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THE PHONOLOGICAL SYSTEM OF MODERN MANDARIN CHINESE AND THE PHENOMENON OF PHONOVARIABILITY: A THEORETICAL AND FUNCTIONAL ANALYSIS

https://doi.org/10.5281/zenodo.20172399

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Abstract. *This study analyzes the phonological system of modern Mandarin Chinese and its major characteristics. The research examines the syllabic structure of Mandarin Chinese, including initials, finals, and tones, as well as segmental units and the functional aspects of the tonal system based on scientific sources. In addition, tone sandhi, the phonetic features of the neutral tone, the phenomenon of erhua (rhotic suffixation), and assimilation processes are discussed in detail.*

Special attention is devoted to the issue of phonovariability, including alternative pronunciation forms, reduction, elision, speech-rate-dependent changes, and sociolinguistic and regional variability factors. As a result, the study demonstrates that the phonological system of Mandarin Chinese, while possessing a rigid structural foundation, simultaneously represents a dynamic system characterized by a high degree of variability in actual speech.

Keywords*: Mandarin Chinese, phonology, syllable structure, initial, final, tone, tone sandhi, neutral tone, erhua, phonovariability.*

In the monograph Synchronic Phonology of Mandarin Chinese by Chin Chuan Cheng, a linguist affiliated with the University of Illinois, the phonetics of Chinese (Putonghua) are analyzed through syllable structure, initials, finals, tones, and a number of phonological rules governing sound changes in speech.

Traditionally, the syllable structure in Chinese consists of three main components:

- Initial (the consonant sound at the beginning of a syllable);
- Final (the remaining segmental part of the syllable);
- Tone (the tonal contour assigned to the entire syllable).

A syllable may lack an initial, medial, or terminal element, but it must contain a syllabic nucleus and a tone. The final itself consists of three segments: the medial (the segment preceding the nucleus), the nucleus (the main vowel),

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and the terminal, which may be either a vowel or a consonant (usually a nasal sound).

Regarding the system of initials and finals, aspiration is considered a phonemically distinctive feature among consonants in Chinese. One of the frequently discussed issues concerns the nature of palatal sounds, which usually occur before the vowels [i] and [y]. The author of the monograph argues that palatal sounds should be treated as independent and primary segments.

According to the source, the following four vowels mainly occur within finals: i, y, ɨ (apical vowel), and u.The movement of low vowels is governed by the "back-vowel rule," in which regressive assimilation predominates over progressive assimilation.

Turning to the tonal system and tone sandhi phenomena, it is known that Chinese possesses four main tones and one neutral tone:

• First tone: high-level tone;

• Second tone: rising tone;

• Third tone: falling-rising tone (with the longest duration);

• Fourth tone: falling tone.

Apart from tones, Chinese also has the phenomenon of tone sandhi, which refers to tonal changes occurring within connected speech.

The most common rules of tone sandhi include the following:

• When a third-tone syllable is followed by another third-tone syllable, the first third tone is pronounced as a second tone;

• When a third tone is followed by any tone other than another third tone, the third tone changes into a "half-third tone," pronounced as a low falling tone without the final rise.

The neutral tone differs from other tones due to its short duration and weakened articulation. Its pitch and contour generally depend on the tone of the preceding syllable.

The neutral tone demonstrates the following characteristics:

• After the first, second, and fourth tones, it is usually pronounced with a low and falling contour;

• After the third tone, it is generally pronounced with a relatively higher and rising contour.

Another characteristic feature of the neutral tone is that syllables carrying it often undergo vowel reduction and voicing of initial consonants.

Retroflective Suffixation (Erhua). The addition of the suffix -r (-er) 儿 to a word or syllable significantly affects the syllable final. For example, if a final ends with the nasal sound [ŋ], the suffix may disappear, causing the preceding vowel to become nasalized. Many linguistic sources consider phonovariability — that is, context-dependent sound changes and the existence of alternative pronunciation forms — one of the important yet insufficiently studied aspects of Chinese phonology. Alternative pronunciation forms, changes occurring within the speech flow, and similar phenomena

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require comprehensive analysis together with the strict distributional rules governing sounds.

Some sources identify the following main aspects of phonovariability:

1. Alternative pronunciation forms and variability of segments. Sources provide examples of words having several pronunciation variants, which are often related to the presence or absence of medials.

• As an example of medial variability, the Chinese word for “cotton” may be pronounced as miánhua or miánhuo, although its standard written form is miánhua.

• The merging of two or more sounds or morphemes into a single form may also occur. Frequently used expressions can contract into one syllable, altering the quality of vowels within them.

2. Reduction. Reduction refers to the pronunciation of sounds in a shortened, weakened, or simplified form. This phenomenon is especially characteristic of syllables carrying the neutral tone, which are highly susceptible to phonetic weakening.

Vowel reduction. Vowels with low rising articulation may become centralized in neutral-tone pronunciation and consequently be realized as a neutral schwa-like vowel. For example, the syllable fa in the word meaning “hair” may sometimes be pronounced closer to fe.

Voicing of consonants. Voiceless consonants may become voiced when followed by a neutral tone. For example:

• p → b;

• t → d.

Segment deletion. Segment deletion refers to the omission of sounds or syllables during pronunciation, resulting in phonetic contraction. In Chinese, certain vowels occurring before a neutral tone may be omitted in speech.

3. Dependence on speech rate. When speech becomes rapid, various phonological changes may occur despite the existence of fixed phonological rules.

Tonal changes. Chinese contains tone sandhi rules according to which tones may change under the influence of neighboring tones within words or phrases. This phenomenon is especially common with third tones. In rapid speech, such tonal modifications may apply not only within minimal syntactic groups but also across entire sentences.

Elision. Elision refers to the omission of a sound during pronunciation without affecting meaning. This often occurs in disyllabic words where the second syllable is reduced or omitted, and its initial sound becomes attached to the preceding syllable. For example, the word wǒmen (“we”) may be pronounced as wǒm in rapid colloquial speech.

4. Sociolinguistic and dialectal variability. This type of variability involves pronunciation differences associated with speakers’ age and performance traditions.

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Types A and B of erhua. Words containing the retroflex suffix -r/er 儿 demonstrate different pronunciation types. Type A pronunciation is more typical of younger speakers in Beijing, whereas Type B is associated with older generations.

Beijing opera pronunciation. In Beijing opera pronunciation, an artificial distinction between “sharp” and “rounded” sounds still exists, referring to the contrast between palatal and non-palatal sibilants. Such pronunciations have already disappeared from modern Putonghua.

5. Positional variability of tones. Given the vast territory of China, tonal pronunciation differs across regions. For example, in some areas the third tone is pronounced in its half-third-tone form in medial position (only the falling part is realized), whereas at the end of an utterance it is pronounced in its full form.

The phenomenon of phonovariability in Chinese may metaphorically be compared to the flow of water within a riverbed. In this metaphor, the three principal phonetic units of the language — initials, finals, and tones — represent the structure of the riverbed itself. Their acoustic and articulatory realization in speech is shaped by factors such as speech rate, phonetic influence from neighboring sounds, and syntactic boundaries, ultimately adapting to the most efficient articulatory form.

Conclusion. In conclusion, the phonological system of modern Mandarin Chinese is complex, multilayered, and dynamic in nature. It is formed through the interaction of syllable structure (initials, finals, and tones), segmental units, and suprasegmental features. Although the phonological system is based on a strict structural model, this model demonstrates considerable variability in actual speech under the influence of various phonetic and prosodic factors.

Aspiration, palatalization, the limited vowel inventory and its combinatory possibilities, as well as the functional load of the tonal system, constitute the principal typological features of Mandarin phonology. In particular, tones and tone sandhi play an important role not only in distinguishing lexical meaning but also in organizing the rhythmic and intonational structure of speech. The existence of the neutral tone further intensifies phonetic variability through processes such as reduction, weakening of segments, and voicing.

At the same time, phonological processes such as erhua, assimilation, and elision, together with speech rate, sociolinguistic influences, and regional variation, demonstrate that Mandarin Chinese is not merely a static system but rather a flexible and context-dependent one. This requires phonological units to be studied not only at an abstract level but also in terms of their articulatory and acoustic realization in actual speech.

Thus, the phonology of Mandarin Chinese represents a dialectical unity of strict systematic structure and a high

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degree of variability. Its detailed analysis makes it possible to gain a deeper understanding of the functional-semantic and stylistic characteristics of the language.

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