Is there a manner/result complementarity in verbal roots?

Rappaport Hovav and Levin (in press) (RHL) argue that verbs fall into (at least) two classes: those entailing a scalar result (e.g. *break, smash, crush*) and those entailing a manner (e.g. *run, swim, scrub*), which they analyze as non-scalar change — sequences of (temporary) changes unordered along any scale. No verb, they claim, entails both, thus e.g. the manner in which something comes to be broken is unspecified for *break*-type verbs, while the result is unspecified by *run*-type verbs. This is argued to follow from how verb meanings are built up in the lexicon: each verb has a single lexicalized "root" meaning, and a root can either modify an underlying ACT predicate, giving a manner reading (1a), or be an argument of BECOME (1b), giving a result reading.

We argue against this view on both empirical and theoretical grounds. Empirically, a critical issue in supporting the claim of complementarity is isolating appropriate diagnostic tools for discerning which verbs entail scalar change and which entail manner. We review and develop a number of such diagnostics, and argue on the basis of them that manner of death verbs — including *crucify, drown, hang, electrocute, decapitate, asphyxiate, behead,* and *suffocate* (Krohn 2008) — entail both a result and a manner, and thus present a robust counterexample to RHL's generalization. Furthermore, the single rootedness property of RHL's theory, which they argue explains the complementarity, does not in fact predict it once spelled out in more detail. Rather, it predicts that there should exist classes of verbs entailing both manner and result.

For change-of-state, we believe it uncontroversial that a verb entails a result if it cannot be denied that a result state for some participant obtains. Beavers (2008a) proposes that a general test for result states with property change verbs is *something is different about x*, which does indeed separate canonical result verbs as in (2a) from canonical manner verbs as in (2b). Crucially, manner of death verbs, as shown in (2c), clearly encode change by this diagnostic as well. Furthermore, the change in this case is necessarily scalar change — the transition is from not dead to dead, forming a contrast along a binary scale (Beavers 2008b) (cp. *#more hanged, #more drowned, #more electrocuted*). Further supporting this is the test for scalar change in Rappaport Hovav (2008): manner verbs allow object deletion as in (3a) while scalar change verbs do not as in (3b); manner of death verbs pattern like result verbs as in (3c). This plus other diagnostics we consider (including acceptability with certain types of secondary result XPs) lead us to conclude that manner of death verbs encode scalar change, and thus on RHL's theory should not entail a manner as well.

Whether a verb encodes manner, or even what a manner is, is an issue that has received much less attention in the literature. RHL define manner as non-scalar change, including temporary changes that define actions, such as the movement of arms and legs during running. Manners are typically complex, involving extended sequences of disjointed non-scalar changes which do not themselves form a single continuous change that can be measured. However, diagnosing manner on this conception is difficult. Rappaport Hovav (2008) claims that the ability to undergo object drop as in (3a) is a diagnostic for non-scalar change. However, this test is inherently negative — as discussed above, what this test really shows is *not* entailing a scalar change. Furthermore, if object drop is correlated to scalar vs. non-scalar change, the test makes no predictions about what would happen if a verb encodes both, or how we could identify this. Thus we develop diagnostics for positively identifying manner (qua non-scalar change) independent of the diagnostics for result.

First, manner verbs are unambiguous under negation, where only the ACT subevent is negated (it being the only subevent) as shown in (4a). Conversely, result verbs are ambiguous under negation, where either the CAUSE or the BECOME subevents can be negated as in (4b,c) (Dowty 1979). Interestingly, manner of death verbs are at least *three* ways ambiguous, as in 6, intermin-

gling the patterns of manner and result verbs and suggesting they contain both (plus causation, behavior that would only be predicted on RHL's account for complex predicates, e.g. *John swept the floor clean*). Furthermore, manner verbs should by definition entail at least some complex activity on the part of the subject. Focusing on just the core case of manner — physical motion associated with performing an action — many manner verbs are infelicitous with *x didn't move a muscle*, unlike result verbs for which this is sometimes possible, as shown in (5a,b) respectively. Manner of death verbs again pattern like manner verbs, as shown in (5c). Finally, inasmuch as relative complexity of the manner is relevant for predicting complementarity, we again follow Dowty (1979:170-171) in assuming that complex actions require non-trivial time to verify, predicting that verbs with non-trivial actions should be durative. Manner verbs such as *waltz* and *run* are durative as in (7a), and so are most manner of death verbs as in (7b). Durativity here is not due to the complexity of reaching the result state, since the scalar change is a binary transition and thus would normally correspond to a punctual event (Beavers 2008b). Thus with an appropriate set of result and manner diagnostics fully outlined, manner of death verbs seem to show patterns of having both components of meaning, arguing against the complementarity of manner and result in verb meaning. Furthermore, we argue that verbs such as *cut* and *climb*, which Levin (2008) claims are polysemous between manner and result uses — but crucially never encoding both at the same time — in fact do have uses encoding both simultaneously. Thus empirically the categorical ban on manner/result complementarity is not supported, even if many verbs tend to only encode one or the other.

Theoretically, we argue that RHL's proposal — that a root can only modify ACT or be an argument of BECOME — crucially relies on the assumption that verbs never have more than one root, which we suggest is not well-founded. Levin (2008) gives at least one example, *mow*, that has two roots, albeit both are non-scalar — in *John mowed the lawn* the agent acts in a certain manner, and the lawn comes to be affected, but in a non-scalar way (cp. *#My lawn is more mowed than yours*). Assuming a result must be the argument of BECOME, and a manner must modify an ACT, then *mow* has two roots as in (8), arguing against single rootedness. Alternatively, some roots may even have two scalar roots: locative verbs as in (9) always entail both motion of the theme and the commensurate covering or filling of the location argument by the theme. The two scales go hand in hand, but either may be taken to measure out the event, depending on which is the direct object (Dowty 1991). Thus empirically, single-rootedness is not motivated.

Rather, we suggest that dual roots are predicted to exist, once we flesh out what a verb meaning is. Assuming a standard neo-Davidsonian event semantics, "argument" roots can be analyzed as predicates over stative eventualities, while "modifier" roots are predicates over eventive eventualities. On this conception of verb meaning having two "roots" simply means entailing additional truth conditions on the causing and caused subeventualities. But number of truth conditions is not known to be a constraint on possible verb meanings, since some verbs can lexicalize more or less specific processes (cp. *move* to *dosey-doe*) or results (cp. *change* to *melt*). Thus when fully spelled out, we believe that any theory of verb meaning must instead predict that there are verbs that have more than one root, with at least the types in (10) attested on the survey above, and presumably only limited by the plausibility of events of enough complexity to have multiple manners and results entailed, or the communicative use of verbs encoding more complex meanings. This suggests that manner/result complementarity cannot follow in its most general form from any formal property of verb meanings, a welcome result given our empirical observations.

(1)   a. [x ACT$_{<ROOT>}$]   b. [[x ACT] CAUSE [y BECOME $< ROOT >$]]

(2)   a. #Mary broke/shattered/destroyed the vase, but nothing is different about it.

       b. Mary ran quickly/struggled laboriously, but nothing is different about her.

       c. #Mary crucified/drowned/hanged/electrocuted Joe, but nothing is different about him.

(3)   a. All last night, Cinderella scrubbed (floors).

       b. All last night, we dimmed *(the lights in the house).

       c. All last night, John electrocuted/hanged/drowned *(victims).

(4)   a. ¬Manner: Jim didn't run — he swam instead.   (¬ [x ACT <ROOT>]

       b. ¬Cause: Jim didn't break the vase — you broke it! (¬[x CAUSE [y BECOME <ROOT>]])

       c. ¬Result: Jim didn't break the vase — he fixed it!   (¬ [y BECOME <ROOT>])

(5)   a. #Bob ran, but didn't move a muscle.

       b. Jim destroyed his car, but didn't move a muscle (rather, he let it sit on his lawn on cinderblocks until it disintegrated).

       c. #Jen crucified/drowned/hanged/electrocuted/beheaded Al, but didn't move a muscle.

(6)   a. ¬Manner: Jim didn't drown Bob — he electrocuted him instead!

       b. ¬Cause: Jim didn't drown Bob — he held his head under, but he really died of a stroke!

       c. ¬ Result: Jim didn't drown Bob — he choked on the water but survived!

(7)   a. John ran quickly/laughed incessently for an hour/#in an instant.

       b. John electrocuted/hanged/drowned Jim in 30 sections/*in an instant.

(8)   [[x ACT$_{<mow>}$ y] CAUSE [y BECOME $< mown >$]]

(9)   a. John loaded the wagon with the hay.   (theme all moves, wagon filled)

       b. John loaded the hay onto the wagon.   (wagon filled up, theme moves)

(10)   a. Single scalar root (*break, smash*)

        b. Single non-scalar root (*run, walk, swim*)

        c. Two non-scalar roots (*mow*)

        d. Two scalar roots (*load*)

        e. Two roots, one scalar and one non-scalar (manner of death verbs, *climb*)

References

BEAVERS, JOHN. 2008a. On affectedness. The University of Texas at Austin, ms.

——. 2008b. Scalar complexity and the structure of events. In Event structures in linguistic form and interpretation, ed. by Johannes Dölling, Tatjana Heyde-Zybatow, and Martin Schäfer, 245–265. Berlin: Mouton de Gruyter.

DOWTY, DAVID. 1979. Word meaning and Montague Grammar. Dordrecht: Reidel.

——. 1991. Thematic proto-roles and argument selection. Language 67.547–619.

KROHN, LAURIE. 2008. The manner/result complementarity and verbs of the manner of death. Unpublished undergraduate Grammatical Semantics class essay, The University of Manchester, ms.

LEVIN, BETH. 2008. A constraint on verb meanings: Manner/result complementarity. Talk given at Brown University, March 17, ms.

RAPPAPORT HOVAV, MALKA. 2008. Lexicalized meaning and the internal structure of events. In Theoretical and crosslinguistic approaches to the semantics of aspect, ed. by Susan Rothstein. Amsterdam: John Benjamins.

RAPPAPORT HOVAV, MALKA, and BETH LEVIN. In press. Reflections on manner/result complementarity. In Syntax, lexical semantics, and event structure, ed. by Edit Doron, Malka Rappaport Hovav, and I Sichel. Oxford: Oxford University Press.