

## An HPSG-Styled Grammar of Japanese: With an Analysis of Multiple Noun-Nominative Sentences

Hiroki Koga

University of Illinois at Urbana-Champaign

[h-koga@students.uiuc.edu](mailto:h-koga@students.uiuc.edu)

The current paper proposes an explicit HPSG-styled grammar for fragments of Japanese, which I have implemented in the Unicorn parsing system developed at the University of Illinois at Urbana-Champaign. The semantics of the grammar is based on Barwise and Cooper's (1981) generalized quantifier analysis of nouns. The grammar makes possible a well-balanced division of labor in predicting, e.g., the phenomena of multiple noun-nominative sentences, i.e., clauses that contain more than one noun-nominative sequence for only one finite verb.

**The grammar analyzes all cases, i.e., nominative, accusative, and genitive, as heads of special kinds of adjuncts.** For example, nominative is the head of a noun-nominative sequence that is an adjunct to a finite verb or adjective. Accusative is the head of a noun-accusative sequence that is an adjunct to a transitive verb or adjective. **In the lexicon, each lexical entry is assumed to have small *pros* already saturating SUBCAT requirements, specifying the index of each of the *pros* with a certain case.** For example, the content of *ner-u* 'sleep-NONPERF' is specified as  $\text{sleep}'(x_{\text{nom}})$ , where  $x_{\text{nom}}$  indicates that the free variable is co-indexed with a nominative noun. **The content of a case is identified with the content of the noun that the case subcategorizes for, described as a generalized quantifier, e.g.,  $\{X \mid \{x \mid \text{child}'(x)\} \cap X \neq \emptyset\}$  for *some child*, selecting the set of individuals that can plug into the free variable co-indexed with a noun of the case.**

For example, the content of sentence (1) is computed as follows. The content of a sentence, as in (1), i.e., an adjunct-head phrase, is identified with the content of the adjunct daughter *kodomo ga* 'child NOM'. Assuming that a case subcategorizes for a quantified noun, the content of *kodomo ga* 'child NOM', which is a complement-head phrase, is identified with the content of the head daughter, i.e., nominative.

- (1) *kodomo-ga ner-u*  
child-NOM sleep-NONPERF  
'A child sleeps.'

Assuming that bare nouns in Japanese are existentially closed, the content of the sentence is identified with (2), which is equivalent to (3), which is further equivalent to (4).

- (2)  $\{X \mid \{x \mid \text{child}'(x)\} \cap X \neq \emptyset\}$  selects  $\{x_{\text{nom}} \mid \text{sleep}'(x_{\text{nom}})\}$   
(3)  $\{x_{\text{nom}} \mid \text{sleep}'(x_{\text{nom}})\} \in \{X \mid \{x \mid \text{child}'(x)\} \cap X \neq \emptyset\}$   
(4)  $\{x \mid \text{child}'(x)\} \cap \{x_{\text{nom}} \mid \text{sleep}'(x_{\text{nom}})\} \neq \emptyset$

An analysis of multiple noun-nominative sentences in the framework of the above grammar will be given in the talk.

I can send an implementation of the grammar that contains the analysis of multiple noun nominative sentences in the Unicorn parsing system, upon request.