DGfS/GLOW Summer School — Stuttgart
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Lexical Semantics and Argument Realization III

Constraints on the Complexity of Verb Meanings

1 The complementarity of manner and result

(1) MANNER/RESULT COMPLEMENTARITY: Manner and result meaning components are in complementary distribution: a verb lexicalizes only one. (L&RH 1991)
— Manner verbs: specify manner of carrying out an action (e.g., *hit, pound, smear, sweep*)
— Result verbs: specify result of an action (e.g., *clean, cover, empty, put, remove*)

EVIDENCE: Across the English 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.

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

(2) 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.

This dichotomy crosscuts apparently "semantically coherent" classes of verbs, e.g., removal verbs, giving rise to various lexical domains with two subclasses of verbs.

	Manner	vs.	Result
— Verbs of Removal:	*shovel*	vs.	*empty*
— Verbs of Putting — 2-dim:	*smear*	vs.	*cover*
— Verbs of Putting — 3-dim:	*pour*	vs.	*fill*
— Verbs of Combining:	*shake*	vs.	*combine*
— Verbs of Killing:	*stab*	vs.	*kill*
— Verbs of Motion:	*run*	vs.	*come*
— Verbs of Sound:	*shout*	vs.	*say*

Manner and result verbs show distinctive patterns of behavior (Fillmore 1970, RH&L 1998):
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*.

PROPOSAL: The complementarity reflects a real constraint on the complexity of a verb's meaning.

GOALS:
— To investigate the complementary distribution. of two important components of verb meanings: manner and result.
— To argue that their complementarity arises from a constraint on how much can be packaged into a verb's meaning.
— To explore some consequences of this constraint.

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.

(3) "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 2004)

• 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 (3) continues:

(4) "However, looked at from another point of view, such a verb [e.g., *smolt* in (3) — BL] is semantically no more complex than any other: it is either a causative or an activity predicate." (Grimshaw 2005:85)

— One hypothesis is that a causative verb has the most complex possible event structure.

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

(5) 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 is that 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).

• However, manner/result complementarity does not follow from any of these constraints. As it involves roots, the question is whether any constraints on verb meaning are attributable to the root?

PROPOSAL: Constraints exist, arising from how a root is associated with an event structure template.

3 Background: The representation of verb meaning

Representations of verb meaning are predicate decompositions 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).

(6) a. Complex event structure template:
e.g., [[x ACT$_{<MANNER>}$] CAUSE [y BECOME <*RES-STATE*>]]

b. Simple event structure template:
e.g., [x ACT$_{<MANNER>}$]

• *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.

(7) manner → [x ACT$_{<MANNER>}$]
(e.g., *jog, run, creak, whistle,* ...)

(8) instrument → [x ACT$_{<INSTRUMENT>}$]
(e.g., *brush, hammer, saw, shovel,* ...)

(9) container → [x CAUSE [y BECOME AT <*CONTAINER*>]]
(e.g., *bag, box, cage, crate, garage, pocket,* ...) ...)

(10) internally caused state → [x <*STATE*>]
(e.g., *bloom, blossom, decay, flower, rot, rust, sprout,* ...)

(11) 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., (9)-(11)) or MODIFIERS (e.g., (7)-(8)) of predicates; roots are italicized and in angle brackets; notated via subscripts when modifiers.

4 The lexicalization constraint

(12) THE LEXICALIZATION CONSTRAINT: Each root has a single ontological type and can be associated with only one primitive predicate.

This constraint is similar in spirit to a constraint with the same name suggested by Kiparsky (1997) in a study of possible denominal verb meanings:

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

Since, as we argue below, by the canonical realization rules manner roots modify ACT and result roots are arguments of BECOME, a consequence of (12) is that:

(14) 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 (14).

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.

5 Refining the notions of result and manner

An examination of lexical domains showing manner/result complementarity suggests:
— the notion of result needs refinement;
it is not the same as the notion of change of state, nor is it the same as telicity.
—the notion of manner needs refinement; it cannot be equated with manner as in manner adverbs.

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

(15) "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)

(16) a. Tracy put the book in the bag in/*for ten seconds flat.
b. Tracy removed the book from the bag in/*for ten seconds flat.

• Nonetheless, 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.

QUESTION: What is the semantic notion of result relevant to manner/result complementarity?

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

5.1 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 *ascend*, *cross*, *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 results and distinguishing both from manner?
This question requires an answer to give real content to the hypothesis that manner is in
complementary distribution with result, including direction of motion.

5.1.1 Scalar and nonscalar changes

Manner and result verbs are dynamic, and all dynamic verbs involve change;
however, dynamic verbs do not all involve the same type of change.
There are two types of change (e.g., McClure 1994, Rappaport Hovav 2006), which 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

It is these two types of changes which are the meaning components in complementary distribution.

• 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 an ordering relation.
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 "located 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 (e.g., degree achievements, such as *dry, cool*) and gradual traversals of path, (e.g., certain directed motion verbs, such as *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.

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, e.g., the change lexicalized by *move*.

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

Further support for taking direction to be a type of result and directed motion to be a type of scalar change comes from parallels in telicity between change of state and directed motion verbs.

GENERALIZATION: Only verbs which are associated with a two-point scale are necessarily telic, whether in the change of state or directed motion domain (Rappaport Hovav 2006, Filip 2004).
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.

— 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 directed motion verbs are parallel requires recognizing they fall into subtypes.

Subtypes of English directed motion verbs:
— direction of motion of the theme is determined deictically: *come*, *go*
(this class apparently has just these two members crosslinguistically)
— direction of motion of the theme is lexicalized by the verb:
– direction is determined by "external" considerations, e.g., whether the motion is with or against the pull of gravity: *ascend, descend, fall, rise*, . . .
– direction is determined by the nature of the reference object: point-like: *enter, exit, arrive, leave, reach,* . . . ; spatially-extended: *pass, traverse,* . . . ; or either *cross*
(see Nikitina (2006) on Wan (Mande), Muehleisen & Imai (1995) on Japanese)

— Only verbs lexicalizing a point-like reference object (e.g., *arrive, enter, exist*), as directed motion verbs associated with a two-point scale, are necessarily telic.

— Other verbs lexicalizing direction of motion can also 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. Thereafter 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)

c. One of them came towards us and spotted that we were machine gunners. (http://www.aftermathww1.com/interviews1.asp)

SUMMARY: Deixis, direction, and scalar change of state are all types of result; verbs lexicalizing one of these never also lexicalize a manner, conforming to manner/result complementarity.
These three meaning components are also in complementary distribution with respect to each other: no verb lexicalizes more than one of these.

The lexicalization constraint prevents a single verb from lexicalizing manner, deixis, and direction.
However, some languages allow all three to be expressed within a VP, e.g., via a serial verb or other multi-verb constructions, as in Mandarin Chinese (Lu 1973), Korean (Bowerman & Choi 1991), or Thai (Zlatev & Yangklang 2004).

(23) a. Tā zǒu shàng lái/qù-le.
he walk go.up come/go-ASP
'He is walking up toward/away from the speaker.'

b. Tā zǒu jìng lái/qù-le.
he walk go.into come/go-ASP
'He is walking in toward/away from the speaker.'

(Mandarin Chinese; Lu 1973:249, (29a, 29c))

5.2 Relating (non)scalar change to manner and result verbs

Reinterpreting the canonical realization rules in the context of our clarification of the nature of manner and result roots:

(24) 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.

Then, due to the lexicalization constraint, manner/result complementarity follows.

A CONSEQUENCE: As Carter (1976:38) observes, 'change from being yellow to being red' is not a possible verb meaning; this follows if the argument of BECOME has to be a scale and the set of color values from yellow to red do not constitute the type of dimension that constitutes a scale.

ANOTHER CONSEQUENCE: Since a root is associated with one scale, no verb can simultaneously be a change of state and directed motion verb, consistent with observations about verb meaning.

A FURTHER 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 constituted of a particular repeated hand action over a surface carried out by an animate, typically with the intention of increasing the cleanliness of that surface.

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.

5.3 A motivation for the lexicalization constraint

An interpretation of manner/result complementarity: 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.

It is possible to think of other measures of complexity: 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)

It appears that presuppositions do not contribute to complexity from the perspective of the lexicalization constraint; we are unaware of any constraint on how complex the set of presuppositions associated with a verb can be.

6 Potential counterexamples to manner/result complementarity

Test cases for the complementarity observation and its suggested origins in a lexicalization constraint come from apparent exceptions to complementarity.

6.1 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* expressed a clambering manner of motion only:
Kelly climbed down from the roof.
Kelly climbed up/down the tree.
Kelly climbed through the gap in the hedge.
(NOTE: direction is expressed outside of verb, so is not lexicalized in verb)

b. *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)

There are no uses of *climb* that involve neither a clambering manner nor an upward direction:
The verb *climb* must have some meaning!

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.

6.1.1 Resolving the potential problem

The problematic uses of *climb* have the reference object, which is KEY in defining the direction of motion, as direct object.

Although such uses may appear to lexicalize an upwards direction, we argue this is not so: they only lexicalize manner. Rather, the understood upwards motion is actually inferred given real world knowledge about default motion by clambering with respect to the 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 direction is understood as over the reference object.

(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. ride the Rockies — 'ride through/over the Rockies'

c. swim the Channel — 'swim across the Channel'

d. 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)

— *ride*: the following examples have the same reference object, but the larger context indicates that the direction is down in (31) and up in (32).

(31) He was descending a hill of a four-lane arterial, on a bicycle equipped with the all-reflector system of nighttime protection that is required by federal regulation, but not using a headlamp. ... I testified to two accurate ways to determine speed on a slope. The first is plain experimentation. RIDE THE SLOPE and see what speed develops.
(http://johnforester.com/Consult/GreenJM/derby.htm)

(32) On light wind days you can fly your thermal plane from the lower North Bench. The launching/landing area is large, flat, and grassy ... NO rocks. On breezy days you can enjoy classic "Slermal" conditions ... RIDE THE SLOPE; catch a thermal; gain some big altitude; and then make a heart thumping dive to super-sonic speeds!
(http://www.flagstaffflyers.com/flyingsites/flyingsites_merriam.html)

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.

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

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

(33) The plane climbed to its cruising altitude.

Why should *climb* show these two uses?
Its manner is used to facilitate 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 then been extended for use to indicate motion in an upward direction, while losing the manner component.
This direction-only use is also consistent with the lexicalization constraint.

However, 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.

CONCLUSION: The verb *climb* is the exception that proves the rule.

6.1.3 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 the constraint on the complementarity between manner and result (or, in this instance, direction)?
Not on our understanding of what this complementarity means.

The manner adverbial *slowly, steadily, or effortfully* does NOT specify a nonscalar change, which by (14) 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*: this verb does not specify a nonscalar change, but rather provides 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*)

6.2 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, something that requires the use of an instrument.

(36) Definition of *cut*: penetrate with sharp instrument. (*American Heritage Dictionary*)

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

• EVIDENCE FOR *cut* AS A RESULT VERB:

The derived nominal cut_{N} refers to a result, a property shared with result verbs:
$break_{\mathrm{V}}$/*a* $break_{\mathrm{N}}$, $crack_{\mathrm{V}}$/*a* $crack_{\mathrm{N}}$, $split_{\mathrm{V}}$/*a* $split_{\mathrm{N}}$

• EVIDENCE FOR *cut* AS A MANNER VERB:

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

(38) Distribution of the conative construction:

a. Ok with manner verbs: *claw, hit, kick, pull, splash*

b. Out with result verbs: *break, crack, split*

(39) 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)

(40) Finally, she got the blade pulled out and started cutting at the tape on Alex . . .
(www.authorhouse.com/BookStore/ItemDetail bookid 28127.aspx)

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.

PROPOSAL: The behavior of *cut* verb 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 default or contextually determined manner.

An examination of cutting events makes clear that *cut* lexicalizes a result and implies an instrument.

(41) "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)." (Bohnemeyer 2005)

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.

(42) *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:

(43) cut, grind, slice, dice, cube, . . .

The result characteristic of each verb prototypically is brought about by a specific instrument,
though no specific instrument is really directly lexicalized by each verb.
In this respect, these verbs contrast with verbs which really lexicalize an instrument,
like *rake* or *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.

(44) ∗ grind at/dice at/cube at/slice 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.

Other verbs that appear to show result and manner meaning components:

• *scratch* can mean 'make a scratch in a surface'. But since making a scratch is often associated with a particular manner, i.e. a certain hand motion, the verb can denote just manner. In this case, it does not lexicalize a result, as when a person scratches him/herself (e.g., due to a mosquito bite).

(45) a. The needle scratched the record when the table moved, and now there is a huge scratch in the record.

b. Terry scratched (at) the mosquito bite all night.

• *grind* can mean to crush or reduce to powder by some kind of friction; here it is a result verb.
However, in *grind one's teeth* and comparable uses, the verb denotes the manner which is
prototypically associated with bringing about the result of grinding.
Crucially, however, when one grinds one's teeth, the teeth are not thereby ground.
This use, then, denotes manner but no result, consistent with manner/result complementarity.

7 Conclusion

There is a potential source for manner/result complementarity as a constraint on possible verb meanings: a lexicalization constraint limiting the complexity of verb meanings.

OPEN QUESTIONS:

• In English manner/result complementarity appears not to hold above the word-level, as shown by the resultative construction (RH&L 2006).

(46) 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?

• Manner and result have been explicated with reference to the notion of scale—a notion appealed to in research on aspect, raising a question: Is aspect a semantic determinant of argument realization?

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