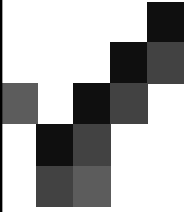SEALS XVII ~ 2 September 2007

Phonological Scansion in Loanword Adaptation

Evidence from English Loans in Burmese

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Outline

1. Background on Burmese phonology
2. Adaptation of foreign segments
3. Adaptation of foreign onset clusters
4. Adaptation of foreign codas and coda clusters
5. Discussion and implications
6. Conclusions

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Background

- Burmese consonant inventory

	labial	dental	alveo.	palatal	velar	glottal
stops	p pʰ b		t tʰ d		k kʰ g	ʔ
affricates				ʧ ʧʰ ʤ		
fricatives		Θ ð	s sʰ z	ʃ		h
nasals	m̥ m		n̥ n	ɲ̥ ɲ	ŋ̥ ŋ	
liquids			l̥ l			
flap			ɾ			
glides	w̥ w			j		

  - voiced, voiceless unaspirated, and voiceless aspirated obstruents
  - voiced and voiceless sonorants (including nasals at four different places)
  - no labiodental fricatives or retroflex approximant

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Background

- Burmese vowel inventory

	front	central	back
high	i ĩ		u ũ
mid	e	(ə)	ɔ
low		a ã	
diphthongs	ei ẽi ai ãi	au ãu ou õu	

  - five oral monophthongs + three nasal monophthongs
  - four oral diphthongs + four nasal diphthongs
  - mid central vowel /ə/ only in reduced, non-final 'minor' syllables
  - no low front vowel, no nasalized mid vowels, no /ɔi/ diphthong

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Background

- Burmese tone inventory (also cf. Cornyn 1944, Wheatley 1987, Win 1998)

			characteristics
low	[sù] 'protrude'	med. duration, low intensity, often rising
high	[sú] 'pricked'	breathy, long, high intensity, often falling
creaky	[sṵ] 'collect'	creaky, short, high intensity, high pitch
glottal	[sʊʔ] 'put on ring'	very short, sharp glottal closure, high pitch

  - tones are implemented via pitch and phonation
  - tone that falls on schwa is neutral
  - change in vowel quality with the glottal tone
  - glottal tone considered here to be allotone of creaky tone

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Background

- Burmese phonotactics (also cf. Green 1995, 2002)
  - basic syllable structure → $C_1C_2V(V)C_3$
    - C_2 = glides /w, j/ (but *[σ [-labial]+j)
    - C_3 = /ʔ/ (or N)
  - nasal vowels do not occur with glottal coda: *Ṽʔ]σ
  - the vowel /ɔ/ does not occur with glottal coda: *ɔʔ]σ
  - the diphthongs /ai, au/ always occur in closed syllables (i.e. with glottal coda): *ai]σ / *au]σ

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Questions

- How do the Burmese inventory and phonotactic restrictions constrain the nativization of English loanwords?

- How much is adaptation a phonetic vs. a phonological process (cf. Silverman 1992, Paradis 1996, Kenstowicz 2001, Steriade 2002)?

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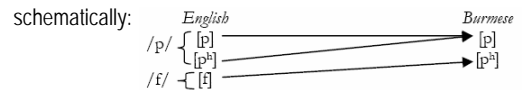5. Discussion and implications
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Consonant substitutions (in syllable onset)

- Labiodental fricatives /f, v/ → [p^h, b], respectively
  - e.g. [p^{h}ì~là~] 'Finland'
    [jùnìbàsìtì] 'university'
- Onset /ɹ/ → [j] or [ɾ]
  - e.g. [jèidìjòu] 'radio'
    [bàbəɾà] 'Barbara'
- Voiced palato-alveolar fricative /ʒ/ → [ʃ]
  - e.g. [məléiʃá] 'Malaysia'

Choice of substitution

- When choosing the phonetically closest substitution would result in a phonological merger, a different substitution is chosen (if available).
  - e.g. [kòu~pjùtà] 'computer' (*[kòu~p^{h}jùtà])
- English [p^h] → Burmese [p], not [p^h] (cf. Eng [f] → Bur [p^h])
- English [ɾ] → Burmese [d], not [ɾ] (cf. Eng [ɹ] → Bur [ɾ])

  schematically:
  English   Burmese
  /p/ ⎧ [p]   [p]
      ⎩ [p^h]   [p^h]
  /f/ ⎯ [f]

Vowel substitutions

- Low front /æ/ → [a, e]
  - e.g. [dʒəpà~] 'Japan' [dʒɛʔ] 'Jack'
- Back rounded /ɒ, ɔ/ → [ou], [u], [au], or [ɔ]
  - e.g. [sətóu] 'store' [p^{h}ʊʔ] 'Ford'
    [gauʔ] 'golf' [kɔp^{h}ì] 'coffee'
- Diphthong /ɔi/ → [wai]
  - e.g. [bwáɪ~] 'boy'

Vowel laxing via glottal stop epenthesis

- High front /i/ → [ɪ]
  - e.g. [sɪʔtímaʔ] 'City Mart'
- Mid front /e/ → [ɛ]
  - e.g. [pɛʔpəsì] 'Pepsi'
- Low central /a/ → [ɐ]
  - e.g. [bɐʔsəká] 'bus' (< *bus + car*)

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Resolution of onset clusters

- Stop-glide clusters are preserved, unless illegal.
  - □ e.g.　[**kw**èikà?ou?] 'Quaker Oats' ◁
  　　　　　[**n**əjùjau?] 'New York' ◁
- All other clusters are resolved via epenthesis.
  - □ e.g.　[**d**əɾã̀] 'drum' ◁
  　　　　　[?ĩ̀**g**əlã̀] 'England' ◁
  　　　　　[sə**pʰ**ɪ̃] 'Sphinx' ◁
  　　　　　[bɔ̀**s**ətʊ̃] 'Boston' ◁

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Adaptation of obstruent syllable codas

- Obstruent codas are debuccalized.
  - □ e.g.　[kəlɪ?] 'hair clip' ◁　[màgəɾɛ?] 'Margaret' ◁
  　　　　　[bəɾei?] 'brake' ◁　[déibɪ?] 'David' ◁
  　　　　　[ma?] 'March' ◁　[kɔ́lei?] 'college' ◁
  　　　　　[gɛ?] 'gas' ◁　[pəlei?] 'police'/'plague' ◁
  　　　　　[sʰai?] 'size' ◁　[?ĩ̀gəlei?] 'English' ◁
  　　　　　[dʒóusʰɛ?] 'Joseph' ◁　[?ìlɪ?zəbɛ?] 'Elizabeth' ◁
  - □ Debuccalization occurs regardless of place, manner, phonation, or stridency.

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Adaptation of obstruent syllable codas

- Obstruent codas may also be deleted with concomitant creaky tone on the preceding vowel.
  - □ e.g.　[səkɔ̰] 'Scott' ◁　　[hɔ̰dɔ̰] 'hot dog' ◁
  　　　　　[səpʰɪ̰] 'Sphinx' ◁　[kaṵ̃] 'count' ◁
  - □ This adaptation occurs when the vowel is not compatible with a coda glottal stop (i.e. /ɔ/, nasal vowels).

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Adaptation of sonorant syllable codas

- Sonorant codas are generally deleted.
  - □ e.g.　[?ɪ?zəjéi] 'Israel' ◁　[wɪ̃̀sʰà] 'Windsor' ◁
  　　　　　[jã̀] 'rum' ◁　　　　[pʰóũ] 'phone' ◁
  　　　　　[?ã̀kè] 'uncle' ◁
  - □ Liquid codas are deleted outright.
  - □ Nasal codas are deleted with concomitant nasalization of the preceding vowel.

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Adaptation of coda clusters

- Sonorants are generally deleted, and obstruents are debuccalized.
    - e.g. [gauʔ] 'golf' ◁ [kwèikàʔouʔ] 'Quaker Oats'
      [səkɐʔ] 'skirt' ◁ [ʔɔ́gouʔ] 'August' ◁ ◁
      [hábɐʔ] 'Harvard' ◁ [ʔìdʒɪʔ] 'Egypt' ◁
- When glottal stop is disallowed, obstruents are deleted, leaving behind a creaky tone.
    - e.g. [səpʰ ɪ̰] 'Sphinx' ◁ [ka̰ṵ̃] 'count' ◁

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Discussion

- Initial scansion in Burmese loanword adaptation occurs on a phoneme-to-phone basis.
    - Both labials and coronals are adapted in such a way as to preserve phonemic distinctions.
- Secondary scansion (cf. Silverman 2002) is phonetically detailed.
    - Tense/lax vowel quality and length play a role in adaptation even though neither of these is distinctive within the language.
- Speakers are conscious of 'accidental' phonological gaps, which strongly constrain adaptations.
    - *ɔʔ, *ai]$_\sigma$, *au]$_\sigma$ constraints result in various departures from the most faithful adaptation possible.

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Conclusion

- The case of Burmese loanword adaptation indicates a level of phonological scansion not normally assumed in models of loanword adaptation.
- Burmese loanword adaptation shows the influence of Burmese and English phonological considerations, as well as perceptual attunement to non-phonemic details of the speech signal.
- In adaptation, the role of bilinguals (who have access to both languages' phonology) should not be underestimated.

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