Course LSA.113P
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July 1-3, 2007

The Lexical Semantics of Verbs I: Introduction and Causal Approaches to Lexical Semantic Representation

Textbook: For further elaboration of much of the material in these lectures, see Chapters 1–4 of Levin and Rappaport Hovav (2005) *Argument Realization*, Cambridge University Press

The Big Questions:
How do we discover meaning of verbs? → The focus here.
How do we represent meaning of verbs? → A few mentions.

1 The Foundational Assumption: Verb Meaning Provides a Key to Verb Behavior

Why is a theory of verb meaning important? Verbs name events or states with participants, making them the organizational core of the sentence, so their meaning is key to sentence meaning.

Word meanings in general are difficult to pin down, and verb meanings are no less so.
How do we study verb meanings?

ONE STRATEGY: Exploit the link between verb meaning and argument realization.

WHY IS THIS STRATEGY PRODUCTIVE? To the extent that a verb's meaning appears to determine its argument realization options, looking at verbs with shared or overlapping patterns of argument realization provides a way of isolating linguistically-relevant components of verb meaning.

LIMITATION: illuminates only facets of verb meaning relevant to argument realization.

1.1 Support for this Strategy: Novel English Denominal Verbs

The argument realization options of new denominal verbs provide support for the foundational assumption that verb meaning determines verb behavior.

(1) a. He faxed the letter.
b. The librarian wanded the barcode.

(2) Double object construction:
a. He faxed me the letter.
b. ∗ The librarian wanded me the barcode.

(3) a. *fax* is a verb of information transfer
b. *wand* is not a verb of information transfer

(4) He mailed/cabled/radioed/e-mailed me the letter.

(5) Verbs derived from names of instruments used for removing:

a. The mockingbird pounces, TWEEZERS it [=the cricket] from the grass with a sharp and deadly accurate bill ... (M. Maron, *Southern Discomfort*, The Mysterious Press, New York, 1993, p. 1)

b. Carefully he RAZORED the heads off the matches ...
(B. Thoene, *Warsaw Requiem*, Bethany, Minneapolis, 1991, p. 187)

(6) He raked/swept/vacuumed the leaves off the sidewalk.

1.2 Challenges in Identifying Meaning Components

The relevant meaning components may not always be readily identifiable:
— there may be several overlapping semantic characterizations;
— the correct characterization may not be the most obvious one.

The Italian verbs *russare* 'snore' and *arrossire* 'blush' are both bodily process verbs, yet they select different auxiliaries in Italian:

(7) *russare* 'snore' takes the auxiliary *avere*
arrossire 'blush' takes the auxiliary *essere*

(8) *russare* 'snore': activity
arrossire 'blush' (= *a* + *rosso* + *ire* 'become red'): change of state

(9) AUXILIARY SELECTION:
Activity verbs take the auxiliary *avere* 'have'
State and change of state verbs take the auxiliary *essere* 'be'

1.3 A Verb's Meaning Encodes a Specific Conceptualization of an Event

The assumption that there is a verb meaning–verb behavior connection is not uncontroversial, though it is compelling.

Potential counter-examples: *buy/sell, please/like, fear/frighten*.

Most cited counter-examples can be defused: they involve pairs of verbs that DO differ in meaning: they may lexicalize different perspectives on an event, different construals of an event, or simply different events.

AN EXAMPLE OF A DIFFERENCE IN EVENT CONSTRUAL:
Differences in the behavior of certain translation equivalents.

Italian conceptualizes "blush" as a change of state, but Dutch conceptualizes it as a process. Evidence: like process verbs, Dutch *blozen* 'blush' selects the auxiliary *hebben* 'have'.

(10) a. J heeft een uur lang gebloosd
'J has one hour long blushed'

b. ∗ J heeft in een uur gebloosd
'J has in one hour blushed' (McClure 1990, p. 314, Table 4)

This example also shows it is the construal of an event that matters.

1.4 What Argument Realization Properties Illuminate the Relevant Meaning Components?

Notions such as "subject", "object", and "transitive" alone are not very revealing.
A variety of verbs are transitive, and their objects bear a range of semantic relations to the verb.

(11) The engineer built the bridge. (effected object/factitive)
The engineer destroyed the bridge. (consumed object/patient)
The engineer widened the bridge. (patient)
The engineer moved the bridge. (theme)
The engineer washed the bridge. (location/surface)
The engineer crossed the bridge. (location)
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)
The engineer avoided the bridge. (?)
The engineer studied the bridge. (?)

Phenomena that make finer grained distinctions:
— Argument (diathesis) alternations within a language. → The focus here.
— Cross-linguistic variation in argument realization.
— Derivational morphology (Foley & Van Valin 1984; RH&L 1998b).

1.5 Overview of the Lectures

2 A Case Study: Hitting and Breaking

Fillmore's well-known study, "The Grammar of *Hitting* and *Breaking*" (1970), shows how examining verb behavior can provide insight into verb meaning via a case study of two verbs.
This study also introduces two important semantic verb classes.

break and *hit* pattern together in some ways: both are transitive and take instrument *with* phrases.

(12) a. The boy broke the window with a ball.
b. The boy hit the window with a ball.

But not in all ways: There are divergences in their argument realization options.

(13) Availability of the causative alternation:

a. The boy broke the window. (*break*-transitive: 'cause to *break*-intransitive')
The window broke.

b. The boy hit the window.
∗ The window hit.

(14) Availability of stative adjective:

a. The window was broken. (stative and eventive readings)

b. The window was hit. (eventive reading only)

(15) Availability of body-part possessor ascension:

a. I broke his leg./*I broke him on the leg.

b. I hit his leg./I hit him on the leg.

(Fillmore 1970: 126, (23)–(26))

(16) Availability of the *with/against* alternation:

a. Perry broke the fence with the stick.
Perry broke the stick against the fence.

b. Perry hit the fence with the stick.
Perry hit the stick against the fence.

(Fillmore (1977a: 74–78)

THE QUESTIONS: Why do these two verbs show divergent behavior?
Why do the divergences take the forms that they do?

The verbs *break* and *hit* are each representative of a larger semantically identifiable class of verbs.

(17) a. *Break* Verbs: bend, fold, shatter, crack (Fillmore 1970: 125, (15))
→ verbs of change of state

b. *Hit* Verbs: slap, strike, bump, stroke (Fillmore 1970: 125, (16))
→ verbs of surface contact

Each set shows semantic coherence:
— *break* verbs involve a change of state in an entity,
— *hit* verbs involve contact, often forceful, with an entity, without entailing a change in its state.

(18) The rocks hit the windshield, but luckily it wasn't damaged.

The fact that classes of verbs with similar meanings show characteristic argument realization patterns suggests that the patterns can be attributed to the semantic properties of each class.

Further support: comparable classes of verbs, again with distinct behavioral patterns, can be identified in other languages, such as Lhasa Tibetan (DeLancey 1995), Berber, Warlpiri, and Winnebago (Guerssel et al. 1985).

CONSEQUENCE: Common characterization of both verbs as "agent-act-on-patient" is inadequate.

Fillmore's proposal: the verbs assign distinct semantic roles to their objects:
object of *break*: patient (Fillmore's object); object of *hit*: location (Fillmore's place).
This approach is unsatisfying: why should patients and locations differ?

SUMMARY:
Fillmore's case study shows how semantic and syntactic properties of a verb are not idiosyncratic, but may be attributed to an entire class.

3 Approaches to Lexical Semantic Representation

Two dimensions of variation in lexical semantic representations:
— the nature of the representation, e.g., semantic roles, predicate decompositions
— the model of event conceptualization, i.e., the organizing hypothesis

Semantic role representations reduce a verb's meaning to a set of roles assigned to its arguments. The set of semantic roles is taken to be independent of the verbs, and there is no organizational framework for determining or constraining what the overall set of roles should be, nor what set is appropriate for a given verb.

Why is a model of event conceptualization important?
Such a model embodies a hypothesis about the way in which events are organized in language.

The most successful theories of lexical semantic representation are organized around such a hypothesis, which helps to choose among various potential semantic meaning components and semantic representations.

TWO COMPETING PROPOSALS FOR THE MODEL OF EVENT CONCEPTUALIZATION:
— in terms of the causal structure of the event: a causal approach
— in terms of the time course of an event: an aspectual approach

Certain meaning components that are said to be relevant to semantic representations recur in various studies:
— Causation: CAUSE
— Change: BECOME, CHANGE, GO, T (transition)
— State: BE
— Measuring Out (Tenny 1987, 1992, 1994), Incremental Theme (Dowty 1991)
— Telicity: endpoint/goal/terminus
— Affectedness: Patient role, AFF
— Agency: Agent role, ACT, DO
— Process: ACT, DO, P (process)
(The list is inspired by the work of Carter, Dowty, Fillmore, Jackendoff, McCawley, Pustejovsky, Tenny, Van Valin, Wierzbicka, Wunderlich, among others.)

The items listed reflect a debate as to whether an aspectual, a causal, or a hybrid model of event conceptualization is preferable.

4 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 members of a class.

(19) VERBS OF CHANGE OF STATE: bend, break, crack, dry, empty, freeze, harden, lengthen, melt, open, warm, widen, . . .

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

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

Many current lexical semantic theories distinguish two facets of verb meaning:
One STRUCTURAL and one IDIOSYNCRATIC.
(cf. Grimshaw's (2005 [1993]) "semantic structure" vs. "semantic content" distinction)
(Grimshaw 2005, Hale & Keyser 2002, Jackendoff 1983, 1990, Marantz 1997, Mohanan & Mohanan 1999, Pesetsky 1995, Pinker 1989, RH&L 1998, but see Taylor 1996)

STRUCTURAL: a representation of the event type;
defines grammatically relevant semantic classes of verbs.
(Most often, "event structure", or "construction")

IDIOSYNCRATIC: distinguishes among the members of a semantic class of verbs.
(Most often, "root" or "core verb meaning")

KEY IDEA: Verb meanings are bipartite: they can be represented using:
— one of a small set of event types defined in terms of primitive predicates
— one of an open-ended set of "roots" representing a verb's idiosyncratic meaning.

Bipartiteness is best captured by a representation that takes the form of a predicate decomposition:

(21) 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*>]]]

4.1 A Key Property of the Root: Its Ontological Type

Roots are systematically associated with event structures.

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

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

b. 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, . . .

c. If N names an instrument, V means 'use that instrument for its purpose'.
bicycle, brush, microwave, rake, shovel, spear, staple, . . .

Basic event structure(s) associated with a verb is determined by its root's "ontological" type.

Each root has an ontological categorization, chosen from a fixed set of types
(e.g., state, result state, thing, place/container, manner, instrument, . . .)

4.2 Consequences of the Bipartite View of Verb Meaning

— Allows for a finite characterization of an infinite set of verb meanings (Carter 1976).
— Allows for crosslinguistic similarities in the set of verb classes,
while allowing crosslinguistic divergences in the class members and
even in the size of the verb classes.
—Localizes arbitrary complexity in verb meaning in the root.

5 A Dichotomy Attributable to the Root: The Means/Manner vs. Result Verb Distinction

An important generalization about verb meaning and verb behavior can be stated over roots:
The manner vs. result verb dichotomy
which supports the claim a root has an ontological categorization, chosen from a fixed set of types.

5.1 Hitting and Breaking Revisited

Why is Fillmore's case study of *hit* and *break* so effective?
The verbs are worth comparing because certain events could be described by either one.

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

This event could be described with either verb:

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

WHY: The verbs describe different parts of the event:

(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, 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

(24) 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 verbs describe means/manners 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);
they describe the specific types of damage that result from forceful impact.
e.g., *break, crack, shatter, splinter*

5.2 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).

Other apparently "semantically coherent" verb classes of English can be similarly subdivided, giving rise to lexical domains with two subclasses of verbs;
each is characterized by a convergence of meaning/behavior:
— Means/manner verbs: specify manner of carrying out an action (e.g., *pound, sweep*)
— Result verbs: specify result of an action (e.g., *remove, put, cover, empty, clean*)
In each instance, the means/manner verbs describe actions used to bring about the types of results associated with the paired result verbs.

	Means/Manner Verbs	vs.	Result Verbs
— Verbs of Damaging:	*hit*	vs.	*break*
— 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*

Thus, the verbs in each column in the table share meaning components of the same type, as identified by the label for each column.

Means/manner verbs and result verbs differ systematically in meaning and behavior.
— Within a language the means/manner vs. result verb dichotomy figures in:
— characterizing behavioral patterns (cf. Fillmore on *hit* and *break*)
— characterizing language acquisition patterns (Behrend 1990, 1995, Gentner 1978)
— Across languages the dichotomy figures in:
— characterizing crosslinguistic similarities and divergences

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 argument alternations, e.g., *Kim broke/wiped the window/The window broke/*wiped*.

5.3 Why Are Some Means/Manner and Result Verbs Felt to Be Paired?

The "semantic classes" in the leftmost column of the table are not semantically coherent, grammatically relevant classes in the sense of change of state verbs or surface contact verbs, though their manner/means and result verb subclasses are.

Yet they are perceived as semantic classes in the sense that there is an intuition that certain means/manner verbs and certain result verbs together belong in that class.

What is the source of this intuition? Its source is the observation that:

Means/manner verbs often describe actions performed to bring about some conventionally associated result (cf. *sweep clean*), typically described by the result verbs that they are grouped with, even if the result is not lexically entailed (Talmy 2000).
Result verbs do not specify the manner in which the associated result is achieved, though there may be a conventional way of doing this (cf. *clean a floor/sweep a floor clean*).

• Pouring, dumping, and dribbling some stuff into containers or onto surfaces are all actions often performed with the intention of filling containers or covering surfaces.

• Stirring, shaking, and beating some stuff are all actions often performed with the intention of mixing that stuff.

5.4 A Constraint on Verb Meaning

(25) MANNER/RESULT COMPLEMENTARITY: Manner and result meaning components are in complementary distribution: a verb lexicalizes only one (L&RH 1991, RH&L 2006).

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.

(26) 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.

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

RH&L (2006) argue it arises from how a root is associated with an event structure.

This constraint is similar in spirit to a constraint Kiparsky (1997) proposes in a study of possible denominal verb meanings:

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

6 Causal Approaches to Lexical Semantic Representation

Intuitively, what makes *break* and *hit* distinct is that only *break* is perceived as inherently causative.

The causal approach takes the facets of verb meaning relevant to argument realization to involve the causal structure of the events denoted.

This approach naturally accommodates notions such as agent, patient, and instrument, which figure centrally in semantic role inventories;
That is, the causal approach is often implicitly assumed in semantic role accounts.
However, it also defines other less widely used notions, such as "force recipient".

FOUNDATIONAL ASSUMPTION:
Causation is the primary framework for understanding and individuating events.
Contra proposals to define events in terms of spatiotemporal extension:

> "Spatiotemporal extension is neither a necessary nor a sufficient condition for defining events." (Croft 1991:159)

"Events are identical if and only if they have exactly the same causes and effects. Events have a unique position in the framework of causal relations between events in somewhat the way objects have a unique position in the spatial framework of objects." (Davidson 1980:179)

(28) Three models of causal relations:

a. events cause other events (Davidson 1967; Dowty 1979) → Often adopted
b. individuals bring about events (Gruber 1976)
c. individuals act on other individuals (Croft 1991, 1998; Talmy 1972, 1975)

THE QUESTION: Precisely what causal notions are relevant to argument realization?

6.1 The Causal Chain Model of an Event

One instantiation of the causal approach models events in terms of individuals acting on individuals, thus involving causal chains, consisting of a series of segments (or "atomic events"), each relating two participants in the event; a single participant may be involved in more than one segment.
(See Croft 1991, 1994, 1998, DeLancey 1984, Langacker 1987, Talmy 1976, 1988, among others.)

The causal chain named by a verb consists of a "self-contained" series of segments:

Verbs "... define as much as possible 'naturally' individuated events." (Croft 1994:36)

AN IMPORTANT PROPERTY: The relation between individuals is often asymmetric.

Atomic "events ... have causal directionality, and they can be linked into a series of causally related events such that the endpoint or affected entity of the causally-preceding atomic event is the initiator of the next atomic causal event. This series I will call a CAUSAL CHAIN." (Croft 1991:169)
— "each shift in the 'force' from one entity to another represents a new segment in the causal chain." (Croft 1991:170)
— "directionality of the causal chain is determined by the direction of 'force.'" (Croft 1991:170-1)

(29) The Idealized Cognitive Model of a Simple Event:
a. simple events are segments of the causal network;
b. simple events involve individuals acting on other individuals (transmission of force);
c. transmission of force is asymmetric, with distinct participants as initiator and endpoint;
d. simple events are nonbranching causal chains;
g. simple events are independent; that is, they can be isolated from the rest of the causal network
(Croft 1991:269; see also Croft 1991:173, (e)-(f) dropped, following Croft 1998:47-48)

This approach privileges the event type denoted by transitive *break* and suggests that it is such events that are prototypically denoted by transitive verbs:

"The prototypical event type that fits this model is unmediated volitional causation that brings about a change in the entity acted on (i.e., the manifestation of the transmission of force) . . . Other event types must be 'coerced' into this model." (Croft 1991:173)[1]

(30) Harry broke the vase. (Croft 1994:38, (12)

Harry		vase		(vase)		(vase)
•	⟶	•	⟶	(•)	———	(•)
SBJ	CAUSE		CHANGE		STATE	OBJ
###			break			###

(31) *Harry broke the vase* involves a three-segment causal chain:
(i) Harry acts on the vase (NOTE: indicated as CAUSE in (30))
(ii) the vase changes state
(iii) the vase is in a result state (i.e., broken)

Important properties of causal chains defining events:
— DIRECTIONALITY, arising from the asymmetric transmission of force
— DELIMITATION (from rest of causal network)

"In order for an event to be easily isolable from the causal network, it must be conceptualized as not having a clear prior cause and not itself causing another event — that is, the event must have a clear starting point and a clear endpoint. These properties are satisfied by the cause-become-state event sequence." (Croft 1990:58)

The notions "agent" and "patient" can be defined in terms of the starting point and endpoint, respectively, of the prototypical event; they are natural delimiters: an event with an agent and patient is maximally delimited (Croft 1994:39).
— Assuming free will, there is no antecedent transmission of force to agent.
— As patient is in a result state and states don't lead to other events, there is no subsequent transmission of force.

(32) Some possible event-types encoded as simple verbs:

Initiator		Endpt		(Endpt)		(Endpt)	
•	⟶	•	⟶	(•)	———	(•)	
	CAUSE		CHANGE		STATE		
###						###	CAUSATIVE
		###				###	INCHOATIVE
				###		###	STATIVE
###				###			VOLITIONAL ACTIVITY
		###		###			NONVOL ACTIVITY

[1] Croft on the notation: "a dot indicates a participant; an arrow indicates a relationship of transmission of force, which can be described by the capitalized label just below it; a line without an arrowhead indicates a noncausal (stative) relation; a parenthesized dot indicates that it is the same participant as in the preceding causal (or noncausal segment)." (Croft 1994:37, n. 5)

6.2 The Notion of Force Recipient

The notion "force recipient", which emerges from the causal chain approach, allows for a finer grained characterization of the semantic types of English objects, a characterization that is relevant for understanding crosslinguistic differences in the transitive verb inventory.

It is relevant not only to distinguishing the objects of *hit* and *break*, but also to setting them apart from the objects of certain other verbs types, including perception and emotion verbs.

(33) a. Change of state verbs: direct object is both a recipient of a transmitted force and entailed to change state.
b. Surface contact verbs: direct object is a recipient of a transmitted force, but not entailed to change state.
c. Perception and emotion verbs: direct object is neither a force recipient, nor changes state.

6.2.1 Force Recipients and Transitivity

Tsunoda (1985:388-389) proposes a hierarchy of verb classes organized according to the likelihood that their members will figure among the transitive verbs of a language. Part of the hierarchy reflects the order of verb classes in (33),

(34) change of state verbs > surface contact verbs > perception/emotion verbs

This ranking suggests the notions "changes state" and "force recipient" matter for transitivity, with the first having priority over the second.

These notions provide insight into Tsunoda's suggestion that the hierarchy is organized in terms of the decrease in "affectedness" of the patient, following an assessment of a set of semantic components of transitivity suggested by Hopper and Thompson (1980), which includes this notion.

Most surprising, perhaps, is the placement of surface contact verbs in the hierarchy, which is intended to capture the observation that these verbs are not transitive in every language, though they are in many languages.

There is evidence for this observation:

• LHASA TIBETAN: The counterpart of English *hit* is not transitive: the argument denoting surface contacted takes a locative marker. Concepts expressed by other surface contact verbs involve verb-noun combinations (DeLancey 1995, 2000).

(35) shing*(-la) sta=re-s gzhus-pa.
tree-LOC axe-ERG hit
'hit the tree with an axe' (DeLancey 1995: (18))

(36) nga-s blo=bzang=la rdog=rdyag gzhus-pa yin
I-ERG Lobsang-LOC $kick_N$ hit/throw-PERF/CONJUNCT
'I kicked Lobsang' (DeLancey 1995: (20))

• INGUSH: The counterparts of certain English surface contact verbs are also expressed via verb-noun combinations (Nichols 1982:447, 1984:188). Again the surface is expressed in an oblique case—a case-marking pattern common across Caucasian languages (Nichols 1984:188).

(37) *tuop tuoxan* ‘rifle hit’ means ‘shoot’, not ‘beat with a rifle’ (Nichols 1984: 189).

• HEBREW: The surface is expressed in a PP headed by the locative preposition *be*.

(38) *xavat be* ‘hit’, *ba’at be* ‘kicked’, *naga be* ‘touched’, *halam/hika be* ‘beat’ (Botwinik-Rotem 2003:10)

• VIETNAMESE: Surface contact verbs may express the surface as an object or take cognate objects with the surface expressed in a PP.

(39) *da* ‘kick’, *dam* ‘punch’, *thui* ‘punch’, *cao* ‘scratch’, *cau* ‘pinch/nip’, *nen* ‘beat’, *quai* ‘beat’, *can* ‘bit’, *danh* ‘hit’, *tat* ‘slap’, *vuot* ‘stroke/fondle’, *liem* ‘lick’, *hon* ‘kiss’, *cu* ‘tickle’, *phang* ‘strike with a stick’, *quat* ‘strike’, . . . (Pham 1999:233)

(40) Ti da toi.
Ti kicked me
‘Ti kicked me.’ (Pham 1999:232, (10a))

(41) Ti da mot da.
Ti kicked a kick
‘Ti kicked a kick.’ (Pham 1999:233, (10b))

(42) Ti da mot da vao toi.
Ti kicked a kick on me
‘Ti kicked me a kick.’ (Pham 1999:233, (10c))

6.2.2 Identifying Force Recipients

A DIAGNOSTIC FOR FORCE RECIPIENT: can be *Y* in the frame *What X did to Y was . . .*

(43) a. What Harry did to the window was break it.
b. What Tracy did to the soup was warm it.
c. What they did to their children’s hair was rub it.

(44) a. What Harry did to the window was hit it.
b. What Terry did to the jammed door was kick it.
c. What the man did to the donkey was beat it.
d. What the waiter did to the glasses was wipe them.

(45) a. ∗ What Kelly did to the movie was see it.
b. ∗ What Popeye did to spinach was love it.
c. ∗ What the child did to the toy was want it.

NOTE: Jackendoff (1987:394, 1990:125-30) takes this frame to be a diagnostic for a “patient”, which he also defines as an ‘affected entity’ (see also Fiengo 1980:37). As he notes, however, the NPs picked out by this diagnostic do not correspond precisely to those picked out by other affectedness diagnostics, which pick out patients in a strict sense—understood in terms of change of state.

Independent support for the notion "force recipient": The resultative construction.

THE GENERALIZATION: The result XP is predicated of the NP denoting the argument of a transitive verb which is the recipient of a transmitted force, if there is one (RH&L 2001).

Result XPs may be predicated of the object of change of state verbs, surface contact verbs, and verbs of exerting force (e.g., *pull, push, tug, yank*).

(46) a. She might employ it [her body] as a weapon—fall forward and FLATTEN me wafer-thin. (D. Ephron, *Big City Eyes*, Putnam's, New York, 2000, p. 92)

b. She was WIPING the mirror free of steam ... (E. George, *Missing Joseph*, Bantam, New York, 1993, p. 251)

c. He PULLED the glass door tightly shut behind them ... (A. Cleeves, *Murder in My Backyard*, Fawcett, New York, 1991, p. 119)

6.3 What Makes a Causative Alternation Verb?

A hallmark of *break*, which sets it apart from *hit*, is its participation in the causative alternation.

That is, it is among the verbs found in transitive/intransitive pairs where V_{trans} = 'cause to $V_{intrans}$'.

(47) a. Pat broke the window./The window broke.

b. Tony opened the door./The door opened.

c. Kelly cooled the soup./The soup cooled.

d. Sam cooked the fish./The fish cooked.

(48) Pat hit the window./*The window hit.

How can causative alternation verbs best be characterized?

6.3.1 What Makes *break* Different from *hit*?

Usually discussions of how *break* and *hit* differ focus not on the semantic role of their object, but on the notion "causative": transitive *break* is said to be causative, *hit* is not.

Causative events are often analyzed using the event-cause-event model; they are "complex events".

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.

(49) a. Complex event structure:
[[x ACT$_{<MANNER>}$] CAUSE [BECOME [y <*STATE*>]]]

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

OFTEN-CITED EVIDENCE FOR EVENT COMPLEXITY: 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., Lakoff & Ross 1972, McCawley 1973, Morgan 1969, Dowty 1979, von Stechow 1995, 1996).

(50) 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 (50), 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, (51), which is taken to be a simple event, has the repetitive reading only.

(51) Tracy hit the punching bag again.

6.3.2 What Makes *break* Different from *play*?

What property of *break* makes its transitive use causative?
An answer to this question emerges from contrasting *break* with intransitive verbs such as *play*, which are NOT regularly paired with a transitive causative use.

Agentive intransitive verbs do not participate in the causative alternation.
But the distinction cannot be equated with agentivity;
there are nonagentive verbs which do not participate in the alternation.

(52) Animate agentive argument:

a. The children played./*The teacher played the children.
(on the interpretation 'The teacher made the children play.')

b. The politician spoke./*The press spoke the politician.
(on the interpretation 'The press made the politician speak.')

c. The athletes jogged./*The coach jogged the athletes.
(on the interpretation 'The coach made the athletes jog.')

(53) Animate nonagentive argument:

a. Charlotte blushed./*The rude comment blushed Charlotte.

b. Kelly coughed./*The medicine coughed Kelly.

c. The crowd laughed./*The comedian laughed the crowd.

(54) Inanimate nonagentive argument:

a. The stream burbled./*The rocks burbled the stream.

b. The embers glowed./*The draft glowed the embers.

c. The chimney smoked./*The draft smoked the chimney.

d. The onions smelled./*The frying smelled the onions.

The relevant distinction is between verbs denoting internally caused eventualities and verbs denoting externally caused eventualities.

• An INTERNALLY CAUSED EVENTUALITY "cannot be externally controlled" (Smith 1970:107), but is conceived of as arising from inherent properties of its argument. An inherent property of the argument is "responsible" for the eventuality denoted by an internally caused verb.

Internal causation subsumes agentivity: monadic agentive verbs are internally caused. However, not all internally caused verbs are agentive.
The prototypical internally caused eventuality involves an agentive argument with a self-controlled body acting volitionally.

Internally caused verbs that depart from the prototype tend to exert strong selectional restrictions on their subject since the eventuality they denote must result from inherent properties of the verb's argument, and thus the argument must have the requisite properties.

• EXTERNALLY CAUSED EVENTUALITIES inherently involve an external cause with immediate control over the event: agent, natural force, or circumstance.

The core externally caused verbs are verbs of change of state and change of position:

(55) Jespersen's "Move" and "Change" Verbs:

a. bounce, move, roll, rotate, spin, . . .

b. bake, blacken, break, close, cook, cool, dry, freeze, melt, open, shatter, thaw, thicken, whiten, widen, . . .

Externally caused verbs cannot be equated with verbs of change of state: there are internally caused verbs of change of state (Wright 2001).

(56) a. The cactus bloomed/blossomed/flowered early.

b. ∗ The warm weather bloomed/blossomed/flowered the cactus early.

(57) a. The logs decayed.

b. ∗ The humid weather decayed the logs.

6.3.3 Implications for the Representation of Verb Meaning

If the key semantic property of verbs showing the causative alternation such as *break* is external causation, then there is a sense is which such verbs are inherently causative; that is, they are naturally compatible with a complex event structure, such as:

(58) *break*: [[x ACT] CAUSE [BECOME [y <*BROKEN*>]]]

Not only are these result verbs, but their root represents an externally caused state—a result state.

Verbs like *hit* with means/manner roots would not be compatible with a complex, causative event structure; hence, their object cannot represent an argument that changes state, since no externally caused result state is part of their meaning.

Transitive and intransitive *break* would have the same lexical semantic representation; intransitive *break* involves lexical binding of the external cause (L&RH 1995) or reflexivization (Koontz-Garboden 2007).

Evidence from the morphological form of causative pairs: The use of reflexive morphology.

(59) Italian:

a. Gianni ha aperto la porta.
'Gianni opened the door.'

b. La porta si è aperta.
'The door opened.'

(60) Russian:

a. Anna otkryla dver'.
'Anna opened the door.'

b. Dver' otrkylas'.
'The door opened.'

(61) Hebrew:

a. Dan yibeš et ha-begadim.
Dan dried ACC the-clothes

b. Ha-begadim hityabšu.
the-clothes dried

6.4 What Is an Agent?

Causal approaches draw attention to the notion "agent", e.g., Croft's prototypical transitive event.

THE QUESTION: How are agency and causation related?

• Not all verbs that may take an agent are causative: e.g., *hit* and other surface contact verbs.

• Not all causative verbs are necessarily agentive:

— Causative alternation verbs may take instrument and natural force subjects.

(62) a. Kelly dried the clothes.
b. The heater dried the clothes.
c. The wind and sun dried the clothes.

— And the agency of an animate subject can be denied.

(63) The boy broke the window (accidentally).
(Van Valin & Wilkins 1996: 307, (4a))

— Even *kill*, another verb commonly assumed to be agentive (and causative), does not require an agent, contrasting with *murder*, which is (Van Valin & Wilkins 1996).

(64) a. Larry killed the deer.
b. Larry intentionally killed the deer.
c. Larry accidentally killed the deer.
d. The explosion killed the deer.
(Van Valin & Wilkins 1996: 309, (9); adapted from Holisky (1987: 118, (15))

(65) a. Larry murdered his neighbor.
b. ∗ Larry inadvertently murdered his neighbor.
c. ∗ The explosion murdered Larry's neighbor.
(Van Valin & Wilkins 1996: 310, (10))

As Van Valin & Wilkins point out, elaborating on Holisky (1987), verbs which require agents as subjects such as *murder* are much rarer than those which allow agents as subjects, but also allow various nonagentive causer subjects, such as *kill*.

"I would argue that the meaning of agent is often not a property of the semantic structure of the predicate at all. … Agent interpretation often arises, rather, from the intersection of the semantics of the clause (the semantics of both the actor NP and the predicate) and general principles of conversation (cf. Grice, 1975)." (Holisky 1987:118-119)

Holisky proposes agentivity derives from a pragmatic principle:

(66) Pragmatic principle: You may interpret effectors and effector-themes which are human as agents (in the absence of any information to the contrary). (Holisky 1987:118-119)

where an "effector" is the semantic role that Van Valin attributes to the subject of verbs like *kill*.

This point has significant implications for the characterization and analysis of argument realization regularities: for example, it raises the question whether instrument subjects are best so characterized or whether they should simply be considered effectors?

NOTE: A set of references for all three lectures will be included with the third handout.