Definitions: Problems and Lessons

http://www-rohan.sdsu.edu/~gawron/semantics

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1. Introduction

2. Difficulties with senses

3. Difficulties with senses

4. Hard

5. Line
Outline

1. Introduction

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What is a lexicographer?

“. . . a lexicologist with a deadline” (Fillmore)
Three tasks

1. Identify senses by looking at data.
2. Compose definitions. (Many of you would get fired your first day on the job.)
3. Provide *illustrative* examples. (Not so easy!)
1 Introduction

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How many senses are there? Look at the dictionary entries for *line* that follow, and compare with other dictionaries. Atkins and Levin (1991) find numerous cognitive and theoretical difficulties in merging *whistle*, *whistler* entries from two dictionaries, SENSEVAL1 and SENSEVAL2 (Kilgarriff and Palmer 2000): Verbs generally harder (more polysemous). Avg polysemy of 16.28 senses in WordNet (Fellbaum 1998). Average interannotator agreement (71%); [compare nouns and adjectives: 85%]

Modern Lexicographers have moved away from relying on that classical notion of what a dictionary is (American Heritage, Collins, New Oxford) to entries heavily fortified with examples, proliferating senses whenever necessary to accommodate a variety of examples.
Verbs are worse (Atkins 1993, Palmer et al. 2007)

<table>
<thead>
<tr>
<th>Hector</th>
<th>Number of senses</th>
</tr>
</thead>
<tbody>
<tr>
<td>bury</td>
<td>15</td>
</tr>
<tr>
<td>float</td>
<td>18</td>
</tr>
<tr>
<td>seize</td>
<td>11</td>
</tr>
</tbody>
</table>
### Example problem verbs (Palmer et al. 2007)

<table>
<thead>
<tr>
<th>Hector</th>
<th>WN</th>
</tr>
</thead>
<tbody>
<tr>
<td>shake hands with so.</td>
<td>WN1</td>
</tr>
<tr>
<td>shake o.’s fist at so.</td>
<td>WN1</td>
</tr>
<tr>
<td>shake o’s head</td>
<td>WN1</td>
</tr>
<tr>
<td>My hands shook from the cold.</td>
<td>WN1</td>
</tr>
<tr>
<td>He shook the bag violently.</td>
<td>WN1</td>
</tr>
</tbody>
</table>

- gentle tremors (WN2)
- rapid vibrations (WN3)
- swaying (WN4)
- shaken by his father’s death (WN5)

Sense grouping methodologies proposed (syntactic and semantic criteria); psychological priming experiments support the idea of core/peripheral senses. (Williams 1992)
Kilgariff (1997:19)

The primary implication is that a task independent set of word senses for a language is not a coherent concept. Word senses are simply undefined unless there is some underlying rationale for clustering, some context which classifies some distinctions as worth making. For people, homonyms like *pike* are a limiting case; in almost every situation where a person considers it worth their while attending to a sentence containing *pike*, it is also worth their while making the fish/weapon distinction.
For better or worse, this would bring **competition** to the licensed trade. (Kilgarriff 1993)

On streets where life can be as **hard**, gray, and dirty as the sidewalks, people seem to want art. (Anastasia Hernandez)
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5. Line
a long, narrow mark or band: a row of closely spaced dots will look like a continuous line — I can’t draw a straight line.

Mathematics a straight or curved continuous extent of length without breadth.

a positioning or movement of a thing or things that creates or appears to follow a line: her mouth set in an angry line — the ball rose in a straight line.

a furrow or wrinkle in the skin of the face or hands.

a contour or outline considered as a feature of design or composition: crisp architectural lines — the artist’s use of clean line and color.

(on a map or graph) a curve connecting all points having a specified common property.

a line marking the starting or finishing point in a race.

a line marked on a field or court that relates to the rules of a game or sport.

Football the line of scrimmage.
Defining *line* II
New Oxford American Dictionary

- (the Line) the equator.
- a notional limit or boundary: the issue of peace cut across class lines — television blurs the line between news and entertainment.
- each of the very narrow horizontal sections forming a television picture.
- Physics a narrow range of the spectrum noticeably brighter or darker than the adjacent parts.
- (the line) the level of the base of most letters, such as h and x, in printing and writing.
- [as modifier] Printing & Computing denoting an illustration or graphic consisting of lines and solid areas, with no gradation of tone: a line block — line art.
- each of (usually five) horizontal lines forming a staff in musical notation.
- a sequence of notes or tones forming an instrumental or vocal melody: a powerful melodic line.
- a dose of a powdered narcotic or hallucinatory drug, esp. cocaine or heroin, laid out in a line.
2. a length of cord, rope, wire, or other material serving a particular purpose: wring the clothes and hang them on the line — a telephone line.
   - a telephone connection: she had a crank on the line.
   - a railroad track.
   - a branch or route of a railroad system: the Philadelphia to Baltimore line.
   - a company that provides ships, aircraft, or buses on particular routes on a regular basis: a major shipping line.

3. a horizontal row of written or printed words.
   - a part of a poem forming one row of written or printed words: each stanza has eight lines.
   - (lines) the words of an actor’s part in a play or film.
   - (lines) Brit.an amount of text or number of repetitions of a sentence written out as a school punishment.

4. a row of people or things: a line of acolytes proceeded down the aisle.
a row or sequence of people or vehicles awaiting their turn to be attended to or to proceed.
a connected series of people following one another in time (used esp. of several generations of a family): we follow the history of a family through the male line.
(in football, hockey, etc.) a set of players in the forwardmost positions for offense or defense.
bفا Football one of the positions on the line of scrimmage.
a series of related things: the bill is the latest in a long line of measures to protect society from criminals.
a range of commercial goods: the company intends to hire more people and expand its product line.
informal a false or exaggerated account or story: he feeds me a line about this operation.
the point spread for sports events on which bets may be made.
an area or branch of activity: the stresses unique to their line of work.
a direction, course, or channel: lines of communication — he opened another line of attack.

(lines) a manner of doing or thinking about something: you can’t run a business on these lines — the superintendent was thinking along the same lines.

an agreed-upon approach; a policy: the official line is that there were no chemical attacks on allied troops.

a connected series of military fieldworks or defenses facing an enemy force: raids behind enemy lines.

an arrangement of soldiers or ships in a column or line formation; a line of battle.

(the line) regular army regiments (as opposed to auxiliary forces or household troops).
## Senses of *hard*

1. **Difficult, challenging, taxing**  
   Precedes infinitive  
   *It’s hard to focus now.*

2. **Exhibiting great effort**  
   Precedes the **noun** *work*  
   *It was hard work convincing her.*

3. **Not soft, tough**  
   Precedes noun denoting physical object.  
   *It has a hard shell.*

4. **Resentful (of feelings)**  
   Occurs after *take it*  
   *Sam took it hard.*

Consistent with statements above? *She tried hard to convince her parents, but they wouldn’t budge.* (Michael Stephens)
Find the parts of speech of *hard* and *work* in the following examples (many based on Michael’s)

(1)  
a. It was *hard* work convincing her parents.  
b. She had to *work* hard to convince her parents.  
c. Bill had a *work* order for Room 111.  
d. The *hard* brick wall fell.  
e. He pushed *hard* the entire semester and passed all his classes.  
f. The cheese turned *hard* after sitting out so long.
It’s hard reading.
It’s a hard reading.
It’s hard to read.

a hard journey = a difficult journey = one requiring hard work

Distinct ideas may have overlapping extensions; *dog* means both male dog and the species
Introduction

Difficulties with senses

Difficulties with senses

Hard

Line
Senses

1. A single unit of speech in a play, often a single utterance, or a segment of poetry that completes a metrical pattern (five iambs in iambic pentameter)

2. A horizontal string of words in a document; usually a page consists of many such lines

3. A boundary that divides two regions in space

4. People or Objects arranged in a chain for some purpose, a queue

5. An arrangement of mechanical devices including cables or wires for the purpose of carrying a communication signal

6. A collection of company products, usually unified by falling into some natural commercial category or by a theme or by an endorser or designer
How to do semantics if the foundations of meaning are so creaky?

We **do** understand each other (a lot of the time, anyways . . .)

Particular aspects of word meaning get activated/primed by context, not necessarily by logical associations (The astronomer married a star.)

Reference anchors a lot of noun meanings (“Oh, you mean Fred Hoyle, the astronomer,” short-circuiting the need for definitions of *astronomer* or *astronomy*)

Highly ambiguous verb meanings (*bury*) remain an interesting puzzle.

We focus in this course on the semantics/pragmatics connection, grammatical meaning, and how word meanings **combine**.
Bibliography

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Cambridge, MA: MIT Press USA.

I don't believe in word senses. 

Introduction to the special issue on senseval. 

Palmer, Martha, Hoa Trang Dang, and Christiane Fellbaum. 2007. 
Making fine-grained and coarse-grained sense distinctions, both manually and automatically. 
*Natural Language Engineering* 13(02):137–163.

Processing polysemous words in context: Evidence for interrelated meanings. 