

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



JAPANESE FRAME<sub>NET</sub>

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# Outline

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

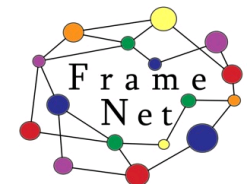


# 1. Introduction



# 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

Clear

2

FrameSQL

[Absolute clause](#)  
[Adjective as nominal.abstract](#)  
[Adjective as nominal.definite](#)  
[Adjective as nominal.people](#)  
[As.role](#)  
[Attributive degree modification](#)  
[Bare argument ellipsis](#)  
[Bare noun phrase.role](#)  
[Be present-participle](#)  
[Be recip](#)  
[Comparison](#)  
[Comparison equality](#)  
[Comparison equality metalinguistic](#)  
[Comparison inequality](#)  
[Coordination](#)  
[Degree modification](#)  
[Degree so](#)  
[Deictic daytime inverted](#)  
[Determined noun phrase](#)  
[Determined proper name](#)  
[Dimension conjunction](#)  
[Exocentric adjectival compound](#)  
[Gapping](#)  
[Have with](#)  
[Head-complements](#)  
[Infinitival relative modal](#)  
[Integrated appositive](#)  
[Inversion with preposed element](#)  
[Let alone](#)  
[Location in calendar subunit](#)

**Comparison\_inequality** NoColor NoTag ColorTag summary

Inherits from Comparison

- This construction licenses the creation of a complex comparative adjectival predicator and the realization of the arguments of that predicator. The comparative expression indicates the inequality of two values on a scale.
- The comparison phrase is made up of a marker (**CD\_Marker**, also the CEE) and a noncomparative base expression (**CD\_Base\_expression**). The "CD" prefix ("construction daughter") indicates that the spans so-labeled are components arranged by the construction into a complex phrase with its own valence. The marker indicates the "direction" of comparison (more than or less than), and may be either *more*, *less*, or *-er*. In case of a suppletive comparative form such as worse, both the **CD\_Marker** and **CD\_Base\_expression** labels are applied to the word.
- The comparison phrase has a valence of the **Item** and **Standard**, the two entities which are compared for the values of particular attributes on a scale. The scale is indicated by the base expression (e.g., *X is taller than Y* compares X and Y on a scale of height). The **Item** is normally the external argument, and is compared against a **Standard**, normally expressed as a complement of the Comparison\_phrase.
- The **Standard** covers all varieties of phrase (*than him*, *than he is*, *than expected*) except where it expresses a particular value, *than six feet*. In that case **Standard\_value** is used. The element **Difference** indicates the difference in values between the **Item** and **Standard**. It may be a measurement phrase (*three inches*) or a more vague specification (*much*).

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- **Approximation(app)**: How closely the **Item** comes to the measurement expressed by the comparison phrase. This element is usually expressed with approximations such as *almost* and *nearly*.  
ex.: That tree is [app\_nearly] taller than mine. TRANSLATIONS 1 2
- **CD\_Base\_expression(bas)**: The non-comparative expression that forms the basis for the comparison phrase, and which indicates the scale on which the Item and Standard (or their values) are being compared.  
ex.: That tree is several feet [bas\_taller] than this one. TRANSLATIONS 1 2
- **CD\_Marker(mar)**: The word that marks the type of comparison being done. In some cases individual words may incorporate comparison meaning, and should be so marked (e.g., *better*).  
ex.: That tree is several feet [mar\_taller] than this one. TRANSLATIONS 1 2
- **Difference(dif)**: The difference in value between the Item and Standard. Expressible as a measure phrase (*two inches*) or with an adverb (*much*).  
ex.: That tree is [dif\_several feet] taller than this one. TRANSLATIONS 1 2
- **Item(ite)**: The **Item** is what is being compared.  
ex.: [ite\_That tree] is several feet taller than this one. TRANSLATIONS 1 2
- **Multiplicative(mul)**: A phrase such as *seven times* or *twice* may precede the **CD\_Marker**, indicating that the extent to which **Item** differs from the Standard on the indicated scale. The use of a Multiplicative requires the scale to be (or be construed as) quantifiable.

CD\_MarkerCD\_Base\_expressionCD\_MarkerCD\_MarkerCD\_Base\_expressionItemStandardStandard

1. In 1959 , the Crowther Report forecast that with the raising of the minimum school leaving age to sixteen , {Comparison\_inequality[CD\_Marker<more>] [CD\_Base\_expressionaffluent]} [CD\_Markerparents] would persuade their {Comparison\_inequality[CD\_Marker<more>] [CD\_Base\_expressionintelligent]} [Itemoffspring] to stay on for A levels at eighteen . [StandardDN] [StandardDN] [allLavers] Translations 1 2 ↑



# 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 | <ul style="list-style-type: none"><li>• Simple words</li><li>• Multiwords (e.g. Phrasal verbs; Support CxNs, etc.)</li></ul>   | <ul style="list-style-type: none"><li>• <b>CxNs with internal and external structures</b></li></ul>  |
| Information Annotated | <ul style="list-style-type: none"><li>• <b>Frame names</b></li><li>• <b>Frame-Evoking Elements (FEEs)</b></li><li>• <b>Frame Elements (FEs)</b></li><li>• Phrase Types (PTs)</li><li>• Grammatical Functions (GFs)</li></ul> | <ul style="list-style-type: none"><li>• <b>Construction-Evoking Elements (CEE)</b></li><li>• <b>Constructs</b></li><li>• <b>Construct Elements (CEs)</b></li></ul> |



## 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<br>Fillmore 1982:379,<br>Fillmore & Baker 2010       | <b>Interactional</b> frames<br>Fillmore 1982:379 |
| <b>Linguistic</b> frames<br>Fillmore & Baker 2010:338                 |  |
| <b>Semantic</b> frames<br>Ruppenhofer et al. 2010: 5<br>Goldberg 2010 |  |
| Frames<br>Fillmore & Baker 2010                                       |  |

## Semantic frames

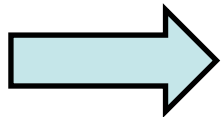
“[A] script-like conceptual structure that describes a particular type of situation, object, or event along with its participants and props”

## 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

{ [<sup>Clause</sup>*kir* -*ase* *te-morau*] [<sup>CEE</sup>*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*).

{ [<sup>Sub</sup> *syuzyu no kadai e no taioo ga*]

various GEN problem GOAL GEN dealing.with NOM

[<sup>Pre</sup> *konnani natte kite 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- 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- 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- 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*.

{ [<sup>Sha1</sup> *kaigai haken gata to site 11 mei*] [<sup>Pun</sup>,] [<sup>Sha2</sup> *genti taizai*  
overseas dispatch type for people local stay  
*gata to site 4 mei*] [<sup>Pun</sup>,] [<sup>Sha3</sup> *rainiti gata to site 4 kumi*]  
type for people visit.Japan type for group  
[<sup>Com</sup> *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.’<sup>27</sup>

## 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