Tone and WH-Questions in Fukuoka Dialects
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The data given are from two dialects of Fukuoka city:
• Hakata (Hayata 1985)
• Fukuoka (Hayata 1985; Kubo 1989 et seq.)

I. The phenomenon: "High plateau" tone contour in WH-questions and related structures
(First observed by Hayata (1985); further investigated by Kubo (1989 et seq.))

A. Basic facts about tone: (Hakata examples, from Hayata (1985))
• The tonal system is similar to that of Tôkyô (cf. Hayata 1985).

(1) Word with lexical accent
\[\text{noti} \rightarrow \text{life} /\text{inóti}/\]
• Note: like Tôkyô, location of pitch accent is contrastive for nouns only

(2) Word without lexical accent
\[\text{atama} \rightarrow \text{head} /\text{atama}/\]
• Note: unlike Tôkyô, verbs and adjectives must have pitch accent

(3) Accents within larger phrases
(a) \{ \underline{\text{gohan}} \} 'rice' /\text{góhan}/
(b) \{ \underline{\text{tabeta}} \} 'ate' /\text{tabeta}/ (\rightarrow obligatory penult accent in verbs)
(c) \{ \underline{\text{gohan tabeta}} \} 'ate rice/a meal' (only leftmost accent surfaces in MiP)
(d) ~ \{ \underline{\text{gohan}} \}{ \underline{\text{tabeta}} \}

(4) Tonal phonology (following analysis of Tôkyô by Poser 1984, Pierrehumbert & Beckman 1988):
(a) Pitch accent is H*+L
(b) There is a phrasal H- that results in the apparent (L)HHHH... contour for unaccented phrases
(c) Only one accent per MiP
(d) There is "initial lowering" at the MiP level

(5) Phrasal tone specifications: Apparently, the same as in Tôkyô
\[
\left(\begin{array}{cc}
\%L & H- \\
\text{IP} & \left(\begin{array}{c}
\text{MaP} \\
\text{MiP}
\end{array}\right)
\end{array}\right)\left(\begin{array}{c}
\%L \\
\text{MiP}
\end{array}\right)\] \\
\text{(Pierrehumbert & Beckman 1988)}

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B. WH-questions and the H-plateau

First, some data:

(6) Compare the following utterances (from Kubo (1989)):

[Lines drawn above and below utterances represent pitch. Underlying accents are marked (for reference) even in cases where they do not surface as pitch accents.]

(a) *Declarative* ORE kyōnen KYÔOTO ITTA ze.  
I last.year Kyoto went EMPH

(b) YNQ²  Ōmae KYÔOTO ITTA TÔ-ya'?  
Did you last.year Kyoto went COMP?

(c) WHQ  Dare-ga KYÔOTO ITTA to-ya'? who last.year K. went COMP? 
Who went to Kyoto last year?

The expected pitch-accents on kyōnen, KYÔOTO do not appear in the WH-question.

(7) Very long WH-questions

(a) Itu omae kono.mae ore-no syookai.sita onna to atte deeto kootya nond ona to.ya-?  
when you [ this.before I-NOM introduced ] woman with meet date have tea drank COMP

(Toyata 1985; informant is Kubo)

(b) Itu omae wazawaza ore-ga kuroo-site Kyooto kara katte kita yatsuhashi kutte-simoota to ya-?  
when you deliberately [ I-NOM pains-taking Kyoto from buy came ] yatsuhashi ate-up COMP

( KUBO 1989)

(8) Varying the word order (Kubo 1989):

(a) Itu KYÔOTO Iku ya?  
when Kyoto go COMP

(b) KYÔOTO Itu Iku ya?  
Kyoto when go COMP

(9) Embedded WH-questions (Kubo 1996):

(a) [-WH] matrix clause, [+WH] embedded clause: H-plateau extends only over embedded question

[ Itu arîta-ga Kôobe iku 'ka ] wasurêta.  
[I forgot [ when you-NOM Kobe go WH-COMP ] forgot]

(b) [+WH] matrix clause, [+WH] embedded clause: H-plateau extends over whole clause

Dare-ga [ itu Kôobe iku 'ka ] sittóo-ya?  
Who-NOM [ when Kobe go WH-COMP ] knows

²The usual requirement that verbs have penultimate accent is suspended before the COMP-like particle to.
Kubo (p.c.) has recently suggested that there is default accent insertion at the right edge of the H-plateau. However, there are WH-complementizers (na, ya; cf. (8, 10)) that occur without an accent. This fact suggests that the accents that occur with, e.g., 'ka and kái-na are intrinsic to these complementizers, not inserted by default at the phrasal level.

(10) WH-Comps can be accented or unaccented (Hayata 1985):

(a) Nan kái-na?
   \textit{what WH-Comp}  'What is it, I wonder?'

(b) Nan na-?
   \textit{what WH-Comp}  'What is it?'

• The analysis

(11) \textit{Observations} to note

• All lexical accents from the WH-element to its associated +WH-complementizer disappear (except the one on or inserted by the complementizer, as in kái-na, 'ka')
• H pitch is seen throughout this region, no matter how long it is
• Phrase breaks are rarely (Hayata 1985) or never (Kubo 1989) permitted inside this region (but see Kubo 1989 regarding same-clause multiple WH-phrases)

(12) \textit{Analysis} proposed by Hayata (1985), as modified by Kubo (1989)

• The region from the WH-element to its complementizer becomes one phonological phrase [=MiP]
  (Note: The WH-Comp of a matrix clause may be null.)
• All accents are deleted from within this region and the "default" tonal pattern is observed³
  (Note: Usually, in Japanese, the leftmost accent in a MiP is preserved, although any further accents within the same MiP must be deleted.)

II. Implications for the syntax-phonology interface

• What is the tonal representation for WH-questions?

(13) If the Hayata/Kubo analysis is correct, then: • the H-plateau is an unaccented region

• the H is one single phrase tone

\begin{verbatim}
Dare-ga kyõnen Kyôoto itta to-ya-? (MiP)
...L% H- H% who last.year Kyoto went COMP
\end{verbatim}

• How is this representation created?

(15) The H-plateau region seems best defined according to Kubo's formulation:

the span from the left edge of the WH-word to the right edge of its associated WH-Comp

In other words, some constraint compels the members of a WH-feature chain to belong to the same MiP.

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One idea (cf. Truckenbrodt 1995 for WRAP constraints):

WRAP-WH Elements with the same WH-feature must be contained in the same MiP.

Another possibility: An extension of "prosodic deletion under Focus" (Truckenbrodt 1995)?

Suppose there is a constraint ALIGN-R(foc).

One way to improve performance on this constraint is to delete intervening levels of prosodic structure.

An impossibility: There is no way to identify the H-plateau region as a syntactic constituent.

Unresolved issue: How is the prosody able to "see" WH-features or WH-chains?

III. Empirical investigation

Questions under consideration:

(a) Do younger Fukuoka dialect speakers still have the H-plateau in WH-questions?
(b) Is the Hayata/Kubo analysis of the tonal structure of WH-questions correct?

If the H-plateau is an unaccented MiP, it should have a gradual downtrend equivalent in slope to something that is known to be an unaccented MiP.
A. Experimental design and materials

(22) The following classes of utterances were tested. Each contained utterances of length 4-12 moras.

(a) WU: WH-questions containing only unaccented words
(b) WA: WH-questions containing accented words
(c) SU: YN-questions (etc.) containing only unaccented words
(d) SA: YN-questions (etc.) containing accented words
(e) N: NPs of the structure N no N no...

• Note: The W and S sentences were matched in terms of structure and lexical items.

(23) Recordings were made during June and July of 1998:

• Three informants, all Kyushu University undergraduates (“informants 4, 5, 6”)
• Utterances were presented in a different random order for each informant
• Each utterance was presented once and was read two times by informants

B. Results and discussion

• Do young people have the H-plateau?

(24) WU utterances in unaccented context = 10 x 3 informants = 30 utterances
WA utterances in unaccented context = 10 x 3 informants = 30 utterances
Number of utterances with accents present: 2 (1 each from informants 5 and 6)

(25) WU utterances in accented context = 10 x 3 informants = 30 utterances
WA utterances in accented context = 10 x 3 informants = 30 utterances
Number of utterances with non-context accents present: 3 (all from informant 5)

(26) Anomalies from the accented-context sets

Note: The accented WH-Comp kai-na has two possible accents: ’kai-na or kái-na.

WU: (a) dare-ga niwa ni óru kai-na. (expect orú kai-na ~ oru kái-na)
who-NOM garden in be COMP

(b) dare-ga ayame eránda kai-na. (expect erandá kai-na ~ eranda kái-na)
who-NOM irises chose COMP
(Informant produced this form on first repetition only)

WA: (c) dogena onna-ga miéru kai-na. (expect mierú kai-na ~ mieru kái-na)
what.kind woman-NOM be.visible COMP

• In all three cases, what is happening is that the word preceding the COMP receives its expected (non-WH) accentuation. Pre-accenting at word, rather than syllable, level?
• This informant shows this pattern with kai-na in some non-WH cases as well.

(27) Conclusion: Generally speaking, these informants still have the H-plateau in WH-questions.
• Is the H-plateau an unaccented MiP?

(28) No instrumental results are yet available
Impressionistically: Sounds like this is probably the case.

(29) Predicted results of downtrend slope comparison tests:
  (a) WA = WU All WH-questions of equivalent length should have the same
      slope, whether they contain any lexically accented words or not
  (b) WA = WU = SU WH-questions should have the same slope as unaccented utterances
  (c) WA, WU * SA WH-questions should differ from ordinary accented utterances

(30) A sample comparison
  (a) wa12a1/6  dare-ga ano iró-ba erandá kai-na.
      who-NOM that color-ACC chose COMP
      'Who chose that color, I wonder.'
  (b) ba12a1/6  áya-ga | ano iró-ba | erandá kai-na.
      Aya-NOM that color-ACC chose COMP
      'Did Aya choose that color, I wonder.'

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