

Relating Frames and Constructions in Japanese FrameNet

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Abstract

Relations between frames and constructions must be made explicit in FrameNet-style linguistic resources such as Berkeley FrameNet (Fillmore & Baker, 2010, Fillmore, Lee-Goldman & Rhomieux, 2012), Japanese FrameNet (Ohara, 2013), and Swedish Constructicon (Lyngfelt et al., 2013). On the basis of analyses of Japanese constructions for the purpose of building a construction in the Japanese FrameNet project, this paper argues that constructions can be classified based on whether they evoke frames or not. By recognizing such a distinction among constructions, it becomes possible for FrameNet-style linguistic resources to have a proper division of labor between frame annotations and construction annotations. In addition to the three kinds of “meaningless” constructions which have been proposed already, this paper suggests there may be yet another subtype of constructions without meanings. Furthermore, the present paper adds support to the claim that there may be constructions without meanings (Fillmore, Lee-Goldman & Rhomieux, 2012) in a current debate concerning whether all constructions should be seen as meaning-bearing (Goldberg, 2006: 166-182).

Keywords: Frame Semantics, Japanese FrameNet, Constructicon

1. Introduction

Relations between frames and constructions must be made explicit in FrameNet-style linguistic resources such as Berkeley FrameNet (Fillmore & Baker, 2010, Fillmore, Lee-Goldman & Rhomieux, 2012), Japanese FrameNet (Ohara, 2013), and Swedish Constructicon (Lyngfelt et al., 2013). On the basis of analyses of Japanese constructions for the purpose of building a construction in the Japanese FrameNet project, this paper argues that constructions can be classified based on whether they evoke frames or not. By recognizing such a distinction among constructions, it becomes possible for FrameNet-style linguistic resources to have a proper division of labor between frame annotations and construction annotations. Furthermore, the present paper adds support to the claim that there may be constructions without meanings (Fillmore, Lee-Goldman, & Rhomieux, 2012) in a current debate concerning whether all constructions should be seen as meaning-bearing (Goldberg, 2006: 166-182).

Why do we need to discuss relations between constructions and frames in FrameNet-style linguistic resources? First of all, limitations of frame annotations in FrameNet and Japanese FrameNet became apparent: the two projects originally had purely lexicographic purposes of characterizing the main distributional properties of verbs, nouns, and adjectives based on valence and of identifying the requirements that lexical units might impose on their dependents (cf. Fillmore, Lee-Goldman, & Rhomieux, 2012: 310-313, Ohara, 2013). This means that the kinds of grammatical structures that frame annotations are capable of recording are more or less limited to relations of predication, modification, and complementation (Fillmore, Lee-Goldman, & Rhomieux, 2012: 312, Ohara, 2013). There remain, therefore, many sentences whose semantic and syntactic organizations cannot be

fully annotated in frame annotations.

In order to describe the meaning of various kinds of sentences, FrameNet project and later the Japanese FrameNet project thus began to engage in construction-annotating activities, in addition to frame annotations. There is, however, partially overlapping information between frame annotation and construction annotation: frames have to do with meanings (i.e., script-like conceptual structures that describe a particular type of situation, object, or event along with its participants and props (cf. Ruppenhofer et al., 2010)), whereas constructions pertain to pairings between formal patterns and their meanings. A proper division of labor between frame annotations and construction annotations is thus needed in language resources such as FrameNet and Japanese FrameNet, in which two kinds of annotation are overlaid (cf. Lyngfelt et al., 2013). There has been, however, not too much discussion on how to relate construction annotations with frame annotations, except for Ohara (2008), Fillmore, Lee-Goldman & Rhomieux (2012), and Lyngfelt et al. (2013). By showing different ways in which Japanese constructions can be related to frames, this paper attempts to stimulate discussions on overlay of different kinds of annotations and on whether all constructions should be regarded as meaning-bearing.

The rest of the paper is organized as follows. The proposal is presented in Section 2. Section 3 compares the present proposal with previous analyses. Finally, Section 4 concludes the analysis.

2. Proposal

I argue that constructions can be classified according to whether they evoke frames or not. That is, there are constructions that evoke frames and constructions that do not evoke frames. The latter, it is claimed, can be further divided into four types, at least in the case of Japanese.

First, there are constructions that evoke frames. The

Comparative_inequality construction in Japanese, shown in (1) below, is an example of such constructions. In the construction of Japanese FrameNet, an annotation of each construction identifies and annotates the following: the CONSTRUCT, i.e., a phrase licensed by the rules of a construction; CONSTRUCT ELEMENTS (CEs, or components of the construct); a special CONSTRUCTION-EVOKING ELEMENT (CEE); and relevant features of the context. Outer brackets ‘{ }’ are used to enclose the expressions produced by the construction, and inner brackets ‘[]’ are used to enclose the individual construct elements.

- (1a) The *Comparative_inequality* construction
- The *Comparative_inequality* construction reports inequalities between two *Entities* as arguments of a plain adjective.
 - Construct Elements: *Entity1*, *Entity2*, *Feature*
 - { [^{Entity1} *kore* (*no hoo*) *ga*]
 this GEN side NOM
 [^{Entity2} *are*] [^{CEE} *yor*i] [^{Feature} *nagai*] }
 that than long
 ‘This is longer than that.’

The *Comparative_inequality* construction evokes the *Comparison_inequality* frame, as shown in (1b). (1b) lists: the name of the frame; informal descriptions of the frame; mnemonic names for the Frame Elements (FEs); and the bracketing formula with the underlined Frame-Evoking Element (FEE) and with the mnemonic names for the FEs.

- (1b) The *Comparative_inequality* construction evokes the *Comparison_inequality* frame:
- The ENTITY is compared against some STANDARD with respect to their values for some FEATURE.
 - Frame Elements: ENTITY, STANDARD, FEATURE
 - [_{ENTITY} *kore* (*no hoo*) *ga*]
 this GEN side NOM
 [_{STANDARD=FEE} [*are*] [*yor*i]] [_{FEATURE} *nagai*]
 that than long
 ‘This is longer than that.’

Next, there are constructions that do not evoke frames. They can be divided into four types, at least in the case of Japanese. The first subtype of constructions that do not evoke frames has to do with syntactic patterns with specific formal features whose interpretation depends on combining information from their constituents in a completely regular way (Fillmore, Lee-Goldman, & Rhomieux, 2012: 326). The *Head-Complement*, *Modifier-Head*, *Subject-Predicate* constructions in Japanese, just like those in English, are examples of such constructions.

The *Modifier-Head* construction in Japanese is shown in (2).

- (2) The *Modifier-Head* construction
- Construct Elements: *Modifier*, *Head*
 - { [^{Modifier} *utukusii*] [^{Head} *hana*] }
 Beautiful flower
 ‘(A) beautiful flower’

The second subtype of “meaningless” constructions involves constructions that determine syntactic patterns to which separate interpretations can be given under different variations. Fillmore, Lee-Goldman & Rhomieux (2012) argue that the *Aux-Initial* and *Filler-Gap* constructions in English are such constructions (326-327). The *V-te iru* construction in Japanese is another example. Depending on the kind of aktionsart of the verb, separate interpretations are given.

- (3) The *V-te iru* construction
- Construct Element: *Verb*
- (3a)
- A state interpretation with a state verb
 - *haha to musume wa*
 mother CONJ daughter TOP
 yoku { [^{Verb-State} *ni*] [^{CEE} *te iru*] }
 much alike
 (Lit.) ‘(The) mother and (the) daughter are much alike.’
- (3b)
- A progressive interpretation with an activity verb
 - *kodomo-tati ga*
 child PL NOM
 { [^{Verb-Activity} *hasit*] [^{CEE} *te iru*] }
 run
 ‘(The) Children are running.’
- (3c)
- A resultant state interpretation with an achievement verb
 - *koi kiri ga numa no ue ni*
 thick fog NOM mire GEN top LOC
 { [^{Verb-Achievement} *ori*] [^{CEE} *te iru*] }
 fall
 ‘(A) thick fog has fallen over (the) mire.’

The third subtype of constructions that do not evoke frames pertains to constructions that allow the omission of position-specific constituents that would otherwise be repetitions. The *Gapping* construction in Japanese is a member of this subtype, just like its counterpart in English.

- (4) The *Gapping* construction
- Construct Elements: *Item1*, *Item2*, *Item3*
 - { [^{Item1} *ozii* -*san wa*]
 old-man HON TOP
 [^{Item2} *yama e*] ,
 mountain GOAL

[^{Item1} obaa -san wa]
 old-woman HON TOP
 [^{Item2} kawa e]
 river GOAL
 [^{Item3} itta] }
 went
 ‘(The) old man went to the mountain, (the)
 old woman to the river.’

The last subtype of “meaningless” construction involves constructions whose meaning cannot be described by a frame. That is, there are certainly semantic constraints but the constraints do not seem to be expressible by a frame. In Japanese, the *te-linkage* construction belongs to this category. According to Hasegawa (1996), the constraints on the use of *te-linkage* “are neither on syntactic structures alone, nor on semantic relations alone; they apply only when a particular syntagm is used to express a certain semantic relation.” The constraint can be characterized as “(w)hen two events which are linked solely by temporal sequentiality are expressed via *te-linkage*, the conjuncts must share an agentive subject.” (cf. (5a) and (5b)).

- (5a) #watasi ga kaizyoo ni tuite
 I NOM meeting-place LOC arrive-TE
 kooen ga hazimatta.
 lecture NOM began
 (Intended) ‘I arrived at the meeting place, and the lecture began.’
- (5b) koosi ga kaizyoo ni tuite
 lecturer NOM meeting-place LOC arrive-TE
 kooen ga hazimatta.
 lecture NOM began
 ‘The lecturer arrived at the meeting place, and the lecture began.’s

The *te-linkage* construction can be described as in (5c).

- (5c) The *te-linkage* construction
- Construct Elements: *Conjunct1*, *Conjunct2*
 - { [^{Conjunct1} koosi ga kaizyoo ni
 lecturer NOM meeting-place LOC
 tui] [^{CEE} te] [^{Conjunct2} kooen ga hazimatta] }
 arrive-TE lecture NOM began
 ‘The lecturer arrived at the meeting place,
 and the lecture began.’

English constructions that belong to this subtype have not been identified or at least have not been discussed in the literature so far.

3. Discussion

I claim that constructions can be classified based on whether they evoke frames or not. By recognizing such a distinction among constructions, it becomes possible for FrameNet-style linguistic resources to have a proper

division of labor between frame annotations and construction annotations. Let us compare our proposal with previous studies.

Lyngfelt et al. (2013) discuss three types of relations between constructions and frames. They are: straight-forward pairings; split pairings; and constructions not corresponding to a frame. However, since frames and constructions are different kinds of entities, it does not quite make sense to categorize relations between constructions and frames based on whether their pairings are “straight-forward” or not. Furthermore, they also attempt to relate construct elements and frame elements, classifying the relations into three types: straight-forward match; less straight-forward match; and no lexical unit instantiating the frame. Since construct elements and frame entities are distinct categories, it is not clear what we gain from relating construct elements with frame elements.

Fillmore, Lee-Goldman, & Rhomieux (2012) classify constructions according to the kinds of constructs they create. They admit that their classes “are not intended to be complete, nor are they mutually exclusive” (324). In order to relate construction annotations with frame annotations in FrameNet-style language resources, it seems more plausible to classify constructions based on whether they evoke frames or not. Also, whereas they divide meaningless constructions into three subtypes of meaningless constructions, the present analysis proposes the fourth subtype, namely, constructions whose meaning cannot be described by a frame. It seems worth investigating whether English indeed has such constructions, just like Japanese.

4. Conclusion

In order for FrameNet-style language resources to be able to overlay frame annotations and construction annotations, the present paper proposed classification of constructions based on whether constructions evoke frames, not based on whether constructions “matches with” frames, by analyzing Japanese constructions. In addition to the three kinds of “meaningless” constructions which have been proposed already, the paper suggested there may be yet another subtype of constructions without meanings. It is hoped that the present paper will contribute to the discussion concerning whether all constructions should be seen as meaning-bearing.

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References

- Fillmore, C.J., Lee-Goldman, R.R. and Rhomieux. R. (2012). The FrameNet Construction. In Boas, H. C. and Sag, I. A. (Eds.), *Sign-based Construction*

- Grammar*, 309-372. Center for the Study of Language and Information.
- Goldberg, A. (2006). *Constructions at Work: The Nature of Generalization in Language*. Oxford: Oxford University Press.
- Hasegawa, Y. (1996). Toward a description of *te*-linkage in Japanese. In M. Shibatani and S. A. Thompson, editors, *Grammatical Constructions*, chapter 3, pages 55-75. Oxford University Press.
- Hasegawa, Y, Lee-Goldman, R.R., Ohara, K.H., Fujii, S. and Fillmore, C.J. (2010). On expressing measurement and comparison in Japanese and English. In Boas, Hans C. (Ed.) *Contrastive Construction Grammars*, 169-200. Amsterdam: John Benjamins.
- Hasegawa, Y, Lee-Goldman, R.R., Ohara, K.H., Ellsworth, M. and Fillmore, C.J. (2012). The Frames-and-Constructions Approach to Paraphrase. ICCG7.
- Lyngfelt, B., Borin, L., Forsberg, M., Heppin, K.F., Johansson, R., Rydstedt, R. and Cronostaj, M.T. (2013). Frame Elements and Construction Elements. ICLC 2013.
- Ohara, K.H. (2008). Lexicon, Grammar, and Multilinguality in the Japanese FrameNet. LREC2008. Proceedings of the 6th International Conference on Language Resources and Evaluation. Marrakech, Morocco.
- Ohara, K.H. (2013). Toward Constructicon Building for Japanese in Japanese FrameNet. Special Issue on Frame Semantics and Its Technological Applications. *Veredas*, vol. 17, no.1, pp.11-27.
- Ruppenhofer, J., Ellsworth, M., Petruck, M.R.L., Johnson, C.R. and Scheffczyk, J. (2010). *FrameNet II: Extended Theory and Practice*. Berkeley, California: International Computer Science Institute.