A scalar constraint approach to the typology of loanword adaptation

Brian Hsu & Karen Jesney
George Mason University    University of Southern California

1. Patterns of loanword adaptation

Phonological systems often impose different restrictions on native vs. non-native words.

- **A. Superset-at-periphery**: Less nativized loanwords allow a greater range of marked structures than native words. (Paradis & Lebel 1994, Lib & Mester 1995)

- **B. Subset-at-periphery**: Less nativized loanwords allow a smaller range of marked structures than native words. (Kenslowicz 1995)

- **C. Divergent repairs**: Loanword classes differ in the repairs used to avoid marked structures. (Kang 1996, Peperkamp et al. 2008)

All of these patterns are impitational.

Claim: Harmonic Grammar with scalar constraints can capture all of these patterns of adaptation.

2. Scalar constraints

In Harmonic Grammar (Legendre et al. 1990, Smolensky & Legendre 2006) constraints are weighted.

- **Proposal**: A scaling factor \( s \) is added to the basic constraint weight \( w \). The value of \( s \) increases with distance from the core.

- Distance from the core is continuous, with the core assigned a distance value \( d = 0 \).

- The penalty assigned by a constraint \( C = w + s(d) \)

Example:

- **C1 weight** = 2
  - C1 scaling factor = 1
  - C2 weight = 1
  - C2 scaling factor = 2

At the core:

- C1 penalty = 2 + 1(0) = 2
- C2 penalty = 1 + 2(0) = 1

At distance \( d = 3 \):

- C1 penalty = 2 + 1(3) = 5
- C2 penalty = 1 + 2(3) = 7

3. Analysis of stratum sensitivity in Harmonic Grammar with scalar constraints

A. **Superset-at-periphery**

- **Guaraní**: Nativized Spanish loanwords undergo coda deletion; recent borrowings permit codas. (Pinta 2013)
  - Less nativized loanwords allow codas, but native words do not.

  - \(/ká'ro/ \rightarrow [ka.la] \) ‘Carlos’ MAX-C violated
  - \(/l'nes/ \rightarrow [l'ne] \) ‘Monday’ MAX-C violated
  - \(/ensaláda/ \rightarrow [en.sa.la.ə] \) ‘salad’ NOCODA violated

- **Weighting conditions for analysis of superset-at-periphery patterns**:

  \( w(M) > w(F) \), but \( F \) has a larger scaling factor, so the faithfulness penalty exceeds the markedness penalty beyond some distance from the core \( d \).

B. **Subset-at-periphery**

- **Hungarian**: Nativized loanwords show contrastive gemination; recent loanwords require gemination following short stressed vowels. (Nádasdy 1989 Magyar 2014)
  - Less nativized loanwords do not have fully-contrastive geminates, but native words do.

  - \(/klap/ \rightarrow [bp] \) ‘piece of paper’ WSP violated
  - \(/kľip/ \rightarrow [klip] \) ‘video clip’ IDENTLENGTH violated

- **Weighting conditions for analysis of subset-at-periphery patterns**:

  \( w(F) > w(M) \), but \( M \) has a larger scaling factor, so the markedness penalty exceeds the faithfulness penalty beyond some distance from the core \( d \).

C. **Divergent repairs**

- **Korean**: Obstruent + nasal sequences are repaired by obstruent nasalization in native and Sino-Korean words, and by vowel epenthesis in recent borrowings. (Kang 1996)
  - Some loanword classes use nasalization repairs, while others use epenthesis.

  - \( /k\text{uk}/ \rightarrow [\text{k}\text{um}][\text{m}] \) ‘soup’ IDENTNASAL violated
  - \( /k\text{uk}\text{min}/ \rightarrow [\text{k}\text{um}][\text{m}][\text{in}] \) ‘people’ IDENTNASAL violated
  - \( /pʰ\text{nik}/ \rightarrow [pʰ][\text{mnik}] \) ‘picnic’ DEP-V violated

- **Weighting conditions for analysis of divergent repair patterns**:

  \( w(F_1) > w(F_2) \), but \( F_2 \) has a larger scaling factor, so the relative faithfulness penalties are reversed beyond some distance from the core \( d \).

4. Discussion

In HG, each pattern of adaptation is predicted if violations are scaled based on distance from the core.

- Patterns arise through conflict between constraints that favor vs. disfavor repair, or constraints that favor different repairs.

- These patterns are always impitational.

...Relative penalties assigned by pairs of conflicting constraints can be inverted only once between the core and the periphery.

Approaches in OT with ranked constraints (Prince & Smolensky 1993) overgenerate.

Ex.: Unattested, non-implicational Korean pattern where repair choice ‘skips’ a level.

- Native \(/k\text{uk}\text{mul}/ \rightarrow [\text{k}\text{um}][\text{m}] \) ‘soup’ nasalization
- Sino-Kor. \(/k\text{uk}\text{min}/ \rightarrow [\text{k}\text{um}][\text{m}][\text{in}] \) ‘people’ epenthesis
- Foreign \( /pʰ\text{nik}/ \rightarrow [pʰ][\text{mnik}] \) ‘picnic’ nasalization

This pattern is predicted by indexed constraint ranking:

\*ObsNAS >> DEp-V >> IdNASALF >> IdNASAL-S,K >> DEpS-J,K >> DEp-J >> IdNASAL


- Learners must posit a potentially unbounded number of indexed constraint strata. (Hsu & Jesney to appear)

These problems are obviated in HG with weighted scalar constraints.

See handout for references

bhsu2@gmu.edu    jesney@usc.edu