Tone and intonation in Cantonese English

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Sentence prosody in tone languages

1. Is the sentence prosody given by a concatenation of the lexical tone patterns?
2. If not,
   a. are there boundary tones?
   b. are there phonetic implementation rules with major effects?
   c. are there tone adjustments?
British English

Intonation:
a. Pitch accents (tone melody, marks accented syllable)
b. Boundary tones (marks boundary of phonological constituent)

‘The same intonation’ = the same pitch accent plus boundary tones

\[
\begin{align*}
\text{tea} & \quad \text{teapot} & \quad \text{teapot exhibition} \\
H^*L & \quad H^*L & \quad H^*L \\
H% & \quad H% & \quad H%
\end{align*}
\]
Compare British and Cantonese English
Pilot experiment - Production

...  
14. Tea  
15. Lemon tea  
16. Apple !  
17. Chinese !  
18. Apple ?  
19. Who are you to comment about that?  
20. Who is the one who thought of the good example?  
21 The White House  
...  
55.
Compare British and Cantonese English

- tea
  - H* H%
- apple
  - H* L H%
- consideration
  - %L H* H* H%

- tea
  - H* L H%
- apple
  - H* L H%
- consideration
  - %L H* H* H%

- tea
  - H* L%
- apple
  - H* L%
- consideration
  - %L H* H* L%
Compare British and Cantonese English
1. Assign H to syllables from secondary stress to primary stress.
2. Assign L to any syllables after the primary stress.
3. Assign M to any pre-stress syllable.
Cantonese English (Luke 2000)

Every syllable has a tone:

M H .... (L)

tea

| H

apple

| H | L

consideration

| | | | | | M | H | H | H | L
Cantonese English (Luke 2000)

Every syllable has a tone:

M H .... (L)

‘The same intonation’ = the same boundary tone

tea
H H%

apple
H LH%

consideration
M H H H L H%
Compare British and Cantonese English
Compare British and Cantonese English
Compare British and Cantonese English

H% = interrogative

Ø = declarative

L% = emphatic
Research questions

1. Ungrammatical:  Tea  And:  Tea

2. Ungrammatical:  Apple  Apple

3. Level tone = declarative

4. There are two phonological falls for words ending in L.
Contours of interest

Emphatic fall
Fall
Fall-Rise
Level
Rise
Experiment I

- 5 contours x 2 registers x 4 words
- 42 listeners whose second language is ‘English’ and whose familiarity with Cantonese English is at least ‘moderate’ (all participants).
- Task: Bad? If not: Statement – Question?

1. BAD □ STATEMENT □□□□□□□□□□ QUESTION

- Two counterbalanced orders
Grammaticality scores

Tea/lemon grass  apple/October

Ungrammatical - Grammatical

Ungrammatical - Grammatical

Figure 8. Normalized grammaticality scores for five artificial pitch contours on words with final main stress (panel a) and words with penultimate main stress (panel b).
Grammaticality scores

Tea/lemon grass

apple/October

Figure 8. Normalized grammaticality scores for five artificial pitch contours on words with final main stress (panel a) and words with penultimate main stress (panel b).
Question scores

**Tea/lemon grass**
Final H

**apple/October**
Final L

**Figure 9.** Question scores for the emphatic fall, the medium fall, the level tone and the rise in words with final main stress and for the emphatic fall, the medium fall and the fall-rise for words with penultimate main stress.

H-ending words: Interaction ord x contour
Do the contours form triangles perceptually?

Tea

Apple
## Contours of interest

<table>
<thead>
<tr>
<th>Tea</th>
<th>Apple</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emphatic fall (High)</td>
<td>Emphatic fall (High)</td>
</tr>
<tr>
<td>Emphatic fall (Low)</td>
<td>Emphatic fall (Low)</td>
</tr>
<tr>
<td>Level (Low)</td>
<td>Plain fall (Low)</td>
</tr>
<tr>
<td>Rise (High)</td>
<td>Fall-Rise (High)</td>
</tr>
<tr>
<td>Rise (Low)</td>
<td>Fall-Rise (Low)</td>
</tr>
</tbody>
</table>
Experiment II

- 5 L-ending contours x 2 words
- 5 H-ending contours x 2 words
- 5 x 4 pairs per word
- 42 listeners
- Task: Same or different?

- Two 5 x 5 difference matrices, with equal cells in diagonal.
- Factor analysis
Forced two-dimensional scaling solution for H-ending an L-ending contours.
Conclusions

1. Ungrammatical: Tea Yes! And: Tea Looks like it.

2. Ungrammatical: Apple

3. Level tone = declarative

4. There are two phonological falls for words ending in L.

H H% is fine, but not L L%
Sentence phonology.

1. Is the sentence prosody given by a concatenation of the lexical tone patterns?
2. If not,
   a. are there boundary tones?
   b. are there phonetic implementation rules with major effects?
   c. are there tone adjustments?
3. Absence of ‘deaccenting’ and vowel reduction.
Absence of ‘deaccenting’

1. Compound = Phrase
   the White House – the white house
2. No Post-Focus Compression
No vowel reduction

Cantonese English

b. The workers can fish

M H H M H

‘The workers are able to fish’

d. The workers can fish

M H H H H

‘The workers put fish in cans’
Downstep

Cantonese English DOWNSTEP: H → downstepped high pitch / { ... H M ___ ... }_{IP}
(26) lemon tea

(27)
a. You should stop thinking about it

b. You can drink tea or coffee in there
Tone adjustments


You should stop thinking about it

| | | | | | | | | |
| H | M | H | H | H | M | H | M |

This post-lexical rule may have quite many instances of L to take care of.
Alternatively: an accentual analysis.
a. You should stóp thínking about it
b. Yóu should stóp thínking abóut it
c. Yóu should stóp thínking abóut it
   H H H H

d. Yóu should stóp thínking abóut it
   H H H H H

e. Yóu should stóp thínking abóut it
   H M H H H M H M
Thank you for your attention

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