FrameNet *vs*. Constructicon: A Case study in Japanese FrameNet

JAPANESE FRAMENET

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Outline

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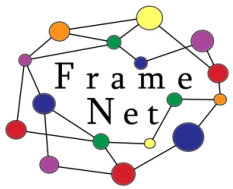
2. Why we need constructicons
3. FN Lexicographic Annotation & Constructicon Annotation
4. Using frames to represent meaning structures of constructions
5. Are all constructions “meaning-bearing”?
6. Summary

1. Introduction

Japanese FrameNet (JFN)

- Creating a **prototype of an on-line Japanese lexical resource** following FrameNet methodology and practice
  - Compatibility with FrameNet: Frames, Database structure, annotation tools
- **Practical implementation** of **Frame Semantics** and **Construction Grammar**
  - Ohara 2014, 2015, 2017, cf. Boas 2010
- My talk today
  - Focuses on JFN and Japanese, BUT …
  - About the overall architectures of "FrameNet(s)" & "Constructicon(s)"



Overview of JFN

- Balanced & representative corpus of Modern Written Japanese (BCCWJ)
  - General Coverage
- Manual annotation
  - Desktop
- Annotation LUs > Full Text Annotation > Constructicon Building
- JFN frames imported from FN (Release 1.3)
  - The “Expand” approach
  - Coverage OK, Some differences in contents

Current JFN Projects

- JFN Data Release
  - Scheduled in 2017
  - Full Text Annotation of BCCWJ corpus
- Constructicon Building
  - Grant-in-Aid for Scientific Research
    - 2015-2018
- Collaboration with NPCMJ (Parsed Corpus of Modern Japanese)
  - Using syntactically annotated corpus as input to JFN
- JFN Web Application Tool (JFNWAT)
  - Concordancer, Web Annotation Tool, Web Report
- New Data Model
  - Kabbach & Ohara 2015

What is Constructicon?

- Two meanings of "Constructicon"

1. Theoretical concept of a structured network of grammatical constructions (CxNs; "Form-meaning pairings")
   - Fillmore 1988, Jurafsky 1991

2. Actual instantiation of construction descriptions with annotations

   - Berkeley FrameNet (FN), **Japanese FrameNet (JFN)**, Swedish Constructicon, FrameNet Brasil projects
   - Fillmore 2008, Fillmore et al. 2012

What is Constructicon?

- Constructicon
  - A registry of **grammatical constructions** with annotations

Aims of this talk

1. To clarify distinctions between FrameNet lexicographic annotation and Constructicon annotation

2. To contribute to the on-going discussion on whether all constructions should be seen as “meaning-bearing” or not
   - Cf. Goldberg 2006, Fillmore et al. 2012, Hilpert 2014

2. Why we need Constructicon, in addition to FrameNet

Frame Semantics
as a theory of sentence meaning

"Frame Semantics is the study of **how linguistic forms *evoke* or activate frame knowledge**, and **how the frames thus activated can be integrated into an understanding of the passages** that contain these forms."

(Fillmore & Baker 2010: 317)

Things which cannot be handled in FN

- Anything other than "relations of predication, modification, and complementation"

- Linguistic objects "that function *as units* while at the same time having a describable internal structure"
  - Internal & External structures

(cf. Fillmore et al. 2012:312-313)

Things which cannot be handled in JFN

Internally headed relative clauses (IHRCs)

[[*kinoo* *ringo o* *okuttekudasatta*] *no*] *ga*

yesterday apple ACC send-HON-PST NMLZ NOM

kyoo *tukimasita*

today arrived-POLITE-PST

(Lit.) '(You) sent me apples yesterday,

and (they) arrived today.'

3. FN Lexicographic Annotation & Constructicon Annotation

FN Lexicographic Annotation & Constructicon Annotation

- FN Lexicographic Annotation
  - Identify Frame Evoking Element (FEE)
  - Annotate constituents corresponding to Frame Elements (FEs)
  - Annotate them with FE, PT, & GF labels
- Constructicon Annotation
  - Identify Construction-Evoking Element (CEE)
  - Identify Construct
    - Actual structures licensed by one or more constructions
  - Annotate constructs corresponding to Construct Elements (CEs)

(Fillmore 2008, Fillmore et al. 2012)

⇨ Are they really parallel?!

FN Lexicographic Annotation & Constructicon Annotation

… They are not strictly parallel!

	FN Lexicographic annotation	**Constructicon annotation**
Targets of Annotation	• Simple words • Multiwords (e.g. Phrasal verbs; Support CxNs, etc.)	• **CxNs with internal and external structures**
Information Annotated	• **Frame names** • Frame-Evoking Elements (FEEs) • Frame Elements (FEs) • Phrase Types (PTs) • Grammatical Functions (GFs)	• **Construction-Evoking Elements (CEE)** • **Constructs** • **Consruct Elements (CEs)**

4. Using frames to represent meaning structures of constructions

Meaning structures of constructions

- May or may not involve **semantic frames** defined/used in FrameNet

- Constructions can be classified based on
  - whether or not they evoke frames;
  - what kind of frames they evoke

Terminological Confusions about "frames"

Cognitive frames Fillmore 1982:379, Fillmore & Baker 2010	**Interactional** frames Fillmore 1982:379
Linguistic frames Fillmore & Baker 2010:338	
Semantic frames Ruppenhofer et al. 2010: 5 Goldberg 2010	
Frames Fillmore & Baker 2010	

Semantic frames

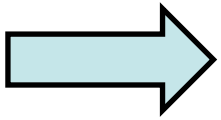
"[A] script-like conceptual structure that describes a particular type of situation, object, or event along with its participants and props"

Interactional frames

"… how we conceptualize what is going on between the speaker and the hearer, or between the author and the reader."

Semantic *vs.* Interactional Frames

- Propositional vs. Contextual, interpersonal
- Event participants vs. Discourse participants



- Grammatical Constructions may evoke either type.
- We need **both kinds of frames** to characterize meaning structures of constructions.

Cxn evoking Semantic frame

The ***Comparative_inequality*** construction

- CEs: *Item*, *Standard*, *Base_expression*
- **Evokes the `Comparative_inequality` frame**, which reports inequalities between *Item* and *Standard* as arguments of a plain adjective

{ [***Item*** *kore* (*no* *hoo*) *ga*]

this GEN side NOM

[***Standard*** *are*] [***CEE*** ***yori***] [***Base_expression*** *nagai*]

that than long

'This is longer than that.'

Cxn evoking Interactional frame

The *Suspended-Clause* construction

- CE: *Clause*
- The Speaker expects the Hearer to make an inference and to understand his/her situations.

sore zya ne.

that DAT-TOP SFP

{ [^{Clause}*kir -ase te-morau*] [^{CEE} ***kara***] }

hang-up CAUS AUX because

[On the phone] (Lit.) 'That's it. Because I'm gonna hang up. (Don't bother me anymore).

5. Are all constructions “meaning-bearing”?

Whether all CxNs are "meaning-bearing"

- Yes!
- Some CxNs evoke **Semantic** frames,

while other CxNs evoke **Interactional** frames,

still other CxNs have meanings which CANNOT be described by **Semantic** /**Interactional** frames.

- But we can classify CxNs based on the notion of frames:

  [1] CxNs evoking **Semantic** frames

  [2] CxNs evoking **Interactional** frames

  [3] CxNs compositionally interpretable

  [4] CxNs whose more elaborated CxNs evoke frames on their own

  [5] CxNs with omission of repetitive position-specific constituents

[3] CxNs compositionally interpretable

The *Subject-Predicate* construction

- CEs: *Subject*, *Predicate*
- Supplies an external argument (*Subject*) to a phrase that is missing one (*Predicate*).

{ [^{Sub} *syuzyu no kadai e no taioo ga*]
various GEN problem GOAL GEN dealing.with NOM
[^{Pre} *konnan ni natte ki te iru*] }
difficult DAT become COME ASP
'Dealing with various problems has become difficult'

[4] CxNs whose more elaborated CxNs evoke frames on their own

The *V-te iru* construction

●CE: *Verb*

(a) **Evokes the `State` frame** with **state** verb

haha to musume wa yoku { [$^{Verb\text{-}\,State}$ *ni*] [^{CEE} *te iru*] }

mother CONJ daughter TOP much alike

'(The) mother and (the) daughter are much alike.'

(b) **Evokes the `Activity` frame** with **activity** verb

kodomo-tati ga { [$^{Verb\text{-}\,Activity}$ *hasit*] [^{CEE} *te iru*] }

child PL NOM run

'(The) Children are running.'

(c) **Evokes the `*Resultant_state` frame** reading with **achievement** verb

koi kiri ga numa no ue ni { [$^{Verb\text{-}\,Achievement}$ *ori*] [^{CEE} *te iru*] }

thick fog NOM mire GEN top LOC fall

'(A) thick fog has fallen over (the) mire.'

[5] CxNs with omission of repetitive position-specific constituents

The *Shared-Completion* construction

- CEs: *Sharer1, Sharer2, Sharer3, Punctuation, Completion*
- The *Completion* is interpreted as completing each of the *Sharers*.

{ [*Sha1 kaigai haken gata to site 11 mei*] [*Pun*,] [*Sha2 genti taizai*
overseas dispatch type for people local stay
gata to site 4 mei] [*Pun*,] [*Sha3 rainiti gata to site 4 kumi*]
type for people visit.Japan type for group
[*Com no simei o okonai masita*] }
GEN nomination ACC do POLITE-PST

'(The project) nominated 11 people for the overseas dispatch type, 4 people for the local stay type, (and) 4 groups for the visit-Japan type.'

6. Summary

Summary

- Clarified distinctions between FN lexicographic annotation *vs.* Constructicon annotation
  - FN lexicographic annotation: Simple words; multiwords
  - Constructicon annotation: CxNs with internal & external structures
- It is possible to assume that all CxNs are "meaning-bearing"

  ↔ Fillmore et al. 2012
- CxNs can be classified whether or not they evoke frames (= Frames are useful in classifying CxNs)

  [1] CxNs evoking **Semantic** frames

  [2] CxNs evoking **Interactional** frames

  [3] CxNs compositionally interpretable

  [4] CxNs whose more elaborated CxNs evoke frames on their own

  [5] CxNs with omission of repetitive position-specific constituents
- We need **Interactional** frames in FNs, in addition to **Semantic** frames