Article

A Comparative Survey

of Chinese and Yeniseian tonogeneses

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Abstract: The paper compares the tonogenetic properties in the touchstone cases of Chinese and Yeniseian languages, where the nature of tonogenetic phonemes is well-known or little doubtful.

Keywords: Chinese, Yeniseian, Tonogenesis, Typology.

The paper compares the tonogenetic properties in the touchstone cases of Chinese and Yeniseian languages, where the nature of tonogenetic phonemes is known or little doubtful.

1. *Presentation of (Mandarin) Chinese*

As many other languages of far-eastern Asia, Chinese and more exactly the different and numerous dialects[1] of Chinese have tones. The official standard variety, the so-called Mandarin[2], is based on the phonology of Peking (BěiJīng) and has four tones, which is a rather low number when compared to most other Chinese geolects, which not infrequently have twice as many tones as BěiJīng.

These tones can be conventionally and conveniently described on a scale from 1 (low) to 5 (high). This approach was designed by Zhào YuánRèn in the 1930s. A similar system is used by Americanists for Amerind languages but the scale is inverted: 1 (high) to 5 (low). According to Yip (2002:20) and Bao (1999:22) this scale with a division in five quintiles can account for all known languages.

| Tone	Name	Example	Prosody
1	'high'	mā 'mother'	55
2	'rising'	má 'hemp'	34
3	'low-rising'	mă 'horse'	213
4	'falling'	mà 'to curse'	31

Table1: BěiJīng Chinese tone pattern

Some conservative dialects of Mandarin as in NánJīng have a fifth tone. Tone5 has the same pitch pattern as tone4 with an extra final glottal stop. This dialect was the basis of the official language for some time between 1910 and 1949. It can be noted that this fifth tone is descriptively ambiguous as it mixes prosodic features and segmental features and this raises the issue of the nature and genesis of Chinese tones. Most dialects of Mandarin do not have any kind of syllable-final stops like -*k*, -*p*, -*t*, not

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[1] These so-called "dialects" are in fact separate languages for the sheer technical point of view of linguistics, but the ethnopolitical tradition of China deals with this large and variegated body of idioms as being FāngYán 'local speech'. The term *geolect* avoids the misleading connotations of *dialect*. Mandarin has dialects but Chinese as a whole has geolects and topolects.

[2] This usual name is not especially adequate as the old GuanHua 'Mandarin administrative language' is in fact a dead variety of Chinese which disappeared with the fall of the Empire.

even -ʔ (except NánJīng). This absence is a typical feature of Mandarin (or Northern Chinese generally speaking) when compared to the southern geolects of Chinese where the syllable-final stops are better preserved.
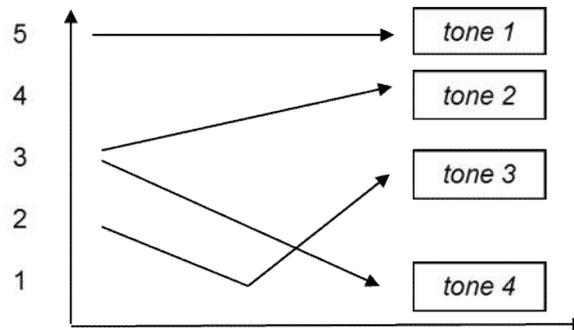
Graph1: BěiJīng Chinese tone pattern

Present-day Mandarin has four tones (or five if we take into account NánJīng). Tone2 is an innovation dating back to the first third of the second millenium AD. Mandarin then lost voiced initials and retained only voiceless and aspirate consonants. The words which had voiced initials before 1000 AD were adjusted either to Tone2 or Tone4 depending on the coda of the syllable.

Early Mandarin as spoken in the first millenium AD, during the Tang dynasty, also had four tones but they only partially correspond to the tones of present-day Mandarin. The tones of Early Mandarin are traditionally described as Píng 'even', Shǎng 'rising', Qù 'departing' and Rù 'entering'. It is not clear who invented these terms. They are first attested under the pen of Shěn Yuē (441-513 AD). In all cases they attest that the tonogenesis of Mandarin was already considerably advanced at that time to the point where the initial triggering factors were no longer there and only tones were apparent to the speakers (*Cf.* Baxter 1992:303).

From a purely prosodic point of view, Early Mandarin had only three tones as the Rù tone applied to syllables with a final stop -k, -p, -t. On the whole, the old tones can be roughly equated with the modern ones as follows: Píng 'even' > tone1, Shǎng 'rising' > tone3, Qù 'departing' and Rù 'entering' > tone4, with the specific case of voiced initials > tone2 or tone4. We hardly have any direct description of Early Mandarin tones: one is due to a Japanese bonze called Annen who described the Shǎng tone as being "high and short" in the 9th century AD (*Cf.* Branner 2000:121). As noted by Baxter (1992:304) "it is quite likely that these terms [Píng, Shǎng, Qù, Rù] were intended as descriptive as well as illustrative." Each of the four indeed labels and exemplifies the eponymic tone.

As regards the beginning of tonogenesis in Chinese, the careful study of the oldest collection of poems, written in the early first millenium BCE and known as the ShīJīng, indicates that, at that time, there already existed a tendency to have specific groups of words rhyme together, but it is probable that these groups of words were not characterized by tonal features yet, but by segmental features for the most part. Tonogenesis was only in the making during the first millenium BCE. Baxter (1992:305) cites the point of view of Jiāng YǒuGào, a Chinese sinologist of the 19th century: "The ancients actually did have four tones, but the tones they read were not the same as [those of] the men of later times."

2. *The tonogenesis of (Mandarin) Chinese*

The standard theory about Mandarin tonogenesis was first proposed by André Haudricourt in the 1950s. He developed an observation originally made by Maspero in the 1910s that the tones of Vietnamese can be compared with segmental phonemes in the non-tonal Mon-Khmer languages which

are the closest relatives of Vietnamese. In the inherited section of Vietnamese vocabulary, the lost word codas *-ø, *-ʔ or *-*h* have generated separate tones in the language[3]. On the basis of these observations pertaining to the native Mon-Khmer lexemes, Haudricourt hypothesized that the earliest layer of Chinese loanwords in Vietnamese must have followed the same tonogenetic path as the native words and that they therefore must have had the same word codas at the time of borrowing.

Examples illustrating Shǎng tone:

Initial consonant	Mon-Khmer cognates	Vietnamese	Mandarin	Proto-Mandarin
voiced	Khmu *rənkoʔ*	*gạo* 'rice'		
	-ʔ	*nạng* tone[4]	*shǎng* tone	*-ʔ
	(< Chinese)	*chợ* 'market'	*shì*	*dzyiʔ
other	Khmu *hlaʔ*	*lá* 'leaf'		
	-ʔ	*sắc* tone	*shǎng* tone	*-ʔ
	(< Chinese)	*ngó* 'lotus root'	*ǒu*	*nguwʔ

Table2: Vietnamese loanwords and native words with coda *-ʔ

Examples illustrating Qù tone:

Initial consonant	Mon-Khmer cognates	Vietnamese	Mandarin	Proto-Mandarin
voiced	Mon *muh* Mnong *ries*	*mũi* 'nose' *rễ* 'root'		
	-*h*, -*s*	*ngã* tone	*qù* tone	*-H, *-s
	(< Chinese)	*mũ* 'hat'	*màu*	*muH
other	Rongao *toih*	*tỏi* 'garlic'		
	-*h*, -*s*	*hỏi* tone	*qù* tone	*-H, *-s
	(< Chinese)	*thỏ* 'rabbit'	*tù*	*thuH

Table3: Vietnamese loanwords and native words with coda *-*h* < *-*s*

The theory proposed by Haudricourt was developed by Pulleyblank's study of loanwords into Chinese. For that matter, it is widely accepted among sinologists that the three tones: Píng, Shǎng, Qù respectively originate in lost word codas of the type: *-ø, *-ʔ and *-*h*, *-*h* being itself plausibly from a yet earlier *-*s*. (*Cf.* Baxter 1992:308-324). It must be kept in mind, when reading the tables above, that the tonogenesis of Vietnamese differentiated voiced initials from non voiced ones.

3. *Presentation of Yeniseian*

This linguistic family comprises six languages. Five are now extinct: Yugh, Kot, Arin, Pumpokol and Assan, but they were nevertheless described in a more or less satisfactory way during the 18th and

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[3] In a number of cases, the coda *-*h* can be further reconstructed as *-*s*. Vietnamese *vải* 'cloth', Rongao *kopeih*, Chrau *paih*, Bahnar *kopaih* 'cotton'. This word has been compared with Sanskrit *karpāsa* 'cotton' which does not have an Indo-European origin and is most probably an Austro-Asiatic loanword.
[4] This tone still has a glottalic explicit feature in present-day Vietnamese. *Cf.* Pham (2003:13).

19th centuries and even during the 20th for Yugh. An extensive survey of historical sources is published in Vajda (2001) and Werner (2005).

Only one Yeniseian language: Ket is still spoken by some 200 people, for the most part over 50 years old. The current Ket population numbers 1100 people inhabiting the middle course of the eponymic Yenissei river. The 1989 Russian census indicated that about half the Kets still spoke their language but according to Anderson (2004:12) this number is overestimated. Vajda (2008:1) counts 200 speakers.

The other groups lived slightly to the south upstream from the Kets, when the river is taken as a reference. As described by Anderson (2004:9), former speakers were gradually assimilated either to the Russians or to other Siberian groups during the 17-19th centuries. Assans fused with Ewenkis, then Arins and Baikots with Khakas Turks, and later Kots were russianized in the 1840s. An excellent description of Kot as spoken by the last speakers is due to the famous Finnish linguist: M. A. Castrén (1858). The northernmost group is the only one to preserve its precarious identity to this day.

The Yeniseian family is sometimes called (Yenisei) Ostyak. This term of Tatar origin, according to Vajda (2001:XII), is a bit vague and also applies to a Uralic people of the Ugric subbranch: Khanty or Ostyak, spoken in the tributaries of the Ob river. Vajda (2001:XI) mentions that three schools teach in native Ket thanks to the creation of a cyrillic graphic norm and to the composition of manuals by the linguist Werner. This program was successfully validated by the Russian administration in 1988. The future of Ket remains rather delicate in the long run. The next two generations are critical for the perennity of this last representative of the family. The word *Ket* derives from *keˀt* 'man' in Ket but it can be noted that the auto-ethnonym is *Ostəɣan*, that is to say 'Ostyak' or *kəndeng* 'light man'. Vajda (2001:XII) indicates that *ostəɣan* is mostly used when speaking with non Ket people.

From a typological point of view these languages display numerous unusual features when compared to their Siberian neighbors. They have three grammatical genders: masculine, feminine and neuter. Hundreds of miles around no other language displays this feature but Russian. As underlined in Vajda (2001:XV), Yeniseian languages do not have (any trace of) vocalic harmony, which makes them very different from the surrounding Uralo-Altaic languages. Another point is the massive use of prefixes in verb morphology, especially in Ket. Other Siberian languages massively resort to suffixes, be they Uralic, Turkic, Mongolian or Tungusic. This explains that they are generally considered isolates with no established relationship with other families. In all cases, look-alike words are more probably loanwords than cognates. As indicated in Vajda (2008:1): "It is no exaggeration to say that the position of Ket in Inner Eurasia has up until now remained as enigmatic as that of Basque in Europe, Zuni in the American Southwest, or Burushaski in South Asia." Frequent hypotheses are a relationship with North-west Caucasic and/or Sino-tibetan (*Cf.* Starostin 1994) or with Athabaskan and Na-Dene (*Cf.* Vajda 2008). For the time being none has gained full acceptance.

4. *The tonogenesis of Yeniseian*

Ket is the only remaining Yeniseian language. From the phonological point of view, an interesting feature of Ket is that it has initiated a process of tonogenesis but, at the same time, the segmental features which trigger tonal features are still apparent in Ket or in the other Yeniseian languages. The tonogenetic features are as follows:

tone	Example	Vowel	Prosody	Segment
1	qō·j 'uncle, aunt'	half long	'flat high'	(is) v-ø-C
2	qɔˀj 'wish'	short	'rising'	(is) v-ˀ-C
3	qɔ́ɔ̀j 'next to'	long	'rising-falling'	(was) *v-h-v
4	qɔ̀j 'bear'	short	'falling'	(was) *v-h-C

Table4: Southern Ket tone pattern

To a large extent, it is nearly possible to give two adequate synchronic descriptions of Ket: a purely segmental one and a purely tonal one. The tone patterns can be described phonologically in two different ways, if one agrees to reintroduce the recently muted fricative *-h- in the synchronic description of Ket:

tone	Example	Purely tonal	Purely segmental
1	qō·j 'uncle, aunt'	/¹qoj/	/qoj/
2	qɔˀj 'wish'	/²qoj/	/qoˀj/
3	qɔ́ɔ̀j 'next to'	/³qoj/	*/qohoj/
4	qɔ̀j 'bear'	/⁴qoj/	*/qohj/

Table5: Descriptive approaches to Southern Ket tone pattern

The functional yield of tonal oppositions is fairly high, as shown in the following table:

vowel	Tone1	Tone2	Tone3	Tone4
/a/	bā·t 'face'	baˀt 'truth'	báàt 'old man'	
/e/[5]	ē·j 'island'	εˀj 'egg'		ɛ̀j 'to kill'
/i/	ī· 'name'	iˀ 'day'	íì 'steam, fog'	
/ɤ/	ɤ·t 'we'	ʌˀt 'quiver'	ʌ́ʌ̀t 'birch-bark container'	
/ɨ/	ɨ̀n 'two'		ɨ́ɨ̀n 'tree-bark'	ɨ̀t 'heartwood'
/o/	qō·t 'although'	qɔˀt 'path'	qɔ́ɔ̀t 'hunger'	
/u/	ū·t 'full'	uˀt 'simple'		ùt 'mouse'

Table6: Functional yield of Southern Ket tones

The comparison with other Yeniseian languages provides the direct key to the etymological origin of present-day Ket tonogenesis in the making:

	tone	Northern Ket	Central Ket	Southern Ket	Yugh	Kott
'river'	1	sē·s	šē·š	sē·s	sēs	šet
'resin'	1	dī·k	dī·k	dī·k	dīk	čik
'larch'	2	sεˀs	šεˀš	sεˀs	sεˀs	šet
'snowsled'	3	súùl	šúùl	súùl	sɔ́ùl	čogar
'birch'	4	ù:se	ù:sə	ùs	ù:ʰs	uča

Table7: Comparative table of Yeniseian languages

The first accurate recordings of Ket/Yugh phonemic prosody were made only in the late 1960s, beginning with the pioneering work of Heinrich Werner, over a century after the first Yeniseian grammar was published. Before that discovery, the prosodic peculiarities of Yeniseian had remained unnoticed. In addition Werner made a convincing case in Verner (1990b) that systematic peculiarities in the pre-modern transcription of Kott, Assan, Arin, and Pumpokol indicate the presence of Tone1 and Tone2 in these languages as well. The tone numbers used in the article are those originally given

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[5] It can be noted that there are slight variations in the realizations of vowels according to the tones.

by Werner. One of the first minimal distinctive sets identified by Werner in the 1960s was 'snowsled'. The status of the tonogenetic segments in Yeniseian is as follows:

tone	tonogenetic segment	status in Ket	tonogenesis in Ket	status in Yugh	tonogenesis in Yugh
1	none	/	achieved	/	achieved
2	-ʔ-	still there	unfinished	still there	unfinished
3	-h-	lost	achieved	lost	achieved
4	-h-	lost	achieved	still there	unfinished

Table8: Tonogenetic situation in Southern Ket and Yugh

5. *Prosodic and tonogenetic features of laryngeals*

Now that the tonogenesis of Chinese and Yeniseian has been described, it is possible to examine PIE laryngeals more fruitfully. As will be surveyed in the following paper, the different PIE laryngeals can be assigned to the following types:

- Absence of laryngeal corresponds to Chinese Píng and Yeniseian Tone1. This is PIE high pitch.

- Laryngeal of the Chinese Qù type and Yeniseian Tone4 causing falling tone: $*H_1$, which must be some kind of voiceless guttural fricative. Considering that $*H_1$ does not leave any graphic traces in the Anatolian branch, it seems quite reasonable to conclude that $*H_1$ was a voiceless fricative [ḥ], of pharyngeal deep articulation, in the PIE language.

- Laryngeal of the Yeniseian Tone3 type: $*H_2$, which must be some kind of voiced guttural fricatives. Considering that $*H_2$ leaves graphic traces in Anatolian as a kind of velar (or less probably uvular) phoneme, it seems quite reasonable to conclude that $*H_2$ was a voiced velar fricative [γ].

- Laryngeals of the Chinese Shǎng and Yeniseian Tone2 type causing rising tone: $*H_4$ and $*H_3$. Considering that $*H_4$ does not leave any graphic traces in Anatolian IE, it seems quite reasonable to conclude that $*H_4$ was a glottal stop [ʔ] in the PIE language. As for $*H_3$, considering that it appears to be written in Anatolian IE with some instability as *h* or Ø, a voiced pharyngeal [ʕ] would be the best match.

The conclusion of the present survey is therefore that: $*H_1 = $ [ḥ], $*H_2 = $ [γ], $*H_3 = $ [ʕ] and $*H_4 = $ [ʔ].

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