

## Introduction

Singapore is a multilingual society. Mandarin is one of the official languages, and it takes the grammar of Beijing Mandarin as criterion. However, due primarily to language contact with the other languages spoken in Singapore, such as English, Malay, Tamil and the modern Southern Chinese coastal dialects, namely the Min dialects, Cantonese, Hakka, etc., the Mandarin commonly spoken in Singapore differs considerably from that of Beijing in phonology, syntax and lexicon. Hence, Mandarin spoken in Singapore is regarded as the emergence of a new variety of Mandarin from language contact, and is named Singapore Mandarin.

Majority of the studies on Singapore Mandarin regarded any form of Singapore Mandarin, which is different from Standard Mandarin, i.e. Beijing Mandarin, as being a deviant variety. These studies argued that the variant features of Singapore Mandarin resulted from imperfect learning, language interference and error.

This paper seeks to analyze a few cases of phonetic alternations, or so to say, cases of sound change in-progress in Singapore Mandarin, which demonstrate an interface between phonetics and morphology.

## Case Studies

### The Insertion of Aspiration

#### Case 1: [tʂuan<sup>51</sup>]撞 ‘collide/strike’ > [tʂʰuan<sup>51</sup>]

The alternation of unaspirated retroflex affricate [tʂ] and its aspirated counterpart [tʂʰ].

The insertion of aspiration to the retroflex affricate [tʂ] exclusively occurs in the morpheme [tʂuan<sup>51</sup>]撞, which means ‘collide/ strike’.

#### Case 2: [suei<sup>51</sup>]碎 ‘break into pieces’ > [tsʰuei<sup>51</sup>]

The alternation of alveolar fricative [s] and aspirated alveolar affricate [tsʰ].

The insertion of aspiration and plosive [t] to the alveolar fricative [s] exclusively occurs in the morpheme [suei<sup>51</sup>]碎, which means ‘break into pieces’.

#### Case 3: unaspirated stop > aspirated stop

The alternation of unaspirated stop and its aspirated counterpart occurs particularly in the following morphemes:

[ta<sup>55</sup>]搭 ‘build; take (ship, plane, etc.)’ > [tʰa<sup>53-51</sup>]/ [tʰaʔ]

[pian<sup>51</sup>]遍 ‘all over; time in repetition’ > [pʰian<sup>51</sup>]

[pian<sup>55</sup>]編 ‘organize; compile; make up’ > [pʰian<sup>55</sup>]

[pei<sup>51</sup>]培 ‘bake’ > [pʰei<sup>35</sup>]

[po<sup>55</sup>lan<sup>51</sup>]波浪 ‘wave’ > [pʰo<sup>55</sup>lan<sup>51</sup>]

### The Removal of Aspiration

#### Case 4: [pʰo<sup>55</sup>]坡 ‘slope’ > [po<sup>55</sup>]

The alternation of aspirated voiceless bilabial stop [pʰ] and its unaspirated counterpart [p] concerns an isolated morpheme [pʰo<sup>55</sup>]坡 ‘slope’.

## Research Question

Such phonetic alternations are irregular as they only concern particular morphemes, however, they do suggest motivations behind a linguistic evolution.

Anttila (2002) pointed out, “there are two kinds of phonological alternations: those that are purely phonologically conditioned and those that are conditioned by an amalgam of phonological, morphological and lexical formation. Alternations of the second type raise an important general question: how exactly do phonological, morphological and lexical formation interact in the grammar?”

Our case studies seem to demonstrate an interface between phonetics and morphology. It raises the long-standing question in the study of sound change: what role do lexical and morphological factors play in sound change?

Neogrammarians and many later historical linguists claimed that when morphological patterns seem to have played a role in sound change, what actually happened is that a later (independent) analogical change has interfered with its effects. Nonetheless, as Garrett and Johnson (2013) pointed out, ‘analogical’ effects can be discerned before a phonological innovation has become categorical. This phenomenon was first described by Bloomfield (1933: 364-366) and has been studied by Trager (1940), Steriade (2000) and others in the recent laboratory phonology literature. (c.f. Garrett and Johnson 2013)

Anttila (2002) argued that morphological and lexical conditions do not occur randomly. Instead, they follow a particular phonological rationale. If phonology fully determines an alternation, or is heavily biased towards one alternant, morphology will not use such an alternation to set up a contrast, say, between nouns and adjectives. In contrast, if phonology does not favor any particular outcome, we have a possible locus for the expression of morphological meanings.

We don’t intend to argue the dominance of morphological condition and analogical effects play in sound change. Our case studies demonstrate that analogical effects can be discerned before a phonetic innovation, nonetheless, there are also cases where lexical and morphological factors be dominant.

As of why does a sound change the way it does, we believe that it is the articulatory and perceptual apparatus, in other words, the concrete, phonetic properties of speech sounds that trigger changes to take place in the speech of Singaporean Chinese.

## Discussions

### Analogical Effect

Unaspirated stop > Aspirated stop

	Standard Mandarin	Singapore Mandarin
搭 ‘build; take (ship, plane, etc.)’	[ta <sup>55</sup> ]	[tʰa <sup>53-51</sup> ]/ [tʰaʔ]
遍 ‘all over; time in repetition’	[pian <sup>51</sup> ]	[pʰian <sup>51</sup> ]
編 ‘organize; compile; make up’	[pian <sup>55</sup> ]	[pʰian <sup>55</sup> ]
培 ‘bake’	[pei <sup>51</sup> ]	[pʰei <sup>35</sup> ]

We argue that these phonetic alternations illustrate imperfect learning with the interference of analogical effect.

	Ideogram	Phoneme	Initial
塔	土 ‘earth/soil’	答 [tʰa]	[tʰ-]
搭	手 ‘hand’	答 [tʰa]	[t-]
篇	竹 ‘bamboo’	扁 [pʰian]	[pʰ-]
遍	辵 ‘walk’	扁 [pʰian]	[p-]
編	糸 ‘silk’	扁 [pʰian]	[p-]
培	土 ‘earth/soil’	音 [pʰou]	[pʰ-]
焙	火 ‘fire’	音 [pʰou]	[p-]

The morphemes listed above are alike in shape. They are pictophonetic characters (also known as phonograms 形聲 xíng shēng).

Pictophonetic/ phonogram is one of the six methods of forming Chinese characters (六書 liùshū). The grapheme is a combination of an ideogram and a phoneme. It integrates both meaning and pronunciation in its character. For instance, the character培, which means ‘to cultivate/ to earth up’, consists of the ideogram土, which refers to earth or soil, and the phoneme音[pʰou], which represents the sound.

The speakers analogized these characters, which are similar in shape, with their pronunciations, and eventually pronounced them uniformly with the aspirated stops. In terms of perception and production, the speakers perceived that since these graphemes carry the same phonemes respectively, as in 搭 and塔 with 答; 焙 and培 with 音; 遍, 編 and篇 with 扁, and they are just different in meanings, their pronunciations are supposed to be the same. Consequently, the speakers pronounced them all with aspiration.

- ❖ Aspiration is analogically implemented to the phonetic representations.
- ❖ Analogical effect came before phonetic alternation and triggered sound change.

### Lexically or Morphologically Conditioned Sound Change

	Standard Mandarin	Singapore Mandarin
撞 ‘collide/ strike’	[tʂuan <sup>51</sup> ]	[tʂʰuan <sup>51</sup> ]
碎 ‘break into pieces’	[suei <sup>51</sup> ]	[tsʰuei <sup>51</sup> ]
波浪 ‘wave’	[po <sup>55</sup> lan <sup>51</sup> ]	[pʰo <sup>55</sup> lan <sup>51</sup> ]

In this case, phonetic alternations are motivated by phonological iconicity, i.e. sound symbolism. This is a realization of the human mind at work creating links between sound and meaning.

For instance, the alternation of [tʂ] and [tʂʰ] in the morpheme [tʂuan<sup>51</sup>]撞 ‘collide/ strike’. Aspiration plays a crucial role in the speaker’s creation of the sign. By producing the aspirated retroflex affricate [tʂʰ], the airstream is released in a stronger burst of sound and the sound produced is more significant in comparison with its unaspirated counterpart. The onset [tʂʰ-] with the rest of the segments [uan<sup>51</sup>] creates a sort of sound effect that is somewhat like collision in the auditory sense.

- ❖ The morpheme conveys meaning via aspiration. Note that this differs from English where aspiration does not cause a contrastive meaning.

## Doubt: Is analogical effect discerned before a phonetic innovation in sound symbolism?

Seemingly, sound symbolism involves analogical effects. Thus, one may argue that the alternation of [tʂuan<sup>51</sup>] and [tʂʰuan<sup>51</sup>] is still an analogical conditioned change.

Contrast [po<sup>55</sup>lan<sup>51</sup>]波浪 ‘wave’ > [pʰo<sup>55</sup>lan<sup>51</sup>] with [pʰo<sup>55</sup>]坡 ‘slope’ > [po<sup>55</sup>].

The insertion of aspiration to [po<sup>55</sup>]波 ‘wave’ is a mimic of the sound of the waves breaking on the shore, whereas, the removal of aspiration from [pʰo<sup>55</sup>]坡 ‘slope’ is of no effect.

- ❖ [pʰo<sup>55</sup>]坡 ‘slope’ > [po<sup>55</sup>] suggests that the aspiration within the morphemic unit could have likely been disregarded and removed due to its inconsequence as there is no dependency of the morpheme on the aspiration to convey meaning. In other words, the process does not concern any morphological label, i.e. highlight of or change in meaning.

## Proposition & Contribution

- ❖ The dependency of the morpheme on the aspiration to convey meaning or not is realized in the articulatory program as an aspirated and unaspirated onset.
- ❖ Analogical effects can be discerned before a phonetic innovation, however, there are cases where lexical and morphological factors be dominant.
- ❖ Linguistic variations or innovations in Singapore Mandarin do not always concern language contact and interference. We have demonstrated how acoustic cues, such as the relative perceptual distinctness of aspirated vs. unaspirated onset, has shaped the sound patterns in the speech of Singaporean Chinese.

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