How Much Homophony Is Normal?

Abby Kaplan – UC Santa Cruz

Phonological alternations are known to be sensitive to the need to maintain potential lexical contrasts (Flemming 2002). Silverman (to appear) asks whether alternations also avoid neutralizing individual words – that is, creating homophones. Silverman examines Korean, which has many neutralizing alternations and whose phonemic writing system makes it easy to reconstruct underlying forms. He argues that the amount of resulting homophony is unexpectedly low.

To conclude that the level of homophony in Korean is low, we must compare it to a 'baseline' level that we would expect if alternations were *not* sensitive to homophony. Silverman addresses this question by comparing particular alternations to minimally different hypothetical alternations, and finds that the actual ones produce less homophony than the hypothetical ones. This approach has the advantage of allowing us to hand-select phonologically reasonable alternations for comparison, but the disadvantage that the resulting baseline depends heavily on which possibilities we happen to choose. This paper takes an alternative 'brute-force' approach of randomly selecting a large number of hypothetical neutralizing alternations for comparison. Although this approach necessarily involves examining many phonologically implausible patterns in addition to the plausible ones, it has the advantage of covering many more possibilities than the hand-selection approach.

Table 1 shows the surface realizations of all possible underlying coda-onset sequences in Korean. (Alternations that depend on morpheme boundaries, such as lateral nasalization, and certain non-neutralizing alternations, such as intervocalic voicing, are not shown.) Applying these neutralizations to the polysyllabic stems in the Korean National Database (Lee 2006) results in 6644 stems with at least one homophone. (Note that this figure includes the 6201 homophones already present in the database.) In order to establish a baseline to compare with this rate of homophony, I ran a series of simulations, each of which generated 1000 random hypothetical neutralization patterns and calculated the rate of homophony associated with each. Since the number of homophones increases with the number of neutralized contrasts, the hypothetical patterns were constrained to involve the same number of neutralizations as in the actual pattern in order to allow a fair comparison.

In simulation A, the 1000 hypothetical patterns consisted of random combinations taken from all possible coda-onset sequences. Figure 2 (left) shows a histogram of the number of resulting homophones in the simulated patterns; the vertical line shows the actual number of homophones. Most of the random patterns produced more homophony than the actual pattern. Simulation B included the additional constraint that sequences with the same onsets and/or codas patterned together, in an attempt to make the hypothetical patterns more phonologically plausible. Figure 2 (right) shows that these patterns, too, generally produced more homophony than the actual pattern.

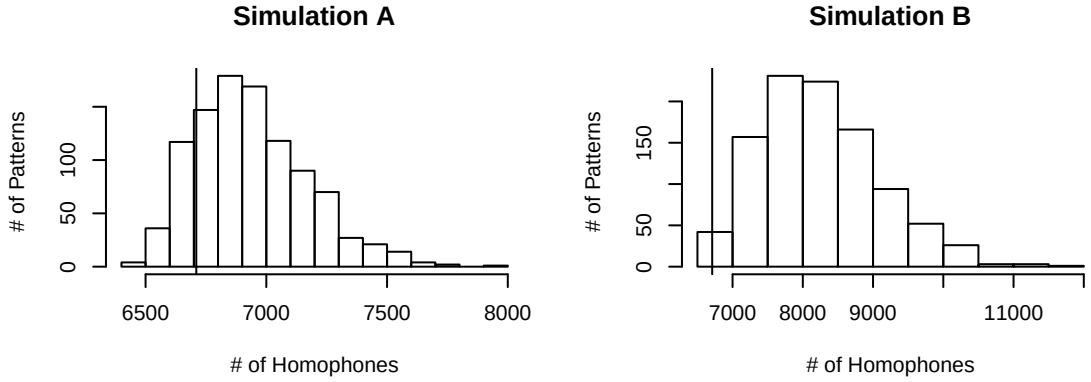
These simulations therefore suggest that the overall amount of homophony in Korean is indeed unexpectedly low. With a few exceptions, similar results were found in simulations that modelled individual alternations (such as laryngeal neutralization in codas). In addition, the results were similar when homophony was measured by number of homophonic pairs or homophonic sets instead of by the number of individual homophones.

The results of this study provide stronger support for Silverman's claim that in Korean, neutralizing phonological alternations produce fewer homophones than expected. It seems that phonological alternations avoid neutralizing *actual* words, not just potential contrasts.

Figure 1: Surface realizations of underlying coda-onset sequences in Korean

	pʰ	**p**	**p’**	**tʰ**	**t**	**t’**	**s**	**s’**	**ʧʰ**	**ʧ**	**ʧ’**	**kʰ**	**k**	**k’**	**m**	**n**	**l**	**h**	**∅**
p	pʰ		p’	tʰ	t’		s’		ʧʰ	ʧ’		kʰ	k’		pm	pn	pl	pʰ	p
pʰ																		pʰh	pʰ
ps																		ps’h	ps’
lp																		lpʰ	lp
h																		hh	h
t																			t
tʰ																		tʰ	
s																		s	
s’																		s’	
ʧ																			ʧ
ʧʰ																		ʧʰ	
k	kpʰ	kp’		ktʰ	kt’		ks’		kʧʰ	kʧ’					km	kn	kl		k
k’																			k’
kʰ																		kʰ	
ks																		ks’	
m	mpʰ	mp	mp’	mtʰ	mt	mt’	ms	ms’	mʧʰ	mʧ	mʧ’	mkʰ	mk	mk’	mm	mn	ml	m	
n	npʰ	np	np’	ntʰ	nt	nt’	ns	ns’	nʧʰ	nʧ	nʧ’	nkʰ	nk	nk’	nm	nn	nl	n	
nh																			
nʧ																		nʧʰ	nʧ
ŋ	ŋpʰ	ŋp	ŋp’	ŋtʰ	ŋt	ŋt’	ŋs	ŋs’	ŋʧʰ	ŋʧ	ŋʧ’	ŋkʰ	ŋk	ŋk’	ŋm	ŋn	ŋl	ŋ	
lm	lpʰ	lp	lp’	ltʰ	lt	lt’	ls	ls’	lʧʰ	lʧ	lʧ’	lkʰ	lk	lk’	lm	ln	ll	lm	
l																		l	
lh																			
lpʰ																		lpʰ	
ltʰ																		ltʰ	
ls																		ls	
∅	pʰ	p	p’	tʰ	t	t’	s	s’	ʧʰ	ʧ	ʧ’	kʰ	k	k’	m	n	l	∅	

Figure 2: Homophony in hypothetical neutralizing patterns



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