DISCOURSE UPDATE AND SEMANTIC COMPOSITION OF PARTICLES:
THE CASE OF *nen* IN OSAKA JAPANESE*

TOMOHIDE KINUHATA
YURIE HARA
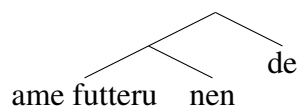*Fukuoka University and City University of Hong Kong*

1   Introduction

This paper discusses the sentence-final particle *nen* in Osaka Japanese. As is often the case with particles, *nen* has no obvious contribution to the truth conditions of a sentence in which it occurs. For example, the sentence in (1) has the same truth conditions as the sentence without *nen*.

(1)   ame futteru   nen.
        rain be.falling NEN
        'It is raining.'

The first issue we address in this paper is the nature of *nen*'s non-truth-conditional semantic contribution.

Another issue we will address in this article is how particles are composed when they occur in one clause simultaneously. One run-of-the-mill hypothesis would be to assume that each sentence-final particle (SFP) takes the immediately adjacent clause and projects another clause as in (2).

(2)   ame futteru   nen de.
        rain be.falling SFP SFP
        'It is raining.'

This paper offers a different view from (2): *Nen* is not syntactically integrated into the main text, but paratactically associated to it. That is, *nen* functions as a kind of floating morpheme which attaches to the at-issue or implicational content after computing the whole meaning of the sentence.

This paper is organized as follows. After looking at the basic function of this particle in section 2, we present examples where *nen* is used with another sentence final particle *de* and propose that *nen* is associated to the implicature induced by *de* in section 3. In section 4, we offer an apparatus, i.e., paratactic association, which allows a compositional account of the proposal in section 3 and explains the use of *nen* in interrogatives as discussed in Hara and Kinuhata (To appear). Section 5 concludes the paper.

2   Basic function

2.1   Two characteristics

In this section, we look at the use of *nen* in declarative sentences and observe two characteristics. The first characteristic of *nen* is that the prejacent proposition seems to be part of the speaker's knowledge. For example, while the use of *nen* is natural with a first person subject as in (3-a), the speaker sounds like a prophet or appears to force the addressee to do the activity when the second person occupies the subject position as in (3-b).[1]

(3)   a.   watashi konban furansu ryoori taberu nen.
              I   tonight France cuisine eat   NEN
              'I'll eat French cuisine tonight.'
        b.   anta konban furansu ryoori taberu nen.
              you tonight France cuisine eat   NEN
              'You'll eat French cuisine tonight.'

If the sentence represents a proposition about which the speaker could not have gather knowledge than the addressee, the use of *nen* is infelicitous. One such class of examples are sentences which have an experience adjective as its predicate: While the first person subject again makes the sentence natural as in (4-a), the sentence with *nen* sounds deviant with a second person subject as in (4-b).[2]

(4)   a.   A: Why do you leave so early?
              B: ha-ga   itai nen.
                    tooth-NOM ache NEN
                    'I have a toothache.'
        b.   A: I cannot eat a steamed bun because of my toothache.

---

[1]There is a phonological variant *en* after the past-tense morpheme *t/d*:

(i)   kinoo   furansu ryoori tabe-t   en.
       yesterday France cuisine eat-Past NEN
       'I ate French cuisine yesterday.'

[2]When followed by the copula verb *ya*, *nen* is naturally used in (3-b) and (4-b), that is, the first characterization of *nen* does not hold for the sequence *nen-ya*. We have not found any account to this pattern, and therefore we will ignore those instances of *nen* in the rest of this article.

> B: #sonnani ha-ga itai nen.
> such tooth-NOM ache NEN
> 'You have such a toothache.'

The second characteristic is that it is not appropriate to use *nen* in a context where the speaker intends to suggest an act for the addressee. This is surprising given the first characteristic of *nen*, since it is usual for the speaker to use what she knows in advising the addressee. In general, the speaker should be able to suggest an act which the addressee should take by communicating some fact that she has observed. However, *nen* cannot be used in contexts like (5).

(5)   (The speaker goes out of the house, notices that it's started to rain and tries to suggest to the addressee that he take in the laundry.)

> #ame futteru nen.
> rain be.falling NEN
> 'It is raining.'

Another particle *de* fits the context better than *nen*, as illustrated in (6).[3]

(6)   (The same context as (5))

> ame futteru de.
> rain be.falling DE
> 'It is raining.'

Note that this does not mean that the sentence with *nen* cannot stand in a causal relation with a particular action in general. If the action triggered by the sentence with *nen* has already taken place, the sentence in (5) becomes felicitous, as shown in the following example.

(7)   (B has already taken in the wash and is hanging it in the house)
>   A: Why did you take in the laundry?
>   B: ame futteru nen.
>   rain be.falling NEN
>   'It is raining.'

This pattern can be observed in the following examples as well; the sentences in the following examples are construed as a trigger of an action such as taking the road to the gas station in (8) or preparing for the meeting in (9). While the use of *nen* is infelicitous when the relevant action has not yet been performed, as in (8-a) and (9-a), it is natural to use *nen* in contexts where the action has already been completed as in (8-b) and (9-b). Examples (8) and (9) are adapted from Davis (2009).

(8)   a.   (A man is standing by an immobilized car, the speaker approaches him and tries to suggest to him that he take the road to the gas station.)
>   #mukoo-ni gasorinsutando-ga aru nen.
>   over.there-DAT gas.station-NOM exist NEN

---

[3]*De* is an Osaka Japanese counterpart of *yo* used in Tokyo Japanese, though *de* is not used with imperatives and interrogatives, unlike *yo*. See Takubo and Kinsui (1997), McCready (2009) and Davis (2009) for the analyses of *yo* in Tokyo Japanese.

'There is a gas station over there.'
b.   (B walks down the road to the gas station.)
    A: Why are you going down this road?
    B: mukoo-ni   gasorinsutando-ga aru   nen.
        over.there-DAT gas.station-NOM   exist NEN
        'There is a gas station over there.'

(9)   a.   (The speaker and the addressee have a meeting starting at 3, it is ten minutes to 3 and
      the speaker tries to suggest to the addressee that he prepare for the meeting.)
    #san-ji   kara kaigi   ya   nen.
    3-o'clock from meeting Copula NEN.
    'The meeting starts at 3.'
  b.   (A and B have a meeting starting at 3 and B is busy getting ready for the meeting.)
    A: Why are you so busy now?
    B: san-ji   kara kaigi   ya   nen.
        3-o'clock from meeting Copula NEN.
        'The meeting starts at 3.'

Note that it is not obligatory for the use of *nen* that the prejacent proposition of *nen* stands in a causal relation with a particular action, cf., (3). Therefore, our approximation for the distribution of nen is the following: If the information conveyed by the sentence with *nen* is connected to a particular action, as in examples (5) to (9), it is necessary for that action to have already occurred, or to be taken for granted to occur, before the utterance. In other words, if that action has not even been initiated as in (5), (8-a) and (9-a), then the sentence cannot naturally be used with *nen*.[4] If the speaker does not intend to utter the sentence to give a reason for a particular action as in (3), it only implies that the prejacent proposition is part of the speaker's knowledge.

2.2   Formalization

In formally characterizing the discourse function of *nen*, we employ the model of discourse contexts developed by Stalnaker (1978). Stalnaker (1978) argues that assertive acts operate over a common ground (CG), which is a set of propositions (10).

(10)   Common Ground
    A set of propositions each of which is a mutual belief of the participants in the discourse.

To model the dynamic update performed by *nen*, we adopt Heim's (1982) context change potential (CCP). In Heim (1982), a speech act is regarded as a function, i.e., a CCP, which takes the current context as an input and returns an updated context. Based on this, *nen* is defined as a function from a proposition to a CCP as in (11), in which $CG(C)+p$ is an updated context with p which is identical to the pre-update context C except that $CG(C)+p$ now contains p.[5]

---

[4]Hara and Kinuhata (To appear) entertain a different explanation for the infelicity of *nen* in (5), (8-a) and (9-a). That is, the use of *nen* is blocked by the existence of the particle that fits the context better, namely *de*. See also footnote 6.

[5]Hara and Kinuhata (To appear) adopted Gunlogson's (2003) model of discourse update, which defines the common ground as the intersection of the public beliefs of the discourse participants. This paper does not derive

(11) $[\![nen]\!] = \lambda p. \lambda C. \ (CG(C) + p)$

The two characteristics observed in section 2.1 are now expressed as the update constraint in (12).[6]

(12) $[\![nen]\!](p)(C)$ is defined iff:
        $access(\text{addr}, p) \leq access(\text{spkr}, p)$ in C & if $p \rightsquigarrow q \in CG(C)$, then $q \in CG(C)$.

The constraint on the update consists of two parts conjoined by '&': The first conjunct indicates that *nen*'s prejacent is part of the speaker's knowledge, and the second corresponds to our generalization that the action inferred from the prejacent of *nen* must be taken before the utterance. Let us closely look at these conditions one by one.

The *access* function is implemented to represent the priority of knowledge between the speaker and the addressee about the proposition. *access* is a function taking a cognitive agent and a proposition as the input and returning a degree of familiarity of the agent about the proposition. In (12), *nen* is defined when the speaker's familiarity with p is at least as great as the addressee's in the pre-update context.[7,8]

This straightforwardly explains the contrast in (3) and (4). Since one usually knows more about her schedule or her toothache than the others, the speaker knows more about the schedule or the toothache than the addressee in (3-a) and (4-a) but not in (3-b) and (4-b). This makes the use of *nen* in (3-a) and (4-a) natural. If *nen* is attached to a sentence expressing the addressee's activity as in (3-b), the presupposition of *nen* entails that the speaker is more familiar with the addressee's schedule than is the addressee himself, which deviates from the typical context and, for example, gives rise to a nuance of enforcement on the addressee's activity. When *nen* is used with an experience predicate, the subject of the sentence cannot be second person since the speaker is not able to know more about the addressee's internal state than the addressee himself. Thus, (4-b), which is about the addressee's toothache, is inappropriate.

An alternative account for data like that in (3) and (4) would be to hypothesize that *p-nen* can be used when the speaker directly knows p, since, for example, the toothache is directly experienced by the speaker in (4-a) but not in (4-b).[9] *Nen* can be used, however, when the speaker obtains the information not by direct experience but by inference. It is natural to use *nen* in a context such as

---

the common ground from other primitive concepts like public beliefs for simplicity, but this choice does not affect the discussion of this paper.

[6]The analysis in Hara and Kinuhata (To appear) is simpler in that the definition of *nen* does not involve the presuppositional requirement specified in (12). In other words, *nen* simply performs an assertive update and the distributional pattern is explained by an interaction of optimality theoretic constraints (Zeevat 2004). Since a particle *de* which marks a suggestion context is available in this variety of Japanese, the use of the default assertive marker *nen* is blocked. See Hara and Kinuhata (To appear) for detailed discussion.

[7]The reason why we use $\leq$ rather than $<$ in the definition (12) is that the use of *nen* by one interlocutor does not prevent the other to use *nen* for the same proposition. If they use *nen* for the same proposition without any conflict in knowledge between those interlocutors, then their respective familiarity with the proposition must be the same.

[8]In Hara and Kinuhata (To appear), we considered *nen* as a realization of a default assertive act. Thus, the infelicity of (4-b) would be due to the violation of the general pragmatic principle, i.e., the preparatory condition for the assertion: The speaker should assert what is informative to the addressee (Grice 1975, Searle 1969). In the current paper, this constraint is lexicalized in the meaning of *nen* and implemented by '$access(\text{addr}, p) \leq access(\text{spkr}, p)$'.

[9]See Takubo and Kinsui (1997) for the direct/indirect distinction of experience encoded in Japanese particles and demonstratives.

(13), where B reaches the conclusion by inference from the circumstantial evidence provided by A.[10]

(13)   A: My girlfriend isn't answering my calls these days, and she's always busy, even on holidays...
        B: sore, uwaki shiteru   nen.
              that affair be.doing NEN
              'That means, she's having an affair with someone.'

Since the conclusion that A's girlfriend is cheating on A is not noticed by A, it is more accessible for B than for A. Thus, the update using *nen* is licensed according to our account.

'⤳' in the second conjunct represents the causal or inferential relation held between p and q. We adopt Kratzer's (1981) definition of conditionals for this relation. Kratzer (1981) does not define conditionals as mere material implication but defines it within her framework of graded modality that relies on conversational backgrounds. Using her definition, we can define $p \leadsto q$ as follows: $p \leadsto q$ is true in a context C just in case, with p added to the current context C and an ordering source g selecting from it those worlds which are at least just as good, according to the ordering source, as all the other worlds, q is true in every world thus selected.[11] To illustrate, 'it is raining ⤳ the addressee takes in the laundry' is true in a context C just in case: 'It is raining' is first added to the current context; propositions such as 'the laundry is dry', 'the addressee is near the laundry', etc. selects the better worlds in which the consequent is evaluated: better than the worlds where the laundry is wet or the speaker takes in the laundry; in every world thus selected 'the addressee takes in the laundry' is true.

Given the above definition of '⤳', the second conjunct reads as follows: If there is a salient inferential or causal relation $p \leadsto q$ in the common ground, then q must also be in the common ground in the pre-update context;[12] if there is no salient inferential relation which p causes in the discourse, *nen* only updates the context with the proposition familiar to the speaker.

This explains the data in 2.1. In (3), the second conjunct is not relevant if those sentences are not uttered to give a reason for a particular proposition: *nen* only indicates that the prejacent is familiar more to the speaker than to the addressee. In the examples from (4) to (9), there is an inferential relation involving the prejacent of *nen*. In those examples such as (5), (8-a) and (9-a), the action taken by the addressee, represented as a proposition q in (12), has not been shared by the discourse participants, since the action is just indicated and has not been taken. Thus, the update by

---

[10]The example (13) is pointed out to us by Sanae Tamura (personal communication). We thank her for bringing our attention to the fact that the use of *nen* cannot be accounted for by 'direct experience'.

[11] $p \leadsto q$ is formally defined with respect to a context C and an ordering source g (Kratzer 1981) as follows.

(i)   a.   For all w_i, w_j: $w_i \leq_C w_j$ iff $\{p| \ p \in g(C) \ \& \ w_j \in p\} \subseteq \{p| \ p \in g(C) \ \& \ w_i \in p\}$
        b. $p \leadsto q$ in C iff for all $w_i, w_j \in \cap CG(C')$, if $w_i \leq_C w_j$, then $w_i \in q$.
              where $CG(C')=CG(C) \cup \{p\}$

q in (i-b) is considered to be an optimal action in the sense defined in Schwager (2010), though the addition of p to the common ground is not relevant in her definition. See also Davis (2009) for another definition of an optimality of an action.

[12]The fact that, given p implies q, q must be shared is reminiscent of 'haigo no jijoo (background reasons)' which have been associated with the meaning of *noda* in Tokyo Japanese (Kuno 1973,Tanomura 1990, Noda 1997): If the speaker wants to give an explanation for some fact, the explained fact must be given in the discourse.

nen is blocked. In (7), (8-b) and (9-b), on the other hand, the speaker and the addressee recognize that the speaker has already taken the action, which licenses the use of *nen* in those contexts.

3 Puzzle: *Nen* used with *De*

3.1 Data

We saw in section 2.1 that the use of *nen* is infelicitous in contexts where the speaker intends to suggest a discourse-new action for the addressee. This fact is explained in section 2.2 by *nen*'s requirement that the action inferred from *nen*'s prejacent must be shared by discourse participants before the utterance. In this section, we present data in which *nen* used with another sentence-final particle *de* such as (14) can be felicitous in such contexts.

(14)   ame futteru   nen de.
       rain be.falling NEN DE
       'It is raining.'

In order to show the puzzle, let us first look at the data given in (5) and (6), repeated here as (15): While *de* is adequately used in indicating an optimal act for the addressee, *nen* is not.

(15)   (The speaker goes out of the house, notices that it's started to rain and tries to suggest to the addressee that he take in the laundry.)

       ame futteru   {#nen/de}.
       rain be.falling NEN/DE
       'It is raining.'

Since *nen* and *de* behave contrastively in contexts like (15), one may wonder what interpretations the particle cluster of *nen* and *de*, henceforth *nen-de*, has in such contexts. The answer to this question is that *nen-de* is used in the same way as *nen*. For example, *nen-de* is infelicitous in the same situation as (15), as shown in (16). Other examples are given in (17) and (18), which correspond to examples (8-a) and (9-a) where the use of *nen* was infelicitous.

(16)   (The speaker goes out of the house, notices that it's started to rain and tries to suggest to the addressee that he take in the laundry.)

       #ame futteru   nen de.
        rain be.falling NEN DE
        'It is raining.'

(17)   (A man is standing by an immobilized car, the speaker approaches him and tries to suggest to him that he take the road to the gas station.)

       #mukoo-ni   gasorinsutando-ga aru   nen de.
        over.there-DAT gas.station-NOM   exist NEN DE
        'There is a gas station over there.'

(18)   (The speaker have a meeting starting at 3, it is ten minutes to 3 and the speaker tries to suggest to the addressee that he prepare for the meeting.)

       #san-ji   kara kaigi   ya   nen de.
        3-o'clock from meeting Copula NEN DE

'The meeting starts at 3.'

This seems to show that the same constraint as *nen* is active in the meaning of *nen-de*: If the action indicated by the prejacent proposition of the *nen-de* has not been taken before the utterance, the use of *nen-de* is prohibited.

Surprisingly, however, a slightly different context, which still induces the interpretation of suggesting an act to the addressee, makes the use of *nen-de* natural. Compare the examples (19)-(21) to (16)-(18): The former are different from the latter in that the speaker repeatedly urges the addressee with an accusing tone. The sentences in (19) to (21) are most naturally uttered with an expanded pitch range on the accented syllable before *nen*, represented by boldfaces.

(19)   (The speaker informs the addressee that it is raining, the addressee does not initiate any
        action of taking in the laundry and the speaker accuses the addressee, saying:)

        ame futte**ru**   nen de.
        rain be.falling NEN DE
        'It is raining.'

(20)   (The speaker informs the addressee which road takes him to the gas station, the addressee
        does not initiate any action of going there and the speaker accuses the addressee, saying:)

        mukoo-ni   gasorinsutando-ga a**ru** nen de.
        over.there-DAT gas.station-NOM   exist NEN DE
        'There is a gas station over there.'

(21)   (The speaker informs the addressee that the meeting starts very soon, the addressee does
        not initiate any action of preparing for the meeting and the speaker accuses the addressee,
        saying:)

        san-ji   kara **ka**igi   ya   nen de.
        3-o'clock from meeting Copula NEN DE
        'The meeting starts at 3.'

In sum, when the speaker first suggests an act to the addressee, it is not appropriate to attach *nen-de* to the sentence. When the speaker suggests an act repeatedly with an accusing tone, however, the attachment of *nen-de* becomes acceptable. To put it another way, the use of *nen-de* is felicitous when the speaker wants to remind the addressee of a suggestion that the speaker has already made, e.g., 'you should take in the laundry' in (19). The speaker is re-asserting the suggestion by using *nen*. In the next section, we propose that the propositional argument of *nen* in the felicitous examples is not the prejacent surface proposition but the implicature about the addressee's action engendered by *de*.

3.2   Proposal

We analyze the effect of *nen-de* as a composition of the individual meanings of two particles, i.e., *nen* and *de*. *Nen* has the meaning argued for earlier, i.e., (12), repeated here as (22).

(22) $[\![\text{nen}]\!](p)(\text{C})$ is defined iff:
        $access(\text{addr}, p) \leq access(\text{spkr}, p)$ in C & if $p \rightsquigarrow q \in \text{CG(C)}$, then $q \in \text{CG(C)}$.

Since *de* is natural in contexts where the speaker suggests an act to the addressee, we assume that the use of *de* has the effect of projecting an implicature about an action that the addressee should take. For example, the output of 'ame futteru de (it is raining-DE)' in (6) is the at-issue proposition 'it is raining' and the implicature 'the addressee takes in the laudry.'[13]

Given the two dimensional outputs of the particle *de*, we attribute the difference in felicity of examples of *nen-de* observed in section 3.1 to the difference of objects to which *nen* is attached. That is, we propose:

(23)   *Nen* in *nen-de* can attach either to the at-issue content or to the implicature generated by *de* with the prejacent proposition.

Let us first consider the interpretation obtained by attaching *nen* to the at-issue content of the sentence. If *nen* attaches to the at-issue proposition, the sentence is predicted to be infelicitous both in non-reproaching contexts like (16) to (18) and reproaching contexts like (19) to (21). For example, when *nen* takes the at-issue proposition 'it is raining' in (16) and (19), *nen*'s presupposition in (22) entails that the proposition 'it is raining' is more familiar to the speaker than to the addressee and that, since there is an obvious inferential relation from 'it is raining' to 'the addressee takes in the laundry' in the context, the act 'the addressee takes in the laundry' must be shared by both conversational participants before the utterance. But the latter requirement is not satisfied in (16) and (19), since the act is only indicated by the speaker's utterance and is not established in the pre-update contexts.

Let us consider the other possibility: attachment of *nen* to the implicature raised by *de*. If *nen* attaches to the implicated act 'the addressee takes in the laundry', the second conjunct of the *nen*'s presupposition in (22) is not relevant to the interpretation of the sentence, since, in both (16) and (19), there is no contextually salient inferential relation which have the addressee's action as the antecedent: 'the addressee takes in the laundry' is not the causer but the causee of the relation. Thus, (22) only requires that the speaker be more familiar with the addressee's act than the addressee himself. This requirement explains why *nen-de* is used only in contexts where the speaker accuses the addressee as in (19). As noted on the example (3-b), while *nen* is most natural with the first person in the subject position, it sounds as if the speaker is trying to force the addressee to do the activity when the second person appears in subject position. Since the proposition denoting the suggested action of the addressee always has the addressee as its subject, *nen*, attaching to this proposition, is accompanied by a sense of enforcement on the addressee's activity. This means that the sentence with *nen-de* is allowed in contexts where the speaker urges the addressee as in (19) to (21) but not in contexts without such a sense of urgency as in (16) to (18).

We have seen in this section that the use of *nen-de* is only felicitous in indicating an act for the addressee when the sentence is uttered with an accusing tone. Our analysis to the puzzle is to attach *nen* not to the at-issue meaning of the sentence but to the implicature induced by the particle *de*. This analysis presupposes that *de* must be composed with the prejacent proposition before the calculation of the meaning of *nen*. Then, the next question is: What mechanism reorders the attachment of *nen* and *de* and allows *nen* to attach to the implicature?

---

[13]The term 'at-issue' is borrowed from Potts (2005), who argues for multidimensionality of meanings in natural language.

4   Paratactic association

4.1   *Nen* in *Nen-de*

In the previous section, we proposed a solution to the puzzle arising from the cluster of particles consisting of *nen* and *de* by maintaining that *nen* can attach not only to the at-issue content of its host but to the implicature raised by *de*. The current section offers a mechanism which enables this kind of flexible attachment, viz. paratactic association.

(24)   *Nen* is attached to its host by paratactic association in the sense of Lyons (1977) and Bartels (1999).

The particle *nen* is not syntactically integrated into the main text, but is a kind of floating morpheme which attaches to the at-issue or implicational content after calculating the whole meaning of the sentence.

   Let us take (19) as an example, repeated here as (25). According to our proposal, the syntactic structure of the sentence in (25) is not the one in (26-a) but instead the one in (26-b) where the symbol '⊗' denotes the paratactic association.

(25)   (The speaker once informs the addressee that it is raining, the addressee does not initiate any action of taking in the laundry and the speaker accuses the addressee, saying:)

   ame futte**ru**   nen de.
   rain be.falling NEN DE
   'It is raining.'

(26)   a.   ame futteru-nen-de   b.   ame futteru-de⊗nen

                 ame futteru-nen   de   ame futteru   de

           ame futteru   nen

   The semantic composition goes as follows.   *De* takes the proposition and returns two propositions, one of which is the same as its complement as in (27-a), and the other the implicature that the addressee takes in the laundry as in (27-b).[14]   Then, *nen* can attach to either of the two meaning dimensions, paratactically associated to the main text.[15]

---

[14]This implicature is conversational rather than conventional, since other contexts can give the same sentence a different instruction for the addressee. For example, 'it is raining' would mean 'the addressee should not go out' given another context. We do not think, however, that the meaning of *de* is totally irrelevant to this implicature. We assume that the meaning of *de* indicates the existence of an optimal act for the addressee while updating the discourse with the at-issue proposition. This is the characterization which Davis (2009) proposes for the meaning of *yo*, a counterpart of *de*, in Tokyo Japanese. Hence, the relevant implicature results from the combination of the meaning of *de* and the current context.

[15]To simplify the discussion, we assume that *de* returns propositional types, the proper argument of *nen* in (11). If *de* is assumed to return a CCP type (cf., McCready 2009, Davis 2009), we need an adjustment to the semantic type of *nen* so that *nen* can take CCPs as its argument as in (i): (i-b) replaces the first line of (12). 'X' is a function from a proposition to a CCP.

(i)   a.   ⟦nen⟧=λCCP.λC. (CCP(C))
         b.   ⟦nen⟧(X(p))(C) is defined iff:

In examples like (25), since *nen* cannot take the at-issue proposition as discussed in 3.2, it has to attach to the implicature 'the addressee takes in the laundry' as in (27-d). The superscripts 'a' and 'i' represents the at-issue meaning and the implicature respectively.

(27) a. ⟦ame futteru-de⟧^{a} ↦ *it is raining*
      b. ⟦ame futteru-de⟧^{i} ↦ *the addressee takes in the laundry*
      c. ⟦ame futteru-de⊗nen⟧^{a} ↦ *it is raining*
      d. ⟦ame futteru-de⊗nen⟧^{i} ↦ λC. (CG(C)+*the addressee takes in the laundry*)

Consequently, the sentence in (25) updates the discourse with two propositions, i.e., the at-issue proposition and the implicature triggered by *de*, adding the presupposition that the implicated proposition is more familiar to the speaker than to the addressee. The paratactic association thus enables the calculation of particles to be reordered and *nen* to attach not only to the at-issue content, but also to the implicature of the sentence.

4.2 Evidence from interrogatives

In 4.1, we saw that paratactic association can make sense of examples with the particle cluster *nen-de*. This section shows that paratactic association is not stipulated only to explain the examples of *nen-de* in reproaching contexts, but has good motivation also in other uses of the particle *nen*. We look at the use of *nen* in interrogatives in this section, reviewing the discussion in Hara and Kinuhata (To appear).

In section 2, we saw that *nen* indicates that the prejacent proposition is part of the speaker's knowledge and defined the function of *nen* as assertively updating the common ground with a proposition that is familiar to the speaker. This characterization is also supported by the fact that *nen* is not acceptable in rising *yes-no* questions as in (28).[16]

(28) *ano hito yoo   warau nen↑
      %H H*+L H*+L %H   **L%H%**
      'Does that person often laugh?'

If the words in (28) are uttered with a falling intonation as in (29), it can only be an assertion, not a question.

(29) ano hito   yoo   warau nen↓
      %H H*+L H*+L %H   **L%**
      'That person often laughs.'

Surprisingly, however, *nen* can be used with *wh*-interrogatives, although there is a restriction on the type of questions. Hara and Kinuhata (To appear) observe that *wh*-interrogatives with *nen*

---

[16]We adapted Venditti's (2005) J_ToBi notation for Osaka Japanese.

express either biased/rhetorical questions or express an accusing/reproaching tone[17], and shows that paratactic association can explain the data of *nen* in interrogatives.

What particularly concerns us here is the *wh*-question with an accusing/reproaching tone. While *nen* is not acceptable in purely information-seeking questions as in (30-a), it becomes appropriate when used in a reproaching context as in (30-b).

(30)   a.   (A goes to a restaurant with B, sits at a table and as soon as they open up a menu asks B:)
              A: #nani taberu nen↓
                   what eat   NEN
                   'What are you going to eat?'
        b.   (A goes to a restaurant with B, sits at a table, looks at a menu, quickly decides what to order, waits for B to decide for more than 10 minutes and asks B:)
              A: nani taberu nen↓
                   what eat   NEN
                   'What are you going to eat?'

Since (30-b) is not a rhetorical question and has an information-seeking nature, *nen* cannot attach to the at-issue question 'what are you going to eat?' due to semantic anomaly as well as type mismatch: Questions entail the lack of knowledge of the speaker and the semantic type of questions is more complex than propositions, e.g., a set of propositions (Hamblin 1973).

As argued in 4.1, paratactic association enables *nen* to attach to other semantic objects than the at-issue meaning. In Hara and Kinuhata (To appear), the speaker who utters a question is assumed to have a background assumption that the addressee knows the answer to the question, which is the proposition that *nen* takes in the semantic calculation as follows.

(31)   a. $[\![$nani taberu$]\!]^a \mapsto \{p\colon p$ is the complete true answer to *what are you going to drink*$\}$
        b. $[\![$nani taberu$]\!]^i \mapsto$ *The addressee knows the answer*
        c. $[\![$nani taberu⊛nen$]\!]^i \mapsto \lambda C.\ (CG(C) + $*The addressee knows the answer*$)$

As the result, the *wh*-interrogatives with *nen* performs two updates in parallel: One is an inquisitive update by the *wh*-interrogative and the other is an assertive update by the particle *nen*.

The accusing tone in interrogatives can be explained in a similar fashion to that in declaratives. Since the subject of the proposition to which *nen* attaches is the second person as in (31-c), it gives rise to a connotation of enforcement on the addressee's knowledge: the speaker considers it to be taken for granted that the addressee knows the answer. But, at the same time, the addressee has not yet answered the question. This conflict brings about an implication that enough time has passed for the addressee to answer the question. Thus the accusing tone arises.

In sum, in order to make the proposal in 3.2 feasible, we offer an apparatus in this section that enables *nen* to reorder its application and attach freely to the at-issue or impilcated content. We

---

[17]Davis (2011) observes that the same restriction can be found on the type of questions used with *yo* in Tokyo Japanese. Davis' (2011) analysis derives the accusing tone from the speaker's bias toward the answer to the embedded question. However, *yo* can be used in contexts where the speaker does not have a bias toward the answer: nani taberu-nda yo↓ (What are you going to eat-YO?) is possible in (30-b). This means that the analysis of interrogatives with *yo* must, at least in part, incorporate the view presented here for the analysis of *nen* in Osaka Japanese.

also show that the utility of this mechanism, i.e., paratactic association, is supported by its use in interrogatives, in which *nen* cannot attach to the at-issue question.

5   Conclusion

In this paper, we defined the discourse update of *nen* in Osaka Japanese. *Nen* updates the discourse with a proposition p which is more familiar to the speaker than to the addressee, and if there is an inferential or causal relation from p to q, q must be shared by interlocutors in the pre-update context. We then saw that the problem arising from the use of *nen* in *nen-de* can be solved by considering *nen* as paratactically associated to the main text. Since paratactic association allows the particle to freely compose with the at-issue or implicated content of the entire sentence, it can explain the use of *nen* in interrogatives, in which *nen* cannot attach to the at-issue meaning.

Paratactic association was first employed in Lyons (1977) analysis of English performative verbs, and Bartels (1999) independently supports its utility in the analysis of intonation. Our study thus shows that intonation tunes and particles resemble each other in terms of their composition as well as their discourse functions.

References

Bartels, Christine. 1999. *The intonation of English statements and questions*. New York: Garland Publishing, Inc.

Davis, Christopher. 2009. Decisions, dynamics, and the Japanese particle *yo*. *Journal of semantics* 26:329–366.

Davis, Christopher. 2011. Constraining interpretation: Sentence final particles in Japanese. Doctoral Dissertation, University of Massachusetts, Amherst.

Grice, Paul H. 1975. Logic and conversation. In *Syntax and semantics*, ed. P. Cole and J. Morgan, Vol. 3: Speech Acts, 43–58. New York: Academic Press.

Gunlogson, Christine. 2003. *True to form: Rising and falling declaratives as questions in English*. New York: Routledge.

Hamblin, Charles L. 1973. Questions in Montague English. *Foundations of Language* 10:41–53.

Hara, Yurie, and Tomohide Kinuhata. To appear. Osaka Japanese *Nen*: One-sided public belief and paratactic association. In *Proceedings of esslli workshop on formal approaches to discourse particles and modal adverbs*. SDV.

Heim, Irene. 1982. The semantics of definite and indefinite noun phrases. Doctoral Dissertation, University of Massachussets, Amherst.

Kratzer, Angelika. 1981. The notional category of modality. In *Words, worlds, and contexts*, ed. J. Eikmeyer and H. Riesner, 38–74. Berlin: Walter de Gruyter.

Kuno, Susumu. 1973. *The structure of the japanese language*. Cambrigde, Mass: MIT Press.

Lyons, John. 1977. *Semantics*. Cambridge University Press.

McCready, Eric. 2009. Particles: Dynamics vs. utility. In *Japanese/Korean linguistics* 16, ed. S. Grzelak Y. Takubo, T. Kinuhata and K. Nagai, 466–480. Stanford: CSLI.

Noda, Harumi. 1997. *'no(da)' no kinoo (The function of* No(da)*)*. Tokyo: Kuroshio Publisher.

Potts, Christopher. 2005. *The logic of conventional implicatures*. New York: Oxford University Press.

Schwager, Magdalena. 2010. Modality and speech acts: troubled by German *ruhig*. In *Proceedings of the 17th amsterdam colloquium*, ed. M. Aloni and K. Schulz. ILLC.

Searle, John R. 1969. *Speech acts: an essay in the philosophy of language*. Cambridge: Cambridge University Press.

Stalnaker, Robert. 1978. Assertion. In *Syntax and semantics*, ed. Peter Cole, Vol. 9: Pragmatics, 315–332. New York: Academic Press.

Takubo, Yukinori, and Satoshi Kinsui. 1997. Discourse management in terms of mental spaces. *Journal of Pragmatics* 28:741–758.

Tanomura, Tadaharu. 1990. *Gendai nihongo no bunpoo I:* Noda *no yoohoo to imi (The grammar of Contemporary Japanese I: The meaning and the usage of* noda*).* Osaka: Izumi Shoin.

Vneditti, Jennifer J. 2005. The J_ToBI model of Japanese intonation. In *Prosodic typology: The phonology of intonation and phrasing*, ed. Sun-Ah Jun, 172–200. Oxford: Oxford Unviersity Press.

Zeevat, Henk. 2004. Particles: Presupposition triggers, context markers or speech act markers. In *Optimality theory and pragmatics*, 91–111. Palgrave McMillan.