Scalar Complexity and the Structure of Events

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1 Introduction

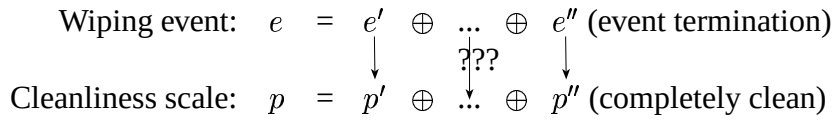
- **Telicity** of change-of-state predicate has been argued to arise from a homomorphism between the event and a **bounded** participant, e.g. incremental themes, paths, and properties (cf. Krifka (1989, 1992, 1998), Dowty (1991), Tenny (1994), Jackendoff (1996), Kratzer (to appear)).

- In recent work Hay et al. (1999), Kennedy and Levin (2001) correlate telicity with the boundedness of a scale of change of a participant (generalizing over previous approaches). The scale is **inherent** in inherent change-of-state (1a-b) and **overt** in resultatives (1c).

  (1) (a) John ate the apple.
  (Progress of event ⇔ **volume** of apple; event ends when volume=0)
  (b) John hiked the Barton Springs trail.
  (Progress of event ⇔ **position** of agent on path; event ends at position=end of path)
  (c) John wiped the table clean.
  (Progress of event ⇔ **cleanliness** of the table; event ends at cleanliness=100% clean)

- Telicity comes from a **coextensive homomorphism** between the event and scale.

  (2) (a) John wiped the table clean.
  (b)



- Boundedness of the event arises from boundedness of the scale, e.g. when the result XP is explicitly bounded (i.e. a goal-marking PP, a non-gradable Adjs, certain gradable Adjs, etc. (Wyngaerd 2001, Beavers 2002a, Wechsler, to appear)).[1]

- However, boundedness doesn't explain the following distributional differences:[2]

  (3) (a) The outlaw knocked/beat the sheriff senseless.
  (b) The outlaw knocked/*beat the sheriff dead. (cf. Wechsler (to appear))
  (c) The flames will lick the room to/into a semblance of comfort... [CORPUS : *to*]
  (d) John stunned Mary into/??to silence. [CORPUS] (cf. Beavers (2002a))

- All of these result XPs yield telic predicates, but *senseless*/*into* PPs have wider distributions.

- I claim these distinctions are due to **durativity** and scalar **gradability**.

[1] Technically speaking telicity is a property of predicates, i.e. predicates impose bounds on events/scales, and not a property of events (see for instance Krifka (1998)).

[2] The data from Beavers (2002a) marked [CORPUS] are from a corpus of resultatives including about 1,700 with result PPs collected from various print media by Beth Levin, although some examples have been modified for brevity or clarity.

(4) **Claim #1:** The durativity of any change-of-state event is directly correlated with the gradability of the scale of change:

Event		Scale
Durative	$\leftrightarrow$	Gradable
Punctual	$\leftrightarrow$	Non-gradable

Claim #2: The appropriate homomorphism to describe this is an abstract **movement relation**, which captures both this correlation and the telicity/boundedness correlation.

- This is based on previous work on prepositional resultatives (Beavers, 2002a,b). Steve Wechsler (2002, to appear) arrived at similar conclusions working primarily on adjectival resultatives, and I draw heavily on his insights even though our models differ in important respects.

2 Beyond Telicity - Durativity and Some Observations about Resultatives

Durativity is the "subdividability" of the event, i.e. whether or not it has discernable subparts (Engelberg, 1999, 2000, Beavers, 2002a):[3]

- Intuitively, verbs like *notice* just entail a transition, from noticed to not noticed, whereas a verb like *build* entails a process of building with subevents.

(5) Future+*for/in* test (durative+*for/in* have both a duration and *after* reading; punctual+*in* has only the *after* reading):[4]

(a) John will build the house in two years. (duration/*after* $\Rightarrow$ durative)

(b) John will notice the painting in five minutes. (*after* $\Rightarrow$ punctual)

(c) John will tap the table once in five minutes. (*after* $\Rightarrow$ punctual) (Kearns, 2000)

(6) *Stop/Finish*-test (*stop/finish* only good with durative predicates).

(a) John finished building the house. (durative)

(b) #John finished noticing the painting. (punctual)

- Some predicates are underspecified, e.g. semelfactives may be punctual or iterative and some non-semelfactives allow either reading (though they may typically be durative or punctual).

(7) (a) The settler will cross the desert in two hours. (duration : durative)

(b) The settler will cross the border in two hours. (*after* : punctual)

(c) John will tap the table for two hours. (duration : durative)

(d) John will tap the table once in five minutes. (*after* : punctual)

- We can now explore the data in (3) on grounds of durativity.

- Wechsler (2002, to appear) noticed the following distinctions among adjectival result XPs.[5]

(8) (a) The sheriff beat the outlaw senseless/black and blue. (V=atelic)

[3]This definition makes durativity a property of events, not predicates, although predicates encode sortal constraints on durativity. Again, this distinction is not relevant for this discussion.

[4]This test works in the past tense as well but the future tense seems to draw out the distinction more clearly.

[5]I focus here on what Wechsler (1997) calls "control" resultatives, where V and the XP share an argument, as opposed to "ECM" resultatives (involving fake objects/reflexives) where the V is not subcategorized for the subject of the XP.

(b) The sheriff battered the outlaw senseless/black and blue. (V=telic)
(c) ??The sheriff beat/battered the outlaw dead. (V=atelic/telic)
(d) The sheriff shot/knocked the outlaw dead. (V=semelfactive)

- All of these Adjs are bounded and telicity doesn't govern their distribution, but durativity does:

(9) (a) The sheriff will beat/batter the outlaw senseless in five minutes. (duration : durative)
(b) The sheriff will shoot the outlaw dead in five minutes. (*after* : punctual)
(c) The sheriff will knock the outlaw senseless in five minutes. (duration/*after*).

∴ *Dead* requires the verb it combines with to be punctual; the others impose no constraints.

- Beavers (2002a) noted similar distinctions between *to* and *into* prepositional result XPs:

(10) (a) John walked to/into the Harvard bookstore. (V=atelic) [CORPUS]
(b) Kim polished the shoes into/to a sombre, unscuffed shine. (V=telic) [CORPUS]
(c) ... the blue vein in the corner of his right eye so puffed and writhing that she longed to press it with her own dead-cold fingers, to kiss it to/into calmness, if that were possible. (V=semelfactive) [CORPUS : *to*]
(d) The gray sky dimmed into/to dusk and the snow started up again. (V=telic/atelic (DA)) [CORPUS : *into*]
(e) I was startled into/??to indiscretion. (V=telic) [CORPUS]
(f) I ducked into/*to the cave. (V=telic)

- Durativity but not telicity correlates with these distributional differences:

(11) (a) The gray sky will dim into/to dusk in ten minutes. (duration : durative)
(b) Mary will startle me into indiscretion in six minutes. (*after* : punctual)
(c) I will duck into the cave in two minutes (*after* : durative).

∴ Here we see that *to* requires a durative predicate but *into* doesn't seem to care.

- There is an interesting contrast between *dead* and *to death*.

(12) (a) The sheriff will shoot the outlaw dead in five minutes. (*after* : punctual)
(b) The sheriff will shoot the outlaw to death in five minutes. (duration : durative)

- While *dead* requires one shot, *to death* requires multiple shots, thus the weirdness of (13b).

(13) (a) After firing several shots, the sheriff finally shot the outlaw dead.
(b) #After firing several shots, the sheriff finally shot the outlaw to death.

∴ We see the following durativity constraints:

dead	→	punctual event
to	→	durative event
All others	→	durative or punctual event

- But why should this be the case, i.e. what properties of scalars yield this distribution?

3 The Durativity/Gradability Correlation

Gradability is the subdividability of a scale, i.e. whether it denotes a binary or multi-valued scale (Sapir, 1944, Bolinger, 1972, Kennedy, 2001).

- Intuitively, *dead* just describes a point on a non-gradable scale (you're dead or not dead). *Flat* describes a point on a gradable scale: there can be many degrees of *flatness* leading up to *flat*.

(14) Comparative morphology test for Adjectives (Kennedy and McNally, 2004):

(a) Non-gradable adjectives do not take comparative morhpology:
#deader, #more dead

(b) Gradable Adjs do take comparative morphology:
dirtier, wetter, straighter, more bent

(15) Appears to work for prepositions, too (roughly location vs. directional Ps):

(a) Non-gradable Ps do not take comparative morphology:
#Bill is more at the store than John, #This fly is more on the wall than that one

(b) Gradable Ps do take comparative morphology:
This road cuts more into the woods than the highway, John walked more to/over the river than Bill

- Now we can now state the durativity/gradability correlation I claim exists in the introduction.

Adjectival Result XPs: Wechsler attributes the distribution of adjectival XPs we saw before to durativity/gradability.

(16) (a) *dead* $\rightarrow$ punctual event

(b) All other Adjs $\rightarrow$ durative or punctual event

(b) more senseless/black and blue/sillier/#deader/#more dead.

- Wechsler proposes the following correlation restrictions relative to durativity:

(17) (a) Durative verb + (bounded) gradable adjective

(b) Punctual verb + non-gradable adjective

- However, the following is also possible:

(18) (a) John stamped the tulips flat (with one fell movement of his foot).

(b) John slammed the door shut (in a violent burst).

(c) flatter, more shut

(19) Punctual Verb + (bounded) gradable adjective: punctual reading of event.

- The gradable Adj is understood non-gradably (*flat* vs. *not flat*).
- Note a subclass of (17) with semelfactives:

(20) (a) John stamped the tulips flat.

(b) John shot the outlaw dead.

(21) (a) Semelfactive + (bounded) gradable adjective: punctual or iterative reading
(b) Semelfactive + non-gradable adjective: punctual reading

- Durativity ensures gradability of the scale and punctuality ensures non-gradability, although it appears that gradable Adjs are actually underspecified for gradability.

Prepositional Result XPs: We've already seen the following cooccurrence restrictions for *to*/*into*:

(22) (a) *to* $\rightarrow$ durative event
(b) *into* $\rightarrow$ durative or punctual
(b) more to/into the lake

- Note again the following subclass of (22):

(23) (a) John shot the sheriff to death.
(b) John slapped the generator into life.

(24) (a) Semelfactive verb + PP[*to*]: iterative reading
(b) Semelfactive verb + PP[*into*]: iterative or punctual reading

- Non-gradable Ps appear to impose punctuality constraints:

(25) (a) John will slap the poster on the wall in five minutes. (*after*)
(b) John will roll the poster onto/??on the wall.
(c) John will push/roll the cart at the lamppost in five minutes (*after*).

Summary:

Dynamic V	Non-grad. Adj/PP	Max. Endpoint Adj/PP[*into*]	PP[*to*]
Durative	×	✓	✓
Semelfactive	✓	✓	✓
	(punctual)	(iterative or punctual)	(iterative)
Strictly Punctual	✓	✓	×

Conclusion:

Reading of Predicate		Reading of result XP
Durative	$\leftrightarrow$	Gradable
Punctual	$\leftrightarrow$	Non-gradable

- Resultatives from the BNC support this: *dead* had 434 occurrences as a result XP, all with punctual Vs. Likewise there were 489 occurrences of *to death* and 45 occurrences of *to sleep*, all with durative Vs. Other result XPs had mixed possibilities (e.g. *shut* occured 202 times, 97 with necessarily punctual Vs, 91 with necessarily durative Vs) (Beavers, 2002a, Boas, 2003).

4 Durativity and Inherent Scales of Change

- Even without overt scalar XPs, change-of-state verbs show durativity/gradability correlations.
- Some Vs may be durative or punctual *with a commensurate change in scalar gradability*.

(26) (a) [In a context of turning a knob while the lights dim incrementally]
The stagehand will lower the house lights in five minutes. (duration : durative)
(b) [In a context of flicking a switch once that cuts the power to the lights by 3/4]
The stagehand will lower the house lights in five minutes. (*after* : punctual)

(27) (a) [In a context of John standing just outside the entrance of a cave]
John will enter the cave in 30 seconds. (*after* : punctual)
(b) [In a context of John standing outside a tunnel that leads into the cave]
John will enter the cave in 30 seconds. (duration : durative)

Conclusion: Thus the correlation seen for result XPs more generally applies to all change-of-state.

Reading of Predicate		Reading of inherent/overt scale
Durative	$\leftrightarrow$	Gradable
Punctual	$\leftrightarrow$	Non-gradable

5 A Complete Event Homomorphism Model

- I've argued above that durativity is separate from telicity, but we can nonetheless understand the durativity/gradability correlation in terms of the same homomorphism, sufficiently constrained.
- Consider just motion events (a subtype of change-of-state events):

(28) (a) John walked to the store. (Durative event/long path)
(b) John stepped into the office. (Punctual event/short path)

- We can verify a homomorphic relationship between the event and scale visually: John's progress to the store is measured overtly by the path he walks, whereas his progress into the office is marked by a transition from one point outside the office to another.
- Intuitively, these are basic properties of motion:
  - A motion event starts when the figure leaves the source point.
  - There may or may not be a middle bit he progresses along adjacently.
  - The event ends when he arrives at the goal point.
- Krifka (1998) argues that movement derives from Movement Relations (MR) that preserve:

Coextensiveness: The event begins at the beginning of the path and ends at the end of the path.

Adjacency: Progress from one part of the event to an adjacent part corresponds to progress from one part of the path to another (but not necessarily forward).

Mereological Complexity: Each part of the event maps surjectively to a part of the path.

- Mereological complexity isn't an isomorphism: two subevents could map to the same subpath.
- But as we've seen above beginnings map to beginnings, endings to endings, and middles to middles if they exist (regardless of the internal complexity of middle).
- Therefore, mereological complexity should be *isomorphic up to tripartite complexity*.
- There appears to be no difference between this and non-motion change-of-state:

  (29) (a) John built the house.
  (b) John noticed the painting.

- As John buils the (initially non-existent) house it progresses adjacently through different levels of builtness until finally reaching built, whereas for notice the change is a transition.[6]
- Following Beavers (2002a), I propose that all **dynamic predicates** impose a Generalized Movement Relation (GMR), an MR over all scales (including paths).

  (30) P is a dynamic predicate iff P predicates over an event e, a potentially affected theme x,[7] and a scale of change p, and P entails a GMR θ between e and p.

- Change-of-state is abstract motion in a very strict mereological sense (cf. Wechsler (to appear), which captures a similar generalization but doesn't impose mereological complexity).
- Telicity/boundedness correlations are again due to the coextensiveness of θ.
- Durativity/gradability follows from the preservation of mereological complexity and adjacency.

  (31) (a) There are two types of complexities:
  - Minimally Complex Objects (MCO) have two subparts (a beginning and end).
  - Complex Objects (CO) have at least three (a beginning, middle, and end).[8]

  (b) $MCO(e)$: Punctual event $MCO(p)$: Non-gradable scale
  $CO(e)$: Durative event $CO(p)$: Gradable scale

- All constraints imposed on e and p must be compatible according to θ:

  (32) $\theta(e,p) \rightarrow (MCO(e) \leftrightarrow MCO(p) \wedge CO(e) \leftrightarrow CO(p))$.

- These constraints arise from three places.

Lexical Constraints: Lexemes impose complexity constraints (which I'll assume for now are basic although they're presumably derivable from more basic lexical semantic properties):

(33)

Verb	Example	Constraints Imposed
Durative	*run*/*walk*	$CO(e)$
Underspecified (incl. semelfactives)	*tap*/*enter*	
Strictly punctual	*stun*/*die*	$MCO(e)$

[6] See Piñón (2000) for an analysis of *gradually* based on an analysis of change like this.

[7] This corresponds to "force recipient" (Rappaport Hovav and Levin, 2001), an entity that has potential for change.

[8] See Piñón (1997) for a formalization based on boundaries as separate mereological entities. While ontologically different (making different predictions about sorts of punctual events), my analysis could be recast in those terms.

(34)

Scalar	Example	Constraints Imposed
PP[*to*]	*to*	$CO(p)$
Gradable Adj/PP[*into*]	*dry*/*clean*/*into*/*onto*	
Non-gradable Adjs/Ps	*dead*/*stunned*/*on*/*off*	$MCO(p)$

Contextual Constraints: Contextual constraints must be commensurate with the lexical constraints, so that durative *walk* must occur in a durative context (or conversely with a complex path):

(35) (a) **Standing just outside the office:** *John walked into the office.
(b) **Standing just outside the office:** John stepped into the office.

Pragmatic Constraints: Likewise, pragmatics can influence the interpretation of an event or scale:

(36) (a) John drew a circle (#instantly).
(b) The (special new) printer drew a circle (instantly). (cf. Verkuyl (1993))

- Pragmatically, a human must draw in a sequenced manner and thus it must be durative, but context can trump pragmatics, if for instance there's a printer that draws a circle all at once.

Putting the Pieces Together: For a predicate P = V + scalars XP_1 ... XP_n ($n \geq 0$) in a context C:

- V, XP_1, ..., XP_n, C impose **telicity/boundedness** and **durativity/gradability** constraints.
- If none of V, XP_1, ... XP_n, or C impose constraints, pragmatics may determine some constraints by implicature (see Hay et al. (1999) on pragmatics and telicity).
- $\theta(e, p)$ preserves structure:

(37) Grammatical durativity/gradability correlations:
(a) V_{dur} + Gradable Scale (*John walked to the store*)

$$CO(e): \quad e = e' \oplus e'' \oplus e'''$$
$$\qquad\qquad\quad \downarrow \quad\; \downarrow \quad\; \downarrow$$
$$CO(p): \quad p = p' \oplus p'' \oplus p'''$$

(b) V_{punct} + Non-Gradable Scale (*John shot the sheriff dead*)

$$MCO(e): \quad e = e' \oplus e'''$$
$$\qquad\qquad\quad \downarrow \quad\; \downarrow$$
$$MCO(p): \quad p = p' \oplus p'''$$

(38) Ungrammatical durativity/gradability correlations:
(a) *V_{punct} + Gradable Scale (**John stunned Mary to silence*)

$$MCO(e): \quad e = e' \quad \oplus \quad e'''$$
$$\qquad\qquad\quad \downarrow \qquad\quad \downarrow$$
$$CO(p): \quad p = p' \oplus p'' \oplus p'''$$

Violates tripartite isomorphism

(b) *V_{dur} + Non-Gradable Scale (**The sheriff battered the outlaw dead*)

$$CO(e): \quad e = e' \oplus e'' \oplus e'''$$
$$\qquad\qquad\quad \downarrow \qquad\quad \downarrow$$
$$MCO(p): \quad p = p' \quad \oplus \quad p'''$$

Violates tripartite isomorphism

(39) Underspecified gradability compatible with different events:
(a) V_{dur}+Underspecified Scale (Iterative *John stamped the tulips flat*)

$$CO(e_1): \quad e_1 = e_1' \oplus e_1'' \oplus e_1''' \quad \neq \quad e_2' \oplus e_2''' = e_2 : MCO(e_2)$$
$$\qquad\qquad\quad \downarrow \quad\; \downarrow \quad\; \downarrow \qquad\qquad \searrow \quad\; \downarrow$$
$$\qquad\quad p = p' \oplus p'' \oplus p''' \quad = \qquad p'''' \oplus p''' \qquad (p'''' = p' \oplus p'')$$

(b) V_{punct}+Underspecified Scale (Punctual *John stamped the tulips flat*)

(40) Underspecified durativity compatible with different scales:

(a) $V_{underspecified}$+Gradable Scale (Durative *John entered the room*)		(b) $V_{underspecified}$+Non-Gradable Scale (Punctual *John entered the room*)	
$e = e' \oplus e'' \oplus e'''$	=	$e'''' \oplus e'''$	$(e'''' = e' \oplus e'')$
$CO(p_1): \; p_1 = p_1' \oplus p_1'' \oplus p_1'''$	$\neq$	$p_2' \oplus p_2'''$	$= \; p_2 : MCO(p_2)$

- The internal complexity of the middle events/paths is irrelevant, so long as coextensiveness and bipartite/tripartite isomorphism holds.
- In all cases coextensiveness holds, ensuring telicity.

6 Conclusion

- **Claim #1:** There appears to be a correlation between durativity and gradability.
- English deverbal adjectives (Kennedy and McNally, 2004) and cross-linguistic data support this claim (see Beavers (2003) on Japanese goal-marking, Kiparsky (2001) on Finnish partitive)
- **Claim #2:** An generalized movement relation explains not just this data but also telicity/boundedness correlations.
- Coextensiveness $\rightarrow$ telicity/boundedness correlation
- Mereological complexity (with adjacency) $\rightarrow$ durativity/gradability correlation, relative to two classes of objects: complex (tripartite) and minimally complex (bipartite).
- Telicity/durativity often thought of as basic categories of verbs.
- Perhaps θ is the basic property of dynamic verbs, it's what they're about: a measurable change. Inherent change-of-state/resultatives explicitly encode scales, atelic dynamic verbs don't.
- Therefore telicity/boundedness and durativity/gradability are not basic but are derivative of a more general concept.

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References

Beavers, John. 2002a. Aspect and the distribution of prepositional resultative phrases in English. LinGO Working Paper #2002-7, CSLI, Stanford University, Stanford, CA.

Beavers, John. 2002b. Aspect and the distribution of prepositional resultative phrases in English. Talk given at the 76th Annual LSA Conference, January, San Francisco.

Beavers, John. 2003. The semantics and polysemy of goal-marking postpositions in Japanese. In P. St. Dizier, ed., *Proceedings of the ACL-SIGSEM Workshop on the Linguistic Dimensions of Prepositions and their Use in Computational Linguistics Formalisms and Applications*. Toulouse, France.

Boas, Hans C. 2003. *A Constructional Approach to Resultatives*. Stanford, CA: CSLI Publications.

Bolinger, Dwight. 1972. *Degree Words*. The Hague: Mouton.

Dowty, David. 1991. Thematic proto-roles and argument selection. *Language* 67(3):547–619.

Engelberg, Stefan. 1999. 'Punctuality' and verb semantics. *Proceedings of the 23rd Annual Penn Linguistics Colloquium*, Univeristy of Pennsylvania Working Papers in Linguistics.

Engelberg, Stefan. 2000. The magic of the moment: What it means to be a punctual predicate. In *Proceedings of Berkeley Linguistics Society 25*, pages 109–121.

Hay, Jennifer, Christopher Kennedy, and Beth Levin. 1999. Scalar structure underlies telicity in degree achievements. In *The Proceedings of SALT IX*, pages 127–144.

Jackendoff, Ray. 1996. The proper treatment of measuring out, telicity, and perhaps event quantification in English. *Natural Language and Linguistic Theory* 14:305–354.

Kearns, Kate. 2000. *Semantics*. St. Martin's Press.

Kennedy, Christopher. 2001. Polar opposition and the ontology of 'degrees'. *Linguistics and Philosophy* 24:33–70.

Kennedy, Christopher and Beth Levin. 2001. Telicity corresponds to degree of change. Seminar presentation, Stanford University.

Kennedy, Christopher and Louise McNally. 2004. Scale structure, degree modification, and the semantics of gradable predicates. Unpublished ms., Northwestern University.

Kiparsky, Paul. 2001. The partitive revisited. Talk given at the Syntax of Aspect Workshop at Ben-Gurion University, July 2001.

Kratzer, Angelika. To appear. Telicity and the meaning of objective case. In J. Gu´eron and J. Lecarme, eds., *The Syntax of Tense*. MIT Press.

Krifka, Manfred. 1989. Nominal reference, temporal constitution and quantification in event semantics. In R. Bartsch, J. van Benthem, and P. van Emde Boas, eds., *Semantics and Contextual Expressions*, pages 75–115. Dordrecht: Foris Publications.

Krifka, Manfred. 1992. Thematic relations as links between nominal reference and temporal constitution. In I. Sag and A. Szabolcsi, eds., *Lexical Matters*. Stanford, CA: CSLI Publications.

Krifka, Manfred. 1998. The origins of telicity. In S. Rothstein, ed., *Events and Grammar*, pages 197–235. Dordrecht: Kluwer Academic Publishers.

Pi˜n´on, Christopher. 1997. Achievements in an event semantics. In *Proceedings of SALT VII*, pages 276–293.

Pi˜n´on, Christopher. 2000. Happening gradually. In *Proceedings of Berkeley Linguistics Society 26*. Berkeley, CA.

Rappaport Hovav, Malka and Beth Levin. 2001. An event structure account of English resultatives. *Language* 77(4):766–797.

Sapir, Edward. 1944. Grading: A study in semantics. *Philosophy of Science* (11):93–116.

Tenny, Carol L. 1994. *Aspectual Roles and the Syntax-Semantic Interface*. Dordrecht: Kluwer Academic Publishers.

Verkuyl, Henk J. 1993. *A Theory of Aspectuality: The Interaction between Temporal and Atemporal Structure*. Cambridge, UK: Cambridge Unversity Press.

Wechsler, Stephen. 1997. Resultative predicates and control. In *The Proceedings of the 1997 Texas Linguistics Society Conference*, pages 307–321. Texas Linguistic Forum.

Wechsler, Stephen. 2002. Resultatives, telicity, and the scalar structure of adjectives. Paper given at the Linguistic Society of America 76th Annual Meeting, San Francisco.

Wechsler, Stephen. To appear. Resultatives under the 'event-argument homomorphism' model of telicity. In N. Erteschik-Shir and T. Rapaport, eds., *The Syntax of Aspect*. Oxford: Oxford University Press.

Wyngaerd, Guido Vanden. 2001. Measuring events. *Language* 77(1):61–90.