Exhaustivity in Imperatives: A Case Study of Imperatives with *DAKE* 'Only'

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1. Introduction

The dual character of imperatives, *command* (or *directive*) and *permission* (or *concession*), has been a long lasting puzzle (e.g. Portner 2004/2007, Condoravdi & Lauer 2012, Kaufmann 2012, among many others).

(1) Clean up your room! [command]

(2) OK, go out and play (if you want to). [permission]

The aim of this paper is to make a contribution to the understanding of the semantic/pragmatic relation between the dual character of imperatives and exhaustivity by focusing on the Japanese focus particle "*dake*" 'only'. The dual effect of imperatives also occurs with *dake*. When *dake* occurs in *command* imperatives, we obtain a *prohibition* inference that we can paraphrase as "It is necessary for the addressee not to ...", as exemplified in (3):

(3) [Context: The speaker does not want the addressee to drink any alcohol at the party tonight:]

(Kyoo-wa) [mizu]$_F$-dake(-o) nom-e!
today-TOP water-DAKE(-ACC) drink-IMP

'Only drink water (today)!'

⇝ **It is necessary for the addressee not to drink {beer, sake, wine}.**

Interestingly, in *permission* contexts, imperatives with *dake* convey the inference like "It is not necessary for the addressee to ..." as in (4):

(4) [Context: The addressee is a lightweight drinker. The speaker thinks that the addressee does not have to force himself to drink alcohol at the party tonight:]

(Murisuru-na yo.) [Mizu]$_F$-dake(-o) nom-e!
(overwork-IMP.NEG SFP) water-DAKE(-ACC) drink-IMP

'(Take it easy.) Only drink water!'

⇝ **It is not necessary for the addressee to drink {beer, sake, wine}.**

Current theories of imperatives like Portner (2010) or Kaufmann (2012) assume that there is *no* semantic difference between command and permission imperatives. If this is true, how do the two inferences of *dake*-imperatives come about? This question can be approached from these two perspectives: namely, (i) why do command imperatives with *dake* convey some notion of prohibition?, and (ii) how can we provide an account for the fact that permission imperatives with *dake* induce the permission inference rather than prohibitions?

These accounts have not been typically presented in a (formal) linguistic theory since almost all studies of *dake* have exclusively focused on declaratives so far.

The upshot of this paper is as follows. I argue that: (i) 'exhaustification in imperatives' is not equal to ' exhaustification of imperative speech acts' but is equal to 'exhaustification of the (weak) necessity operator,' and (ii) the two inferences of imperatives with *dake* are generated by the scope interaction of *dake* and the necessity operator.

2. Basics

2.1. The Semantic of *DAKE* 'Only'

In this study, I simply assume that the exhaustivity operator 'exh' (Fox 2007, Chierchia et al. 2012, among others) associated with *dake* identifies a proposition as the most informative out of a given alternative set, as shown in (5):[1]

(5) $[\![exh(\text{ALT}_{\langle st,t\rangle})(p_{\langle s,t\rangle})(w)]\!] = p(w) \wedge \forall \phi \in \text{NW}(p, \text{ALT}) : \neg\phi(w)$
, where $\text{NW}(p, \text{ALT})$ is a set of alternatives that are not weaker than p.

$exh_{\text{ALT}}(p)$ identifies a proposition 'p' as the most informative out of a given alternative set alt(p). Technically, exh is a function which takes p, a world 'w' and the alternative set '$\text{ALT}(p)$,' and returns the two-part meanings that (i) p is true in w and (ii) all the alternatives that are not weaker than p are false in w (: $\neg\phi(w)$). The example and its interpretation are illustrated as follows:

(6) (Who came to the party yesterday?)

[Taro]$_F$-**dake**(-ga) ki-ta yo.
T.-DAKE(-NOM) come-PAST SFP

'Only Taro came.'

(7) Interpretation of (6):

a. $\text{ALT}([\![(6)]\!]) = \{ \overbrace{came(P, Taro)}^{Alternative\ uttered}, \underbrace{came(P, Hanako), came(P, Jiro)}_{Alternatives\ which\ are\ not\ true} \}$

b. $[\![(6)]\!]^w$ and $\neg came(P, Hanako), \neg came(P, Jiro)$

Intuitively, $dake$ in (6) conveys the meaning "Taro came, and people other than Taro did not come."

2.2. The Brief Semantics of Imperatives

In this paper, I follow the widely accepted assumptions of the semantics of imperatives, as summarized

[1] I'm less clear on how to deal with the current issues from the point of view of Tomioka (2015), who suggests that *dake* is not simply an exhaustive operator, but is an element which denotes the MAX-degree of alternatives (See Tomioka 2015).

in the bullets below:[2]

- Imperative speech act itself is represented as an *imperative operator* 'imp' ('update operator' in the sense of dynamic accounts by Portner (2004/2007), or 'directive operator' in the sense of truth conditional accounts by Kaufmann (2012), which is not assumed to be a part of a proposition.
- There is *no* semantic difference between command and permission imperatives (Portner 2010, Kaufmann 2012).
- Differences in function among imperatives depend on the pragmatic grounds i.e. contexts upon which the imperative is issued (ibid).

Based on the above understandings, let me consider the example imperative in (8). When we say "Go to school!" in out-of-the-blue contexts, namely in command contexts, the utterance puts a sort of content that 'the addressee is required to go to school' on the common ground (Kaufmann 2012), or updates the context by adding a property that the addressee goes to school (Portner 2004/2007). I will show that both of the views are compatible with the current study.

(8) Go to school! (out-of-the-blue)

a. $[\![(8)]\!] = imp[go(school, addr)]$

b. CG(common ground) $\subseteq$ [*addr* is required to go to school] (Kaufmann's modal view)

or

TDL(To-do lists) $\oplus$ [*addr* go to school] (Portner's dynamic view)

How about the case in permission context? Current theories of imperatives (e.g. Portner 2010, Condoravdi & Lauer 2012, Kaufmann 2012) suggest that permission imperatives arise when the content of the imperatives is *inconsistent* with the context i.e. CG or TDL. See the example in (9):

(9) [Context: *addr* (= A) is prohibited to go to school because of the serious flu.]

A: Mom, I feel much better now.

B: Are you sure? ...OK, go to school.

In (9), the content of the imperative (= 'the addressee goes to school') is pragmatically inconsistent with the content in the given context (= 'the addressee is *prohibited* to go to school' i.e. 'the addressee cannot go to school'), hence deriving the effect of permission imperatives.

3. Puzzles

3.1. Computation Trouble

[2]See von Fintel & Iatridou (2017) for the overview of the two major approaches to the semantics/pragmatics of imperatives (The truth conditional approach of Kaufmann (2012) and the dynamic semantic approach of Portner (2004/2007).

Under the current assumptions, let me first apply the meaning of *dake* (: (5)) to the command imperative in (10) (=(3)).

(10) [Context: The addressee drank way too much last night. The speaker does not want the addr to drink any alcohol at the party tonight:]

(Kyoo-wa) [mizu]$_F$-dake(-o) nom-e!
today-TOP water-DAKE(-ACC) drink-IMP

'Only drink water (today)!'

$\rightsquigarrow$ **It is necessary for the addressee not to drink {beer, sake, wine}.**

(11) a. ALT($p : drink(water, addr)$) = $\left\{ \begin{array}{l} drink(water,addr) \\ drink(beer,addr) \\ drink(sake,addr) \\ drink(wine,addr) \end{array} \right\}$

b. $[\![(10)]\!]^w$ and $\neg drink(beer, addr), \neg drink(sake, addr), \neg drink(wine, addr)$

(i.e.: "Drink water!", and #**(s)he does not drink {beer, sake, wine}**.)

As the illustration in (11), the alternative in this context would be like 'the addressee drinks water', 'the addressee drinks beer', 'the addressee drinks wine', 'the addressee drinks wine'. When the command imperative with *dake* is uttered, these alternatives are evaluated by the exhaustive operator associated with *dake*, and non-weaker alternatives, namely 'the addressee drinks beer', 'the addressee drinks wine', and 'the addressee drinks wine', are negated, thus deriving the meaning 'the addressee does not drink {beer, sake, wine}'. Obviously, the analysis fails to get the right interpretation that we want here; (11b) does not represent a prohibition inference.

3.2. Exhaustification over Speech Acts?

One possible resolution is to assume that *dake* can exhaustify an imperative 'speech-act'. Hara (2007) suggests that the meaning of $dake$ involves exhaustification of (potential) speech acts including imperative acts, as shown in (12):

(12) $[\![\, dake(\text{ALT})(S)(w) \,]\!] = S(w) \wedge \forall a \in \text{NW}(S, \text{ALT}) : \neg a(w)$

, where a is an alternative speech-act that is not weaker than S.

Her analysis leads to the following interpretation for imperatives with *dake* in command contexts:

(13) (Kyoo-wa) [mizu]$_F$-dake(-o) nom-e! (= (10)/(3))

a. ALT($S : imp[drink(water, addr)]$) = $\left\{ \begin{array}{l} imp[drink(water,addr)] \\ imp[drink(beer,addr)] \\ imp[drink(sake,addr)] \\ imp[drink(wine,addr)] \end{array} \right\}$

b. $[\![(13)]\!]^w$ and $\neg imp[drink(beer, addr)], \neg imp[drink(sake, addr)], \neg imp[drink(wine, addr)]$

(i.e.: "Drink water!", and **'I don't make commands about {beer, sake, wine}'**.)

(13b) seems to capture the correct interpretation of the given utterance; the interpretation in (13b) is compatible with the context in (3)/(10). However, we are still facing some problems. The given meaning in (13b) (= 'I don't make commands about {beer, sake, wine}') cannot be distinguished from a permission interpretation; how can we *only* derive a prohibition inference, excluding the possibility of a permission inference in this context? — Clearly, further explanation is needed. Moreover, whether *dake* (or English *only*) can quantify over speech acts or not remains under discussion (cf. Haida & Repp 2012, Hara 2014). Thus, I will propose the alternative (and perhaps the 'minimal') account of the discourse effects of *dake* in imperatives that is parallel to the account of the case in declaratives, maintaining the denotation of *dake*.

4. Proposal & Analysis

I propose that the dual inference of imperatives with *dake* can be derived by the scope interaction of the (weak) necessity modal which is part of the semantics of imperatives and the exhaustivity operator associated with *dake*: concretely, (i) in command contexts, the exhaustification by *dake* happens at the level of the propositional content as in the case in declaratives, and (ii) in permission contexts, *dake* exhaustifies the (weak) necessity modal associated with the imperative morphology.

4.1. The Weak Necessity Semantics for Imperatives

Before moving on to illustrate the proposal in detail, I introduce the brief semantics of weak necessity for the current analysis. In this paper, I adopt the analysis of Medeiros (2013) and Ihara & Noguchi (to appear) that canonical form imperatives (i.e. in Japanese, imperative-form imperatives like "*I-ke*!" 'Go!') semantically represents the modal content called *weak necessity modal* '$\Box_{wn}$' (Silk 2013) which operates independently of the imperative (or directive) speech-act operator, and are roughly equivalent to *ought* or *should* in their interpretation.

The specific analysis of imperatives therefore depends completely upon the formal analysis of weak necessity. I adopt the formal treatment of weak necessity presented in Silk (2013). Silk's model of weak necessity depends upon premise sets P, which simplify the interaction of modal base and ordering source within Kratzerian modal semantics (Kratzer 1981/1991). Premise sets P describe functions that context supplies for the interpretation of modals; an unsaturated premise set P supplies this context. The value of P given a world of evaluation is a saturated premise set $P(w)$. First, within this model, strong necessity *must* is defined as follows:[3]

(14) $[\![must(p)]\!] = 1$ iff $\cap P(w) \subseteq [\![p]\!]$ (Silk 2013)
(i.e: the truth of '*Must*(p)' is checked by comparing whether the conditions in the evaluation world w are s.t. the premise set $P(w)$ verifies the necessity of p.)

[3]Note that strong necessity modal *must* cannot pattern with weak reading such as permissions:
(i) #You **must** open the window, if you're cold.
(ii) You **should**/**ought to** open the window, if you're cold.

Silk relates weak necessity to strong necessity in terms of conditional or contingent necessity; weak necessity therefore defines what is necessary if certain conditions hold. Formally, and making use of a selection function $\mathcal{H}$ which selects a set of χ-worlds that are closest to w (χ picks out a set of relevant worlds that are *preferred* in some contextually relevant sense i.e. most normal, expected, desirable), weak necessity *ought/should* is defined as (15), such that *'ought/should p'* makes a claim about the necessity of p at all closest relevant χ-worlds, for some contextually supplied condition χ.

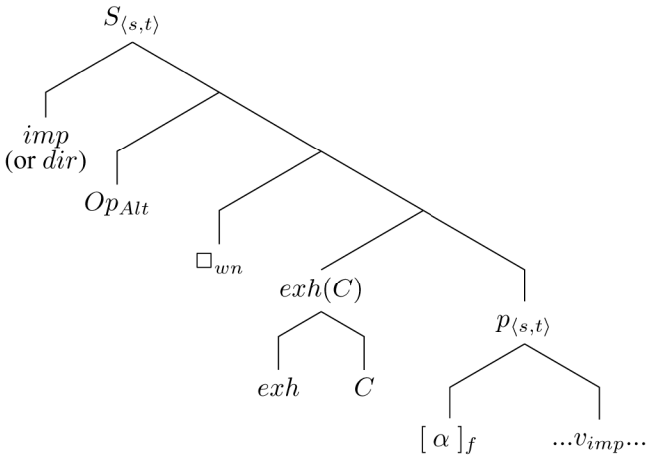
(15) $[\![\, ought/should(p) \,]\!] = 1$ iff $\forall w' \in \mathcal{H}(w, \chi) : \cap P(w') \subseteq [\![p]\!]$ (Silk 2013)
(i.e.: '*ought/should*(p)' is true iff the contextually preferred worlds w' verify the necessity of p, namely iff p follows from the relevant P at every $w' \in \mathcal{H}(w, \chi)$.)

The key here is that the weak necessity of p is not evaluated at world w, but at the worlds $w' \in \mathcal{H}(w, \chi)$. Under this model, weak necessity is contingent necessity. Therefore, under the right contextual circumstances, canonical imperatives (and therefore weak necessity modals) can very closely approximate a strong necessity modal. Ihara & Noguchi (to appear) suggests that Japanese imperative form imperatives semantically encodes the weak necessity, as they can pattern both with strong (i.e. commands) readings and weak (i.e. permission) readings.

4.2. Proposal: Exhaustification over/under Necessity

Based on the assumptions, I propose the following LF for imperatives with *dake* in command contexts as shown in (16). As I have already mentioned, in command contexts, the exhaustification of *dake* happens at the level of the propositional content, specifically *under* the weak necessity, as in the case in declaratives.

(16) LF of imperatives with $dake$ in command contexts



'Op_{Alt}' is a simple alternative-generating operator without any quantificational meanings (Tomioka 2009). Focus is interpreted by the squiggle operator which introduces a covert variable C at LF that receives its value from the context through the variable assignment function g_C (Rooth 1992).

With *dake* having the scope in (16), the imperative in (10) should be interpreted as illustrated in (17):

(17) $[\![S : imp [\Box_{wn} [dake (p)]]]\!] = \forall\phi \in \textsc{nw}(S, \textsc{alt}) [\Box_{wn} \neg\phi]$

Now we can obtain the following meaning from (16) and (17) as follows, which represents the right interpretation for (10):

(18) (Kyoo-wa) [mizu]$_F$-dake(-o) nom-e! (= (10))

a. ALT($\Box_{wn}\, drink(water, addr)$)) = $\left\{ \begin{array}{l} \Box_{wn}[\textit{drink(water,addr)}] \\ \Box_{wn}[\textit{drink(beer,addr)}] \\ \Box_{wn}[\textit{drink(sake,addr)}] \\ \Box_{wn}[\textit{drink(wine,addr)}] \end{array} \right\}$

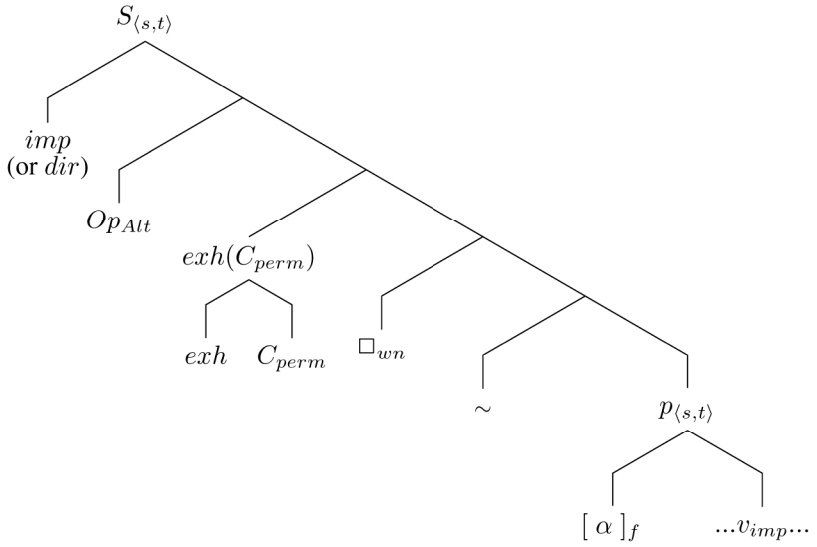
b. $[\![(10)]\!]^w$ and $\Box_{wn}\neg drink(beer, addr), \Box_{wn}\neg drink(sake, addr), \Box_{wn}\neg drink(wine, addr).$

(i.e.: "Drink water!", and **It is necessary for the addressee not to drink {beer, sake, wine}**.)

(18b) correctly represents the interpretation of (10) since it captures the meaning of prohibition that 'it is necessary for the addressee not to drink {beer, sake, wine}'.

How about the case in permission contexts? I suggest that in permission contexts, *dake* exhaustifies the necessity modal associated with the imperative morphology; unlike the case in command contexts, *dake* scopes *over* the necessity modal (, in other words it takes a *wide* scope), as shown in (19):

(19) LF of imperatives with $dake$ in permission contexts



, where $C_{perm} \supset$ CG such that CG $\subseteq$ [p of *imp*(p) is prohibited].

In (19), exh receives the context C, and if C is the context which satisfies the presupposition of permission, namely C_{perm} i.e. where the addressee is prohibited to do p (the *p*ropositional content or *p*roperty of the given imperative, Portner 2010), it takes wide scope to fit the context.[4] With *dake* having wide scope, imperatives in permission contexts should be interpreted as (20):

[4]This would happen because of presupposition accommodation. Assume that in imperatives, command contexts are unmarked and permission contexts are marked (Portner 2010). When a given context satisfies the presupposition of permission i.e. when the addressee is prohibited to do *p* (the *p*ropositional content or *p*roperty of the given imperative), the addressee would think that the inference which can be obtained by command imperatives (as in (16)) does not fit the context. Due to this, *dake* quantifies over necessity modal, not under the modal, to accommodate the presupposition.

(20) $[\![\, S : imp\,[\, dake\,[\, \Box_{wn}\,(p)\,]\,]\,]\!] = \forall\phi \in \textsc{nw}(S, \textsc{alt})\,[\, \neg\Box_{wn}\phi\,]$

From (20), we obtain the following interpretation for the permission imperative in (4):

(21) Murisuru-na yo. (Kyoo-wa) [mizu]$_F$-dake(-o) nom-e! (= (4))

a. ALT($\Box_{wn}\, drink(water, addr)$)) = $\left\{\begin{array}{l} \Box_{wn}[\textit{drink}(\textit{water},\textit{addr})] \\ \Box_{wn}[\textit{drink}(\textit{beer},\textit{addr})] \\ \Box_{wn}[\textit{drink}(\textit{sake},\textit{addr})] \\ \Box_{wn}[\textit{drink}(\textit{wine},\textit{addr})] \end{array}\right\}$

b. $[\![(4)]\!]^w$ and $\neg\Box_{wn}[drink(beer, addr)], \neg\Box_{wn}[drink(sake, addr)], \neg\Box_{wn}[drink(wine, addr)]$
(i.e.: "Drink water!", and **it is not necessary for the addressee to drink {beer, sake, wine}**.)

The computation goes as follows. When a command imperative '$imp(\Box_{wn}\phi_1)$' is uttered, the alternatives $\{\Box_{wn}\phi_1, \Box_{wn}\phi_2, \Box_{wn}\phi_3, \Box_{wn}\phi_4\}$ are evaluated by exh, and all the non-weaker alternatives are negated, thus deriving $\{\neg\Box_{wn}\phi_2, \neg\Box_{wn}\phi_3, \neg\Box_{wn}\phi_4\} = \{\Diamond\neg\phi_2, \Diamond\neg\phi_3, \Diamond\neg\phi_4\}$.

Focusing only on the modal, the present proposal has the following properties. First, under the current analysis, we can *logically* handle the dual character of imperatives with *dake*. Secondly, since it says nothing about embeddability of speech-acts, a special modification for the semantics of *dake* is not needed.

5. Embedded Exhaustification in Imperatives

A prediction from the proposed analysis is that we can handle the meaning of embedded-imperatives with *dake* without saying anything about embeddability of speech-acts or propriety of exhaustification over speech-acts. While most languages impose strong restrictions on imperatives in embedded contexts (to the point of banning them altogether), Japanese allows imperative markers in *to*-marked complements of speech reporting predicates. While *to* can, in principle, introduce both *direct* speech (quotational constructions) and *indirect* speech, Kuno (1988) adduces examples where the behavior of indexicals refutes an analysis as direct speech (See also Kaufmann 2012). The sentence in (22), for example, shows that imperatives with *dake* can also be embedded under indirect discourse; the indexical *kare* 'he' = 'John' indicates that the embedded imperative in (22) is not a direct discourse. The key here is that (22) is ambiguous between (i) the speaker's view (= (23a): the implicature relativized to the speaker) and (ii) Taro's local view (= (23b): the implicature relativized to Taro).

(22) John^i-ga Mary-ni [kare^i-no ronbun-**dake** yom-e] to meireishi-ta.
John-NOM Mary-to his paper-DAKE read-IMP COMP give.an.order-PAST
'John ordered Mary to read only his paper.'

(23) a. **The (actual) speaker** believes that only as for John's paper, John said "Read!" to Mary.

b. **John** believes that it is necessary for Hanako to read only his paper.

The present analysis straightforwardly captures the two readings in (23); the ambiguity depends on whether *dake* operates at the level of the embedded clause or at that of the matrix clause. The computations are as follows, respectively:

(24) Reading (23a): the speaker's point of view

a. LF: $\left[\textit{assert} \left[\underline{\textit{dake}} \left[\!\left[p\text{: ...}[\mathbf{John}]_F\text{...} \right]\!\right] \right] \right]$

b. ALT($order[\mathbf{j}, \Box_{wn} read(paper_{\mathbf{John}}), \mathbf{m}]$) = $\left\{ \begin{array}{l} order[\mathbf{j}, \Box_{wn} read(paper_{\mathbf{John}}), \mathbf{m}] \\ order[\mathbf{j}, \Box_{wn} read(paper_{\mathbf{Mary}}), \mathbf{m}] \\ order[\mathbf{j}, \Box_{wn} read(paper_{\mathbf{Sara}}), \mathbf{m}] \\ order[\mathbf{j}, \Box_{wn} read(paper_{\mathbf{Tom}}), \mathbf{m}] \end{array} \right\}$

c. $[\![(22)]\!]^w$ and $\neg order[\mathbf{j}, \Box_{wn} read(paper_{\mathbf{Mary}}), \mathbf{m}]$, ... , $\neg order[\mathbf{j}, \Box_{wn} read(paper_{\mathbf{Tom}}), \mathbf{m}]$

(i.e.: John ordered Mary to read his paper, and the speaker thinks that he did not order her to read the papers other than John's.)

(25) Reading (23b): John's point of view

a. LF: $\left[\textit{assert} \left[p\text{: John-ga Mary-ni } [_{emb-imp} \underline{\textit{dake}} \text{ [... } [\mathbf{John}]_F \text{ ...]]-to meireishi-ta } \right] \right]$

b. ALT($\Box_{wn} read(paper_{\mathbf{John}}, \mathbf{m})$) = $\left\{ \begin{array}{l} \Box_{wn} read(paper_{\mathbf{John}}, \mathbf{m}) \\ \Box_{wn} read(paper_{\mathbf{Mary}}, \mathbf{m}) \\ \Box_{wn} read(paper_{\mathbf{Sara}}, \mathbf{m}) \\ \Box_{wn} read(paper_{\mathbf{Tom}}, \mathbf{m}) \end{array} \right\}$

c. $[\![(22)]\!]^w$ and $\Box_{wn} \neg read(paper_{\mathbf{Mary}}, \mathbf{m})$, ... , $\Box_{wn} \neg read(paper_{\mathbf{Tom}}, \mathbf{m})$

(i.e.: John ordered Mary to read his paper, and he believes that it is necessary for Hanako to read only his paper.)

6. Conclusion

Little work has been devoted to the semantic/pragmatic relation between *dake* and imperatives. In this paper, I have argued that the dual character of imperatives with *dake* are generated by the scope interaction of the operators, namely the necessity operator and the exhaustivity operator. The present analysis is theoretically important because the 'minimal semantics' view of imperatives that the denotation of imperatives is simply 'p' (Portner 2004/2007) cannot spell out the dual meanings; the view that imperatives *do* contain an operator which is interpreted like necessity modals (e.g. Kaufmann 2012) is needed.

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