A maximality – exhaustivity connection: The semantics and pragmatics of *-dake* in Japanese*

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The topic of this paper is the meaning of the Japanese expression *dake*, which is most commonly translated as *only* in English. The meaning of the English *only* is by no means simple or uncontroversial.[1] My story of *dake* is also rather complicated, but it is not a direct consequence of inheriting the known complexity of *only*. On the contrary, I argue that the semantic core of *dake* is fundamentally different from that of *only*. Despite the difference, however, the two expressions are often functionally equivalent and can describe the same state of affairs. The common practice of equating *dake* to *only* is undoubtedly based on this practical aspect, but we should be reminded that functional equivalence does not necessarily mean semantic equivalence, as there are some known cases

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[1] In Horn (1969), it is argued that *only X is Y* asserts that no non-X is Y while the 'prejacent' proposition that X is Y is presupposed. While Horn's highly influential analysis has nonetheless been challenged, the debate seems to focus on the presuppositional status of the prejacent (e.g., van Rooij and Schulz 2005, Ippolito 2008). On the other hand, the asserted or 'at-issue' nature of the exhaustive meaning is rarely questioned. One notable exception is Zeevat (2009), whose proposal will be discussed in detail later.

of such discrepancies. For instance, a definite plural and a universally quantified plural (e.g., *the students* vs. *all the students*) arguably have different semantic denotations that are nonetheless hard to distinguish in terms of truth conditions (cf. Brisson 1998). In Dayal's (2000) analysis of the Wh-scope marking structure in Hindi, the scope marking strategy is not semantically identical to the overtly wh-moved counterpart, but the two strategies are not easily distinguishable in terms of their communicative function. The current study argues that the *dake–only* comparison presents another case of this kind.

Let us begin with the informal observation that an English sentence with *only* can have two different translations in Japanese.

(1) Only Mary passed the exam.

(2) a. Mari-dake-ga   siken-ni   ukatta.
        Mari-DAKE-Nom exam-DAT pass.PAST

     b. Mari-sika siken-ni   ukar-anakatta
        Mari-SIKA exam-DAT pass-NEG.PAST

The truth conditions of the two sentences in (2) have the two components: (i) Mari passed the exam, and (ii) no other relevant people did. (2b) involves the negative concord item *XP-sika*, which mimics patterns found in other languages, such as *ne ... que XP* in French. It is sometimes regarded as a type of exceptive construction, and its interpretation, 'nothing/no one except for XP', is practically identical to that of *only*. I do not have much more to say about the meaning of *sika...nai,* however. I will assume that it has the same semantic content as *only*. Although the two versions of *only* in Japanese can describe the same situation, their interchangeability breaks down in some contexts, as Kuno (1999) and Yoshimura (2007) discovered. According to these authors, their differences boil down to the strength of their negative meaning: Informally speaking, *dake* generates weaker negative meaning than -*sika...nai* does. For instance, consider the following English example.

(3) Q: Why didn't Daisuke get the job?
     A: Because he only speaks Japanese.

The felicity of this mini-discourse shows that the negative proposition, 'Daisuke does not speak any languages other than Japanese', is readily

available with *only*. When we compare the two Japanese expressions of 'only', however, an unexpected pattern emerges.

(4) Q: Why didn't Daisuke get that job?

   a. $^{???}$ nihongo-dake hanas-eru-kara-desu.

     Japanese-DAKE speak-can-because-be

     Intended: 'Because he can speak only Japanese.'

   b. nihongo-sika hanas-e-nai-kara-desu.

     Japanese-SIKA speak-can-Neg-because-be

     'Because he cannot speak any languages other than Japanese.'

   c. hanas-eru-no-ga nihongo-dake-da-kara-desu.

     speak-can-NML-Nom Japanese-DAKE-be-because-be

     'Because Japanese is the only language that he can speak.'

Surprisingly, the use of *dake* is rather inadequate in the context above although it is perhaps not outright infelicitous. In this discourse context, *sika...nai* is a better choice, as it can more effectively communicate Daisuke's inability to speak other languages. Interestingly, however, *dake* becomes much more acceptable when it is cleifted, as is demonstrated in (4c).

    Another environment in which *dake* and *sikanai* behave differently is a conditional sentrence. Kuno (1999) notes that an *if*-clause that is interpreted as 'as long as' can embed *dake*, but not *sika...nai*.

(5) sekai-ryokou-o suru-niwa,
    world-travel-ACC do-in.order.to
    'In order to make an around-the-world trip'

   a. eego-dake hanas-er-eba ii.

     English-DAKE speak-can-if good

     'it is all right as long as (you) can speak English.'

   b. # eego-sika hanas-e-nak-ereba ii.

     English-SIKA speak-can-NEG-if good

     'it is all right as long as (you) cannot speak any other languages besides English.'

  c. # hanas-eru-no-ga eego-dake deare-ba ii.
    speak-can-NML-NOM English-DAKE be-if good

    'it is all right as long as it is only English that you can speak.'

The exhaustivity meaning of *dake* in (5a) is weakened to the extent that its contribution is almost invisible. The *-sika...nai* counterpart is pragmatically odd, which is expected since its English translation with *only* is equally infelicitous in the same context. Once again, the clefted *dake* patterns with *-sika...nai*. Previously, Kuno (1999) suggested that the positive meaning (= the prejacent) is the primary meaning of the sentence with *dake*, and the negative meaning (= the exhaustive meaning) the secondary. Yoshimura (2007), on the other hand, argued that the positive meaning is 'asserted', while the negative meaning is 'entailed' in the sense of Horn (2002). However, neither author considers the cleft data, and it is unclear at best how the clefted *dake* can elicit the negative meaning comparable to *sika...nai*.[2]

  In this paper, I offer an alternative analysis in which the exhaustivity meaning (= the negative quantification over non-weaker alternatives) is altogether absent in *dake*. I argue that the exhaustive-like meaning of *dake* is rooted in its use as a degree expression, roughly paraphrased as 'as much/many as', 'the upper limit'. In particular, it inherits the notion of 'maximality', which is common in degree expressions (cf. von Stechow 1984, Rullmann 1995) and the exhaustive interpretation is inferable from it and the additional 'mirative' import (cf. Zeevat 2009). Let us begin with Futagi's (2004) observation that *dake*, which was historically derived from *take* 'length, height, limit', can still be used as a degree expression in the contemporary Japanese, as shown below.[3]

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[2] There are a couple of relevant papers that I unfortunately cannot include in the discussion here: Ido and Kubota (2021) and Oshima (2023).

[3] In addition, there are other degree/scale expressions that come close to the meaning of 'only': *bakari*, which can alternatively mean 'approximately'. This morpheme derives from the verb *hakaru* 'to measure'. *X-kagiri* can also mean 'only X', and *kagiri* is a nominal form of the verb *kagiru* 'to limit'. Below are examples of *bakari*.

(i) a. soko-no niku-o 1-kiro-bakari kudasai.
    there-GEN meat-ACC 1-kilo-BAKARI give.me.please

(6) a. Ringo-o aru-dake/ari-ttake motte-ki-ta.
  apple-ACC exist-DAKE/exist-DAKE have-come-Past

  '(I) brought as many apples as I had.'

  b. 5-en kitte-o 100-en-dake kudasai.
  5-yen stamp-ACC 100-yen-DAKE give.me.please

  'Please give [me] one hundred yen worth of five-yen stamps.'
  = Futagi (2004, (222a))

  c. Hikkosi-ni dore-dake okane-ga kakarimasita-ka?
  moving-DAT which-DAKE money-NOM cost.PAST-Q

  'How much money did it cost (you) to move?'

My proposal is based on the intuition that *dake* maintains the connection to the degree meaning even when it is used as an exhaustive/exclusive particle. I argue that *X–dake* means something similar to 'as much/many as X,' 'X is the upper limit', or 'to the extent of X'. When we make reference to degrees, the maximality operation is often needed. For instance, comparatives require maximality (cf. von Stechow 1984, Rullmann 1995, Schwarzschild 2008).

(7) a. Anna is taller than Maria is.

  b. There is a degree d such that Anna is d-tall and d is higher than the <u>maximal</u> degree of Maria's height.

  c. Definition of the Maximality Operator *max*, Rullmann (1995, (21)):
  Let DEG be a set of degrees ordered by the relation $\leq$, then
  $max(\text{DEG}) = \iota d\ [d \in \text{DEG} \wedge \forall d' \in \text{DEG}\ [d' \leq d]]$.

The effect of maximality with *dake* is straightforwardly interpreted in (6c):

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  'Please give me one kilo of that meat over there (but you needn't be exact).'

  b. aitsu-wa niku-bakari-tabete, yasai-wa zenzen tabe-nai.
  that.guy-TOP meat-BAKARI-eat, vegetable-TOP at.all eat-NEG

  '(Every time I see him eat), that guy only eats meat and never touches vegetables.'

(8)   a.   LF of (6c): [$_{CP}$ dore-dake [λd_1 [$_{IP}$ hikkosi-ni t_1 okane-ga kakarimashita]] -ka]

b.   The meaning: {p: $\exists d \wedge$ p = [d = $max(\lambda d'$. it cost (you) d'-much money to move)] }

In this example, the complement of *dore-dake* 'how much' denotes a set of degrees, and *max* chooses the maximal degree out of that set. In applying the maximization process to the exhaustive/exclusive use of *dake*, I maintain that the maximization applies to the complement of *XP-dake* but also make the following transitional steps: (i) To avoid complications, I focus on cases of *XP-dake*, where *XP* is an entity denoting expression, (ii) the complement of *XP-dake* denotes a set of entities, and (iii) the maximization applies to the complement, yielding the maximal entity. The last step is practically identical to the semantics of definite plurals. In most cases in which degree expressions are involved, the maximization operation takes place implicitly, but I hypothesize that *dake* lexically encodes the maximization. Under this scheme, the denotation of *dake* is (9a). Unlike (7b), *max* in (9a) does not take a set of degrees but a set of entities instead.

(9)   a.   ⟦ dake ⟧ = $\lambda x.\lambda P.$ *max*(P) = x

b.   Let P be a set of atomic and plural entities, then
$max(P) = \iota x\ [x \in P \wedge \forall y \in P\ [y \leq x]]$

With this meaning of *dake*, the sentence (10a) is interpreted as (10b).

(10)   a.   Aya-to Saki-to Eri-dake-ga   ukat-ta.
Aya-and Saki-and Eri-DAKE-Nom pass-PAST

b.   The maximal individuals who passed are Aya, Saki and Eri.
≈ The people who passed are Aya, Saki, and Eri.

While (10b) describes the meaning of (10a) fairly well, something is amiss. The same discomfort is felt when we compare the two near-equivalent English sentences, *only A, B, and C passed* and *the people who passed are A, B, and C*. The definite plural paraphrase (10b) is compatible with a situation where Aya, Saki and Eri are all the students who took the exam. Clearly, however, (10a) is utterly inappropriate in such a situation, just as is the case with the English sentence with *only*. One remedy is to appeal to the Roothian focus semantic import here (Rooth 1992): Let the

NP, *Aya, Saki, and Eri* be focused and generate a non-singleton set as its focus value. Then, the existence of some entities other than three individuals must be included.

Alternatively, we can assume, following Zeevat's (2009) analysis of *only* in English, that there is a mirative (surprise) component in sentences with *dake*: The argument of *dake* was less than expected or lower than some salient standard. The following is a brief summary of Zeevat's analysis of mirativity of focus-sensitive particles.

(11)   a. Some particles add 'mirative/surprise' flavors. *even*: more than expected, *only*: less than expected, *already*: earlier than expected, *still*: later than expected, etc.

         b. The exhaustivity meaning in a sentence with *only* is derivable with focus; Even without *only*, the sentence has the exhaustive meaning, as it is typically considered as the complete (exhaustive) answer to a QUD.

         c. Thus, the mirativity is the sole meaning of *only*, and it is regarded as not-at-issue (a weak presupposition in Zeevat's term).

With the added mirativity, the meaning of (10a) is (12).

(12)   a. The maximal individuals who passed are Aya, Saki and Eri.

         b. The maximal individual (Aya & Saki & Eri) was less/fewer than expected.

(12b) cannot be satisfied unless there are others who took the test, could have also passed but didn't. As a result, the maximality becomes very close to, and practically indistinguishable from, the exhaustive meaning of *only*. Since the mirative meaning is supposed to be not-at-issue, however, the exhaustivity generated by *dake* is expected to be weaker than the English *only*.

This way of thinking the (non-)exhaustivity of *dake* paves the way to explain why the clefted *dake* becomes more like *sika...nai*. First of all, it should be noted that the cleft construction itself can generate exhaustivity. In the context where several students took the exam, uttering *It is Eri that passed the exam* means that only Eri passed the exam. However, the exhaustivity of a cleft sentence does not always match that of *only*. Consider the Japanese examples bellow.

(13) Did both Aya and Eri pass the exam?

> Iie, ukat-ta no-wa Eri-#(dake)-desu.
> No, pass-PAST NML-TOP Eri-(DAKE)-be
> 'It is #(only) Eri that passed the exam.'

The cleft construction does not have suitable exhaustivity for a negative answer to a 'both' question, and in such a situation, the addition of *dake* is necessary. To the extent that the English translation shows the same pattern, (13) may not be surprising. However, I have hypothesized that the meaning of *dake* is not the same as the English *only*. Then, why does the addition of *dake* elicit the same effect as *only*? Putting the puzzle slightly differently, we have witnessed that the clefted *dake* seems to elicit the kind of exhaustivity or negativity that is comparable to *sika...nai*. How does this strengthened exhaustivity come about? First, the cleft construction involves focus, and that is undeniable. When a clefted *X–dake* phrase is interpreted as exhaustive as *only* or *sika...nai*, what is actually focused is the particle *dake*, rather than *X* or the whole *X–dake*, which is indicated by the prosody. In the sentence (13), the focal accent is placed on the particle *dake* alone. I hypothesize that this focus pattern leads to the generation of a polar alternative, as shown below.

(14) a. ukat-ta no-wa Eri-DAKE-desu.
        pass-PAST NML-TOP Eri-DAKE-be
    b. {Eri is the maximal individual who passed, Eri is not the maximal individual who passed}

Before discussing how these alternatives are made use of, it is necessary to examine the second alternative: Eri is not the maximal individual who passed. Technically speaking, this sentence is true either if Eri and someone else passed or if Eri herself did not pass in the first place. However, there are good indications that the sentence (14a) presupposes that Eri passed. For instance, the negation and the polar question formation tests show that Eri's passing is presupposed.

(15) a. Ukat-ta no-wa Eri-DAKE-dewa ari-masen.
        pass-PAST NML-TOP Eri-DAKE-be   exist-NEG
        'It is not only Eri that passed.' ⤳ Erika passed.

  b. Ukat-ta no-wa Eri-DAKE-desu-ka?
    pass-PAST NML-TOP Eri-DAKE-be-Q
    'Is it only Eri that passed? ⤳ Erika passed.

The second alternative, therefore, means that Eri and someone else passed. The exhaustivity associated with the cleft construction negates this alternative. Suppose that there are three exam takers, Aya, Saki, and Eri. The proposition that Eri is not the maximal individual who passed is equivalent to (16):

(16) Aya and Eri passed ∨ Saki and Eri passed ∨ Aya, Saki and Eri passed

Combined with the presupposition that Eri passed, the negation of (16) leads to the negation of the two alternatives: Aya didn't pass, and Saki didn't pass. This is precisely the same semantic effect of *only/sika...nai,* which involves the negation of all the non-weaker alternatives.

  The unexpected behavior of *dake* in conditionals is also accounted for. Recall:

(17) sekai-ryokou-o suru-niwa,
   world-travel-ACC do-in.order.to
   'In order to make an around-the-world trip'
   a. eego-dake hanas-er-eba ii.
     English-DAKE speak-can-if good
     'it is all right as long as (you) can speak English.'
   b. # eego-sika hanas-e-nak-ereba ii.
     English-SIKA speak-can-NEG-if good
     'it is all right as long as (you) cannot speak any other languages besides English.'
   c. # hanas-eru-no-ga eego-dake deare-ba ii.
     speak-can-NML-NOM English-DAKE be-if good
     'it is all right as long as it is only English that you can speak.'

The *as-long-as* interpretation is often elicited when the consequence has such expressions as *good (enough, sufficent, X is content,* etc.). In such a conditional, the antecedent *p* provides some 'minimally sufficient' criterion for the consequent clause to hold. The notion of 'minimally suffi-

cient' can be defined in semantic terms (as is predicted by propositional logic), but it can be based on something more pragmatic.

(18) If you can bring fruits salad, that will be sufficient.
   a. You need not bring anything in addition to fruits salad.
   b. You need not bring anything fancier / more complicated to make.

Turning to the felicitous *dake* sentence (17a), we can easily imagine the following ordering based on the number of languages that the addressee can speak.

(19) $\max(\lambda x.\ \text{is-able-to-speak}(x)(\text{addressee})) = \text{English} <$
   $\max(\lambda x.\ \text{is-able-to-speak}(x)(\text{addressee})) = \text{English} \oplus \text{Spanish}, <$
   $\max(\lambda x.\ \text{is-able-to-speak}(x)(\text{addressee})) = \text{English} \oplus \text{Spanish} \oplus$
   Russian $< ...$

The propositional content of the *if*–clause sets the minimal criterion in this ordering. Therefore, the conditional statement is felicitous.

   In contrast, *sika...nai* is infelicitous in this context, and I suggest that the infelicity is predicted because the ordering is reversed. *Sika...nai* primarily asserts the negation of the alternatives. Thus, the ordering is based on the number of languages that the addressee <u>cannot</u> speak. The following is the ordering of possible propositions contained in *if* that are compatible with the prejacent (you speak English). Imagine that there are three relevant languages; English, Russian and Spanish.

(20) is-able-to- speak(Eng $\oplus$ Rus $\oplus$ Sp)(addressee) &
   $\neg\exists x.\neg$ is-able-to-speak(x)(addressee) $<$
   is-able-to-speak(Eng $\oplus$ Sp)(addressee) &
   $\neg$is-able-to-speak(Rus)(addressee)),
   is-able-to-speak(Eng $\oplus$ Rus)(addressee)) &
   $\neg$is-able-to-speak(Sp)(addressee)) $<$
   is-able-to-speak(Eng)(addressee)) &
   $\neg$is-able-to-speak(Rus $\oplus$ Sp)(addressee)

The trouble here is that the one that is actually said *you don't speak any languages except for English* is the highest in the ordering. In other words,

it creates a pragmatic anomaly since the highest in the ordering is presented as the minimally sufficient condition. Since the clefted *dake* conveys the exhaustive meaning comparable to *sika..nai*, the ordering is the same as *sika..nai*. Thus, the use of the clefted *dake* is infelicitous as well.

One interesting consequence of the proposed semantics of *dake* is that *dake* is not a focus-sensitive expression if the mirative component is responsible for eliciting (weak) exhaustivity. The idea advocated by Rooth (1985) treats *only* as a focus-sensitive operator. It must have a focus within its scope since its lexical meaning requires a non-singleton set of alternatives. That is not the case with *dake*. The meaning of *dake* spelled out in (12) makes no reference to focus semantic values. Like any other expression, a *dake*–phrase can be focused but need not be. This aspect of *dake* seems to get support from what has come to be known as 'LF intervention effects'. It has been observed that wh-phrases cannot outscope a certain class of interveners that c-command the wh-phrases at the surface level (cf. Hoji 1985, Kim 2002, Beck 2006, Beck and Kim 2006, Tomioka 2007b, among others). Kim (2002) and Beck (2006) identify potential interveners as focus-sensitive expressions. Tomioka (2007b) uses a more pragmatic notion of focus, but focus-sensitive expressions such as *only*–phrases are considered good candidates for interveners because they tend to be pragmatic foci as well. Surprisingly, however, the experimental studies reported in Kitagawa, Tamaoka and Tomioka (2013) found that *dake*–phrases do not induce intervention effects at all. The following sentences form a minimal pair.

(21)   a. Mariko-dake-ga   dare-o   sasot-ta-no?
           Mariko-DAKE-NOM who-ACC invite-PAST-Q
           'Who did only Mariko invite?'
       b. Dare-o   Mariko-dake-ga sasot-ta-no?
           who-ACC Mario-DAKE-NOM invite-PAST-Q
           'Who did only Mariko invite?

In Tomioka (2007a), *dake* is labeled as a weak intervener, and a sentence similar to (21a) is judged questionable while its scrambled counterpart is acceptable. However, this judgment was not reproduced in Kitagawa, Tamaoka and Tomioka's results: The changing of the c-command relation between a *dake* and a wh-phrase has no effects. The pair of sentences in (21) received acceptability scores that are not significantly dif-

ferent from each other (2.76 vs. 2.88 in the 6 point scale, p = 0.651). This result is no longer surprising if the current proposal is right. *Dake* is not exhaustive, and it does not require a focus semantic value for its meaning to be computed.

To sum up, I have argued, going against the conventional wisdom, that

(22) a. *Dake* encodes maximality, which is rooted in its other self as a degree expression.

    b. The maximality of *dake*, combined with the mirative import, leads to the exhaustive(-like) interpretation, but it is expectedly weak, as it has no explicit negation of non-weaker alternatives.

    c. When clefted, *dake* is contrasted with its 'non-maximal' alternative, and the denial of the latter due to the exhaustivity of the cleft construction makes the clefted *dake* more like the true exhaustive *only*.

    d. All these effects can be obtained without making any reference to focus semantic values. Therefore, *dake* is not a focus-sensitive operator.

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