Verb meanings and verb alternations
Chris Potts, Ling 130a/230a: Introduction to semantics and pragmatics, Winter 2021
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Note  This handout is based on a handout by Erika Petersen, a PhD student in Stanford Linguistics.

1  Overview

• **Compositional semantics** tends to focus on closed-class function words: *every, not, and, …*

• For open-class lexical items (nouns, adjectives, verbs, etc.), we make a meaningful commitment about their semantic types, but then we say something bland about their meanings like “[run] is the characteristic function of the set of entities that run”.

• **Lexical semantics** focuses on open-class words and asks a wide range of questions:
  – What is the nature of semantic relations like synonymy and antonymy?
  – How does lexical meaning affect morphology and syntax?
  – How do lexical meaning and cognition shape each other?

For today, we’re going to study some interactions between lexical meaning and syntax, and we’ll try to relate these interactions to more general aspects of cognition.

2  Semantic roles

As we saw in our semantic grammar, verbs vary in their argument structure:

(1)   a.  
       \[ \text{study} = \lambda x \ (T \text{ if } x \text{ studies, else } F) \]

       b.  
       \[ \text{tease} = \lambda y \ (\lambda x \ (T \text{ if } x \text{ teases } y, \text{ else } F)) \]

And we could continue this: *give* would have three arguments, and perhaps *bet* would have four (*x bet y z amount that p*). The alignment of syntactic positions to argument slots is important, as it determines semantic roles:

(2)  

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    VP
     \[ V \]  \[ PN \]
     |   |   
    \[ tease \]  \[ Homer \]

    \lambda x \left( T \text{ if } x \text{ teases } \text{ Hom\(\text{\textcircled{\text{}}}\)} \text{, else } F \right)
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    \[ \text{tease} \]
    \[ Hom\(\text{\textcircled{\text{}}}\)\]
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Common semantic roles:

<table>
<thead>
<tr>
<th>Semantic role</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGENT</td>
<td>volitional causer of an event</td>
<td>Homer teases Lisa.</td>
</tr>
<tr>
<td>EXPERIENCER</td>
<td>experiencer of an event</td>
<td>Maggie loves Lisa.</td>
</tr>
<tr>
<td>PATIENT</td>
<td>participant most directly affected by an event</td>
<td>Homer teases Lisa.</td>
</tr>
<tr>
<td>INSTRUMENT</td>
<td>instrument used in an event</td>
<td>Bart cut the board with a saw.</td>
</tr>
<tr>
<td>SOURCE</td>
<td>origin of the object of a transfer event</td>
<td>Oil gushed from the well.</td>
</tr>
<tr>
<td>GOAL</td>
<td>destination of an object of a transfer event</td>
<td>Lisa traveled to Paris.</td>
</tr>
</tbody>
</table>

Our theory itself doesn’t say what the roles are like, but it seems ready to be combined with such a theory. Informally:

(3) \[
\text{\texttt{tease}} = \lambda y_{\text{PATIENT}} (\lambda x_{\text{AGENT}} (\text{\texttt{T if \texttt{x_{\text{AGENT}}}} \text{\texttt{teases \texttt{y_{\text{PATIENT}}}}}, \text{\texttt{else F}}}))
\]

3 Verb alternations

Despite what our grammars have suggested so far, many lexical items have **flexible** argument structure. Such verbs are said to show *multiple argument realization options*, and lexical semanticists have learned a great deal about the nature of these options.

Here we will concentrate on three verb alternations:

**The causative alternation**

(4) General pattern:

a. AGENT verb PATIENT
b. PATIENT verb

(5) Example:

a. Jesse opened the door.
b. The door opened.

**The conative alternation (from the Latin conar/conari; ‘to try to’)**

(6) General pattern:

a. AGENT verb PATIENT
b. AGENT verb at PATIENT

(7) Example:

a. Jesse cut the bread.
b. Jesse cut at the bread.
Body-part possessor ascension alternation

(8) General pattern:
   a. Agent verb Body-part-Possessor’s Body part
   b. Agent verb Body-part-Possessor on the Body part

(9) Example:
   a. Maggie touched Lisa’s shoulder.
   b. Maggie touched Lisa on the shoulder.

4 Break-type verbs and Hit-type verbs

The verbs break and hit both have transitive uses:

(10) a. Sandy broke the stick (with a rock).
    b. Sandy hit the tree (with a rock).

Both of these verbs show the following argument realization:

(11) Agent verb Patient (Instrument)

However (twist!), these verbs turn out to be different with respect to our three alternations.

Causative alternation

(12) a. Sandy broke the stick.
    b. The stick broke.

(13) a. Sandy hit the tree.
    b. *The tree hit.

Conative alternation

(14) a. Sandy broke the stick.
    b. *Sandy broke at the stick.

(15) a. Sandy hit the tree.
    b. Sandy hit at the tree.

Body-part possessor ascension alternation

(16) a. Sandy broke Jesse’s arm.
    b. *Sandy broke Jesse on the arm.

(17) a. Sandy hit Jesse’s arm.
    b. Sandy hit Jesse on the arm.
Summary table

<table>
<thead>
<tr>
<th>Verb</th>
<th>Causative</th>
<th>Conative</th>
<th>Body-part possessor ascension</th>
</tr>
</thead>
<tbody>
<tr>
<td>break</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>hit</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Verb classes**  Verbs that show the same behavior with respect to a series of verb alternations belong to the same semantic class:

(18) *Break*-type verbs: chip, crack, crash, snap, split, …

(19) *Hit*-type verbs: bang, beat, knock, pound, strike, …

**Why**  *Break*-type verbs are change-of-state verbs, whereas *Hit*-type verbs are surface-contact verbs. This very general property of the lexical meanings (and/or of the way we conceptualize the events they describe) seems to partly control argument realization.

5  *Break* and the causative alternation

What is a lexical item? A string of sounds? A string out sounds with a specific meaning attached? But then how do we delimit different meanings?

(20) a. Maggie broke the vase.
    b. The vase broke.

(21) a. Maggie broke the promise.
    b. *The promise broke.

(22) a. *The sun broke the day.
    b. The day broke.

Questions:

i. How many different meanings does break have?

ii. Which meanings of break show the causative alternation and which do not?

iii. Is the causative alternation pattern for different meanings predictable?

5.1 Petersen’s (2020) corpus study

**Source**  The Corpus of Contemporary American English (CoCA; Davies 2008),¹ which contains more than one billion words of text from different genres (e.g. spoken, fiction, popular magazines, newspapers, academic texts, web pages) from the period 1990–2019.

¹https://www.english-corpora.org/coca/
Analysis  There are 26,285 examples of break in CoCA. Petersen annotated 1,000 randomly-sampled examples, seeking to characterize:

- The meaning of the break phrase.
- Whether the frame was transitive or intransitive.
- The semantic classification of the arguments to break.

The analyzed sample is supplemented by more strategic Web searching to see if specific patterns are attested.

Alternating break + NP combinations

23) break + inanimate entity: ‘to separate into pieces’

a. We should be thanking the coral reefs,” says Dave Vaughan, executive director of Mote Marine Laboratory & Aquarium’s Elizabeth Moore International Center for Coral Reef Research & Restoration. “They broke the waves. If they hadn’t, our homes would not have survived.” (Google)

b. I know the feeling, but I have to stop and start taking it in: the air infused by the iodine scent of kelp mixed with the spiced incense of the forest, the hiss of spray blowing off the tops of waves in the still moment before they crest and break on the reef. (CoCA)

24) break + device: ‘to cease to function’

a. One unfortunate law of operating-system upgrades – which applies equally to Macs and to Windows PCs – is that they will break some systems and applications, especially at first. (CoCA)

b. He said he would never buy such a service plan unless he knew the product it protected was guaranteed to break. (CoCA)

25) break + state: ‘to stop, interrupt, or end’

a. Networking with other music teachers, both new and experienced, can be a professional life-line for beginning music teachers and can help to break the isolation of the first years of teaching. (CoCA)

b. Then, without warning, I was boxed in by trees in an enchanting forest of evergreens and birches with teardrop lakes that stretched to the Earth’s edges. The isolation broke intermittently. I was revived by the sight of what Manitoba calls towns and what I refer to as generous rest stops. (Google)

26) break + new information: ‘to make known’

a. We’ll break this news gently: For the next few months, you’ll be seeing red. (CoCA)

b. Do you think the media voiced enough skepticism whether or not the guy was guilty? Because when the story did break, people were just reporting the story. (CoCA)
Transitive-only *break* + NP combinations

(27)  *break* + code: ‘to decipher’

a. The tribal dialects completely baffled the enemy, who repeatedly tried but failed to break the codes. (CoCA)

b. *The secret codes broke.*

c. Almost sixty years later, Frank Rowlett, a cryptologic pioneer and head of the “Purple” team, remembered that historic day when the code broke. “What [Genevieve] Grotjan did was a big step forward and was very significant in the solution of Purple.” (Google)

(28)  *break* + norm: ‘to violate or disobey’

a. Monica broke her promise/the contract.

b. *Her promise/The contract broke.*

(29)  *break* + record: ‘to better’

a. So far this year, 11 people have been killed in this Caribbean island territory of 110,000 people, putting the Virgin Islands on a pace to break the record of 27 homicides set in 1989. (CoCA)

b. *The record of 27 homicides broke.*

Intransitive-only *break* + NP combinations

(30)  *break* + natural phenomenon: ‘to start or appear’

a. Kevin drove them all the way back to Equinox, to the Goodbye Goose, as day began painfully to break. (CoCA)

b. *The Earth’s rotation broke the day.*

5.2 Petersen’s (2020) core generalizations

Semantic senses of break correlate with syntactic restrictions:

- Transitive uses: require two event participants, which get assigned to syntactic positions according to more general principles of semantic role assignment.

- Intransitive: require only one event participant, and this becomes the subject because Standardized English pretty much always requires clauses to have subjects.

These could be partly about how we conceptualize these events, but they are clearly also partly about how we divide up lexical senses.
5.3 My attempt to paint a break landscape

Not necessarily endorsed by Erika Petersen!

What is the relevance of facts like these?

(31) a. Kim surpassed the world record.
    b. *The world record surpassed.

(32) a. Kim violated the contract.
    b. *The contract violated.

(33) a. *Helios appeared the sun.
    b. The sun appeared.

(34) a. The paper published the news.
    b. *The news published.
    c. The news appeared.
References
