The Emergence of Tonal Contrast in Contemporary Seoul Korean: a Longitudinal Case Study*

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English loanwords in Contemporary Korean (Kang 2008)

• Present day Korean
  – Voiced stops $\rightarrow$ Lenis stops (Fortis stops : < 20%)
    e.g. *game* $\rightarrow$ k‘eim

• Enlightenment Period Korean, 1930s
  – Voiced stops $\rightarrow$ Fortis stops (ca. 60%)
  – Best match the low VOT of English voiced stops

• Why?
• Korean-internal sound change?
• Acoustic data from early 20th century?
Silva (2006)

• In younger Seoul Korean speakers’ speech, VOT contrast between lenis and aspirated sounds are neutralized in phrase-initial position.
  – VOT: Aspirated \approx\text{Lenis} > \text{Fortis}

• The contrast is redefined as one of a tone.
  – f0: Aspirated \approx\text{Fortis} > \text{Lenis}

Presumed Trajectory of Tonogenesis

- Consonantal phonation contrast (VOT) only
  ↓
- Consonantal phonation contrast (VOT) and vocalic tonal contrast (f0) coexist
  ↓
- Vocalic tonal contrast (f0) only
Presumed Trajectory of Tonogenesis

- Consonantal phonation contrast (VOT) only (???)

- Consonantal phonation contrast (VOT) and vocalic tonal contrast (f0) coexist
  (Older Seoul speakers, data from 1960s)

- Vocalic tonal contrast (f0) only
  (Younger Seoul speakers)
Han (2005)

『普通学校 朝鮮語読本』音声資料에 대한 음운론적 연구

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要約 및 抄録

本稿는 1935년에 録音된『普通学校 朝鮮語読本』音声資料를 바탕으로 당시의 音韻體系 및 音響의 特徴과 音韻現象을 살펴보는 것을 목표로 한다.『普通學校 朝鮮語讀本』은 조선총독부에서 편찬한 普通學校用 敎科書이다. 그리고 演習 자료는 読本에서 27편을 추려 당시 師範附屬學校 学生들의 朗讀을 녹음하여 1935년에 SP판으로 제작한 것으로서 당시의 서울말을 고스란히 담고 있다.

이 音盤에서는 19개의 子音이 확인되며 分布 様相도 현대 서울방언과 같다. 그러나 ‘에, 阿’는 현대 서울방언에 비해 締音 辨別이 잘 되며, ‘위, び’는 單純母音으로 실현되는 예가 많다. ‘에나 오는’는 다양한 자유변이가 나타난다. 音韻現象 중 用言的 活用에서 나타나는 ‘-아/-어X’의 交替에서 소위 母音調和에 맞지 않는 예가 폭 넓이 발견된다. 또한 ‘시’가 포함된 韻母이나 聲母말미 ‘-시’의 締音에 서 나타나는 ‘유’ 脫落 現像是 ‘시’의 締音過程에 대해 중요한 端緒를 제공한다.
Han (2005)

- A phonological analysis of Seoul Korean as represented in recordings of Korean language textbook from 1935.
- Produced in SP in 1935 and reproduced in CD in 2004.
- Speakers:
  - Dr. Chung In-Seop, a linguist with a PhD from University of London (1935: age 41, male)
  - Several 5th graders, one of them is Mr. Chung Kye-Whan (1935: age 10, male)
- Mr. Chung Kye-Whan re-recorded the textbook in 2005 (2005: age 80, male)
Syllabary
Data analyses

• 30 phrase-initial CV sequences
  – C: k, t, p, kh, th, ph
  – V: a, ə, o, u, i

• Measurements
  – VOT
  – f0 at vowel onset and vowel midpoint (reciprocal of time distance between pulses as given by Praat)
  – h1-h2 at vowel onset and vowel midpoint

• Sound quality issue
  – Often the stop release is not very clear
  – Two separate analyses
    • By a research assistant who is unaware of the purpose of the project
    • By the first author
      ➔ Comparable results for VOT
VOT

- VOT significantly differs depending on the laryngeal feature (F(1, 10)=225.998, p<.001).
- This effect is similar across speakers (F(3, 10)=.649, p=.601).
F0 at vowel midpoint

- F0 at vowel midpoint significantly differs depending on the laryngeal feature ($F(1, 15)=10.825, p=.005$).
- This effect is NOT! uniform across speakers ($F(3, 15) =4.254, p=.023$).
A significant difference across speakers (F (3, 55) = 7.894, p<.001)

Post-hoc Tukey HSD:
2005 Adult differs from the others.
Summary

• VOT
  – For all speakers, aspirated stops have a significantly longer VOT than lenis stops.
  – VOT was a robust difference for the speakers in the 1930s and for the adult speaker of 2005.

• f0:
  – For the adult speaker of 2005, aspirated stops show a substantially higher (ca. 20Hz) f0 than lenis stops.
  – The speakers in the 1930s show a difference in the same direction but the difference is minimal (ca. 3 Hz).
  – f0 contrast at vowel midpoint has not yet developed in the 1930s.
Conclusion

• 1930s data suggests a possibility that the tonal contrast for the laryngeal category was not yet developed in 1930s.

• It is plausible that earlier adapters relied heavily on VOT for phonation contrast and this is in line with the observed diachronic shift in loanwords.