

Argument Realization and Aspect at the Boundaries of Affectedness

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1 Introduction

- My research is largely in the field of lexical semantics, and in that work there have been a few larger driving questions I've explored:
 - What are the basic building blocks of verb meaning — what units are they broken down into and how are those units put together to form more complex meanings? What conditions are there on putting such pieces together?
 - How are those chunks of verb meaning interpreted truth conditionally? What are the contexts in which a word can and can't be used?
 - How is a verb's meaning related to its grammatical properties? Does truth conditional content tell us everything about a verb's morphosyntax, or are there mediating levels of representation? And what other non-semantic factors matter?
- Quite a lot of my earliest work was about taking supposedly grammatically relevant aspects of verb meaning (say, thematic roles) and figuring out what their semantics is, with a goal of then seeing whether the supposed grammatical correlates of those notions tied together consistently with the semantics we needed to analyze them (Beavers 2006(e)]TJ292.323254(m)-28.4505(r)

- Nowadays it is often treated as scalar: when patient changes in event it transitions in the degrees to which it holds some property along a scale of degrees, in a way that measures the progress of (Tenny 1994, Krifka 1998, Hay et al. 1999, Beavers 2008a, 2012, Kennedy and Levin 2008, Koontz-Garboden 2010, Rappaport Hovav 2014, *inter alia*).
- However, recent work has called into question whether scalar transition leads to a change:
 - Beavers and Koontz-Garboden (2017) showed that it's possible to have scalar change without a new state, owing to the possibility of scalar circularity (e.g. in motion).
 - Some work in nonculmination has posited sublexical modalities that bleed inferences of change (e.g. Bar-el et al. 2005, Tatevosov 2008, and Martin and Schäfer 2012, 2017, Beavers and Lee 2020; see also Dowty 1979 and Beavers 2011a).
- Given how much work on argument realization and aspect has relied on scalar change to final states, do we need to rethink the role of scalar change in these phenomena? Well, sorta:
 - #1 Scalar circularity and sublexical modality are technically orthogonal to change, but do call for a revised notion of affectedness for the phenomena it has been implicated in.
 - #2 The resulting theory of affectedness, like the original one, does actually figure into argument realization, as I'll show with data from English dispositional middles.
 - #3 Aspectual properties like (a)telicity end up as a lot more diverse phenomena.
- I'll recap prior work on scalar change and affectedness, and then turn to confounding patterns

- **Durativity** hinges on scalar complexity (Wechsler 2005, Beavers 2008a). Gradable scales favor durative readings and nongradable scales punctual readings (testable by whether a durational reading or just an *after* reading arises with *in an hour* modifiers; Kearns 2000):

(5) A predicate ✓

2.2 Affectedness and Argument Realization

- *Affectedness* is based on the FPR, but comes in degrees (Hopper and Thompson 1980) defined in terms of how specific the predicate is about ν 's progress on ν in ν (Beavers 2011b):

- (11) a. **Quantized change** (“telic change”): ν reaches *specific* state, on ν in ν ?
- Alice peeled the apple, #but nothing’s different about it.
 - Alice peeled the apple in/?for five minutes.
 - What happened to the apple is Alice peeled it.
- b. **Nonquantized change** (“atelic change”): ν reaches *some* state, on ν in ν ?
- Alice cut the apple, #but nothing’s different about it.
 - Alice cut the apple for/?in five minutes.
 - What happened to the apple is Alice cut it.
- c. **Potential for change** (“force recipient”): ν *might* reach some state, on ν in ν ?
- Alice hit the apple, but nothing’s different about it.
 - Alice hit the apple (for/?in an hour), but nothing’s different about it.
 - What happened to the apple is Alice hit it.
- d. **Unspecified for change** (“none of the above”): ν is a participant in ν ?
- Alice saw the apple, but nothing’s different about it.
 - Alice saw the apple for/?in an hour, but nothing’s different about it.
 - #What happened to the apple is Alice saw it.

- These definitions derive an implicational *Affectedness Hierarchy*:

$$(12) \text{ For all } \nu, q, \nu \sim \nu \rightarrow \text{non-}q \sim \nu \rightarrow p \sim \nu \rightarrow \nu \sim \nu$$

- #1 (12) explains why the predicates in (11) fall into subset relations in terms of standard affectedness tests, since if a test targets one degree of affectedness it targets all to its left:

(13) Diagnostics	<i>peel x</i>	<i>cut x</i>	<i>hit x</i>	<i>see x</i>
Telic	✓	×	×	×
Change entailed	✓	✓	×	×
<i>What happened to X is Y</i>	✓	✓	✓	×

- Inferences of change and telicity follow as above, but we need to define Cruse’s test:

$$(14) \text{ What happened to } \nu \text{ is } \nu \text{ is true iff } \nu \text{ has potential for change in } \nu .$$

- #2 Object/oblique alternations like the conative reflect decreasing affectedness (Beavers 2010):

- (15) a. Sally ate her lunch. \Rightarrow Sally ate at her lunch. (quantized \Rightarrow nonquantized)
 b. Sally cut the tomato. \Rightarrow Sally cut at the tomato. (nonquantized \Rightarrow potential)
 c. Sally hit the tomato. \Rightarrow Sally hit at the tomato. (potential \Rightarrow unspecified)

- The tests above point to these being the right categories, meaning these data give syntactic justification for the grammatical significance of affectedness.

3 Problems of Affectedness

3.1 Circular Change

- Canonical property change verbs (e.g. *cool*) entail that the event involves transition along a scale (16a), and the final state on the scale differs from the initial one (16b):

- (16) a. The soup just cooled, #but hasn't changed its temperature at all.
b. The soup just cooled, #and is still the same temperature it was before.

- But as Beavers and Koontz-Garboden (2017) show, motion verbs don't always require both a transition and a new result state. The following verbs require transition:

- (17) a. Kate slid/skied (#in place/without leaving her spot). (cp. (16a))
b. Kate climbed (the stairs)/climbed to the top, #but never left her initial spot.

- But they *don't* require a new final state:

- (18) a. Kate slid/skied (around and around), ending up exactly where she started.
b. Kate climbed (around and around), ending up exactly where she started.

- This is owing to possibility of *circular paths*, something uniquely possible in motion (e.g. you can't go "up" in temperature and double back). On the basis of this, Beavers and Koontz-Garboden (descriptively) distinguish **scalar change** from **scalar result**:

- (19) a. Scalar change: undergoing a transition along a scale in an event.
b. Scalar result: undergoing a transition along a scale in an event, resulting in having a different degree along the scale at the end of the event than at the beginning.

- Predicates with circular paths as in (17)-(18) entail scalar change but not scalar result.
- Yet accepting the possibility that a scale could circle back on itself, these predicates otherwise (a) describe transition and (b) place no constraints on where the patient ends up. This is *exactly* what **nonquantized change** was meant to account for, albeit with a circular path.
- There are also verbs that allow circular paths, but *do* require a specified end state. In (20) the specified end state happens to be the same as the initial, requiring a circular path:

- (20) The racecar lapped (around) the track, #but only made it halfway.

- Reaching a specific state is *exactly* the idea underlying **quantized change**, suggesting that even in the absence of scalar result (i.e. with a circular path) there can be quantized change.
- Finally, some motion verbs don't even require transition (see Bassa Vanrell 2013), plus are compatible with circular paths, constituting **potential for change** without scalar result:

- (21) Kate danced/floated/ran/jogged in place/without leaving her spot.

- Thus we have all the same degrees of affectedness as in §2 for simple scalar change verbs as we do for scalar result verbs, meaning scalar result vs. scalar change is a crosscutting factor.

- This derives a major revision to the Affectedness Hierarchy, covering more predicates:

(22) **Revised Affectedness Hierarchy:**

	<i>quantized</i>	<i>nonquantized</i>	<i>potential</i>
<i>scalar result</i>	peel, shatter	cool, cut	hit, punch
<i>scalar change</i>	climb _{tr} , lap	slide, climb _{itr}	jog, walk

- Just a comment: the affectedness hierarchy is based on weakening truth conditions, but so is the scalar result vs. scalar change distinction. Vaugeness matters a lot in defining the contrasts.
- But this means the original diagnostic of Beavers (2011b) defining (non)quantized change as entailing a new result state is incorrect. The real diagnostic is that a (specific) state be reached after a transition away from the initial state, even if it happens to be the initial state.

What defines (non)quantized change is transition, *not* a new state.

3.2 Sublexical Modality

- Another factor can bleed entailments of change: sublexical modalities that push the realization of the event into another possible world (Koenig and Davis 2001).
- This occurs in nonculmination, where in some languages results of change-of-state verbs are not entailed (Koenig and Muansuwan 2000, Bar-el et al. 2005, Tatevosov 2008, Altshuler 2014, Martin and Schäfer 2012, 2017, Beavers and Lee 2020, Nadathur and Filip 2021).
- For example, Korean (23) is possible, but only when the agent is trying to break the window:

(23) *ku-ka changmwun-ul kkay-ss-ta. haciman changmwun-i*
 he-NOM window-ACC break-PST-DECL but window-NOM
kkay-ci-ci anh-ass-ta.
 break-PASS-COMP NEG-PST-DECL
 (lit.) ‘He broke the window. But it was not broken.’ (Beavers and Lee 2020: 149, (3))

- Beavers and Lee (2020) analyze this a necessity modal \Box_{I_x} — introduced by a special active voice morpheme — scoping over the change-of-state, where the modal base of \Box_{I_x} is the set of worlds corresponding to the intentions of the subject, (ignoring tense):

(24) $\llbracket ku-ka\ changmwun-ul\ kkay-\emptyset_{\text{active-modal}}-ss-ta \rrbracket =$
 $\exists [\text{effector}'(\text{he}'_{\blacktriangleright}) \wedge \Box_{I_{\text{he}'}} \exists \exists [\text{window}'(\text{window}'_{\blacktriangleright}) \wedge p_{\blacktriangleright} \neg \text{h}'(\text{window}'_{\blacktriangleright}) \wedge r_o \text{h}'(\text{window}'_{\blacktriangleright})]]$

- Modality accounts for so-called “zero result” or “failed attempt” nonculmination, i.e. where no change at all occurs (Demirdache and Martin 2015: 194, Tatevosov 2008: 395).
- There are also “partial result” or “partial success” (*ibid.*) readings, where some but not all of the expected change occur, and Korean has this sort of nonculmination as well:

(25) *ku-ka changmwun-ul yel-ess-ta. kulayse changmwun-i cokum*
 he-NOM window-ACC open-PST-DECL so window-NOM a little
yel-li-ess-ta.
 open-PASS-PST-DECL
 ‘He opened the window. So it was opened a little bit.’

- **Beavers and Lee suggest that this just reflects a difference between quantized and nonquan-**

4 Middles - A Basic Recap

- I suggest that there are argument realization phenomena that are sensitive to the larger space of “affectedness” predicates in (28) (and here I’m drawing a lot on Koenig and Davis 2001).
- I take middle constructions as in (29) as my case study (“dispositional middles”, hereafter “middles”) (van Oosten 1977, Keyser and Roeper 1984, Jaeggli 1986, Condoravdi 1989, Fagan 1992, Tenny 1992, 1994, Zribi-Hertz 1993, Ackema and Schoorlemmer 1994, 1995, 2017, Cornips and Hulk 1999, Egerland 2000, Lekakou 2002, 2006, *inter alia*):

- (29) a. Mary cut the bread (with a dull knife).
b. This bread cuts easily (for anyone with even a dull knife).

5 Methodology - Corpus Evidence

- We wanted to cast a wide net on what verbs form a middle, so we turned to corpus evidence.
- We developed a tool using Stanford CoreNLP (Manning et al. 2014) to pull examples out of

6 The Classic Affectedness Constraint on Middles

- One of the oldest analyses of middles is that there is an Affectedness Constraint, whereby the promoted object must be affected somehow, i.e. a patient (Anderson 1979, Jaeggli 1986).

(38) a. Mary just opened the door.

8 Counterexample II: Vehicle Objects and Circular Paths

10 Lexical Aspect and Affectedness without Change-of-State

- Argument alternation facts suggests that scalar change (not just scalar result) matters gram-

(59) John climbed (around) for/??in an hour.

- Here again the explanation seems clear: there's no result nor even a natural point to interpret as a result. These are like open scale deadjectival verbs as per Kennedy and Levin:

(60) Mary widened the opening for/??in an hour.

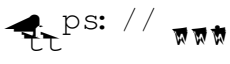




Only a small subset of change predicates are truly, categorically telic. But the ways in which the rest are variably telic or atelic might be predictable based on their meanings.

11 Conclusion

- Affectedness as rooted in scalar change matters for lexical aspect and argument realization, but much of that prior work has hinged on the entailments of change themselves.
- But orthogonal factors can bleed those inferences of change, raising the question of how phenomena rooted in affectedness will pattern in such cases.
- I proposed a revised Affectedness Hierarchy rooted in the original hierarchy of Beavers (2011b) but that takes two crisscrossing factors into account: the scalar change vs. scalar result distinction and the nonmodal vs. modal distinction.
- The argument structural and aspectual facts support this analysis:

#1 Grammatically, while some alternation patterns (e.g. those discussed in Hopper and Thompson 1980 or Beavers 2010) will still be rooted in notions of actual change, middles in English suggest that the larger notion of affectedness is

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