Focus particles, secondary meanings, and Lexical Resource Semantics: The case of Japanese *shika*

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In the last decade, there has been a flurry of ever more fine-grained distinctions in the status of the information conveyed by utterances, e.g., implicitures (Bach 1994), conventional implicatures (in the sense of Potts 2005), secondary meanings (Bach 1999, Potts 2005), or assertorically inert propositions (Horn 2002). In this paper, we show how HPSG and Lexical Resource Semantics (Richter and Sailer, 2004) can help model the semantic difference between two Japanese focus particles roughly paraphraseable as *only* in English, *shika* and *dake*, as well as help solve an apparent non-compositional aspect of the semantics of sentences containing *shika*. We show that a single lexical item (a negative suffix) can sometimes contribute to the primary meaning of sentences that contain it and sometimes to their secondary meanings. Our paper thus both solves a long-standing descriptive difficulty in Japanese lexical semantics and serves as a case study in the benefits of HPSG and LRS in modeling the syntax/semantics interface of Japanese focus particles.

1 The problem

1.1 Two Japanese exclusive particles

Japanese is traditionally analyzed as having two exclusive particles, *-shika* and *-dake*. They behave similarly to *only* in that sentences containing these particles express both the prejacent and asserted propositions associated with *only*-like particles illustrated in (1). But, one crucial difference between the two particles is that *-shika* obligatorily co-occurs with the negative verbal suffix *-na* as shown in (2).

(1) Only Yuna came.
     (*prejacent*: Yuna came; *assertion*: No one other than Yuna came)

(2) Yuna-shika ko-na-katta.
     Yuna-SHIKA come-NEG-PAST
     'Only Yuna came.'

If we assume that *-shika* is an exclusive marker like English *only*, the presence of the negative verbal suffix *-na* is left unexplained, as the Japanese sentence in (2) contains a negative verbal suffix while the English paraphrase does not.

1.2 Why an exceptive analysis is not a solution to the problem

Yoshimura (2006) tries to account for the presence of the negative verbal suffix by assuming that *-shika* is an exceptive marker like English *everyone except*, i.e. propose an analysis of (2) corresponding to the paraphrase *Everyone except Yuna did not come* rather than the more traditional

exclusive paraphrase given in (2). In the exceptive analysis of *-shika*, the semantic import of the negative verbal suffix can be explained compositionally since the property non-exceptions share is the negation of the property borne by the exception (i.e., 'did *not* come' for (2)).

Two facts suggest that the negative verbal suffix *-na* does not behave like ordinary negation, contrary to the predictions of the exceptive analysis of *-shika*. First, ordinary negation is downward entailing. Thus, (3), in which the negative suffix co-occurs with *-igai* 'other than' entails (4), whose verb phrase denotes a subset of what the verb phrase in (3) denotes. However, (5), in which the negative suffix co-occurs with *-shika*, does not entail (6).

(3) Yuna-igai   ko-na-katta.
    Yuna-other.than come-NEG-PAST

    'Everyone other than Yuna didn't come.'

(4) Yuna-igai   okurete ko-na-katta.
    Yuna-other.than late   come-NEG-PAST

    'Everyone other than Yuna didn't come late.'

(5) Yuna-shika ko-na-katta.
    Yuna-SHIKA come-NEG-PAST

    'Only Yuna came.'

(6) Yuna-shika okurete ko-na-katta.
    Yuna-SHIKA late   come-NEG-PAST

    'Only Yuna came late.'

Second, the negative suffix co-occurring with *-shika* cannot license the NPI *nanimo* 'anything' as exemplified in (7a) (to be contrasted with (8), which contains *-igai* 'other than').

(7) a. #Yuna-shika nanimo   tabe-na-katta.
       Yuna-SHIKA   anything eat-NEG-PAST

   b. ?*John-shika sensei-ni   ichido-mo   awa-nak-atta.
       John-SHIKA   teacher-DAT once-MO$_{\text{NPI}}$ see-NEG-PAST

       'Only John saw the teacher at all. (Yoshimura 2007)

(8) Yuna-igai   nanimo   tabe-na-katta.
    Yuna-other.than anything eat-NEG-PAST

    'Everyone other than Yuna didn't eat at all.'

Since it is critical to the exceptive analysis of the meaning of *-shika* that the negative verbal suffix co-occurring with *-shika* is an ordinary descriptive negation, we conclude that *-shika* is not an exceptive particle, but an exclusive particle, as is traditionally assumed.

2   A solution that involves secondary meanings

We propose that the negative verbal suffix co-occurring with *-shika* only participates in the secondary meaning of sentences containing *-shika*, as informally shown in (9) for sentence (2). We characterize (9) as a secondary meaning because, as we show in the paper, it behaves in all respects like the secondary meaning of *even* or *but*: It cannot be under the scope of operators which behave as holes for presupposition projection, its truth value is independent of that of the primary meaning, it is not cancellable even with meta-linguistic negation, it can be under the scope of propositional attitude verbs like believe, etc.

(9) Secondary meaning: Yuna's coming and no one else's coming implies that a contextual proposition Q does not hold.

The necessary presence of this contextual proposition Q which the sentence containing *-shika* negates accounts for native speakers' intuition that contexts in which *-shika* is appropriate are more 'negative' than those in which *-dake* occurs (Kuno, 1999). In (10), *-shika* is acceptable because the adversative clause implies that the speaker did not make pancakes. Thus, the proposition expressed in (12) is a Q that does not hold. In the same context, (11), on the other hand, is not acceptable because the purposive clause implies that the speaker made pancakes. The same contextual proposition Q expressed in (12) therefore now holds. More generally, we propose that the negation that must co-occur with *-shika* leads to the secondary meaning in (13). (To support our hypothesis, we conducted a corpus study of two Japanese newspapers and analyzed 100 ps-randomly selected discourse examples of *-shika*. In all examples, there was a contextually available proposition Q that the sentence containing *-shika* contradicted. Additionally, there was no such Q in all attested examples containing *-dake* which would have been infelicitous had *-shika* occurred instead.)

(10) Hottokeeki-o tukuri-ta-katta-n-dakedo,   hutatu-shika/(#)hutatu-dake tamago-o
      pancake-ACC make-want-PAST-COMP-although two-SHIKA/two-DAKE   egg-ACC
      kawa-na-katta/ka-Ø-tta.
      buy-NEG-PAST/buy-Ø-PAST

      'Although I wanted to make pancakes, I only bought two eggs.'

(11) Hottokeeki-ga tukur-e-ru-youni,   #hutatu-shika/hutatu-dake tamago-o
      pancake-NOM make-can-NON.PAST-in.order.to two-SHIKA/two-DAKE   egg-ACC
      kawa-na-katta/ka-Ø-tta.
      buy-NEG-PAST/buy-Ø-PAST

      'In order to make pancakes, I only bought two eggs.

(12) Q: I made pancakes.

(13) The primary meaning (i.e., the standard conjunction of the prejacent and asserted propositions) pragmatically implies the negation of a contextually retrieved proposition.

3   Our HPSG and LRS model

We present a model of the necessary co-occurrence of a negation with *-shika* and the secondary meaning associated with the negative suffix *-na* within HPSG, using LRS for our semantic component. We show that the combination of a lexical approach to co-occurrence restrictions (through argument structure and valence features) and the ability to identify underspecified semantic values leads to a simple account of the syntax and semantics of sentences containing *-shika*. There are three observations that any adequate model of sentences containing *-shika* must account for:

- The morphosyntactic dependency between *-shika* and *-na*: *-Shika* requires the presence of *-na*;

- The semantic dependency between *-na* and *-shika*: The co-occurrence of *-na* and *-shika* conveys the secondary meaning in (13), not ordinary sentential negation;

- The secondary meaning of sentences containing *-shika* contains the sentence's primary meaning.

To model the first observation, we propose the constraint in (14). This constraint says, that if a verb has a dependent (in the sense of Bouma et al., 2001) which contains the focus particle *-shika*, this verb must be of type *secondary-negated-verb*. We assume that every constituent onto which the focus particle *shika* cliticizes bears a head feature FPART that identifies the relevant postpositional particle that appears at the edge of that constituent.

(14) $\left[\text{DEPS}\left\langle\ldots\left[\text{HEAD}\left[\text{FPART } shika\right]\right]\ldots\right\rangle\right] \Rightarrow second\text{-}neg\text{-}verb$

To model the second and third observations (i.e., to account for the difference between negated verbs whose negation is part of the verb's primary meaning and negated verbs whose negation is part of the verb's secondary meaning), we define the type *secondary-neg-verb* as in (15). This type requires first the polarity to the verb to be negative (the negative polarity feature of the verb will be realized morphophonologically via the suffix *-na*). More importantly, the type declaration divides the semantic external-content of that verb into a primary and secondary external-content (via two attibutes, the usual (primary) EXC attribute and the additional (secondary) SEC-EXC attribute). This division corresponds to the distinction between primary and secondary meanings outlined in Bach (1999) and Potts (2005). Members of the PARTS list in the LF of words or phrases can be subexpressions of either the EXC or SEC-EXC, although, by default, they only contribute to the primary external content of words or phrases. The type declaration further requires that the (regular) content (EXC) contributed by *-shika* (identified by ① in (15)) "implies" $\neg Q$, where Q is a contextually supplied proposition.[1]

(15) $second\text{-}neg\text{-}verb \Rightarrow \begin{bmatrix} \text{HEAD} & \left[\text{POLARITY -}\right] \\ \text{SEC-EXC} & \boxed{1} \rightsquigarrow \boxed{2}\neg Q \\ \text{DEPS} & \left\langle\ldots\begin{bmatrix}\text{HEAD}\left[\text{FPART } shika\right] \\ \text{EXC} \quad \boxed{1}(only\text{'}(\alpha,\,\beta))\end{bmatrix}\ldots\right\rangle \\ \text{PARTS} & \left\langle\ldots\boxed{2}\neg\ldots\right\rangle \end{bmatrix}$

For reasons of the space, we cannot go into the details of how we implement a Rooth-style approach to focus particles in this abstract. Suffice it to say that we define the semantics of *only'* and the secondary meaning contributed by *shika* and *na*, as in (16).

(16) a. *Primary meaning*: $only\text{'}(\alpha, \beta)$ $(= \boxed{1})$
   1. $\alpha, \beta = $ (primary) contents of the expression on which *-shika* focuses and the non-focused part of the sentence, respectively (see Rooth, 1997);
   2. $only\text{'}(\alpha, \beta)$ is true iff $\beta(\alpha)$ and there is no alternative other than α for which $\beta(\alpha)$ is true;
  b. *Secondary meaning*: $\boxed{1} \rightsquigarrow \neg Q$.

Note that in our analysis, there is a single lexical entry for the negative suffix *-na*, which is underspecified with respect to whether the negation contributes to the primary meaning or secondary meaning. Since the choice among the two uses of the negative suffix is conditioned by whether the verb under the scope of the negative suffix has a dependent containing *-shika*, it is not necessary to assume two separate lexical entries for the two kinds of negation or speculate an extra-grammatical constraint to distinguish the two uses of the negative suffix. Whenever *shika* occurs, the verb it is a dependent of must be a *second-neg-verb* and any *second-neg-verb* must be of negative polarity and the negation on its PART list must contribute to its secondary

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[1]Alternatively, rather than a free pragmatic variable, the type declaration can existentially bind the propositional variable Q. Nothing substantial hinges on this choice. $\rightsquigarrow$ stands for pragmatic implication.

context (SEC-EXC). Constraints (14) and (15) illustrate some of the advantages of HPSG and LRS when modeling the complex syntax/semantics interface of sentences containing *shika*. The co-occurrence of *-na* and *-shika* is easily modeled via constraints on verbs that select for a *shika* marked dependent. The fact that *-na* contributes to the secondary meaning of verbs only when these verbs select for a *shika* dependent is easily modeled via constraint on the type *second-neg-verb* and the distinction between PARTS and (SEC)-EXC. Finally, the dependency between the primary exclusive meaning and the secondary negative implication of sentences containing *shika* is easily modeled through token-identity between the primary external content and the relevant part of the secondary external content of verbs of type *second-neg-verb*.

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