

The Hidden Side of Exclusive Focus Particles: An Analysis of *dake* and *sika* in Japanese

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Abstract: This paper proposes an analysis of two exclusive focus particles in Japanese: *dake* and *sika*. Our starting point is the idea, originally due to Kuno (1999a), that the meanings of *dake* and *sika* have two components. For *dake*, the prejacent (i.e. the positive statement without the focus particle) is the ‘primary assertion’ and the exclusive meaning is the ‘secondary assertion’ whereas the primary/secondary status of these meanings is exactly opposite for *sika*. While Kuno’s proposal is intuitively appealing, the formal statuses of the notions of ‘primary’ and ‘secondary’ assertions have not been clarified in past literature. The goal of this paper is to offer a principled theoretical explanation for this distinction, and thereby contribute to the literature on the meanings of exclusive focus particles. Specifically, we formulate a formal analysis by building on Tomioka’s (2015) analysis of *dake* in terms of the maximality operator and by identifying the secondary assertion as a particular type of derived entailment (in the sense of Kubota (2012)) that is triggered by the maximality operator. The proposed analysis represents a new synthesis of the ‘symmetricist’ and ‘asymmetricist’ analyses of exclusive focus particles, with implications for the debate on the typology of ‘non-at-issue’ entailments within current formal semantics literature.*

Key words: *dake/sika*, focus particle, maximality, projective meaning, conventional implicature

1. Introduction

This paper proposes an analysis of two types of exclusive focus particles in Japanese: *dake* and *sika*. The purpose of the paper is two-fold. First, we aim to clarify the precise theoretical statuses of the notions of ‘primary assertion’ and ‘secondary assertion’ that were introduced by Kuno’s (1999a) influential study of these focus particles. Although Kuno’s distinction is intuitively appealing and convincing at a descriptive level, its precise theoretical status is rather elusive, and to date, no formal analysis of this notion has been conducted. The second aim is closely

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related to the first, but pertains to a more general theoretical point. Specifically, by clarifying the meanings of *dake* and *sika*, we aim to contribute to the debate in the recent formal semantics literature on different types of uncancellable entailments, starting with Potts's (2003) influential work on conventional implicatures (CI). The 'dual' nature of *dake* and *sika* consisting of 'primary' and 'secondary' assertions poses an interesting challenge to the widely entertained (though controversial) view that uncancellable entailments of a sentence may be broadly classified into three categories: the presupposition, CI, and assertion (for a recent overview, see Potts 2015). By closely examining the properties of *dake* and *sika*, a somewhat more nuanced picture emerges that takes into account *interactions* between different types of uncancellable meanings. Thus, the *dake/sika* paradigm in Japanese sheds new light on this larger theoretical issue by exemplifying a pattern that has hitherto been overlooked.

The meanings of exclusive focus particles such as *only* have been studied extensively in the tradition of logical semantics (see, e.g., Atlas 1991, 1993, Horn 1996, Beaver and Clark 2008, Roberts 2011). The issue boils down to the question of how to analyze the 'dual' meanings of such expressions with tools available in logic/formal semantics. The so-called symmetricist view (e.g., Atlas 1991, 1993) holds that (1) is simply the conjunction of (2a) and (2b).

- (1) Only John came.
 (2) a. John came. (prejacent)
 b. People other than John didn't come. (exclusive meaning)

The asymmetricist view (e.g. Horn 1996) holds that (1) asserts only (2b) and that (2a) is not part of the assertion of (1) ((2a) is typically taken to be a presupposition; see, for example, Rooth 1985).

The debate between the symmetricist and asymmetricist camps has not yet been settled. To make things worse, the recent literature has seen an expansion of the catalog of 'non-asserted' uncancellable meanings (or, 'projective meanings'; Tonhauser et al. 2013), in which the so-called CI (Potts 2005) is typically regarded as a type of non-asserted entailment distinct from presupposition. The prejacent of *only* has received a renewed attention in these studies (Roberts 2011, Tonhauser et al. 2013, Oshima 2016), but its elusive nature has only helped further blur the boundary between presupposition, CI, and assertion.

Examining Japanese in this context is potentially illuminating for two reasons. First, broadening the range of languages is always a favorable strategy when seeking a new analytic angle, especially when the literature has tended to be 'Anglocentric'. Second, Japanese has two types of exclusive focus particles *dake* and *sika*, which contrast with one another in the crucial prejacent/exclusive meaning dimension. Thus, clarifying the nature of *dake* and *sika* could shed new light on the nature of (what appear to be) non-asserted entailments of exclusive expressions.

Dake is roughly a translational equivalent of *only* whereas *sika* is a negative polarity item (NPI) counterpart of *dake* that obligatorily occurs with morphological negation.

- (3) a. John-dake-ga ki-ta.
 John-DAKE-NOM come-PST
 ‘Only John came.’
- b. John-sika ko-nakat-ta.
 John-SIKA come-NEG-PST
 ‘Only John came.’

A *dake* sentence like (3a) and a *sika* sentence like (3b) are truth-conditionally indistinguishable, yet, as noted by Kuno (1999a), the statuses of the two components of the ‘dual’ meanings (corresponding to the prejaçant and non-prejaçant of *only*) are mirror images of one another.

If the above characterization of *dake* and *sika* is on the right track, it raises important issues for the analysis of exclusive focus particles cross-linguistically, as well as for the broader CI/projective meaning literature. First, the mirror-image statuses of *dake* and *sika* pose a serious challenge to (at least the simplest form of) the symmetricist view, which assigns the same status to both the prejaçant and the exclusive meaning. Second, for each type of focus particle, the precise status of the prejaçant and the exclusive meaning needs to be clarified. Finally, assuming that some version of the asymmetricist view is on the right track, the question arises as to why exclusives invoke dual meanings, where one is primary and the other is secondary.

To preview the conclusion, we argue for an analysis that is, in a sense, a ‘compromise’ between these apparently conflicting positions. We treat the secondary meanings of *dake* and *sika* as *derived entailments* in the sense of Kubota (2012), that is, entailments that follow from the asserted content together with a piece of information that supports it. Our proposal respects the symmetricist view in having the secondary assertion strictly follow from the entailment of the sentence, while also incorporating the key idea of the asymmetricist view that the secondary assertion is not on the ‘surface’ of the asserted content, but is more indirectly associated with it.

2. Secondary assertions as part of the assertion proper

We start with a review of key descriptive generalizations about *dake* and *sika*. *Dake* and *sika* have two meaning components, a positive proposition and an exclusive proposition, and they behave as mirror images of each other. For both, one meaning component corresponds to a so-called assertion (‘the primary assertion’), and the other to a ‘non-at-issue’ meaning (‘the secondary assertion’). After clarifying the basic meanings of *dake* and *sika*, we show that the secondary assertion of these words cannot be analyzed as a presupposition or CI, based on the standard ‘family of sentences’ test (Chierchia and McConnell-Ginet 1990; see also Karttunen 1973). Finally, we briefly review recent work on the non-at-issue meanings of *dake* and *sika* and related phenomena by Yoshimura (2007) and Horn (2002, 2017). These previous works are highly insightful but are largely descriptive rather than constituting explicit analyses of the phenomena.

2.1. Basic contrasts between *dake* and *sika*

Kuno (1999a) has pointed out an important contrast between the two exclusive focus particles:¹ *dake* sentences convey a positive proposition (prejacent) as the *primary assertion* and an exclusive proposition as the *secondary assertion*, while *sika* sentences convey the exclusive proposition as the primary assertion and the positive proposition as the secondary assertion, as summarized in (4) and (5). Similar observations are found in, inter alia, Morita (1980), McGloin (1986), Kato (1985), Teramura (1991), and Numata (2009).

- (4) Taroo-dake-ga ikinokot-ta.
Taro-DAKE-NOM survive-PST
Primary assertion: Taro survived.
Secondary assertion: Those other than Taro didn't survive.
- (5) Taroo-sika ikinokor-anakat-ta.
Taro-SIKA survive-NEG-PST
Primary assertion: Those other than Taro didn't survive.
Secondary assertion: Taro survived.

The evidence for the primary/secondary distinction comes from data such as (6) and (7).²

- (6) a. Taroo_i-dake-ga ikinokot-ta. ϕ_i Siitoberuto-o
Taro-DAKE-NOM survive-PST seatbelt-ACC
si-tei-ta-kara-da.
wear-IPFV-PST-because-COP
'Only Taro survived. That's because he was wearing the seatbelt.'
- b. ??/#Taroo_i-sika ikinokor-anakat-ta. ϕ_i Siitoberuto-o si-tei-ta-kara-da.
(Kuno 1999a: 299)
- (7) a. #Taroo_i-dake-ga ikinokot-ta. ϕ_j Siitoberuto-o
Taro-DAKE-NOM survive-PST seatbelt-ACC
si-tei-nakat-ta-kara-da.
wear-IPFV-NEG-PST-because-COP
'Only Taro survived. That's because those other than him weren't wearing the seatbelt.'
- b. %Taroo_i-sika ikinokor-anakat-ta. ϕ_j Siitoberuto-o si-tei-nakat-ta-kara-da.
(Kuno 1999a: 300, adapted slightly)

¹ Kuno (1999b) is an English version of Kuno (1999a).

² The % in (7b) indicates inter-speaker variability; some speakers can take the zero pronoun to refer to people excluding Taro, whereas others accept only the reading in which the zero pronoun refers to the entire group including Taro. Since anaphoric construal is itself a quite complex issue, we leave detailed examination of this issue for future research. What is crucial for us is the contrast between examples such as (7a) vs. (7b), which seems sufficiently robust.

If we simply assumed that *dake* and *sika* meant the same thing ('Taro survived, and others didn't'), the contrasts in these examples would be puzzling. However, if we assume the primary/secondary distinction along the lines of (4) and (5) and further assume that the follow-up sentences in (6) and (7) provide the reason for the primary and not the secondary assertion, then the contrasts in these examples follow naturally. That is, in (6), wearing the seatbelt would provide an adequate explanation for why Taro survived but not for why the others didn't survive. Similarly, in (7), not wearing the seatbelt explains why the others didn't survive but not why Taro survived.

To summarize the discussion thus far, the two meaning components of *dake* and *sika* are mirror images, where the X-*dake* sentence primarily describes X, and the X-*sika* sentence describes those other than X. To further elucidate the nature of primary and secondary assertions, it is instructive to examine a phenomenon that has a similar property to the *dake/sika* contrast: *almost* and *barely* in English. Horn (2002, 2017) points out that *almost* and *barely* have 'dual' meanings, and that one meaning component (specifically, the 'polar implication') is 'non-at-issue'. This 'non-at-issue' implication is similar to the secondary assertion of *dake* and *sika*.

- (8) John almost won.

Approximate meaning: John came close to winning.

Polar meaning: John lost.

- (9) John barely won.

Approximate meaning: John came close to losing.

Polar meaning: John won.

Horn notes two phenomena that distinguish between primary and secondary assertions (another test he employs is NPI licensing, but this test is inapplicable in our case because the status of *sika* as a strong NPI interferes with the intended effects that the test is supposed to diagnose). First, in contrastive discourse such as (10), the polar implication (which is secondary) can be re-asserted without sounding excessively redundant (Horn 2017: 293). However, (11) shows that such re-assertion under rhetorical opposition is clearly impossible with the (primary) approximate implication.

- (10) a. Obama barely won the nomination, but he won.

b. Obama almost won the nomination, but he didn't win.

- (11) a. #Obama barely won the nomination, but he came close to losing.

b. #Obama almost won the nomination, but he came close to winning.

This test can be applied to *dake* and *sika*. As shown in (12) and (13), in a contrastive discourse sequence, the secondary assertions of *dake* and *sika* can be re-asserted whereas the primary assertions cannot. Examples (14) and (15) from McGloin (1986) demonstrate the same point (here, 'a \ll b' indicates relative degrees of acceptability where b is more natural than a).

- (12) Yooko-wa hahaoya-to-dake kaiwa-suru. Sikasi,
 Yoko-TOP mother-with-DAKE conversation-do but
 'Yoko only talks to her mother. But...'
 a. hahaoya-to-nara kaiwa-suru. < b. titioya-to-wa
 mother-with-if conversation-do father-with-TOP
 'She does talk with her mother.' kaiwa-si-nai.
 conversation-do-NEG
 'She doesn't talk with her father.'
- (13) Yooko-wa hahaoya-to-sika kaiwa-si-nai. Sikasi,
 Yoko-TOP mother-with-SIKA conversation-do-NEG but
 'Yoko only talks to her mother. But...'
 a. hahaoya-to-nara kaiwa-suru. (= (12a)) >> b. titioya-to-wa kaiwa-si-nai.
 (= (12b))
- (14) {Tanaka-san-dake-ga ki-ta-ga / #Tanaka-san-sika
 Tanaka-Mr.-DAKE-NOM come-PST-but Tanaka-Mr.-SIKA
 ko-nakat-ta-ga}, hokano hito-wa ko-nakat-ta.
 come-NEG-PST-but other people-TOP come-NEG-PST
 '(Only) Mr. Tanaka came, but nobody other than him came.'
 (McGloin 1986: 84–85)
- (15) Okane-wa nokot-ta keredo, {#100-en-dake nokot-ta
 money-TOP remain-PST but 100-yen-DAKE remain-PST
 /100-en-sika nokor-anakat-ta}.
 100-yen-SIKA remain-NEG-PST
 'Although money remained, it was only 100 yen.' (McGloin 1986: 85)

The second test Horn employs involves whether the sentence has a positive or negative connotation. According to Horn, this is determined by the polarity of the primary assertion and not the secondary assertion. Building on Horn's arguments, Yoshimura (2007) notes that *almost* is felt to be more 'positive', while *barely* is more 'negative', giving the following examples:

- (16) a. Good news: My printer almost functions!
 b. Bad news: My printer barely functions! (Yoshimura 2007: 109)

Yoshimura then points out that a parallel pattern is observed with *dake* and *sika*, as in (17) (if (17a) sounds awkward, note that it improves in the variant *Okane-dake aru-no-ga semete-mo-no sukui-da* 'Having some money left is the only hope for me'):

- (17) a. Good news: Okane-dake aru.
 money-DAKE exist
 'I have only money. (= I have at least money)'
 b. Bad news: Okane-sika nai.
 money-SIKA not.exist
 'I have only money. (= and nothing else...)' (Yoshimura 2007: 109–110)

These positive/negative effects can be illustrated particularly clearly when the *dake/sika* sentence is embedded in a reason clause or a concessive clause, as in the following examples (note that Kuno's original data in (6) and (7) exemplify essentially the same point).³

- (18) a. Mizu-dake-ga (sukunakutomo) nome-ta-node,
 water-DAKE-NOM at.least can.drink-PST-because
 suusyuukan-wa iki-rare-ta.
 for.several.weeks-TOP survive-can-PST
 'Thanks to at least having water to drink, I could survive for several weeks.'
- b. #Mizu-sika nome-nakat-ta-node, suusyuukan-wa
 water-SIKA can.drink-NEG-PST-because for.several.weeks-TOP
 iki-rare-ta.
 survive-can-PST
 'Because I could drink only water, I could survive for several weeks.'
- (19) a. #Mizu-dake-ga nome-ta-node, ue-ni
 water-DAKE-NOM can.drink-PST-because starvation-by
 kurusime-rare-ta.
 afflict-PASS-PST
 'Thanks to at least having water to drink, I suffered from hunger.'
- b. Mizu-sika nome-nakat-ta-node, ue-ni
 water-SIKA can.drink-NEG-PST-because starvation-by
 kurusime-rare-ta.
 afflict-PASS-PST
 'Because I could drink only water, I suffered from hunger.'

Here, the reason clause in (18) indicates why the speaker could survive, while the reason clause in (19) indicates why he/she starved. In the former, the reason clause should indicate a benefit (i.e., the speaker could at least drink water). In this context, the *dake* sentence is appropriate but the *sika* sentence is not, as shown in (18). In contrast, in (19), the proposition in the reason clause must indicate a hardship. In this context, the point is that anything other than water was unavailable, so, *sika* is appropriate but *dake* is not.

The same pattern is observed in concessive clauses, which express a situation that is 'opposite' in some sense to that described by the main clause, unlike the reason clause. The superficial judgments are thus reversed from the pattern of (18) and (19).

³ Some readers may find (18a) awkward at best, unless *dake-ga* is replaced with *dake-wa*. This is arguably a pragmatic effect: since the *dake-wa* version brings out the main assertion more clearly, it is more appropriate in this context. See footnote 13 for a discussion on *dake-wa*.

- (20) a. #Mizu-dake-ga nome-temo, suusyukan-wa
 water-DAKE-NOM can.drink-even.if for.several.weeks-TOP
 iki-rareru.
 survive-can
 ‘Even if you have at least water available to drink, you can survive for several weeks.’
- b. Mizu-sika nome-naku-temo, suusyukan-wa
 water-SIKA can.drink-NEG-even.if for.several.weeks-TOP
 iki-rareru.
 survive-can
 ‘Even if you can drink nothing other than water, you can survive for several weeks.’
- (21) a. Mizu-dake-ga nome-temo, ikinobi-rare-nai.
 water-DAKE-NOM can.drink-even.if survive-can-NEG
 ‘Even if you have at least water available to drink, you cannot survive.’
- b. #Mizu-sika nome-naku-temo, ikinobi-rare-nai.
 water-SIKA can.drink-NEG-even.if survive-can-NEG
 ‘Even if you can drink nothing other than water, you cannot survive.’

Here, due to the pragmatic property of a concessive conjunction, a (primarily) negative proposition can stand in opposition to the positive consequent in (20) and a (primarily) positive proposition can stand in opposition to the negative consequent in (21). Therefore, the patterns we see in (20) and (21) are consistent with the assumption that *dake* and *sika* express positive and negative propositions as their respective primary assertions.

To summarize the discussion in this section, we first reviewed Kuno’s observation that *dake* and *sika* both have two meaning components (i.e., positive and exclusive propositions) but that they package these two meanings differently: with *dake*, the primary assertion is the positive proposition whereas with *sika*, the primary assertion is the exclusive proposition. We then reviewed evidence from other sources as well as our own (involving the redundancy test of Horn (2002) and the positive/negative connotations of *dake* and *sika*), to provide further support for the primary/secondary distinction of the meaning components of *dake* and *sika*.

2.2. Secondary assertions are not projective contents

Kuno’s proposal is intuitively appealing and is supported by a range of data, as reviewed in the previous section. However, he does not address the exact semantic status of the primary and secondary assertions. In this section, to further elucidate the nature of these meanings, we apply standard tests for classifying different types of meaning and demonstrate that both the primary and secondary assertions should be taken to be part of the assertion proper.

There is no doubt that the primary assertion is an assertion. On the other hand, the status of the secondary assertion is open to question. We cannot simply treat the primary and secondary assertions of *dake* and *sika* as having equal status,

as in the symmetricist view on *only* in English, since such an approach fails to distinguish the above-mentioned difference between *dake* and *sika*. We cannot treat the secondary assertion of *dake* and *sika* as conversational implicature (cf. Grice 1967, Levinson 1983) either, since this meaning component is uncancellable, as noted by previous researchers (Kataoka 2006, Yoshimura 2007).

What is the precise status of *dake* and *sika*'s secondary assertion? This question is important in light of the recent debates on 'projective meanings' in the formal semantics and pragmatics literature (e.g. Potts 2005, 2015, Tonhauser et al. 2013, Oshima 2016, Sawada 2018). Uncancellable entailments are generally classified into three types: assertion, presupposition, and CI. One might then consider characterizing the secondary assertion of *dake* and *sika* as presupposition or CI. However, as demonstrated below, such an analysis is implausible.⁴

Before we turn to linguistic evidence, one methodological point must be addressed. There is currently much debate on the distinction between CI and presupposition, including the question of whether there is any clear-cut boundary between the two (for a recent overview, see Potts 2015; see also Tonhauser et al. 2013; Oshima 2016). However, there is a general consensus among scholars that these two types of meaning contrast with the at-issue assertion in that they are both 'projective' (Tonhauser et al. 2013), meaning that they tend to escape the scope of truth-functional operators such as modals and conditionals. Since our aim here is to show that the secondary meaning is *neither* a presupposition *nor* a CI, it is sufficient to group CIs and presuppositions together as forming a broader class of projective content, and to use the classical 'family of sentences' test as a diagnostic (however, it should be noted that the projectivity of CI is another point of contention; we return to this issue in Section 2.3).

The 'family of sentences' test can be illustrated with typical presupposition triggers such as the additive particles *mo* in Japanese and *too* in English (Horn 1969, Karttunen and Peters 1979, Kato 1985, Numata 2009; but note that projective contents are not limited to presuppositions, as they also include expressions that have been categorized as CIs). *Mo* conveys the implication that, in addition to the thing mentioned, something else satisfies the property in question. For example, (22) asserts the prejacent proposition that Yoko's father will attend the parent-teacher meeting, while also conveying the implication that somebody else (most likely, Yoko's mother) will also attend. This latter implication is standardly analyzed as a presupposition.

⁴ Some readers may be tempted to draw an analogy between the notion of primary and secondary assertions and superficially similar notions, such as foregrounded/backgroundedness (see Levinson (1983) for a discussion on the latter notion). While perhaps ultimately related to these notions in one way or another, the distinction between primary/secondary assertions that we propose below has a specific theoretical sense that pertains (primarily) to uncancellable entailment of the sentence alone.

- (22) Sansya-mendan-ni-wa Yooko-no titioya-mo kuru.
 parent.teacher-meeting-to-TOP Yoko-GEN father-MO come
 'Yoko's father will also attend the (individual) parent-teacher meeting.'

The different statuses of assertion and presupposition can be diagnosed by the family of sentences test, which embeds the relevant sentence in the scope of operators such as modals, interrogatives and conditionals (we have omitted negation to avoid the confounding factor of meta-linguistic negation). The relevant examples with *mo* are shown in (23)–(25).

- (23) Sansya-mendan-ni titioya-mo ki-tara, seiseki-no hanasi-o
 parent.teacher-meeting-to father-MO come-if grade-GEN talk-ACC
 suru.
 do
 'They'll discuss her grades if her father also comes to the parent-teacher meeting.'
- a. Demo, titioya-wa ko-nai-kamosirenai.
 however father-TOP come-NEG-may
 'However, her father may not come.'
- b. #Demo, hahaoya-wa ko-nai-kamosirenai.
 however mother-TOP come-NEG-may
 'However, her mother may not come.'
- (24) Sansya-mendan-ni-wa titioya-mo kuru-kamosirenai.
 parent.teacher-meeting-to-TOP father-MO come-may
 'Her father may also come to the parent-teacher meeting.'
- a. Demo, titioya-wa ko-nai-kamosirenai. (= (23a))
 b. #Demo, hahaoya-wa ko-nai-kamosirenai. (= (23b))
- (25) Sansya-mendan-ni-wa titioya-mo ki-masu-ka?
 parent.teacher-meeting-to-TOP father-MO come-POL-Q
 'Will her father come to the parent-teacher meeting, too?'
- a. Iie, titioya-wa ki-masen.
 no father-TOP come-NEG.POL
 'No, her father will not come.'
- b. #Iie, hahaoya-wa ki-masen.
 no mother-TOP come-NEG.POL
 'No, her mother will not come.'

In (23), the antecedent clause of the conditional sentence contains the additive particle *mo*. The presupposition triggered by *mo* (i.e., the proposition that somebody other than Yoko's father will come to the parent-teacher meeting) projects to the whole sentence. Thus, the follow-up statement (23b), which contradicts this presupposition (assuming that the 'somebody else' is Yoko's mother), is infelicitous. By contrast, the asserted content of the antecedent clause (i.e. the proposition that

- (27) Sansya-mendan-ni-wa hahaoya-dake-ga kuru-kamosirenai.
 parent.teacher-meeting-to-TOP mother-DAKE-NOM come-may
 ‘Only her mother may come to the parent-teacher meeting.’
 a. Demo, hahaoya-wa ko-zu, titioya-ga kuru-kamosirenai. (= (26a))
 b. Demo, titioya-mo kuru-kamosirenai. (= (26b))
- (28) Sansya-mendan-ni-wa hahaoya-dake-ga ki-masu-ka?
 parent.teacher-meeting-to-TOP mother-DAKE-NOM come-POL-Q
 ‘Will only her mother come to the parent-teacher meeting?’
 a. Iie, hahaoya-wa ko-zu, titioya-ga ki-masu.
 no mother-TOP come-NEG father-NOM come-POL
 ‘No, her mother will not come, but her father will.’
 b. Iie, titioya-mo ki-masu.
 no father-MO come-POL
 ‘No, her father will also come.’

In all these examples, both the primary assertion-contradicting follow-ups (a.) and the secondary assertion-contradicting follow-ups (b.) are possible. Thus, it follows that neither the primary nor the secondary assertion is projective; that is, both are part of the asserted content of the *dake*-sentence, and hence fall under the scope of truth-functional operators.

The same pattern is observed for *sika*. As can be seen in (29)–(31), neither the primary nor the secondary assertion projects to the whole sentence with *sika*. Thus, as with *dake*, both meaning components are part of the assertion of the sentence.⁶

- (29) Sansya-mendan-ni hahaoya-sika ko-nakat-tara, seiseki-no
 parent.teacher-meeting-to mother-SIKA come-NEG-if grade-GEN
 hanasi-wa si-nai.
 talk-TOP do-NEG
 ‘If only her mother comes to the parent-teacher meeting, they won’t discuss her grades.’
 a. Demo, titioya-mo kuru-kamosirenai. (= (26b))
 b. Demo, hahaoya-wa ko-zu, titioya-ga kuru-kamosirenai. (= (26a))
- (30) Sansya-mendan-ni-wa hahaoya-sika ko-nai-kamosirenai.
 parent.teacher-meeting-to-TOP mother-SIKA come-NEG-may
 ‘Only her mother may come to the meeting.’

⁶ One may find (29b)–(31b) somewhat awkward. This is arguably due to subtle pragmatic interactions between the lexically encoded meaning of *sika* and contextual information. The primary meaning of *sika* raises the possibility that people other than Yoko’s mother will not come to the parent-teacher meeting. Since a parent-teacher meeting cannot be held without a parent, this invokes the expectation that Yoko’s mother will come. The follow-up sentence contradicts this expectation, and is felt to be odd. Importantly, there is a clear contrast between the slight awkwardness of (29b)–(31b) and the catastrophic presupposition failure of (23b)–(25b).

- a. Demo, titioya-mo kuru-kamosirenai. (= (26b))
 b. Demo, hahaoya-wa ko-zu, titioya-ga kuru-kamosirenai. (= (26a))
- (31) Sansya-mendan-ni-wa hahaoya-sika ki-masen-ka?
 parent.teacher-meeting-to-TOP mother-SIKA come-NEG.POL-Q
 ‘Will only her mother come to the parent-teacher meeting?’
- a. Iie, titioya-mo ki-masu. (= (28b))
 b. Iie, hahaoya-wa ko-zu, titioya-ga ki-masu. (= (28a))

To summarize, the comparison of *dake* and *sika* to *mo* reveals that, unlike the presupposition of *mo*, the secondary assertions of *dake* and *sika* are not projective. Thus, these meaning components are indeed secondary *assertions* (or entailments). We are then faced with the following question: what does it mean to label this meaning component ‘secondary’?

2.3. Attempts at making sense of secondary assertions

The discussion above makes it clear that the secondary assertion of *dake* and *sika* is neither a presupposition nor a CI. However, providing a negative characterization is only the first step; evidently there is more to be said about what it exactly means for some meaning component to be ‘secondary’ and simultaneously part of the assertion proper. Before giving our own answer to this question, we will briefly review some relevant previous literature.

Among the various ideas entertained in the literature, Horn’s (2002, 2017) work on *almost* and *barely* in terms of *assertoric inertia* is perhaps the most famous. According to Horn, an assertorically inert entailment is something that the interlocutors cannot directly take issue with, but which nonetheless is part of what is entailed by the sentence (thus, the hearer is obliged to take the speaker being committed to its truth). This is precisely what a secondary assertion is. However, Horn does not address the crucial question of how a meaning component that is strictly entailed by the sentence can be both non-projective and non-at-issue. The standard three-way classification of meaning into assertion, presupposition, and CI does not leave room for a type of meaning with such a profile. Incidentally, Amaral (2010: 531), using the ‘family of sentences’ test, shows that the polar proposition of *almost/barely* is not projective. For example, saying *Perhaps John almost missed the train* does not necessarily implicate that John did not miss the train, and examples such as *Perhaps John barely missed the train* do not necessarily implicate that John missed the train.

Yoshimura’s (2007) proposal regarding *dake* and *sika* is similarly unsatisfactory. Yoshimura argues that the secondary assertion of *dake* and *sika* corresponds to ‘entailment’ rather than an at-issue assertion or assertorically inert meaning. However, in standard terminology, entailment and assertion are (almost) synonyms, and Yoshimura herself does not clarify the difference between the two notions; thus, Yoshimura’s analysis simply rephrases ‘secondary assertion’ as ‘entailment’, without clarifying the nature of the relevant meaning component.

The recent CI literature is highly relevant in this connection: The controversy

centers on the question of whether CIs are uniformly projective (e.g. Amaral et al. 2007, Harris and Potts 2009, Sawada 2018). In view of this debate, one might consider treating the secondary assertion as (a subtype of) non-projective CI. In fact, in a paper that proposes a fine-grained six-way classification of non-at-issue meanings, Oshima (2016) notes that some English words such as *only* and *almost* have the function of updating the context, meaning that they are not typical presuppositions, and that they are obligatorily interpreted locally (unlike typical CIs) when embedded under attitude verbs. Oshima's system may be able to accommodate secondary assertions and capture their relation to better known types of non-at-issue meanings; but even so, a meaning component that updates the local context is by definition an entailment; Therefore, the question of how to characterize its 'secondary' nature still needs to be clarified.

Thus, many authors agree that certain words within natural language, such as the exclusives *dake* and *sika* and polar approximatives *almost* and *barely*, express meanings that are neither projective nor at-issue. Prototypical non-at-issue meanings (i.e., presuppositions and CIs) are standardly taken to be robustly projective; thus, the status of a meaning component with this profile is unclear. Clarifying this question is important in view of the broader classification of different types of uncancellable meanings. In the next section, we offer an initial step in clarifying the nature of secondary assertions, by formulating an explicit analysis of *dake* and *sika* in terms of the maximality operator, and by treating secondary assertions as *derived entailments*, which are essentially indirect logical consequences of the lexically encoded meanings of *dake* and *sika*.

3. Analysis: *dake* and *sika* as maximality operators

Our analysis of *dake* and *sika* builds on two key concepts: Tomioka's (2015) analysis of *dake* in terms of the maximality operator, and Kubota's (2012) proposal that an uncancellable entailment of a proposition can be a logical consequence of accepting both the directly asserted meaning and a piece of information (typically, a presupposition) that supports the asserted meaning. We argue that the primary/secondary distinction in the meanings of *dake* and *sika* falls out naturally from an analysis that identifies the secondary meaning as a derived entailment triggered by the definedness condition of a hidden maximality operator. The difference between *dake* and *sika* follows from the way in which maximality is encoded in the two focus particles.

3.1. *Dake* as a positive maximality operator

We start with the analysis of *dake*. Tomioka's (2015) proposal is based on the idea that *dake* is etymologically associated with a 'maximal degree' meaning and that the exclusive focus particle use was a later development that arose out of the degree meaning. In contemporary Japanese, *dake* retains the older degree-delimiter meaning when it is combined with numerals:

- (32) 5-en kitte-o 100-en-dake kudasai.
 5-yen stamp-ACC 100-yen-DAKE give.me.please
 ‘Please give me 100-yen worth of 5-yen stamps.’ (Futagi 2004: 161)

Tomioka then proposes that sentences like (33) can be paraphrased along the lines of (34).

- (33) Mary-dake-ga ki-ta.
 Mary-DAKE-NOM come-PST
 ‘Only Mary came.’
 (34) *At most* one person (= Mary) came.

This analysis can be achieved by assigning the following meaning to *dake*:

- (35) $\llbracket \text{dake} \rrbracket = \lambda X \lambda P. \mathbf{max}_C(P) = X$

(35) is identical to Tomioka’s formulation, except that the contextual parameter C (technically a free variable) is added, designating the contextually relevant set of individuals (see Ido (2016) for the justification for making reference to this context set).⁷ X is a possibly plural individual and it is identified as the maximal individual that satisfies the property P in the current context.

Tomioka does not spell out the definition of **max**, but its exact definition becomes crucial when we consider the statuses of the primary and secondary assertions of *dake* and *sika*. We adopt the following definition for the maximality operator:

- (36) $\mathbf{max}_C(P) = \iota X : \underline{\neg \exists Y. Y \in C^* \wedge X < Y \wedge P(Y)}. P(X)$

This says that **max** returns some possibly plural individual satisfying the property P . The definedness condition (underlined) of the operator imposes the additional restriction that this individual is the largest within the relevant context satisfying P . The intuition here is that the definedness condition ensures that **max** picks up not just any individual satisfying P but the largest one among such individuals. This could be thought of as a type of presupposition, but it is different in nature from prototypical types of presupposition (such as the additive meanings *mo* in Japanese and *too* in English) in that checking this condition can be done in the strictly local context, without access to the global context corresponding to the common ground shared by the interlocutors. This point will be discussed in more depth below.

Based on the lexical meaning of *dake* in (35), the meaning of (37) comes out as in (38).

- (37) John-to-Bill-dake-ga ki-ta.
 John-and-Bill-DAKE-NOM come-PST
 ‘Only John and Bill came.’
 (38) $\mathbf{max}_C(\text{come}) = \mathbf{j} \oplus \mathbf{b}$

⁷ Tomioka’s (2015: 136) original definition reads $\llbracket \text{dake} \rrbracket = \lambda x \lambda P. \mathbf{max}(P) = x$.

Suppose that the contextually relevant individuals are John, Bill and Peter. Then C^* is the set of all (plural or singular) individuals in C , namely:

$$(39) C^* = \{\mathbf{j}, \mathbf{b}, \mathbf{p}, \mathbf{j} \oplus \mathbf{b}, \mathbf{b} \oplus \mathbf{p}, \mathbf{j} \oplus \mathbf{p}, \mathbf{j} \oplus \mathbf{b} \oplus \mathbf{p}\}$$

It then follows that (37) is true just in case John and Bill came but Peter did not. In particular, when nobody came, (37) is intuitively false (rather than infelicitous). This is predicted correctly. When there is no individual that satisfies P , \mathbf{max} returns the bottom element $\mathbf{0}$ of the plural semilattice. In such a case, (38) is simply false, because the equation $\mathbf{0} = \mathbf{j} \oplus \mathbf{b}$ does not hold.

However, one issue needs to be addressed here. As it is, the maximality-based analysis is too weak. Unlike what (37) intuitively means, (38) is compatible with a situation in which John and Bill were the only people under consideration and where they both did in fact come. Tomioka proposes strengthening the meaning of *dake* via a Roothian focus semantic import (Rooth 1992) or by assigning a mirative meaning to *dake* (cf. Zeevat 2009). Alternatively, we may require that in (35), X is a proper subset of C .⁸

One may still wonder—as an anonymous reviewer astutely did—whether this approach extends to cases involving disjunction, where a plurality-based approach for conjunction of the sort sketched above does not seem viable:

- (40) John-ka-Bill-dake-ga ki-ta.
 John-or-Bill-DAKE-NOM come-PST
 ‘Only John or Bill came.’

We propose analyzing cases like (40) by treating disjunctive NPs such as *John-ka-Bill* as an (indefinite-type) quantifier of type $\langle\langle e, t \rangle, t \rangle$ which introduces an individual that is either John, Bill, or the individual sum of John and Bill:

$$(41) \llbracket \text{John-ka-Bill} \rrbracket = \lambda P. \exists Y. [Y \neq \mathbf{0} \wedge Y \leq \mathbf{j} \oplus \mathbf{b}] \wedge P(Y)$$

By feeding the property in (42) to this GQ-type denotation of the disjunctive nominal, we obtain (43).⁹

$$(42) \llbracket \lambda X. X\text{-dake-ga ki-ta} \rrbracket = \lambda X. [\mathbf{max}_C(\mathbf{come}) = X]$$

$$(43) \exists Y. [Y \neq \mathbf{0} \wedge Y \leq \mathbf{j} \oplus \mathbf{b}] \wedge \mathbf{max}_C(\mathbf{come}) = Y$$

With $C = \{\mathbf{j}, \mathbf{b}, \mathbf{p}\}$ (as above), (43) is true just in case—among the three individuals John, Bill and Peter—either John came and the other two didn’t or Bill came and the other two didn’t or John and Bill came and Peter didn’t. The last reading may

⁸ In this connection, Beaver and Clark’s (2008) proposal on *only* in English is instructive. On their analysis, which employs a maximality operator similar to our proposal, the exclusive inference of *only* arises as a consequence of a presupposed expectation of a stronger answer to the ‘Current Question’. This is precisely what is needed to exclude the infelicitous reading under discussion.

⁹ Although we remain agnostic about the details of syntax, one way to obtain (42) would be to QR the disjunctive quantifier in (41) from its surface position.

be difficult to obtain in plain declarative sentences such as (40), but this is arguably due to the Gricean quantity implicature.

Let us now see how the maximality-based approach above explains the different statuses of the primary and secondary assertions of *dake*. Given the meaning of *dake* and the definition of **max**, the primary assertion of (37) ('John and Bill came') follows from the asserted content of the sentence alone. Given that **max** contributes the information that *P* holds of whichever individual *X* it identifies as the 'maximal individual', by equating this individual to the plural entity that consists of John and Bill, it follows that both John and Bill did come.

By contrast, the secondary assertion, namely the entailment that people other than John and Bill didn't come, arises more indirectly. Note that it does not follow from either the asserted content or the definedness condition of **max** alone. The asserted content merely concerns John and Bill. On the other hand, the definedness condition of **max** imposes a condition on *Y* (cf. (36)), which is a plural entity that contains *X* as its proper subpart, that there is no such *Y* that satisfies *P*. However, it cannot be determined whether *Y* as a totality satisfies *P* without first knowing whether *X* satisfies *P* (for if *X* does not satisfy *P*, then it trivially follows that *Y* as a totality does not either). The definedness condition can serve the intended role of excluding elements other than *X* only if we independently know that *P*(*X*) is true (the primary assertion).

Because of the indirect way in which it arises, there is a sense in which the secondary assertion is not really what the sentence is mainly 'about'. This difference in status is crucial when accounting for the different roles that the primary and secondary assertions play in certain types of discourse, such as the sort observed in Section 2.1. That is, in a discourse sequence such as Kuno's (1999a) examples (6) and (7), where the main point of the follow-up sentence is to provide an explanation for the preceding utterance, it is only natural that the more straightforwardly available primary assertion is identified as the target of explanation. The secondary assertion, which is after all an indirectly derived entailment, does not stand out saliently enough to support the relevant causal discourse relation in the two sentences in examples such as (6) and (7).

Our characterization of the secondary assertion may seem somewhat puzzling, as it seems to admit the existence of a type of (indirect) uncancellable implication that is, by itself, neither an entailment nor a presupposition (nor a 'Pottsian CI' in its original sense). However, this is by no means an unprecedented idea. In a somewhat different context (specifically, the analysis of the equative comparative expressions *izyoo(-ni)* and *gurai*), Kubota (2012) calls an uncancellable implication of a sentence that arises as a logical consequence of accepting both the presupposition and the assertion of the sentence a *derived entailment*. The secondary assertion of *dake* is then another type of derived entailment, triggered by the definedness condition of the **max** operator.¹⁰

¹⁰ Von Stechow's (1999) 'Strawson entailment/validity' (in the wider sense; not the narrower, more commonly invoked notion of 'Strawson downward entailment') pertains to the same idea.

Despite the asymmetrical statuses of the primary and secondary assertions as direct versus derived entailments, the present account treats both meanings as part of the strictly entailed content of the (smallest) proposition in which *dake* occurs. In particular, unlike a presuppositional (or CI) account, our approach does not incorrectly predict that the secondary assertion would project beyond truth-functional operators such as conditional and interrogative operators.

To appreciate this point more concretely, let us observe the following example:

- (44) John-to-Bill-dake-ga ku-reba, Mary-wa ie-de
 John-and-Bill-DAKE-NOM come-COND Mary-TOP home-at
 paatii-o suru.
 party-ACC hold
 ‘If only John and Bill come, Mary will hold a party at home.’

This sentence is neutral about whether people other than John and Bill will come to the party; they may or may not. A presuppositional account that takes the secondary meaning (i.e., the exclusive proposition) as a presupposition would wrongly predict (44) to be felicitous only in situations where it is already taken for granted that people other than John and Bill will not attend the party. Our maximality-based analysis assigns the following meaning to (44):

- (45) $[\max_c(\text{come}) = j \oplus b] \rightarrow \text{hold-party-at-home}(m)$

This says that Mary holds a party on the condition that only John and Bill (and nobody else) are visitors. There is an invited inference that in other situations (e.g., when only one of them comes or more than the two people come) there will not be a party, but this inference is easily defeasible. This captures the truth conditions for (44) correctly.

One might think that a presuppositional account could be saved by invoking local accommodation. For example, in (44), the presupposition triggered by *dake* is satisfied in the local context (i.e., in the antecedent of the conditional clause), rather than projecting up all the way to the global context. However, on such an account, it remains to be explained why certain types of presuppositional meanings are susceptible to local accommodation while others (e.g., the additive meanings of *too* and *also*) are not. One way of seeing the relationship between the present account and a presuppositional alternative is that the present account offers a principled explanation for the non-projective behavior (or, more precisely, the non-obligatoriness of projection) of the secondary assertion of *dake*. Under the present approach, the ‘local accommodability’ of the secondary assertion falls out naturally from the fact that it is tied to the definedness condition of the maximality operator. That is, when the maximality operator is interpreted in a local context (e.g., in the antecedent of a conditional clause), its definedness condition is checked against this local context. In such cases, the prediction is virtually indistinguishable from a (presuppositional) local accommodation account. In this sense, the two approaches are similar but distinct. In particular, the secondary assertion is different in nature

from a presupposition in the Stalnakerian sense (i.e., being in the context set). One might call it ‘co-supposition’, in the sense that it is taken into account *together with* the primary assertion when determining the truth conditions of the proposition. However, it does not play as prominent a role as the primary assertion in the main ‘narrative’ of the discourse.

3.2. *Sika* as a negative maximality operator

According to Kuno (1999a), *sika* is a mirror image of *dake*. Our analysis formalizes this key idea by using the **max** operator. Since the primary meaning of ‘X-*sika* P-*nai*’ is a negative statement about the complement of X rather than X, the meaning of *sika* can be formalized as follows:

$$(46) \llbracket \text{sika} \rrbracket = \lambda X \lambda Q. \mathbf{max}_C(Q) = \mathbf{max}_C(\lambda y. y \not\in X)$$

We assume that *Q* in (46) is a negative predicate—this dependency between negation and *sika* can be ensured by a syntactic feature-passing mechanism of some sort.

Note that this analysis requires *sika* to be syntactically a sister of a negated predicate, rather than being c-commanded by negation. The idea that a *sika* NP appears outside the c-commanding domain of negation has occasionally been proposed in the literature (e.g. Shoji 1986 and Kataoka 2006). Shoji’s (1986) analysis can be seen as a precursor of (46), and Kataoka (2006) provides explicit evidence supporting the non-c-commanding syntactic relation between negation and *sika* with data involving the scopal interactions between *sika* and quantifiers.¹¹

Given these assumptions, the translation for (47) comes out as in (48).

(47) John-to-Bill-sika ko-nakat-ta.
John-and-Bill-SIKA come-NEG-PST
‘Only John and Bill came.’

$$(48) \mathbf{max}_C(\text{-come}) = \mathbf{max}_C(\lambda y. y \not\in \mathbf{j} \oplus \mathbf{b})$$

Assuming (as above) that $C = \{\mathbf{j}, \mathbf{b}, \mathbf{p}\}$, (48) is true just in case the maximal indi-

¹¹ *Dake* and *sika* are known to contrast with one another in terms of cleft sentence formation:

- (i) a. Ki-ta-no-wa John-dake-da.
come-PST-NMLZ-TOP John-DAKE-COP
‘Only John came.’
b. *Ko-na-katta-no-wa John-sika-da.
come-NEG-PST-NMLZ-TOP John-SIKA-COP

A reviewer correctly notes that the unacceptability of (ib) does not fall out from our semantic analysis alone. We believe that this is essentially a syntactic phenomenon, perhaps reflecting a lack of nominal property of *sika*-marked NPs (Aoyagi 2007; note that *sika* is a so-called *kakari-joshi*). Alternatively, *sika*-marked NPs may occupy a topic position in the sentence (Shoji 1986: 182), thereby conflicting with the topic marking on the nominalized clause in (ib).

vidual satisfying the property $\neg\mathbf{come}$ is Peter. This is equivalent to saying that John and Bill came and Peter did not. Thus, it correctly follows that (47) is truth-conditionally identical to (37).

For disjunction sentences such as (49), we obtain the result in (50).

- (49) John-ka-Bill-sika ko-nakat-ta.
 John-or-Bill-SIKA come-NEG-PST
 ‘Only John or Bill came.’
- (50) $\exists Y.[Y \neq \emptyset \wedge Y \leq \mathbf{j} \oplus \mathbf{b}] \wedge \mathbf{max}_c(\neg\mathbf{come}) = \mathbf{max}_c(\lambda y.y \not\leq Y)$

This is equivalent to the denotation of the *dake* counterpart of the disjunction sentence in (43).

By analyzing *sika* as in (46), it follows that the primary and secondary statuses of the two meaning components are reversed from the case of *dake*. Identifying the set of individuals excluding X (i.e., the referent of the *sika*-marked NP) as a plural entity satisfying the negated property amounts to saying that the exclusive implication is an entailment that follows from the assertion of the sentence alone (i.e. primary assertion). By contrast, the positive entailment about X now receives the status of a derived entailment. As with the derived entailment of *dake*, this meaning does not directly follow from either the assertion of the sentence or the definedness condition of the \mathbf{max} operator (for $\neg\mathbf{come}$) alone. In particular, the definedness condition merely states that it is not possible to extend the plural individual identified by the \mathbf{max} operator so that $\neg\mathbf{come}$ uniformly holds of that larger individual. Without ensuring that $\neg\mathbf{come}$ holds of the smaller individual, having this information alone is insufficient to determine whether the elements that are ‘added’ to it satisfy $\neg\mathbf{come}$ or not. Thus, the secondary status of the derived entailment falls out in exactly the same way as with *dake*.

Moreover, the non-projective behavior of the secondary assertion is correctly predicted. As with *dake*, the secondary assertion derives from the definedness condition of the \mathbf{max} operator. The definedness condition can be calculated in the local context in which the \mathbf{max} operator is evaluated. Thus, it does not necessarily project up to the global context. To summarize, the present approach captures both the similarities and differences between *dake* and *sika* by formalizing the key intuition behind Kuno’s (1999a) proposal in terms of the maximality operator.

3.3. Interim conclusion and open issues

At this point, we would like to take a broader view and comment on the larger implications of our proposal, as well as identify open issues for future research. We have thus far deliberately focused on simple examples with individual-denoting nominals for which discourse pragmatic factors are negligible, but the actual empirical landscape is significantly more complex. In this section, we comment briefly on some loose ends that seem to indicate the most promising avenues for future exploration.

First, some comments are in order on the bigger picture; for this purpose, it is useful to return to the key concept behind the asymmetricist approach to

- (52) a. $\max_C(\lambda x. \text{know-this-hotspring}(x)) = \{\mathbf{jp}\}$
 b. $\max_C(\lambda x. \neg \text{know-this-hotspring}(x)) = C \setminus \{\mathbf{jp}\}$ (where \setminus denotes set complement)

The truth conditions in the *dake* and *sika* versions come down to essentially the same thing: Only **jp** satisfies the property of knowing this hot spring (as a kind), to the exclusion of **am** (Americans), **ch** (Chinese), **fr** (French), and so on. Both (52a) and (52b) tolerate exceptions among the Japanese.

One possible objection we can foresee is that (51) intuitively makes a much weaker claim than what is encoded in (52) (the effect may be more vivid with *sika*): (51) seems to be merely saying that at least some Japanese know the hot spring, not that the hot spring is known to Japanese ‘in general’. To see whether a genericity-based approach can be upheld against this criticism, the issue of what counts as evidence for supporting a generic claim (and what count as exceptions) needs to be clarified (see Leslie and Lerner (2016) for a recent overview). It may be that, when making exclusive claims like those exemplified by (51), the relevant conditions can be relaxed. Since this is a rather complex and subtle issue, we will not explore it further here. Instead, we would like to make just one observation: simply equating (51) with an existential statement is arguably a highly questionable move. Suppose Taro is the only person who knows the hot spring, and he happens to be Japanese. Is this fact alone enough to make (51) true?

Second, one may wonder—again, as some of the anonymous reviewers did—whether the present proposal can be extended to cases with numerals and scalar expressions (assuming that such cases are empirically similar enough to the nominal cases that are considered above). For example, does a suitably extended meaning of *sika* give correct truth conditions for sentences such as the following?

- (53) *Kyonen-wa eiga-o san-bon-sika mi-nakat-ta.*
 last.year-TOP movie-ACC three-CL-SIKA see-NEG-PST
 ‘Last year I saw only three movies.’

We can speculate that in this case, the sentence is making a claim about the maximal set of (decreasingly) ordered natural numbers whose members make the statement ‘I saw x movies last year’ false. The number three is then the cut-off point, such that we need to exclude it (and any smaller number) to satisfy the condition. This is of course only a sketch of a beginning, and it remains to be seen whether an adequate analysis can be developed along these lines.¹²

Finally, there are cases in which *dake* and *sika* seem to be interchangeable with one another (see footnote 5), as one reviewer reminds us. Such cases are potentially problematic for proposals that simply treat *dake* and *sika* as mirror

¹² We would like to thank a reviewer for alerting us to the vexing issue that awaits if we naively step into the domain of scalar expressions (e.g., 20cm-*sika*). The domain of degrees is dense, from which it follows that a maximal degree (not satisfying some endpoint) is undefined. We leave it to future research to determine whether our approach can be suitably modified to circumvent this issue.

images. Our proposal can be thought of as an attempt to save the ‘dual’ meaning analysis from precisely this type of criticism. By treating both the primary and secondary assertions as entailments (in the completely standard sense), it is in principle compatible with this ‘chameleon-like’ nature of *dake* and *sika* (Karttunen et al. 2014), where they sometimes look similar, and sometimes different.

However, we acknowledge that our proposal still leaves one crucial issue unaddressed: what exactly are the conditions under which the difference between *dake* and *sika* is neutralized? We noted briefly in footnote 5 that the contrast seems to disappear in an objective-report type context, but the empirical picture is much more complex. Instead of trying to resolve this issue, we simply reproduce the suggestive data offered by two reviewers:

- (54) a. Suki-na mono-dake-o taberu-no-wa karada-ni
fond-COP thing-DAKE-ACC eat-NMLZ-TOP body-DAT
yoku-nai.
good-NEG
‘It is not healthy to eat only what you like.’
- b. Sotogawa-dake tabe-teiru no?
outer.part-DAKE eat-IPFV Q
[Context: Looking at a friend who is eating only the skin of a dumpling.]
‘Wow, you’re eating only the skin? (That seems really bland...)’

In (54a) *dake* seems to have much the same meaning as *sika* since the main point of the sentence is the inadequacy of an unbalanced diet (where the implicit alternative of maintaining a balanced diet, which in a *sika* sentence would correspond to the primary assertion, is contextually prominent due to world knowledge). In (54b), too, pragmatics and world knowledge seem to play a key role because eating only the skin of a dumpling and not the filling is unusual behavior that calls for an explanation. What’s going on in (54a) and (54b) is that when the contrast between ‘normal’ and ‘abnormal’ is salient in the discourse, the primary/secondary distinction is masked by this more prominent opposition. A possible line of attack we can currently see would be to develop a model that takes into account pragmatic factors (such as QUD (question under discussion)) properly (which is a necessary extension anyway). In fact, recent work on *only*, such as Beaver and Clark (2008), Roberts (2011) and Coppock and Beaver (2014), seems to be moving in exactly this direction; therefore we find this a particularly promising line to develop in future research.¹³

¹³ Another puzzle (as noted by an anonymous reviewer) pertaining to interactions with discourse-oriented factors is the behavior of *dake-wa*, as exemplified in (i). Here, *dake* seems to contrast with *dake-wa* regarding which of the two propositions is the target of the embedding operator/predicate (see also Oshima to appear).

(i) Oyazi-ga Ken-{dake/#dake-wa/#wa} kawaigaru-no-ni-wa
father-NOM Ken-DAKE/DAKE-TOP/TOP love-NMLZ-DAT-TOP

4. Related phenomena

Is the maximality-based analysis applicable to phenomena other than *dake* and *sika*? To shed light on this question, we discuss two related phenomena in this section: the exclusive particle *igai* in Japanese (Section 4.1), and the approximative polar adverbs *almost* and *barely* in English (Section 4.2). Our discussion below reveals that *igai* should be analyzed in a different way from *dake* and *sika*, while the maximality-based approach is potentially applicable to *almost* and *barely*. The case of *igai* makes it clear that this approach should not be mechanically applied to exclusive meanings based merely on superficial similarities in meaning, while the case of *almost* and *barely* suggests that for phenomena that share some deeper property in common with *dake* and *sika* (non-at-issue, non-projective entailments), a derived entailment-based account may turn out to be useful.

4.1. *Igai*

One may wonder whether the **max** operator-based approach is applicable to any expression that has an exclusive meaning. Contrasting the behavior of *sika* with the superficially similar expression *igai* suggests that it is not. For example, (55) can be taken to consist of a positive proposition ('Taro drank water') and an exclusive proposition ('Taro didn't drink anything else').

- (55) Taroo-wa mizu-igai noma-nakat-ta.
 Taro-TOP water-IGAI drink-NEG-PST
 'Taro didn't drink anything but water.'

Igai conveys the exclusive proposition as a primary assertion, much as *sika* does. We can see this point from the parallel behavior of *igai* and *sika* as opposed to *dake* in (56) and (57) (the *dake* and *sika* versions of these sentences are repeated from Section 2; see (18) and (19) for the gloss). These examples show that *igai* exhibits the same pattern as *sika*. Thus, we can conclude that the exclusive proposition is the primary meaning of *igai*.

- (56) {Mizu-dake nome-ta/#Mizu-{sika/igai} nome-nakat-ta}-node, suusyuukan-wa iki-rare-ta.
 'Thanks to at least having water to drink, I could survive for several weeks.'
 (= (18))

komaru-na. Mari-ga kawaisoo-da.
 be.troubled-COP Mari-NOM pitiful-COP
 'I find it awkward that my father cares about only Ken. I feel sorry for Mari.'

It should be noted that the judgment pattern of *dake-wa* in (i) aligns with that of the contrastive *wa* alone. We leave it for future research to investigate the properties of *dake-wa* sentences (see Hara (2007) for further discussion; see also Tomioka (2010) for the general pragmatic properties of contrastive *wa*), but the infelicity of (i) with *dake-wa* arguably comes from the function of contrastive *wa*, having nothing to do with (the status of) the exclusive meaning of *dake* per se.

- (57) {#Mizu-dake nome-ta / Mizu-{sika/igai} nome-nakat-ta}-node, ue-ni kurusime-rare-ta.
 'Because I could drink only water, I suffered from hunger.' (= (19))

These data show the similarity between *sika* and *igai* in this respect. However, aside from the obvious difference that *igai* does not require a negative predicate, there is an important difference between them. Specifically, as pointed out by Kataoka (2006: 200), unlike *sika*, the positive proposition of *igai* can be canceled. The following example illustrates this point:

- (58) Hansuu-izyoo-no gakusei-ga zibun-no
 half-more-GEN student-NOM self-GEN
 sidoo-kyooin-[#]to-sika/igai-to} hanas-anai. Sono
 advising-teachter-with-SIKA/IGAI-with speak-NEG those
 ooku-wa sidoo-kyooin-to-mo hanas-anai.
 many-TOP advising-teachter-with-even speak-NEG
 'More than half the students talk to advisors only. Many don't even talk to advisors.'

As discussed in the previous section, the meaning of *sika* contains a **max** operator; therefore, the positive proposition of the *sika* sentence cannot be canceled because it arises as a derived entailment from the lexical meaning of *sika*. The cancellability of the positive proposition of *igai* suggests that the **max** operator-based analysis is not appropriate. Instead, the positive proposition of *igai* is simply a Gricean quantity implicature, as noted by Kataoka.

This discussion should make it clear that the maximality-based analysis we proposed for *dake* and *sika* is not applicable to all types of exclusive particles. This analysis predicts that the secondary meaning is uncancellable. The behavior of *igai* shows that this is not always the case and that superficially similar 'dual' meanings can arise out of conversational implicature as well.

4.2. The primary/secondary assertion distinction apart from *dake* and *sika*

Then, is there any other phenomenon for which a maximality-based analysis is appropriate? An obvious candidate is the 'assertorically inert' entailments of *almost* and *barely*. While it is beyond the scope of the present paper to offer a full-fledged analysis of *almost* and *barely*, we would like to comment briefly on the possibility of extending the maximality-based analysis of secondary assertions to these words. The key underlying idea of Horn's (2002, 2017) analysis of *almost* and *barely* is that the approximate implication is the main assertion (corresponding to our primary assertion) whereas the polar implication is 'assertorically inert' (corresponding to our secondary assertion; see Section 2.1).

Below, we focus on examples with scalar predicates such as (59), for which a scale-based analysis underlying Horn's proposal is directly applicable. We set aside the more complex cases such as (8) and (9) from Section 2.1 that seem to involve scalar coercion of some sort.

- (59) a. The tank is almost half full (so we do not need to stop at a gas station).
Approximate: The tank is nearly half full. / **Polar:** The tank is not half full.
- b. The tank is barely half full (so we need to fill it up before getting onto the highway).
Approximate: The tank is nearly not half full. / **Polar:** The tank is half full.

In a maximality operator-based approach, the case of *almost* and *barely* can be analyzed along the following lines. *Almost* identifies the maximal degree of ‘fullness’ for the tank as falling slightly below the midpoint. This can be roughly written as (60) (we say ‘roughly’ here partly because of the technical issue of denseness of degrees; cf. footnote 12):

$$(60) \quad \mathbf{max}(\lambda d.\mathbf{full}(\mathbf{the-tank})(d)) \approx d' \wedge d' = \mathbf{mid-point}$$

Given the definition of the **max** operator (see (36)—in (60), it essentially says ‘choose some degree d such that the tank is at least d -full (assertion); make sure that d is the unique maximal element that satisfies this property (definedness condition)’), it straightforwardly follows from the truth conditional component of (60) alone that the fullness of the tank is *at least* close to the midpoint. However, the polar implication that it fails to reach the midpoint follows only by taking into consideration the fact that the degree in question is indeed the maximal one, that is, by taking into consideration the definedness condition of **max**. Therefore, the ‘secondary’ nature of the polar implication follows in essentially the same way as in the case of *dake* and *sika*.

Barely can be analyzed similarly. Here, we are looking at the scale from the ‘opposite’ perspective. Thus, *barely half full* means that the minimum degree d that satisfies the description ‘the tank is not d -full’ is slightly above the half-full point. From this, it follows that the fullness (or *non*-fullness) of the tank falls somewhere near the midpoint (beyond which it counts as ‘not half full’). But the polar implication (i.e., that the tank is indeed half full) does not follow unless it is guaranteed that the degree in question is actually the *lowest* one satisfying the property of ‘not d -full’. Thus, this implication is a derived entailment just like the polar implication of *almost*.

Much more work is clearly needed to extend this approach to a full-fledged account, but we believe that this sketch at least suggests a promising direction for making the key intuition behind Horn’s treatment of *almost* and *barely* more precise. The range of data for which a maximality-based analysis of ‘secondary’ assertions is applicable may in fact be larger, given the recurrent observation in the literature (Tonhauser et al. 2013, Potts 2015, Oshima 2016) that the alleged projective meanings of certain expressions (such as the translational equivalent of *only* in Guaraní (Tonhauser et al. 2013: 89)) tend to be accommodated in the local context more easily than expected by a ‘projective meaning’ analysis. Such a profile does not fit neatly into the current taxonomy of ‘projective’ content (but see

Oshima (2016) for a refinement of Tonhauser et al.'s (2013) classification that may fare better), and the theoretical status of such meaning components is unclear. It is tempting to speculate that non-at-issue entailments of some of these expressions could be treated as secondary assertions, as we have argued for in the case of *dake* and *sika*.

5. Conclusion

Potts concludes his recent overview of presupposition and implicature with the following remark:

Perhaps all this talk of splitting and lumping is misguided, though. What we need are rich theories of properties like 'conventional,' 'backgrounded,' and 'projective,' the way those properties interact, and the effects of those interactions on language and cognition. Clustering different combinations of these properties using labels like 'presupposition' and 'implicature' does not necessarily help with these theoretical challenges, and it might even lead us astray, by suggesting boundaries where there are none. It is easy to imagine future theoretical developments leading us drop all of these terminological distinctions in favor of more abstract concepts from language and social cognition. (Potts 2015: 192–193)

The recent 'projective content' literature has indeed seen an explosion of phenomena that have been dubbed in various ways. While this type of pre-theoretical classification is useful, the time seems right to take stock and move on. As Potts reminds us, taxonomies are after all taxonomies and they sometimes obscure the underlying principles governing the superficially observed patterns.

The goal we set to ourselves in this paper was a modest one: to clarify the nature of *dake* and *sika* by building on both descriptive and theoretical studies. We approached the problem by identifying the theoretical mechanisms that best explained the empirical patterns. This led to a proposal that makes sense of the 'secondary assertions' of *dake* and *sika* in terms of derived entailments arising from the definedness condition of the maximality operator. As argued above, this analysis offers a conceptually natural explanation for two important empirical properties of the secondary assertions of *dake* and *sika*: non-at-issueness and non-projectivity. While such a property may appear puzzling from the viewpoint of a predefined taxonomy of non-at-issue meanings, it makes sense when we recognize the source of this secondary meaning and the role it plays in the interpretation of the sentence. The secondary assertion arises as a logical entailment of what makes the **max** operator (which is hidden inside the lexical meaning of an exclusive) what it is. Such an aspect of meaning is not in the central focus of what is being asserted using that operator. But when the exact truth-conditional import of the statement matters (e.g., when the relevant proposition constitutes the antecedent of a conditional sentence), this aspect of meaning needs to be taken into account since it nontrivially affects the truth conditions of the entire sentence. Thus, the derived entailment analysis offers a principled explanation for when the implication in

question matters and when it doesn't.

As Potts (2015) anticipates, the next step in the non-at-issue meaning research is likely to involve a radical reorganization of the current taxonomy and attempts to discover the deeper, underlying principles and interacting factors. The analysis of *dake* and *sika* we have offered in this paper can be thought of as a modest first step in this direction, and we hope that it will contribute to the progress of future research in this exciting area of semantics and pragmatics.

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【要 旨】

限定の意味を表すとりたて詞の「第二陳述」の理論的位置づけ
——日本語のダケとシカの分析——

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本論文では限定の意味を表すとりたて詞ダケとシカの分析を試みる。広く知られている Kuno (1999a) の提案では、ダケ文では肯定命題が主陳述、否定命題が第二陳述となり、シカ文では逆に否定命題が主陳述、肯定命題が第二陳述となる。この分析は魅力的だが、「主陳述」と「第二陳述」の概念の内実が明らかでない。本論文では、Tomioka (2015) による最大値演算子 (maximality operator) を用いたダケの分析に基づき、ダケとシカの第二陳述は最大値演算子の意味から副次的に生じる派生的含意 (Kubota 2012) であると分析する。このことにより、主陳述と第二陳述の区別に理論的裏付けが与えられる。提案する分析は、論理学における限定表現に関する長年の対立を新たな角度から捉え直し、そのことによりいわゆる「投射の意味」に関する最近の形式意味論・語用論分野での論争に一石を投じることを目論むものである。