part of the context of utterance.

Kamp on now: Before Kamp’s work (Kamp 1968, 1971), it had not been noticed that there is a distinction between Present Tense and *now*. But Kamp’s work opened up interesting perspectives on the behavior of tenses in embedded contexts, where they are often “anaphoric” in various ways. Kamp noted that the Present Tense doesn’t always “refer” to the speech time, but *now* (with a few special exceptions) does. The following examples are not Kamp’s own, but related ones that make his point. ((3) is from <http://semantics-online.org/lisa311/>, which I believe is from Kai von Fintel’s class in the 2005 Linguistic Institute held at MIT.)

- (3) a. Once everyone alive hadn’t been born yet. (Ambiguous; contradictory on one reading.)
b. Once everyone now alive hadn’t been born yet. (Unambiguous, no contradictory reading.)

There is no present tense in (3). A similar example with explicit present tense is (4).

- (4) a. Someday Susan will marry a man she loves.
b. Someday Susan will marry a man she loves now.

Like (3a), (4a) is ambiguous: the present tense can either refer to the present time (in which case (4a) and (4b) have the same truth conditions), or it can be analogous to a pronoun, picking up the time of event described in the main clause – a man she loves then.

Or compare (5a) and (5b):

- (5) a. Will he ever admit that he is wrong?
b. Will he ever admit that he is wrong now?

More on tense and anaphora, and tenses acting sometimes “referentially” and sometimes like “bound variables”: (Abusch 1988, Abusch 1997, Bäuerle 1979, Kratzer 1998, Partee 1973, Partee 1984). Interesting work on the pragmatic element in the selection of the relevant reference time for evaluating nominal predicates (cf. the interesting temporal interpretation problems in sentences like *John met his wife when they were both 5 years old*: in principle, *wife*

could be interpreted under the past-tense operator, but we evidently interpret it as ‘wife now’, not ‘wife then’): (Enç 1981, Enç 1986, Enç 1987, Musan 1997).

4. Aspect: basics

4.1. Lexical aspect, Aktionsart.

Building on work by Aristotle, Kenny and then Vendler proposed various tests for classifying different sorts of verbs according to their behavior in various kinds of temporal inference patterns. The best basic reference for linguists on this work is Dowty (1979). Other linguists including Bach, Dahl, Smith, and Klein have built on this work and extended it. Dahl and Comrie are non-formal semanticists who have made major contributions to the typological study of aspect.

Event-predicates vs process-predicates and state-predicates:

Test: Does *John is verb-ing* entail *John has verb-ed*?

Process and state predicates: Yes. (*run, smile, live in Texas*).

Event predicates: No. (*build a house, die, win the race, reach the top, buy a car*)

Test: Co-occurrence with in 3 minutes/hours/days/weeks vs. for 3 minutes/hours/days/weeks.

Processes and some states: good with for-adverbials, not (except with a different reading) with in-adverbials. (The reading of in-adverbials that is relevant for the test is a reading that tells how long the event took. The irrelevant reading is a reading that means “sometime within the interval that starts now, or at some given reference point, and ends 3 minutes/hours/etc from that point.”)

Extended events: Good with in-adverbials, bad with for-adverbials.

Instantaneous events: Bad with both.

Some “atemporal predicates”: Bad with both. (So ‘statives’ have to be divided; there are lots of problems in trying to fit all sorts of states into suitable aspectual categories.)

Examples:

- (6) a. Process: John worked for 3 hours. *John worked in 3 hours.
b. Extended event: *John built the house for 3 weeks. OK: John built the house in 3 weeks.
c. Aspectually ambiguous: John washed the dishes for 20 minutes. John washed the dishes in 20 minutes. (‘wash the dishes’ as a kind of process vs. as a kind of event)
d. Instantaneous event: The rock hit the window *for three minutes/ *in three minutes (ignore the irrelevant reading, “in three minutes from the time when ...”).

Semantic analysis:

In classic temporal logic, sentences were true at ‘moments’, and there was no good way, for instance, to talk about the relation between *build a house* and *be building a house*. Bennett and Partee introduced *interval semantics*, allowing that a basic sentence might be true at a moment (*the rock hit the window*) or at an interval (*John build a house*). The later widespread adoption of *event semantics*, with an event argument as first proposed by Davidson, made it even easier to analyze tense and aspect. One of the most influential ways to formalize the distinctions in Aktionsart, or lexical aspect, builds on analogies with the distinction between mass nouns (analogous to process predicates) and count nouns (analogous to event predicates): see (Link 1983, Link 1987), collected in (Link 1998), also (Bach 1986, Dowty 1991, Krifka 1987, Krifka

1992, Krifka 1998, Partee 1999), for more on this analysis and on the connections between them in the dual aspectual classifications of “incremental theme” verbs like *read, eat, write, build*.

- (7) a. John ate an apple in 10 minutes/ *for 10 minutes (‘quantized’ count noun, telic)
b. John ate soup for 10 minutes/ *in 10 minutes (‘non-quantized’ mass noun, atelic)
c. John ate apples for 10 minutes/ *in 10 min (‘non-quantized’ plural noun, atelic)
d. John ate two apples *for 10 minutes/ in 10 minutes (‘quantized’ plural noun, telic)

In general, work on *lexical aspect*, or *Aktionsart*, is concerned with the ‘temporal constitution’ of eventualities and its reflection in event predicates: are eventualities conceived of as bounded (telic) or unbounded (atelic), as having duration, as having definite endpoints/ beginning points, etc. *Viewpoint aspect*, which we look at next, is more about the various kinds of aspectual modifications that can be made to the basic predicates, by the addition of various aspectual operators. But the line between them isn’t always clear! And since languages as well as theories differ, terminology is not always consistent! Watch out!

4.2. Viewpoint aspect.

What is the difference between English simple past and present perfect?

- (8) a. Mary ate three apples.
b. Mary has eaten three apples.

No obvious difference in truth conditions. Kamp (Kamp 1979, Kamp and Rohrer 1983, Kamp and Reyle 1993) argued on the basis of such distinctions as the distinction between French *Passé Composé* and *Passé Simple* that truth conditions are not enough; something analogous to Reichenbach’s reference time is also needed. (In his *Discourse Representation Theory*, important weight is given to a representational level containing “discourse entities”, which may include events and times as well as more entity-like entities, for capturing these things.)

Klein (1994) has a nice account that draws both on the Reichenbachian tradition and on work in formal semantics. He introduces the notion of “Topic Time” where Reichenbach had “Reference Time” and connects it to independently motivated notions of Topic in linguistics. Then he makes the following generalizations:

TENSE concerns the relationship of Topic Time to Utterance Time.

(Viewpoint) ASPECT concerns the relationship of Event Time to Topic Time.

Progressive aspect: Topic time is within event time. (“looking at event from within”)

Perfective aspect: Event time is within topic time. (“looking at event as a completed whole”)

Perfect aspect: Event time precedes topic time. (“looking at event from a later perspective”)

5. More progress and issues in tense and aspect: a tiny sample.

5.1. Stage-level and individual-level predicates.

(9) Carlson (1977, 1980): the interpretation of bare plurals. See also Diesing 1992.

- (a) Opera tickets are available. (Stage-level: existential interp.)
(b) Opera tickets are expensive. (Indiv-level: generic interp.)

(10) Interpretation: "Stage-level" predicates express properties of spatio-temporal manifestations of individuals, typically "temporary" properties, "episodic". "Individual-level" predicates

express properties of individuals, including "kinds". Bare plurals denote kinds; predicating a stage-level property of a kind gets interpreted as saying that the kind has instantiations manifesting the given property.

Other structures sensitive to stage-level/individual-level predicates (see Kratzer (Kratzer 1995) and Diesing (Diesing 1992)):

(11) Adjectival complements of perception verbs (Siegel 1976a, Siegel 1976b)

- (a) Mary saw Bill naked. (Stage-level)
- (b) *Mary saw Bill intelligent. (Individual-level)

(12) Existential there-construction (Milsark 1974, Milsark 1977)

- (a) There were dogs available. (st-level)
- (b) *There were dogs intelligent. (i-level)

5.2. The ontology of entities and events.

Event vs. *entity* as a matter of perspective; frequently interchangeable.

Via nominalization, virtually anything can be regarded as an entity or individual (Cresswell 1973), and we tend to nominalize when we want to talk about anything, including *events*, *times*, *actions*, etc.

Less typical combinations: NPs with stage-level modifiers (13), and sentences with i-level main predicates (14) (Partee 1991b)

(13) How can there be a cherry that has no stone? ... A cherry when it's blooming, it has no stone.

(14) A quadratic equation usually has two different solutions.

References

Note: Robert Binnick maintains a large on-line bibliography of work on tense and aspect. It can be found at www.utoronto.ca/~binnick/TENSE/. The site also includes links to downloadable abstracts and papers, and links to sites of others working on tense and aspect.

Abusch, Dorit. 1988. Sequence of tense, intensionality, and scope. In *WCCFL 7: Proceedings of the Seventh West Coast Conference on Formal Linguistics*, ed. Hagit Borer. Stanford, CA: CSLI Publications.

Abusch, Dorit. 1997. Sequence of Tense and Temporal {em De Re}. *Linguistics and Philosophy* 20:1--50.

Bach, Emmon. 1981. On time, tense and aspect: An essay in English metaphysics. In *Radical Pragmatics*, ed. Peter Cole, 63-81. New York: Academic Press.

Bach, Emmon. 1986. The algebra of events. *Linguistics and Philosophy* 9:5-16. Reprinted in Paul Portner and Barbara H. Partee, eds., *Formal Semantics: The Essential Readings*, Oxford: Blackwell (324-333).

Bach, Emmon, Jelinek, Eloise, Kratzer, Angelika, and Partee, Barbara H. 1995. Introduction. In *Quantification in Natural Languages*, eds. Emmon Bach, Eloise Jelinek, Angelika Kratzer and Barbara H. Partee, 1-11. Dordrecht: Kluwer.

Bäuerle, Rainer. 1979. *Temporale Deixis – Temporale Frage*. Tübingen: Narr.

Bennett, Michael, and Partee, Barbara. 1972. *Toward the Logic of Tense and Aspect in English*. Santa Monica, California: System Development Corporation; reprinted with an Afterword by Indiana University Linguistics Club, Bloomington, 1978. Reprinted in Partee, Barbara H. 2004.

- Compositionality in Formal Semantics: Selected Papers by Barbara H. Partee*. Oxford: Blackwell Publishing, 59-109.
- Carlson, Greg. 1977. A unified analysis of the English bare plural. *Linguistics and Philosophy* 1:413-458. Reprinted in Portner and Partee, eds., 2002, 35-74.
- Carlson, Gregory N. 1980. *Reference to Kinds in English*. New York: Garland Publishing Co.
- Comrie, Bernard. 1976. *Aspect*. Cambridge: Cambridge University Press.
- Comrie, Bernard. 1985. *Tense*. Cambridge: Cambridge University Press.
- Cresswell, M. J. 1973. *Logics and Languages*. London: Methuen.
- Dahl, Östen. 1985. *Tense and Aspect Systems*. Oxford: Basil Blackwell.
- Davidson, Donald. 1967. The logical form of action sentences. In *The Logic of Decision and Action*, ed. Nicholas Rescher, 81-95. Pittsburgh: Pittsburgh University Press.
- Diesing, Molly. 1992. *Indefinites*. Cambridge, MA: MIT Press.
- Dowty, David. 1979. *Word meaning and Montague grammar. The semantics of verbs and times in Generative Semantics and in Montague's PTQ*: Synthese Language Library. Dordrecht: Reidel.
- Dowty, David. 1991. Thematic proto-roles and argument selection. *Language* 67:547-619.
- Enç, Mürvet. 1981. Tense without Scope: An Analysis of Nouns as Indexicals, University of Wisconsin, Madison.
- Enç, Mürvet. 1986. Towards a Referential Analysis of Temporal Expressions. *Linguistics and Philosophy* 9:405-426.
- Enç, Mürvet. 1987. Anchoring conditions for tense. *Linguistic Inquiry* 18:633-657.
- Hughes, George, and Cresswell, Max. 1968. *An Introduction to Modal Logic*. London: Methuen.
- Hughes, George, and Cresswell, Max. 1968. *A New Introduction to Modal Logic*. London: Routledge.
- Kamp, Hans. 1971. Formal Properties of Now. *Theoria* 37:227-273.
- Kamp, Hans. 1979. Events, Instants and Temporal Reference. In *Semantics from Different Points of View*, eds. Rainer Bäuerle, Urs Egli and Arnim von Stechow. Berlin: Springer.
- Kamp, Hans, and Rohrer, Christian. 1983. Tense in Texts. In *Meaning, Use, and Interpretation of Language*, eds. Rainer Bäuerle, Christoph Schwarze and Arnim von Stechow, 250-269. Berlin: de Gruyter.
- Kamp, Hans, and Reyle, Uwe. 1993. *From discourse to logic. Introduction to model theoretic semantics of natural language, formal logic, and Discourse Representation Theory*. Dordrecht: Kluwer.
- Kamp, Johan Anthony Willem (Hans). 1968. Tense Logic and the Theory of Linear Order, Philosophy, UCLA: Ph.D. dissertation.
- Kenny, Anthony. 1963. *Action, Emotion and Will*. London: Routledge and Kegan Paul.
- Klein, Wolfgang. 1994. *Time in Language*. London and New York: Routledge.
- Kratzer, Angelika. 1995. Stage-level and individual-level predicates. In *The Generic Book*, eds. Gregory N. Carlson and Francis Jeffrey Pelletier, 125-175. Chicago: The University of Chicago Press [original publication in 1989: Stage-Level and Individual-Level Predicates. In *Papers on Quantification*, ed. Emmon; Kratzer Bach, Angelika; Partee, Barbara: Department of Linguistics, University of Massachusetts at Amherst].
- Kratzer, Angelika. 1998. More structural analogies between pronouns and tense. In *SALT VIII: Proceedings of the Second Conference on Semantics and Linguistic Theory 1998*, eds. Devon Strolovitch and Aaron Lawson, 92-110. Ithaca, N.Y.: CLC Publications, Department of Linguistics, Cornell University.
- Kratzer, Angelika. 2004. Telicity and the meaning of objective case. In *The Syntax of Time*, eds. Jacqueline Guéron and Jacqueline Lecarme. Cambridge, MA: MIT Press.
- Krifka, Manfred. 1987. Nominal reference and temporal constitution: towards a semantics of quantity. In *Studies in Discourse Representation Theory and the Theory of Generalized Quantifiers (= GRASS Series No. 8)*, eds. Jeroen Groenendijk, Martin Stokhof and Frank Veltman, 153-173. Dordrecht: Foris.
- Krifka, Manfred. 1992. Thematic relations as links between nominal reference and temporal constitution. In *Lexical Matters*, eds. Ivan Sag and Anna Szabolcsi, 29-53. Stanford: CSLI.
- Krifka, Manfred. 1998. The origins of telicity. In *Events and grammar*, ed. Susan Rothstein, 197-235. Dordrecht: Kluwer.

- Landman, Fred. 2000. *Events and Plurality: The Jerusalem Lectures*: Studies in Linguistics and Philosophy v.76. Dordrecht: Kluwer.
- Link, Godehard. 1983. The logical analysis of plurals and mass terms: A lattice-theoretical approach. In *Meaning, use and the interpretation of language*, eds. R. Bäuerle, C. Schwarze and A. von Stechow, 303-323. Berlin, New York: Walter de Gruyter. Reprinted in Link, Godehard. 1998. *Algebraic Semantics in Language and Philosophy*: CSLI lecture notes No. 74. Stanford, Calif.: CSLI Publications. pp.11-34. Reprinted in Portner and Partee, eds., 2002, 127-146.
- Link, Godehard. 1987. Algebraic semantics of event structures. In *Proceedings of the Sixth Amsterdam Colloquium*, eds. Jeroen Groenendijk, Martin Stokhof and Frank Veltman, 243-262. Amsterdam: ITLI. Reprinted in Link 1998, pp. 251-268.
- Link, Godehard. 1998. *Algebraic Semantics in Language and Philosophy*: CSLI lecture notes No. 74. Stanford, Calif.: CSLI Publications.
- McCoard, James. 1978. *The English Perfect: Tense-Choice and Pragmatic Inferences*. Amsterdam: North-Holland Press.
- Milsark, Gary. 1974. Existential sentences in English, MIT: Ph.D. dissertation.
- Milsark, Gary. 1977. Toward an explanation of certain peculiarities of the existential construction in English. *Linguistic Analysis* 3:1-29.
- Montague, Richard. 1970. Pragmatics and intensional logic. *Synthese* 22:68-94. Reprinted in Montague 1974, 119-147.
- Musan, Renate. 1997. *On the Temporal Interpretation of Noun Phrases*. New York: Garland.
- Ogihara, Toshiyuki. 1996. *Tense, Attitude, and Scope*. Dordrecht: Kluwer.
- Parsons, Terence. 1990. *Events in the Semantics of English. A Study in Subatomic Semantics*. Cambridge MA: MIT Press.
- Partee, Barbara. 1973. Some structural analogies between tenses and pronouns in English. *The Journal of Philosophy* 70:601-609. Reprinted in Partee, Barbara H. 2004. *Compositionality in Formal Semantics: Selected Papers by Barbara H. Partee*. Oxford: Blackwell Publishing, 50-58.
- Partee, Barbara. 1984. Nominal and Temporal Anaphora. *Linguistics and Philosophy* 7:243-286.
- Partee, Barbara. 1991a. Adverbial quantification and event structures. In *BLS 17: Proceedings of the Seventeenth Annual Meeting of the Berkeley Linguistics Society*, eds. Laurel Sutton, Christopher Johnson and Ruth Shields, 439-456. Berkeley, CA: Berkeley Linguistics Society.
- Partee, Barbara. 1991b. Adverbial Quantification and Event Structures. *BLS* 17.
- Partee, Barbara H. 1999. Nominal and temporal semantic structure: aspect and quantification. In *Prague Linguistics Circle Papers, v.3*, eds. E. Hajicová, T. Hoskovec, O. Les"ka, P. Sgall and Z. Skoumalová, 91-108. Amsterdam: John Benjamins Pub. Co.
- Prior, A. 1967. *Past, Present, and Future*. Oxford: Oxford University Press.
- Reichenbach, Hans. 1947. *Elements of Symbolic Logic*. London: Macmillan.
- Rothstein, Susan Deborah ed. 1998. *Events and Grammar. Studies in linguistics and philosophy; v. 70*. Dordrecht; Boston: Kluwer Academic.
- Siegel, Muffy. 1976a. Capturing the Russian adjective. In *Montague Grammar*, ed. Barbara H. Partee, 293-309. New York: Academic Press.
- Siegel, Muffy E.A. 1976b. Capturing the Adjective, University of Massachusetts: Ph.D. dissertation.
- Smith, Carlota. 1991. *The Parameter of Aspect*. Dordrecht: Kluwer.
- Tenny, Carol, and Pustejovsky, James eds. 2000. *Events as Grammatical Objects: The Converging Perspectives of Lexical Semantics, Logical Semantics and Syntax*. vol. 100. *CSLI Lecture Notes*. Stanford: CLSI Publications.
- Vendler, Zeno. 1957. Verbs and Times. *Philosophical Review* 66:143-160. Reprinted in Z. Vendler (1967), *Linguistics in Philosophy*, Ithaca: Cornell University Press, 97-121.
- Vendler, Zeno. 1967. Verbs and Times. In *Linguistics in Philosophy*, ed. Zeno Vendler, 97-121. Ithaca: Cornell University Press.
- von Stechow, Arnim. 1995. On the proper treatment of tense. In *SALT V: Proceedings of the Fifth Conference on Semantics and Linguistic Theory 1995*, eds. Mandy Simons and Teresa Galloway, 362-386. Ithaca, N.Y.: CLC Publications, Department of Linguistics, Cornell University.