

Fukuoka Japanese wh questions: Implications for the syntax-phonology interface

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Introduction

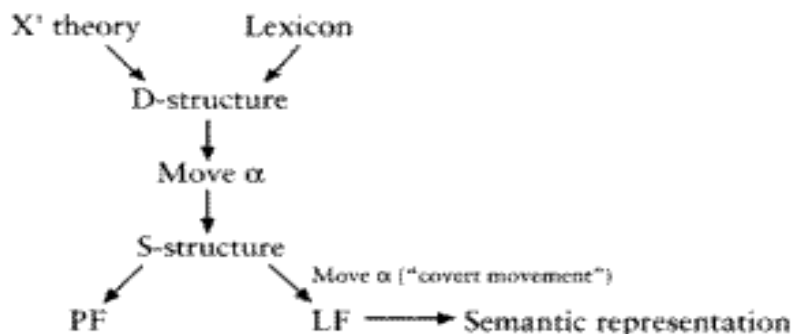
- Major questions pertaining to the nature of the syntax/phonology interface — and how Fukuoka Japanese (FJ) bears on these questions
- (1) What kinds of information from the syntax are accessible to the prosody/phonology?
 - (a) X^0 / XP edges
 - (b) Focus
 - Is there a necessary role for wh features?
—> FJ seems to show that there is
 - (2) Is the syntax/phonology interface necessarily derivational (phases/MP)? Is it compatible with a parallel (OT) model?
—> Preliminary FJ results suggest that a phase-based “Multiple Spell-Out” account might be less successful (*requires more investigation*)
 - (3) What is the nature of the constraints that mediate between syntax and phonology?
 - (a) Alignment
 - (b) W_{RAP}
 - Richards (2006) — A W_{RAP} -like requirement that groups together the wh element and the [+wh] complementizer?
—> FJ supports this view and allows further exploration of this proposal
 - (4) Structure of the talk
 - §1 Prosody and the syntax/phonology interface
 - §2 Intonation basics in Tokyo and Fukuoka Japanese
 - §3 wh-related prosody in Tokyo and Fukuoka Japanese
 - §4 Empirical investigation of the FJ wh contour
 - §5 Theoretical implications: The wh/C phrasing condition
 - §6 Conclusions

1. Prosody and the syntax/phonology interface

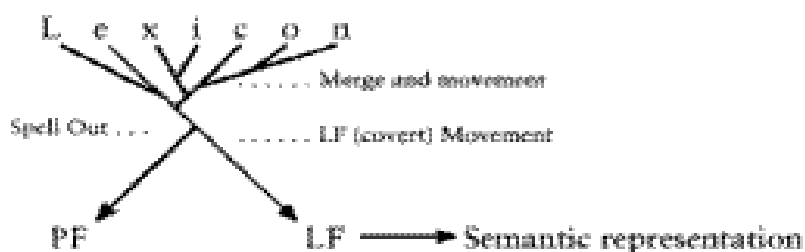
A. How do syntax and phonology interact?

- (5) Within the Chomskyan tradition, there has been a general assumption that syntax precedes or “feeds” phonology (images from Jackendoff 2003: 109-110)

(a) **Government-Binding Theory** (*Lectures on Government and Binding*, 1981)



(b) **Minimalist Program** (1993)



(6) Questions to pursue:

- (a) To what extent does syntactic information influence phonology?
- (b) (To what extent does phonological information influence syntax?)

(7) **Intonation** is an aspect of phonological structure that does appear to be influenced by syntactic information

- Different syntactic structure often correlates with distinct intonational contours

(8) Example: Tokyo Japanese (Selkirk & Tateishi 1988) [more details in §2]

- (a) Some words have a **pitch accent**: a fall from high (H) to low (L) tone
- (b) A process known as **downstep** lowers the H in pitch accents in certain contexts
- (c) **Syntactic structure matters**: The same string of lexical items is subject to downstep in different ways when the syntactic constituency is different

(9) Compare two different structures involving the same lexical items:

Aóyama-no Yamáguchi-no aníyome-ga inai *ó = pitch accent*
place.name-GEN prs.name-GEN sister.in.law-NOM exist-NEG

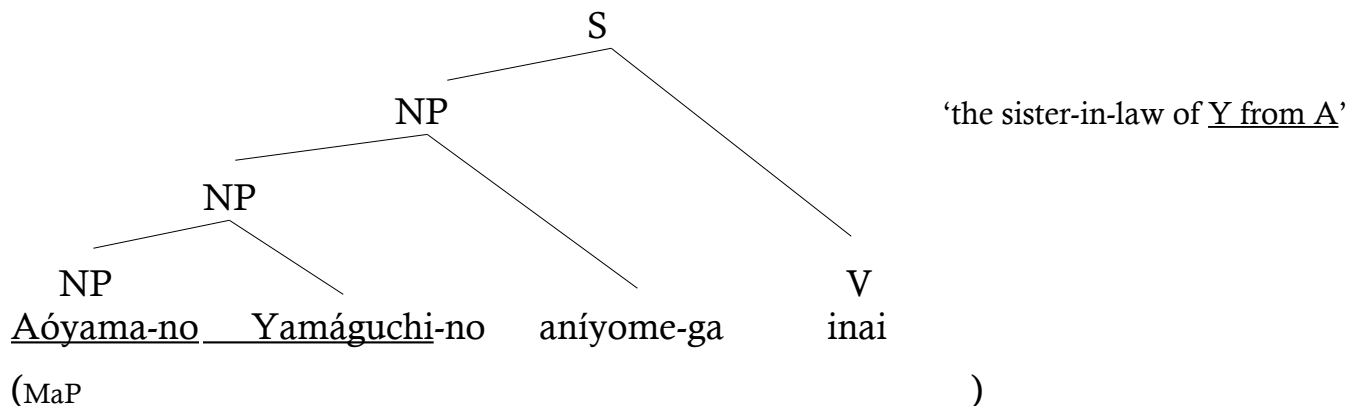
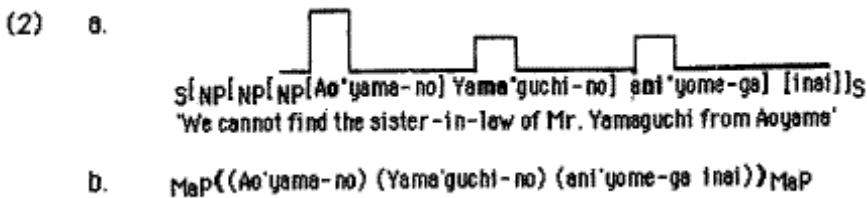
(10) Two possible constituent structures:

[Aóyama-no Yamáguchi]-no aníyome
 ‘Yamaguchi from Aoyama’s sister in law’
 Aóyama-no [Yamáguchi-no aníyome]
 ‘Yamaguchi’s sister in law, from Aoyama’

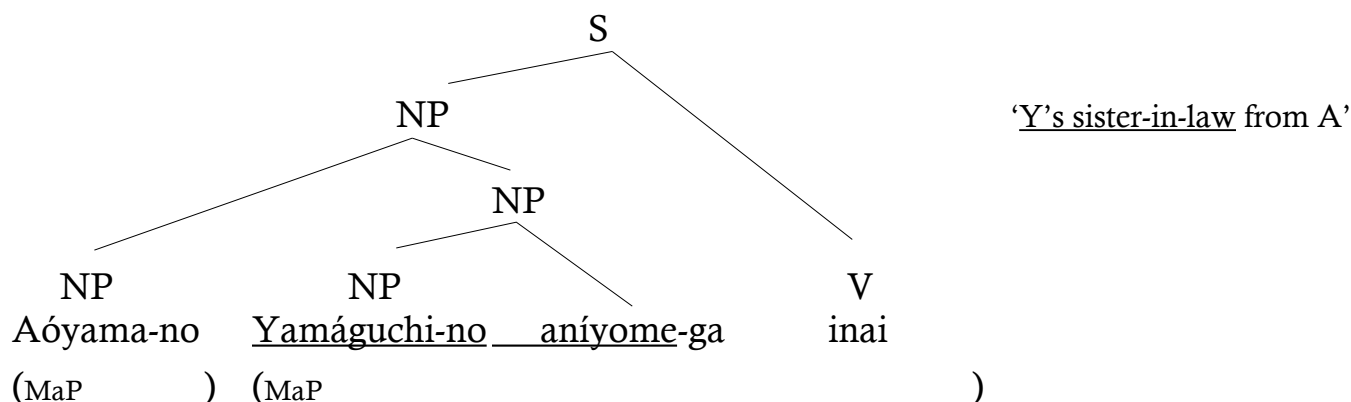
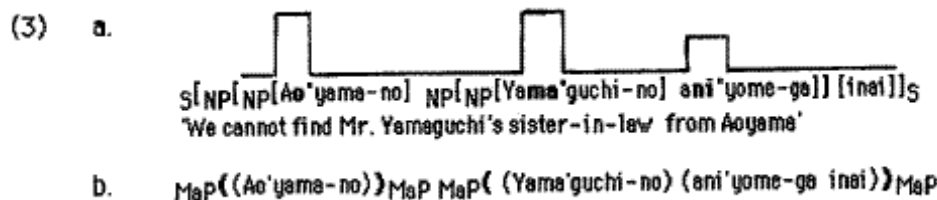
(11) How the domain of downstep has been characterized (McCawley 1968; Poser 1984; Pierrehumbert & Beckman 1988):

- (a) Phonological words are grouped into phonological phrases
- (b) One type of phonological phrase is the major phrase (MaP)
- (c) Downstep applies in each MaP to all pitch accents after the first
 - On this view, syntax influences downstep by influencing MaP formation

(12) Structure with one MaP (example, image from Selkirk & Tateishi 1988: 318)



(13) Structure with two MaPs (example, image from Selkirk & Tateishi 1988: 318)



(14) Proposal (Selkirk & Tateishi 1988, 1991):

At every left edge of a lexical XP, there is a left edge of a MaP

(15) **Implication:** At least some syntactic information is available to the phonology (see also Selkirk 1981, 1986; Kaisse 1985; Nespor and Vogel 1986; Chen 1987; Truckenbrodt 1999)

Question: How much?

Empirical observation: Syntax/phonology interaction is quite severely restricted

—> The model needs to account for this

B. One approach to the interface: The Extended Edge-Based (EEB) model

(16) Indirect Reference Hypothesis (Inkelas 1989: 9)

Phonological rules refer only to prosodic constituent structure

—> *not* directly to syntactic structure or constituency

In terms of the above example:

- the domain of downstep is stated in terms of prosodic structure
- not directly in terms of syntactic structure

(17) The EEB model (e.g., Selkirk 1986; Chen 1987; Nagahara 1994; Truckenbrodt 1999)

(a) Prosody has access to information about:

- Edges of lexical heads (X^0) and edges of lexical maximal projections (XP)
- Focus marking on syntactic structure (focus has consequences for both semantics and phonology/intonation)

- (b) Different syntactic structures lead to XP edges in different places
 - > differences in prosodic structure
 - > observed differences in intonation and other phonological effects

C. A second approach: The Multiple Spell-Out (MSO) model

- (18) The MSO model (Ishihara 2003, 2007; see also Kratzer & Selkirk 2007) — assuming Minimalist Program: phases, Spell-Out
 - (a) Basic idea: As each phase of the syntactic derivation is sent to Spell-Out, its information becomes visible to the phonological component
 - (b) Different syntactic structures lead to different portions of the string of lexical items being grouped as phases and sent to Spell-Out together
 - To what extent does this approach still depend on the notion of **prosodic structure** as an interface level between syntax and phonology?

D. The significance of wh questions in Fukuoka Japanese

- (19) Fukuoka may be a case that can distinguish between the EEB and MSO approaches (*only briefly discussed today; see §3*)
- (20) Pursuing an account of FJ wh intonation in the EEB model:
 - Intonation appears to be sensitive to the syntactic scope of wh elements (§3)
 - (a) Is this really the case? —> Apparently, yes (§4)
 - (b) What modifications need to be made to the EEB model to account for this?
 - Application, investigation of **wh/C phrasing condition** (Richards 2006) (§5)

2. Intonation basics in Tokyo and Fukuoka Japanese

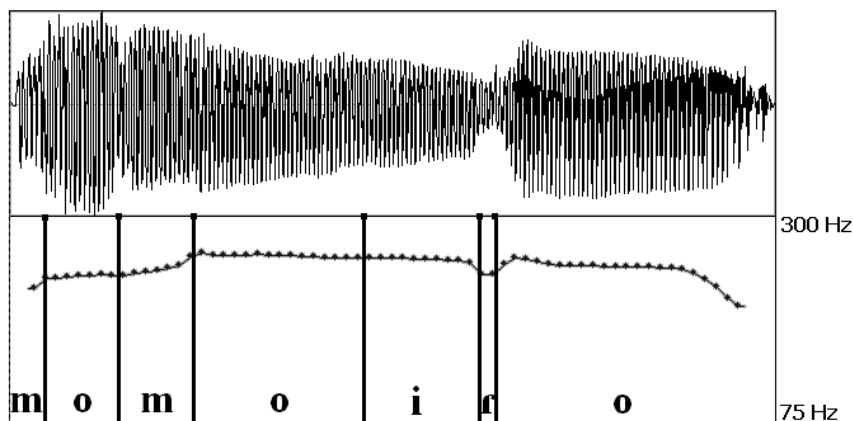
A. Tokyo Japanese intonation

(Classic references in English: McCawley 1968; Poser 1984; Pierrehumbert & Beckman 1988; Selkirk & Tateishi 1988, 1991)

- (21) Tokyo Japanese has lexical pitch accents
 - (a) words may be accented or unaccented
 - (b) if accented, the location of the accent is also lexically specified for nouns, “particles” (but accent location is predictable for verbs, adjectives)
 - (c) accent is realized as a pitch fall

(22) Unaccented word: [momoiro] ‘peach color, pink’ *audio: http://japanese.about.com/bl_colors.htm*

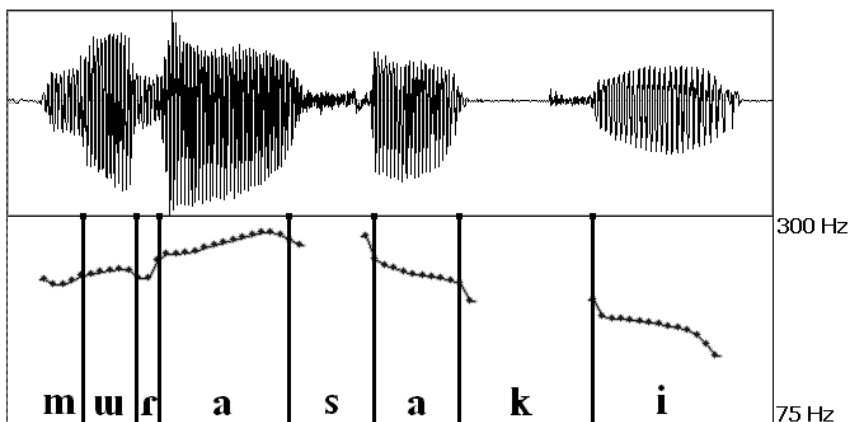
- Basic tonal contour: Starts low(ish), then flat or slightly decreasing high tone



(23) Accented word: [murásaki] ‘purple’

audio: http://japanese.about.com/bl_colors.htm

- Basic tonal contour: Starts low(ish); quickly goes high; one designated syllable is the pitch peak (H), after which the pitch drops precipitously
- Phonological analysis of the shape of the pitch accent (Pierrehumbert & Beckman 1988): H*+L (the H* tone associates to the designated accented syllable)



(24) Traditionally, two levels of phonological phrasing are recognized (McCawley 1968; Pierrehumbert & Beckman 1988)

- (a) **Minor phrase/MiP** (also ‘accentual phrase’) — words are grouped into MiPs
- Domain of Initial Lowering — the initial low pitch seen in examples above
 - Initial low pitch is therefore a diagnostic for the left edge of a MiP
 - Only one accented word is permitted per MiP

- Examples of Initial Lowering (Pierrehumbert & Beckman 1988: 27)

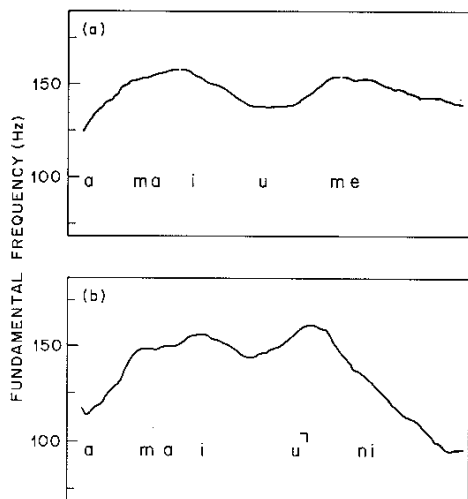
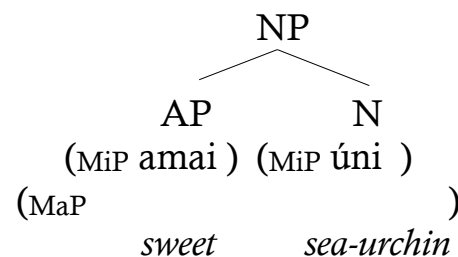
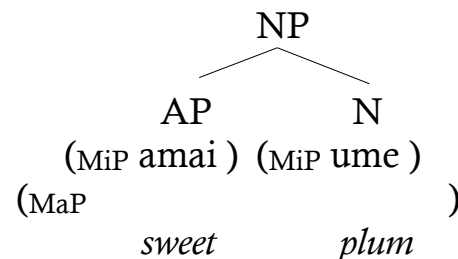


Figure 2.1
 F₀ contours for utterances of (a) *amai ume* 'sweet plum' and (b) *amai u'ni* 'sweet sea-urchin', produced by speaker OF.



- (b) **Major phrase/MaP** (also 'intermediate phrase') — MiPs are grouped into MaPs
 - Domain of downstep, as demonstrated in §1
 - Pitch reset is a diagnostic for the left edge of a MaP
- (c) A recent proposal by Ito & Mester (2007) suggests that MiP and MaP are simply the minimal and maximal levels of recursive phonological phrase structure, rather than two distinct prosodic units
 - this development will not be crucial for today's talk
- The level of phrasing relevant for FJ wh intonation *may* be the MiP

B. Fukuoka Japanese intonation

(25) "Fukuoka dialect" (Kubo 1989 et seq.)

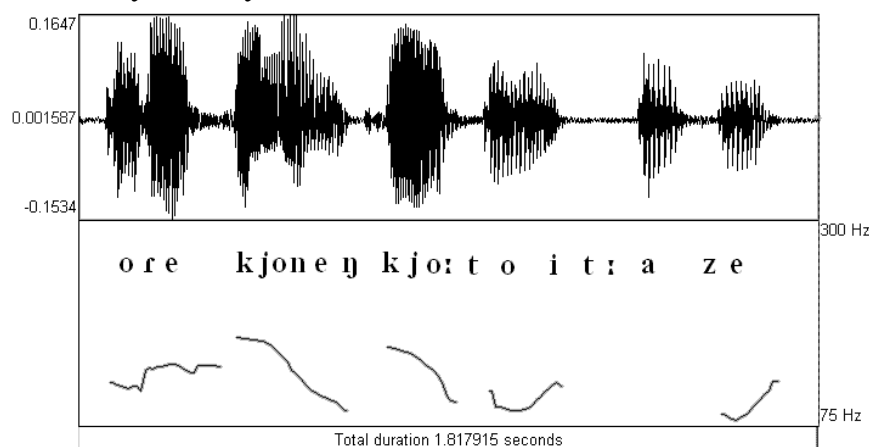
- (a) Spoken in the city of Fukuoka (Fukuoka pref., Kyushu) and the surrounding area
- (b) The city can be broadly divided into two subareas, Hakata and Fukuoka
- (c) There are differences between Hakata and Fukuoka dialects, but they generally pattern together with respect to the intonational phenomena discussed here



Map image courtesy of Wikimedia Commons, Maps_of_Japan

- (26) Fukuoka Japanese has accented and unaccented words, like Tokyo
- Basic assignment of tones to words operates in a similar way
 - However, the accent of a particular word may differ between the two dialects
 - Example: Tokyo [tábeta] vs. Fukuoka [tabéta] ‘ate’
- (27) FJ seems to have Initial Lowering and downstep like TJ → needs more research

Ore kyó-nen Kyóoto ít-ta ze. (Kubo 1989)
I last-year Kyoto went EMPH ‘I went to Kyoto last year, I say.’



3. wh-related prosody in Tokyo and Fukuoka Japanese

- (28) Basic facts about wh questions in Japanese
- Japanese is a head-final language; constituent order is Subj – Obj – Verb
 - wh elements are not required to move out of their base-generated position
 - However, any constituent (except the verb) can be optionally fronted, by a process known as **scrambling**, so a wh element may be fronted for this reason

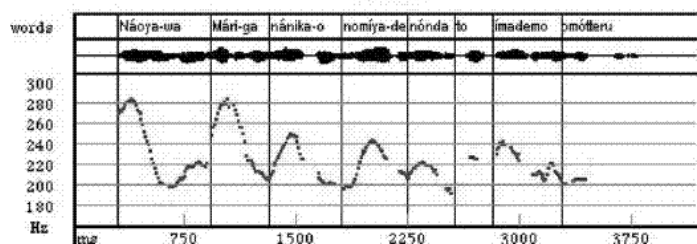
A. wh-related prosody in Tokyo

- (29) Matrix vs. embedded wh scope is distinguished by intonation

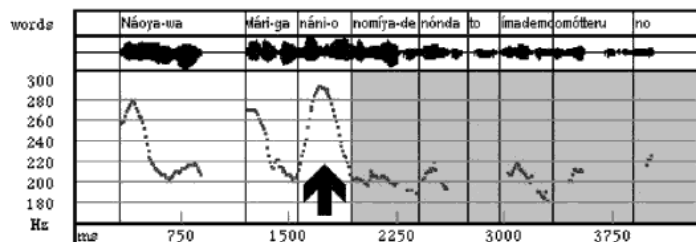
(Deguchi & Kitagawa 2002; Ishihara 2002, 2003, 2007)

- (a) a. *Non-interrogative sentence (No FI, default pitch contour)* (Ishihara 2007: 158-9)

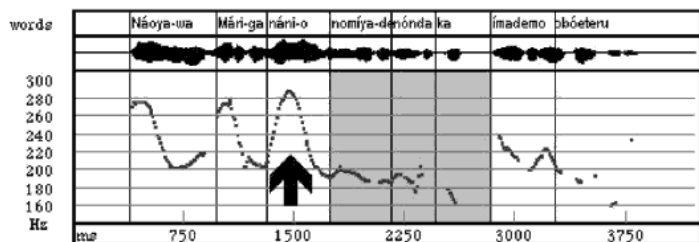
Náoya-wa [Mári-ga nánika-o nomiya-de nónda
 N.-TOP M.-NOM something-ACC bar-LOC drank
 to] ímademo omótteru.
 that even.now think
 ‘Naoya still thinks that Mari drank something at the bar.’



- (b) b. *Matrix wh-question (FI at the matrix clause)*
Náoya-wa [Mári-ga { náni-o nomíya-de nónda
 N.-TOP M.-NOM what-ACC bar-LOC drank
to] ímademo omóteru no? }FI
 that even.now think Q
 ‘What_i did Naoya still think that Mari drank *t_i* at the bar?’
 sh12b2t



- (c) c. *Indirect wh-question (FI at the embedded clause)*
Náoya-wa [Mári-ga { náni-o nomíya-de nónda
 Naoya-TOP Mari-NOM what-ACC bar-LOC drank
ka }FI] ímademo obóeteru.
 Q even.now remember
 ‘Naoya still remembers what_i Mari drank *t_i* at the bar.’
 sh11a1t



(30) Analysis (Ishihara 2002 et seq.) — assuming Minimalist Program, phases, Spell-Out

- (a) The *wh* element is marked with focus
 (b) A focused element in TJ is followed by a post-focus reduction intonational contour (pitch range is greatly compressed; pitch accents are barely discernable)
 (c) *wh*-scope/Focus correlation is a consequence of Multiple Spell-Out (see also Kratzer & Selkirk 2007)
- **Embedded *wh* scope** allows the structure to be sent to Spell-Out when the embedded CP is complete
 —> post-Focus reduction applies, extends only to **end of embedded CP**
 - **Matrix *wh* scope** means the embedded C cannot be sent to Spell-Out until the whole matrix clause is ready to go
 —> post-Focus reduction must apply to the **whole utterance**

(31) In Fukuoka, there is also a *wh*-related prosodic contour

- Can it be handled according to Ishihara’s (2002, 2003, 2007) approach to Tokyo?
- If so, this might avoid the need to extend the EEB model to allow for reference to *wh* features at the syntax/phonology interface

B. wh-related prosody in Fukuoka

(32) Unusual phenomenon, described originally by Hayata (1985) and in great detail by Kubo (1989 et seq.)

- Analysis based on native-speaker intuitions and careful impressionistic phonetics
- (a) Flat high tonal contour appears in wh-questions
 - Also in certain quantificational expressions built from wh-elements, such as *wh...mo* ‘no matter wh...’; see Kubo (1989 et seq.) for details
- (b) The H-tone span stretches between a wh-element and its [+wh] complementizer
- (c) Kubo: wh domain is **one single unaccented PhP** (MiP? — Kubo 2005)
- (d) What is interesting is that the wh domain can be very long, engulfing what would ordinarily be separate smaller PhPs in non-wh examples

(33) Notational conventions

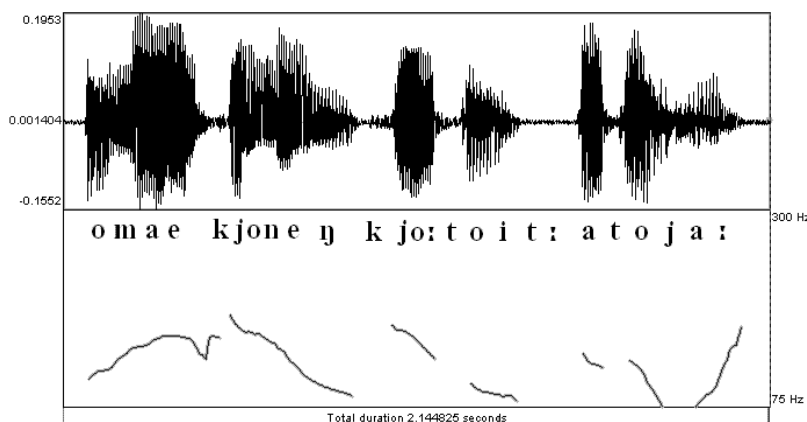
- wh elements and associated complementizers are marked with **bold underline**
- { } demarcates the wh-domain — extent of high flat tone
- ó acute accent marks a pitch accent that is realized
- ^ indicates a final rising tone

(34) Abbreviations for functional categories used in glosses

NOM nominative	ACC accusative	DAT dative	TOP topic
PRG progressive	NEG negative	COP copula	NZR nominalizer

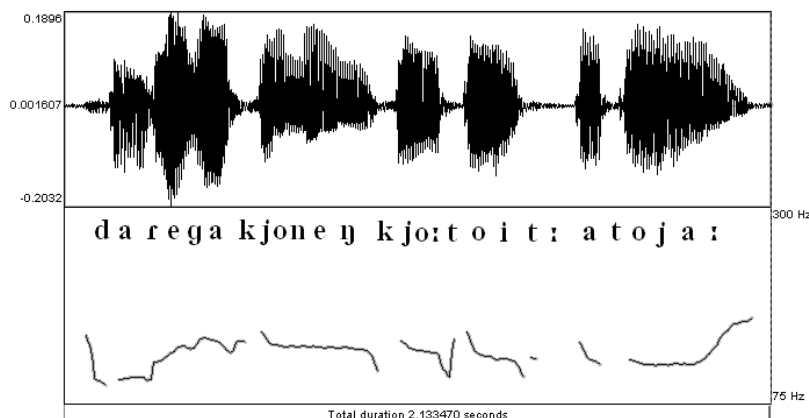
(35) Fukuoka yes/no-question: Ordinary pitch accents and phrasing appear

Omae kyó-nen Kyóoto it-ta tó ya Ø ^ (Kubo 1989)
you last-year Kyoto went NZR COP C_{-WH} ‘Did you go to Kyoto last year?’



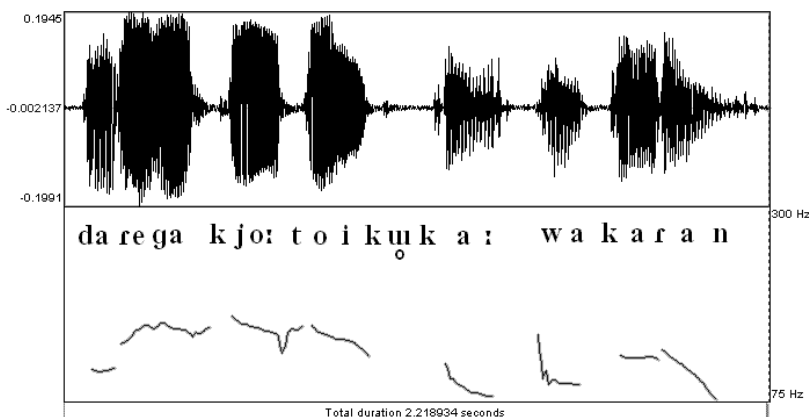
(36) Fukuoka matrix wh-question: High tone to end of matrix clause; no pitch accents

{ Dare-ga kyo-nen Kyooto it-ta to ya \emptyset ^ } (Kubo 1989)
who-NOM last-year Kyoto went NZR COP C_{+WH} ‘Who went to Kyoto last year?’



(37) Fukuoka embedded wh-question: H-tone span ends at [+wh] complementizer *ka*; lexical accents are deleted in the wh domain, but default penultimate accent appears

{ [CP Dare-ga Kyooto ikú ka] } wakar-án (Kubo 1989)
who-NOM Kyoto go C_{+WH} know-NEG ‘(I) don’t know who’s going to Kyoto.’



• Can the MSO approach account for the FJ pattern? —> Apparently not

(38) Fukuoka wh prosody is phonetically very different from Tokyo wh prosody

(a) TJ focus/wh prosody:

- salient pitch accent on the wh word
- greatly reduced pitch levels thereafter

(b) FJ wh prosody does not resemble focus intonation:

- lexical accent deletion on wh word and on subsequent items
- default accent insertion inside H-tone span
- Igarashi (2007) confirms that even focusing an unaccented NP (which is the status of a wh word at least after accent deletion has applied) does not produce a H-tone span like this
- Open question: How about a modified MSO, w/ reference to prosodic structure?

• **Potential problems for the EEB approach as well?**

- (39) Relating syntactic constituents to PhPs in the EEB model
- (a) Edge Alignment: Edges of lexical XPs → edges of PhPs (Selkirk 1986; Chen 1987; Selkirk & Tateishi 1988, 1991)
 - (b) Wrap-XP: Some PhP must contain all of a lexical XP (Truckenbrodt 1999)
 - (c) Focus marking can also cause or block Edge Alignment and Wrap-XP effects (Nagahara 1994)
- (40) FJ wh intonation does not fit these generalizations
- (a) The span between a wh element and its associated complementizer (C) is a single, unaccented PhP (Kubo 1989 et seq.)
 - (b) The special wh-PhP overrides the usual PhP formation criteria
 - Expected PhP breaks are absent within this wh span
 - (c) Looks like a WRAP effect: wh element and C must be phrased together
 - (d) But what is being “wrapped”? Not a syntactic constituent
- (41) Implication: Phrase edges, focus are *not* enough for the syntax/phonology interface
- (42) First task: Determine whether there *is* accent deletion in the wh-prosody domain

4. Empirical investigation of the FJ wh contour

- (43) Claim to test: Accents are deleted in a wh question in FJ
- Four experimental conditions; hypothesis based on Hayata/Kubo analysis

	<i>lexically accented</i>	<i>lexically unaccented</i>
<i>YN question</i>	mon <u>ó</u> -ga (accent realized)	ni <u>wa</u> -ni (no accent realized)
<i>WH question</i>	mon <u>ò</u> -ga (no accent realized)	ni <u>wa</u> -ni (no accent realized)

- (44) Participants
- Four undergraduate students at Kyushu University (three female, one male)
 - Self-reported native speakers of FJ
- (45) Materials (recorded as part of a larger set of utterances)
- (a) 2 sentence sets, the “8-mora set” and the “10-mora set”
 - (b) Each set had 1 sentence from each of the following categories (2 repetitions)
 - YN-acc: **yes/no** question containing **accented** lexical item
 - WH-acc: **wh** question containing **accented** lexical item
 - YN-un: **yes/no** question with only **unaccented** lexical items
 - WH-un: **wh** question with only **unaccented** lexical items

- (c) Within each set, the sentences formed segmentally matched pairs
- YN-acc and WH-acc: identical except for the initial word (wh or not)
 - YN-un and WH-un: identical except for the initial word (wh or not)
 - However, *acc* and *un* items were not matched segmentally

(46) Sentence sets

- The critical mora is **underlined** (lexically accented mora, or equivalent position)

(a) 8-mora set

YN-acc	age-na <i>that.kind.of</i>	monó -ga <i>thing-NOM</i>	aru <i>exist</i>	to <i>NZR</i>	Ø _[-WH] <i>C</i>
WH-acc	do _[+WH] -na <i>what.kind.of</i>	monò -ga <i>thing-NOM</i>	aru <i>exist</i>	to <i>NZR</i>	Ø _[+WH] <i>C</i>
YN-un	yome-ga <i>bride-NOM</i>	niwa -ni <i>garden-LOC</i>	oru <i>exist</i>	to <i>NZR</i>	Ø _[-WH] <i>C</i>
WH-un	dare _[+WH] -ga <i>who-NOM</i>	niwa -ni <i>garden-LOC</i>	oru <i>exist</i>	to <i>NZR</i>	Ø _[+WH] <i>C</i>

(b) 10-mora set

YN-acc	age-na <i>that.kind.of</i>	onná -ga <i>woman-NOM</i>	mieru <i>be.visible</i>	to <i>NZR</i>	Ø _[-WH] <i>C</i>
WH-acc	do _[+WH] -na <i>what.kind.of</i>	onnà -ga <i>woman-NOM</i>	mieru <i>be.visible</i>	to <i>NZR</i>	Ø _[+WH] <i>C</i>
YN-un	age-na <i>that.kind.of</i>	ayame -ga <i>iris-NOM</i>	mieru <i>be.visible</i>	to <i>NZR</i>	Ø _[-WH] <i>C</i>
WH-un	do _[+WH] -na <i>what.kind.of</i>	ayame -ga <i>iris-NOM</i>	mieru <i>be.visible</i>	to <i>NZR</i>	Ø _[+WH] <i>C</i>

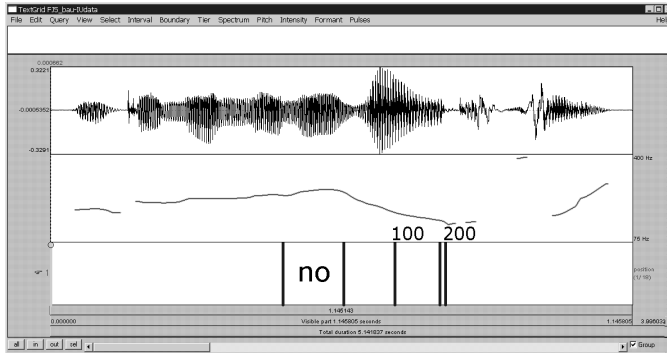
Analysis 1: Pitch fall after accented mora?

(47) Measurement procedure (Praat, v. 4.6.04)

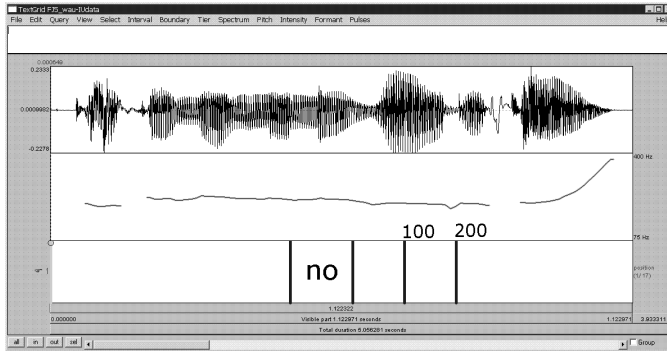
- (a) The **critical mora** was demarcated and its *mean* F0 was recorded
- (b) F0 measurements were also taken at these duration *points*:
- **100ms** and **200ms** after the right edge of the critical mora
 - 100ms seemed to approximate one mora
 - 200ms because generational difference in accent perception reported by Hayata (1985: 7-9) might mean that young FJ speakers have a slower F0 fall
- (c) Two values were computed for each utterance:
- F0 change at 100ms = (Critical-mora mean F0) – (F0 at 100ms point)
 - F0 change at 200ms = (Critical-mora mean F0) – (F0 at 200ms point)

(48) Sample utterances, with measurement points labeled

(a) YN-acc (participant 5) *age-na monó-ga aru to?*



(b) WH-acc (participant 5) *doge_l+WH_J-na monò-ga aru to?*



(49) Predictions

(a) The F0 change for YN-acc should represent the usual realization of an accent

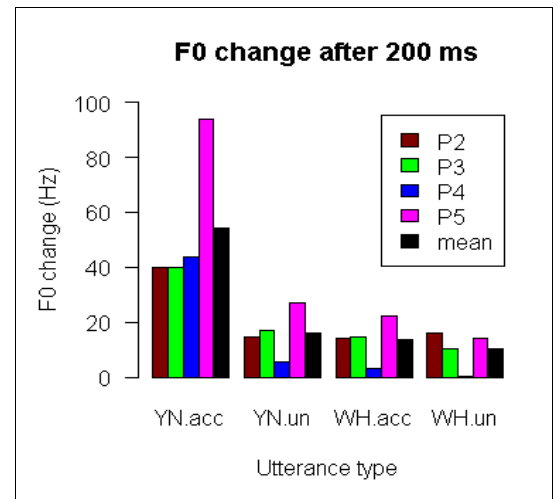
(b) If accents are lost in WH questions:

- i. YN-acc F0 change should be significantly larger than WH-acc F0 change
- ii. WH-acc F0 change should not be different from those for WH-un, YN-un

(50) **Results:** F0 change at 200ms

(a) Means by participant for each condition (F0 change in Hz)

	<i>YN-acc</i>	<i>WH-acc</i>	<i>YN-un</i>	<i>WH-un</i>
2	40.11	13.92	14.54	16.17
3	39.98	14.40	16.85	10.25
4	43.68	3.26	5.31	0.15
5	93.70	22.48	26.80	14.37
<i>Mean</i>	54.37	13.52	15.88	10.23



(b) Statistical analysis: Mixed model, to account for multiple observations within subject

i. YN-acc different from mean of other three conditions

Estimates

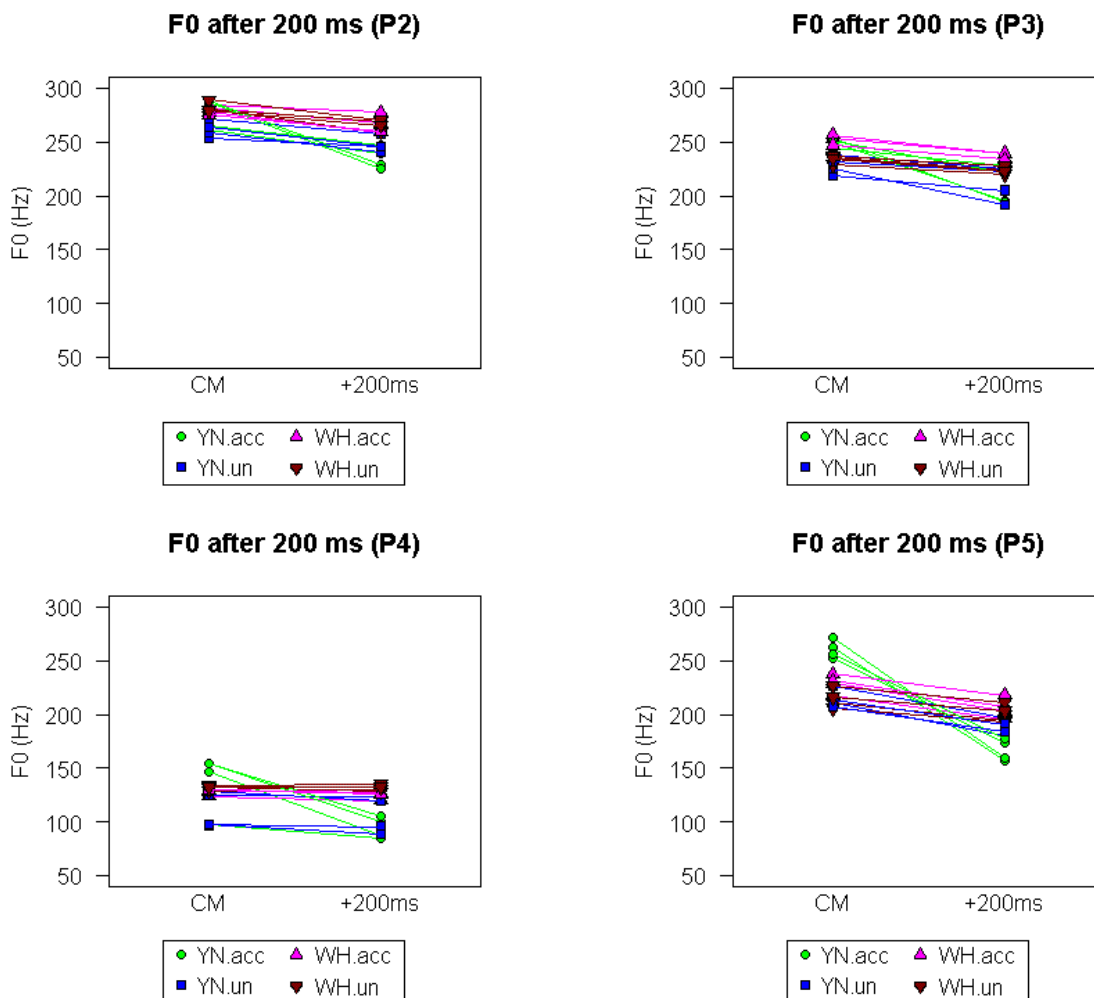
Label	Estimate	Standard Error	DF	t Value	Pr > t
YN-a vs mean of (YN-u WH-a WH-u)	41.1594	3.9222	57	10.49	<.0001

ii. WH-acc, YN-un, WH-un not different

Contrasts

Label	Num DF	Den DF	F Value	Pr > F
ITEM_TYPE	3	57	37.17	<.0001
YN-u vs. WH-a vs. WH-u	2	57	0.70	0.5027

(51) Utterances by individual participant



Analysis 2: Downstep?

(52) Igarashi & Kitagawa (2007, slide 48) on FJ accent in wh questions:

- One of the two speakers showed slightly but significantly lower pitch in verb when preceded by accented words than by unaccented words (downstep was observed).
- The results may suggest that lexical accents in the post-focal domain are actually NOT deleted.
- Although further research is clearly necessary, the results may be suggestive of incomplete neutralization of the accentedness of the post-focal words.
- We can not exclude the possibility that post-focal accents actually survives.

Can their findings be replicated with these materials?

(53) Measurement procedure (Praat, v. 5.0.32)

(a) The **critical mora** was demarcated, as above; *mean* and *max* F0 were recorded

(b) The **penultimate vowel** was demarcated; *mean* and *min* F0 were recorded

- Penultimate vowel was used because sentence-final [to] bears the final rising tone (H%) that signals a matrix question

(c) Two values were computed for each utterance:

- F0 change, mean | mean = (Critical-mora mean F0) – (Penult V mean F0)
- F0 change, max | min = (Critical-mora max F0) – (Penult V min F0)

(54) Predictions

(a) If wh-acc and wh-un have the same F0 change:

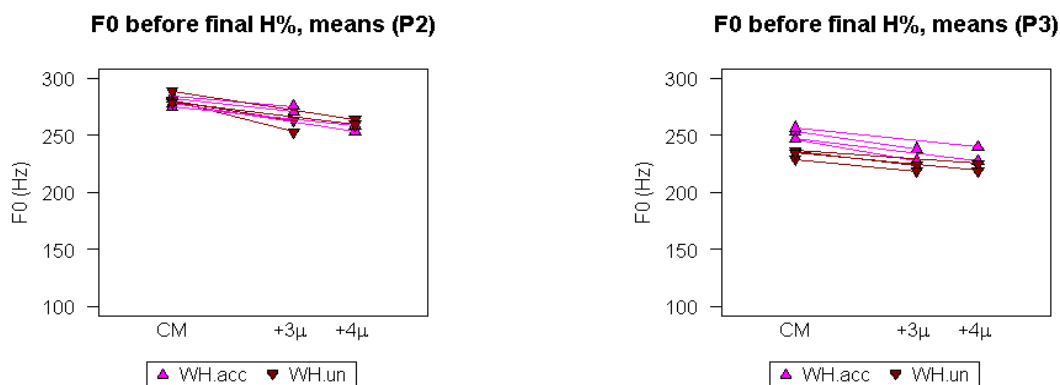
- Consistent with the claim that they have the same (surface) representation
- Evidence that accent deletion has taken place in wh-acc

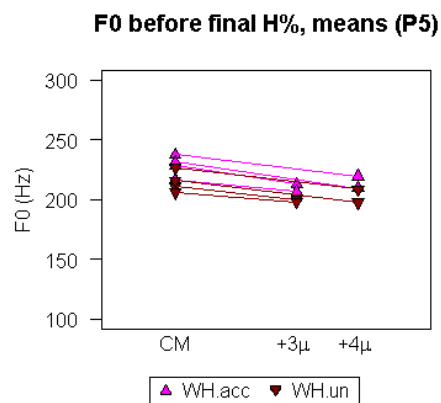
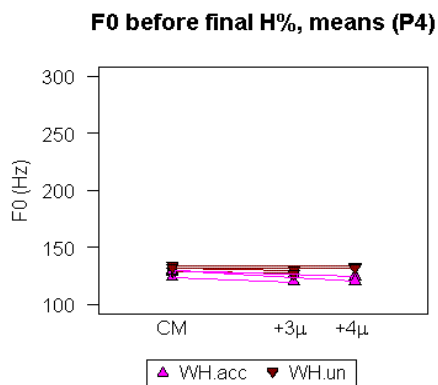
(b) If the F0-change measurements show downstep in wh-acc:

- Indication that underlying accent is present, influencing surface intonation

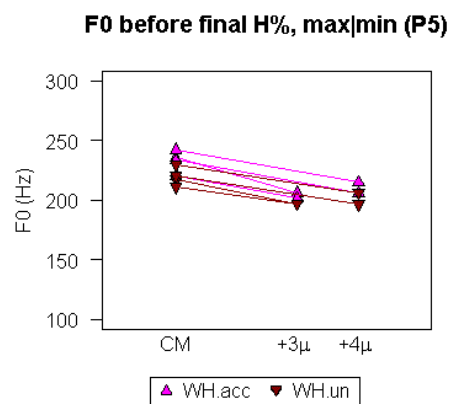
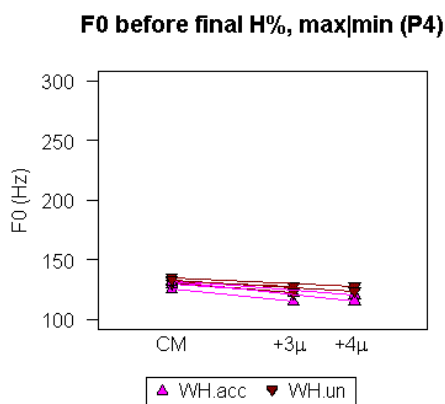
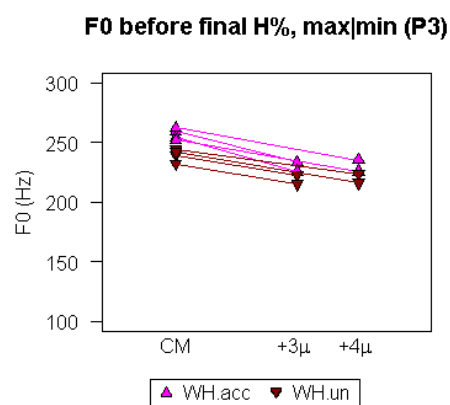
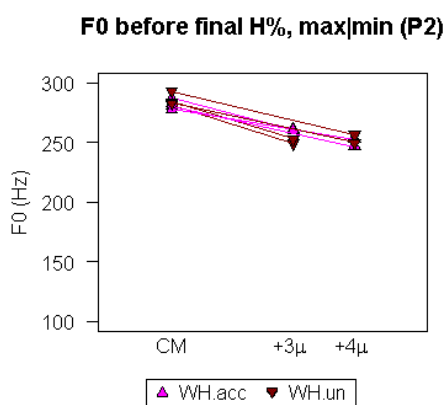
(55) **Results:** F0 change, mean | mean

- The two sentence-length conditions are distinguished in the graphs (+3 μ , +4 μ)





(56) **Results:** F0 change, max | min



(57) Summary of downstep results:

- Two participants (P2, P4) do not appear to distinguish wh-acc and wh-un
- Two participants (P3, P5) do appear to distinguish wh-acc and wh-un
 - wh-acc items have a higher overall F0
 - This does indicate a surface effect of the underlying accent
 - But does not look like downstep — difference begins early, at critical μ
 - Might need embedded questions (with final L) to fully test for this

(58) Interpretation: May be some kind of incomplete neutralization of the overall pitch contour in *wh*-acc items, but there is no compelling evidence that the underlying pitch accent itself (H*+L tone sequence) is realized on the surface

- Question: Would a FJ *listener* be able to distinguish WH-acc, WH-un?

(59) Conclusion of empirical study

The results of this small-scale study seem to support the claim that **accents are deleted** in the *wh* intonational span

- although underlyingly accented *wh* utterances may show overall higher F0?

5. Theoretical implications: The *wh*/C phrasing condition

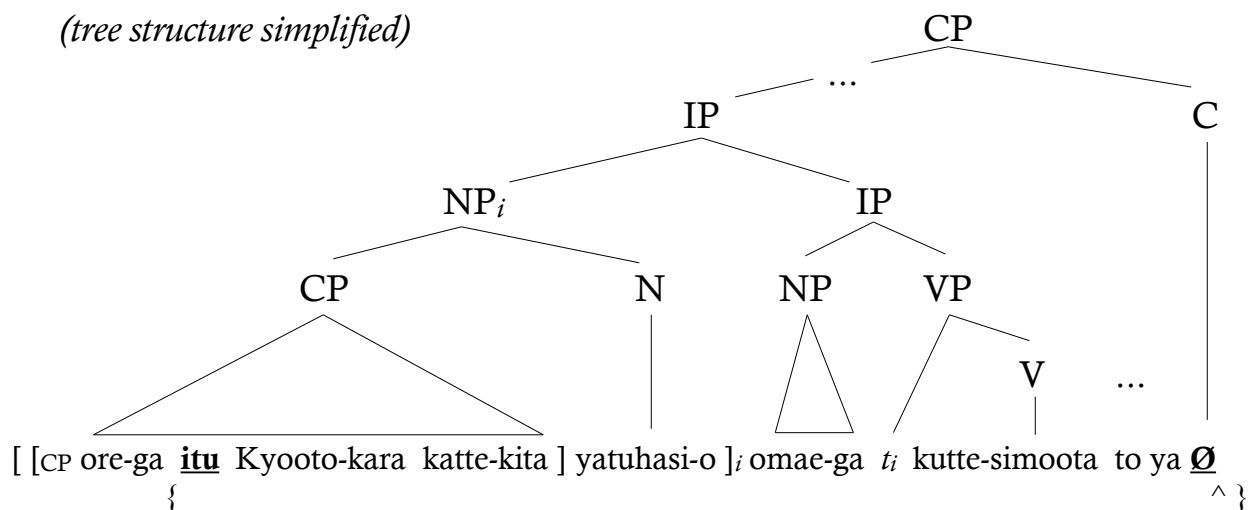
(60) FJ *wh* intonation vs. the EEB model (repeated from above)

- The span between a *wh* element and its associated complementizer (C) is a single, unaccented PhP (Kubo 1989 et seq.)
- The special *wh*-PhP overrides the usual PhP formation criteria
 - Expected PhP breaks are absent within this *wh* span
- Looks like a W_{RAP} effect: *wh* element and C must be phrased together
- But what is being “wrapped”? Not a syntactic constituent

(61) The *wh*-PhP can be structurally arbitrary

(example from Hayata 1985: 27)

(tree structure simplified)



[[I-NOM when Kyoto-from buy-brought] yatsuhashi-ACC]_i you-NOM *t_i* ate-up NZR COP C+WH

‘Which yatsuhashi did you eat, identified by when I brought them back from Kyoto?’

(lit., (*Eng) When_i did you eat the yatsuhashi [that I brought back from Kyoto *t_i*] ?)

- Left edge of *wh* domain starts at *wh* element, wherever it is in the structure
- Right edge of *wh* domain ends at the C that is associated with the *wh* element

- (62) FJ is part of a larger pattern:
wh/C phrasing condition (Richards 2006, slightly restated)
- Given:
- a wh phrase α
 - a complementizer C where α takes scope
- α and C must be separated by as few phonological phrase boundaries as possible, for some level of phonological phrasing
- (a) In some languages, α moves to be closer to C (English)
- (b) In some languages, large PhPs include both α and C (Fukuoka Japanese)
- (63) The wh/C phrasing condition connects two formerly unrelated patterns
- (a) The overt/covert wh movement parameter
- (b) wh-specific prosody, as in Fukuoka Japanese
- But what is the reason for this phrasing condition?
 - Can it be reduced to more fundamental principles?
- (64) Today's contribution: A more detailed look at Richards's phrasing condition
- Proposal: Evidence from Fukuoka intonational structure (based on detailed descriptions by Kubo 1989 et seq.) that it is the C, not the wh element α , that drives the phrasing requirement
- (65) So far, the Fukuoka examples do not determine whether the wh/C phrasing condition is driven by the C or by the wh element
- Two potentially active constraints:

(a) W_{RAP-WH} **Every** wh element must be in the same PhP as **some** associated C

(b) W_{RAP-C} **Every** $C_{[+WH]}$ must be in the same PhP as **some** associated wh

(W_{RAP} constraints — an extension of Truckenbrodt 1999)
 - Examples with multiple wh elements and/or Cs clarify which constraint is active
- A. Paired-list wh questions: Two wh elements, same C
- Paired-list questions in Fukuoka show that requirements originating with the wh element make little or no contribution to the wh/C phrasing condition
- (66) When two wh elements are associated with the same C: $[CP \dots wh_1 \dots wh_1 \dots C_1]$
- (a) A phrase break is required at left edge of second wh element (sometimes, at left edge of "constituent" (CP?) containing wh element)
- (b) A wh-PhP is initiated at each wh element

- (67) { **doko**₁-no daigaku-no gakusei-ga } { **nan**₁-nin ki-ta **tte**₁ ^ } (Kubo 1989: 3)
where-GEN university-GEN student-NOM how.many.people come-PRF C.QUOT_[+WH]
 ‘How many students came from which university, reportedly?’

- Kubo (1989: 3) explicitly says ungrammatical without the break

- (68) W_{WRAP}-WH (if it exists at all) must be ranked *below* the constraint that initiates a new PhP at each wh element

ALIGN-L(wh, PhP) The left edge of every wh element is aligned with the left edge of some PhP

- (69) ALIGN-L(wh, PhP) >> W_{WRAP}-WH

[_{CP} doko ₁ ... nan-nin ₁ ... Ø ₁]	ALIGN-L(wh, PhP)	W _{WRAP} -WH
(a) { doko ₁ ... nan-nin ₁ ... Ø ₁ }	*!	
▶ (b) { doko ₁ ... } { nan-nin ₁ ... Ø ₁ }		*

- Consequence: *doko* is not phrased with its C because having a PhP edge at *nan-nin* is more important

B. Nested wh questions: Two wh elements and two Cs

- Nested wh questions show that W_{WRAP}-C, unlike W_{WRAP}-WH, is active in Fukuoka

- (70) When a wh chain involving the matrix C completely surrounds a wh chain involving an embedded C: [_{CP} ... wh₁ ... [_{CP} ... wh₂ ... C₂] ... C₁]

(a) Entire wh₁...C₁ span is one large wh-PhP

(b) Crucially, there is no PhP break at wh₂

- (71) { **dare**₁-ga [_{CP} oretati-ga **doko**₂-ni iku **ka**₂] sit.too to ya ^ Ø₁ } (Kubo 1989: 3)
who-NOM we-NOM where-LOC go C know.STAT NZR COP C_{+WH}
 ‘Who knows where we are going?’

- (72) If ALIGN-L(wh, PhP) >> W_{WRAP}-WH were the only relevant constraints, we would expect a new PhP to start at *doko* — but this is not the case

[_{CP} dare ₁ ... [_{CP} ... doko ₂ ... ka ₂] ... Ø ₁]	ALIGN-L(wh, PhP)	W _{WRAP} -WH
▶ (a) { dare ₁ ... doko ₂ ... ka ₂ ... Ø ₁ }	*	
☹ (b) { dare ₁ ... } { doko ₂ ... ka ₂ ... Ø ₁ }		*

- (73) Therefore, it is not W_{RAP-WH} that enforces the wh/C phrasing condition in FJ, but W_{RAP-C}

$W_{RAP-C} \gg \text{ALIGN-L}(\text{wh, PhP}) \gg W_{RAP-WH}$

[CP dare ₁ ... [CP doko ₂ ... ka ₂] ... Ø ₁]	W_{RAP-C}	$\text{ALIGN-L}(\text{wh, PhP})$	W_{RAP-WH}
▶ (a) { dare ₁ ... doko ₂ ... ka ₂ ... Ø ₁ }		*	
(b) { dare ₁ ... } { doko ₂ ... ka ₂ ... Ø ₁ }	*!		*

- Starting a new PhP at *doko* is avoided because that would leave C₂ phrased with no wh element

- (74) Crucial ranking for Fukuoka: $W_{RAP-C} \gg \text{ALIGN-L}(\text{wh, PhP}) \gg W_{RAP-WH}$

- Note that there is actually no evidence here that the constraint W_{RAP-WH} exists

- (75) Summary

- (a) What makes the wh element and the C be phrased together in Fukuoka Japanese is W_{RAP-C} , not a putative W_{RAP-WH}

W_{RAP-C} **Every** C_[+WH] must be in the same PhP as **some** associated wh

- (b) This means that it is the C, not the wh element, that is ultimately responsible for Richards's (2006) wh/C phrasing condition (at least in Fukuoka Japanese)

- Needs to be explored in other languages as well

- (76) Compare the principle of “Enlightened Self-Interest” (Lasnik 1995)

Syntactic movement is driven by the requirements of the landing site rather than requirements of the moved element

- If there is only a W_{RAP-C} constraint, and no W_{RAP-WH} constraint, this would be a prosodic analogue of Enlightened Self-Interest
- This in turn would support Richards's (2006) insight that wh-specific prosody and syntactic wh movement are related

6. Conclusions

- (77) The wh intonational pattern in Fukuoka Japanese, as described by Hayata (1985) and Kubo (1989 et seq.):

- (a) seems to be difficult for the MSO model to account for (§3)
 (b) receives empirical support from the phonetic pilot study (§4)

- (c) requires the addition of something like Richards' (2006) wh/C phrasing condition to the EEB model
- Implication: information about wh chains is available to the syntax/phonology interface
- > Question: What about other types of operator/variable relationships?
- (d) sheds further light on the nature of the wh/C phrasing condition — the C drives the requirement
- (78) Further quantitative work on this dialect has the potential to contribute significantly to our understanding of the syntax/phonology interface

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