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Masanori Deguchi
Indiana University

Yoshihisa Kitagawa
Indiana University

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Masanori Deguchi and Yoshihisa Kitagawa

Indiana University

While numerous works on syntax continue to be made public, relatively few of them pay attention to the accompanying prosody, not at least in any systematic way. Through the examination of wh-questions in Japanese, we hope to show in this work, first, that we need to pay much more serious attention to prosodic structure than usually exercised in conducting tests for grammaticality judgments and semantic interpretations. In the last section of the work, we will also propose and argue for a syntactic analysis of wh-questions in Japanese which permits us to capture both of their information structure and prosody in a simple and systematic way.

1. Prosody in Japanese

We begin this work with a brief summary of the literature on prosody of standard (or Tokyo) Japanese (henceforth simply Japanese). Our purpose here is to identify the major prosodic phenomena that are generally observed in utterances in Japanese. We believe that any researcher should be aware of these or similar phenomena in any dialect or language even if his or her main interest is not in sounds themselves but in structure and/or meanings.

1.1 Basic F_0-altering Factors

Those who conduct researches on speech sounds seem to generally agree that fundamental frequency (henceforth F_0) tends to decrease over the course of an utterance, and the literature has repeatedly identified three major prosodic factors as the main cause

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of this tendency. First, Poser (1984) draws and Pierrehumbert and Beckman (1988) reinforce the conclusion that Japanese has a rule of "downstep" or "catathesis." This phonetic realization rule applies iteratively at each lexical accent within some intermediate domain of an utterance. It radically compresses F_0 at each application. As a result, a series of lexical accents manifest themselves in the form of a descending staircase. Second, the same researchers confirm a phonetic effect of "declination" — F_0 gradually declines from the beginning of the utterance as a function of time. Third, they also concluded that Japanese has a phonetic rule of "final lowering," which significantly lowers F_0 at the end of each declarative utterance.

In addition to these downtrends, they also identify a prosodic event in which the pitch register is reset upwards at the left edge of each new domain for catathesis. As a result, F_0 exhibits a moderate rebound from catathesis and declination every time a new domain boundary is encountered in the utterance. A non-trivial question here is what counts as the "domain" for pitch reset as well as catathesis. Selkirk and Tateishi (1991), for instance, claim that every syntactic maximal projection constitutes such a domain. In this work, we will not pursue this interesting topic but assume that pitch register is reset at least at the beginning of each IP in Tokyo Japanese.

1.2 Some Information-based Prosodic Factors

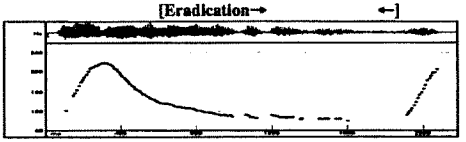
Japanese also exhibits at least two similar but distinct prosodic events that seem to be controlled by the information structure of an utterance. First, narrow focus, an item carrying **emphatic** new information, is represented by an "emphatic accent." An emphatic accent consists not only of a sharp rise of F_0 but also of its sharp fall (cf. Bolinger (1965), Jackendoff (1972)). Another important prosodic effect of focus pointed out by Ishihara (2000) (extending the original observation by Ladd (1996)) is that an emphatic accent is accompanied by what we label as "**eradication**" of lexical accents. That is, when one or more of lexical accents follow an emphatic accent, their H tones (H*) are all suppressed. As a result, the lowest pitch induced by the emphatic accent is inherited and prolonged with further gradual declination up to the right boundary of some clausal structure, as illustrated by the pitch-track diagram in (1b) for the sentence in (1a).[1]

(1) Focus Prosody: (**XX**'xx = Emphatic accent, ↓____↓ = Eradication)

a. Eeh?! ano **MA**'ry-ga [$_{VP}$ ↓me'gane-o deza'in-de era'nda↓]-nO↑?
what that -NOM glasses-ACC design.for selected -Q
'What?! You mean **THAT MARY** selected glasses for the design?'

[1] Though in a subtler way, eradication seems to apply also to phrasal accents (in the context of initial lowering) when they follow an emphatic accent. For simplicity and clarity, however, we will concentrate in this work on the eradication effect involving lexical accents. Throughout, we will superimpose prosodic factors on the linguistic data with the following notations: **XX**'xx for emphatic accent, ↓___↓ for eradication, XX'xx (sometimes with H*) for retained lexical accent, xx'xx for eradicated lexical accent, and ↑ for a clause-final rising intonation for a question and other types of illocutionary force.

b. MA'ry-ga ↓me'gane-o deza'in-de era'nda↓ nO↑
[Eradication→ ←]



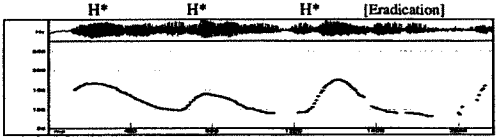
One thing we noted through our pitch tracking experiments is that, while the range of pitch and intensity involved in the emphatic accent seems to vary depending on the degree of emphasis, **eradication** seems to remain constant. It therefore is the accompaniment of eradication rather than raising of F_0 that seems to be the truly constant and reliable clue to the identification of focus prosody.[2]

Second, Ishihara (2000) claims that an equivalent of "nuclear stress" (Chomsky and Halle (1968)) exists in Japanese and that Cinque's (1993) "null theory" of sentential stress is at work. We also believe that some such F_0-raising factor exists in Japanese and refer to it as **"nuclear accent."** While we are yet to fully identify the conditions imposed on the assignment of a nuclear accent, we tentatively hold the following view of the phenomenon. The most deeply embedded phrase within at least the most deeply embedded predicate phrase (e.g., VP) is the default position for **"rheme"** of a sentence, an item carrying **non-emphatic** new information. The lexical head of rheme rejects catathesis. As a result, pitch of the accent on rheme manifests itself **somewhat** higher than expected by catathesis and declination unless it is within the domain of eradication. We further noted and our pitch-tracking experiments also confirmed that a nuclear accent also induces eradication and suppresses the lexical accent of the predicate that immediately follows it as illustrated by the pitch track diagram in (2b) for the sentence in (2a).

(2) Nuclear accent:

a. MA'ry-wa [$_{VP}$ ME'gane-o *deZA'in-de* ↓era'nda↓]-nO↑?
-TOP glasses-ACC design.for selected -Q
'Has Mary selected her glasses for the design?'

b. MA'ry-wa ME'gane-o *deZA'in-de* ↓era'nda↓ nO↑
H* H* H* [Eradication]



[2] Our pitch-tracking experiments involve our own recordings and are in many ways informal and insufficient. We are presenting them, however, because they seem to us to have turned out to be the faithful physical reflection of our intuition and they help us illustrate our points. In order to minimize our own biases, we have at least conducted some informal perception tests, presenting our recordings and/or our own utterances to over a dozen native speakers of Japanese. They have confirmed that the utterances we have presented to them are accompanied by "natural intonation" for the intended interpretations.

Note the "higher than expected" F_0 peak of the rheme *deZA'in-de* 'design.for' and the suppression of H* of the lexical accent on the predicate *era'nda* 'select-PAST' in (2b).

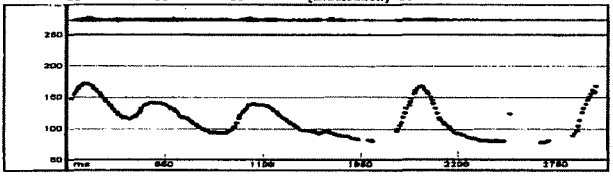
1.3 Emphatic Prosody and Default Prosody in the Embedded Context

Since both focus and nuclear accent involve F_0-raising and F_0-lowering followed by eradication of the lexical accent of the subsequent predicate, the two information-based prosodic activities are difficult to distinguish within a simplex sentence. For instance, when (2a) above involves focusing (rather than a nuclear accent) of *deZA'in-de* 'design.for', the only distinction that may possibly be detected is somewhat more drastic raising of F_0 on the focused material, whose degree in fact seems to be subject to variation as already mentioned above. The crucial difference between the two information-based prosodic activities emerges, however, when we embed a sentence involving them into another sentence. First, when a sentence without involving any focus is embedded as in (3a), a nuclear accent falls on the lowest phrase in the subordinate VP (*ME'gane*-o 'glasses-ACC') and raises F_0 of H* on its head as shown in (3b).

(3) DPD:

a. JO'hn-wa [MA'ry-ga *ME'gane*-o ↓era'nda↓-to] I'mademo omo'tteiru-nO↑?
- TOP -NOM glasses-ACC selected-COMPeven.now think -Q
'Does John still think that Mary selected glasses?'

b. JO'hn-wa MA'ry-ga *ME'gane*-o ↓era'nda↓-to I'mademo omo'tteiru-nO↑?
H* H* H* [Eradication] H*



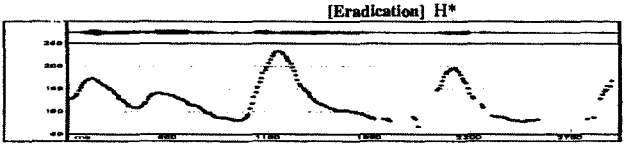
As expected, eradication follows this nuclear accent and suppresses the lexical accent of the subordinate predicate (*era'nda* 'selected' in (3b)). Crucially, however, the effect of eradication here is local and a lexical accent introduced in the matrix clause (H* on *I'mademo* 'even now' in (3b)) is retained. In what follows, we will refer to this prosodic pattern, i.e., a nuclear accent followed by **local** eradication as **Default Prosody** (henceforth **DPD**). A crucial consequence of DPD in the embedded context is that the lexical accents in the matrix (other than that on the predicate) are **retained**.

When the same subordinate element is interpreted as focus rather than rheme as in (4a) below, on the other hand, there arises an interesting variation that we cannot detect in the case involving DPD. First, we observe a prosodic pattern as in (4b).

(4) Short EPD:

a. JO'hn-wa [$_{IP}$ MA'ry-ga **ME**'gane-o ↓era'nda↓]-to I'mademo omo'tteiru]-nO↑?
-TOP -NOM glasses-ACC selected-COMP even.now think -Q
'Does John think even now that it was glasses that Mary had selected?'

b. JO'hn-wa MA'ry-ga **ME**'gane-o ↓era'nda↓-to I'mademo omo'tteiru-nO↑
[Eradication] H*



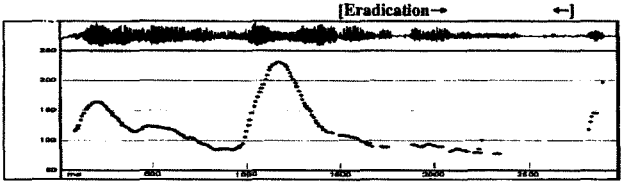
Just as in the simplex context, the radically higher F_0 peak of the focus material followed by eradication is the signature of prosody involving focus. Let us label it as **Emphatic Prosody** (henceforth **EPD**). We note in the diagram in (4b) that eradication following the focus prominence in this case is **local**, and it permits the lexical accent of the matrix adjunct *I'mademo* 'even now' **retained**. Let us therefore refer to the prosodic pattern here as **"short EPD."** As already pointed out above, the pitch range of the focus material seems to be subject to wide variety and hence is sometimes indistinguishable from a nuclear accent. Moreover, both DPD and short EPD involve local eradication. These two prosodic patterns therefore are somewhat difficult to distinguish.

In the same sentence involving the same focus material, however, we can also detect a clearly distinct prosodic pattern as illustrated in (5a).

(5) Long EPD:

a. JO'hn-wa [$_{IP}$ MA'ry-ga **ME**'gane-o ↓era'nda]-to i'mademo omo'tteiru↓]-nO↑?
-TOP -NOM glasses-ACC selected-COMP even.now think -Q
'Is it glasses that John thinks even now that Mary had selected?'

b. JO'hn-wa MA'ry-ga **ME**'gane-o ↓era'nda-to i'mademo omo'tteiru↓-nO↑?
[Eradication→ ←]



Here, we have another instance of EPD, but this time with what we may describe as **"global eradication"** rather than local eradication observed in the short EPD above. That is, the eradication started in the subordinate clause is prolonged to the end of the matrix clause and all of the lexical accents in the matrix clause are suppressed as illustrated in the diagram in (5b). Let us refer to this prosodic pattern as **"long EPD."** We thus may encounter three distinct prosodic patterns, DPD, short EPD, and long EPD, for a sentence

consisting of the same string of lexical items in (3a)-(5a), depending on the information structure involved there.

At first sight, it is not clear whether the choice between short EPD and long EPD leads to any difference in information structure. When we combine focus with negation as in (6) and (7), however, the distinction between the two prosodic patterns emerges more clearly.

(6) [kimi-wa nanimo-kamo umakatta-tte yuukedosa,]
'Although you say everything was delicious,'
[$_{IP}$ boku-wa [$_{IP}$ **U**'ni-ga ↓uma'i]-to omow-a'na-katta↓]-zE↑
I-TOP sea.urchin-NOM delicious-COMP didn't.think-EMP
'It is the sea urchin that I didn't think was delicious.' **(FOCUS > NEG)**

The sentence in (6) is accompanied by long EPD. In this sentence, the (male) speaker is picking out ***U'ni*** 'sea urchin' as the sole target of his disapproval (or negative thought) as to its taste. This suggests that focus is taking scope over negation. In (7), the same sentence is accompanied by short EPD.

(7) [kimi-wa uni-ga itiban umakatta-tte yutterukedosa. (Hokano-mono-nara izasirazu,)] 'You say the sea urchin was the most delicious food tonight(. I don't know about other dishes), but '
[$_{IP}$ boku-wa [$_{IP}$ **U**'ni-ga ↓uma'i]-to↓](-wa) oMOW-A'na-katta]-zE ↑
I-TOP sea.urchin-NOM delicious-COMP(-CONT) didn't.think -EMP
'I never thought that the sea urchin was delicious.' **(NEG > FOCUS)**

In this case, the speaker is expressing his objection to (or negative thought on) the claim that ***U'ni*** 'sea urchin' was worth picking out as particularly delicious food among what was served. This suggests that negation is taking scope over focus. This interpretation becomes even more readily available when the subordinate clause is marked with a contrast marker *-wa*. The same contrast can be more clearly illustrated when we strengthen focusing with *dake* 'only' as in (8a-b).

(8) Focus with *dake* 'only':
a. Long EPD: [konyano-ryoori-no-nakade,] 'Among the dishes served tonight,'
[$_{IP}$ boku-wa [$_{IP}$ U'ni-da**KE**'-ga ↓uma'i]-to omow-a'na-katta↓]-zE↑
I-TOP sea.urchin-only-NOM delicious-COMP didn't.think -EMP
'Sea urchin was the only food that I didn't find delicious.' **(FOCUS > NEG)**
b. Short EPD: [konyano-ryoori-no-nakade,] 'Among the dishes served tonight,'
[$_{IP}$ boku-wa [$_{IP}$ U'ni-da**KE**'-ga ↓uma'i↓]-to-wa oMOW-A'na-katta]-zE ↑
I-TOP sea.urchin-only-NOM delicious-COMP-CONT didn't.think -EMP
'I didn't think that the sea urchin was the only delicious food.' **(NEG > FOCUS)**

The semantics of (8a) and (8b) can be informally represented as in (9a) and (9b), respectively.

(9) a. **ONLY***x*, sea urchin (*x*), [**NOT** [THOUGHT (I, [*x* was delicious])]]
b. **NOT** [THOUGHT (I, [**ONLY***x*, sea urchin (*x*), [*x* was delicious]])]

With the interpretation in (9a), the speaker implies that all other served dishes were delicious. With the interpretation in (9b), on the other hand, all he implies is that there was at least one other dish that was delicious. When such semantic differences can be detected between the two types of EPD, an interesting picture emerges — the right edge of EPD, i.e., the endpoint of eradication, and the right boundary of the scope domain of focus do coincide. That is, long EPD is associated with the matrix scope of focus and short EPD with the subordinate scope. The table in (10) summarizes our findings so far.

(10) Prosody in Japanese in the Embedded Context:

Prosodic Type	Eradication	Matrix H*	Focus Domain
DPD	Local	**Retained**	N/A
Short EPD	Local	**Retained**	**Subordinate**
Long EPD	Global	**Eradicated**	**Matrix**

Based upon these findings, we can now identify some specific prosodic pattern of a sentence depending on the particular information structure involved there, whether or not focus is involved. We therefore should expect no such thing as a sentence without prosody, which is quite often pretended to exist in many syntactic studies available in the literature.[3] Among the properties listed in (10), we would like to pay special attention to the surface manifestation of the H* of the lexical accents in the matrix clause (i.e., retention vs. eradication) as well as the correlation between the type of prosody and the scope domain of focus.

1.4 Prosody in Wh-questions:

We now extend our analyses to wh-questions. First, when a wh-phrase in the subordinate clause is to be interpreted under the matrix CP as a direct question as in (11), long EPD provides a natural and acceptable intonation.

(11) Long EPD in Direct Wh-questions:
[JO'hn-wa [MA'ry-ga **NA'**ni-o ↓era'nda-to] i'mademo omo'tteiru↓-nO↑]?
-TOP -NOM what-ACC selected-COMP even.now think -Q
'What does John still think that Mary selected?'

We then notice crucially that the same sentence with the same intended interpretation as a direct wh-question becomes clearly unacceptable when it is accompanied by DPD as in (12). Note that the short eradication is followed by the retention of the lexical accent on *I'mademo* 'even now' in the matrix (henceforth simply "**retention**").

(12) DPD in Direct Wh-questions: (# = unacceptable with the indicated prosody)
#JO'hn-wa [MA'ry-ga *NA'ni-o* ↓era'nda↓-to] I'mademo omo'tteiru-nO↑?
what-ACC -Q

[3] When a simplex sentence is involved, only DPD or short EPD is expected. In what follows, our target of investigation is mostly complex sentences.

If we replace the wh-phrase in the subordinate clause in (12a) with a non-wh-phrase like *ME'gane*-o 'glasses-ACC' as in (13) below, DPD becomes completely compatible with this sentence (as a yes/no question). (The sentence (13) is identical to (3a) above, and local eradication followed by "retention" as part of the DPD involved here is illustrated in the pitch-track diagram (3b).)

(13) DPD in Embedded Declarative Clauses:
JO'hn-wa [MA'ry-ga *ME'gane*-o ↓era'nda↓-to] I'mademo omo'tteiru-nO↑?
glasses-ACC **H***
'Does John still think that Mary selected glasses?'

Thus, the paradigm in (12)-(13) suggests that a wh-question in Japanese must involve at least one EPD. Short EPD may also accompany a sentence involving a subordinate wh-phrase, but only when it is interpretable as an indirect question.

(14) Short EPD:

a. [JO'hn-wa [MA'ry-ga **NA'**ni-o ↓era'nda↓-ka] I'mademo sirana'i-nO↑]?
-TOP -NOM what-ACC selected- $COMP_{WH}$ even.now don't.know-Q
'Doesn't John know yet what Mary selected?' **H***

b. #[JO'hn-wa [MA'ry-ga **NA'**ni-o ↓era'nda↓-to] I'mademo omo'tteiru-nO↑]?
-TOP -NOM what-ACC selected-$COMP_{THAT}$ even.now think -Q
'What does John still think that Mary selected?' **H***

The indirect wh-question in (14a) is completely compatible with short EPD, which induces local eradication followed by "retention." On the contrary, short EPD makes the sentence in (14b) noticeably awkward. Note that the subordinate CP in (14b) is headed by the non-interrogative COMP *-to* 'that' and hence cannot be interpreted as an indirect wh-question. This means that short EPD accompanies a sentence involving a subordinate wh-phrase only when this wh-phrase as focus takes subordinate scope. Thus, the correlation between EPD and focus scope pointed out in (10) above is also observed in wh-questions in the form of the contrast between a direct question with long EPD and an indirect question with short EPD. The ungrammaticality of short EPD in (14b) (which involves a subordinate declarative clause) also verifies this correlation in another way. The prosodic characteristics of wh-questions are summarized in (15).

(15) Prosody in Wh-questions:
a. A wh-question must involve at least one EPD.
b. Long EPD is for a direct wh-question; short EPD for an indirect wh-question.[4]

What (15a) suggests is that a wh-question involves focus (at least in default cases). While involvement of focus in wh-questions is not news, the syntax literature often regards it as an exception (e.g., Nishigauchi (1990, Chapter II, 3.2.1)), treating the majority of wh-

[4] We have learned that Tomioka (1997) also points out similar correlation between prosody and wh-scope.

questions as if they were sentences without any prosody involved. In our opinion, this misconception has led us to some improper treatment of this construction. The position we feel obliged to take after examining the prosody of wh-questions, on the contrary, is that focus is the norm (rather than exception) of wh-questions in general (Ishihara (2000a) which necessarily gives rise to some specific prosodic pattern. Finally, (15b) is nothing but a specific instance of a larger generalization we have stated in (10) above concerning the correlation between EPD and focus scope. All these thoughts will lead us to propose a focus-based analysis of wh-questions in Section 3 below.

2. Re-examination of Some Syntactic Phenomena

In this section, we will re-examine some of the observations concerning wh-questions which have been offered in the literature, taking into consideration the prosodic structure of wh-questions discussed above.

2.1 Subjacency in Japanese

Ever since Huang (1982) introduced the idea of covert wh-movement to generative syntax, it has been a point of controversy whether or not wh-in-situ languages like Japanese exhibit subjacency effect. Some researchers claim that Japanese does, though more often than not, alleged subjacency effect is reported as involving "variation of acceptability among speakers" and/or "subtlety of judgment" as illustrated in (16).

(16) Subjacency violation (Wh-island):

a. (?)~??John-wa [Mary-ga **nani**-o katta *kadooka*] siritagatte-iru-no?
-TOP -NOM what-ACC bought whether want.to.know-Q
'**What**$_1$ does John want to know [*whether* Mary bought **t**$_1$]?'
(Watanabe (1992, 257, 263))

b. *Satoo-kun-wa [Suzuki-kun-ga **nani**-o tabeta *kadooka*] oboete-imasu-ka?
Mr. Sato-TOP Mr. Suzuki-NOM what-ACC ate whether remember-Q
"**What**$_1$ does Mr. Sato remember [*whether* Mr. Suzuki ate **t**$_1$]?'
(Nishigauchi (1990, 31))

Let us now clarify the prosody that must, may or cannot be associated with this syntactic phenomenon. Suppose, for instance, that the sentence in (16a) is accompanied by DPD as in (17).

(17) DPD:
[$_{CP1}$ Jo'hn-wa [$_{CP2}$ Ma'ry-ga *NA'ni-o* ↓katta'↓**-kado'oka**] I'mademo
what-ACC -COMP$_{WHETHER/WH}$ **H***
siritaga'tteiru-nO↑]
-Q

As we have already confirmed with the ungrammaticality of (18) below, however, the sole wh-phrase in the subordinate clause is forced to take subordinate scope when the sentence is accompanied by DPD.

(18) DPD: (= (12a))
#[$_{CP1}$ JO'hn-wa [$_{CP2}$ MA'ry-ga *NA'ni-o* ↓era'nda↓-**to**] I'mademo
what-ACC selected-$COMP_{THAT}$ **H***
omo'tteiru-nO↑]
think -Q

DPD imposes exactly the same constraint in (17) and the sentence cannot be interpreted as a **matrix** wh-question. This at least conforms to the result expected by the subjacency constraint, although the restriction here does not necessarily originate from the interrogative status of the subordinate clause, i.e., from its islandhood.

Suppose now that the sentence in (16a) is accompanied by short EPD as in (19).

(19) Short EPD: (% = Either grammatical or ungrammatical)
*[$_{CP1}$ JO'hn-wa [$_{CP2}$ MA'ry-ga NA'ni-o ↓katta'↓-*kado'oka*] I'mademo
what-ACC -$COMP_{WHETHER/WH}$ H*
siritaga'tteiru-nO↑]
-Q
'Does John still want to know what Mary bought?'

As we have confirmed with (20a-b) below (= (14a-b) above), short EPD requires the subordinate wh-phrase to take subordinate scope and the sentence to be necessarily interpreted as an indirect question.

(20) Short EPD: (='(14))
a. [$_{CP1}$ JO'hn-wa [$_{CP2}$ MA'ry-ga NA'ni-o ↓era'nda↓-**ka**] I'mademo siritaga'tteiru-nO↑]
what-ACC -$COMP_{WH}$ **H*** -Q
b. #[$_{CP1}$ JO'hn-wa [$_{CP2}$ MA'ry-ga NA'ni-o ↓era'nda↓-**to**] I'mademo omo'tteiru-nO↑]
what-ACC -$COMP_{THAT}$ **H*** -Q

Short EPD in (19) also requires the sentence to be interpreted as an indirect question. A slight complication arises here, however, due perhaps to some idiolectal variation (possibly in the context of diachronic change). For those who interpret *kadooka* strictly as *whether*, (19) is ungrammatical. For those who can interpret *kadooka* ambiguously as *whether* or $COMP_{WH}$, on the other hand, the sentence may still be interpreted as an indirect wh-question.

Last but not least, the sentence (16a) can be accompanied by long EPD as in (21).

(21) Long EPD:
[$_{CP1}$ Jo'hn-wa [$_{CP2}$ Ma'ry-ga NA'ni-o ↓katta'-kado'oka] i'mademo
-TOP -NOM what-ACC bought-$COMP_{WHETHER}$ even.now
siritaga'tteiru↓-nO↑]
want.to.know-Q
'**What**$_i$ does John want to know [*whether* Mary bought **t**$_i$]?'

With this prosodic pattern, we find, and numerous speakers we have consulted with also find, that the sentence is clearly grammatical as a direct question. That is, no subjacency effect arises in (21). Note that we are **not** adding any special or unusual prosody to the sentence here. On the contrary, the contrast between (22) below and (18)/(20b) above indicates that even a wh-phrase embedded in a "non-island" must be accompanied by long EPD to take matrix scope.

(22) Long EPD: (= (11a))
[$_{CP1}$ JO'hn-wa [$_{CP2}$ MA'ry-ga **NA**'ni-o ↓era'nda-to] i'mademo omo'tteiru↓-nO↑]
-TOP -NOM what-ACC selected-COMP$_{THAT}$ -Q
'What does John still think that Mary selected?'

Based upon the observations above, we would like to strongly urge that what has been regarded in the literature as "subjacency effect" in Japanese and any hypothesis which is contingent on it be seriously reconsidered. By neglecting the prosodic factors elaborated above, a researcher runs a risk of conducting a syntactic test that is not repeatable. Soliciting grammatical judgments with only examples written down on the paper is especially dangerous since the informants may unconsciously and arbitrarily associate a sentence like (16a) with any of DPD, short EPD or long EPD. Our speculation is that such lack of repeatability of syntactic tests combined with the idiolectal variation concerning *-kadooka* mentioned above play a significant role in the variation as well as unstability of the native speakers' intuition on subjacency effect in Japanese.

2.2 Additional-wh Effect in Japanese

In relation to subjacency, a paradigm as in (23) has been also presented and discussed in the literature.

(23) Additional-wh effect in Japanese: (Watanabe (1992, 263))
a. John-wa [Mary-ga **nani**-o katta *kadooka*] **dare**-ni tazuneta-no?
-TOP -NOM what-ACC bought whether who-DAT asked-Q
'What$_i$ did John ask **whom** [*whether* Mary bought **t$_i$**]?'
b. ??John-wa [Mary-ga **nani**-o katta *kadooka*] **Tom**-ni tazuneta-no?
what-ACC whether Tom-DAT
'What$_i$ did John ask **Tom** [*whether* Mary bought **t$_i$**]?'
c. ??John-wa [**dare**-ga **nani**-o katta *kadooka*] Tom-ni tazuneta-no?
who-NOM what-ACC whether
'Whom$_i$ did John ask **t$_i$** [*whether* Mary bought **what**]?'

First, it was reported that the subjacency violation allegedly detected in (16a) above can be obviated by introducing an additional wh-phrase in the matrix as in (23a). Second, when such an additional wh-phrase is replaced by a non-wh-phrase as in (23b), subjacency violation is said to reappear. Finally, when an "additional" wh-phrase is introduced within an island as in (23c), it allegedly fails to obviate subjacency effect. The alleged set of contrasts illustrated with this paradigm is what is often referred to in the literature as "additional-wh effect."

Let us now add appropriate prosody to these sentences. First, to ensure the matrix scope of the subordinate wh-phrase in (23a) allegedly induced by "additional-wh effect," we actually seem to have to introduce a novel type of prosodic pattern as in (24).

(24) Long Complex EPD:
JO'hn-wa [MA'ry-ga **NA**'ni-o ↓katta'-kado'oka] **DA**'re-ni ↓tazu'neta↓↓-nO↑
what-ACC -COMP$_{WH/WHETHER}$ who-DAT -Q
'**What**$_t$ did John ask **whom** [*whether* Mary bought t_i]?'

Here, one instance of EPD seems to be nested into the eradication portion of another longer instance of EPD, and the derived "complex" EPD functions as if it were a single EPD. This prosodic pattern presumably is the phonetic reflection of the "pair (or set)" interpretation of more than one wh-phrase under a single CP. We will refer to this prosodic pattern as "**complex EPD**" and indicate the eradication of the "nested" EPD with ↓__↓. In (24), the involved complex EPD must be extended to the end of the entire clause for a matrix pair-interpretation, and hence must be "**long** complex EPD." If, on the other hand, we let two separate instances of short EPD accompany (23a) as in (25), each wh-phrase is forced to take distinct scope within each clause.

(25) JO'hn-wa [MA'ry-ga **NA**'ni-o ↓katta'↓-**ka(do'oka)**] **DA**'re-ni ↓tazu'neta↓-nO↑
-TOP what-ACC -COMP$_{WH/WHETHER}$ who-DAT -Q
'**Whom**$_t$ did John ask t_i [*what*$_2$ Mary bought t_2]?'

Thus, the sentence is interpretable only as a direct question embedding an indirect question for only those who can interpret *-kadooka* as COMP$_{WH}$. If we replace *-kadooka* with *-ka* 'COMP$_{WH}$', the sentence seems to be acceptable to every speaker with this interpretation. We can also assure the involvement of two separate instances of short EPD by forcing "retention" of the lexical accent (on the reordered matrix element *JO'hn-wa* 'John-TOP') between them as in (26).

(26) [MA'ry-ga **NA**'ni-o ↓katta'-ka(do'oka)↓] **JO'hn-wa** **DA**'re-ni↓tazu'neta↓-nO↑
what-ACC -COMP$_{WH/WHETHER}$ **H*** -TOP who-DAT -Q

Again, each wh-phrase must be interpreted in a distinct clause in (26), which contrasts sharply with (24).

Both "nesting" EPD and "nested" EPD of complex EPD may start out within the subordinate clause and make up long complex EPD as in (27a), in which the two wh-phrases can be legitimately interpreted as a pair in the matrix.

(27) Multiple Wh-phrases in a Non-island:
a. Long Complex EPD:
JO'hn-wa [**DA**'re-ga ↓**NA**'ni-o ↓katta'-*to*] to'm-ni omowa'seta↓↓-nO↑
who-NOM what-ACC bought-COMP$_{THAT}$ -DAT made.believe-Q
'**What**$_t$ did John made Tom believe [*that* **who** bought t_i]?'

b. Short Complex EPD:
#JO'hn-wa [**DA**'re-ga ↓**NA**'ni-o ↓katta'↓↓-*to*] TO'm-ni omowa'seta-nO↑
who-NOM what-ACC bought-$COMP_{THAT}$ **H*** -DAT made.believe-Q

c. DPD:
#JO'hn-wa [DA're-ga *NA'ni-o* ↓katta'↓-*to*] TO'm-ni omowa'seta-nO↑
who-NOM what-ACC -$COMP_{THAT}$ **H*** -DAT made.believe-Q

When the same sentence is accompanied by short complex EPD as in (27b) or by DPD as in (27c), however, the sentence cannot provide any legitimate interpretation. Long complex EPD, in other words, is required for the matrix interpretation of multiple wh-phrases in the subordinate clause. Now, when long complex EPD is assigned to (23c) as in (28), the sentence can be interpreted as a pairwise wh-question in the matrix.

(28) JO'hn-wa [**DA**'re-ga ↓**NA**'ni-o ↓katta'-*kado'oka*] to'm-ni tazu'neta↓↓-nO↑
who-NOM what-ACC -$COMP_{WHETHER}$ -DAT -Q
'**What**$_i$ did John ask Tom [*whether* **who** bought t_i]?'

Alleged subjacency violation, in other words, does not arise even when the "additional-wh" is located within the island. Recall here that long complex EPD is required even when the two wh-phrases are located within a non-island as in (27a). We are, in other words, **by no means** applying any special or unusual prosody but rather legitimate and required prosody to (28) and (24).

Finally, as we have already confirmed above, the sentence like (23b) can be legitimately interpreted as a matrix wh-question as long as it is accompanied by long EPD, the required prosody, as in (29).

(29) JO'hn-wa [MA'ry-ga **NA**'ni-o ↓katta'-kado'oka] to'm-ni tazu'neta↓-nO↑
what-ACC -$COMP_{WHETHER}$ -DAT -Q
'**What**$_i$ did John ask **Tom** [*whether* Mary bought t_i]?'

In short, as long as each of the sentences in (23a-c) is properly accompanied by required prosody, they do not yield subjacency violation, and this situation holds whether or not "additional-wh" may appear, or wherever it may appear in the sentence. Based upon this observation, we would like to point out that what has been regarded in the literature as "additional-wh effect" in Japanese and any hypothesis which is contingent on it should be seriously reconsidered.

2.3 Long-distance Scrambling of Wh-phrases

Saito (1985) reintroduced scrambling to generative syntax as an instance of Move and further pursued his investigation of its syntactic behaviors and semantic effects in a series of works. One unique descendant of this line of research is what we refer to as the "wh-movement analysis of long-distance scrambling (henceforth **LD-scrambling**)." This analysis was proposed based upon the observation that interpretive asymmetry exists between (30a) and (30b).

(30) Long-distance Scrambling and Wh-scope Interpretation:

a. John-wa [$_{CP}$ Mary-ga **nani**-o tabeta-ka] siritagatteiru -no?
-TOP -NOM what-ACC ate-Q want.to.know-Q
(i) Matrix Wh-Q: '[**What** does John want to know [whether Mary ate]]?'
(ii) Subordinate Wh-Q: 'Does John want to know [**what** Mary ate]?'

b. **Nani**-o$_i$ John-wa [$_{CP}$ Mary-ga t_i tabeta -ka] siritagatteiru -no?
what-ACC -TOP -NOM ate-Q wants.to.know-Q

In (30a), the wh-phrase located in the subordinate clause may be interpreted either as a direct question in the matrix CP or as an indirect question in the subordinate CP. When the same wh-phrase is LD-scrambled, that is, scrambled out of the subordinate clause as in (30b), on the other hand, it is reported to be interpretable only as a direct question in the matrix. Takahashi (1993, p. 658) proposed an account of this observation, which can be summarized as follows. First, scrambling is regarded as a movement rule that does not create an operator-variable relation and hence can be "undone" at LF (Saito's (1989)). The moved wh-phrase cannot take subordinate scope in (30b) because it has not been moved by LD-scrambling but by wh-movement, which by nature establishes an operator-variable relation and hence does not permit "undoing" at LF. The claim made in fact was a little stronger and urged us to analyze all instances of LD-scrambling of a wh-phrase to a clause-initial position as wh-movement.

Let us note first that each of the ambiguous interpretations in (30a) is strictly associated with one specific prosodic pattern. That is, the matrix scope for a direct question is accompanied by long EPD as in (31a) below, and the subordinate scope for an indirect question is accompanied by short EPD as in (31b). Note the global eradication extended to the end of the matrix clause in (31a) and the "retention" in the matrix in (31b).

(31) Scope-Prosody Correlation in (30a):

a. **Matrix** Scope → **Long** EPD:
JO'hn-wa [$_{CP}$ MA'ry-ga **NA'**ni-o ↓ta'beta-ka] siritaga'tteiru↓-nO↑
what-ACC -Q

b. **Subordinate** Scope → **Short** EPD:
JO'hn-wa [$_{CP}$ MA'ry-ga **NA'**ni-o ↓ta'beta↓-ka] siRITAGA'tteiru-nO↑
what-ACC **H*** -Q

Crucially, then, when we let the sentence in (30b) be accompanied by each of these prosodic patterns, we can reproduce the same result. That is, not only the matrix scope but also the subordinate scope of the LD-scrambled wh-phrase becomes available, the former with long EPD and the latter with short EPD as illustrated in (32). Note again the global eradication in (32a) and the "retention" in the matrix in (32b).

(32) Prosody-Scope Correlation in (30b):

a. **Long** EPD → **Matrix** Scope:
NA'ni$_i$-o ↓jo'hn-wa [$_{CP}$ ma'ry-ga t_i ta'beta-ka] siritaga'tteiru↓-nO↑
what-ACC -Q

b. **Short** EPD → **Subordinate** Scope:
NA'ni$_i$-o ↓jo'hn-wa [$_{CP}$ ma'ry-ga t_i ta'beta↓-ka] siRITAGA'tteiru-nO↑
what-ACC H* -Q

These observations leave several questions unanswered under the Wh-movement analysis of LD-scrambling. First, the matrix scope in (32b) is established by overt wh-movement but the subordinate scope in (32b) must be established by "undoing" of LD-scrambling at LF, which is apparently a contradiction. Second, identical scope ambiguity observed in (31) and (32) must be ascribed to two totally distinct syntactic factors. In (31), only covert wh-movement is involved and the ambiguity arises due to the distinct distance involved in each application of this covert movement. In (32), on the other hand, ambiguity arises as described just above, involving overt wh-movement on the one hand and the combination of overt LD-scrambling and covert undoing on the other. Finally, and quite importantly, the scope-prosody correlation commonly observed in both constructions remains totally unaccounted for. All these considerations will naturally lead us to reconsider the status of the wh-movement analysis of LD-scrambling of wh-phrases and that of any hypothesis which is contingent on it.

3. E-agreement

We have made so far the following generalizations concerning the correlations between prosody and meanings. First, there exists a systematic correlation between the right boundary of EPD and the scope domain of focus ((10)). Second, a wh-question in Japanese must involve at least one EPD ((15a)). Third, the endpoint of the involved EPD and the scope domain of a wh-phrase coincide ((15b)). Finally, the obligatoriness of EPD as well as the prosody-scope correlation in a wh-question holds whether the involved wh-phrase undergoes overt movement or remains in-situ ((31)-(32)). We consider that these correlations between phonetic properties and semantic properties of a sentence are too systematic and too pervasive to be a mere accident and cries out for an analysis that can capture them simultaneously. We now would like to explore a syntactic analysis of wh-questions in which such synchronization of phonetic and semantic events is proposed to arise as the interpretive projections of syntax at each of Articulatory-Perceptual system (A-P) and Conceptual-Intentional system (C-I).

The proposal starts with the identification of a formal feature, which we claim to play the major role in the syntactic derivation of a sentence involving focus. In particular, we assume that what we call "**E-features**" may establish a probe-goal relation in the following way.[5] An **uninterpretable** E-feature is optionally assigned to INFL (or to T, if such an analysis is preferred) before syntax. We will refer to an INFL containing such an E-feature as IE, and its maximal projection as IEP. An **interpretable** E-feature may be also assigned optionally to virtually any lexical category. An uninterpretable E-feature is perhaps a type of what Chomsky (2000, p. 108) identifies as P(eriphery)-features (cf.

[5] To increase clarity, commonality with other syntacticians, and hopefully falsifiability of the proposed analysis as well, we will tentatively adopt the analysis incorporating the "probe-goal" system proposed by Chomsky (2000, p. 122). It, however, is by no means the only plausible execution or the core part of the proposal here.

Jackendoff's (1972) "F"). The uninterpretable E-feature on INFL acts as a probe, and when a wh-phrase contains an interpretable E-feature, its status as a goal can be activated by its inherent wh-feature. The E-feature on IE as a P-feature, we believe, induces covert movement of a wh-phrase as focus material. We consider that this movement takes place independently of the interpretation of a wh-phrase as a questioned item. We also assume that the probe-goal relation established between IE and the moved wh-phrase induces the erasure of an uninterpretable E-feature on IE through the operation Agree. We will refer to this particular type of agreement as **"E-agreement."** Finally, we propose first that a pair of "agreeable" E-features contained in a PF-representation is linearly scanned and comes to be phonetically interpreted at A-P as EPD. The emphatic accent falls on the **phonetically non-empty** item carrying the goal (= an interpretable E-feature), and eradication follows it and continues until a material containing the probe (= an uninterpretable E-feature) is encountered. Second, the LF-representation involving successful E-agreement comes to be semantically interpreted at C-I as involving focus — the goal is the focus material and the maximal projection of the probe is its scope. We consider that this is how the prosody-scope correlations mentioned above are established.

3.1 Analysis

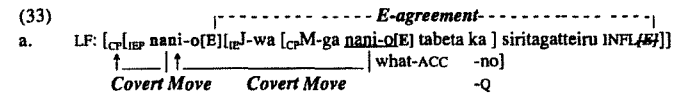
We now analyze the wh-questions in (31)-(32) above in the proposed E-agreement approach and account for the prosody-scope correlation observed in each case. Recall that each of the two sentences can be accompanied by either long EPD or short EPD, and accordingly either matrix or subordinate scope interpretation of the wh-phrase. We can capture all these four cases with four distinct syntactic derivations. We first examine the two cases in which the wh-phrase remains in-situ, and then the other two cases in which the wh-phrase is LD-scrambled to the matrix clause.

3.1.1 Wh-in-situ

Our analysis under the E-agreement approach starts with the identification of the two positions in a wh-question where an interpretable E-feature and an uninterpretable E-feature are introduced, respectively. In all four cases we will examine, the interpretable E-feature is introduced in the wh-phrase. The distinction among them therefore begins with the position in which the uninterpretable E-feature is introduced. First, suppose that the uninterpretable E-feature is assigned to the matrix INFL and creates a probe. The wh-phrase as the goal then covertly moves to the Spec of the matrix IEP to undergo E-agreement with the uninterpretable E-feature on the head IE. It then moves to the matrix Spec-CP to have the wh-feature checked. This derivation will yield the LF-representation as in (33a). (In the LF representations that follow, an arrow indicates the application of Move, a dotted line indicates E-agreement, and an outlined wh-phrase with its E-feature (e.g., **nani-o**[E]) indicates a "silent copy," an item copied in the process of Move.

(33)

a. LF: [$_{CP}$[$_{IEP}$ **nani-o**[E][$_{IE}$J-wa [$_{CP}$M-ga <u>nani-o[E]</u> tabeta ka] siritagatteiru INFL[~~E~~]]]



b. PF: [$_{CP}$[$_{IEP}$ **nani-o**[E][$_{IE}$J-wa[$_{CP}$M-ga **NA'ni**[E]-o↓tabetaka] siritagatteiru INFL*[E]*↓]]
-nO↑] |_____*EPD*_____|

Based upon its PF-representation in (33b), EPD is assigned to the string of words starting from the overt wh-phrase marked with the interpretable E-feature (**NA'ni**[E]-o) to the matrix IE. This derivation derives the prosody-scope relation as in (34).

(34) **Long** EPD / **Matrix** Scope: '**What** does John want to know [whether Mary ate]?'
JO'hn-wa [$_{CP}$ MA'ry-ga **NA'ni-o** ↓ta'beta-ka] siritaga'tteiru↓-nO↑
-TOP -NOM what-ACC ate-Q want.to.know-Q (= (31a))

Suppose, on the other hand, that the uninterpretable E-feature is assigned to the subordinate INFL. We now have the LF as in (35a) after covert Move and E-agreement take place in the subordinate clause, which yields the subordinate scope of the wh-phrase.

(35)
a. LF: [$_{CP}$ [$_{IP}$ J-wa [$_{CP}$ [$_{IEP}$ **nani-o**[E] [$_{IE}$ M-ga nani-o[E] tabeta INFL*[E]*]]-ka]
↑____| ↑_____| what-ACC -Q
siritagatteiru INFL]-no]
b. PF: [$_{CP}$ [$_{IP}$ J-wa [$_{CP}$ [$_{IEP}$ **nani-o**[E] [$_{IE}$ M-ga **NA'ni-o**[E] ↓tabeta INFL*[E]*]]↓-ka]
siRITAGA'tteiru INFL] –nO↑] |_____|
H*

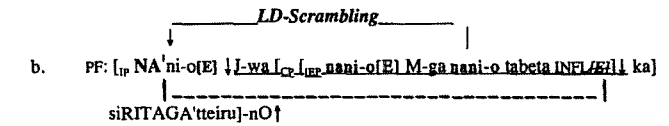
Based upon the PF in (35b), EPD is assigned also within the subordinate clause, retaining H* in the matrix. This derivation results in the prosody-scope correlation as in (36).

(36) **Short** EPD / **Subordinate** Scope: 'Does John want to know [**what** Mary ate]?'
JO'hn-wa [$_{CP}$ MA'ry-ga **NA'ni-o** ↓ta'beta↓-ka] siRITAGA'tteiru-nO↑
what-ACC **H*** -Q (= (31b))

3.1.2 Scrambled Wh-phrases

As has just been described in (33a) and (35a), the uninterpretable E-feature may appear in either the matrix or subordinate INFL and undergo E-agreement when a wh-phrase with the interpretable E-feature is covertly moved to its Spec position. The situation remains the same even when an independent overt operation of scrambling applies to the wh-phrase. Thus, the LF-representation we obtain for each scope-interpretation is completely identical to those involved in the wh-in-situ cases discussed above ((33a) and (35a)).

(37) *LD-Scrambling*
↓ |
a. PF: [$_{CP}$[$_{IEP}$**NA'ni-o**[E] ↓J-wa [$_{CP}$M-ga nani-o ta'beta ka] siritagatteiru INFL*[E]*↓]
|_____|-nO]↑



For both scope interpretations, however, LD-scrambling moves the phonetic features of the wh-phrase to the clause-initial position and derives the PFs as in (37a-b). Since the uninterpretable E-feature is introduced in the matrix IE in (37a) but it is introduced in the subordinate IE in (37b), the former results in long EPD while the latter results in short EPD. These derivations yield the prosody-scope correlation as in (38).[6]

(38) LD-scrambling: (= (32))

a. **Long** EPD / **Matrix** Scope: '**What** does John want to know [whether Mary ate]?'
NA'ni$_i$-o ↓jo'hn-wa [$_{CP}$ ma'ry-ga t_i ta'beta-ka] siritaga'tteiru↓-nO↑
what-ACC -TOP -NOM ate-Q wants.to.know-Q

b. **Short** EPD / **Subordinate** Scope: 'Does John want to know [**what** Mary ate]?'
NA'ni$_i$-o ↓jo'hn-wa [$_{CP}$ ma'ry-ga t_i ta'beta↓-ka] siRITAGA'tteiru-nO↑
what-ACC **H*** -Q

Thus, the E-agreement analysis permits us to capture the otherwise puzzling correlation between EPD and wh-scope. It also naturally follows why the identical correlation holds whether a wh-phrase is in-situ or LD-scrambled.

3.2 Further Motivation

There is another empirical fact that supports the E-agreement approach. We observed earlier that a multiple wh-question yields a legitimate interpretation if both wh-phrases are accompanied by a long EPD, which results in what we called a long complex EPD as illustrated in (39).

(39) Kimi-wa [**DA**'re-ga ↓**NA**'ni-o ↓katta-'ka] obo'eteiru↓↓-nO↑
you-top who-nom what-acc bought-COMP$_{WH}$ remember -Q
'Who$_i$ do you remember [t_i bought what]?'

We also note here that the same sentence is acceptable even when only one of the wh-phrases receives an emphatic accent. The sentence therefore involves only a single instance of long EPD, and the emphatically accented wh-phrase takes the matrix scope as illustrated in (40a).

(40) a. Kimi-wa [**DA**'re-ga ↓na'-ni-o katta'-ka] obo'eteiru↓-nO↑
'Who$_i$ do you remember [what$_2$ [he or she]$_i$ bought t_2]?'

[6] We are regarding the application of LD-scrambling in (38a-b) as totally independent of the covert Move triggered for E-agreement, though we are yet to figure out how exactly this idea should be developed. See Ueyama (1998) for relevant discussion. She argues that some instances of scrambling are relevant only to PF.

b. #Kimi-wa [da're-ga **NA**'-ni-o ↓katta'-ka] obo'eteiru↓-nO↑
'What$_2$ do you remember [who bought t_2]?

Surprisingly, however, when the other wh-phrase receives the only emphatic accent as in (40b), the sentence becomes uninterpretable. The contrast between (40a) and (40b) can be demonstrated when we attempt to answer these questions. We can comfortably answer the question in (40a) with (41a) but we cannot find any legitimate answer, including (41b), to the question in (40b).

(41) a. (Bo'ku-wa) **JO**'hn-ga ↓na'ni-o katta'-ka obo'eteiru↓ yo↑.
'I remember what **John** bought.'
b. #(Bo'ku-wa) da're-ga **WA**'in-o ↓katta'-ka obo'eteiru↓ yo↑.
'I remember who bought **the wine**.'

This puzzling contrast receives a straightforward account under the proposed analysis.

(42) [$_{IEP}$ **dare-ga**[E][$_{IEP}$kimi-wa [$_{CP}$**DA**'re-ga nani-o katta-ka] obo'eteiru INFL[~~E~~]]]

As is illustrated in (42), the emphatic wh-phrase (DA're-ga 'who-NOM') in (40a) covertly moves to Spec-IEP and undergoes E-agreement with the uninterpretable E-feature on INFL without any problem. In (40b), on the other hand, when the emphatic wh-phrase (NA'ni-o 'what-ACC') covertly moves to Spec-IEP, it inevitably crosses over the non-emphatic wh-phrase as illustrated in (43) since the former is located in a lower position than the latter.

(43) [$_{IEP}$ **nani-o**[E] [$_{IEP}$ kimi-wa [$_{CP}$ ***dare-ga*** **NA**'ni-o katta-ka] obo'eteiru INFL[E]]]

Then, since both *dare-ga* 'who-NOM' and *NA'ni-o* 'what-ACC' have the same uninterpretable feature [wh], the non-emphatic wh-phrase *dare-ga* induces some kind of intervention effect when the emphatic wh-phrase *NA'ni-o* undergoes movement. This results in the violation of relativized minimality (henceforth RM: Rizzi (1990)) and eventually the failure of agreement between the two E-features. This way, we can assimilate the paradigm in (40) to the familiar superiority effect, which in turn renders additional support to the movement-based analysis proposed above.

The RM violation detected in (40b) is obviously neutralized in (39), where both of the wh-phrases receive an emphatic accent. In order to make this phenomenon compatible with the E-agreement analysis, we tentatively adopt a version of the "wh-cluster hypothesis" argued for by Saito (1994) and Grewendorf (2001). Under this analysis, a multiple wh-question to be interpreted under a single CP undergoes a derivation as illustrated in (44a-b).

(44) a. LF_1: [$_{IP}$ ... [$_{DP}$ **nani-o**$_1$ dare-ga] nani-o$_1$ ...]

b. LF_2: [$_{IEP}$ [$_{DP}$ **nani-o dare-ga**]$_2$ ... [$_{DP}$ **nani-o**$_1$ dare-ga]$_2$ nani-o$_1$ ...]

First, the lower wh-phrase moves to the higher wh-phrase to form a cluster as shown in (44a) and then the wh-cluster as a whole moves to Spec-CP as in (44b). In this derivation, no wh-phrase crosses over another wh-phrase and the intervention effect observed in (43) will be circumvented and the RM violation is avoided.[7]

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Department of Linguistics, Memorial Hall 325
Indiana University, Bloomington, IN 47408

mdeguchi@Indiana.edu
kitagawa@Indiana.edu

[7] We assume that the wh-phrase without an E-feature in (40a) is licensed in-situ along the line of Baker (1970). The two distinct methods of licensing a wh-phrase exhibit quite intricate and interesting interpretive asymmetry, which requires scrutiny we are unable to go into in this work. See Pesetsky (1987) and Barss (2000) among others for relevant discussion.