

Frame Semantics in Action: A Frame-based Contrastive Text Analysis Using FrameNet

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Abstract

- Frame-based contrastive text analysis
 - The FrameNet methodology allows us to compare languages at a more detailed level than previous studies.
 - Cf. Ikegami 1991, Slobin 2004
 - It is, however, also necessary to cross-reference grammatical constructions, rather than analyzing the semantics of frame-bearing predicates only.

Outline

1. Background

- 1) FrameNet and Japanese FrameNet
- 2) Frame-semantic Contrastive Analysis of Lexical Units by Ellsworth et al. 2006

2. Analysis

- 1) Claim
- 2) Problems with Ellsworth et al.

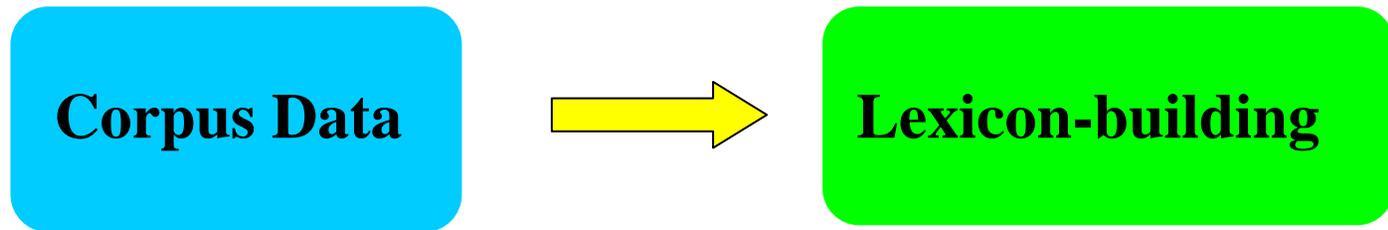
3. Discussion

4. Conclusion

1. Background

1) FrameNet and Japanese FrameNet

Frame Semantics



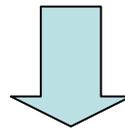
- **Each word is described in terms of the conceptual “frame” it evokes**

Japanese FrameNet: <http://jfn.st.hc.keio.ac.jp/>

Cf. Spanish FrameNet, German FrameNet

2) Frame-semantic Contrastive Analysis of Lexical Units

- Ellsworth et al. 2006
- In scenes involving motion in English, Japanese, Spanish, and German.
 - Different information encoding patterns of the four languages
 - Cf. Ikegami 1991
 - Japanese prefers to express events in terms of (change of) **the whole scene** rather than (change of) **an entity**.



Reveal detail not covered by Talmy and Slobin's semantic typologies.

E: *As we watched it the fog-wreaths **came crawling** round both corners of the house and **rolled** slowly **into one dense bank**, on which ...*

Fog's motion toward the view point

Turbulent circular motion

J: *yagate atari wa itimenni **usuboyakete**,*

soon area TOP all.around blur

Blurring of the scene

*sidaini kiri no naka e **makikom-areteitta** ga, ...*

gradually fog GEN inside GOAL engulf-PASS-PAST CONJ

Being engulfed by the fog

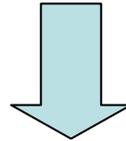
“Soon the area was blurred all around and (it) was gradually engulfed inside the fog ...”

(Arthur Conan Doyle. 1901-1902. Chapter 14,
The Hound of the Baskervilles)

2. Analysis

1) Claim

- Ellsworth et al. is limited to contrasting **frame-bearing predicates**



In order to arrive at an accurate interpretation of a sentence, it is necessary to represent **how the semantics of frame-evoking predicates interact with the semantics of the grammatical constructions within the same sentence.**

2) Problems with Ellsworth et al.

E: ... *said the detective ... , glancing ... at the huge lake of fog which lay [Being_located] over the Grimpen Mire.*
(Arthur Conan Doyle. 1901-02. *The Hound of the Baskervilles*)

J: ... *keibu wa ... gurinpen no oo-zoko-nasi numa no*
detective TOP GEN great-bottom-less mire GEN
ue ni ori [Motion_directional] teiru koi kiri o miwatasita
over LOC PROG..PRESENT thick fog ACC glanced
'.. the detective glanced at the thick fog which had fallen over the
great bottomless Grimpen Mire.'

- (Transl. Ken Nobuhara. 1955. *Basukaviru ke no inu*)

E: *To this post a figure was tied* [Being_attached] , *so swathed and muffled in the sheets which had been used to secure it that one could not for the moment tell whether it was that of a man or a woman.*

J: *kono hasira ni siitu o guruguru to makitukete,*

this pillar LOC sheets ACC MANNER swathed

tyotto mita no de wa otoko ka onna ka

little seeing NOM COP TOP man Q woman Q

wakaranai ningen ga hitori sibarituke [Attaching] **te atta**

tell-NEG person NOM one bind RESULT

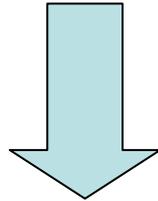
‘To this pillar a person, who was swathed in sheets and whom one could not tell whether it was a man or woman, had been bound.’

3. Discussions

The problem of representation

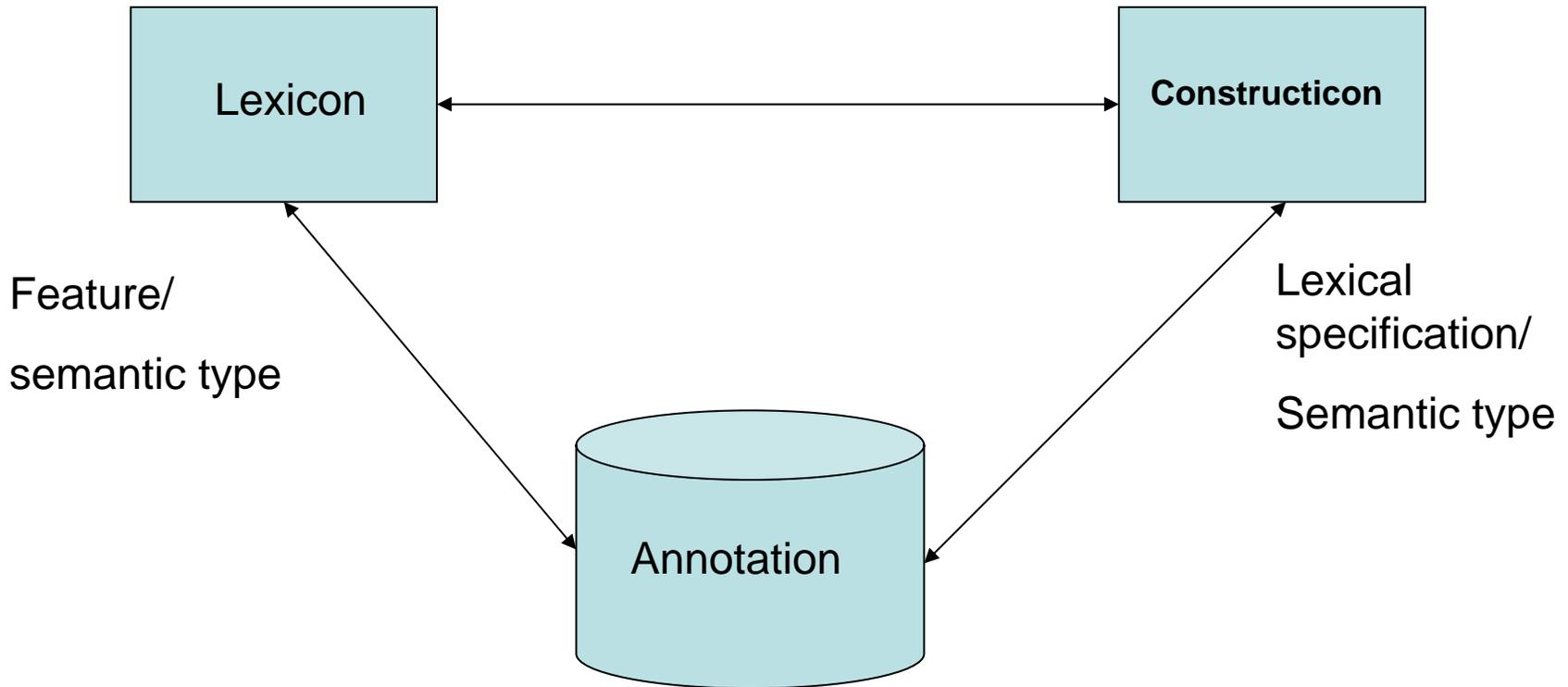
- How to relate constructions to the lexical units that participate in them
- How to show, within a lexical entry, info about how a given lexical unit fits into the grammar

- Mutual dependencies of lexicon and grammar



Lexicon (specifying the grammatical affordances of its entries) + **Grammar** (specifying the kinds of lexical units capable of occurring in specifiable positions within grammatical constructions)

Cross-references between Lexicon and Constructicon



Access to Lexical Entry

Based on Fillmore 2006

Recognition of boundaries, constituents

Annotating Lexical Units

The screenshot displays the Japanese FrameNet Desktop interface. On the left, a tree view shows the hierarchy of frames, with 'Motion_directional' selected. The main window, titled 'Paragraph Editor: 8 (10568)', contains a paragraph of Japanese text: 「ほう！ しかしここはあんまり気持ちのいいところじゃありませんね」 警部はぶるぶると身ぶるいして、陰気な小山の山腹のあたりや、グリーンペンの大底なし沼の上においている濃い霧を見わたした。

Overlaid on this is the 'LexUnit Editor: おりる.v (10133)'. The 'Name' field contains 'おりる.v'. The 'Frame' is set to 'Motion_directional'. The 'Semantic Types' section has a red box around the word 'Achievement'. Below this, there are fields for 'Created Date', 'Created By', 'Last Modified Date', and 'Last Modified By'. The 'Incorporated FE' is set to 'Direction'. The 'Sense Description' field contains the text: IPAL: 上の方から下の方へ自力で移動する.

At the bottom, the 'Part of Speech' is listed as 'V'. The system tray at the very bottom shows the Windows taskbar with various icons and the time '2:06'.

Annotating Constructions

The screenshot shows a window titled "Japanese FrameNet DeskTop" with a menu bar (Main, Action, Window) and a list of lines (39-99). The main text area contains two paragraphs of Japanese text:

0
● 「ほう！ しかしここはあんまり気持ちのいいところじゃありませんね」警部はぶるぶると身ぶるいして、陰気な小山の山腹のあたりや、グリーンペンの大底なし沼の上におりている濃い霧を見わたした。

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● 「この先に人家の灯火が見えていますね」

Below the text is a "Layer" window showing the text: "して、陰気な小山の山腹のあたりや、グリーンペンの大底なし沼の上におりている濃い霧を見わたした。". A red box highlights the word "おりている".

Annotations in the Layer window:

- Perfect Construction** (in a red box)
- Resultative Construction

A larger red box contains the following text:

Perfect Construction
Form: [V Semantic type: Achievement] *te-iru*
Meaning: A state exists as a result of an event.

The Windows taskbar at the bottom shows "スタート", "Firefox...", "コマンド...", "Japan...", "ICLC", "Micros...", "A般", "Norton", "99%", and "2:01".

4. Conclusion

- In order to analyze and contrast meanings of sentences in different languages, only examining the semantics of frame-evoking predicates is not enough.
- Necessary to represent **interaction between lexicon and grammar**.
 - An implementation of such interactions is proposed.
- Development of “**Constructicon**” is called for.

Selected References

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