

Sentence-final Particles in Japanese

May 10, 2019

1 Overview

It has long been recognized in the traditional Japanese grammatical literature that the various suffixes found within the highly agglutinative verb and the various particles found to its right are ordered semantically, with more “objective” items found closer to the verbal root, and more “subjective” elements appearing farther away, to the right (see Larm (2009) and Narrog (2009) for discussion in English). This split between *objective* and *subjective* regions was made at least as early as Kindaichi (1953). This view has informed subsequent work that makes finer grained distinctions, such as that of Hayashi (1960), who sorts the right periphery into items related to *description*, *evaluation*, *presentation*, and *transmission*. This and related work appears almost exclusively in Japanese, but see Larm (2009) and Narrog (2009) for explication and development of this idea in English. The chart in Figure 1 (from Davis 2011, based in turn on one found in Minami 1993), summarizes the picture of the right periphery outlined by Kindaichi and Hayashi. Note that the elements here are only a small sample of the suffixes and particles that can appear in the right periphery.

The rightmost edge of Figure 1 contains the three sentence final particles (SFPs) which have received the largest amount of attention in the English-language literature: *ka*, *yo*, and *ne*. These all fall into Kindaichi’s “subjective” meaning category, a category which also contains certain modal/evidential elements, such as the particle *darou*, which has received a formal semantic analysis in Hara (2006). Hayashi’s classification, on the other hand, splits the three SFPs into two groups, with *ka* appearing in the “presentation” region, and the others appearing in the “transmission” region. This split is one that we adopt in the following discussion. As we show in subsequent sections, the question particle *ka* is very different, both

Verb Root		Causative (<i>sase</i>)	
		Passive (<i>rare</i>)	
		Negation (<i>nai</i>)	
		Past (<i>ta</i>), Copula (<i>da</i>)	
		Epistemic (<i>darou</i>)	
		SFP ₁ : <i>ka</i>	
		SFP ₂ : <i>yo</i>	
		SFP ₃ : <i>ne, na</i>	
Description		Evaluation	
Presentation		Transmission	
Objective		Subjective	

Figure 1: Sketch of the Japanese right periphery, based on a figure from Minami (1993, 52)

syntactically and semantically, from the other particles. It can roughly be thought of as a “clause-typing” particle, marking the clause it attaches to as an interrogative, but as we discuss in Section 2, there is reason to think that this use of *ka* may be connected to the use of *ka* in the formation of disjunctions and indefinites, putting the semantics of this particle squarely in the realm of “ordinary” semantic meaning.

Those particles constituting Hayashi’s “transmission” group, on the other hand, seem to be more fundamentally pragmatic in nature. The word “transmission” itself suggests a semantic/pragmatic role for these particles that will drive the discussion throughout this chapter: these particles are means by which speakers situate their utterances in discourse; they take informational content and make some indication about how that content is to be “transmitted” to the addressee.

For expositional purposes, we will distinguish the transmission particles into two groups, which for convenience we call “notification” particles (exemplified by *yo*) and “confirmation” particles (exemplified by *ne/na*). These terms are inspired by terminology found in the Japanese literature (e.g. the label *shirase* “notification” particles found in Masuoka and Takubo 1989). While evocative, the terms themselves are merely a convenience, and as will be seen, the exact semantic and pragmatic functions of these particles, and the systematic differences between the two groups, is difficult to pin down.

The notification particles include *yo*, *zo*, and (Eastern Japanese) *wa*.¹ All these particles show similarities to one another, justifying their classification into a coherent group, but they also show subtle semantic distinctions; following the literature, we will focus on *yo*, limiting the other particles to a brief overview.² This discussion can be found in section 3.

The speaker-oriented particles are often set up in opposition to the confirmation particles *ne* and *na*. These particles have not received as much attention in the formal literature as the notification particles (in particular *yo*) have. In section 4 we will provide an overview of some facts about them and a partial summary of existing informal linguistic analyses. The three groups of particles outlined above can also appear in combination with one another. These combinations are discussed in section 5. Section 6 concludes, discussing what we take to be some of the broader implications for semantic and pragmatic theory of the particles discussed in this chapter.

2 Question Particle *ka*

The first SFP we discuss is *ka*, typically labeled a question (or Q) particle. Intuitively, the Q particle can be thought of as a way of marking the clause it attaches to as an interrogative, and hence might be thought of as a kind of clause-typing particle. The following representative examples of its use in a matrix polar and wh interrogatives are cited in Slade (2011) (transcription and gloss of this and subsequent cited examples have been modified to fit the conventions adopted in this volume).

(1) Embedded Interrogatives

- a. gakkou ni ikimasu ka?
school to go.POL.PRES Q
“(Are you) going to school?” (Yoshida and Yoshida, 1996)

¹The discussion here, and in most of the literature, is focused on Eastern Japanese, particularly the dialect region centered around Tokyo. Other varieties of Japanese and the related Ryukyuan languages exhibit a range of other particles as well. These particles have received scant attention, but see Hara and Kinuhata (2012) for a formal analysis of the Osaka particle *nen*. In what follows, we restrict our attention to particles associated with the standard variety centered around Tokyo.

²Although Masuoka & Takubo also class the particle *ze* as a *shirase* particle, we will not discuss it here.

- b. John ga nani o kaimasita ka?
 John NOM what ACC bought.POL Q
 “What did John buy?” (Hagstrom, 1998, p.15)

Unlike *yo*, *ne*, and the other SFPs discussed in this chapter, *ka* can be embedded in non-quotative contexts. In fact, embedded interrogatives *require* marking with *ka*, unlike matrix interrogatives, where *ka* can be dropped (see Yoshida and Yoshida (1996) for discussion of “question particle drop”) or in which a number of other particles (for example, the particle *no*) can be used instead (see Miyagawa (1987) and Yanagida (1995) for some discussion of the choice between *ka* and *no*). The mandatory use of *ka* in embedded interrogatives is illustrated in the following examples.³

(2) Matrix Interrogatives

- a. gakkou ni iku *(ka) wakara-nai.
 school to go.PRES Q know-NEG
 “I don’t know if I’m going to school.”
- b. John ga nani o katta *(ka) wakaru ka?
 John NOM what ACC bought Q know Q
 “Do you know what John bought?”

The embeddability of *ka* stands in contrast to the other SFPs, which cannot be embedded except in quotative environments.

Historically, it is interesting to note that *ka* derives from a class of sentence-internal particles in Old Japanese called *kakarijoshi* (“attaching particles”), which triggered particular verbal morphology on the final verb of the clause where the particle takes scope, a phenomenon traditionally called *kakarimusubi* (“binding with the *kakari* particle”). This pattern is illustrated by the following example, cited in Hagstrom (1998), where the wh-word, Q particle, and attributive verbal morphology (glossed M for *musubi*, the traditional term) appear in bold.

- (3) sisi husu to **tare ka** kono koto oomae ni maos-u
 beast lie QUOT who Q this thing Emperor DAT say-M

³In embedded polar interrogatives, the polar question particle *kadouka* is often used instead of *ka*. This particle cannot, however, be used in matrix interrogatives, and we will ignore it here. Note also that matrix interrogatives can host polite verbal morphology, whereas embedded interrogatives typically do not.

“Who reported to the Emperor that beasts were lying?”

(*Nihon Shoki*[720]:75, Ogawa 1977, p.221)

This pattern was lost in modern Japanese, with *ka* moving to a sentence-peripheral position and, in effect, becoming an SFP. Hagstrom (1998) argues for a synchronic analysis of Modern Japanese *ka* in which it moves to its surface sentence-final position from an underlying sentence-internal position corresponding broadly to the *kakarijoshi* position it occupies in Old Japanese. He provides cross-linguistic support for this analysis from Sinhala and Okinawan.

Semantically, Hagstrom argues that *ka* acts as an existential quantifier over choice function variables. The choice function variable that *ka* existentially quantifies over is provided by the trace left by movement of *ka*. The choice function variable operates on a set of Hamblin (1958) alternatives. These alternatives are generated by a wh-phrase (or indeterminate, in the terms of Kuroda 1965) in the scope of the trace of *ka*. This analysis is motivated in part by the fact that while sentence-final *ka* combines with sentence-internal wh-phrases to form interrogatives, it can attach locally to wh-phrases to form indefinites. This gives rise to minimal pairs like the following:

- (4) dare ga tabeta ka
who NOM ate Q

“Who ate?”

- (5) dare-ka ga tabeta
who-Q NOM ate

“Someone ate.”

Hagstrom cites Kuroda (1965) for the view that the *ka* found in indefinites and the *ka* found in wh interrogatives are the same morpheme. Hagstrom develops a unified theory, where a single semantics of *ka* gives rise to the two interpretations depending on the location of the particle.

This analysis unifies the treatment of Q particles in the formation of indefinites and interrogatives containing a wh-phrase/indeterminate (see also Szabolcsi 2015). Recent work by Cable (2007; 2008; 2010) on Q particles in Tlingit builds on this basic view. Whereas Hagstrom makes *ka* an existential quantifier over the choice function variable provided by its own trace, Cable adopts an analysis in which Q particles are themselves choice function variables, a view also argued

for by Yatsushiro (2001, 2009). Cable argues further for a tight connection between Q particles and Focus, building on the ideas of Beck (2006), by suggesting that *wh*-phrases have only a focus-semantic value (Rooth 1992, 1985), and that Q particles are uniquely positioned to bring these defective meanings back to acceptability by operating exclusively on the focus-semantic value of their complements and returning a legitimate regular semantic value. At a syntactic level, Cable proposes a typology of languages determined in part by whether Q projects a phrase or whether it attaches as an adjunct. In the latter case we get movement of the particle itself to a peripheral position, per Hagstrom’s analysis of Japanese.

The proposals sketched above are able to unify the semantics of *ka* in the formation of indefinites and *wh*-interrogatives, but remain silent about the role it plays in polar interrogatives, in which there is no *wh*-phrase/indeterminate to provide the Hamblin alternatives upon which *ka* can operate. Cable (2007, 2010) argues that polar and *wh*-interrogatives do not involve the same Q particle semantically, and that Japanese *ka* in these constructions is a case of accidental homophony. Slade (2011), however, notes that such homophony is cross-linguistically common, making a unified approach more attractive than one that relegates the similarity to one of accidental homophony. Slade further argues that a unified account should take account of the fact that *ka* is also used as a disjunctive particle, as seen in the following example:

- (6) John-ka Bill-ka ga hon o katta
 John-Q Bill-Q NOM book ACC bought
 “John or Bill bought a book.” (Kuroda, 1965, p.85)

The cross-linguistic tendency for the same particle to be used as an interrogative Q particle and as a disjunctive particle is noted by Jayaseelan (2001, 2008), who focuses on the phenomenon in Malayalam. As Slade stresses, a unified analysis of Q particles would seek to treat all of the above uses (*wh*-interrogatives, polar interrogatives, indefinites, and disjunction) as deriving from a single underlying semantics of *ka*. Slade notes that neither Hagstrom nor Cable provide such a unification, and do not account for the particle’s use in polar and alternative questions. Slade pursues such a unification for Q particles in Sinhala, extending his analysis to Japanese *ka*. His analysis maintains the core insight from these earlier studies that the use of *ka* involves choice function over alternatives, the conclusion being that all of these constructions involve Hamblin alternatives in one way or another.

The conclusion we draw from this overview of current work is that the sentence-final question particle use of *ka* is of a kind with the other, sentence-internal uses

of the particle, and does not directly encode semantic content relating to speech acts. It is, in other words, implicated in deriving the “regular” semantic content of the sentence in which it occurs. As we show in the next sections, this distinguishes *ka* at a fundamental level from the other SFPs, whose contribution seems to be more fundamentally pragmatic.

3 Notification Particles

The informal literature on *yo* is extensive, but our aim here is to focus on formal analyses of Japanese particles, so we will not attempt to give a proper overview of this literature here (a task which would in any case be impossible in a chapter of this length). In this section we will examine the data that motivated the first explicitly formal work on *yo* in theoretical linguistics and then turn to the analyses it motivated.⁴ This data centers around forcefulness: pretheoretically, it seems that *yo* signals a desire on the part of the speaker for the hearer to accept the content in the scope of *yo*. This in itself does not distinguish *yo*-marked sentences from ordinary ones in any way: plainly any utterance of a declarative or imperative sentence (at least when used in the standard ways to perform an assertion or command) is aimed at acceptance of this content by the hearer. The difference is that *yo* makes this desire fully explicit. Let us see what this observation amounts to. Data are drawn mainly from McCready (2005, 2006, 2009, 2008a), but we will also make reference to the informal literature where it is immediately relevant.

The basic intuition is illustrated by (7), where adding *yo* seems to provide emphasis, or adds a sense of urgency to the utterance. We take the English particle *man* to be a reasonably close analogue of *yo* (cf. McCready 2008b), and use it in our translations as a rough equivalent, though there are important differences between the two particles. In particular, English *man* is only found in certain dialects and registers of English, while *yo* is used by a wide range of speakers and is thus less socio-linguistically marked and probably more widely used than English *man*.

- (7) Taroo-ga kita (yo)
Taro-NOM came (YO)

'Taro came (, man).'

⁴Some formal modeling of the particles was done from a computational perspective by Ono et al. (1993), but the aim there was less to provide an account capable of deriving their distribution and character than to give a simple model of their general role.

The particle produces a sense of insistence in imperatives as well. The particle-less version below is simply a request; adding the particle gives the impression that the speaker has some stake in the hearer choosing to follow the request, and so sounds non-neutral.

- (8) Dizuniirando ni it-te (yo)
 Disneyland to go-Imp (YO)
 ‘(Come on,) Go to Disneyland(, man).’

The basic function of the particle in these cases is, intuitively, to strengthen what is said, or to (try to) insist on uptake of the utterance content. This function comes out very clearly when the truth of an assertion is questioned. One response to such challenges is to insist on the truth of the claim; in such contexts, not using *yo* sounds rather unnatural. If the speaker doesn’t really care, of course, the particle isn’t necessary.⁵ Here is an example. In this discourse, *yo* is natural in A’s second utterance, where A is explicitly denying B’s denial of A’s first utterance. The reason is that A has good reason to suppose that B will not be willing to accept what he says, and so has good reason to try to strengthen the expression of this content.

- (9) a. A: saki Jon-ga kaetta
 just.now John-NOM went.home
 ‘John just went home.’
 b. B: uso!
 lie
 ‘No way!’
 c. A: kaetta #(yo)
 went.home (YO)
 ‘He DID go home!’

English is similar when intonation is kept flat and inexpressive, in the absence of the particle *man*, which seems to correspond in some respects to *yo*.

⁵This observation can be linked with the question of the sort of content presented by particles, which is usually taken to be presuppositional or expressive. In either case, though the content is not truth-conditional, it is still able to participate in the generation of implicatures. See Davis (2011) for discussion.

- (10) a. A: John is coming tonight.
b. B: No way.
c. A: # He's coming.
d. A: He's coming, man.

For the present, the connection between intonation and particle meaning should be recalled as it will become important as we proceed.⁶

McCready's work analyzed *yo* as very explicitly forcing content on the hearer. The analysis was made in a dynamic setting. Here, the meaning of a sentence is the capacity it has to change the information state of an interpreter. When a hearer processes a new sentence, she is given the option to add the information contained in that sentence to her current stock of information; if she accepts the proposal, the information is so added, and the common ground of the discourse changes accordingly. The change in information thus produced is, roughly, the meaning of the sentence. In such cases of 'discourse update' two cases can be distinguished. In the first, the information in the sentence is compatible with the information the interpreter already has. Then the new information is simply added to the information state by a process of *update*. The other possibility is that the new information is not compatible with what is already known, the current content of the information state. In such a case, update results in inconsistency, giving a failed discourse move.

Plainly discourses of this sort do not actually fail; this is a theoretical artifact. The hearer instead modifies her stock of beliefs in such a way that the new information can be accepted, assuming that she is willing to accommodate it. One way to model this process of accommodation is via the so-called 'AGM' theory of belief revision (e.g. Gärdenfors 1988).⁷ In this theory, a 'downdate' operator can be defined, the opposite of update. Downdate is an operation that removes content from an information state rather than adding it; in particular downdating with some proposition yields a minimal revision of an information state where that proposition is no longer entailed. Now, supposing that a particular proposition *q* conflicts with the proposition *p* with which we would like to update, it becomes possible to downdate with *q* and then update with *p*; this is an operation of belief

⁶We have the impression that there is in general a close relationship between particle meanings and the pragmatic functions of intonation; there may be a division of labor between these two sets of linguistic phenomena. This is a connection that deserves a more systematic investigation than it has so far received in the literature.

⁷The AGM theory is selected only for concreteness. There are many other options on the market. A nice overview can be found in Delgrande et al. (2008).

revision. McCready's idea was to take *yo* to denote a request for revision as a matter of lexical meaning. Thus an utterance of *yo(p)* asks the hearer to revise with *p*. The proposition *q* which is then 'removed' can be either the negation of *p* or some other inconsistent proposition, as determined by contextual factors.

One could also incorporate a presupposition to account for the observation made in many places in the literature (e.g. Takubo and Kinsui 1997; Suzuki Kose 1997; Noda 2002) that the content in *yo*'s scope must be new to the hearer.⁸ However, one might question whether this is really necessary, for, if (as one might expect) the use of *yo* indicates the speaker's assessment that revision might be required, then it follows that the speaker believes that the hearer (at a bare minimum) does not already believe that information. On this picture, then, the requirement for hearer-newness becomes a kind of Relevance implicature.

This analysis accounts for restrictions noted in the literature on the use of *yo*. Suzuki Kose (1997) notes that in contexts where the speaker has absolute authority over the hearer, use of *yo* is infelicitous. For example, in the context of an army officer ordering his troops, (11a) is good, but the corresponding version with *yo*, (11b), is bad. Kose believes that *yo* emphasizes the personal desires of the speaker; as a result, she claims (11b) is bad because it is inappropriate for an officer to emphasize personal desires when giving orders to his subordinates. The present analysis leads to a different way of thinking about the facts in (11): for *yo* to be used, one assumes that there is a reason, as with any lexical item (or indeed action). What the particle does is to ensure, or attempt to ensure, that the hearer accepts the content in its scope. But in the case of the army officer, there is no reason to doubt that the hearer will accept this content: given that the troops are subordinate to the officer, they are required to accept his orders. As a result, use of the particle is marked.

- (11) a. Susume!
Advance!
'Advance!'
- b. # Susume yo
Advance YO
'Advance, man!'

Davis (2009) shows that *yo* does not always carry the impression of force discussed in the last section (see also Oshima 2011 for discussion of this issue). Two

⁸This move is made by e.g. McCready (2005).

significant advances are made in his approach: first, a separation of the particle content and the contribution of the intonational contour of the sentence in which the particle appears, and, second, the introduction of the notion of choice of action into the analysis. Davis's key observation (based on Koyama 1997) is that the intonational contour with which *yo* appears is crucial to its interpretation. The use of *yo* discussed in the previous section is associated with falling intonation. But *yo* with rising intonation has a very different character.

Here are two examples, simplified from some appearing in Davis's paper, indicating the contribution of *yo* with rising intonation.

(12) In the sushi place

- A. dono sushi ni shi-yoo kana?
which sushi to do-HORT PT
'Which sushi should I get?'
- B. koko-no maguro wa umai #(yo↑)
here-GEN tuna TOP good (YO)
'The tuna here is good, yo.'

(13) In front of a broken down car.

- A. I'm out of gas.
- B. magatta tokoro ni gasorinsutando ga arimasu #(yo↑)
turned place at gas.station NOM exists (YO)
'There's a gas station up there around the corner, yo.'

In both of these examples, roughly, B is giving advice to A about what he should do to solve some problem he is facing. In the sushi case, B knows a good sushi option for A to pick; in the gas case, B knows where A should go to get gas. These discourses are not that natural without *yo*, but perfectly natural with it. Davis takes this to mean that *yo* with rising intonation is a marker of (Gricean) relevance: use of the particle indicates that the information conveyed by the sentence is relevant for the speaker, more or less in the sense used by van Rooij (2003a,b).

Davis's starting point is the idea that one should separate the contributions of intonation and *yo* itself. To do this, he adopts (a version of) the theory of Gunlogson (2003). Gunlogson gives a model of discourse context which represents the public commitments of each conversational participant, those propositions that each participant is known to believe; the commitments of agent *a* are represented

as PB_a . The common ground is then defined as the set of those propositions that are public commitments of all conversational participants: limiting attention to speaker s and hearer h , $CG = PB_s \cap PB_h$. In standard dynamic semantics it is often an implicit assumption that the hearer’s belief set is being updated, but with Gunlogson’s machinery, it is possible to update the commitments of speaker and hearer separately in an explicit manner. Davis (2009) makes use of this potentiality by assuming that default assertions target only the speaker’s public beliefs. He achieves this by defining an assertion operator which serves to update the public beliefs of the speaker.⁹

Such a semantics of assertion lacks any provision for updating the belief set of the hearer, which is presumably the usual goal of actual assertions. Davis suggests that this function of assertion is encoded by intonation. Intonational contours introduce additional operators, which also appear in the syntax and serve as modifiers of ‘force heads,’ including the assertion operator. In assertions, sentence final falling intonation modifies the semantics of the assertion operator so that it targets the hearer’s (public) beliefs for update in addition to those of the speaker.

Davis treats yo as having two components to its meaning: a presuppositional component and an ‘asserted’ component. The presuppositional component is defined relative to a sort of decision problem. In Davis’s account, the context determines a set of possible actions from which the contextual agents can select, which defines the contextual decision problem. The presupposition allows use of yo only in contexts where the propositional content p of the host sentence determines an optimal action (which turns out to be too strong a requirement, as we will show shortly): the presupposition requires that there be some action that is more optimal than any other action in all worlds compatible with the common ground after update with p . The at-issue content of yo is just an identity function.

Let’s see how this applies to a concrete example. Consider again the sentence in (12). Suppose that A is trying to decide whether to order salmon or tuna. Here there are basically four possibilities: only the tuna is good, only the salmon is good, both are good, or neither are. Let’s suppose further that B is minimally competent in restaurant selection and the fourth option is off the table. The remaining three possibilities can be denoted T, S, B . We indicate A’s choice with a subscript; thus, for example T_s represents those (unfortunate) situations where

⁹This model is modified significantly in Davis (2011), where the public beliefs targeted for revision are left open by the assertion operator itself, with the use of yo making the utterance target both the speaker’s and hearer’s public beliefs. In that work, the final fall in conjunction with yo encodes a something like a downgrade operation, while a final rise with yo indicates relevance for a contextually salient decision problem.

only the tuna is good (T) and A chooses salmon (s). Then there are six possibilities according to A (who lacks knowledge about this restaurant), ranked as follows by the partial ordering on worlds (assuming that it is preferable to pick something tasty than something not).

$$(14) \{T_s, S_t\} <_{\sigma} \{T_t, S_s, B_t, B_s\}$$

Here note that there is no determinate best option; choosing tuna might place A in a preferable world, or in a less preferable one. The same goes for salmon. A thus does not know what he should order on the basis of his knowledge before utterance of (12).

Now consider A's information state after learning the content of (12). Now the possibilities where only salmon is tasty have been eliminated, yielding a new ordering:

$$(15) \{T_s\} <_{\sigma} \{T_t, B_t, B_s\}$$

Given this information, ordering tuna can be taken to be an optimal action: you cannot go wrong by choosing tuna, since it will never lead to a situation that is ranked lower than another. Of course salmon might also be good, but we don't know this for sure, and in any case there is no situation in which choosing salmon puts A in a better position than choosing tuna. For the proposed presupposition to be satisfied, it is not required that one choice be the only best one, but only that there be at least one sure-fire choice. This analysis proves to be slightly too strong in that it is sufficient for the options to be narrowed down (or even just altered) for $y\circ$ to be felicitous, but we take it that the basic idea is clear.

The theory in Davis (2009) is extensively revised in Davis (2011). Details aside, Davis (2011) breaks the contribution of $y\circ$ into the particle itself, and one of two associated intonational contours (rising or falling). The particle (rather than the associated intonation) is argued to make the associated update target the addressee's public commitments. Falling intonation combined with $y\circ$ is then argued to contribute a kind of 'downdate' semantics, requiring the addressee to remove some pre-existing commitment. Rising intonation gives rise to the "relevance" implication, stated in terms of decision problems. Details aside, the major thrust of this work is that the contribution of the particle and its associated intonational contours should be distinguished, and that moreover a unified semantics for $y\circ$ and its intonational associates across different clause types (declarative, imperative, and interrogative) is possible. In fact, most work on $y\circ$ is largely or exclusively concerned with its behavior in declaratives (and the associate speech

act of assertion); Davis (2011) is largely unique in giving equal treatment to the use of *yo* in imperatives and interrogatives as well.

Oshima (2014) challenges some of the empirical generalizations made in Davis (2011), showing that the association between particular pragmatic functions and particular intonational contours is not as straightforward as that theory predicts. In particular, Oshima argues that “correction” (modeled by Davis as *downdate*, following earlier proposals by McCready) is not a sufficient condition on the use of *yo* with falling intonation. Moreover, Oshima provides examples showing the over-restrictiveness of the optimality metric that Davis uses to model the idea that rising intonation with *yo* indicates relevance.

Analytically, Oshima argues that, contra Davis, a compositional analysis dissecting the particle from its intonational contour is untenable, and individual combinations of particle and intonation should be analyzed holistically. He also distinguishes three distinct intonational patterns, in contrast to the two posited by Davis. From this starting point, Oshima proposes refinements to the analysis of *yo* in declaratives aimed at overcoming the empirical difficulties he argues follow from earlier treatments, and lays out a number of additional uses of the particle that do not fall under his account either. He does not discuss the use of *yo* in non-declaratives, and it is unclear how or whether the analyses he gives of the three particle-intonation combinations are intended to extend to imperatives and interrogatives.

Conceptually, Oshima’s general approach contrasts with that of Davis in arguing that a compositional analysis (one particle, a handful of intonational contours) employing a unified semantics across sentence types and particle-intonation combinations is untenable. This is a general tension in the study of these particles; to what extent can a unified, compositional account be achieved, and what is the alternative if it cannot? Moreover, since the data is fundamentally pragmatic, it is a subtle question how one maps particular theories onto testable empirical predictions. One thing that becomes clear from the development of this literature is that theories built directly on vague notions like “relevance” or “strength” are, on their own, difficult to translate into empirically testable claims. Only when these notions are spelled out in concrete theoretical terms that have clear empirical implications can progress be made in the study of these particles.

3.1 Other notification particles

There are a number of other notification particles in Japanese. Prominent among these are *zo* and *wa*, though neither have received much attention in the formal

literature. Consequently, we will discuss them only very briefly; their analysis seems to be a promising area for future research.

The particle *zo* is commonly associated with masculine speech (in the sense of gender). It seems quite parallel to *yo* in many respects: for instance, it induces the sense of insistency that we have seen with that particle, though in the case of *zo* this forcefulness is, if anything, stronger.¹⁰ However, it also exhibits significant disanalogies in its distribution. While *yo* can appear with imperatives, *zo* cannot, as well as several other clause types; in general, *zo* is highly restricted in the environments in which it is found. To our knowledge, these facts have not yet been explained.

Even less studied in the formal literature is the sentence-final particle *wa*, which is distinct from the topic-marking *wa* (or so we believe): to our knowledge, it has not been touched on at all, despite being relatively common in spoken language. This particle has two realizations. One is commonly used in the Japanese spoken in the Kansai region and has a meaning very similar to *yo*; another *yo*-variant in Kansai is *de*. Interestingly, while both *wa* and *de* can be used in declarative sentences, neither is compatible with imperatives, unlike *yo*; rather, the particle *ya* must be used. The Kansai-dialect copula has the same phonological shape as *ya*, but it is not clear whether the two should be equated. In Eastern or ‘standard’ Japanese, *wa* is associated with feminine speech; it has a *yo*-like meaning but also seems to have an emotive, evaluative component. Further research is needed to properly understand the functions and meaning of these particles and their interrelationships.

¹⁰It also affects modal subordination, a topic we have not discussed in detail in this paper; these are cases where an anaphoric relation between a nonspecific indefinite in the scope of a nonveridical operator and a later pronoun is enabled, despite its usually being infelicitous (see e.g. Roberts 1989; Geurts 1999; Asher and McCready 2007 for discussion, analysis, and further references). Usually the operators that induce modal subordination are (as the name suggests) modal, but *yo* can also do so (as shown by McCready 2005, 2008b,a) and so can *zo* (McCready, 2005). We will not discuss the modal subordination data further in the present paper, but it shows interesting relationships between particle meanings and modal meanings which are not yet fully understood.

4 Confirmation particles

4.1 *Ne* and *Na*

This section presents data related to what for convenience we call *confirmation* particles, in particular *ne* and *na*. Note that in this section we are considering only the *na* that is an analogue to *ne* in male speech and the dialects of Western Japan; *naa* with a lengthened vowel has a rather different meaning and will not be discussed here. *Ne* and *na* are often described in the literature as being used to request confirmation from the hearer about the sentence's propositional content. But it will turn out that the meaning of *ne/na* is rather more general, and the 'hearer-orientedness' noted by past researchers is an artifact of the combination of this meaning and certain intonational contours. Consequently we will have occasion to discuss intonation in some detail, just as we did with *yo* in the previous section.

The basic intuition about the meaning of *ne/na* is that the particle serves to indicate that the speaker is trying to get confirmation of the content of the sentence from the hearer. This sort of meaning arises in sentences like (16), which generally appear with rising intonation:

- (16) a. miitingu-wa sanji kara desu ne?
meeting-TOP 3:00 from COP NE
'The meeting is at 3, right?'
- b. anta-no kaisha-wa moo tousan da ne
your company-TOP soon bankrupt COP NE
'Your company'll be bankrupt soon, huh.'

However, *ne* and *na* also have a use that is clearly speaker-oriented, as in the examples in (17). Here, it does not seem that hearer confirmation is being requested, for in (17a) the propositional content of the sentence need not be endorsed by the hearer to be true (since it expresses an attitude of the speaker, cf. Mitchell 1986), and in (17b), the sentence describes an intention of the speaker that may well be new information from the hearer's perspective. This reading is generally associated with falling intonation.

- (17) a. koko-no gyooza-wa umai ne, yappari
here-GEN dumplings-TOP good NE as.expected
'The dumplings here are good right, like I thought.'

- b. kono hon ashita mottekimasu ne
 this book tomorrow take-bring NE
 ‘I’ll bring this book tomorrow, OK?’ (Eda, 2000)

Thus it is not sufficient to simply say that these particles ask for hearer confirmation; in some cases, as in (17), the idea of requesting confirmation does not even make sense.¹¹

We begin by considering some accounts found in the literature. Masuoka and Takubo (1989) state that *ne/na* expresses that the speaker believes the hearer to have the information in the statement already. Thus *ne/na*-marked sentences can serve to request confirmation or express that the speaker believes that the hearer is already aware of the content of what he’s saying. But this sort of view won’t give an automatic analysis of the cases in (17), for, at the level of semantic content, these sentences cannot be analyzed as specifying an individual whose attitudes are at issue, as shown by Lasersohn (2005). The possibility of speaker-oriented readings in these sentences already shows that *ne/na* cannot simply be viewed as ‘checking’ something in the hearer’s information state. More concretely, suppose that the propositional content of (17a) is something like *tasty(gyoza)*. If the function of the particle is to simply check whether the hearer has this belief, it will turn out hearer-oriented (as the hearer will be the judge of tastiness), at least by default; hearer beliefs about tastiness are normally associated with the hearer, though this default can be overridden (cf. McCready 2007). The problem is even more severe for (17b); presumably the speaker, in announcing her plan to bring the book tomorrow, is not anticipating that the hearer is already aware of it.

Another view is provided by Suzuki Kose (1997). On her account, *ne* indicates that the speaker believes the addressee is committed to the content of the utterance, which, for declaratives, indicates belief. For Kose, the use of rising *ne* (which she writes *ne?*) means that the speaker suspects that the addressee is committed to the propositional content, while the meaning of falling *ne* is just the default described by the above rule.

This analysis requires that the two *nes*, rising and falling, are treated as distinct lexical items, for the first is strictly weaker than the second, meaning that the default cannot apply at all; but it is at least plausible that one lexical item is in use, and the differences in meaning that exist are due to the meaning associated

¹¹Of course, it is possible to imagine contexts in which such readings could exist; McCready (2007) discusses some such with respect to the closely related issue of personal taste predicates in questions.

with the differing intonational contours. Kose’s analysis also makes several problematic predictions. First, *ne* is predicted to be unusable with new information; however, it is in fact possible to use *ne* with new information when it is used with falling intonation. This fact suggests that the role of intonation in the analysis needs to be brought to the fore, rather than buried. Second, Kose claims that because *ne* makes reference only to the hearer’s cognitive state, the speaker need not be committed to the propositional content of a *ne*-marked sentence.¹² Kose offers as evidence an example of a dialogue involving declarative sentences (p. 98) where she claims that no commitment is necessary, reproduced in example (18).¹³ We have deviated from Kose’s glosses in the interest of ready understanding.

- (18) a. Sister [Mari]: Mari-chan kumo-no ue-ni noreru mon
 Mari-DIM cloud-GEN top-on can.ride PT
 ‘Mari can ride on clouds.’
- b. a. Brother: Mari-chan kumo-no ue-ni noreru ne?
 Mari-DIM cloud-GEN top-on can.ride NE?
 ‘Mari can ride on the clouds, huh?’
- b. soo dat-tara kumo-wa Mari-chan-ga noreru kurai
 so COP-COND cloud-TOP Mari-DIM-NOM can.ride as.much
 katai ne?
 solid NE
 ‘If that’s so, then the clouds must be solid enough for you to stand on, right?’
- c. soshitara hikooki-wa kumo ni butsukatteshimau ne?
 then.COND airplane-TOP cloud against bump NE
 ‘Then airplanes should bump into them, right?’

The idea here is that the brother’s utterances don’t commit him to a belief that Mari can really ride on clouds; and certainly, this dialogue does not commit him to this claim. But is this really evidence for a particular interpretation of *ne*? The sentence is uttered with rising intonation, giving an interpretation like that of a polar question; plainly, use of a polar question does not commit the speaker to its propositional content. This will be so regardless of the particular content of

¹²Kose states, for instance, that “when the speaker uses *ne* after a directive, he may or may not want the addressee to perform the action expressed by the directive” (p 97).

¹³Here the particle *mon* (a contraction of *mono*) is used; it generally indicates explanation. See McCready and Takahashi (2011) for details.

the question. With respect to particles, there are two scope possibilities: either the particle scopes over the question, in which case no speaker commitment is expected to the propositional content, or the question over the particle, in which case the content of the particle is presumably questioned anyway. (Here the former seems to us more probable.) Thus it seems to us that this dialogue does not represent substantial support for a view of *ne* on which it does not commit the speaker to the sentential content.

Noda (2002) states that *ne* indicates that the speaker is trying to unify the content of the sentence with something already present in the discourse. The object of the unification may be in the hearer's knowledge; in this case, *ne* confirms that the hearer already knows the information conveyed by the sentence. Alternatively, the content may be in the speaker's information state, in which case *ne* indicates that the speaker has the proposition already in his knowledge store. How is it determined which reading of *ne* should appear in a given context? The answer to this question lies in the intonation of the sentence, to which we now turn.

4.2 *Ne/Na* and Intonation

Ne/na can appear both in sentences with rising intonation and sentences with falling intonation. Many authors have observed that the interpretation of the particle differs depending on the overall intonational contour of the sentence: the general consensus is that the 'hearer-oriented' use of *ne/na*, on which it asks for confirmation of the sentence content from the hearer, is associated with sentence-final rising intonation, while the reading on which *ne* simply emphasizes that the speaker knows the proposition is associated with falling intonation (cf. Oshima 2012). A good deal of experimental work has verified these claims in their broad outlines, though it is clear that the intonational contour in question is perceptual rather than absolute. This perceptual basis is shown particularly well by the work of Sugito (2001), who studies the phonetic correlates of rising/falling *ne*. She agrees that rising *ne* asks for hearer confirmation, and that 'falling' *ne* marks what she calls self-confirmation (*jikakunin*), which presumably is similar to the concept discussed by Noda above, where the content in question is in the speaker's information state rather than the hearer's. Interestingly, however, her research shows that so-called 'falling' *ne* isn't always phonetically falling—rather, the intonational contour can actually be rising at the end of the sentence, but still be perceived as falling. Particularly steep rises do tend to be perceived as rising,

resulting in a hearer-oriented reading, however.¹⁴ We will not consider phonetic correlates of perceived intonational contour in detail here, simply assuming that sentences are associated with either a (phonological) rising or falling intonation.

Moriyama (2001) agrees that rising *ne* asks for hearer confirmation. He provides the following interesting example. Here the sentence is ambiguous between a reading in which it asserts that the book is interesting and a reading in which it asserts that the book is one that is available for borrowing. Interestingly, intonation disambiguates these two readings: rising intonation selects the ‘borrowing’ reading, and falling intonation the ‘interesting’ reading.

- (19) a. kono hon, ii *ne*↑
 this book, good NE(rising)
 ‘It’s OK to borrow this book, right?’
- b. kono hon, ii *ne*↓
 this book, good NE(falling)
 ‘This is sure a good book.’

Moriyama verified this judgement using survey questionnaires (Moriyama 2001, pp. 38-41). Another experiment tested a similar phenomenon involving the following sentences. Here, rising intonation is bad in the first sentence and good in the second.¹⁵

- (20) a. watashi-wa iya desu ne (↓ / #↑)
 I-TOP bad COP NE
 ‘It is bad for me.’ / # ‘It is bad for me?’
- b. kimi, ikimasu ne (# ↓ / ↑)
 you, go NE
 ‘You’re going, right?’ / # ‘You’re going.’

What is the cause of these two contrasts? Intuitively, they both fall out from the assumption that rising intonation on *ne* produces hearer orientation. The main predicate used in (19) is *ii* ‘good’, which presents a judgement about the value of something. Such judgements are usually dependent on the speaker in assertions (Mitchell, 1986), so it makes sense that in contexts in which hearer-oriented

¹⁴Sugito also shows that a rise only on the vowel in *ne* (so that *e* only is raised, but not *n*) also produces a bias toward perception of *ne* as rising, resulting in a hearer-oriented reading.

¹⁵Note that some subjects found the opposite readings possible, with a dose of strong emotion; probably this is just due to flouting of ordinary standards of conversation.

readings arise such as (19a), a different reading (on which additional material is understood as elided) is preferred. Similarly, since the speaker is presumably clearer about his own opinions than his interlocutor is, rising intonation in (20a) is peculiar; conversely, since individuals ordinarily decide on their own actions, it is odd to use non-hearer-oriented falling intonation in (20b). However, there is a problem with this argument that arises with (19) and (20a): although in assertions ‘mental predicates’ like these are ordinarily speaker-oriented, this does not hold for environments like questions, where the hearer’s evaluation of something is usually being questioned (Mitchell, 1986).

Thus we see that the term ‘hearer-oriented’ for *ne* and *na* is really a misnomer; these particles can also be oriented to the speaker. To summarize the points discussed: *Ne/na* marks sentences whose content is assumed to be already known to the hearer, in some cases, and the speaker, in others, depending on the intonation of the sentence. An important task of future research is to develop a formal, compositional analysis of *ne/na* and its two intonational associates. As discussed in the previous section, Davis (2009, 2011) has argued for such a decomposition of *yo* and the two intonational contours (rising and falling) with which it occurs. It is an interesting and open question whether a compositional approach can unify the meaning of the intonational contours across both particles, and also maintain a unified analysis for each individual particle. We think that future progress on both classes of particles, which we have here labeled ‘notification’ and ‘confirmation’ particles, will best be achieved by paying close attention to the role of intonation, which should be carefully distinguished from the role of the particles themselves.

5 Particle Combinations

The above sections have looked at the use of the three major classes of particles in isolation. We have already seen that the study of these particles requires attention to be paid to the sentence-final intonational patterns with which they co-occur. An additional complication comes from the fact that the particles can appear in combination with one another, giving rise to systematic but complicated and, as yet, relatively understudied semantic and pragmatic effects. As discussed earlier, the combination of these particles obeys the strict ordering $ka < yo < ne$. The full range of combinatoric possibilities are illustrated by the following examples, provided with rough English translations. These translations are approximations to one out of, in some cases, several distinct pragmatic interpretations; these distinctions may in turn depend on intonational differences, as discussed in the sections

on the individual particles. First, the bare sentence in (21) is interpreted as simple assertion, provided that the sentence is accompanied with a final fall. The use of a final rise instead makes the sentence a type of polar question.

- (21) aitsu to isshoni iku.
he with together go
“(I will) go with him.”

The unspecified subject of this sentence has been translated as the speaker; this is a natural interpretation in a “null” context, but not the only one. As seen below, the use of certain particle combinations can bias this interpretation in other directions.

The use of particles in isolation was discussed in the individual sections describing these particles; examples (22-24) illustrate their use with the above sentence:

- (22) aitsu to isshoni iku ka?
he with together go KA?
“Will (you) go with him?”

- (23) aitsu to isshoni iku yo.
he with together go YO
“(I will) go with him, man.”

- (24) aitsu to isshoni iku ne.
he with together go NE
“(I will) go with him, ok?”

Note that the use of *ka* in (22) generates a “standard” polar question interpretation only in conjunction with a final rise. In this case, the null subject is naturally understood as referring to the addressee. If a final fall is used instead, the utterance is more naturally interpreted as a kind of rhetorical question, with two distinct interpretations. In one interpretation, the question is biased toward the negative answer, and the interpretation of the null subject is naturally interpreted as referring to the speaker: “Would I go with someone like him? No way!” Alternatively, the rhetorical question can be interpreted as granting the truth of the positive answer, and registering the speaker’s surprise at its truth. In such cases, the null subject is naturally resolved to the addressee: “Whoah, you’re going with someone like *him*?”

Interestingly, the use of *yo* with *ka* forces this type of rhetorical interpretation, as illustrated in (25).

- (25) *aitsu to isshoni iku ka yo.*
3SG with together go KA YO

“As if (I) would go with him!” / “Whoah, you’re going with him?”

As discussed in Section 3, *yo* can generally occur with either a rising or falling intonation, but in conjunction with *ka*, only a final fall is possible. This restriction deserves further investigation; it is unclear at this point whether the final fall in sentences ending in *ka yo* should be thought of as identical to the final fall found in rhetorical uses of *ka* sentences more generally, or whether it (also) makes the same contribution that a final fall does in other *yo* sentences.

The fact that *yo* in conjunction with *ka* forces a rhetorical interpretation of the question is discussed in Davis (2009, 2011). The use of *ka yo* has a rough and even aggressive flavor. This restriction is reflected in the fact that *ka yo* can only be used with “plain” or non-polite verbal forms; the following example, in which *ka yo* is used with the polite form of the verb, is bad to the point of ungrammaticality (note that the non-polite third person masculine pronoun *aitsu* has been replaced with the neutral third person masculine pronoun *kare*):

- (26) **kare to isshoni iki-masu ka yo.*
3SG with together go-POL KA YO

Note that this restriction cannot be attributed to either of the particles in isolation; both *ka* and *yo* are, on their own, perfectly compatible with polite verb forms.

Although the topic requires further investigation, it seems that in general the rhetorical uses of *ka* described above do not arise with polite verb forms. Moreover, the interpretation does not arise in the absence of *ka*; the following example, in which the particle *no* is used, has a standard information-seeking interpretation when used with a final rise, and a standard assertive interpretation when used with a final fall.

- (27) *aitsu to isshoni iku no ?/.*
3SG with together go NO

“Will (you) go with him?” / “(I) will go with him.”

Recently, Taniguchi (2016) has given an analysis of *ka yo*, building on that of Davis (2011), arguing that sentences with *ka yo* indicate what she calls a “self-directed corrective”. As with Davis (2011), Taniguchi pursues a compositional

analysis, the difference lying in the details of exactly what morphemes underly the construction and what their exact contribution is. In any case, the data above show that the rhetorical character of these kind of questions does not depend on *yo* itself, but that the use of *yo* forces this kind of interpretation.

The sentence in (28) illustrates the use of *ka* in conjunction with *ne/na*. As indicated by the English gloss, the effect of adding *ne/na* is roughly to make the sentence into a kind of self-addressing question, which simply expresses the speaker's own state of wondering, rather than directly asking the addressee for an answer. Perhaps for this reason, the null subject is naturally resolved to a third person, rather than to the addressee (although the latter interpretation is also possible).

- (28) aitsu to iss honi iku ka ne/na.
3SG with together go KA NE/NA

“I wonder if (she) will go with him.”

The question of which intonational pattern(s) *ne/na* can occur with in conjunction with *ka* is, as far as we are aware, an unexplored question, as is the difference (if any) between the use of *ne* and *na* in this construction.

While the particle combinations discussed above have remained relatively un(der)explored, the combination of *yo* and *ne* in assertive sentences has received some attention (Takubo and Kinsui, 1997; McCready, 2009). The use is illustrated in (29).

- (29) aitsu to iss honi iku yo ne.
3SG with together go YO NE

“(You will) go with him, right?”

These sorts of uses are puzzling to the extent that one takes *yo* and *ne* to be, in some sense, complementary. Concretely, assume an analysis on which *yo* marks information the speaker takes to be hearer-new, and *ne* marks information which the speaker takes to be hearer-old. These interpretations are not compatible. How then can a sentence be marked with the sequence *yo ne*? One possibility is to take a noncompositional view, according to which (29) includes a single particle, *yone*, instead of a sequence of two particles. Another possibility is to revise the semantics in such a way that the interpretation comes out consistent. This problem is discussed in some detail by McCready (2009) and also by Takubo and Kinsui (1997).

Although there is some disagreement among speakers as to its grammaticality and interpretation, it seems that *yo ne* is also found after *ka*, as illustrated in (30).

- (30) aitsu to isshoni iku ka yo ne.
3SG with together go KA YO NE

“As if (I) would go with him, right?”

The combination *ka yo ne* has not, to our knowledge, been described, let alone analyzed, in the literature on SFPs. The combination is understood as a negative rhetorical question (as seen above for *ka yo*) with an additional request for addressee confirmation of the speaker’s own view. The combination appears, on its face, to be compositionally derived from the use of *ka yo* (expressing a negative rhetorical question) and *ne* (seeking addressee confirmation). However, here, a pause seems to be required between the *ka yo* and the following confirmation particle *ne*; this fact makes it likely that this sort of case should be treated as composed of the particle sequence *ka yo* followed by a metalinguistic comment expressed by *ne*. We leave confirmation of this analysis as an open question for the purposes of this survey.

The above discussion shows that every logical particle combination is attested (at least in the orderings discussed), although the status of *ka yo ne* is debatable. This suggests, we think, that the meaning of such particle combinations should be pursued under the assumption that they are compositionally derived from the meanings of the individual particles, in combination with whatever final intonational contours these combinations allow. We think that future research on Japanese SFPs will make progress by focusing on particle combinations, which at once provide additional data for determining the core meanings of individual particles, and also potentially rule out certain analyses which would make such combinations illicit, or which would predict incorrect meanings for combinations of particles. One such class of analyses are those that treat *yo* and *ne* as being essentially opposites, as discussed above. Such analyses will, as we have seen, have trouble handling the fact that the combination of *yo* and *ne* is not only possible, but common.

Another way in which combinations of particles can inform future research derives from the order in which they are found. As discussed in Section 1, there is a long tradition suggesting that the linear order of right-peripheral elements in Japanese maps onto a natural semantic/pragmatic ordering as well. Formally, this fact suggests a view in which the order of particles reflects their semantic types, with the position of particle determined by the kind of semantic objects found at different layers of sentence structure. Such an approach to particle and intonational meaning is pursued in Davis (2011), which focuses on *yo* and its associated intonational contours across a range of clause types. The idea pursued there is

that the region of SFPs and sentence-final intonation are ways of spelling out an articulated region of *sentential force* or *mood*, in the tradition of Lewis (1970), mediating the truth-conditional core of a sentence with its pragmatic speech-act level interpretation.

Regardless of the details of formal implementation, the SFPs discussed in this chapter are of clear interest from the perspective of how semantic meaning interfaces with pragmatics. These issues are discussed in the next section.

6 Implications: Semantics versus Pragmatics

As we have seen, sentence final particles occupy an intriguing position at the interface of semantics and pragmatics. At least in Japanese, some of these particles *semantically* indicate certain pragmatic aspects of the role their host utterance plays in the discourse. For example, consider again the particle *yo*, which we have discussed in some detail. As we showed there, this particle requests update at all costs when uttered with falling intonation; when used with rising intonation, it indicates that the utterance it marks changes the degree to which the current question under discussion can be viewed as resolved. These appear to be the empirical facts. But they raise some intriguing and puzzling questions. How can it be that a linguistic object internal to a sentence can say something about the pragmatic status of that sentence? The particle is *part* of the sentence; how then can it specify something about the *action* that ought to be performed with that very sentence? And what sorts of meanings are these? The answer – one might think – should relate to the ability, or inability, of particles to be stacked, though we will not be able to consider this issue in detail in the present context. The meanings themselves raise puzzles, in that they seem to do no more than highlight already present aspects of pragmatic meaning. The answers to these questions, and to issues relating to particle meaning more generally, have substantial implications for other aspects of the semantics-pragmatics interface. If, as it appears, particles do reference pragmatic aspects of interpretation, does this support other operator-based analyses of pragmatic phenomena such as the ‘invisible operator’ line on implicature generation (e.g. Chierchia 2004)? More generally, what do particles indicate about the organization of the grammar? This section will address these questions, though our discussion will be somewhat preliminary for reasons both of space and of (un)settledness.

Let us first flesh out the issue by considering a particular instance of a sentence with a particle. Take a standard instance of a particle-including sentence like

(31).

- (31) ame-ga futteiru yo
rain-Nom falling YO
‘It’s raining, man.’

Davis (2009, i.a.) has argued that the meaning of this sentence can be represented as the application of an operator denoted by *yo* to the proposition denoted by *ame-ga futteiru*, yielding something like *yo(r)*. The interpretation of this sentence, then, assuming that it appears with rising intonation, is that *r* is relevant in some way to the question under discussion, either in that *r* helps to resolve the question under discussion (QUD) or that its truth shows that the QUD is less resolved than it previously seemed. For example, supposing that the QUD is ‘Should I take an umbrella?’, then *r* would (in most circumstances) resolve it; alternatively, supposing that other considerations dictated that the addressee probably would not take an umbrella, learning *r* might destabilize this resolution and reopen the issue.

The meaning above is a pragmatic one. The notion of a QUD is already pragmatic. It seems unlikely that it is possible to determine the QUD in the absence of a context of utterance, and indeed the very idea doesn’t make much sense. McCready (2012), starting with the common assumption that QUDs can be viewed as salient decision problems, argues that the problem of determining the current QUD crucially involves reasoning about the possible goals of the conversational participants and selecting a decision problem from an available space of possibilities. But there is something puzzling about the resulting picture. The traditional view of the semantics-pragmatics interface is that a semantic representation is computed on the basis of syntactic and lexical input, and that this semantic representation is in turn the input to pragmatics.¹⁶ One might wonder whether this view is compatible with the theory (or theories) of particles that we have discussed.

On any of the views we have examined, particles have a pragmatic function. They have been viewed as indicating the relevance (in the Gricean sense) of the sentence that hosts them, as directly modifying the speech act performed, as increasing the forcefulness of the claim made, itself a kind of indirect modification

¹⁶This model has been called into question recently on the basis of various kinds of (what appear to be) ‘pragmatic intrusions’ into semantic content. For example, to take a standard kind of example in the literature, the sentence ‘It is raining’ is generally interpreted as claiming that it is raining at the speaker’s location, although the sentence does not (overtly) make this claim. See (i.a.) Cappelen and Lepore (2005) for extensive discussion.

of a speech act. All of these views require the assumption that the particle meaning is not part of the ‘proper’ meaning of the sentence. For suppose that it was. Then (31) would mean $y\phi(r)$. Further suppose (for the sake of illustration) that the ‘forcefulness’ analysis is the correct one. Then we end up with a paradoxical situation: either (i) the strengthening function of $y\phi$ must somehow be externally imposed on the sentence meaning — which already contains the meaning of $y\phi$ — or the meaning of the particle must be part of the content which is strengthened and operate on the speech act ‘from the inside’, which seems nonsensically self-referential. This argument shows that the particle meaning cannot be part of the ordinary semantic content.

This being the case, it is necessary to decide what category of meaning they should belong to in order to give a complete formal analysis. Given our current understanding of the types of not-at-issue meanings available in natural language, this amounts to determining whether particles are presuppositional or expressive in nature.¹⁷

In the literature we can find both views. Davis (2009, 2011), for instance, takes the particle $y\phi$ to introduce expressive content; McCready (2005, 2009), on the other hand, takes $y\phi$ to come with a presupposition that the information in the sentence it hosts is hearer-new. It’s hard to say which of these views (if either) is correct. The usual ways of distinguishing expressive content from presupposition involve tests such as deniability and the independence of the content in question from ordinary semantic operators such as negation (see e.g. Potts 2005); but these tests do not seem particularly applicable in the case of particles. While their meanings do not seem to fall in the scope of other operators, this would seem to be because those meanings, being essentially pragmatic or even procedural, aren’t really the sort of content which *could* even in principle be negated or otherwise fall under the scope of standard truth-conditional operators. Thus, it remains unclear

¹⁷Of course, these are not the only logical possibilities: they could also introduce conversational implicatures, directly modify speech acts, or act in a completely different way. But none of these options are completely straightforward. For the first, since use of particles seems to modify sentence meanings in a nondefeasible way, an analysis in terms of conversational implicature looks problematic, as cancellability is usually taken to be a defining feature of such implicatures. The notion of speech act modification is in itself unproblematic, but spelling it out in a formal theory of composition requires it to take one of the two forms mentioned in the main text if the modification is to be viewed as taking place through the medium of an operator introduced in the semantic composition process. The possibility of a third approach remains, of course; one might for instance take the mere presence of a particle to induce a new speech act in a way independent of semantic composition (perhaps via some inferential mechanism). But in the absence of a worked-out theory of this kind, we will put such possible views aside here.

whether the impossibility of e.g. embedding is the result of particle meanings being expressive or whether it is the result of their just being non-truth-conditional in nature.

But the whole question of the kind of meaning associated with *yo* is also difficult to address for another reason. The analyses in terms of strengthening and relevance both have a common element. They highlight already present aspects of speech acts (assertion in the cases we have focused on here). If one accepts the characterization of cooperativity given by Grice (1975), assertions should convey the proper amount of information (given Gricean Quantity) that is useful for some current purpose (given Relevance). Further, if a speaker is cooperative, then she ought to try to help her interlocutor acquire useful information, likely at cost of being forceful in some situations. But these are just the proposed meanings of *yo*. For this reason, it isn't obvious how to show that either of the proposals makes wrong predictions: to do so, it would be necessary to find a case where either (i) the proposed particle meaning is not observed in a sentence with a particle, or (ii) a sentence without a particle nonetheless has the proposed meaning. Given that the proposed meanings are close to being universal properties of utterances, however, cases like (i) ought never to arise, and cases like (ii) ought to arise in virtually every case.

Still, there is a means to test the proposals, one implicitly used by the range of authors working on the Japanese particles. Recent work in formal pragmatics (e.g. Schlenker 2012) proposes a principle of presupposition maximization: roughly, given possible linguistic forms *A* and *B*, where *B* contains a presupposition, the use of *A* implicates that (the speaker believes that) the presupposition of *B* is not satisfied in the current context. The same likely holds for expressive content (see e.g. Davis 2009, 2011, as well as McCready 2018 for extensive discussion). Applying this principle to the present discussion, use of a sentence *S* without *yo* indicates that the meaning of *yo* is not currently appropriate. This explains the infelicity of (9) when no particle is used; the lack of a particle implicates that forcefulness is not required despite the obvious lack of willingness of the hearer to accept the proffered content (given a strengthening view), which provides some support for a picture based on strengthening.

All in all, the meanings of particles represent an interesting case from a variety of perspectives. From the descriptive side, they appear highly various and vague; as we have seen, it is difficult to individuate particle meanings and to tell for certain whether there are ambiguous particles or simply general meanings which take on different roles according to the contextual circumstances. From the theoretical side, the problem of characterizing meanings like those of particles, which mix

pragmatic and semantic effects in sometimes unpredictable and certainly complex ways, is difficult and interesting. As a consequence, a good deal of work is being done in the area. Our knowledge of particles is expanding quickly and many new discoveries are being made, in Japanese as well as in other languages such as English, German and Chinese.

References

- Asher, Nicholas and Eric McCreedy. 2007. Were, would, must and a compositional account of counterfactuals. *Journal of Semantics* 24(2):93–129.
- Beck, Sigrid. 2006. Intervention effects follow from focus interpretation. *Natural Language Semantics* 14:1–56.
- Cable, Seth. 2007. *The Grammar of Q: Q-Particles and the Nature of Wh-Fronting, As Revealed by the Wh-Questions of Tlingit*. Ph.D. thesis, Massachusetts Institute of Technology, Cambridge, MA.
- Cable, Seth. 2008. Q-particles and the nature of wh-fronting. In L. Matthewson, ed., *Quantification: Universals and Variation*, North Holland Linguistics Series. Emerald.
- Cable, Seth. 2010. *The Grammar of Q: Q-Particles, Wh-Movement and Pied-Piping*. Oxford University Press.
- Cappelen, Herman and Ernest Lepore. 2005. *Insensitive Semantics*. Oxford: Blackwell.
- Chierchia, Gennaro. 2004. Scalar implicatures, polarity phenomena, and the syntax/pragmatics interface. In A. Belletti, ed., *Structure and Beyond*, pages 39–103. Oxford.
- 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*. Ph.D. thesis, University of Massachusetts, Amherst.
- Delgrande, James, Yi Jin, and Francis Jeffrey Pelletier. 2008. Compositional belief update. *Journal of Artificial Intelligence Research* 32:757–791.

- Eda, Sanae. 2000. A new approach to the analysis of the sentence final particles *ne* and *yo*: An interface between prosody and pragmatics. In M. Nakayama and C. Quinn Jr., eds., *Japanese/Korean Linguistics 9*. CSLI Publications.
- Gärdenfors, Peter. 1988. *Knowledge in Flux*. MIT Press.
- Geurts, Bart. 1999. *Presupposition and Pronouns*. Oxford: Elsevier.
- Grice, H. Paul. 1975. Logic and conversation. In P. Cole and J. Morgan, eds., *Syntax and Semantics III: Speech Acts*, pages 41–58. New York: Academic Press.
- Gunlogson, Christine. 2003. *True to Form: Rising and Falling Declaratives as Questions in English*. Outstanding Dissertations in Linguistics. New York: Routledge.
- Hagstrom, Paul. 1998. *Decomposing Questions*. Ph.D. thesis, Massachusetts Institute of Technology.
- Hamblin, C.L. 1958. Questions. *Australian Journal of Philosophy* 36(3):159–168.
- Hara, Yurie. 2006. *Japanese Discourse Items at Interfaces*. Ph.D. thesis, University of Delaware.
- Hara, Yurie and Tomohide Kinuhata. 2012. Osaka Japanese *nen*: One-sided public belief and paratactic association. *Sprache und Datenverarbeitung* 35.2/36.1:49–70.
- Hayashi, Shirou. 1960. *Kihon Bunkei no Kenkyuu [Research on Basic Sentence Patterns]*. Meiji Tosho.
- Jayaseelan, Karattuparambil A. 2001. Questions and question-word incorporating quantifiers in malayalam. *Syntax*.
- Jayaseelan, Karattuparambil A. 2008. Question particles and disjunction. Ms., Hyderabad, English and Foreign Language University.
- Kindaichi, Haruhiko. 1953. Fuhenga jodoushi no honshitsu [the essence of non-inflecting auxiliary verbs], parts 1 and 2. *Kokugo Kokubun* 22(2,3).
- Koyama, Tetsuhara. 1997. Bunmatusi to bunmatu intoneesyon [sentence-final particles and sentence-final intonation]. In *Bunpou to onsei [Grammar and Phonetics]*. Kuroshio Press.

- Kuroda, S.-Y. 1965. *Generative Grammatical Studies in The Japanese Language*. Ph.D. thesis, Massachusetts Institute of Technology, Cambridge, MA.
- Larm, L. 2009. West meets east: a kindaichian approach to subjective modality. In B. Pizziconi and M. Kizu, eds., *Japanese Modality. Exploring its Scope and Interpretation*, pages 56?–86. Palgrave Macmillan.
- Lasersohn, Peter. 2005. Context dependence, disagreement, and predicates of personal taste. *Linguistics and Philosophy* 28:643–686.
- Lewis, David. 1970. General semantics. *Synthese* 22(1/2):18–67.
- Masuoka, Takashi and Yukinori Takubo. 1989. *Kisoo Nihongo Bunpoo [Essential Japanese Grammar]*. Tokyo: Kuroshio Shuppan.
- McCready, Eric. 2005. *The Dynamics of Particles*. Ph.D. thesis, UTexas-Austin.
- McCready, Eric. 2006. Japanese yo: Its semantics and pragmatics. *Sprache und Datenverarbeitung* 30:25–34.
- McCready, Eric. 2007. Context shifting in questions and elsewhere. In E. Puig-Waldmüller, ed., *Proceedings of Sinn und Bedeutung 11*, pages 433–447. Barcelona: Universitat Pompeu Fabra.
- McCready, Eric. 2008a. Particles, modality and coherence. In A. Grønn, ed., *Proceedings of Sinn und Bedeutung 12*, pages 430–441. ILOS.
- McCready, Eric. 2008b. What man does. *Linguistics and Philosophy* 31:671–724.
- McCready, Eric. 2009. Particles: Dynamics vs. utility. In Y. Takubo, T. Kinuhata, S. Grzelak, and K. Nagai, eds., *Japanese/Korean Linguistics 16*, pages 466–480. CSLI.
- McCready, Eric. 2012. Determining questions. To appear in *Proceedings of Texas Linguistics Society 13*.
- McCready, E. 2018. Honorification and social meaning. To appear, Oxford University Press.
- McCready, Eric and Yohei Takahashi. 2011. Good reasons. To appear in *Expressives and Beyond*, Daniel Gutzmann and Hans-Martin Gärtner, eds., Johns Benjamins.

- Minami, Fujio. 1993. *Gendai Nihongo Bunpou no Rinkaku [An Outline of Modern Japanese Grammar]*. Taishukan.
- Mitchell, Jonathan. 1986. *The Formal Semantics of Point of View*. Ph.D. thesis, University of Massachusetts at Amherst.
- Miyagawa, Shigeru. 1987. LF affix raising in Japanese. *Linguistic Inquiry* 18(2):362–367.
- Moriyama, Yoshiyuki. 2001. Shujoshi ‘ne’ no intoneeshun [The intonation of the sentence-final particle ‘ne’]. In *Bunpoo to Onsei III [Grammar and Phonology III]*. Kuroshio Press.
- Narrog, Heiko. 2009. *Modality in Japanese: The Layered Structure of the Clause and Hierarchies of Functional Categories*. John Benjamins.
- Noda, Harumi. 2002. Shujoshi no kinoo [The functions of sentence-final particles]. In K. Miyazaki, H. Noda, T. Adachi, and S. Takanashi, eds., *Modariti [Modality]*, pages 261–288. Kuroshio Press.
- Ogawa, Kunihiro. 1977. Where diachronic and synchronic rules meet: A case study from Japanese interrogatives and kakari-musubi. In *Papers in Japanese Linguistics, vol. 5*.
- Ono, Susumu, Tatsunori Mori, and Hiroshi Nakagawa. 1993. Semantics of Japanese sentence final particles in discourse [nihongodanwa ni okeru shujoshi no imiron]. *Zenkoku Taikai Koenronbunshu* 46(3):171–172.
- Oshima, David. 2011. The Japanese particle yo in declaratives: Relevance, priority, and blaming. In A. Butler, ed., *Proceedings of LENLS 8*. JSAI.
- Oshima, David Y. 2012. On the functions of the Japanese discourse particle ‘ne’: A study with special reference to intonation. In *Proceedings of LENLS 9*. Japanese Society for Artificial Intelligence.
- Oshima, David Y. 2014. On the functions of the Japanese discourse particle yo in declaratives. In E. McCready, K. Yabushita, and K. Yoshimoto, eds., *Formal Approaches to Semantics and Pragmatics: Japanese and Beyond*, pages 292–309. Heidelberg: Springer.
- Potts, Christopher. 2005. *The Logic of Conventional Implicatures*. Oxford University Press. Revised version of 2003 UCSC dissertation.

- Roberts, Craige. 1989. Modal subordination and pronominal anaphora in discourse. *Linguistics and Philosophy* 12:683–721.
- Rooth, Mats. 1985. *Association with Focus*. Ph.D. thesis, University of Massachusetts at Amherst.
- Rooth, Mats. 1992. A theory of focus interpretation. *Natural Language Semantics* 1:75–116.
- Schlenker, Philippe. 2012. Maximize presupposition and Gricean reasoning. *Natural Language Semantics* 20:391–429.
- Slade, Benjamin. 2011. *Formal and Philological Inquiries into the Nature of Interrogatives, Indefinites, Disjunction, and Focus in Sinhala and Other Languages*. Ph.D. thesis, University of Illinois at Urbana-Champaign.
- Sugito, Miyoko. 2001. Shuujoshi ‘ne’ no imi/kinou to intoneeshon [the meaning, function, and intonation of the sentence final particle ‘ne’]. In *Bunpou to onsei II [Grammar and Phonetics 2]*, pages 3–16. Kuroshio.
- Suzuki Kose, Yuriko. 1997. *Japanese Sentence-Final Particles: A Pragmatic Principle Approach*. Ph.D. thesis, University of Illinois at Urbana-Champaign.
- Szabolcsi, Anna. 2015. What do quantifier particles do? *Linguistics and Philosophy* 38:159–204.
- Takubo, Yukinori and Satoshi Kinsui. 1997. Discourse management in terms of mental spaces. *Journal of Pragmatics* 28:741–758.
- Taniguchi, Ai. 2016. Sentence-final *-ka-yo* in Japanese: A compositional account. In A. Sugawara, S. Hayashi, and S. Ito, eds., *Proceedings of FAJL 8: Formal Approaches to Japanese Linguistics*, pages 165–176.
- van Rooij, Robert. 2003a. Quality and quantity of information exchange. *Journal of Logic, Language and Information* 12:423–451.
- van Rooij, Robert. 2003b. Questioning to resolve decision problems. *Linguistics and Philosophy* 26:727–763.
- Yanagida, Yuko. 1995. *Focus Projection and Wh-head Movement*. Ph.D. thesis, Cornell University.

- Yatsushiro, Kazuko. 2001. The distribution of *ka* and *mo* and its implications. In M. Cuervo, D. Harbou, K. Hiraiwa, and S. Ishihara, eds., *Formal Approaches to Japanese Linguistics 3*, pages 181–198. MITWPL.
- Yatsushiro, Kazuko. 2009. The distribution of quantificational suffixes in Japanese. *Natural Language Semantics* 17(2):141–173.
- Yoshida, Keiko and Tomoyuki Yoshida. 1996. Question marker drop in Japanese. *ICU Language Research Bulletin* 11:37–54.