Full example

Jin broke the projector before class because he didn’t want to hear Jena talk.

• Given relation break:
  • Arg0: Jin
  • REL: broke
  • Arg1: the projector
  • ArgM-TMP: before class
  • ArgM-CAU: because he didn’t want to hear Jena talk.
Mapping from PropBank to VerbNet (similar mapping for PB-FrameNet)

<table>
<thead>
<tr>
<th>Frameset id = leave.02</th>
<th>Sense = give</th>
<th>VerbNet class = future-having 13.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arg0</td>
<td>Giver</td>
<td>Agent/Donor*</td>
</tr>
<tr>
<td>Arg1</td>
<td>Thing given</td>
<td>Theme</td>
</tr>
<tr>
<td>Arg2</td>
<td>Benefactive</td>
<td>Recipient</td>
</tr>
</tbody>
</table>

*FrameNet Label

Baker, Fillmore, & Lowe, COLING/ACL-98
Fillmore & Baker, WordNetWKSHP, 2001

FrameNet


Introducing FrameNet - Thanks to Chuck Fillmore and Collin Baker

In one of its senses, the verb observe evokes a frame called Compliance: this frame concerns people’s responses to norms, rules or practices.

The following sentences illustrate the use of the verb in the intended sense:

- Our family observes the Jewish dietary laws.
- You have to observe the rules or you’ll be penalized.
- How do you observe Easter?
- Please observe the illuminated signs.
FrameNet

FrameNet records information about English words in the general vocabulary in terms of
1. the frames (e.g. Compliance) that they evoke,
2. the frame elements (semantic roles) that make up the components of the frames (in Compliance, Norm is one such frame element), and
3. each word’s valence possibilities, the ways in which information about the frames is provided in the linguistic structures connected to them (with observe, Norm is typically the direct object).

The FrameNet Product

The FrameNet database constitutes
- a set of frame descriptions
- a set of corpus examples annotated with respect to the frame elements of the frame evoked by each lexical unit
- lexical entries, including definitions and displays of the combinatory possibilities of each lexical unit, as automatically derived from the annotations
- a display of frame-to-frame relations, showing how some frames are elaborations of others, or are components of other frames.

Frame Elements for Compliance

The frame elements that figure in the Compliance frame are called
- Norm (the rule, practice or convention)
- Protagonist (the person[s] reacting to the Norm)
- Act (something done by the Protagonist that is evaluated in terms of the Norm)
- State_of_affairs (a situation evaluated in terms of the Norm)

- You do a whole frame for just observe?
- No. There are other Compliance words too.

V - adhere, comply, conform, follow, heed, obey, submit, ...
AND NOT ONLY VERBS
N - adherence, compliance, conformity, obedience, observance, ...
A - compliant, obedient, ...
PP - in compliance with, in conformity to, ...
AND NOT ONLY WORDS FOR POSITIVE RESPONSES TO NORMS
V - break, disobey, flout, transgress, violate, ...
N - breach, disobedience, transgression, violation, ...
PP - in violation of, in breach of, ...
Tagging Compliance sentences

Our family observes the dietary laws. The light switches in this room are in full conformity with the building code.

Lexical Unit

Our unit of description is not the word (or “lemma”) but the lexical unit (Cruse 1986), – a pairing of a word with a sense. In our terms this is the pairing of a word with a single frame.

The lexical unit - roughly equivalent to a word in a synset - is the unit in terms of which important generalizations about lexical relations, meanings and syntactic behavior can best be formulated.

LUs and V-N relationships

- Are we finished with the verb observe?
  - No. This verb has several other meanings too.

  - In the Becoming-aware frame we get the uses seen in observing children at play, observing an ant colony, sharing frame membership with watch, attend, listen to, view & pay attention.
  - In a Commenting frame, observe and observation share frame membership with remark & comment.

- Note that the nouns based on observe are
  - observance in the Compliance frame,
  - observation in the Perception_active frame

- Similarly, the nouns based on adhere are
  - adherence in the Compliance frame,
  - adhesion in the Attachment frame.

- When we need to be precise we show the frame-specific sense of a lemma (the full name of an LU) with a dotted expression:
  - Compliance.observe, Attachment.adhere, etc.
The study of polysemy concerns membership in different frames

Different LU, Different Valence

**Compliance**. *observe* generally has an NP as its direct object.

**Perception**. *observe* has these patterns:
- NP: *Observe the clouds overhead.*
- NP+V-ing: *I observed the children playing.*
- wh-clause: *Observe what I’m doing.*
- that-clause: *We observed that the process terminated after an hour.*

**Comment**. *observe* occurs frequently with a quoted comment:
- "That was brilliant," he observed snidely.
Lexical-units: Wrap-up

Lexical units are the entities with respect to which we define
- meanings
- grammatical behavior
- semantic relations with other entities
- morphological relations with other entities

In short, there aren’t interesting things to say about the verb observe in general, but only about the individual lexical units that happen to have the form observe.

In recent years, through NSF subcontracts with Colorado and Penn colleagues, and through our participation in the AQUAINT program, we have begun using FrameNet techniques for analyzing full texts.

In October 2002, the U.S. State Department informed North Korea that the U.S. was aware of this program, and regards it as a violation of Pyongyang’s nonproliferation commitments.

<table>
<thead>
<tr>
<th>Time</th>
<th>In 2002,</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaker</td>
<td>the U.S. State Department</td>
</tr>
<tr>
<td>Target</td>
<td>INFORMED</td>
</tr>
<tr>
<td>Addressee</td>
<td>North Korea</td>
</tr>
<tr>
<td>Message</td>
<td>that the U.S. was aware of this program, and regards it as a violation of Pyongyang’s nonproliferation commitments</td>
</tr>
</tbody>
</table>
Inform

The meaning of inform that we wish to describe belongs to a Telling frame; here the emphasis is on getting information to an addressee, and is thus distinct from Statement.

- The Telling frame is shared by inform, tell, notify, etc.,
- Statement is shared by say, announce, state, etc.

The meaning of inform in the Telling frame is distinct from the sense it has as a member of the Reporting frame, where it occurs as part of a phrasal verb, inform on. Other members of this frame are report (they reported me to the authorities), tell on, rat on, link on.

Licensed Omission

- The syntactic possibilities of the verb inform give us a chance to introduce a concept that will be developed in some detail later on: null instantiation.
- The Content FE of this verb can be omitted - as in
  - They already informed me.

This omission is only licensed when the intended Content is already known in the context. This variety of zero anaphora will play an important role in the final section of this presentation.

In October 2002, the U.S. State Department informed North Korea that the U.S. was aware of this program, and regards it as a violation of Pyongyang's nonproliferation commitments.

Awareness.aware

<table>
<thead>
<tr>
<th>Cognizer</th>
<th>the U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TARGET</td>
<td>was AWARE</td>
</tr>
<tr>
<td>Content</td>
<td>of this program</td>
</tr>
</tbody>
</table>
In October 2002, the U.S. State Department informed North Korea that the U.S. was aware of this program, and regards it as a violation of Pyongyang's nonproliferation commitments.

**Categorization.**

- **Cognizer**: the U.S.
- **TARGET**: REGARDS
- **Item**: it
- **Category**: as a violation of Pyongyang's nonproliferation commitments

**Compliance.**

- **Act**: it
- **Target**: a VIOLATION
- **Norm**: of Pyongyang's nonproliferation commitments
In October 2002, the U.S. State Department informed North Korea that the U.S. was aware of this program, and regards it as a violation of Pyongyang’s nonproliferation commitments.

### Commitment.commitment

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Pyongyang’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message</td>
<td>nonproliferation</td>
</tr>
<tr>
<td>Target</td>
<td>COMMITMENTS.</td>
</tr>
</tbody>
</table>

### Support Verbs and Polysemy

*Commitment* also occurs in the Institutionalization frame: committing a person to a mental hospital. That meaning does not welcome the support verb make.

The verb commit itself is a support verb for crimes and sins: to commit murder is the same as to murder. But this use of commit has commission, not commitment, as its nominalization!
The main work of FN has been building a lexicon, including the activities of:
- describing frames and choosing names for their components,
- selecting words that belong in each frame,
- extracting corpus examples as evidence for the behavior of individual words in a frame,
- annotating selected sentences in ways that show how frame information is present in them, and
- automatically deriving descriptions of each word’s behavior from such annotations.

For example:
FRAME: Compliance
FRAME ELEMENTS:
- Protagonist
- Norm
- State_of_affairs
- Act

Our main corpus is the 100M word British National Corpus, supplemented by U. S. Newswire text available through the Linguistics Data Consortium, plus, more recently, an initial release of the American National Corpus and some texts provided by government funders.

Verbs: comply, conform, observe, ..., violate, break, ...
Nouns: compliance, observance, ..., violation, breach,
Adjectives: compliant, observant, obedient, ...
Phrases: in compliance with, in violation of, ...

We've seen some of these...
Lexicon-Building

- The main work of FN has been building a lexicon, including the activities of
  - describing frames and choosing names for their components,
  - selecting words that belong in each frame,
  - extracting corpus examples as evidence for the behavior of individual words in a frame,
  - annotating selected sentences in ways that show how frame information is present in them, and
  - automatically deriving descriptions of each word’s behavior from such annotations.

For example, we will record that the Norm shows up as a simple direct object with *observe* and *follow*, but is introduced by *with* in the case of *comply*, by *to* in the case of *conform*, etc. (*comply with, conform to,...*)