PATTERNS OF THE SYLLABLE-FINAL CONSONANTS IN CHINESE DIALECTS

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ABSTRACT

This paper presents the patterns of the syllable-final consonants in the present-day Chinese dialects. It reports the changes in the historical final consonants, *-*p -*t -*k -*m -*n -*ŋ*, taken place in the dialects, resulting in the formation of the different patterns. The study is based on the consonant inventories of a representative sample of 70 dialects of the 11 Chinese dialect groups. The findings are, (i) there is a total of 15 patterns of the syllable-final consonants; (ii) many patterns are defective, where one or more of the six historical final consonants, *-*p -*t -*k -*m -*n -*ŋ*, are missing; (iii) the changes in the syllable-final consonants are conditioned by the preceding vowel type; (iv) the changes are bi-directional in terms of place of articulation; and (v) the changes result in the emergence of nasal vowels and syllable-final glottal stop in the dialects.

Keywords: patterns of syllable-final consonants, consonant change, Chinese dialects.

1. INTRODUCTION

The paper presents (i) the patterns of the syllable-final consonants, which include the unreleased oral stops [-p -t -k], glottal stop [-ʔ] and nasals [-m -n -ŋ], in the present-day Chinese dialects, and (ii) the formation of the patterns. The syllable-final consonants are the reflexes of the six historical final consonants, *-*p -*t -*k -*m -*n -*ŋ*, that occurred in the sound systems of Old Chinese and Middle Chinese ([1, 2, 3]). The study is based on the consonant inventories of a representative sample of 70 genetically and areally balanced dialects of the 11 Chinese dialect groups, including *Mandarin*, *Jin*, *Hui*, *Gan*, *Xiang*, *Wu*, *Min*, *Yue*, *Kejia*, *Pinghua*, and *Tuhua*. Following the quota rule proposed in [4], a dialect is selected from each one of the 70 subgroups of the 11 Chinese dialect groups. The reference sources on the sound systems of the present-day Chinese dialects for investigation include (i) journal articles in *Fangyan* (Dialect) published by the Institute of Linguistics at the Chinese Academy of Social Sciences, Beijing, (ii) book chapters, (iii) monographs, and (iv) dissertations on the Chinese dialects. The classification of the dialect groups and their subgroups follows the proposals in the published dialect map, LANGUAGE ATLAS OF CHINA ([5]), and the journal article, '*Classification of the Chinese dialects*' ([6]).

2. PATTERNS

Table 1 presents a total of 15 patterns of the syllable-final consonants in the 70 dialects of the 11 Chinese dialect groups. In the column under 'Dialect groups', the number in parentheses denotes the number of dialects of a dialect group, in which a particular pattern occurs. 'Freq[1]' refers to the frequency of occurrence of the 15 individual patterns, and 'Freq[2]' refers to the frequency of occurrence of the individual syllable-final stops and nasals.

Patterns								Freq[1]	Dialect groups
#1	-p	-t	-k		-m	-n	-ŋ	15	*Yue* (8), *Kejia* (4), *Min* (2), *Pinghua* (1)
#2						-n	-ŋ	14	*Mandarin* (5), *Gan* (3), *Xiang* (2), *Hui* (2), *Min* (1), *Tuhua* (1)
#3				-ʔ			-ŋ	9	*Jin* (3), *Wu* (3), *Mandarin* (1), *Kejia* (1), *Min* (1)
#4							-ŋ	9	*Mandarin* (2), *Wu* (2), *Gan* (2), *Min* (1), *Xiang* (1), *Tuhua* (1)
#5				-ʔ		-n	-ŋ	6	*Wu* (3), *Kejia* (2), *Jin* (1)
#6						-n		3	*Xiang* (2), *Hui* (1)
#7				-ʔ				3	*Jin* (2), *Hui* (1)
#8		-t	-k			-n	-ŋ	2	*Kejia* (1), *Gan* (1)
#9	-p		-k		-m		-ŋ	2	*Min* (2)
#10		-t		-ʔ		-n	-ŋ	2	*Kejia* (1), *Gan* (1)
#11	-p	-t	-k	-ʔ	-m	-n	-ŋ	1	*Min* (1)
#12	-p			-ʔ	-m	-n	-ŋ	1	*Gan* (1)
#13					-m		-ŋ	1	*Min* (1)
#14				-ʔ	-m	-n		1	*Hui* (1)
#15								1	*Pinghua* (1)
Freq[2]	19	20	20	23	21	45	62	70	

Table 1: Patterns of the syllable-final consonants in the 70 dialects of the 11 Chinese dialect groups.

The 15 patterns of the syllable-final consonants (Table 1) may be grouped into five types. *Type I* consists of six patterns, [-p -t -k -m -n -ŋ] (15, i.e.,

occurring in 15 dialects), [-t -k -n -ŋ] (2), [-p -k -m -ŋ] (2), [-t -ʔ -n -ŋ] (2), [-p -t -k -ʔ -m -n -ŋ] (1), and [-p -ʔ -m -n -ŋ] (1), each of which contains one or more syllable-final oral stops and two or more syllable-final nasals, and also a syllable-final glottal stop in some patterns. *Type II* consists of three patterns, [-ʔ -ŋ] (9), [-ʔ -n -ŋ] (6), and [-ʔ -m -n] (1), that contain a syllable-final glottal stop and one or two syllable-final nasals, but not the syllable-final oral stops. *Type III* consists of a single pattern, [-ʔ] (3), that contains only a syllable-final glottal stop. *Type IV* consists of four patterns, [-n -ŋ] (14), [-ŋ] (9), [-n] (3), and [-m -ŋ] (1), that contain only the syllable-final nasals. *Type V* consists of a single pattern (1) that contains a zero syllable-final consonant ('Ø'). It occurs in *Zhongshan* (*Pinghua*), the only one of the 70 dialects in this study that lacks all the syllable-final consonants. There are no occurrences of the patterns that contain only a syllable-final glottal stop with the addition of one or more oral stops, such as ˣ[-ʔ -p], ˣ[-ʔ -p -t] and ˣ[-ʔ -p -t -k], nor the patterns that contain only the syllable-final oral stops, such as ˣ[-p], ˣ[-t], ˣ[-k], ˣ[-p -t], ˣ[-p -k], ˣ[-t -k] and ˣ[-p -t -k]. In essence there are no patterns that contain only the syllable-final oral stops, but patterns that contain only a glottal stop [-ʔ] (*Type* III) or only the syllable-final nasals (*Type* IV).

Table 1 also presents the frequencies of occurrence of the syllable-final oral stops, glottal stop and nasals. In order of decreasing frequency of occurrence, they are [-ŋ] (62) > [-n] (45) > [-ʔ] (23) > [-m] (21) > [-t] (20) = [-k] (20) > [-p] (19). The velar nasal [-ŋ] occurs in 62 of the 70 dialects. It is more frequent than the other types of syllable-final consonants. Of the syllable-final stops, the glottal stop [-ʔ] is more frequent than the oral stops [-p], [-t], [-k]; and of the oral stops, [-p] is less frequent than [-t] and [-k]. The bilabials, [-m] and [-p], have a lower frequency of occurrence than the alveolar and velar nasals or oral stops. They may be said to be less stable than the other nasal and stop types, and the velar nasal [-ŋ] is more resistant to the effects of the diachronic process of final consonant elision compared to the other types of syllable-final consonants.

3. FORMATION OF PATTERNS

The various patterns of the syllable-final consonants are formed as a result of the changes in the six historical syllable-final stops and nasals, -**p* -**t* -**k* -**m* -**n* -**ŋ*, taken place in the present-day dialects.

3.1. Changes in -**p* -**t* -**k*

This section presents the changes in the three historical syllable-final stops, -**p* -**t* -**k*, that have contributed to the formation of the *Type I*, *Type II* and *Type III* patterns. As will be shown, the path to the realization of the patterns that contain the syllable-final stops involves more changes than just the drop or elision of some of the historical syllable-final stops -**p* -**t* -**k*.

Type I patterns consist of [-p -t -k -m -n -ŋ] (15), [-p -t -k -ʔ -m -n -ŋ] (1), [-p -ʔ -m -n -ŋ] (1), [-t -k -n -ŋ] (2), [-p -k -m -ŋ] (2), and [-t -ʔ -n -ŋ] (2). In both patterns, [-p -t -k -m -n -ŋ] (15) and [-p -t -k -ʔ -m -n -ŋ] (1), -**p* -**t* -**k* are preserved. The pattern [-p -t -k -ʔ -m -n -ŋ] (1) occurs in a single dialect, *Xiamen*, of the *Min* dialect group. The extra syllable-final glottal stop [-ʔ] results from the debucaalization of -**p* -**t* -**k* in some rimes; in other rimes, -**p* -**t* -**k* are preserved. In the patterns, [-p -ʔ -m -n -ŋ] (1), [-t -k -n -ŋ] (2), [-p -k -m -ŋ] (2), and [-t -ʔ -n -ŋ] (2), as can be seen there are missing syllable-final oral stops. These are the defective patterns, as they do not contain all the reflexes of -**p* -**t* -**k*. In the pattern, [-p -ʔ -m -n -ŋ] (1), which occurs in *Lichuan* (*Gan*), while -**p* is preserved, both -**t* -**k* have turned into [-ʔ] (< -**t*, -**k*), rather than being elided. The pattern [-t -k -n -ŋ] (2) occurs in *Yugan* (*Gan*) and *Wengyuan* (*Kejia*). In *Yugan*, while -**t* -**k* are preserved, -**p* has merged into [-t] (< -**p*). In *Wengyuan*, -**p* has bifurcated into [-t] (< -**p*) and [-k] (< -**p*), and -**k* is preserved in some rimes; in other rimes it has turned into [-t] (< -**k*). Despite the similarity between the patterns on the surface level in the two dialects, the changes that lead to the formation of the patterns differ. This is also true for the patterns [-p -k -m -ŋ] (2) and [-t -ʔ -n -ŋ] (2), each occurring in two dialects. The pattern [-p -k -m -ŋ] (2) occurs in *Ningde* (*Min*) and *Leizhou* (*Min*). In *Ningde*, -**t* has bifurcated into [-p] (< -**t*) and [-k] (< -**t*). In *Leizhou*, *-*t* is either dropped, resulting in changing CVS (where S = stop) to CV syllables, or it has merged into [-k] (< -**t*). The pattern [-t -ʔ -n -ŋ] (2) occurs in *Yongding* (*Kejia*) and *Nanchang* (*Gan*). In *Yongding*, -**p* -**k* have turned into [-ʔ] (< -**p*, -**k*). In *Nanchang*, *-*p* has merged into [-t] (< *-*p*) and -**k* has bifurcated into [-ʔ] (< -**k*) and [-t] (< *-*k*). While [-ʔ] occurs in both dialects, it is a derivative of both -**p* and -**k* in *Yongding*, but only -**k* in *Nanchang*.

Type II patterns consist of [-ʔ -ŋ] (9), [-ʔ -n -ŋ] (6), and [-ʔ -m -n] (1) that contain only a syllable-final glottal stop with the additional one or two syllable-final nasals, occurring in 16 dialects of six Chinese dialect groups. In all the dialects, with the exception of two, in which the three patterns occur, the syllable-final oral stops have turned into [-ʔ] (< -**p*, -**t*, -**k*). In *Yudu* (*Kejia*), only -**k* has turned into [-ʔ] (< -**k*), while -**p* -**t* are dropped; and in *Jiyuan* (*Jin*), -**p* -**t* -**k* have turned into [-ʔ] in some rimes; in other rimes, -**p* -**t* -**k* are dropped.

Type III pattern consists of [-ʔ] (3) that contains only a single syllable-final glottal stop. It occurs in

Datong (*Jin*), *Shenmu* (*Jin*) and *Jixi* (*Hui*). In *Jixi*, -**p* -**t* -**k* have turned into [-ʔ] (< -**p*, -**t*, -**k*). In *Datong* and *Shenmu*, -**p* -**t* -**k* have turned into [-ʔ] (< -**p*, -**t*, -**k*) in some rimes; in other rimes, -**p* -**t* -**k* are dropped.

Summary. The changes in the three historical syllable-final stops, -**p* -**t* -**k*, that contribute to the formation of the Type I, Type II and Type III patterns include (i) elision of -**p* -**t* -**k*, resulting in changing CVS to CV syllables; (ii) debucaalization of -**p* -**t* -**k*; (iii) bi-directional consonant shift in place of articulation, including [-t] < -**p*, [-k] < -**p*, [-p] < -**t*, [-k] < -**t*, [-t] < -**k*, but not ×[-p] < -**k*; and (iv) bifurcations of -**p* into [-t] and [-k], -**t* into [-p] and [-k], and -**k* into [-t] and [-ʔ]. The changes (ii), (iii) and (iv) are in a large majority of cases conditioned by the vowel type that precedes the syllable-final stops.

3.2. Changes in -**m* -**n* -**ŋ*

This section presents the changes in the three historical syllable-final nasals, -**m* -**n* -**ŋ*, that have contributed to the formation of the Type I, Type II and Type IV patterns. As is the case with the syllable-final stops, the path to the formation of the various patterns that contain the syllable-final nasals involves more than just the drop of some of the three historical syllable-final nasals, -**m* -**n* -**ŋ*.

Type I patterns consist of [-p -t -k -m -n -ŋ] (15), [-p -t -k -ʔ -m -n -ŋ] (1), [-p -ʔ -m -n -ŋ] (1), [-t -k -n -ŋ] (2), [-p -k -m -ŋ] (2), and [-t -ʔ -n -ŋ] (2) that contain two or more syllable-final nasals. In the patterns [-p -t -k -m -n -ŋ] (15) and [-p -ʔ -m -n -ŋ] (1), -**m* -**n* -**ŋ* are preserved in 16 dialects. The pattern [-p -t -k -ʔ -m -n -ŋ] (1) occurs only in *Xiamen* (*Min*). In the dialect, -**m* -**n* -**ŋ* are preserved in some rimes; in other rimes, they are dropped with the concomitant change of the preceding vowel into a nasal vowel ([Ṽ] < 'Ø' < -**m*, -**n*, -**ŋ*). The pattern [-t -k -n -ŋ] (2), occurs in *Wengyuan* (*Kejia*) and *Yugan* (*Gan*). In *Wengyuan*, -**m* has bifurcated and merged into [-n] (< -**m*) and [-ŋ] (< -**m*). In *Yugan*, -**m* has merged into [-n] (< -**m*). The pattern [-p -k -m -ŋ] (2), occurs in *Ningde* (*Min*) and *Leizhou* (*Min*). In both dialects, -**m* is preserved. In *Ningde* -**n* has merged into [-ŋ] (< -**n*). In *Leizhou*, -**n* is dropped in some rimes; in other rimes it has merged into [-ŋ] (< -**n*). As for -**ŋ*, it is preserved in some rimes; in other rimes it is dropped. The pattern [-t -ʔ -n -ŋ] (2) occurs in *Yongding* (*Kejia*) and *Nanchang* (*Gan*). In both dialects, -**n* and -**ŋ* are preserved. In *Yongding*, -**m* has merged into [-ŋ] (< -**m*), while in *Nanchang*, -**m* has merged into [-n] (< -**m*).

Type II patterns consist of [-ʔ -m -n] (1), [-ʔ -n -ŋ] (6), and [-ʔ -ŋ] (9), that contain one or two syllable-final nasals with the additional syllable-final glottal stop. Type IV patterns consist of [-n -ŋ] (14), [-ŋ] (9), [-n] (3), and [-m -ŋ] (1), that contain one or two syllable-final nasals. Details of the changes in respect to the patterns of Type II, but not Type IV (due to space limitations), are given below.

The pattern [-ʔ -m -n] (1) occurs in *Chun'an* (*Hui*). In the dialect, -**m* -**n* -**ŋ* are dropped with the concomitant change of the preceding vowel into a nasal vowel ([Ṽ] < 'Ø' < -**m*, -**n*, -**ŋ*) in some rimes; in other rimes, -**ŋ* has bifurcated into [-m] (< -**ŋ*) and [-n] (< -**ŋ*), -**m* has merged into [-n] (< -**m*) and -**n* is preserved. Thus, [-m] in the dialect is not the descendant of -**m* but -**ŋ*. The pattern [-ʔ -n -ŋ] (6) occurs in six dialects of three Chinese dialect groups, *Guidong*, *Chengdu-Longtansi* (both Kejia), *Teqing*, *Suzhou*, *Wenling* (all *Wu*), and *Jiyuan* (*Jin*). In *Guidong* and *Chengdu-Longtansi*, -**m* -**n* -**ŋ* are dropped in some rimes with the concomitant change of the preceding vowel into a nasal vowel ([Ṽ] < 'Ø' < -**m*, -**n*, -**ŋ*); in other rimes -**n* and -**ŋ* are preserved. In *Teqing*, *Suzhou* and *Wenling*, -**m* is dropped. -**n* is dropped in some rimes; in other rimes it is preserved. -**ŋ* is preserved in some rimes; in other rimes, it is dropped with the concomitant change of the preceding vowel into a nasal vowel ([Ṽ] < 'Ø' < -**ŋ*). In *Jiyuan*, -**m* has merged into [-n] (< -**m*) and -**n* and -**ŋ* are preserved. The pattern [-ʔ -ŋ] (9) occurs in nine dialects of five Chinese dialect groups, *Taiyuan*, *Changzhi* and *Lishi* (all *Jin*), *Ningbo*, *Yunhe* and *Jinhua* (all *Wu*), *Taixin* (*Mandarin*), *Yudu* (*Kejia*), and *Putian* (*Min*). In all the dialects, -**ŋ* is preserved. In *Taiyuan*, *Changzhi* and *Lishi*, -**m* -**n* are dropped in some rimes; in other rimes they have merged into [-ŋ] (< -**m*, -**n*). In *Taiyuan*, the drop of -**m* -**n* results in the concomitant change of the preceding vowel into a nasal vowel ([Ṽ] < 'Ø' < -**m*, -**n*). In *Ningbo*, -**m* has merged into [-ŋ] (< -**m*). -**n* has merged into [-ŋ] (< -**n*) in some rimes; in other rimes, it is dropped with the concomitant change of the preceding vowel into a nasal vowel ([Ṽ] < 'Ø' < -**n*). -**ŋ* is dropped in some rimes with the concomitant change of the preceding vowel into a nasal vowel ([Ṽ] < 'Ø' < -**ŋ*). In *Yunhe*, -**m* -**n* are dropped with the concomitant change of the preceding vowel into a nasal vowel ([Ṽ] < 'Ø' < -**m*, -**n*). -**ŋ* in some rimes is dropped with the concomitant change of the preceding vowel into a nasal vowel ([Ṽ] < 'Ø' < -**ŋ*). In *Jinhua*, -**m* -**n* are dropped with the concomitant change of the preceding vowel into a nasal vowel ([Ṽ] < 'Ø' < -**m*, -**n*) in some rimes; in other rimes, they have merged into [-ŋ] (< -**m*, -**n*). In both *Taixing* and *Yudu*, -**m*, -**n* are dropped with the concomitant change of the preceding vowel into a nasal vowel ([Ṽ] < 'Ø' < -**m*, -**n*). In *Taixing*, -**m* in some rimes has merged into [-ŋ]. In *Yudu*, -**ŋ* in some rimes is dropped with the concomitant change

of the preceding vowel into a nasal vowel ([Ṽ] < 'Ø' < -**ŋ*). In *Putian*, -**m* -**n* are dropped.

Summary. The changes in the three historical syllable-final nasals, -**m* -**n* -**ŋ*, that contribute to the formation of the *Type I*, *Type II* and *Type IV* patterns include (i) elision of -**m* -**n* -**ŋ*, resulting in changing CVN (where N = nasal) to CV syllables; (ii) occurrence of nasal vowels; (iii) bi-directional consonant shift in terms of place of articulation, including [-n] < -**m*, [-ŋ] < -**m*, [-ŋ] < -**n*, [-m] < -**ŋ*, [-n] < -**ŋ*, but not ×[-m] < -**n*; and (iv) bifurcations of -**m* into [-n] and [-ŋ] and -**ŋ* into [-m] and [-n]. The changes (ii), (iii) and (iv) are in a large majority of cases conditioned by the vowel type that precedes the syllable-final nasals.

4. DISCUSSION

(1) Chen ([7]) proposes a theory of diachronic change of the historical syllable-final consonants, -**p* -**t* -**k* -**m* -**n* -**ŋ*, taken place in the Chinese dialects and postulates the successive stages of the change of the historical sounds. The sequence of the stages of the change in the syllable-final stops is, Stage 1: -**p* -**t* -**k* → Stage 2: [-t, -k] ([-t] < -**p*; -**t* -**k* unchanged) → Stage 3: [-k] ([-k] < -**t*; -**k* unchanged) → Stage 4: [-ʔ] ([-ʔ] < [-k]) → Stage 5: 'Ø' ('Ø' < [-ʔ], i.e., [-ʔ] dropped). The parallel sequence of the stages of change in the syllable-final nasals is, Stage 1: -**m* -**n* -**ŋ* → Stage 2: [-n, -ŋ] ([-n] < -**m*; -**n* -**ŋ* unchanged) → Stage 3: [-ŋ] ([-ŋ] < -**n*; -**ŋ* unchanged) → Stage 4: [Ṽ] (< 'Ø' < [-ŋ], i.e., [-ŋ] is dropped with the concomitant change of the preceding vowel into a nasal vowel) → Stage 5: V (< [Ṽ], i.e., vowel de-nasalization). Chen's postulation suggests that (i) the changes in the syllable-final consonants are unidirectional with respect to the place of articulation, that is, from front to back, [-p] > [-t] > [-k] > [-ʔ] > 'Ø' and [-m] > [-n] > [-ŋ] > [Ṽ] > [V], and (ii) the successive stages are unalterable and unskippable. The language data presented in the present study show that (a) the changes in -**p* -**t* -**k* and -**m* -**n* -**ŋ* taken place in the dialects are bi-directional consonant shift in terms of place of articulation, such as [-t] < -**p*, [-p] < -**t*; [-k] < -**t*, [-t] < -**k*; and [-ŋ] < -**m*, [-m] < -**ŋ*; [-ŋ] < -**n*, [-n] < -**ŋ*; (b) the successive stages are alterable, e.g., [-p] < -**t* and [-t] < -**k*; and skippable, e.g., [-k] < -**p* and [-m] < -**ŋ*. In the case of the syllable-final stops, there is no phonetic or phonological justification that -**p* or -**t* must first turn into [-k] before turning into [-ʔ]. Articulatorily, for -**p*, -**t* or -**k* to turn into [-ʔ], the release of the oral closure suffices to accomplish the change. As reported in Iwata, et al. ([8, 9]), the laryngoscopic data reveal that the production of the syllable-final applosives in the Chinese dialects, Fukienese and Cantonese, is glottalized, characterized by a laryngeal constriction with a closed glottis as observed in the production of the glottal stop. The glottalization prevents the vocal folds from vibrating at the vowel offset and creates the phonatory condition for effectively producing the unreleased final stops.

There are parallels between the changes in the syllable-final stops and nasals. (a) It is unnecessary for -**m* and -**n* to turn into [-ŋ] before the occurrence of [Ṽ], as the changes, [Ṽ] < 'Ø' < -**m* and [Ṽ] < 'Ø' < -**n*, occur in many dialects; (b) the diachronic changes in the historical syllable-final nasals are bi-directional, such as [-ŋ] < -**m*, [-m] < -**ŋ*; [-ŋ] < -**n*, [-n] < -**ŋ*; and (c) the successive stages are also alterable and skippable. The data in the present study thus call into question on the validity of Chen's theory of diachronic change of the historical syllable-final stops and nasals, -**p* -**t* -**k* -**m* -**n* -**ŋ*, that have taken place in the Chinese dialects.

(2) In this study, the syllable-final consonants in descending frequency of occurrence are [-ŋ] (62) > [-n] (45) > [-ʔ] (23) > [-m] (21) > [-t] (20) = [-k] (20) > [-p] (19). The number of occurrences of the syllable-final nasals, [-m] [-n] [-ŋ], is larger than that of the syllable-final oral stops, [-p] [-t] [-k], at the same place of articulation. This may be because the nasal murmur and nasality on the V-to-N transition are more perceptible than the unreleased oral stops, contributing to nasal identification and nasal place distinction ([10, 11]). As for the larger number of occurrences of [-ŋ] than that of [-m -n], it may be because in the dialects [-ŋ] occurs more frequently after the vowels [a ɑ ɔ], which have a higher intensity level ([12, 13]), contributing to a more perceptible V-to-N transition.

(3) In this study, there are many cases in which the syllable-final stops have turned into the glottal stop and the syllable-final nasals are dropped resulting in the change of the preceding vowel into a nasal vowel. It is believed that the occurrence of [-ʔ] following the loss of [-p] [-t] [-k] serves to prevent the disappearance of checked syllables and checked tones at the time of change, thus continuing to maintain the contrast between CV and CVS syllables. The same can be said about the function of the nasal vowels that occur following the loss of [-m] [-n] [-ŋ].

5. CONCLUSION

The change in the syllable-final consonants is a link in the chain of sound change. It is triggered by the change in the preceding vowel, and it in turn brings about the changes in syllable type and tone type and the appearance of the nasal vowels and glottal stop, which contribute to the shaping of the sound systems in the Chinese dialects.

6. REFERENCES

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