The Short Life Span of Laryngeal Sonorants in Korean

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Overview In this talk we present novel data from Korean that show an underlying sub-phonemic laryngeal contrast in V(owel)/S(onorant)-final roots of verbs. This contrast is stable in its presence, but is volatile in its concrete realization (i.e. aspiration and glottalisation, blocking of coalescence, gemination, allomorph selection). We argue that these particular roots contain a floating laryngeal feature in their underlying representation. We will provide an analysis in Stratal OT which derives the opaque interaction with phonological processes in a straightforward fashion as a bleeding Duke-of-York gambit. **Data** Korean is known for having a three-way distinction in terms of laryngeal contrast in obstruents. This contrast is neutralised – together with minor place contrasts – syllable finally (i.e. /t, t^h, t', s, s', c, c^h, c'/ → [t]) (Martin 1951 among others). V(owels) and S(onorants) on the other hand are all voiced on the surface level and do not show laryngeal contrast. However, vowel-final roots may trigger aspiration and glottalisation to the following consonant-initial suffix, e.g. *-ta* DECL and *-ko* 'and', as illustrated in (1) and (2).

(1) a. /na-ta/ → [na.**t**a] 'occur'
b. /na^ʔ-ta/ → [na.**t'**a] 'get.better'
c. /na^h-ta/ → [na.**t^h**a] 'give.birth'

(2) a. /na-ko/ → [na.**k**o] 'occur'
b. /na^ʔ-ko/ → [na.**k'**o] 'get.better'
c. /na^h-ko/ → [na.**k^h**o] 'give.birth'

The laryngeal property associated with the vowel shows on the affix consonant. In case of S-final roots, there are restrictions on potential laryngeal contrasts depending on the S' place and manner.

(3) a. /al-ta/ → [al.**t**a] 'know'
b. /al^h-ta/ → [al.**t^h**a] 'suffer'

(4) a. /an^ʔ-ta/ → [an.**t'**a] 'hug'
b. /an^h-ta/ → [an.**t^h**a] 'DO.NOT'

If it is a coronal nasal sonorant, it has to trigger either glottalisation or aspiration (Albright and Kang 2018) - (3). If the root ends in a lateral coronal sonorant, it may cause aspiration (Albright and Kang 2018) - (4). **The Puzzles** The laryngeal property of the V/S is visible as laryngealisation only if followed by plain stops. Otherwise the opposition between laryngeal and non-laryngeal V/Ss is preserved by blocking of phonological processes or by triggering unexpected allomorph selection. For example, (optional) coalescence/gliding between the root vowel and suffix -a/-ə is blocked by V$^{ʔ/h}$, see (5) vs (6).

(5) a. /o-a/ → [wa] 'come.INFL'
b. /p^{h}i-ə/ → [p^{h}jə] 'blossom.INFL'

(6) a. /co^h-a/ → [co.a] 'good.INFL'
b. /i^ʔ-ə/ → [i.ə] 'tie.INFL'

(7) a. /po-n/ → [pon]'seen'
b. /mək-in/→[mə.kin] 'eaten'
c. /co^h-in/ → [co.in] 'been good'

(8) a. /po-ni/→[po.ni] 'see.Q'
b. /mək-ni/→[mək.ni] 'eat.Q'
c. /co^h-ni/ → [con.ni] 'good.Q'

In addition, some (mostly S-initial) suffixes have allomorphy e.g., {n,in} 'PERF'. One is used after vowels and the lateral, but aspirating and glottalising roots are unexpectedly selected by the elsewhere allomorph (7). At last, S-initial suffixes without allomorphs induce gemination on themselves, if they attach to a V$^{h/ʔ}$ roots - (8). Remarkably, nominal inflection does not exhibit any of the patterns we discuss. **Proposal** We propose that the laryngeal contrasts of verb-final S/V are encoded as a floating feature (Akinlabi 1996): (+F). We derive the opacity with a bleeding Duke-of-York gambit (Bermúdez-Otero 2001). The floating feature docks to any affixes, even to S/V-initial suffixes, which blocks certain processes (e.g. gliding, coalescence). Later, obstruent-initial suffixes can maintain their laryngeal specification, whereas a S/V loses it and reverts to the initial state. **Analysis** We assume Stratal OT (Kiparsky 2000) and Colored Containment (van

Oostendorp 2007). At the stem level, the optimal candidate O^2 violates a lower ranked constraint $*V_h$, which penalises aspirated vowels. The faithful candidate O^1 fails to dock the floating feature (+sg), and O^3 inserts the root node, which violates DEP •. The floating feature (+sg) blocks the gliding for two reasons: (i) if (+sg) docks only to the vowel, it violates the constraint *μ([+sg][-sg]), which penalises the diphthongs with opposing laryngeal specification - O^4 (ii) if it associates to the entire diphthong, associating to the glide with the same morphological color as the feature violates ALTER (van Oostendorp 2007) - O^5. At the word level, $*V^h$ is ranked higher, so that the vowels neutralise their laryngeal contrasts. Here, the gliding is blocked because FAITH(σ) outranks *V.V.

T_1. Stem-level

I: co (+sg) – a	*FLOAT	DEP •	ALTER	*μ([+sg][-sg])	*V.V	*V^h
O^1: co(+sg)a	*!				*	
☞ O^2: co.a^h						*
O^3: co.ha		*!				
O^4: cwa^h				*!		*
O^5: cw^{h}a^h			*!			**

T_3. Stem-level, gemination

I: co(+sg)-ni	$S^h \rightarrow \mu$	DEP μ
O^1: co.n^{h}i	*!	
☞ O^2: con^h.n^{h}i		*

T_2. Word-level

I: co.a^h	*V^h	FAITH(σ)	*V.V
O^1: co.a^h	*!		
☞ O^2: co.a			*
O^3: cwa		*!	

T_4. Stem-level, allomorph selection

I: co(+sg) {in, n}	$S^h \rightarrow \mu$	DEP μ	*V.V
☞ O^1: co.i^{h}n			*
O^2: con^h	*!		
O^3: con^{h}n^h		*!	

We propose the constraint $S^h \rightarrow \mu$, which demands sonorants with laryngeal specification to be moraic. Due to this constraint a μ is inserted in O^2 - T_3, and the gemination results as optimal. This constraint also affects allomorph selection - T_4. Choosing the V-initial allomorph allows us to avoid the violation of DEP μ, and it only incurs the violation of *V.V. **Alternative analysis** To assume that laryngeal contrast is encoded as full underlying segments (e.g., /coh/ instead of /co[+sg]/) avoids Duke-of-York opacity by reducing the pattern into a counter-feeding opacity. However, it is not a viable analysis for the data, consider (9). Intervocalic /h/ is not deleted.

(9) a. /i.hon/ → [i.**h**on],*[i.on] 'divorce'

b. /co^h-a-ha-ta/ → [co.**a**.ha.ta], *[co.ha.ha.ta], *[co.a.a.ta] 'like.TR'

c. /nəhɨj-tɨl/→ [nə.**hi**.tɨl] ∼ [nə.**i**.tɨl] '2.NONHON-PL (to lower Addressees) '

Discussion We have found a new generalisation on how laryngeal contrast of Korean S/V verbal roots affects the paradigm. We have shown that the floating feature in combination with strata accounts for the observed opacity; The floating feature docks to the affixes, which changes the laryngeal specification. The laryngealised S/V behaves differently for some processes and allomorph selection. At the next level, this contrast is neutralised, unlike on the obstruents, rendering the previous processes opaque. Our work contributes to the discussion of whether Duke-of-York derivations are parts of human language capacity. Our data gives a further evidence that Yun (2008)'s proposal for noun-verb asymmetries in Korean is on the right track. Furthermore, our assumption of the floating feature enables us to broaden her analysis to a wider array of data.

Selected References Akinlabi, A. (1996). Featural affixation. *Journal of Linguistics* 32.2, 239-289. Albright, A. and Kang, Y. (2018) Predicting innovative variants in Korean verb paradigms. Proceedings of CIL18: The 18th International Congress of Linguists. John Benjamins. Bermúdez-Otero, R. (2001). Voicing and continuancy in Catalan: a nonvacuous Duke-of-York gambit and a Richness-of-the-Base paradox. Ms., University of Manchester. Kiparsky, P. (2000) Opacity and Cyclicity, *The Linguistic Review* 17: 351-367. Martin, S. (1951) Korean phonemics, *Language*, 27, 519 - 533. Van Oostendorp, M. (2007). Derived environment effects and consistency of exponence. *Freedom of analysis*, 123-148. Yun, J. (2008). Noun-verb asymmetries in Korean phonology. In *Proceedings of the 27th West Coast Conference on Formal Linguistics* (pp. 449-457). Somerville, MA: Cascadilla Proceedings Project.