Towards a contrast-driven typology of the Altaic vowel systems

This paper argues for what I will term a *contrast-driven typology* with an empirical focus on the Altaic vowel systems including Mongolic, Tungusic, Korean, and Turkic languages (Poppe 1960). Following Dresher's (2009) assumption that phonological contrast is governed by language-specific feature hierarchies, I establish the *contrastive hierarchies* for the vowels in individual languages based on their patterns as well as their surface phonetic realizations. The result is summarized in (1) through (4).

This approach differs from the conventional *inventory-driven typology* in (5) (Crothers 1978, Maddieson 1984) that has focused more on analyzing the structure of phoneme inventory rather than the structure of phonological contrast. For example, apparently dissimilar inventories (e.g., Khalkha 7-vowel system and Chakhar 14-vowel system) can receive the same contrastive hierarchy analysis. There are also cases where similar inventories (e.g., Monguor and Dagur 5-vowel systems) are treated as distinct types with different contrastive hierarchies.

The *contrast-driven typology* presented in this paper correctly reflects the genetic/geographical affinity among the languages, leading to several significant consequences as follows. First, it gives us a better understanding of the synchrony and diachrony of each group. Of particular interest is the Kalmyk/Oirat language (1d) in the Mongolic group, which has a vowel inventory and a palatal harmony seemingly almost identical to Uyghur in (4b) and thus is predicted to have a similar contrastive hierarchy. However, evidence shows that a proper treatment of vowel system in Kalmyk/Oirat requires two distinct features for the front-back dimension, [coronal] for palatalization/umlaut vs. [dorsal] for palatal harmony. The overall Kalmyk/Oirat contrastive hierarchy looks more similar to the Khalkha hierarchy in (1a) than the Uyghur hierarchy in (4b) in terms of the number and the partial rankings of the proposed four contrastive features. I argue that the Kalmyk/Oirat system is an innovation, possibly due to Turkic influence, rather than the retention of the archaic system (contra Svantesson 1985), which can be formalized as [αRTR] → [αdorsal] (Vaux 2009), a phonetically grounded development (A&P 1994). Second, we also notice that there is a systematic difference between the Mongolic and Tungusic groups: [coronal]>[low] in (1) vs. [low]>[coronal] in (3). This minimal difference captures the contrast between the transparency of Mongolic /i/ vs. the opacity of Tungusic /i/ to labial harmony (van der Hulst and Smith 1988). Under the proposed hierarchy, Mongolic /i/ is specified only with [+coronal] and requires no further specification. Lacking [±low] value (unlike Tungusic /i/ and other high vowels), it does not block the labial spreading. Third, notice that Middle Korean (2a) shares exactly the same contrastive hierarchy with the main varieties of Mongolic (1a) and the same four contrastive features with the majority of Tungusic (3a). The difference, however, is found in that Middle Korean exploits the high back region for the labial contrast (/ɨ, ʌ/ vs. /u, o/) while Mongolic and Tungusic languages use the low back region (/ə, a/ vs. /o, ɔ/) instead. Fourth, the current contrast-driven typology provides a plausible account for the inventorial difference between Turkic (4) vs. non-Turkic vowel systems (1), (2), (3). Unlike symmetrical Turkic vowel systems, Mongolic, Tungusic, and Korean have an asymmetrical vowel system that lacks the non-high front vowels. I argue that this difference can be ascribed to the absence vs. presence of the contrastive [coronal] feature in Turkic vs. in non-Turkic vowel systems, respectively. In non-Turkic systems, non-high front vowels are disfavored because their existence requires the antagonistic articulatory correlation between [coronal] and [low] (cf. A&P 1994).

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(1)   Mongolic vowel systems

Language	*Contrastive hierarchy*
a. Mongolian proper (e.g., Khalkha, Chakhar)	[coronal]>[low]>[labial]>[RTR]
b. Monguor, Santa, Bonan, Moghol	[coronal]>[low]>[labial](>[RTR])
c. OM, Dagur, Buriat, Khamnigan	[coronal]>[labial]>[RTR](>[low])
d. Kalmyk, Oirat	[coronal]>[low]>[labial]>[dorsal]

(2)   Korean vowel systems

Language	*Contrastive hierarchy*
a. Middle Korean	[coronal]>[low]>[labial]>[RTR]
b. Early Modern Korean; NW Korean	[coronal]>[high]>[low](>[labial])
c. Central Korean; SE Korean	[coronal]>[low]>[labial](>[high])
d. Jeju Korean	[coronal]>[high]>[labial]>[low]

(3)   Tungusic vowel systems (cf. Zhang 1996; Dresher and Zhang 2005)

Language	*Contrastive hierarchy*
a. W. Manchu, Oroch, Udihe, Ulchi, Uilta Oroqen, Ewenki, Solon, Ewen	[low]>[coronal]>[RTR]>[labial]
b. Nanai	[low]>[coronal]>[RTR]
c. Spoken Manchu, Xibe	[low]>[coronal]>[labial]

(4)   Turkic vowel systems

Language	*Contrastive hierarchy*
a. Most Turkic languages (e.g., Turkish)	[low]≈[labial]≈[dorsal] (cf. Walker 1993)
b. Uyghur	[low]≈[labial]>[dorsal]

('≈' indicates that there is no positive evidence in favor of one hierarchy over the other.)

(5)   An inventory-driven typology based on the number of vowel qualities

No. of vowel qualities	No. of langs (M/Tg/Tk/K)	Percent of langs	Language ([M]: Mongolic, [Tg]: Tungusic, [Tk]: Turkic, [K]: Korean)
5	7 (5/2/0/0)	10.1 %	Monguor[M], Santa[M], Bonan[M], Moghol[M], Dagur[M], Udihe[Tg], Literary Ewenki[Tg]
6	7 (1/2/2/2)	10.1 %	Khamnigan[M], NW Korean[K], SE Korean[K], Written Manchu[Tg], Najkhin Nanai[Tg], Uzbek[Tk], Halič Karaim[Tk]
7	9 (3/3/2/1)	13.0 %	Khalkha[M], Buriat[M], Old Mongolian[M], Middle Korean[K], Spoken Manchu[Tg], Oroch[Tg], Xunke Oroqen[Tg], Khalaj[Tk], (Fuyu Kirghiz[Tk])
8	27 (2/6/19/1)	39.1 %	Kalmyk[M], Oirat[M], Early Middle Korean[K], Sibe[Tg], Ulchi[Tg], (Baiyinna) Oroqen[Tg], Ewen[Tg], Solon[Tg], Negidal[Tg], Chuvash[Tk], Turkish[Tk], Gagauz[Tk], Turkmen[Tk], Salar[Tk], Crimean Tatar[Tk], (Caucasian) Urum[Tk], Karaim[Tk], Karachai-Balkar[Tk], Kumyk[Tk], Kirghiz[Tk], Altai[Tk], Shor[Tk], (Middle) Chulym[Tk], Tuvan[Tk], Tofa[Tk], Yakut[Tk], Dolgan[Tk], Yellow Uyghur[Tk]
9	11 (1/0/10/0)	15.9 %	Kanjia[M], Old Turkic[Tk], Azerbaijani[Tk], Azari[Tk], Uyghur[Tk], Tatar[Tk], Bashkir[Tk], Kazakh[Tk], Karakalpak[Tk], Noghay[Tk], Khakas[Tk]
10	5 (1/1/0/3)	7.2 %	Shira Yugur[M], Uilta[Tg], NE Korean[K], SW Korean[K], Central Korean[K]
11	1 (1/0/0/0)	1.4 %	Baarin[M]
12	1 (0/0/0/1)	1.4 %	Jeju Korean[K]
13	0 (0/0/0/0)	0.0 %	
14	1 (1/0/0/0)	1.4 %	Chakhar[M]
Total	69 (15/14/33/8)	100.0 %	