

Introduction: This paper aims to contribute to the discussion of two general issues in the semantic/pragmatic analysis of discourse particles. **The first issue** concerns particles that can co-occur with either an interrogative or declarative sentence. Should we give such particles a *question-oriented semantics*, and derive its function with a declarative clause as a special case? Or, should we give it a proposition-oriented semantics, and derive its function with an interrogative clause from it? A question-oriented semantics is proposed for the German particle *wohl* by Zimmermann (2008) and for the Japanese particle *darou* by Hara (2006) and Uegaki & Roelofsen (2018), while Littel et al. (2010) propose a proposition-oriented semantics for the evidential particles appearing in questions in St’át’imcets, Nleʔkepmxcín and Gitksan. **The second issue** concerns the role of intonation. Intonation plays a significant role in the interpretation of many discourse particles cross-linguistically (Lindner 1991, Gyuris 2009, Davis 2009, 2011). However, even within a single language, it is unclear if the effects of intonations can be analyzed uniformly across particles. For example, Davis’s analysis of intonation is designed specifically for the purpose of treating the interpretations of the Japanese *yo*, and is not directly applicable to the effect of intonation on *ne*.

In this paper, we argue that the Japanese particles *ne* and *yo* have question-oriented semantics, and furthermore that the effects of intonation on their interpretations can be analyzed in terms of Intonational Compliance by Westera (2017). The analysis achieves a uniform treatment of *ne* with declarative and interrogative prejacent, and succeeds in analyzing the effects of intonation with the two particles uniformly. In addition, the analysis makes a correct prediction as to the incompatibility of *yo* with information-seeking questions following Davis, and provides an analysis for the particle combination *yo-ne*, which has been problematic in the literature (Takubo & Kinsui 1997; McCready 2009; McCready & Davis to appear)

Data: All examples are given in page 3. As in (5), the particle *ne* is compatible with a declarative ((5a)) or interrogative prejacent ((5b)). When it occurs with a declarative prejacent, it presupposes the hearer’s knowledge of the prejacent (McCready 2005; McCready & Davis to appear), and the sentence has a function similar to a tag-question if it ends with a rising intonation \uparrow . The use of *ne* with an interrogative prejacent (5b) is felicitous only if it is already clear that the hearer is wondering about the question. Thus, (5b) is infelicitous as a conversation starter out of the blue.

Turning to *yo*, (6) shows that *yo* is compatible with a declarative prejacent ((6a)) but not with an (information-seeking) interrogative prejacent ((6b)) (although see Davis 2009 for felicitous examples involving rhetorical questions). The intonation again has an effect on the interpretation in (6a). When it ends with \uparrow , intuitively, (6a) functions as an *instruction* for the hearer to act according to the information provided. To use Davis’s terms, (6a) is felicitous only if the hearer is facing a decision problem, and the information in the prejacent helps resolve this decision problem. For example, (6a) with \uparrow is felicitous if it is known that the hearer is wondering whether she should dance, and has decided that she will dance if Taro does. On the other hand, the version of (6b) with \downarrow is felicitous only if the speaker assumes that the hearer does not believe that Taro danced.

Finally, the two particles can be combined as in (7). The utterance is felicitous when there is a salient issue that can be resolved by the information in the prejacent, which the speaker assumes the hearer to already know. Two contexts in which *yone* is felicitous are give in (8). In (8a), I utter (7) to Jiro to confirm that Taro danced, thus resolving my disagreement with Hanako. In (8b), I utter (7) for the same confirmation but to resolve the issue of whether Hanako danced

Theoretical background: Our account is formulated in inquisitive epistemic logic (IEL) (Ciardelli & Roelofsen 2015). In this framework, every individual *a* is associated, in every world *w*, with a

doxastic state dox_a^w and an inquisitive state inQ_a^w . As usual, dox_a^w is a set of possible worlds. On the other hand, inQ_a^w is a set of doxastic states, all extensions (i.e., subsets) of dox_a^w , in which the issues that a entertains in w are resolved. It is assumed that $\text{dox}_a^w = \bigcup \text{inQ}_a^w$.

The semantic value of a sentence φ in IEL, $\llbracket \varphi \rrbracket$, is a downward-closed set of propositions, namely those propositions that support the information that φ conveys (if any) and resolve the issue that φ raises (if any). The truth-conditions of φ are derivable from $\llbracket \varphi \rrbracket$: φ is true in w iff $\{w\} \in \llbracket \varphi \rrbracket$. The informative content of φ , $\text{info}(\varphi)$, is the set of all worlds where φ is true, $\bigcup \llbracket \varphi \rrbracket$. The semantics of the two epistemic operators in IEL is given below:

- (1) a. $\llbracket K_a \varphi \rrbracket := \{p \mid \forall w \in p : \text{dox}_a^w \in \llbracket \varphi \rrbracket\}$ (' a knows φ ')
b. $\llbracket E_a \varphi \rrbracket := \{p \mid \forall w \in p : \text{inQ}_a^w \subseteq \llbracket \varphi \rrbracket\}$ (' a entertains the issue φ ')

If $\llbracket \varphi \rrbracket$ is non-inquisitive (i.e., contains only one maximal element), $\llbracket E_a \varphi \rrbracket = \llbracket K_a \varphi \rrbracket$.

As for the theory of intonation, we follow Westera 2017 in assuming the following Intonational Compliance Principles (see Westera 2017 for independent motivations for these principles):

- (2) a. Right boundary \downarrow conveys that the speaker takes the utterance to comply with the maxims.
b. Right boundary \uparrow conveys that the speaker suspends a maxim (i.e., risks violating it).

Analysis: We propose the following semantic analysis for the particles *ne* and *yo*.

- (3) a. $\llbracket \varphi \text{ ne} \rrbracket^Q$ is defined in w iff $\{w\} \in \llbracket E_{\mathcal{H}} \varphi \rrbracket^Q$; if defined, $\llbracket \varphi \text{ ne} \rrbracket^Q = \llbracket \varphi \rrbracket^Q$ (\mathcal{H} : the hearer)
b. $\llbracket \varphi \text{ yo} \rrbracket^Q$ is defined in w iff $|\text{alt}(\llbracket \varphi \rrbracket \cap Q)| = 1$; if defined, $\llbracket \varphi \text{ yo} \rrbracket^Q = \llbracket \varphi \rrbracket^Q$
where $\text{alt}(\varphi) := \{p \in \llbracket \varphi \rrbracket \mid \text{there is no } q \in \llbracket \varphi \rrbracket \text{ such that } p \subset q\}$

Following Davis, we treat semantic values as sensitive to the contextually salient decision problem, which we simply represent as an issue, i.e., a downward-closed set of propositions. This is represented as the parameter Q on the semantic value in (3). As in (3a), φ -*ne* presupposes that the hearer entertains the issue $\llbracket \varphi \rrbracket$. If φ is a declarative, this presupposition boils down to the hearer's simple knowledge of $\llbracket \varphi \rrbracket$. If φ is an interrogative, the presupposition states that the hearer wonders about the issue $\llbracket \varphi \rrbracket$ or knows an answer to it. We argue that the form φ -*ne* is blocked by the simple interrogative φ if the speaker knows that the hearer knows an answer to φ . As for the intonation, a question-like function is pragmatically derived from \uparrow due to the suspension of the quality maxim, exactly in the same way as Westera's (2017; 2018) analysis of rising declaratives.

As in (3b), φ -*yo* presupposes that intersecting the contextually salient issue Q with $\llbracket \varphi \rrbracket$ makes a non-inquisitive content. This is our IEL implementation of Davis's analysis, i.e., $\llbracket \varphi \rrbracket$ is highly relevant in the sense that it resolves the contextually salient issue Q . The incompatibility of *yo* with interrogatives follows from this analysis though blocking. Any φ -*yo* with an interrogative φ that would resolve Q is blocked by ψ -*yo*, where ψ is a declarative clause such that $\bigcup \llbracket \psi \rrbracket \in \text{alt}(\varphi)$ (i.e., ψ is a specific declarative answer to φ) that would resolve Q . Moving onto intonation, we argue that φ -*yo* with \uparrow indicates that it suspends the manner maxim, as φ -*yo* is not the most *conspicuous* way to resolve the salient issue Q , where the most conspicuous way being directly answering Q . In other words, φ -*yo* \uparrow indicates that the speaker leaves the hearer to address the issue herself, with the relevant information $\llbracket \varphi \rrbracket$. This analysis straightforwardly extends to the falling intonation case. In the contexts where \downarrow is felicitous, the salient issue is whether φ , and it is conspicuously resolved by φ . Thus, no maxim is suspended and \downarrow is used.

Finally, the analysis predicts the following felicity condition for φ -*yo*-*ne*:

- (4) $\llbracket \varphi \text{ yo ne} \rrbracket^Q$ is defined in w iff $\{w\} \in \llbracket E_{\mathcal{H}} \varphi \rrbracket^Q$ & $|\text{alt}(\llbracket \varphi \rrbracket \cap Q)| = 1$

This accords with the intuitive description above. It is presupposed that φ resolves the salient issue Q while the hearer already knows φ .

Examples:

- (5) a. Taro-wa odotta-ne↑/↓.
Taro-TOP danced-NE
↑: 'Taro danced, didn't he?' / ↓: 'Taro danced, as you know.'
- b. Dare-wa odotta-ka-ne ↓
who-TOP danced-Q-NE
'Indeed, who danced?'
- (6) a. Taro-wa odotta-yo↑/↓.
Taro-TOP danced-YO
↑: 'Taro danced (so I suggest you act accordingly)' / ↓: 'Taro danced (and you should revise your belief accordingly)'
- b.*Dare-wa odotta-ka-yo ↓
who-TOP danced-Q-YO
- (7) Taro-wa odotta-yo-ne↑/↓.
Taro-TOP danced-YO-NE.
↑: 'Taro danced, didn't he?' / ↓: 'Taro danced, as we know.'
- (8) Contexts in which (7) is felicitous while (6a) and (5a) aren't.
- a. I am talking with Hanako and Jiro about the party last night. Hanako, who wasn't there at the party, doesn't believe that Taro danced, but I saw him danced. Since Jiro was there too, I assume that Jiro also knows that Taro danced. I say to Jiro...
- b. I am talking with Jiro about the party last night and trying to remember whether Hanako danced. We both know that Taro danced and furthermore that whenever Taro dances, Hanako also dances. I say to Jiro...

References: Ciardelli, Ivano and Floris Roelofsen. 2015. Inquisitive dynamic epistemic logic. *Synthese* 192(6):1643-1687. // Davis, C. (2009). Decisions, dynamics and the Japanese particle *yo*. *Journal of Semantics*, 26(4), 329-366. // Gyuris, B. 2009. Sentence-types, discourse particles and intonation in Hungarian. In: A. Riester & T. Solstad (eds.). *Proceedings of Sinn und Bedeutung* 13. Stuttgart: University of Stuttgart, 157-170 // Hara, Yurie. 2006. Japanese Discourse Items at Interfaces. Ph.D. thesis, University of Delaware. // Lindner, Katrin 1991. Wir sind ja doch alte Bekannte The use of German *ja* and *doch* as modal particles. In: W. Abraham (ed.). *Discourse Particles*. Amsterdam: Benjamins, 303-328. // Littell, P., Matthewson, L., & Peterson, T. (2010). On the semantics of conjectural questions. *University of British Columbia Working Papers in Linguistics*, 28. // McCready, E. (2005), *The Dynamics of Particles*. Doctoral Dissertation, University of Texas Austin. // McCready, E. (2009). Particles: Dynamics vs. Utility. In *Japanese/Korean Linguistics* (Vol. 16, pp. 466-480). CSLI Publications. // McCready, E., & Davis, C. (to appear). Sentence-final particles in Japanese. In *Handbook of Japanese Semantics and Pragmatics*. John Benjamins. // Takubo, Yukinori & Satoshi Kinsui. 1997. Discourse management in terms of mental spaces. *Journal of Pragmatics* 28:741-758. // Uegaki, W., & Roelofsen, F. Do modals take propositions or sets of propositions? Evidence from Japanese *darou*. *Proceedings of SALT* 28. // Westera, Matthijs. 2017. *Exhaustivity and intonation: A unified theory*. Amsterdam: University of Amsterdam dissertation. // Westera, Matthijs. 2018. Rising declaratives of the Quality-suspending kind. *Glossa: A Journal of General Linguistics*, 3(1), 121. // Zimmermann, M. (2011). Discourse particles. In *Semantics: An International Handbook of Natural Language Meaning, Volume 2* (pp. 2012-2038). de Gruyter.