

Reflections on the Complementarity of Manner and Result

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1 The complementarity of manner and result

Verbs drawn from various lexical fields are commonly classified as either manner or result verbs: Manner verbs specify a manner of carrying out an action; result verbs specify the result of an event.

- (1) a. MANNER VERBS: cry, hit, pound, run, shout, shovel, smear, sweep, ...
b. RESULT VERBS: arrive, clean, come, cover, die, empty, fill, put, remove, ...

As the examples illustrate, this distinction crosscuts the transitive/intransitive verb distinction.

Across the English verb lexicon:

- many result verbs lexicalize results that are prototypically associated with particular manners.
e.g., *clean* and *clear* lexicalize a state that may result from removing stuff from a surface.
- many manner verbs lexicalize manners that are prototypically associated with particular results.
e.g., *wipe* and *scrub* lexicalize a manner and describe actions involving surface contact and motion; these actions are often used to remove stuff from a surface.

HOWEVER, such result verbs don't entail the manners, nor do such manner verbs entail the results.

- (2) a. I just wiped the table, but it's still dirty/sticky/wet.
b. I cleaned the dress by soaking it in hot water/by pouring bleach over it/by saying a magic chant.

L&RH (1991) note that manner and result meaning components are in complementary distribution: a verb typically lexicalizes only one, as illustrated by the verbs discussed so far.

Therefore, when a verb lexicalizes one of these components, the other, be it manner or result, can only be expressed outside the verb.

- (3) a. A manner verb can combine with a result XP:
Pat wiped the table clean.
b. A result verb can be accompanied by an adverbial XP expressing manner:
Pat cleaned the table by wiping it.

The manner/result verb dichotomy seems to be grammatically relevant (Fillmore 1970, RH&L 1998): it gives rise to distinct patterns of behavior for the two verb types:

They differ with respect to the availability of unspecified and non-subcategorized objects,

e.g., *Kim swept/*broke*; *Kim scrubbed/*broke her fingers raw*,

as well as the causative alternation, e.g., *Kim broke/wiped the window/The window broke/*wiped*.

QUESTION: What is the significance of the observed manner/result complementarity?

— Does it simply reflect a preference for what type of meaning a verb can lexicalize?

— Or does it reflect a real constraint on verb meaning?

CONSIDER: If manner and result are indeed grammatically relevant, there might be a real constraint, and manner/result complementarity may be another indication of its grammatical relevance.

PROPOSAL: Manner/result complementarity reflects a real constraint on verb meaning.
Moreover, properly understood, it is a constraint on the complexity of a verb's meaning.

GOAL OF TALK: To formulate the constraint, which we take to be a constraint on how much can be packaged into a verb's meaning, and explore some of its consequences.

2 Constraints on possible verb meanings

At first glance, there seem not to be constraints on how much meaning can be packaged into a verb.

- (4) “How complicated can a verb meaning be? On the one hand it seems that the answer is: as complicated as you want. For example, suppose there is a manufacturing process that involves pulverizing something then mixing it with molten plastic, allowing it to harden and then encasing it in steel. Of course we can label the entire process with one verb: to *smolt*, for example.” (Grimshaw 2005:85)

Nevertheless, some linguists have suggested that there are constraints on possible verb meanings (Carter 1976, Croft 1991, Grimshaw 2005:85, Kiparsky 1997:476, 490); these constraints can be interpreted as constraints on the complexity of a verb's meaning.

A context for exploring the constraints: the current view of verb meaning as having two components: — an idiosyncratic component, now often called the “root”, — a structural component we refer to as an “event structure template”, representing an event type. (e.g., Borer 2005, Goldberg 1995, Grimshaw 2005, Hale & Keyser 2002, Jackendoff 1990, Marantz 1997, Mohanan & Mohanan 1999, Pesetsky 1995, Pinker 1989, RH&L 1998, Rothstein 2003)

- Most proposed constraints on verb meaning pertain to the event structure template.
- Grimshaw (2005:85) suggests “unlimited complexity” in meaning is confined to the root, with the structural part of a verb's meaning being “rigidly constrained”.

The quote in (4) continues:

- (5) “However, looked at from another point of view, such a verb [e.g., *smolt* in (4) — BL&MRH] is semantically no more complex than any other: it is either a causative or an activity predicate.” (Grimshaw 2005:85)

— ONE HYPOTHESIS: A causative verb has the most complex possible event structure.

A possible formulation as a constraint on predicate embedding in a decomposition:

- (6) Eliminate any VSR [= verb semantic representation] which has a depth of embedding involving more than three V-PRIMES [= primitives]. (Carter 1976:42)

— A SECOND HYPOTHESIS: There are constraints on the kinds of relation that can hold between subevents of complex events (Croft 1991:160, Goldberg 1998:46-47, Kaufmann 1995:86, Kiparsky 1997:476, (5b), Wunderlich 1997).

- But manner/result complementarity does not follow from these constraints as it involves the root.

QUESTION: Are any constraints on verb meaning attributable to the root?

PROPOSAL: Constraints exist on what can be packaged into a root.

They arise from the way in which a root is associated with an event structure template.

2.1 Background: The representation of verb meaning

A verb meaning may be represented as a predicate decomposition consisting of an event structure template together with a root.

- *Root*: Each root has an ontological categorization, chosen from a fixed set of types:
e.g., state, result state, thing, stuff, container, manner, instrument.
- *Event structure template*: Most important distinction is whether an event structure is complex, consisting of two subevents, or simple, consisting of a single subevent (L&RH 1999).

- (7) a. Complex event structure template:
e.g., [[x ACT_{<MANNER>}] CAUSE [y BECOME <RES-STATE>]]
- b. Simple event structure template:
e.g., [x ACT_{<MANNER>}]

What matters is a representation that allows for predicate decomposition. The cited representations are from RH&L (1998), but could be recast along neo-Davidsonian lines (à la Rothstein 2003) or as minimalist syntactic structures (à la Ramchand in press or Zubizarreta & Oh 2007).

- *Canonical realization rules*: Roots are associated with event structure templates via canonical realization rules (RH&L 1998), which ensure that the minimal elements of meaning lexicalized in a verb are expressed based on the root's ontological categorization.

- (8) manner → [x ACT_{<MANNER>}]
(e.g., *jog, run, creak, whistle, ...*)
- (9) instrument → [x ACT_{<INSTRUMENT>}]
(e.g., *brush, hammer, saw, shovel, ...*)
- (10) container → [x CAUSE [y BECOME AT <CONTAINER>]]
(e.g., *bag, box, cage, crate, garage, pocket, ...*)
- (11) internally caused state → [x <STATE>]
(e.g., *bloom, blossom, decay, flower, rot, rust, sprout, ...*)
- (12) externally caused, i.e. result state →
[[x ACT] CAUSE [y BECOME <RES-STATE>]]
(e.g., *break, dry, harden, melt, open, ...*)

Roots are integrated into templates as ARGUMENTS (e.g., (10)-(12)) or MODIFIERS (e.g., (8)-(9)) of predicates; roots are italicized and in angle brackets; notated via subscripts when modifiers.

The canonical realization rules instantiate generalizations that need to be captured in any framework. We do not claim that these associations are effected by rules which apply in a derivation, nor do we make specific proposals as to how and where these generalizations are effected.

2.2 The lexicalization constraint

- (13) THE LEXICALIZATION CONSTRAINT: Every root has a single ontological type and can be associated with only one primitive predicate, either as an argument or as a modifier.

If the content of the root determines its association with a position in an event structure template, and a root can only be associated with one position in a template, it follows that a root cannot “package” a meaning which would cause it to be associated with more than one event structure position.

(13) is similar in spirit to a constraint with the same name suggested by Kiparsky in a study of possible denominal verb meanings:

- (14) The lexicalization constraint: A verb can inherently express at most one semantic role (theme, instrument, direction, manner, path ...). (Kiparsky 1997:490, (30))

Since by the canonical realization rules manner roots modify ACT and result roots are arguments of BECOME (see section 3.2), a consequence of (13) is that:

- (15) A given root can modify ACT or be an argument of BECOME, but cannot do both within a single event structure.

Manner/result complementarity then follows from (15).

THE NEXT STEP: If the lexicalization constraint is to have real empirical content, the criteria which determine whether a root’s type is manner or result must be made explicit. In some instances it is not difficult to tell, but in others this is not so simple—these are the test cases for the constraint.

3 Refining the notions of result and manner

QUESTION: What semantic notions of manner and result matter to manner/result complementarity?

Beginning with the notion of result, an obvious suggestion is that it should be equated with telicity.

- Telicity is often said to involve a result state, and indeed some result verbs are necessarily telic.

- (16) “One performance differs from another in accordance with the differences between states of affairs brought about: performances are specified by their ends.” (Kenny 1963:178)

- Nonetheless, the notion of result should not be equated with telicity.

— Some result verbs are not necessarily telic: Gradable change of state verbs—i.e. degree achievements (Dowty 1979)—may be telic or atelic.

- (17) a. The chemist cooled the solution for three minutes.
b. The chemist cooled the solution to the desired temperature in three minutes.

— Some manner verbs are potentially telic.

- (18) a. The waiter wiped the table in two seconds.
 b. I read the chapter in an hour.

Telicity has been shown to be compositionally determined in many instances.
 We need a LEXICAL property, relevant for a constraint on lexicalization.

Clarification is provided by turning from the change of state domain that these examples are drawn from to another domain—motion—also showing manner/result complementarity.

3.1 Direction as a type of result

Classification of motion verbs in terms of “conflation” of meaning components (Talmy 1975, 1985):

- Motion and path: inherently directed motion verbs, e.g., English *arrive, ascend, descend, enter*
 e.g., *ascend* specifies a direction of motion, but not the manner in which the motion is effected.
- Motion and manner: manner of motion verbs, e.g., English *amble, jog, swim*
 e.g., *jog* specifies a manner of motion, but is neutral as to the specific direction of motion.

Classification reveals a manner/direction complementarity akin to manner/result complementarity.
 In fact, L&RH (1992) take directed motion verbs to be a type of result verb.

What does direction of motion have in common with the more prototypical change of state results, which justifies subsuming them under result and distinguishing both from manner?

3.1.1 Scalar and nonscalar changes

Manner and result verbs are dynamic, and all dynamic verbs involve change (Dowty 1979);
 however, dynamic verbs do not all involve the same type of change.

Two types of change (e.g., McClure 1994, Rappaport Hovav in press) correlate with the manner/result verb distinction in a way that supports subsuming direction of motion under result:

- SCALAR CHANGE, as in the events denoted by *warm, ripen, cool, fall, ascend, ...*
- NONSCALAR CHANGE, as in the events denoted by
play (in the sand) scribble (on paper), flutter, exercise, tickle, writhe, scream, laugh, rain, ...

PROPOSAL: Result and manner roots specify distinct types of changes:

Root type	Type of change specified
Result root	scalar change, i.e. path traversal or change of state
Manner root	nonscalar change

These two types of change are the meaning components in complementary distribution in verb roots.

• SCALAR CHANGES

Verbs denoting events of scalar change in one argument lexically entail a scale (e.g., Beavers in press, Borer 2005, Hay, Kennedy & Levin 1999, Krifka 1998, Ramchand 1997, Tenny 1994).

A scale is a set of degrees—points or intervals indicating measurement values—ordered on a particular dimension (e.g., height, temperature, cost) (Kennedy 2001).

The dimension represents an attribute of an argument of the verb, with the degrees indicating the possible values of this attribute.

A scalar change in an entity involves a change in the value of this attribute in a particular direction along the associated scale.

Directed motion verbs as well as change of state verbs specify such changes, as the direction of motion defines a scale with the ordering relation defined by the direction. Thus, subsuming verbs of both types under a class of result verbs is justified.

EXAMPLES:

— The change of state verb *warm* is associated with a scale of increasing values on a dimension of temperature; and a warming event necessarily involves an entity showing an increase in the value along this dimension.

— The directed motion verb *descend* is associated with a scale composed of decreasing values on a dimension of height, and an event of descending necessarily involves an entity showing a decrease in the value of this dimension.

A scalar change is simple in that it specifies a change involving one attribute of an entity.

The change may be characterized by a two-point or a multiple-point scale (Beavers in press):

— Changes with a multiple-point scale are related to gradable adjectives (degree achievements, e.g., *dry*, *cool*) and gradual traversals of path (certain directed motion verbs, e.g., *ascend*).

— Changes with a two-point scale are related to true achievements (e.g., *arrive*, *crack*).

Verbs associated with both types of scale show manner/result complementarity, supporting the proposal that both involve scalar change.

• NONSCALAR CHANGES

A nonscalar change is any change that cannot be characterized in terms of an ordered set of degrees along a dimension representing a single attribute. A nonscalar change is typically complex, involving a combination of many changes at once.

Two properties, then, contribute to making a change nonscalar:

— Complexity

— Lack of an ordering relation

Manner verbs, including manner of motion verbs, involve nonscalar changes:

exercise, *flap*, *grimace*, *jog*, *knead*, *scribble*, *shudder*, *wave*, ...

EXAMPLE: The manner of motion verb *jog* involves a specific pattern of movement of the arms and legs that is repeated an indefinite number of times.

However, not all verbs of nonscalar change have roots that are so specific about the precise changes, e.g., the verb *exercise*.

A nonscalar change may be along a single dimension, if such a change does not involve an ordering relation and, hence, is not scalar.

EXAMPLE: The verb *wander* defined as: “to go aimlessly, indirectly, or casually; meander: *The river wanders among the rocks*”. (*American Heritage Dictionary*)

3.1.2 Scalar change and telicity: Change of state and directed motion parallels

Further support for taking directed motion and change of state to be instances of scalar change comes from parallel generalizations governing telicity in the two domains.

GENERALIZATION: Only verbs associated with a two-point scale are necessarily telic, whether in the change of state or directed motion domain (Rappaport Hovav in press, Filip 2005, in press).

Other verbs of scalar change are not necessarily telic, though they tend to be, especially if the scale has a bound (L&RH 1995, Hay, Kennedy & Levin 1999).

- Illustrating this generalization in the change of state domain.

— Verbs lexicalizing a two-point scale are necessarily telic.

- (19) a. The dam cracked at 6:00am/*for two months.
b. The pipe burst at 6:00am/*for two months.
c. The editor discovered the mistake at 2:00pm/*for 20 seconds.

— Verbs lexicalizing a multiple-point scale may be telic or atelic.

- (20) a. We cooled the solution for three minutes.
b. We cooled the solution (to the desired temperature) in three minutes.

• Showing that the directed motion domain is parallel to the change of state domain requires explicating how scalar change is determined for directed motion verbs.

What are the ingredients of the scale with directed motion verbs?

— The dimension defining the scale is the location of the theme with respect to a “ground”.

— The points constituting the scale are a set of contiguous locations which together form a path.

However, a scale requires the points be ordered; how is the order of points on the path determined?

The specific ordering of points on the path is lexicalized by each directed motion verb;

it is this ordering which distinguishes one directed motion verb from another.

English directed motion verbs fall into subtypes according to how the ordering relation on the points on the path is lexicalized in the verb:

— Direction of motion is fully lexicalized by the verb; specifically, the direction is with or against an external force, e.g., the pull of gravity: *ascend, descend, fall, rise, ...* ;
points on the path are ordered in the (reverse) direction of this force.

— Direction of motion is not fully lexicalized by the verb, but must be determined externally:

– Direction of motion of the theme is determined deictically: *come, go*
(this class apparently has just these two members crosslinguistically);
points on the path are ordered as closer to or further from the “deictic center”.

– Direction is determined with respect to reference object: *enter, exit, arrive, leave, reach, ...* ;
points on the path are ordered as closer or further away from this object.

— The only necessarily telic directed motion verbs are those that lexicalize a point-like reference object (e.g., *arrive, enter, exit*) and that are associated with a two-point scale.

— Other verbs lexicalizing direction of motion can be either telic or atelic (L&RH 1995:173).

- (21) a. The plane ascended/descended in/for 20 minutes.
b. I ascended towards a sandy area in the middle of the reef
(<http://www.thelivingsea.com/Adventures/wilddolphins3.php>)
c. The European probe Huygens descended towards the Saturn moon Titan today ...
(<http://www.tribuneindia.com/2005/20050115/world.htm>)
d. A shooting star fell towards the city’s crown of lights. (BNC; FS8)

— Verbs that lexicalize a deictically determined direction also tend to be used telically, but are not necessarily telic (e.g., can take the preposition *toward(s)*).

- (22) a. ... he came towards the castle. (<http://www.sacred-texts.com/neu/tml/tml39.htm>)
 b. On Friday [10/13] four large canoes came towards us filled with men, who appeared to be all armed ... (<http://bell.lib.umn.edu/map/ACT/COOK/cook2.html>)

SUMMARY: Directed motion and change of state instantiate the same type of change; verbs that lexicalize one of them never also lexicalize a manner, conforming to manner/result complementarity.

3.2 Relating (non)scalar change to manner/result complementarity

The canonical realization rules may be reinterpreted in the context of our clarification of the nature of manner and result roots, with manner/result complementarity following due to the lexicalization constraint.

- (23) a. ACT can only be modified by a root specifying a nonscalar change.
 b. BECOME can only take as an argument a root specifying a scalar change.

A CONSEQUENCE: Since a root is associated with only one scale, no verb can simultaneously be a change of state and directed motion verb.

This proposal is consistent with observations about verb meaning. We are not aware of any verbs that should be analyzed as simultaneously describing a change of state and change of direction.

We illustrate what we intend at the “phrasal” level, where the same constraint is apparently in effect: A secondary predicate cannot be combined with a verb to create a change that is instantiated in terms of both motion and state.

EXAMPLE: (24) cannot mean that the bag arrived and as a result of arriving became open—a reading that involves two types of change.

- (24) The bag came open.

Rather, if *open* is understood as a result state, *come* has been bleached of any directional sense; if the verb retains its directional sense, then *open* must be understood as a depictive.

The fact that comparable meanings are not even found at the phrasal level suggests this constraint is real since there are typically less constraints on meanings available at this level.

ANOTHER CONSEQUENCE: Insight into why manners are so often associated with animates and results with inanimates.

Human activities—the type of actions characterized by manner verbs—usually involve many cooccurring changes; these activities, then, cannot be said to be scalar changes. Nevertheless, these activities are often carried out by an animate entity with the intention of producing simple, i.e. scalar, changes in a second, typically inanimate entity—such changes are characteristic of result verbs.

EXAMPLE: *wipe* denotes an activity of moving over a surface with wide strokes with a soft cloth or the like; it is typically carried out by an animate with the intention of increasing the cleanliness of that surface. Although wiping could be carried out by a machine, the machine would have to carry out the same kind of motions and be one designed with the same intent: to increase cleanliness.

Thus, changes that are typically predicated of animates are nonscalar in nature, while those predicated of inanimates are very often scalar. Nevertheless, nonscalar changes may be predicated of inanimates: e.g., *flap*, *flutter*, *rumble*, and scalar changes may be predicated of animates; these often refer to changes in the body, e.g., *Kim reddened*, rather than to intentional activities—the latter by their very nature are complex nonscalar changes.

3.3 A motivation for the lexicalization constraint

An interpretation of manner/result complementarity: It arises because these meaning components contribute to the complexity of a verb's meaning.

If so, the lexicalization constraint reflects a constraint on the overall complexity of a verb's meaning.

Other measures of complexity are possible: e.g., in terms of numbers of entailments or presuppositions associated with a verb. However, the actual "complexity" of the individual meaning components does not seem to be the issue in delineating possible verb meanings.

COMPLEXITY OF ENTAILMENTS: The verb *tango*, which refers to the performance of a specific dance, must be associated with more entailments (i.e. detail) than the verb *dance*, and thus *tango* could be said to have a more complex meaning than *dance*, specifically a more complex manner.

But from the perspective of the lexicalization constraint, *tango* is no more complex than *dance*; there seems to be no constraint on how detailed the content of the manner component can be.

COMPLEXITY OF PRESUPPOSITIONS: Some verbs have extremely complex presuppositions.

- (25) The verb *appeal* "presupposes the existence of a previous complex event involving a trial which resulted in a guilty verdict, and asserts a subsequent act of filing legal papers for the purpose of a retrial." (Goldberg 1998:43)

Presuppositions apparently do not contribute to complexity from the perspective of the lexicalization constraint; we know of no constraint on how complex the presuppositions holding of a verb can be.

4 Potential counterexamples to manner/result complementarity

4.1 From the motion domain

As Fillmore (1982:32-33), Jackendoff (1985) and Kiparsky (1997:490) note, the English verb *climb* apparently expresses both manner and direction in some uses (clambering manner, upwards direction), contra the manner/result complementarity constraint:

- (26) Kelly climbed the tree.

As these researchers note, many uses of *climb* meet the complementarity constraint:

- (27) a. *climb* expresses an upwards direction only:
The plane climbed to a cruising altitude.
(NOTE: as plane is inanimate, it can't clamber, so manner isn't lexicalized in verb)

- b. *climb* expresses a clambering manner of motion only:
 Kelly climbed down from the roof.
 Kelly climbed through the gap in the hedge.
 (NOTE: direction is determined outside of verb, so is not lexicalized in verb)

There are no uses of *climb* that involve neither a clambering manner nor an upward direction:
 The verb *climb* must have some meaning (besides just translational movement).

A POTENTIAL PROBLEM: Uses of *climb* that seem to involve both manner and direction, as in (26).

THE SOLUTION: These uses actually lexicalize manner only, thus conforming to the constraint.

4.1.1 Resolving the potential problem

The problematic uses of *climb* have the reference object—key in defining the direction of motion—as direct object.

We argue that such verbs do NOT lexicalize an upwards direction: they only lexicalize manner.

Understood upwards motion is inferred given real world knowledge about default motion by clambering with respect to particular reference objects in the context of default intentions of agents.

EVIDENCE: With *climb*, the direction does not have to be upwards with all reference objects, as would be expected if direction were lexicalized.

- Typically, a path involving the reference object is understood as upwards, as in (26).
- When the reference object is a barrier (e.g., wall, fence), the path is understood as over it.

- (28) a. ‘I couldn’t see his face very well because the leaves and branches were in the way, but I saw him CLIMB the fence and steal the bulbs.’ (BNC; B0B 1418)
- b. So I thought that if I CLIMBED the fence I’d be able to reach the entrance and the machine where I can buy some chocolate. (BNC; JY9 971)

CONCLUSION: The reference object plays a part in determining the direction of motion with *climb*: it defines a salient path via its inherent nature and the way it is interacted with.

FURTHER SUPPORT: When other manner of motion verbs take a reference object as direct object, direction of motion again depends on nature of reference object and how it is interacted with.

- This point is not usually appreciated because certain types of reference objects are commonly cited, suggesting that there is a default direction understood with these verbs.

- (29) a. hike the Appalachian trail — ‘hike along the trail’
- b. swim the Channel — ‘swim across the Channel’
- c. run the track — ‘run around the track’

- But other directions are possible with alternative choices of reference object:

hike: can be understood as involving upwards motion

- (30) So I decided to try to HIKE the slope behind the condo. This was not my best idea ever. The slope was very steep and covered in loose sharp rocks . . .
(<http://www.pbase.com/jimgephart/image/47620997>)

THE GENERAL RULE: The direction of motion is determined contextually from the combination of manner of motion, nature of the reference object, and the intention of the agent.

4.1.2 The source of the potential problem: The directed motion use of *climb*

What sets *climb* apart from most manner of motion verbs is the availability of a direction-only use, in addition to the manner of motion use—a use that *jog*, *ride*, *run*, and *swim* lack.

- (31) The plane climbed to its cruising altitude.

WHY SHOULD *climb* SHOW THESE TWO USES?

Its manner facilitates motion against the pull of gravity, and such motion is typically upwards; thus, there is a default association of a manner and a direction.

It appears that *climb* has been extended to have a use that indicates motion in an upward direction, while losing the manner component.

This direction-only use is also consistent with the lexicalization constraint.

Few manner of motion verbs pattern like *climb* because they do not involve a manner that by its very nature is associated with a particular, default direction.

HOWEVER *dive* displays behavior that is similar in this respect to *climb*:

like *climb*, it involves a manner which is naturally associated with a particular direction.

We claim that like *climb*, it lexicalizes only one meaning component in a given use in conformity with manner/result complementarity. Concomitantly, *dive* may appear with prepositions indicating directions other than down:

- (32) Watch the dog dive across the goal and stop a shot . . . (youtube.com/watch?v=0mDWNGbbAHs)
(33) You will have to jump over, slide under and dive across the animals that can hurt you.
(<http://www.myfreegamespot.com/online-games/22700/Play-Nothing-can-Stop-Me!.html>)

CONCLUSION: The verbs *climb* and *dive* are the exceptions that prove the rule.

4.1.3 Manner verb meaning is not the same as a manner adverbial

Often, when *climb* has the directed motion sense, something of a manner component remains.

- (34) Definition of *climb*: “to rise slowly, steadily, or effortfully.” (*American Heritage Dictionary*)

Does the manner residue violate manner/result (or, in this instance, direction) complementarity?
Not on our understanding of what this complementarity means.

The manner adverbial *slowly, steadily, or effortfully* does NOT specify a nonscalar change, which by (15) would have to be associated with ACT, a second primitive. Rather, it just provides further information about the scalar change in direction.

A similar effect is observed with *soar*: these verbs do not specify a nonscalar change, but rather provide more detail about the scalar change.

- (35) Definition of *soar*: “to rise or glide high, without apparent effort; to ascend suddenly, above the normal or usual level” (*American Heritage Dictionary*)

4.2 From the change of state domain

A comparable potential counterexample exists in the change of state domain: the verb *cut*.

Guerssel et al. (1985) and Levin (1993:8) suggest *cut* has manner and result meaning components. This suggestion makes intuitive sense as the event described involves the production of an incision, which requires the use of an instrument.

- (36) *cut* LCS: x produce CUT on y, by sharp edge coming into contact with y
(Guerssel et al. 1985:51, (11))

Levin (1993), drawing on Guerssel et al. (1985:59), suggests that for a verb to show the conative, it must encode motion and contact, clearly kind of manners. If this is correct, *cut* would represent a counterexample to the lexicalization constraint.

• EVIDENCE FOR *cut* AS A RESULT VERB:

The derived nominal *cut*_N refers to a result, a property shared with result verbs:

*break*_V/a *break*_N, *crack*_V/a *crack*_N, *split*_V/a *split*_N

• EVIDENCE FOR *cut* AS A MANNER VERB:

This verb is found in the conative construction, a property shared with manner but not result verbs:

- (37) a. It had been a stupid act on her part, I thought to myself as I cut at the rope with my knife, aware that Sarnian Lady was sinking further ...
(www.etext.org/Fiction/Warlady/unzipped/warlady-2/2565-62)
b. Finally, she got the blade pulled out and started cutting at the tape on Alex ...
(www.authorhouse.com/BookStore/ItemDetail/bookid/28127.aspx)

- (38) Distribution of the conative construction:

- a. Ok with manner verbs: *claw, hit, kick, pull, splash, ...*
b. Out with result verbs: *break, crack, split, ...*

PROPOSAL: The behavior of the verb *cut* can be explained in the same way as that of *climb*:
— *climb* encodes a manner and has a default or contextually determined direction,
— *cut* encodes a result and has a conventionally determined manner.

An examination of cutting events makes clear that *cut* lexicalizes a result and implies an instrument: crucially, it doesn't specify the specific action that the instrument needs to be involved in to bring about the particular result.

- (39) “Cut verbs, too, are rather flexible about the action performed and the instrument used (I can *cut* an orange using anything from a knife or axe to a metal string or laser beam, and I can do it by bringing the blade to bear on the fruit or by dropping the fruit onto the blade from sufficient height).” (Bohnenmeyer 2007:159)

With *climb*, the default direction can get lexicalized, but only when the manner drops out, similarly, with *cut*, the manner can get lexicalized, but only at the expense of the result: the conative uses do not entail the result, but require the use of a sharp instrument.

- (40) *cut* Conative LCS: x causes sharp edge to move along path toward y, in order to produce CUT on y, by sharp edge coming into contact with y. (Guerssel et al. 1985:59, (34))

cut is one of a set of verbs, which are differentiated from one another in terms of the result:

- (41) *cut*, *cube*, *dice*, *julienne*, *slice*, *sliver*, ...

The result characteristic of each verb is prototypically brought about by a specific instrument, though neither the specific instrument, nor the action used in wielding it is lexicalized. In this respect, these verbs contrast with verbs which really lexicalize an instrument, like *knife*, *rake*, and *shovel*, which do not lexicalize a specific result.

In fact, most of these verbs do not show the conative alternation, as expected if they encode a result.

- (42) **cube/dice/julienne/sliver* at

However, since *cut* is so strongly associated with a particular manner of handling the instrument, it is sometimes used to encode just this manner. In this use, it lexicalizes manner but not result.

FURTHER EVIDENCE: In an extensive study of verbs which imply an instrument, Koenig et al. (2007:34) find that:

- (43) for the most part, the category of *sl* [the activity of the agent wielding the instrument] is weakly determined and irrelevant to the grouping of verbs. Most of the time, it is very general, some action involving the agent and the instrument. Nothing more specific can be said about that action.

STILL FURTHER EVIDENCE: Despite claims to the contrary, there are anticausative uses of *cut*.

As many have suggested, verbs with explicit manner components do not appear in the anticausative.

- (44) a. ... the rope cut on the rock releasing Rod on down the mountain. (<http://www.avalanche-center.org/Incidents/1997-98/19980103a-Montana.php>)
b. The figure lurched, but didn't fall. I hadn't severed the rope. With another yell, I struck it again. The rope cut cleanly. (<http://www.crashonline.org.uk/27/stranger.htm>)

While it is true that *cut* does not alternate in most uses, there is a well-known requirement on anticausatives (Haspelmath 1993, L&RH 1995) that the event denoted must come about without the continued intervention of the agent.

(45) I cut the bread/*The bread cut.

Clearly, this requirement is not met when bread is being cut.

That does not mean that the verb in *John cut the bread* and *The rope cut* are different verbs. Instead, we suggest that the conditions for the appearance of the anticausative are not purely lexical: rather, they relate to the properties of the event described by the sentence containing the verb.

The verb *slice* displays the same behavior as *cut*: It too is a result verb. But since an event of slicing is prototypically associated with a particular manner, it too can appear in the conative.

(46) She . . . was slicing at the tape that held his legs . . . (books.google.com/books?isbn=0060541075)

SUMMARY: *cut*, *dice*, *cube*, and *slice* are all result verbs.

— Thus, they have related result nouns and specify a particular result.

— Only *cut* seems to have an anticausative use, since only it specifies a result that can occur without the continued intervention of an agent.

— Also *cut* and *slice* are associated with conventional manners, and can then lexicalize the manner and appear in the conative. When this happens, the result part of the meaning drops out.

THE GENERALIZATION FOR MOTION VERBS AND CHANGE OF STATE VERBS:

- When a manner has a conventionally associated result, the result may get lexicalized in some uses of the verb, but only if the manner component drops out (as with *climb* and *dive*).

- When a result verb has a conventionally associated activity, the associated activity may get lexicalized in some uses of the verb, but only if the result drops out (as with *cut* and *slice*).

A CONSEQUENCE OF THE ANALYSIS: We recognize certain cases of polysemy.

4.3 From the incremental theme domain: A further refinement of the constraint

There is a class of activity verbs which specify the activity of the agent and in addition entail some kind of change in the entity denoted by the direct object.

(47) brush, comb, grind, mow, . . .

NOTE: *mow* specifies the activity of an instrument and not the agent wielding that instrument; *brush* and *comb* may be similar.

QUESTION: Do these verbs constitute counterexamples to the proposed lexicalization constraint?

ANSWER Though these verbs specify a change in both (the entities denoted by the) subject and object, these changes are nonscalar and, therefore, are not counterexamples to the constraint.

Verbs like *mow*, *grind*, *brush*, and *comb* specify changes which involve a complex interaction between the (entities denoted by the) subject argument and the object, and this renders the change nonscalar in nature.

The change in the object can be characterized only by concomitant reference to the subject's activity.

EXAMPLE: while grinding and chopping meat may lead to the same result, grinding and chopping are different activities.

EVIDENCE THAT LANGUAGE DOES NOT TREAT THESE CHANGES AS SCALAR:

It is not possible to isolate the change that the entity denoted by the direct object undergoes and to use a scalar modifier to describe this change.

- (48) a. *My lawn was more mowed than yours.
(cannot be used if my lawn is shorter than yours).
b. More of my lawn was mowed than yours.
c. My lawn is better-mowed than yours.
- (49) a. *That meat is more ground than this meat.
b. More of this meat is ground.
c. This meat is better ground.

The same applies to verbs describing different types of cooking/baking:

EXAMPLE: *sauté* means something like ‘stir food with a bit of oil over heat’, but cannot be used with a scalar modifier to describe the degree to which the food is heated.

- (50) * These vegetables are more sautéed than those.

These verbs show the properties of activity verbs and not change of state verbs:
they allow unspecified objects and an array of non-subcategorized objects.

QUESTION: As this understanding of the lexicalization constraint allows for specifying both an activity of the causer argument and a change in the direct object, what is excluded by it?

ANSWER: It rules out a transitive verb which specifies the action of an agent and/or instrument and a scalar change in the patient undergoes which is independent of what the agent/instrument does.

5 Conclusion

- Manner/result complementarity as a constraint on possible verb meanings may follow from a lexicalization constraint which limits the complexity of verb meanings.
- The lexicalization constraint supports the use of a structured representation of verb meaning, such as a predicate decomposition, over purely entailment-based approaches (e.g., Dowty 1991), as the former allows for the relevant characterization of meaning complexity.

A QUESTION FOR THE FUTURE: In English manner/result complementarity appears not to hold above the word-level, as shown by the resultative construction.

- (51) Kelly wiped the table clean.

However, Romance languages lack resultative constructions (e.g., Aske 1989, Green 1973, Talmy 1991). Should this property be taken as an indication that in some languages manner/result complementarity has an analogue above the word-level? If so, what are the larger implications?

References

- Aske, J. (1989) "Path Predicates in English and Spanish: a Closer Look", *BLS* 15, 1-14.
- Beavers, J. (in press) "Scalar Complexity and the Structure of Events", in J. Dölling and T. Heyde-Zybatow, eds., *Event Structures in Linguistic Form and Interpretation*, Mouton de Gruyter, Berlin.
- Bohnenmeyer, J. (2007) "Morpholexical Transparency and the Argument Structure of Verbs of Cutting and Breaking", *Cognitive Linguistics* 18, 153-177.
- Borer, H. (2005) *Structuring Sense II: The Normal Course of Events*, Oxford University Press, Oxford, UK.
- Carter, R.J. (1976) "Some Constraints on Possible Words", *Semantikos* 1, 27-66.
- Croft, W.A. (1991) *Syntactic Categories and Grammatical Relations*, University of Chicago Press, Chicago, IL.
- Dowty, D.R. (1979) *Word Meaning and Montague Grammar*, Reidel, Dordrecht.
- Dowty, D.R. (1991) "Thematic Proto-Roles and Argument Selection", *Language* 67, 547-619.
- Filip, H. (2005) "The Telicity Parameter Revisited", *SALT* 14.
- Filip, H. (in press) "Events and Maximalization: The Case of Telicity and Pefectivity", in S. Rothstein, ed., *Crosslinguistic and Theoretical Approaches ot the Semantics of Aspect*, John Benjamins, Amsterdam.
- Fillmore, C.J. (1970) "The Grammar of Hitting and Breaking", in R.A. Jacobs and P.S. Rosenbaum, eds., *Readings in English Transformational Grammar*, Ginn, Waltham, MA, 120-133.
- Fillmore, C.J. (1982) "Toward a Descriptive Framework of Spatial Deixis", in R.J. Jarvella and W. Klein, eds., *Speech, Place and Action*, John Wiley, London.
- Goldberg, A.E. (1995) *Constructions* University of Chicago Press, Chicago, IL.
- Goldberg, A.E. (1998) "Semantic Principles of Predication", in J.-P. Koenig, ed., *Discourse and Cognition: Bridging the Gap*, CSLI Publications, Stanford University, Stanford, CA, 41-54.
- Green, G. (1973) "A Syntactic Syncretism in English and French", in B. Kachru et al., eds., *Issues in Linguistics*, University of Illinois Press, Urbana, IL, 257-278.
- Grimshaw, J. (2005) *Words and Structure*, CSLI Publications, Stanford, CA.
- Guerssel, M., K. Hale, M. Laughren, B. Levin, and J. White Eagle (1985) "A Cross-Linguistic Study of Transitivity Alternations", *Papers from the Parasession on Causatives and Agentivity*, Chicago Linguistic Society, 48-63.
- Hale, K. and S.J. Keyser (2002) *Prolegomenon to a Theory of Argument Structure*, MIT Press, Cambridge, MA.
- Haspelmath, M. (1993) "More on the Typology of Inchoative/Causative Verb Alternations", in B. Comrie and M. Polinsky, eds., *Causatives and Transitivity*, John Benjamins, Amsterdam, 87-120.
- Hay, J., C. Kennedy and B. Levin (1999) "Scalar Structure Underlies Telicity in 'Degree Achievements'", *SALT* 9, 127-144.
- Jackendoff, R.S. (1985) "Multiple Subcategorization and the Theta-Criterion: The Case of *Climb*", *Natural Language and Linguistic Theory* 3, 271-295.
- Jackendoff, R.S. (1990) *Semantic Structures*, MIT Press, Cambridge, MA.
- Kaufmann, I. (1995) "What is an (Im-)possible Verb?" Restrictions on Semantic Form and their Consequences for Argument Structure", *Folia Linguistica* 24, 67-103.
- Kennedy, C. (2001) "Polar Opposition and the Ontology of 'Degrees'", *Linguistics and Philosophy* 24, 33-70.
- Kenny, A. (1963) *Action, Emotion, and Will*, Routledge and Kegan Paul, London.
- Kiparsky, P. (1997) "Remarks on Denominal Verbs", in A. Alsina, J. Bresnan, and P. Sells, eds., *Complex Predicates*, CSLI Publications, Stanford University, Stanford, CA, 473-499.
- Koenig, J.-P., G. Mauner, B. Bienvenue, and K. Conklin (2007) "What With?: The Anatomy of a (Proto-)role", unpublished ms., SUNY, Buffalo.
- Krifka, M. (1998) "The Origins of Telicity", in S. Rothstein, ed., *Events and Grammar*, Kluwer, Dordrecht, 197-235.
- Levin, B. (1993) *English Verb Classes and Alternations*, University of Chicago Press, Chicago, IL.

- Levin, B. and M. Rappaport Hovav (1991) “Wiping the Slate Clean”, *Cognition* 41, 123-151.
- Levin, B. and M. Rappaport Hovav (1992) “The Lexical Semantics of Verbs of Motion: The Perspective from Unaccusativity”, in I.M. Roca, ed., *Thematic Structure: Its Role in Grammar*, Foris, Berlin, 247-269.
- Levin, B. and M. Rappaport Hovav (1995) *Unaccusativity*, MIT Press, Cambridge, MA.
- Levin, B. and M. Rappaport Hovav (1999) “Two Structures for Compositionally Derived Events”, *SALT 9*, 199-223.
- Lu, J. H.-T. (1973) “The Verb—Verb Construction with a Directional Complement in Mandarin”, *Journal of Chinese Linguistics* 1, 239-255.
- Marantz, A. (1997) “No Escape from Syntax”, *University of Pennsylvania Working Papers in Linguistics* 4(2), University of Pennsylvania, Philadelphia, PA, 201-225.
- McClure, W.T. (1994) *Syntactic Projections of the Semantics of Aspect*, Doctoral dissertation, Cornell University, Ithaca, NY.
- Mohanan, T. and K.P. Mohanan (1999) “On Representations in Grammatical Semantics”, in T. Mohanan and L. Wee, eds., *Grammatical Semantics*, CSLI Publications, 23-75.
- Pesetsky, D. (1995) *Zero Syntax*, MIT Press, Cambridge, MA.
- Pinker, S. (1989) *Learnability and Cognition*, MIT Press, Cambridge, MA.
- Ramchand, G.C. (1997) *Aspect and Predication*, Clarendon Press, Oxford.
- Ramchand, G. (in press) *Verb Meaning and the Lexicon: A First Phase Syntax*, Oxford University Press.
- Rappaport Hovav, M. (in press) “Lexicalized Meaning and the Internal Temporal Structure of Events”, in Susan Rothstein, ed., *Crosslinguistic and Theoretical Approaches to the Semantics of Aspect*, John Benjamins, Amsterdam.
- Rappaport Hovav, M. and B. Levin (1998) “Building Verb Meanings”, in M. Butt and W. Geuder, eds., *The Projection of Arguments*, CSLI Publications, Stanford, CA, 97-134.
- Rothstein, S. (2003) *Structuring Events: A Study in the Semantics of Aspect*, Blackwell, Oxford.
- Talmy, L. (1975) “Semantics and Syntax of Motion”, in J.P. Kimball, ed., *Syntax and Semantics* 4, Academic Press, New York, NY, 181-238.
- Talmy, L. (1985) “Lexicalization Patterns: Semantic Structure in Lexical Forms”, in T. Shopen, ed., *Language Typology and Syntactic Description 3: Grammatical Categories and the Lexicon*, Cambridge University Press, 57-149.
- Talmy, L. (1991) “Path to Realization—Via Aspect and Result”, *BLS* 17, 480-519.
- Tenny, C.L. (1994) *Aspectual Roles and the Syntax-Semantics Interface*, Kluwer, Dordrecht.
- Wunderlich, D. (1997) “Cause and the Structure of Verbs”, *Linguistic Inquiry* 28, 27-68.
- Zubizarreta, M.L. and E. Oh (2007) *The Lexicon-Syntax Interface: The Case of Motion Verbs*, MIT Press, Cambridge, MA.