Lexical Semantics of Verbs II:
The Structure of Event Structure

Reading: L&RH 2005, Sections 3.2, 4.2.5; RH&L 1998; also suggested: Levin 1999;
    L&RH to appear, especially Sections 3-5.

1   The bipartite structure of verb meaning

The organization of the lexicon into grammatically relevant, semantically coherent verb classes
presupposes that a verb's meaning can be factored into two parts:
— A part shared by all members of the same verb class.
— A part that distinguishes among the class members; thus, it is idiosyncratic to each member.
(cf. Grimshaw's (2005 [1993]) "semantic structure" vs. "semantic content" distinction)
(see Grimshaw 2005, Hale & Keyser 2002, Jackendoff 1983, 1990, Marantz 1997, Mohanan &
    Mohanan 1999, Pesetsky 1995, Pinker 1989, RH&L 1998, but see Taylor 1996)

(1)   VERBS OF CHANGE OF STATE: bend, break, cool, crack, dim, dry, empty, freeze, harden,
        lengthen, melt, open, shatter, split, warm, widen, . . .

        dry: '(x cause) y to be dry$_{ADJ}$'
        empty: '(x cause) y to be empty$_{ADJ}$'
        warm: '(x cause) y to be warm$_{ADJ}$'

(2)   VERBS OF SOUND: beep, buzz, creak, gurgle, jingle, ping, ring, roar, rumble, rustle,
        screech, squeak, thud, tick, whistle, . . .

1.1   Representing the bipartite structure of verb meaning (RH&L 1998)

Bipartiteness is easily captured by a PREDICATE DECOMPOSITION: a lexical semantic representa-
tion formulated in terms of primitive predicates chosen to represent (grammatically-relevant) com-
ponents of meaning that recur across significant sets of verbs.

(3)   Verbs of change of state: [[x ACT] CAUSE [BECOME [y *<STATE>*]]]
            dry: [[x ACT] CAUSE [BECOME [y *<DRY>*]]]
            empty: [[x ACT] CAUSE [BECOME [y *<EMPTY>*]]]
            warm: [[x ACT] CAUSE [BECOME [y *<WARM>*]]]

• THE EVENT SCHEMA: The structural component of meaning, representing an event type;
        it comes from a limited inventory encompassing the event types encodable in language;
        often defined in terms of primitive predicates (see Carter 1978, L&RH to appear, Wilks 1987).

Most important distinction is whether an event schema is complex,
        consisting of two subevents, or simple, consisting of a single subevent (L&RH 1999).

(4) a. Complex event schema:
         [[x ACT$_{<MANNER>}$] CAUSE [BECOME [y *<RES-STATE>*]]]

     b. Simple event schema:
         [x ACT$_{<MANNER>}$]
         [x *<STATE>*]
         [BECOME [x *<STATE>*]]

• THE ROOT: idiosyncratic component of meaning, characterized by an ontological type,
    chosen from a fixed set of options (e.g., state, result state, thing, stuff, location, manner);
    the set of roots is in principle open-ended.
    (Not to be confused with the notion of root used in morphology; e.g., Aronoff 1993.)

NOTE: This view of verb meaning can be instantiated lexically or via constructions.

1.2 Support for positing an ontological type for the root

EVIDENCE: Denominal verbs demonstrate clear associations between the meaning of
    the base noun and the meaning of the related verb (Clark & Clark 1979).
Associations probably are not linguistic, but rather reflect general cognitive principles.

(5) a. If N names an instrument, V means 'use that instrument for its purpose'.
             bicycle, brush, chisel, microwave, rake, shovel, spear, staple, . . .

     b. If N names a container, V means 'put something in that container'.
             bag, bottle, cage, garage, pen, pocket, stable, . . .

     c. If N names a thing/stuff, V means 'put that thing/stuff someplace'/
             'provide someplace with that thing/stuff'.
             butter, carpet, diaper, garland, harness, saddle, salt, . . .

There are then systematic associations of roots with event schemas, mediated by ontological type.

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

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

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

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

     e. result, i.e. externally caused, state (Hale & Keyser 2002, L&RH 1995) →
             [[x ACT] CAUSE [y BECOME *<RES-STATE>*]]
             (e.g., *break, dry, harden, melt, open, . . .*)

Although instrument roots are distinguished from manner roots above, this is done for illustrative
purposes; instrument roots are really a subtype of manner roots, behaving in all respects like them.

Roots are integrated into schemas as ARGUMENTS (e.g., (6c)-(6e)) or MODIFIERS (e.g., (6a)-(6b))
    of predicates; roots are italicized and in angle brackets; notated via subscripts when modifiers.

1.3 An additional contribution of the root

The root has a role in determining the name of the verb, while the event schema doesn't.

A root with more than one ontological type can combine with several event
schemas, thus defining more than one verb type, as shown with denominal verbs:

(7) a. *string*
         'put on a string' (e.g., beads)
         'provide with strings' (e.g., a violin)
         'remove strings from' (e.g., green beans)
     b. *shelve*
         'put on shelves' (e.g., books)
         'provide with shelves' (e.g., a wall)
     c. *gas*
         'provide with gas' (e.g., a car)
         'subject to the effects of gas' (e.g., the demonstrators)

Compare: same event schema/different roots: Deadjectival verbs

(8) Verbs of change of state: [[x ACT] CAUSE [BECOME [y *<STATE>*]]]
         dry: [[x ACT] CAUSE [BECOME [y *<DRY>*]]]
         empty: [[x ACT] CAUSE [BECOME [y *<EMPTY>*]]]
         warm: [[x ACT] CAUSE [BECOME [y *<WARM>*]]]

1.4 Consequences of the bipartite view of verb meaning

• Allows for a finite characterization of an infinite set of verb meanings (Carter 1976);
     i.e. new verbs fit into the set of types defined by the event schemas.

• Localizes arbitrary complexity in verb meaning in the verb roots.

Grimshaw (2005:85) asks: "How complicated can a verb meaning be?

(9) "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)

Still, she suggests that there are constraints on the complexity of verb meaning: "unlimited complexity" in meaning is confined to the root, while the event schema is "rigidly constrained" (2005:85):

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

• Allows for crosslinguistic similarities in the set of verb classes,
     while allowing crosslinguistic divergences in the class members and even class size.

Languages that have change of state verbs might differ as to which states are lexicalized;
     similarly, for verbs of manner of motion, verbs of sound, and so on.

2 A dichotomy attributable to the root: The manner/result verb distinction

Further support for attribuing an ontological type to the root: The manner vs. result verb dichotomy
   This dichotomy is relevant to verb meaning and verb behavior.

2.1 *Hitting* and *breaking* revisited

Why do *hit* and *break* jointly make for a compelling case study?
These verbs are worth studying together because certain events could be described by either one,
   yet clearly the choice of one verb or the other has significance.

EXAMPLE: A vandal throws a rock at a store window and the window breaks.

This event could be described with either verb, though each describes a different facet of the event:

(11)   a.   The vandal broke the window with a rock
       b.   The vandal hit the window with a rock.

(a) asserts that the window is no longer intact, but is silent about how it happened: the window could have been hit, kicked, punched, or pounded and a variety of instruments could have been used: rocks, hammers, fists, sticks, balls, etc.

→ This is because *break* is a change of state verb.

(b) asserts that something forcefully came into contact with the window, but is silent as to whether this contact had any effect on the window. The verb does not entail that the window broke, though it may have, as it describes an action that often results in this change of state.

(12)   The rock that the vandal threw hit the window, but luckily it wasn't damaged.
       (cf. I hit the window with a hammer; it didn't faze the window, but the hammer shattered.
       (Fillmore 1970:125, (17)))

→ This is because *hit* is a verb of surface contact.

Generalizing, verbs that describe events in which physical objects are damaged fall into two classes:
— verbs like *hit* that describe making surface contact with an object via forceful impact;
       these MANNER verbs describe ways of potentially damaging objects.
       e.g., *hit, kick, punch, slap, whack*
— verbs like *break* that describe changes in an object's "material integrity" (Hale & Keyser 1987);
       these RESULT verbs describe specific types of damage that often result from forceful impact.
       e.g., *break, crack, shatter, splinter, split*

2.2 Beyond *hitting* and *breaking*: The pervasiveness of the dichotomy

The bifurcation in the "verbs of damaging" class is representative of a more pervasive split
       in the English verb inventory (L&RH 1991, RH&L 1998, in press).

Other apparently "semantically coherent" verb classes of English can be similarly subdivided,
       giving rise to lexical domains with two subclasses of verbs:

— Manner verbs: specify a manner of carrying out an action.
— Result verbs: specify the result of an action.

	Manner Verbs	vs.	Result Verbs
— Verbs of Damaging:	*hit*	vs.	*break*
— Verbs of Putting — 2-dim:	*smear*	vs.	*cover*
— Verbs of Putting — 3-dim:	*pour*	vs.	*fill*
— Verbs of Removal:	*shovel*	vs.	*empty*
— Verbs of Combining:	*shake*	vs.	*combine*
— Verbs of Killing:	*stab*	vs.	*kill*

● In the table, verbs in the Manner column share meaning components of the same type,
as do those in the Result column.

The class of verbs defined in the Manner column is grammatically relevant despite the perceived
semantic diversity of its members; the same holds of the class defined in the Result column.

● However, the "semantic classes" in the leftmost column are not grammatically relevant;
they may be perceived as semantic classes due to intuitions that certain manner verbs and
certain result verbs can sometimes describe the same events, just as *break* and *hit* do.

The source of this intuition most likely lies in the observation that:

— Many result verbs lexicalize results that are conventionally associated with particular manners.
e.g., *clean* and *clear* lexicalize a state that may result from removing stuff from a surface
in a prototypical manner.

— Many manner verbs lexicalize manners that are conventionally 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.

● Beyond the change of state domain, a comparable dichotomy is found in the motion domain.

Classification of motion verbs in terms of "conflation" of meaning components (Talmy 1975, 1985):
— Motion and path: e.g., *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: e.g., *amble*, *jog*, *run*, *swim*
e.g., *jog* specifies a manner of motion, but is neutral as to the specific direction of motion.

→ Directed motion verbs, then, can be subsumed under result verbs.

● The notions of manner and result are applicable to verbs that may not be easily put into larger
lexical "domains" spanning the manner and result verb classes.

(13) a. MANNER VERBS: cry, eat, exercise, mutter, scribble, shout, squeak, waltz, . . .

b. RESULT VERBS: arrive, dry, come, destroy, gladden, melt, widen, . . .

● Manner/result verb distinction crosscuts the transitive/intransitive distinction, yet is grammatically
relevant: each type of verb shows own argument realization options (Fillmore 1970, RH&L 1998).

(14) a. UNSPECIFIED OBJECTS: Kim swept/*broke.

b. NON-SUBCATEGORIZED OBJECTS: Kim scrubbed/*broke her fingers raw.

c. CAUSATIVE ALTERNATION: Kim broke/wiped the window; The window broke/*wiped.

• More generally, manner verbs and result verbs differ systematically in meaning and behavior.
— Within a language the manner vs. result verb dichotomy figures in:
    — characterizing behavioral patterns (cf. (14); Fillmore on *hit/break*; L&RH 1991 on *wipe/clean*)
    — characterizing language acquisition patterns (Behrend 1990, 1995, Gentner 1978)
— Across languages the dichotomy figures in:
    — characterizing crosslinguistic similarities and divergences

Some languages, such as French, don't allow manner verbs in frames with a "result" interpretation.

(15)   a.   sponge something clean

          b.   nettoyer avec une éponge
                  cause-to-become-clean with a sponge (Green 1973:269-270)

(16)   a.   kick something shut/open

          b.   fermer/ouvrir du pied
                  shut/open with the foot (Green 1973:269-270)

• The manner/result distinction provides support for taking a root to have a single ontological type: there are apparently manner verbs and result verbs, but not verbs simultaneously lexicalizing both meaning components (RH&L in press; cf. L&RH 1991, 1995); more on this in a later lecture.

• The manner/result distinction and verb classification:
    — The manner-result distinction provides a coarse-grained classification of verbs akin
        to Rosch's (1978) superordinate level of categorization
    — Fillmorean classes could be seen as akin to the basic level.

— Manner/result classification affects whether a verb has few/many argument realization options.
— Fillmorean classes determine finer-grained argument realization options among manner verbs,
    such as transitivity, preposition choices, and participation in object alternations.

(It is possible to also argue for a fine-grained classification or subordinate level classification, e.g., distinctions among manner of motion verbs according to whether their manner suggests an intended displacement along a path or not: *run* or *fly* vs. *amble* or *stroll*; see Levin 2009.)

2.3   A prediction concerning patterns of behavior attributable to the root

Whatever the intuitions about similarities between them,
— verbs associated with roots of the same ontological type should behave similarly;
— verbs associated with roots of different ontological types need not behave similarly.

PREDICTION: Expect parallels in behavior of manner verbs,
    even if they don't intuitively belong to a "semantically coherent" verb class.

(17)   a.   VERBS OF MANNER OF MOTION: amble, crawl, hop, jump, gallop, limp, run,
                  scamper, skip, swim, trudge, walk, . . .

          b.   VERBS OF SOUND: beep, buzz, creak, gurgle, jingle, ring, roar, rumble, rustle,
                  screech, thud, tick, whistle, . . .

(18)   DIRECTED MOTION VERBS: arrive, come, go, depart, descend, fall, return, . . .

Verbs of sound and manner of motion verbs involve a manner root;
compare directed motion verbs such as *come*, *go*, *descend*, which do not.
Concomitantly, verbs of sound and manner of motion verbs pattern together in terms of
argument expression options and behavior in English and other languages;
in contrast, manner of motion verbs and directed motion verbs do not.

● All three types of verbs may take directional phrases directly:

(19)   Sandy came into the room.
        The papers fell onto the floor.

(20)   Kelly ran to school.
        The dog swam across the river.

(21)   The elevator creaked to the ground floor.
        A large truck rumbled through the gate.

● All three types of verbs may occur as intransitives, but the interpretation differs.

(22)   Sandy came yesterday.
        The papers fell.

(23)   Kelly ran.
        The dog swam.

(24)   The elevator creaked.
        A large truck rumbled.

● Manner of motion verbs and verbs of sound are found in the resultative construction,
    but directed motion verbs are not:

TRANSITIVE PATTERN: NP V NP_i XP_i or NP_i V $self_i$ XP_i

(25)   a.   Don't expect to **swim** yourself sober!

        b.   He **danced** his feet sore.

(26)   a.   … the telephone might **ring** itself blue in the face if it liked, but if it thought she
                was going to answer, it could think again. (P. Wentworth, *Mr. Zero*, 1938; Warner,
                New York, 1990, p. 67)

        b.   The phone **jangled** me into consciousness. (J. Dawson, *Take a Number*, Ballantine,
                New York, 1993, p. 108)

(27)   a.   ∗ The athletes **went** their soles thin.

        b.   ∗ The jumpers **fell** themselves black and blue.

INTRANSITIVE PATTERN: NP_i V XP_i

(28)   a.   Behind me Michael **scooted** free of the overhang, stood, and began brushing off his
                jeans. (S. Dunlap, *Time Expired*, Delacorte, New York, 1993, p. 168)

        b.   When she'd finally **climbed** free, she'd evidently relaxed, shut down. (N. Barr, *Track
                of the Cat*, Putnam, New York, 1993, p. 156)

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(29) a. The door from the opposite wing **swished** open. (D. Crombie, *A Share in Death*, Scribner's, New York, 1993, p. 215)

   b. The lid of the boiler **clunked** shut. (P. Lively, *The Road to Lichfield*, Grove Weiden- feld, New York, 1991, p. 52)

(30) a. The package **came** open. (ok on wrong interpretation)

   b. The hikers **arrived** tired. (ok on wrong interpretation)

• Manner of motion verbs and verbs of sound are found in the *way* construction,
   but directed motion verbs are not:

(31) a. But I managed to **crawl** my way to the road, where I was found. (S. Scoppettone, *I'll Be Leaving You Always*, Little, Brown, Boston, 1993, p. 14)

   b. . . . they finally **creep** their way to the front of the line . . . (P. Klass, *Other Women's Children*, Random House, New York, 1990, p. 29)

(32) a. I waited inside the front door until his car had **screeched** its way up Racine to Bel- mont. (S. Paretsky, *Burn Marks*, Delacorte, New York, 1990, p. 105)

   b. The monorail, that false prediction of 21st-century mobility, **creaks** its way around the perimeter. (E. Helmore, "A Mickey Mouse Kind of Operation", *The Indepen- dent*, July 15, 1995, p. 20)

(33) a. ∗ The students noisily **came** their way into the lecture hall.

   b. ∗ Commuters wearily **return** their way to their homes every evening.

• Manner of motion verbs and verbs of sound may have causative uses,
   but directed motion verbs do not:

(34) a. ". . . I promised Ms. Cain I would **ride** her around the ranch . . . (N. Pickard, *Bum Steer*, Pocket Books, New York, 1990, p. 92)

   b. . . . several strong Teamsters . . . **shuffled** Kit out of the room . . . (L. Matera, *A Radical Departure*, 1988; Ballantine, New York, 1991, p. 79)

(35) a. Slowly, they **rumbled** the Big Wheel across the sidewalk . . . (R. Robinson, *Summer Light*, Viking, 1988, p. 28)

   b. **Vrooooming** his plane up and down . . . Malcolm was holding onto whatever atten- tion he could get . . . (M. Grimes, *The Old Silent*, Little, Brown, Boston, 1989, p. 225)

(36) a. ∗ The train **arrived** the passengers at the station.

   b. ∗ The driver **came** the children to school. (cf. *brought*)

3 A fundamental property of event schemas: Subeventual analysis

Event schemas—roughly, predicate decompositions—have two important STRUCTURAL design properties that make them effective semantic representations:
— They distinguish a root (i.e., "core meaning") from an event structure "schema",
   a combination of primitive predicates, defining an event type.

— They include a "subeventual" analysis: an event may include subevents,
    so that complex events may be distinguished from simple events.
Both properties also characterize now widely used "syntacticized" semantic representations.

Just as sentences are syntactically analyzed as being simple or complex—that is, themselves embedding a well-formed sentence—so have the linguistic representations of events been said to be analyzable as simple or complex—that is, embedding the representation of an event.

The interpretation of the simple/complex event distinction adopted here:
    — A COMPLEX EVENT consists of two subevents, each having a well-formed event schema.
    — A SIMPLE EVENT consists of a single subevent.

(37) a.   Complex event schema:
            [[x ACT$_{<MANNER>}$] CAUSE [BECOME [y $<RES$-$STATE>$]]]

      b.   Simple event schema:
            [x ACT$_{<MANNER>}$]
            [x $<STATE>$]
            [BECOME [x $<STATE>$]]

3.1   Often-cited evidence for complex events: Adverbial scope

Explanation of ambiguities in sentences with some adverbials (e.g., *again*, *almost*, *nearly*):
— the sentences have a complex event structure and
— the adverbials have two possible scopes: over the entire event or an embedded event
(e.g., Dowty 1979, Lakoff & Ross 1972, McCawley 1973, Morgan 1969, von Stechow 1995, 1996).

(38) Tracy opened the door again.

      a.   REPETITIVE: [*again* [[Tracy ACT] CAUSE [BECOME [door OPEN]]]]
            'Tracy yet again performed the activity of opening the door.'

      b.   RESTITUTIVE: [[Tracy ACT] CAUSE [BECOME [*again* [door OPEN]]]]
            'Tracy brought it about that the door was once more open
            (though she may not have opened the door previously).'

In (38), the complex event is taken to be a causative event, analyzed in terms of a predicate CAUSE
    taking two events as arguments: '*causing event* CAUSE *result event*'.

In contrast, (39), which is taken to be a simple event, has the repetitive reading only.

(39) Tracy kicked the door again.

3.2   Further forms of support for subeventual analysis

VARIOUS CASE STUDIES INVOLVING ARGUMENT REALIZATION
— The grammar of wiping and breaking
— The semantic underpinnings of transitivity and objecthood
— (Possible object alternations; see Levin 2006)
— (The distribution of "fake" reflexives in resultatives; see L&RH 1999, RH&L 2001)

4 Preliminaries to the case studies: The licensing of arguments

4.1 Root participants and event structure positions

A root must specify the minimum number of participants in associated event:
    e.g., an event of running minimally involves the runner.
    e.g., an event of pounding minimally consists of a pounder and a surface.
      (see also Goldberg 1995, Grimshaw 2005, van Hout 1996)

Most participants associated with roots are paired with event structure positions.
    Subjects of *run* and *pound* realize such event structure positions.

(40)   a.   Pat ran.

         b.   Leslie pounded the metal.

However, not all root participants are paired with event structure positions.
    The object of *pound* exemplifies such a PURE ROOT PARTICIPANT.
    (cf. Van Valin's (1990) multiple-argument activities with one macrorole;
    Wunderlich's (1997) nonstructural arguments)

(41)   a.   Pat ran
             [x ACT$_{<RUN>}$]

         b.   Leslie pounded the metal.
             [x ACT$_{<POUND>}$ y]

SUMMARY: Two types of NP arguments in the syntax (cf. Grimshaw 2005):
— Those that realize a root participant associated with an event structure position.
— Those that realize a root participant with no place in event structure (underlined).

4.2 One-/two-argument manner verbs have same event schema

PREDICTION: Manner verbs should to some extent display same behavior
    independent of whether their roots are associated with one or two participants.
WHY? The root is always associated with the same event schema: a simple event schema.

SUPPORT FOR THE PREDICTION:
— Actor participant is always the subject
    (i.e., one-argument manner verbs are unergatives).
— Some two-argument manner verbs allow *ss*– causatives in Berber (Alalou & Farrell 1993).
— One- and two-argument manner verbs are found in resultative
    constructions (cf. Carrier & Duncan 1992).
— One- and two-argument manner verbs allow *out*– prefixation
    (cf. Bresnan 1982, Irube 1984).

One-argument means/manner verbs:

(42) Reflexive Resultative:

    a.   We curled up together like lost children who have finally **cried** themselves quiet. (K. Kijewski, *Katwalk*, St. Martin's, New York, 1989, p. 68)

    b.   Allison had **yawned** herself into catatonia … (B.J. Oliphant, *Death and the Delinquent*, Fawcett, New York, 1992, p. 24)

(43) *Out–* Prefixation:

    a.   Here was a young girl who could **out-strut** anything on two legs. (G.F. Edwards, *A Toast Before Dying*, Doubleday, New York, 1997, 169)

    b.   Lacing through the place is a cooling creek, **outbabbled** by the customers, where they chill their beer, vodka and wine. (F.X. Clines, "Tea at Dusk in Tashkent Is a Ritual for Men Alone", *The New York Times*, July 22, 1990, p. 6)

Two-argument means/manner verbs (not all easily allow "unspecified" objects):

(44) Reflexive Resultative:

    a.   By that time Sophie had **swept** and **scrubbed** herself into a state when she could hardly move. (D. Wynne Jones, *Howl's Moving Castle*, Greenwillow Books, New York, 1986, p. 43)

    b.   She **slammed** herself inside her bedroom. (N. Star, *Up Next*, Pocket Books, New York, 1998, p. 55)

(45) *Out–* Prefixation:

    a.   I'm no slouch in the food department, but she consistently **outordered** and **outate** me. (C. Garcia-Aguilera, *Bloody Shame*, Putnam's, New York, 1997, p. 4)

    b.   "… Georgia will have to **outscratch** and **outclaw** the Gators just to beat them," Spurrier said Monday. (T. Barnhart, "Spurrier Defends Comments; Poor-mouthing Is Getting Old", *The Atlanta Journal and Constitution*, November 12, 1991, p. E1)

4.3 The contribution of event schemas to argument realization

The two types of event schemas vary as to number of structure participants:
- Complex event schemas (i.e., two subevents): two structure participants, one per subevent, realized as subject and object.
- Simple event schemas (i.e., one subevent): one structure participant, realized as subject; any other arguments are licensed only by root, one of these may be realized as object.

(46)   a.   Complex event schema:
        e.g., [[x ACT] CAUSE [BECOME [y *<RES-STATE>*]]]

    b.   Simple event schema:
        e.g., [x ACT$_{<MANNER>}$ (y̱)]

CONSEQUENCE: A nonactor argument does not always have the same status.
- When a complex event verb has a root associated with two participants,
    its nonactor argument realizes a structure participant.
- When a simple event verb has a root associated with two participants,
    its nonactor argument realizes a pure root participant.
(The actor argument of both realizes a structure participant.)

This difference has repercussions for argument realization due to a condition on the event structure-syntax mapping. This condition ensures mapping to syntax preserves facets of the event schemas.

THE STRUCTURE PARTICIPANT CONDITION: There must be an argument XP in the syntax
    for each structure participant in the event schema. (RH&L 1998:113, (25a)).

In many instances this condition reduces to an alternative condition, which suggests that an argument needs to be around to "identify" each subevent in argument structure.

THE ARGUMENT-PER-SUBEVENT CONDITION (L&RH 1999)
There must be at least one argument XP in the syntax per subevent in the event structure.
(Grimshaw & Vikner 1993, van Hout 1996, Kaufmann & Wunderlich 1998, RH&L 1998)

PREDICTION: Objects of simple and complex event verbs should show different properties.

5   Case study I: The grammar of wiping and breaking (RH&L 1998)

Explaining differences in behavior of two classes of two-argument verbs:
    — Surface contact verbs (*wipe*, *rub*, *scrub*, *sweep*, ...)
    — Lexically simple change of state verbs (*break*, *dry*, *melt*, *open*, ...)

Surface contact verbs show more argument realization options than change of state verbs:
(RH&L 1998, Wright & Levin 2000; despite questions raised by Goldberg 2001)
— They allow unspecified objects without recourse to generic, repetitive, or contrastive
    contexts, change of state verbs don't.
— They take nonsubcategorized objects, change of state verbs don't.

(47)   Unspecified Objects:

    a.   Leslie swept/scrubbed (the floor).

    b.   ∗ Kelly broke again tonight when she did the dishes.

(48)   Nonsubcategorized Objects:

    a.   Leslie wiped the cloth over the table. (MEANS 'Leslie wiped the table')

    b.   Kelly broke the stick over the fence. (CANNOT MEAN: 'Kelly broke the fence')

Both types of transitive verb classes have roots associated with two participants, though their roots
    are of distinct ontological types, and thus are basically associated with distinct event schemas.

(49)   a.   Change of state verb: Result state root → complex event
                [[x ACT] CAUSE [BECOME [y <RES-STATE>]]]

    b.   Surface contact verb: manner root → simple event: [x ACT$_{<MANNER>}$ (y̲)]

As a consequence, the verb types contrast as to nature of their nonactor argument:
> — Lexically simple change of state verbs: structure participant.
> — Surface contact verbs: pure root participant.

This difference has repercussions for their argument realization options due to
> the Structure Participant Condition.

• Since a surface contact verb has a simple event schema and, thus, only one structure participant,
> the actor, only this argument is required by the Structure Participant Condition,
> > though its root is associated with two participants.

The other argument, a pure root participant, does not fall under this condition.

CONSEQUENCES: It can be left unexpressed, giving unspecified object interpretation;
> other than "normal" objects fine; no reason for object to have consistent semantics.

• Since a change of state verb has a complex event schema with two structure participants,
> it must have two arguments by the Structure Participant Condition.

Its object must realize the structure participant of the second subevent.

CONSEQUENCES: No unspecified objects; choice and interpretation of object is fixed:
> get uniform semantics (patient), determined by its event schema position.

6 Case study II: Characterizing transitivity and objecthood (Levin 1999)

• Discussions of transitivity recognize a "privileged" or "core" set of transitive verbs;
> its members have a clear semantic characterization, fitting the "agent act on
> and cause an effect in patient" mold that is behind the name "transitive" (Tsunoda 1985).

Although *break, cut, destroy, kill, open* fit this semantic profile, many English transitives do not;
> these noncore transitives include *hit, jiggle, kick, pound, shake, wipe*.

• Although "patient" and similar semantic roles are considered the prototypical object roles,
> objects of English transitives bear a wide range of semantic roles;
> some may not belong to typical role inventories or may not be easily identifiable.

(50)   The engineer built the bridge. (effected object/factitive; cf. Fillmore 1968)
> The engineer destroyed the bridge. (patient/consumed object)
> The engineer widened the bridge. (patient/incremental theme; cf. Dowty 1991)
> The engineer moved the bridge. (theme)
> The engineer washed the bridge. (location/surface)
> The engineer hit the bridge. (location; cf. Fillmore 1970)
> The engineer crossed the bridge. (path)
> The engineer reached the bridge. (goal)
> The engineer left the bridge. (source)
> The engineer saw the bridge. (object of perception)
> The engineer hated the bridge. (stimulus/target or object of emotion)

(51)   The engineer praised/touched/avoided/owned/studied/visited the bridge.
> The engineer ignored/greeted/chose/advised/met/followed the architect.

• In contrast, subjects are characterizable in terms of a few related semantic role types.

A KEY INSIGHT: Members of these transitive classes realize two different event types:
— Core transitives: complex event schema; both arguments structure participants.
— Other transitives: simple event schema;
    one argument is a structure participant, the other is a pure root participant.

CONSEQUENCES FOR OBJECTHOOD:

• The multiplicity of semantic characterizations attributable to objects of transitives.

• Objects of core transitives realize a particular event schema position (Grimshaw 2005):
    they realize the structure participant of second subevent of a complex event schema.
Thus, they have a unified and uniform semantic characterization (so-called "patient" role).
INSIGHT: semantic roles labels are generally used to name structure arguments.

• Objects of other transitives realize a pure root participant; can't be characterized in terms
    of the event schema; hence, lack of a simple unified semantic characterization.
Such objects can, however, be characterized with respect to the root:
    subregularities could arise due to natural classes constituted by verbs with similar
    roots, and, thus, their pure root participants would also form a natural class.
Thus, some classes of pure root participants might show language-specific realizations;
    otherwise, they would have some sort of default realization — in English, object.

(52)   REALIZATION OF PURE ROOT PARTICIPANT FOR RUSSIAN VERBS OF AUTHORITY:
        The pure root participant of such verbs is realized as an instrumental NP.

(53)   *rukovodit'* 'rule, direct, manage', *upravljat'* 'govern', *komandovat'* 'command', *zavedovat'*
        'manage, be in charge', *ovladevat'* 'master', *vladet'* 'rule, own', *dirižirovat'* 'conduct (an
        orchestra)', *verxovodit'* 'lord it over' (Dezsö 1982:58-59; Nichols 1975:346-47, 1984:201)

(54)   REALIZATION OF PURE ROOT PARTICIPANT OF HEBREW SURFACE CONTACT VERBS:
        The pure root participant of such verbs is realized as the object of the preposition *b*.

(55)   *ba'at* 'kicked', *dafaq* 'knocked/beaten', *halam* 'beaten/hit', *hika* 'beaten/hit', *naga* 'touched',
        xavat 'hit', . . . (Botwinik-Rotem 2003:10, Halevy 2008:63)

• The source of the subject/object semantic role asymmetry: Subjects, unlike objects,
    are always structure participants: they realize the argument of an identifiable
    primitive predicate; hence, their semantic roles are constrained.

7   Conclusions

• Accounts of a range of facets of English verb behavior relating to objects are predicated on:
    — The root/event structure distinction
    — The existence of event schemas with a subeventual analysis
    — The notion of a pure root participant

• These facets of verb behavior have received a more unified analysis than their variety suggests:
they arise because simple event verbs do not restrict their potential objects.

• They are epiphenomena of the interaction of certain types of roots, simple event structures, and
principles of argument licensing.

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