

Composing paratactically associated items: intonation and particles

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Abstract

This study offers compositional semantic analyses of prosody and particles by introducing a new composition rule that instructs how to interpret paratactically-associated expressive morphemes.

1 Introduction

In the literature on the interpretation of prosodic morphemes (Bartels, 1999; Gunlogson, 2003) and discourse particles, it has been tacitly assumed that the morpheme/particle is somehow attached to the entire sentence and projects an expressive meaning independent of the meaning of the host sentence. We offer a more concrete compositional system, $\mathcal{L}_{CI}^{+S,PA}$, which can handle prosody and particles. More specifically, we treat prosodic morphemes and particles as expressive items that are paratactically associated to the main clause and introduce a new composition rule that instructs how to interpret paratactically-associated expressive morphemes.

This paper is structured as follows: Section 2 proposes a new language, $\mathcal{L}_{CI}^{+S,PA}$ that contains syntactic and compositional rules for paratactic association. Section 3 shows how the proposed rules can derive the interpretations of the constructions that contain particles and prosodic morphemes. Section 4 concludes the paper.

2 Proposal: Syntax and Composition of Paratactic Association

Syntactically, a prosodic morpheme or particle β is paratactically associated (indicated by ‘ \otimes ’) with the head of the root clause (1).

$$(1) \quad \begin{array}{c} C_{\text{ROOT}} \\ | \\ \alpha \otimes \beta \end{array}$$

We propose a new system $\mathcal{L}_{CI}^{+S,PA}$, which is obtained by adding a composition rule (2) to McCready’s (2010) type system for conventional implicatures, \mathcal{L}_{CI}^{+S} . The paratactic association (2) merges two functions into one by abstracting over the argument type of the two functions (\blacklozenge is a metalogical operator that combines expressions of different types).

$$(2) \quad \begin{array}{c} \lambda\chi.\alpha(\chi)\blacklozenge\beta(\chi) : \langle\sigma, \tau \times \nu\rangle \\ \swarrow \quad \searrow \\ \lambda\chi.\alpha(\chi) : \langle\sigma, \tau\rangle \quad \lambda\chi.\beta(\chi) : \langle\sigma, \nu\rangle \end{array}$$

The resulting function, $\lambda\chi.\alpha(\chi)\blacklozenge\beta(\chi)$, is combined with an at-issue expression χ of type σ^a by McCready’s shunting-type functional application (3) and outputs a pair of shunting-type expressions $\alpha(\chi)\blacklozenge\beta(\chi)$ of type $\tau^s \times v^s$.

$$(3) \quad \begin{array}{c} \alpha(\beta) : \tau^s \\ \swarrow \quad \searrow \\ \alpha : \langle \sigma^a, \tau^s \rangle \quad \beta : \sigma^a \end{array}$$

In short, when two expressive morphemes are paratactically associated with each other, the combination yields a function that takes an at-issue content and returns a pair of expressive contents.

3 Deriving the interpretations

In what follows, we show how the paratactic association rule (2) proposed above can derive a variety of the empirical data that contain particles and prosodic morphemes discussed in the literature: Japanese modal auxiliary *daroo* with Final Rise (Hara, 2018), Osaka Japanese particle *nen* in *wh*-interrogatives (Hara & Kinuhata, 2012), Mandarin sentence-final stress in rising declaratives (Hara et al., 2014) and English alternative questions with Final Fall (Biezma & Rawlins, 2012). Parallel analyses can be given to Japanese deaccentuation (Hara et al., 2014) and Mandarin A-NOT-A questions (Yuan & Hara, 2013).

3.1 Japanese rising *daroo*

Hara (2018) observes that a declarative that ends with a modal auxiliary *daroo* and a rising contour L%*H*%/ \uparrow yields an interpretation similar to a tag question as in (4). In other words, (4) gives rise to two independent meanings, the speaker’s bias toward the prejacent proposition ‘Marie drinks’ and a question ‘Does she drink wine?’.

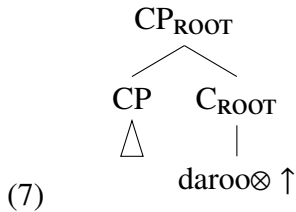
- (4) Marie-wa nomu daroo \uparrow
 Marie-TOP drink DAROO
 ‘Marie drinks, right?’

Hara (2019) analyzes *daroo* as an expressive morpheme that indicates the speaker’s bias as in (5), while \uparrow is analyzed as an expressive question marker as in (6).

$$(5) \quad \llbracket \text{daroo} \rrbracket \in D_{\langle \langle s^a, t^a \rangle, \langle s^s, t^s \rangle \rangle}, \llbracket \varphi \text{ daroo} \rrbracket = \text{bias}_{\text{SP}}(\varphi)$$

$$(6) \quad \llbracket \uparrow \rrbracket \in D_{\langle \langle s^a, t^a \rangle, \langle \langle s^s, t^s \rangle, t^s \rangle \rangle}, \llbracket \uparrow \rrbracket = \lambda q.\{q, \neg q\}$$

As shown in (7), the prosodic question marker \uparrow is paratactically associated to the expressive morpheme *daroo*.



The composition tree is given in (8) ($T = \langle \langle s, t \rangle, t \rangle$). The two shunting-type morphemes are combined by the paratactic association rule (2), which yields a function that takes an at-issue meaning

and returns a pair of expressive meanings.

$$\begin{array}{c}
 \text{bias}_{\text{SP}}(p) \blacklozenge \{p, \neg p\} : \langle s^s, t^s \rangle \times T^s \\
 \hline
 \begin{array}{cc}
 p : \langle s^a, t^a \rangle & \lambda q. \text{bias}_{\text{SP}}(q) \blacklozenge \{q, \neg q\} : \langle \langle s^a, t^a \rangle, \langle s^s, t^s \rangle \times T^s \rangle \\
 \hline
 \lambda q. \text{bias}_{\text{SP}}(q) : \langle \langle s^a, t^a \rangle, \langle s^s, t^s \rangle \rangle & \lambda q. \{q, \neg q\} : \langle \langle s^a, t^a \rangle, T^s \rangle
 \end{array}
 \end{array}
 \quad (8)$$

As a result, (4) has two independent meanings, the speaker's bias toward p and her question $\{p, \neg p\}$, deriving the desired tag-question-like interpretation.

3.2 Osaka Japanese (*n*)*en*

Hara & Kinuhata (2012) show that Osaka Japanese assertion particle *nen* (and its allomorphic variant *en*) in *wh*-interrogatives has special discourse/emotive effects. For instance, (9) can only be interpreted as a rhetorical question which seems to assert that no one is coming.

- (9) Dare-ga kuru nen?
 who-NOM come NEN
 'Who is coming?' ('No one is coming.')

As discussed by Caponigro & Sprouse (2007), the answer to a rhetorical question need not to be a negative one. Rather, a question is interpreted as a rhetorical question when both the speaker and the addressee know its answer. Thus, *nen* can be used in (10) as well.

- (10) dare-ga anta sodate-t-en?
 who-NOM you raise-PAST-NEN
 'Who raised you up?' ('I raised you up.')

Nen can be used in information-seeking questions but the use of *nen* yields a special emotive effect. In uttering (11), the speaker sounds irritated after waiting for the addressee to decide for a long time.

- (11) nani taberu nen?
 what eat NEN
 'What are you going to eat?'

Given Hara & Kinuhata's (2012) observation, we propose the following semantics for *nen*.

$$(12) \quad \llbracket \mathbf{nen} \rrbracket \in D_{\langle T^a, \langle s^s, t^s \rangle \rangle}, \llbracket \varphi \mathbf{nen} \rrbracket = \lambda w. \exists p \in \varphi : p(w) = 1$$

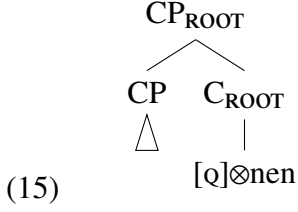
When *nen* attaches to a declarative as in (13), for an expository purpose, we assume that the declarative sentence of type $\langle s^a, t^a \rangle$ type-shifts to a singleton set of propositions (of type T^a).¹ Thus, *p-nen* simply asserts that the embedded proposition is true.

- (13) konban furansu ryoori taberu nen.
 tonight France cuisine eat NEN
 'I'll eat French cuisine tonight.'

¹This assumption can be removed if we employ the framework of Inquisitive Semantics (Ciardelli et al., 2013, a.o.) in which both declarative and interrogative sentences are treated as a set of sets of possible worlds, i.e., of type $\langle \langle s, t \rangle, t \rangle = T$.

Turning to *wh*-questions with *nen*, we assume that a *wh*-question agrees with a question feature [Q] at C, and when [Q] occupies the root C, it renders an at-issue interrogative to an expressive one as defined in (14). *Nen* paratactically associates with this [Q] as depicted in (15).

$$(14) \quad \llbracket [\text{Q}_{\text{ROOT}}] \rrbracket \in D_{\langle T^a, T^s \rangle}, \llbracket [\text{Q}_{\text{ROOT}}] \rrbracket = \lambda\varphi.\varphi$$



When *nen* attaches to a *wh*-interrogative, it projects a question meaning and at the same time asserts that at least one of the propositions denoted by the interrogative clause is true, as shown in (16).

$$\begin{array}{c}
 \{p.q, r, \dots\} \blacklozenge \text{nen}(\{p.q, r, \dots\}) : T^s \times \langle s^s, t^s \rangle \\
 \swarrow \quad \searrow \\
 \{p.q, r, \dots\} : T^a \quad \lambda\varphi.\varphi \blacklozenge \text{nen}(\varphi) : \langle T^a, T^s \times \langle s^s, t^s \rangle \rangle \\
 \swarrow \quad \searrow \\
 \lambda\varphi.\varphi : \langle T^a, T^s \rangle \quad \lambda\varphi.\text{nen}(\varphi) : \langle T^a, \langle s^s, t^s \rangle \rangle
 \end{array}$$

(16)

Following Groenendijk & Stokhof (1997) and Caponigro & Sprouse (2007), we assume that the semantics of an interrogative clause is a partition of possible worlds and each cell of the partition corresponds to a possible answer to the question. Thus, in (9) and (10), the questioner is asserting that one of the answers is true because she knows (or at least she thinks she knows) the answer, giving rise to an interpretation of rhetorical question. In (11), the questioner does not know the answer but by claiming that one of the answers is true, she is urging the addressee to answer the question.

3.3 Mandarin sentence-final stress and Japanese deaccentuation

Hara et al. (2014) show that Mandarin rising declaratives with sentence-final stress (SFS) like (17) intensify the speaker's incredulity about the embedded proposition.

$$\begin{array}{l}
 (17) \quad \text{Ni bu dong fayu} \uparrow_{\text{SFS}} \\
 \text{you NEG understand French} \\
 \text{'You don't understand French?'}
 \end{array}$$

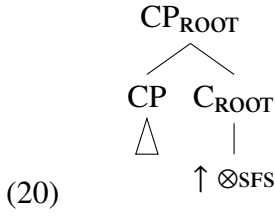
Hara et al. (2014) propose that Mandarin final rise \uparrow_m in $\neg p - \uparrow_m$ indicates that the addressee is committed to the prejacent proposition $\neg p$ while SFS focus-marks $\neg p$ and thereby indicates that alternatives $(\{p, \neg p\})$ to $\neg p$ are salient.

$$(18) \quad \llbracket \uparrow_m \rrbracket \in D_{\langle \langle s^a, t^a \rangle, \langle s^s, t^s \rangle \rangle}, \llbracket \uparrow_m \rrbracket = \lambda p.p \in \text{PB}_{\text{ADDR}}$$

$$(19) \quad \llbracket \text{SFS} \rrbracket \in D_{\langle \langle s^a, t^a \rangle, \langle s^s, t^s \rangle \rangle}, \llbracket \text{SFS} \rrbracket = \lambda p.\text{Salient}(\text{Alt}(p))$$

Thus, the communicative intent of the speaker is: “You are publicly committing yourself to $\neg p$ but I have enough evidence for p (i.e., p is salient). Are you sure that you want to add $\neg p$ to the common ground?”

Given the structure in (20) and the paratactic association rule (2), we can derive this interpretation compositionally from the two intonational morphemes as in (21).



$$\begin{array}{c}
 \neg p \in \text{PB}_{\text{ADDR}} \blacklozenge \text{Salient}(\text{Alt}(\neg p)) : \langle s^s, t^s \rangle \times \langle s^s, t^s \rangle \\
 \hline
 \neg p : \langle s^a, t^a \rangle \quad \lambda p.p \in \text{PB}_{\text{ADDR}} \blacklozenge \text{Salient}(\text{Alt}(p)) : \langle \langle s^a, t^a \rangle, \langle s^s, t^s \rangle \times \langle s^s, t^s \rangle \rangle \\
 \hline
 \lambda p.p \in \text{PB}_{\text{ADDR}} : \langle \langle s^a, t^a \rangle, \langle s^s, t^s \rangle \rangle \quad \lambda p.\text{Salient}(\text{Alt}(p)) : \langle \langle s^a, t^a \rangle, \langle s^s, t^s \rangle \rangle
 \end{array}$$

(21)

A Japanese negative question with deaccentuation like (22) has a similar yet different discourse effect and can be given a parallel compositional analysis.

- (22) Kore, karaku-nai $\uparrow_{\text{DEACCENT}}$
 this spicy-NEG
 ‘Isn’t this spicy?’

3.4 English alternative questions and Mandarin A-NOT-A questions

Biezma & Rawlins (2012) show that English alternative questions with falling (H*L-L%/↓) contour like (23) “offer unbiased choices” between the alternatives.

- (23) Do you want coffee or tea↓

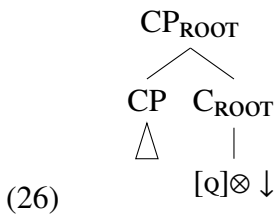
Biezma & Rawlins (2012) derive this interpretation by proposing that ↓ denotes a closure operator which presupposes that the alternatives denoted by the interrogative, e.g., {*p*, *q*}, are salient in a given discourse, i.e., equals to SalAlts:

- (24) SalAlts is the set of propositional alternatives that are salient in the context of interpretation.

We can derive the same interpretation by treating ↓ as a paratactically-associated Closure operator which expresses that the alternative set denoted by the interrogative equals to SalAlts or SalAlts = ∅. Note that we depart from Biezma & Rawlins (2012) in that this salience requirement is treated as an expressive rather than a presupposition.

- (25) $\llbracket \downarrow \rrbracket = \llbracket \text{Closure} \rrbracket \in D_{\langle T^a, \langle s^s, t^s \rangle \rangle}, \llbracket \downarrow \rrbracket = \llbracket \text{Closure} \rrbracket = \lambda \varphi. (\text{SalAlts} = \varphi) \vee (\text{SalAlts} = \emptyset)$

As depicted in (26), the prosodic morpheme ↓ is paratactically associated with the [q] at root C defined in (14).



By the paratactic association rule (2), the construction yields a pair of expressives as in (27).

$$\begin{array}{c}
\{p, q\} \blacklozenge \text{Closure}(\{p, q\}) : T^s \times \langle s^s, t^s \rangle \\
\swarrow \quad \searrow \\
\{p, q\} : T^a \quad \lambda\varphi. \varphi \blacklozenge \text{Closure}(\varphi) : \langle T^a, T^s \times \langle s^s, t^s \rangle \rangle \\
\swarrow \quad \searrow \\
\lambda\varphi. \varphi : \langle T^a, T^s \rangle \quad \lambda\varphi. \text{Closure}(\varphi) : \langle T^a, \langle s^s, t^s \rangle \rangle
\end{array}
\tag{27}$$

Thus, (23) raises an expressive question $\{p, q\}$ and expresses that both alternatives are salient.

Mandarin A-not-A questions like (28) that end with L% tone (↓) seem to express a similar meaning, since they can be used only when the context is unbiased, i.e., both alternatives (p and $\neg p$) are equally salient (see also Yuan & Hara, 2013).

- (28) Ni he-bu-he jiu↓
you drink-not-drink wine
‘Do you drink wine or not?’

4 Conclusion

The paratactic association rule (2) of $\mathcal{L}_{CI}^{+S, PA}$ can provide compositional analyses of expressive meanings that arise from prosodic morphemes and particles.

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