Challenges in D2 and D3 Acquisition:
Dr. Sun Yat-Sen's 1924 Cantonese and Mandarin Audiorecordings

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Two short audiorecordings from Dr. Sun Yat-sen 孫逸仙, made in 1924, serve as the corpora for the study of his second and third Chinese dialect acquisition. His first dialect (D1) was Zhongshan (中山) Cantonese, his second dialect (D2) Standard Cantonese, and his third dialect (D3) Mandarin. Using the two audiorecordings, one of him reading Cantonese and the other Mandarin, this paper studies the types of errors that Dr. Sun made in his D2 Cantonese and his D3 Mandarin speech productions, focusing on patterns of consistency or inconsistency with respect to the target production, and the mapping that took place between source and target dialect.

1. Introduction

In support of the theme of NACCL-34—Data, Methods, and Application in Chinese Linguistics—the research for this study uses data from a pair of spoken corpora; namely, two, short audiorecordings of Sun Wen (孫文), or Sun Yat-sen (孫逸仙), with Yat-sen (Yixian 逸仙) being the given name that he chose when he went to Hong Kong to study. Another name that he is known by is Sun Zhongshan (中山), stemming from the surname portion of his Japanese name, Nakayama Shō 中山樵, which he acquired during his exile in Japan after the unsuccessful Guangzhou uprising in 1895. Dr. Sun Yat-sen (1866-1925) is a well-known figure in modern Chinese history. He is considered the father of modern China, and was the first provisional president of the Republic of China (中華民國) after the fall of the Qing dynasty in 1911, as well as the founder of the *Kuomintang* (國民黨) or KMT party. His oratory and organizational skills were well-known, as he displayed in his first speech to a large audience in 1903 in Hawai'i and in his first public speech on his newly proposed political ideology, *The Three Principles of the*

People (*San Min Zhuyi* 三民主義), delivered to students in Brussels in 1905 (Martin, 1944:89, 98).

Dr. Sun was a native speaker of Zhongshan (中山) Cantonese, or more accurately, the Shiqi (石歧) variety of Zhongshan, or Xiangshan (香山) Cantonese, spoken in the county seat, in what is today the commercial center of Zhongshan city (中山市). He later acquired a second variety of Cantonese as well as Mandarin, that are the languages produced in the two audiorecordings under analysis in this study. These recordings, made in 1924, provide precious acoustic data for analyzing Dr. Sun's acquisition of two varieties of Chinese that belong to two different dialect groups: Standard Cantonese—based on the Cantonese dialect spoken in Guangdong's capital, Guangzhou (Canton City)[1] at that time—as his second dialect (D2), and Mandarin—broadly based on Northern Mandarin represented by the Beijing dialect—as his third dialect (D3).[2, 3]

This paper is organized as follows. Section 2 offers a brief overview of second language (L2) and second dialect (D2) acquisition, and our reason for choosing to analyze the data as involving D2 (and D3) acquisition. Section 3 provides background on Dr. Sun Yat-sen and his acquisition of the three varieties of Chinese. Section 4 introduces the two corpora, one Cantonese audiorecording and one Mandarin audiorecording. Section 5 analyzes the Cantonese speech

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[1] Chao (1947:6) notes, for example, that the Cantonese dialect spoken in Canton City (Guangzhou) was "regarded more or less as the standard form of Cantonese," stemming from his observation of the city's "considerable prestige." Chao (1947:18) further observes a more exclusive subvariety that is not used in his textbook nor in other textbooks, a subvariety found in pre-1949 Guangzhou, in the western section of the city known in Cantonese as Saikwaan (Xiguan 西關), "where there are many old families and where the pronunciation has a certain prestige."

[2] D3 was coined by me, to differentiate the acquisition of Standard Cantonese (D2) from the later acquisition of Mandarin (D3). Distinguishing D3 from D2 recognizes that the speaker's previous knowledge of two other Chinese varieties can aid in acquiring a third variety.

[3] The research for this study is based in part on my personal knowledge of the three language varieties (D1, D2 and D3) are analyzed in this paper. My own D1, D2 and D3 acquisition mirrors to a large extent that of Dr. Sun, with the Shiqi variety of the Zhongshan dialect, on which I conducted linguistic research in Chan (1980), being my D1. I "picked up" some Standard Cantonese as D2 along the way, and Mandarin Chinese as D3 from university.

corpus, while Section 6 analyzes the Mandarin speech corpus. The paper closes with some concluding remarks in Section 7.

2. Second language and second dialect acquisition

In studying the audiorecordings of Dr. Sun Yat-sen's Cantonese and Mandarin speeches, this study treats his production of both the Yue (粵), or Cantonese, dialect group and the Mandarin dialect group as dialects (fangyan 方言) of the Chinese language, and thus involving two cases of second dialect acquisition (SDA) rather than one case of SDA and one case of second language acquisition (SLA). One important reason for treating these cases as dialect acquisition is that there are some important differences between dialect acquisition and language acquisition, the latter involving languages that may be from totally different language families, such as English and Chinese. The former belongs to Indo-European and the latter to Sino-Tibetan. One crucial issue is the *starting point* in the learning of one's target language. As Siegel (2010: 136) notes:

> "[…] with regard to linguistic knowledge, the starting points for SDA and SLA are very different. L2 learners typically have no linguistic knowledge of the L2 when they begin SLA. But D2 learners know most of the lexicon, phonology, morphology and syntax of the D2 when they start SDA, and just have to learn the relatively few aspects of the D2 that differ from D1."

In the case of learning the speech of another Chinese dialect group, the biggest hurdle is the differences in the phonology of the source and target dialect group. However, that is also true even within a Chinese dialect group, such as within the Yue dialects, and even more so within the Min (閩) dialects. Take, for example, a small area, such as the Pearl River Delta region in Guangdong Province, which is 22,000 square miles (56,000 km²) in size. It is roughly half the size of the state of Ohio, which is 44,825 square miles (116,096 km²). Within the Pearl River

Delta, the physical distance between Taishan (台山) and Zhongshan (中山) is 41.6 miles, or 66.9 kilometers. That is roughly about the same distance as that between Columbus and the old state capital, Chillicothe (43.4 miles or 69.8 km). Yet, even though Taishan and Zhongshan dialects both belong to the Cantonese dialect group, a monodialectal Zhongshan speaker hearing a Taishan speaker for the first time will not understand their everyday speech.[4]

However, if that same Zhongshan speaker figures out some regular sound correspondences between these two subvarieties, mentally applying substitution rules, at the same time learning some commonly-used, everyday vocabulary items, they would be achieving some degree of comprehension without formal instruction. For example, *Yinping* (陰平) is a high-level tone /55/ in Zhongshan corresponding to a mid-level tone /33/ in Taishan; the third person plural is 渠哋[5] [k^hy^{51} ti^{33}] in Zhongshan, corresponding to [k^hiak^{21}] in Taishan (Zhan & Cheung, 1987; Zhan & Cheung, 1988). The substitution involves a straightforward, one-to-one mapping. Aside from systematic differences in pronunciation of tones, initials and finals, the two dialects share much of the same morphology, lexicon, and syntax. The differences between Cantonese and Mandarin are obviously greater, but there remain systematic correspondences that aid in comprehension over time, even if production lags behind or is almost negligible, depending on communicative needs.

It is worth noting that Yuen Ren Chao (趙元任, 1892-1982), with his extensive field research on Chinese dialects since the mid-1920s, has some interesting comments on this subject,

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[4] That was true for my brother, for example, in conversing with his monolingual, monodialectal Taishan-speaking mother-in-law who had never attended school. He could not understand what she said and, hence, did not enter into any extensive conversations or any arguments with her. Over time and living under one roof, his comprehension did improve gradually, since conversations remained very circumscribed.

[5] 渠 is a phonetic loan for the third person, with historically much wider geographical distribution in southeastern China beyond the province of Guangdong. The Cantonese graph used in Zhan and Cheung (1978) actually contains the 'man' radical (亻+ 渠), which is not (yet) available in regular Unicode fonts.

comments that essentially challenge claims of non-mutual intelligibility among the dialect groups, at least among the educated populace (Chao, 1947:5):

> "The mutual intelligibility of different dialects depends, as in the case of other languages, both upon the dialects themselves and upon the educational background of the speakers. [...] On the whole, the differences among different groups of Chinese dialects are less radical than the difference between English and German. [...] Most educated persons acquire a Mandarin of sorts either by 'picking it up' from people who speak — or have learned to speak — Mandarin, or merely by adopting the vocabulary of Mandarin novels like the *Dream of the Red Chamber* without attempting any readjustment in pronunciation. […] Among people in public life, linguistic difficulties arising from dialect differences have been negligible."

Chao (1947:7) is even confident that "a thorough schooling of one dialect is an introduction to the whole Chinese language."[6]

What is described above would not hold true for someone hearing a language belonging to a totally different language family for the first time. While there could potentially be extensive loanwords from the donor language to the recipient language, there is no basis for attempting to find systematic phonological, lexical, and syntactic correspondences between them. SLA essentially involves acquiring a new linguistic system that could also be written using an entirely different script, as it is the case for speakers of languages with an alphabet-based writing system (e.g., English) learning the logographic system of Chinese.

The study of Dr. Sun's Cantonese and Mandarin speeches, which deals with the same topic and with the same essential goal, are narrowly confined with respect to vocabulary and syntax. Thus, these two speeches serve as an excellent pair of sources to study the differences in

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[6] Chao (1947:5) does recognize that, for the common people, i.e., the less educated with limited vocabulary and outside contact,oral communication is not possible across dialect groups. Education is thus a crucial factor; hence, the need for "a thorough schooling of one dialect."

Dr. Sun's D2 acquisition of Standard Cantonese, and his D3 acquisition of Mandarin, treating them as dialects from two different dialect groups and not as two languages.[7]

3. Dr. Sun Yat-sen and his language acquisition

We begin with a brief background on Dr. Sun Yat-sen (or Sun Zhongshan 孫中山, 1866-1925). He was born on 12 November 1866 in Cuiheng Village (翠亨村) in the county of Zhongshan (中山縣),[8] or more accurately, that of Xiangshan (香山縣), before it was renamed Zhongshan in 1925 in his honor after his death. The Zhongshan variety of Cantonese spoken in Shiqi (石歧), the county seat, is also the dominant dialect spoken in the surrounding areas, as well as in Nanlang township (南蓢鎮), which includes Cuiheng Village (Chao, 1948a; Chan, 1980; Lin, 1997). As a child, Dr. Sun lived in his village and attended his village school with its traditional, classical education (Martin, 1944), and the language of instruction would have been the locally dominant Shiqi Zhongshan dialect.

Zhongshan county is linguistically complex, with residents speaking different Cantonese varieties, as well as Hakka (Kejia 客家) and Min (閩) dialects (Lin, 1997). As a result, the Zhongshan dialect of Shiqi—hereafter simply "Zhongshan dialect"—served as a much needed lingua franca and the language of education within the entire county. In addition, because Zhongshan speakers not only resided in the Zhongshan county, but they were also dominant in both Macau and Hawai'i at that time, the Zhongshan dialect served as the lingua franca and language of education in those two places as well (Chao, 1948a; Lai, 2000; Egerod, 1956; Chan, 1980).

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[7] The treatment of Cantonese and Mandarin as belonging to different Chinese dialect groups follows Chao (1947) and other Chinese linguists who have conducted extensive research on Chinese dialects (Li, 1973; Norman, 1988; Yue, 2003; Yan, 2006; etc.).

[8] For ease of reference, Zhongshan will be used for both the county and the dialect throughout the paper.

Dr. Sun traveled with his mother to Honolulu in 1879 when he was 13, in what was then the Kingdom of Hawai'i where his older brother was a successful migrant.[9] Being able to continue to use the Zhongshan dialect in Hawai'i, Dr. Sun would have had no language barriers speaking to fellow Chinese residents there. In Hawai'i, he was educated as a boarding student at a prestigious, Anglican school—now known as Iolani School—where he learned English and studied western sciences, Christianity, and so forth. When Sun was 17, his brother sent him back home, fearing that his younger brother wanted to be baptized a Christian (and, indeed, he was eventually baptized). Returning to Zhongshan, however, the young Dr. Sun caused trouble when he destroyed images in the local temple. His family then sent him to the British colony of Hong Kong to study. His proficiency in English learned in Hawai'i would have proved beneficial when he went to Hong Kong.

Between 1883 and 1895, from age 17 to 30, Dr. Sun lived mainly as a student of medicine in Hong Kong. He also spent time studying medicine in Guangzhou (Canton City) . Dr. Sun completed a medical degree at what is now the University of Hong Kong in July 1892, at age 26. He then went to Macao, initially with aims to practice medicine, but shifted his attention to revolutionary activities. In fact, in 1894, Dr. Sun returned to Honolulu where he founded the *Xing Zhong Hui* 興中會 (Hsing Chung Hui) 'Revive China Society,' and later organized a second branch in Hong Kong in 1895.[10] During that decade of his life, Dr. Sun made trips home, which allowed him to receive extensive exposure to Standard Cantonese, mainly in Hong Kong

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[9] This information comes from multiple sources, including Hahn (1941), Martin (1944), Epstein (1993), Sharman (1965), Chang (1986), and Bergère (1994). None of the sources, however, provide clues on the language of communication between Dr. Sun and Mme. Sun Yat-sen (Soong Ching Ling), who was born in Shanghai and educated in the U.S.. It would most likely have been English when she served as his secretary in drafting and translating materials into English, but was that also the primary language used at home in the decade after their marriage in 1915?

[10] In 1919, Dr. Sun re-established this organization under the name, Kuomintang (KMT) (*Guomindang* 國民黨) 'Nationalist Party' and thus served as its first leader.

but also in Guangzhou. At the same time, since he was also spending time in Macao, Hawai'i, and Zhongshan, where the dominant, local prestige dialect was Zhongshan Cantonese, he continued to have ample opportunities to use his Zhongshan dialect. Thus, by age 30, roughly the first half of Dr. Sun's life was spent in locations where either Standard Cantonese or his native Zhongshan dialect was the dominant, prestigious variety..

While this first half of his life would not have required Dr. Sun to converse much, if at all, in Mandarin, his clandestine activities could have brought him into contact with some revolutionaries who spoke Mandarin.[11] However, it would be the second half of Dr. Sun's life when he would have had the greatest need to use Mandarin (*Guanhua* 官話, *Guoyu* 國語), which he spoke with a heavy Cantonese accent, based on his 1924 audiorecording. His need to use Mandarin can be inferred from his engagement in revolutionary pursuits from abroad while in exile during the period from 1895 to1911, and after he returned to China when the revolution ended with the toppling of the Qing Dynasty. Dr. Sun was made the first provisional president of the Republic of China (1911-1912), with its capital in Nanjing. Although he quickly relinquished that position and passed it on to Yuan Shikai (1912-1916) in hopes of avoiding a civil war between the North and the South (as Yuan's political power base was in Beijing and the new republic was in Nanjing), he continued to be involved in political matters. He very much actively strove to create a modern, constitutional republic for China, especially when Yuan Shikai abolished the republic and restored imperial rule by proclaiming himself Emperor of China (r. 1915–16), leading to years of political division and warlordism. During the second half of his life, Dr. Sun lived in a number of places, including Japan, Shanghai, Guangzhou, and Nanjing,

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[11] Many, if not most, of Dr. Sun's closest collaborators seem to have Cantonese background. At the same time, his political bases were not in northern China but in Guangzhou, Hong Kong, Honolulu, and Japan.

and, during that time, he gave many speeches in China and abroad, as his travels included Hawai'i, Europe, North America, and Southeast Asia.

It should be noted that despite Nanjing being the capital of the new Republic of China, the dominant variety of Mandarin in China was not Nanjing Mandarin but Northern Mandarin, represented by Beijing (Peking) dialect. Although the Nanjing dialect was the prestigious variety during the Ming and most of the Qing dynasty, there was a major split linguistically and geographically between Northern Mandarin,, and Southern Mandarin, represented by the Nanjing (Nanking) dialect (Lobscheid, 1866). Nonetheless, by the latter part of the 19th century, the Beijing variety of Mandarin had eclipsed the Nanjing variety, especially after the Taiping Rebellion (1850-1864), with the fall of Nanjing and the decimation of its population (Chen, 1999:11; Coblin, 2002:540). For this reason, the Mandarin variety that Dr. Sun would have aimed for in his speeches was Northern Mandarin.

4. The two corpora: Cantonese and Mandarin audiorecordings

Dr. Sun Yat-sen was audiorecorded in Guangzhou by the *China Evening Post* (中國晚報) a century ago on 30 May 1924, about nine months before he passed away in Beijing on 12 March 1925. The two recorded speeches reintroduced and reinstated Dr. Sun's revolutionary ideology of *The Three Principles of the People* (*San Min Zhuyi* 三民主義), namely, 1. Nationalism (*Minzu Zhuyi* 民族主意), 2. Democracy (*Minquan Zhuyi* 民權主義), and 3. People's Livelihood (*Minsheng Zhuyi* 民生主義), together with a policy for national salvation (*Jiuguo Fangzhen* 救國方針). Despite Dr. Sun having made numerous speeches in China and abroad over the years, these two audiorecordings—one read in Cantonese and the other in Mandarin—are, to the best of my knowledge, the only known recordings of Dr. Sun's speech.

Although unwell and convalescing at the time, Dr. Sun was eager to accept the invitation to make these recordings. Although the two speeches were read and not spontaneously uttered , they aimed to address the audience directly using language that would be comprehensible to the masses who may be less educated.[12] On the fourth anniversary of Dr. Sun's death (12 March 1929), these two audiorecordings were published on gramophone records by the *China Evening Post* as a commemorative volume, *Zhongshan Xiansheng Liusheng Jinianji* (中山先生留聲紀念集. These two audiorecordings, available at multiple websites on the internet, serve as the speech corpora for this study.[13]

The Cantonese recording provides a valuable vignette about Dr. Sun's Cantonese pronunciation, which is a mixture of Zhongshan dialect and Standard Cantonese, while the Mandarin recording, given the much later acquisition of this dialect, is very accented and heavily influenced by Cantonese. Table 1 summarizes the information on these two audiorecordings.

The Cantonese speech is 7 minutes in duration while the Mandarin speech is double the length, i.e., 14 minutes. *AntConc* (Antony, 2022) is used for obtaining the types and tokens from the transcribed texts of the corpora. The number of types refers to the number of different monosyllabic morphemes (i.e., individual Chinese graphs, or characters) in each corpus. The number of tokens refers to the total occurrences of these morphemes.

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[12] Tsui and Chan (2020) conducted a small study of the vocabulary that Dr. Sun used in his 1924 Cantonese speech and found only a few cases of more literary and erudite word choices.

[13] While the original websites where the two audiorecordings could be found have disappeared, they are available on a number of other websites. The transcripts were obtained from two sources, <https://www.youtube.com/watch?v=DSdfGIBfc38> (for Mandarin; no longer available) and <https://archive.org/details/dr_sun_yat_sen_ 1924> (for Cantonese).

Table 1. Types and tokens in the Cantonese and Mandarin speech corpora

	Cantonese Speech Corpus (7 minutes)	**Mandarin Speech Corpus** (14 minutes)
Types	236	317
Tokens	861	1,625
	3.6 tokens per type	5.1 tokens per type

Table 1 shows that the 7-minute Cantonese speech contains a total of 861 tokens, while the 14-minute Mandarin speech contains 1,625 tokens. The 861 tokens in the Cantonese corpus represent a total of 236 types, thus averaging 3.6 tokens per type. The 1,625 tokens in the Mandarin corpus represent a total of 317 types, yielding an average of 5.1 tokens per type. Doubling the length of the recording did not yield a doubling of the number of different morphemes in the Mandarin corpus. As a result, the Mandarin corpus contains more repetition of morphemes than the Cantonese corpus.

Given the aim and the topic of these two political speeches, the distribution of the morphemes is very uneven.Despite the average number of tokens per type given in Table 1, many morphemes actually appeared only once or twice in each of the two speeches, while a few were repeated over and over. For example, morphemes that occurred 20 or more times in the 7-minute Cantonese speech include *guo* 國 (48x), *Zhong* 中 (29x), *zhu* 主 (20x), *min* 民 (20x) and *yi* 義 (20x). A similar pattern can be seen in the 14-minute Mandarin speech, where morphemes that occurred 20 or more times include: *guo* 國 (65x), *min* 民 (37x), *Zhong* 中 (34x), *ming* 命 (31x), *ge* 革 (28x), *yi*義 (26x), *zhu* 主 (25x) and *jia* 家 (22x). The similarity in the two corpora is further demonstrated in the observation that 32 of the 39 high-frequency morphemes featured in the Mandarin corpus are also found in the Cantonese corpus.

The most dramatic difference between the two corpora is the use of vernacular characters in the Cantonese corpus, in which a number of standard (Mandarin-based) Chinese morphemes correspond to vernacular Cantonese ones or to phonetic loans, as shown in Table 2.

Table 2. Examples of vernacular Cantonese characters and their standard counterparts

Cantonese	Mandarin	Meaning
嚟	來	come
瞓	睡	sleep
嘅	的	particle DE
哋	們	plural marker
嘞	了	perfective marker
唔	不	not
乜	什麼	what
呢	這	this
曉	了	perfective marker
係	是	be (copula)
邊處	哪	which

Dr. Sun's use of 曉 [hiu], and not modern Standard Cantonese 咗 [tsɔ], reflects an earlier stage of Standard Cantonese that can be seen in early publications such as Ball (1888, 1907). Note additionally that Dr. Sun's Cantonese speech used 曉 [hiu] as a verb, meaning 'to understand', also found in early sources (Ball, 1908), and even in mid-20th century, black-and-white Hong Kong Cantonese films. It corresponds to modern Cantonese and modern Standard Chinese *zhidao* 知道 [tsi tou].

In the following two sections, we will examine the two corpora in more detail with respect to Dr. Sun's dialect acquisition as reflected in the two audiorecordings made the year before he passed away at the age of 58 from cancer. It is important to keep in mind that, due to the small size of the corpora and the limited range of morphemes, the study of Dr. Sun's speech based on the audiorecordings will capture only a small slice of the full range of his actual speech.

5. The Cantonese spoken corpus

The Cantonese speech was intended for a broad Cantonese-speaking audience, consisting of listeners located both within China and abroad, including Hawai'i[14] and other overseas Cantonese-speaking communities in Southeast Asia, Europe, United States, Canada, etc. Dr. Sun's variety of choice was Standard Cantonese, the regional lingua franca. His choice is evidenced by his immediate self-correction of the word *jin* 進 'go forward,' from his Zhongshan pronunciation [tsɐn], to his intended Standard Cantonese pronunciation [tsøn]. Thus, the recording has the two forms occurring one after the other in sequence in *qian bang jingong* 千邦 進貢: [tsʰiːn pɔŋ tsɐn tsøn kʊŋ] 'a thousand nations pay tribute.' Dr. Sun first said [tsɐn] and immediately corrected himself with [tsøn]. That was his only self-correction of pronunciation in the entire speech.

In studying Dr. Sun's D2 acquisition of Standard Cantonese, the Cantonese audiorecording can be analyzed as showing three patterns. These are shown in Table 3.

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[14] By then, Hawai'i had already been annexed and made a U.S. territory. It did not become the 50th state of the United States until 1959.

Table 3. Three basic patterns in Dr. Sun's Cantonese speech production

Pattern	Description
Pattern A	Adoption of various Standard Cantonese (D2) segments and tones
	• These are different sounds in Standard Cantonese (D2) that were easy for Dr. Sun to perceive and to produce correctly. • Mapping is one-to-one, or two-to-one, the latter involving merger in D2. • Mapping may be one-to-two involving segments, due to merger in D1.
Pattern B	Retention of some Zhongshan Cantonese (D1) segments and tones
	• These are sounds from Zhongshan Cantonese (D1) that were retained, due to various factors such as merger in D1. • Mapping is one-to-two involving tones, due to merger in D1. • Other factors may involve interference from D1.
Pattern C	Variation and fluctuation between D1 and D2 forms
	• These are the most difficult sounds for Dr. Sun to produce accurately due to different patterning of mergers.. • Mapping between D1 and D2 is irregular.

In Pattern A, Dr. Sun successfully produced the correct Standard Cantonese pronunciations. This is due to the two dialects sharing a straightforward correspondence between source and target. That is, there was a clear, systematic, one-to-one mapping between the source and the target dialect. Pattern A also has a second potential scenario, one involving a two-to-one mapping between source and target dialect. In this scenario, there was a systematic merger of two Zhongshan Cantonese (D1) sounds to one in Standard Cantonese (D2). A third scenario involves a one-to-two mapping of segments, with D1 mergers of segments that are distinct in D2.

In Pattern B, Dr. Sun retained some of the pronunciation from his Zhongshan Cantonese (D1) when producing the sounds in Standard Cantonese (D2). This may have been due to different factors, such as sound mergers in Zhongshan Cantonese (D1) that were kept distinct in Standard Cantonese (D2). This scenario involves a one-to-two mapping of tones between source and target dialect due to tone mergers in D1. A second scenario involves interference from D1,

where the source and target sounds were quite close. The phonetic differences were perhaps not sufficiently salient for Dr. Sun to perceive the difference and produce the correct sound. Hence, Dr. Sun used his native pronunciation instead of the target sound in D2, a common D2 phenomenon that also occurs in second language (L2) acquisition.

In Pattern C, Dr. Sun was inconsistent in his attempts to produce Standard Cantonese, resulting in variations and fluctuations in his speech production. This is due to different patterning of mergers in the two Cantonese varieties, and Dr. Sun had not acquired full command of the differences in their pronunciation.

The Cantonese examples for both Zhongshan and Standard Cantonese are transcribed using IPA symbols for greater clarity in making comparisons.

5.1 Pattern A: Adoption of various Standard Cantonese (D2) segments and tones

Two examples are provided here for Pattern A: example (1) involves a two-to-one mapping of the source and target dialect, while the second example (Fig. 1) involves a straight, one-to-one mapping between source and target.

(1) Dr. Sun's production of [ɐm] instead of [ɔm] in 感 [kɐm] 'feel'
乜　嘢　個　感覺
mɐt jɛ kɔ kɐm-kɔk
what thing sub. perception
'what kind of perception'

Example (1) shows a phenomenon mentioned by Ball (1924), as well as earlier editions of his *Cantonese Made Easy* (Ball, 1888; Ball, 1906), who distinguishes the [ɐm] final from the [ɔm] final for Standard Cantonese. Jones and Woo (1912), on the other hand, give only [ɐm], suggesting that around 1900, at least for some speakers,[15] Standard Cantonese had already

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[15] Jones and Woo (1912, p. viii) use only one speaker, namely, the second author, whose standard speech production is praised by Jones in his introduction, dated November, 1912: "Mr. Woo speaks typical good Cantonese, and his pronunciation may be relied on as an excellent standard." Note that the year, 1912, is used here as the year of publication in lieu of simply treating the book as undated.

merged [ɔm] with [ɐm]. In contrast, Zhongshan Cantonese, at least throughout the 20th century, had retained the contrast between [ɐm] and [ɔm] (Chao, 1948a; Chan, 1980; Lin, 1997). Hence, *gan* 感 [kɔm] 'feel' and *jin* 錦 [kɐm] 'brocade,' for example, form a minimal pair in Zhongshan Cantonese, whereas these two finals have already merged as [kɐm] in Standard Cantonese by the time of Dr. Sun's 1924 speech. One can infer from Jones and Woo (1912) that the merger had already taken place a decade earlier.

Example (1) also captures an interesting case of potential indeterminacy in the pronunciation of the subordinative particle, whether as 個 [kɔ] or as 嘅 [kɛ]. Dr. Sun pronounced it with the [ɔ] vowel (but often with less stress that can be transcribed as [kə]). Ball (1888, 1907, 1924) lists both [kɔ] and [kɛ], while Jones and Woo (1912) only used [kɛ], suggesting that by the first decade of the 20th century, the subordinative particle in Standard Cantonese was already only 嘅 [kɛ], contrasting with Zhongshan Cantonese, which continued to retain 個 [kɔ] as well. Interestingly, Ball (1902), in another book, *How to Speak Cantonese,* corroborates Jones and Woo's (1912) claim by providing only 嘅 [kɛ] in that textbook.

Using a screenshot from *Praat* (Boersma and Weenink, 2022), Figure 1 exemplifies a one-to-one mapping of source and target dialect.
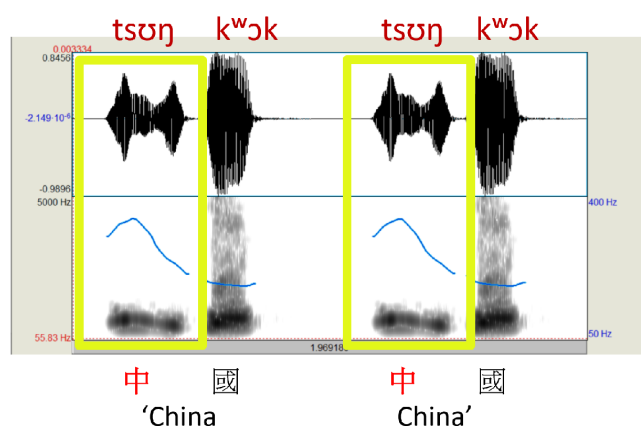

Figure 1. Consistent production of a high-falling tone for *Yinping* (陰平)

Dr. Sun consistently produced Standard Cantonese *Yinping* 陰平 tone on *zhong* 中 in *Zhongguo* 中國 'China' with the high-falling pitch contour, /53/,[16] whereas the corresponding tone in his Zhongshan Cantonese would have simply been high-level, /55/.[17] The Standard Cantonese high-falling *Yinping* tone, /53/, may have been particularly salient for Sun, since it is similar phonetically to the high-falling pitch of Zhongshan *Yangping* tone, /51/.

The transcription in Figure 1 also shows that Dr. Sun produced a labialized velar stop, [kʷ], in *guo* 國 'country,' thus creating a minimal pair with *jue* 覺 'feel' from Example (1): *guo* 國 [kʷɔk] 'country' and *jue* 覺 [kɔk] 'feel.' Zhongshan Cantonese, however, had merged these two initials before the non-high back vowel, [ɔ], producing both morphemes without labialization: [kɔk].[18] Thus, despite the merger in the Zhongshan dialect, Dr. Sun had correctly produced the distinction between /kɔk/ and /kʷɔk/ for Standard Cantonese.

Given the limited morphemes in the corpus, it is difficult to ascertain just how consistently he made that contrast, since it entails the splitting of a set of lexical items into one group in Standard Cantonese that has the plain velar stop initial, and another group that has the labialized velar stop. The morphemes that have the labialized velar stop in Standard Cantonese have the same consonant sound in Mandarin as well. This process requires learning which morphemes have a labialized velar stop before [ɔ] and which have a plain stop. Importantly, Dr. Sun did hearand produce the difference in his Cantonese speech. The existence of a labialized as opposed to a plain velar stop initial before other vowels would have facilitated hearing the distinction. For example, both Cantonese dialects distinguish *gen* 跟 [kɐn] 'with, follow' and *jun*

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[16] The numerical tone values use Chao's (1980/1930) system of tone numbers, with '1' to '5' for a pitch range from lowest to highest. The tone numbers for Zhongshan Cantonese are from Chao (1948a) and Chan (1980), while those for Standard Cantonese are from Chao (1947).

[17] The *Yinping* tone in Hong Kong Cantonese today is similar to Zhongshan Cantonese, namely, high-level.

[18] Hong Kong Cantonese has also been merging the labialized velar stop initials with their plain counterparts. Perhaps dialect contact has precipitated these mergers in today's Hong Kong Cantonese. It has become more and more similar to Zhongshan Cantonese.

軍 [kʷɐn] 'army.' Dr. Sun's ability to produce the contrasts in Standard Cantonese would have also enabled him to hear and produce such contrasts in Mandarin, such as *gǎng* 港 'harbor' and *guǎng* 廣 'wide, vast,' corresponding to 港 [kɔŋ] 'harbor' and 廣 [kʷɔŋ] in Standard Cantonese. In Zhongshan Cantonese, 港 and 廣 are both pronounced [kɔŋ].

The two examples presented for Pattern A show that Dr. Sun was very conscious of the differences between Zhongshan dialect and Standard Cantonese, and he was able to produce at least some of the differences existing in the phonology of these two dialects. Example (1) shows that Dr. Sun was aware that Standard Cantonese does not have the [ɔm] final, so that Zhongshan [ɔm] and [ɐm] correspond to just one form in Standard Cantonese, namely, [ɐm]. That correspondence is very straightforward, involving a two-to-one mapping. Example 2 is even more straightforward, as it displays the replacement of the high-level tone in Zhongshan dialect with a high-falling one in Standard Cantonese; hence, a simple case of one-to-one mapping.

5.2 Pattern B: Retention of some Zhongshan Cantonese (D1) segments and tones

Pattern B, which involves the retention of some Zhongshan tones and segments, has two scenarios: (i) tonal contrasts in Standard Cantonese that have merged in Zhongshan Cantonese, and (ii) retention of Zhongshan pronunciation in sounds that are somewhat similar in D1 and D2.

The first two examples refer to the first scenario and display the one-to-two mapping relative to tones. To ease the understanding of the tonal mergers in Zhongshan Cantonese (D1), Table 4 provides the necessary background on the tone categories that are relevant to the examples displayed in Figures 2 and 3..

As shown in Table 4, Zhongshan Cantonese has only one *Shang* tone (*Shangsheng* 上聲) and one *Qu* tone (*Qusheng* 去聲), whereas Standard Cantonese has a Yin-Yang register split of

these two historical tone categories, resulting in *Yinshang* (陰上) versus *Yangshang* (陽上), and *Yinqu* (陰去) versus *Yangqu* (陽去).

In the case of the *Ru* (入) tone, Standard Cantonese has a three-way contrast, with *Yinru* split into *Shang Yinru* (上陰入) and *Zhong Yinru* (中 陰入). Zhongshan, in contrast, only has two *Ru* tones: *Yinru* (陰入) and *Yangru* (陰入). Table 3 shows that Zhongshan *Yangru* has incorporated what is *Zhong Yinru* and *Yangru* in Standard Cantonese. For reference, while Standard Cantonese has nine tones, Zhongshan Cantonese (Chao, 1948a; Chan, 1980) only has six: *Yinping* (陰平): /55/, *Yangping* (陽平): /51/, *Shangsheng* (上聲): /13/, *Qusheng* (去聲): /22/, *Yinru* (陰入): /5/, and *Yangru* (陰入): /2/.

Table 4. *Shang, Qu* and *Ru* tones in Zhongshan Cantonese and Standard Cantonese

Zhongshan Cantonese (D1)	**Standard Cantonese (D2)**
Shangsheng 上聲 (13)	*Yinshang* 陰上 (35)
	Yangshang 陽上 (23)
Qusheng 去聲 (22)	*Yinqu* 陰去 (33)
	Yangqu 陽去 (22)
Yangru 陽入 (2)	*Zhong Yinru* 中 陰入 (3)
	Yangru 陽入 (2)

We have already encountered examples of one-to-two-mapping of tones. This involves Zhongshan *Yangru* (D1), /2/, corresponding to two separate tones in Standard Cantonese (D2), /3/ and /2/. One case is in (1), with *jue* 覺 'feel.' It is [kɔk.2] in Zhongshan dialect and [kɔk.3] in Standard Cantonese. Dr. Sun pronounced it using his D1 pronunciation, [kɔk.2]. Another case is in Figure 1, where *guo* 國 'nation,' in the word, *Zhongguo* 中國 'China,' is pronounced with the *Yangru* tone by Dr. Sun, as [kʷɔk.2]. It is [kʷɔk.3] in Standard Cantonese. In both cases,

Zhongshan *Yangru* tone, /2/, was used instead of Standard Cantonese *Zhong Yinru*, /3/. Dr. Sun pronounced 中國 'China' as [tsʊŋ.53 kʷɔk.2] instead of [tsʊŋ.53 kʷɔk.3], with tone /3/.

The basic picture that emerges is that there is a one-to-two mapping of source to target that creates pronunciation errors for Dr. Sun. He had difficulty hearing and producing the register contrast in Standard Cantonese, since these are merged in his D1.[19] Dr. Sun used the pitch values from his D1 *Shang* and *Qu* tones,[20] as can be seen in Figures 2 and 3.
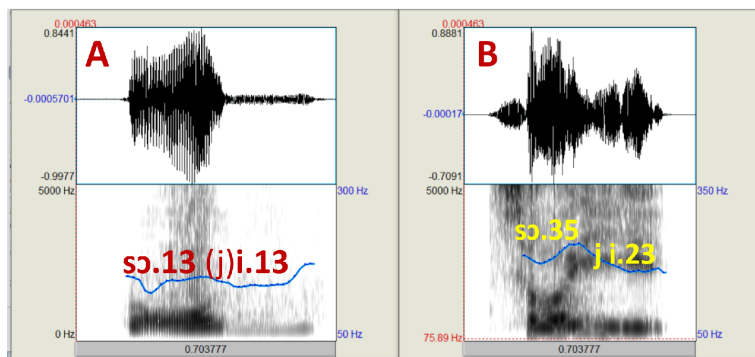
Figure 2. Production of 所以 'therefore' by Speaker A (Dr. Sun) and Speaker B (Guangzhou native)

'China's political affairs would deteriorate'   'China's political affairs would deteriorate'

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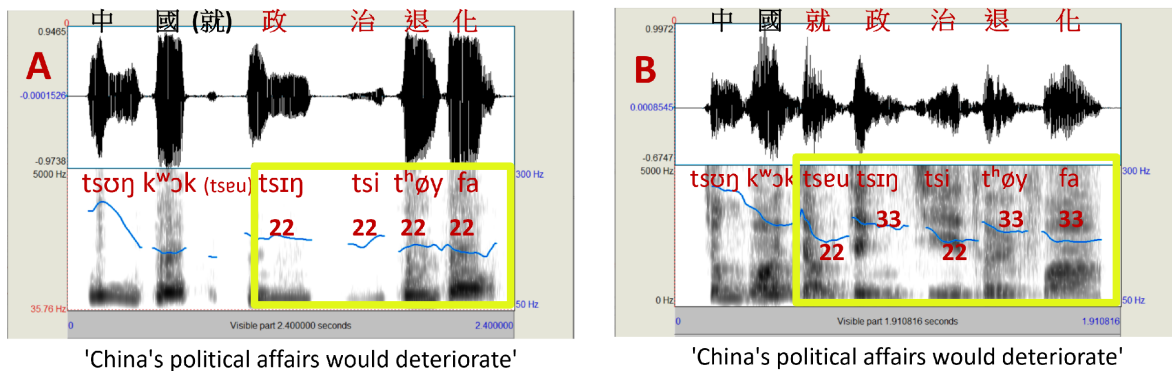
[19] There have been ongoing tone mergers in modern Hong Kong Cantonese, including the loss of the register split in the Shang and Qu tones.

[20] As a native Zhongshan speaker (D1) acquiring Standard Cantonese (D2), I share Dr. Sun's difficulty with producing the full set of tones in Standard Cantonese.
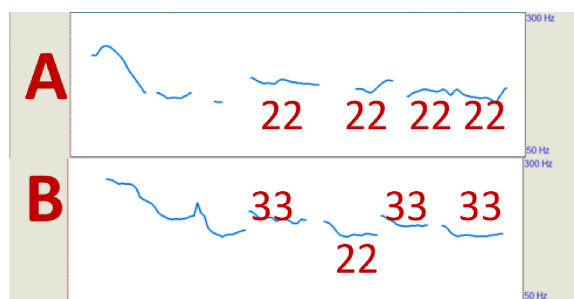
Figure 3. Production of 中國就政治退化 'China's political affairs would deteriorate' by Speaker A (Dr. Sun) and Speaker B (Guangzhou native)

Figure 2 shows the pronunciation of *suoyi* 所以 'therefore' by Speaker A, Dr. Sun, and Speaker B, a then 75-year old female Cantonese native speaker who was born in 1940 in Xiguan district (Guangzhou). The comparison with the native speaker's production shows very clearly that Dr. Sun retained his D1 *Shang* tone, /13/, and used it in lieu of both the Standard Cantonese *Yinshang* tone, /35/ (in 所), and *Yangshang* tone, /23/ (in 以).

Figure 3 visualizes the pronunciation of the sentence, *Zhongguo jiu zhengzhi tuihua* 中國就政治退化 'China's political affairs would deteriorate.' Speakers A and B are the same as above. The focus is on the two disyllabic words ending the sentence, where, according to the Standard Cantonese pronunciation, the compound *zhengzhi* 政治 'political affairs' is a sequence of *Yangqu* and *Yinqu* , /33 22/, while *tuihua* 退化 'deteriorate' is a sequence of two *Yinqu* syllables, /33 33/. Dr. Sun, however, produced all four syllables using his Zhongshan *Qu* tone, /22/, i.e., /22 22 22 22/ instead of /33 22 33 33/, as produced by the native speaker.

Example (2) illustrates the interference of Dr. Sun's D1 in the pronunciation of another morpheme, i.e., *shang* 上 'up, over', in the phrase *shijie-shang* 世界上 'in the world.' Speaker A is Dr. Sun and Speaker B is a native Guangzhou speaker in her late 60s. Two observations can be made. Dr. Sun produced the vowel in *shang* 上 with diphthong-like quality as [øɔ], contrasting

with the native Guangzhou speaker's vowel [œ:]. At the same time, similar to the tone merger in

Figure 3, Dr. Sun produced all three syllables using his Zhongshan *Qu* tone, /22/ instead of the

Standard Cantonese tone sequence of *Yinshang-Yangshang-Yangsheng:* /33 22 22/, thus serving

as a further example of Pattern B involving tonal one-to-two mapping.

(2) Dr. Sun's (A) production of Zhongshan [øɔ] in the [øɔŋ]
    final and Zhongshang *Qu* tone instead of the Standard Cantonese (B) forms
      世　　　界　　　上
    A: sɐi.22 - ka:i.22　søɔŋ.22
    B: sɐi.33 - ka:i.22　sœ:ŋ.22
      world　　　　　on
      'in the world'

The difference in D2 acquisition of segments versus tones is interesting and deserves

further research. The one-to-two mapping of segments presented earlier falls under Pattern A,

while the one-to-two mapping of tones presented here falls under Pattern B, suggesting that,

overall, even speakers of tone languages may have more difficulty hearing and perceiving tone

register (or pitch) differences than segmental differences. The picture, however, can be more

complex, as will be shown in section 5.3 on Pattern C.

5.3. Pattern C: Variation and fluctuation between D1 and D2 forms

Pattern C involves variations and fluctuations between Zhongshan Cantonese and Standard

Cantonese and unveils that Dr. Sun found it challenging to consistently produce the target (i.e.,

D2) forms. The greatest difficulty surfaces in his mixed use of the two dialects due to the

challenge represented by the one-to-two mapping existing between D1 and D2 forms. One

example is presented in (3), where Dr. Sun produced all Standard Cantonese /i/ and /ei/ with the

monophthong /i/. At the same time, the idiosyncratic tone value of /51/ instead of /13/ for *ji* 己 in

ziji 自己 'self' is odd; the same tone value is repeated elsewhere when uttering this very word.

These are the only occurrences of *ji* 己 in the corpus. Other times in his speech, Dr. Sun fluctuated between [i] and [ei], and some tokens seem to be partway between [i] and [e].

(3) Pattern C: Example 1. Dr. Sun's (A) production of /i/ corresponding to Standard
Cantonese (B) /i/ and /ei/

	各	國	自	己	打	自	己
A:	kɔk.2	kʷɔk.2	tsi.22 -	ki.51	ta.13	tsi.22 -	ki.51
B:	kɔk.3	kʷɔk.3	tsi.33 -	kei.35/55	ta.35	tsi.33 -	kei.35/55
	each	nation	self		hit, fight	self	

'each nation fights with itself'

Pattern C also includes some multi-directional mapping that yields mixed results. One example is given in Table 5, where the Zhongshan forms feature five different Late Middle-Chinese (LMC) initials[21] that have been reduced to two in Standard Cantonese, at least with respect to the morphemes under analysis here. Dr. Sun's production does not entirely match the D2 pronunciation as it contains the mismatches shown in Table 5. The symbol /Ø/ is the 'zero initial,' a slot holder designating absence of a syllable onset.[22]

Table 5. Zhongshan initials, their Standard Cantonese counterparts, and Dr. Sun's production

Standard Cantonese (D2)	Zhongshan Cantonese (D1)	Dr. Sun's Production
/h/: 恐	kʰ/ (*k') : 恐	/h/: 恐
/h/: 後	/h/ (*xɦ): 後	/h/: 後
/j/: 現	/h/ (*xɦ): 現	/h/: 現
/j/: 形	/h/ (*xɦ): 形	/j/: 形
/j/: 已, 演	/Ø/ (*j): 已, 演	/j/: 已 , 演
/j/: 弱	/j/ (*r): 弱	/j/: 弱
/j/: 業 , 義	/ŋ/ (*ŋ): 業, 義	/j/: 業 , 義

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[21] Reconstructed forms for LMC are from Pulleyblank (1984, 1991).
[22] For a discussion of the 'zero initial,' see Chan (2023).

Comparing D1, D2 and Dr. Sun's actual production shows the complex multi-directional mapping between source and target dialects. As one can see, Dr. Sun's speech production consists of a mix of D1 and D2 initials when there is not a clear one-to-one, or two-to-one mapping. Dr. Sun's production of initials was inconsistent. While Zhongshan /h/ is the modern reflex of the *Xia* (匣) initial (LMC xɦ) in both *xian* 現 'present' and *ying* 形 'form,' Dr. Sun retained the Zhongshan /h/ initial only in 現 but not in 形. Further, while Zhongshan retains the velar nasal initial from the *Yi* (疑) initial (LMC ŋ) before high vowels, Dr. Sun adopted the D2 pronunciation, where *ŋ is lost before high vowels. His pronunciation of the glide onset /j/ before high front vowels tends to be weakly articulated compared to Standard Cantonese production. This is perhaps because the Zhongshan dialect has zero onset rather than a homorganic glide before high vowels (Chan 2023), and Dr. Sun's pronunciation does not fully align with the target form.

While more, miscellaneous examples can be provided for Pattern C, this subsection ends here. What emerged from this analysis of the three patterns using a mapping strategy is that some of the challenges of D2 acquisition are represented by one-to-two-mapping and multi-directional mapping. In the case of one-to-one and two-to-one mapping, D2 speakers can utilize the systematic mapping to work out the correspondences. How well they can produce a native-like pronunciation is a related but separate issue. Overall, one can expect that speakers of dialects that have better preserved historical phonological categories will have greater ease and greater advantage in being able to analyze the sound correspondences between source and target dialect. This in turn, could potentially lead to a swifter comprehension of the target dialect, potentially leading to a quicker D2 acquisition.

6. The Mandarin spoken corpus

Dr. Sun's Mandarin speech was aimed at an even broader national audience, and potentially even at an international Mandarin-speaking audience. Although Beijing was not his political base, as noted in Section 2, Dr. Sun's standard of reference was Northern Mandarin, represented by the Beijing dialect, and not Southern Mandarin, represented by the Nanjing dialect. By the end of the 19th century, the Beijing variety was already the "most fashionable and courtly," as Williams (1889: xxxii) writes. Along the same lines, Bernhard Karlgren (1918:1), who lived in China from 1910 to 1911, returning to Europe just after the fall of the Qing dynasty, observes:

> "Among these numerous Mandarin dialects that of Peking is nowadays beyond comparison the most fashionable, being the speech of the court and the capital. And generally there is a marked tendency for those educated Chinese who speak a Mandarin dialect to adopt the Peking pronunciation."

In 1911, the government designated the standard pronunciation of the National Language (*Guoyu* 國語) to be mainly based on the Beijing dialect (Chen, 1999: 15ff.). This led to the devising, in 1919, of *Zhuyin Zimu* 註音字母 (subsequently renamed *Zhuyin Fuhao* (註音符號), with revisions in 1932 that made the national language even closer to the Beijing dialect (Chao (1947:8; 1948b:9).[23] Nonetheless, as Simmons notes (2017: 63):

> "Broad popular acceptance of Běijīng as the governing norm for pronunciation began slowly to take hold only after the Ministry of Education of the Republic of China finally officially promoted Běijīng as the national standard in the 1930s. .... Běijīng was not firmly established as the norm until the People's Republic of China definitively declared the city's dialect as standard in the 1950s."

Simmons (2017:66) further cites Kaske (2008:41) to explain the slow pace of adopting the Beijing dialect as the national standard:

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[23] For a recent, more detailed study of the political and linguistic issues raised during that period, see Tam (2020).

"… due to diglossic attitudes towards language[,] the Beijing dialect was not able to acquire prestige. Southern Chinese dialects preserved many phonemic characteristics that had already been lost in the northern-based Mandarin and could thus challenge the authority of the Beijing dialect by claiming greater proximity to the classical standard."

Thus, during those early years after the fall of the Qing dynasty, Dr. Sun had no strong need to try to speak the Beijing dialect in its pure form. His Mandarin speech was, in fact, a more broadly-based form of Mandarin, likely mainly learned during his revolutionary exploits with Mandarin-speaking compatriots. He did not produce a separate retroflex series, for example, which is also absent in Southern Mandarin as well as in Cantonese and other southern dialects.

In Dr. Sun's Mandarin speech production two patterns can be identified, one focusing on Northern Mandarin as the base, and the other looking at a few specific cases of Cantonese and Southern Mandarin as sources for his speech production. These observations will be presented briefly in this paper, and more in-depth research will be left for a future project.

6.1 Pattern A: Northern Mandarin as the base

Dr. Sun's Mandarin speech appears to aim primarily at Northern Mandarin as the target (although it was also strongly influenced by his Cantonese that shares some characteristics with Southern Mandarin). The following are some examples that reflect Northern Mandarin, together with some observations of exceptions.

1. The first person was consistently produced using the labial glide, [w], and not the velar nasal from the *Yi* 疑 initial (LMC ŋ). The velar nasal did not occur as a syllable onset in his Mandarin speech.

2. The segments /l/ and /n/, from the *Lai* 來 initial (LMC l) and *Ni* 泥 initial (LMC n) respectively, were consistently distinguished. (This distinction was -and still is

-maintained in the Zhongshan dialect, but it is often lost in Southern Mandarin/Nanjing dialect)

3. Morphemes with the *Ru* tone (*Rusheng*入聲) in the syllable were not produced with a coda; that is, they were not checked syllables, which is typical ofNorthern Mandarin dialects , where historical *Ru* (入) tone syllables lost their final *-p, -t, -k coda and merged with syllables from the other three historical tones, *Ping* (平), *Shang* (上), and *Qu* (去) (*"Ru pai san sheng"* "入派三聲"). Overall, this was a fairly consistent characteristic of Dr. Sun's speech. For example, he systematically   produced the subordinative particle, *de* 的 without a coda, pronouncing it either as [ti] or [tə]. Nonetheless, there were exceptions. In the case of *guo* 國 'nation,' in *Zhongguo* 中國 'China,' as shown in Figure 4, Dr. Sun was somehow rather consistent in pronouncing it as if he were producing a checked syllable similar to Standard Cantonese [kʷɔk].
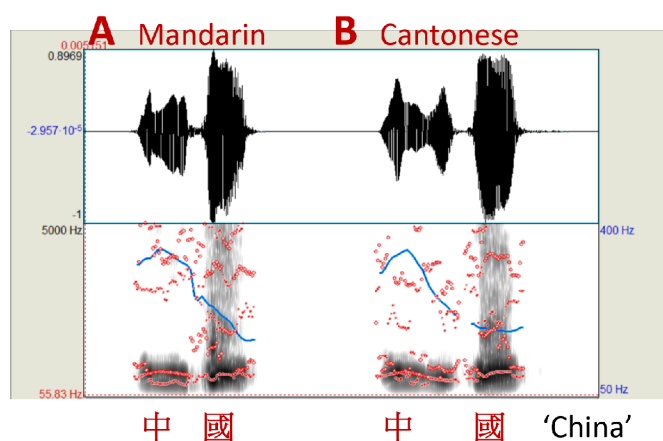

Figure 4. Dr. Sun's production of *Zhongguo* 中國 'China' in his Mandarin (A) and Cantonese (B) speech corpora

4. LMC velar stops were palatalized before a high front vowel. In Dr. Sun's speech, 23 of the 25 morphemes with an LMC velar stop initial (including all occurrences of them, that

is, all tokens) were produced as [tɕ] or [tɕʰ]. These words included *jun* 君, *jia* 家, *jia* 假, *ji* 幾, *ji* 己, *ji* 計, *qiang* 强, *jin* 今, *jin* 近, *ju* 局, *quan* 權, *jiu* 究, *jiu* 久, *jiu* 救, *jiang* 講, *jing* 經, *qi* 其, *jian* 建, etc. All these morphemes are produced with a velar stop initial in Cantonese, and yet Dr. Sun's production was targetlike (based on the Northern Mandarin standard). However, there were two exceptions, namely, *jie* 界 'boundary' (found in *shijie* 世界 'world') and *jie* 解 'explain' (found in 了解 'understand'), both of which Dr. Sun pronounced as [ka:i] in all instances. These two exceptions are indeed intriguing: Mateers' (1906) Nanjing Mandarin textbook still showed velar initials before /i/, and suggested that perhaps palatalization had started some time between the 1890s and the early 1900s, since <kiai> 界 could still be found in Williams (1889). In Hemling (1907), *jiè* 界 was already listed as <chiai>, and Mateer (1922) and Chao (1929) further confirm that palatalization had definitely taken place by the 1920s.

5. The retroflex [ɻ] or a retroflex-like onset was produced as a modern reflex of the Late Middle Chinese *Ri* 日 initial (LMC r). However, Dr. Sun's production was not consistent, as, for some morphemes such as *ren* 人 'person' and *ren* 任 'appoint' (in *zeren* 責任 'responsibility'), [j] occasionally occurred, and in the case of other morpheme, e.g., *ruo* 弱 'weak' and *ran* 然 'but' (in *buran* 不然 'otherwise'), [j] occurred systematically, in all instances. In fact, in one place in his Mandarin speech, when he forgot how to read the word, *ruo* 弱 'weak,' in Mandarin, Dr. Sun hesitated momentarily and then plowed ahead and used Zhongshan Cantonese [jøɔk], but producing the syllable with a falling tone, as shown in Figure 5, where the phrase, *shijie shang ding ruo* 世界上頂弱 [si kai siaŋ tɪŋ jøɔk] 'the world's weakest' is displayed with a close-up of *ruo* 弱 'weak' in the right screenshot.
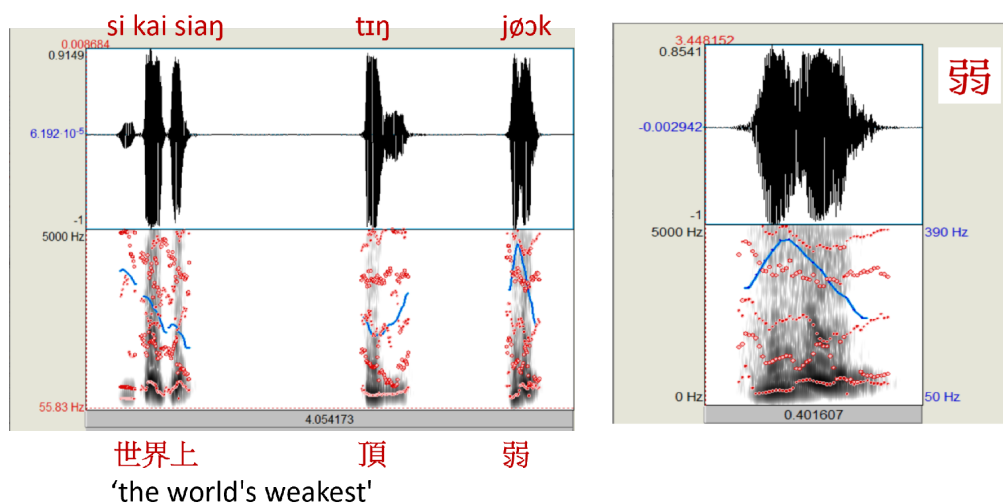
Figure 5. Dr. Sun's production of *shijie shang ding ruo* 世界上頂弱 'the world's weakest' with syllable *ruo* 弱 'weak' enlarged on the right panel

6.2 Pattern B: Cantonese and Southern Mandarin sources

Dr. Sun's speech also reflects Cantonese (primarily Standard Cantonese if it differs from Zhongshan Cantonese) and Southern Mandarin features, such as those present in the Nanjing dialect. Presented below are some further observations, besides the exceptions to Northern Mandarin discussed above.

1. The Mandarin corpus contains no separate retroflex sibilants, which are typical of Northern Mandarin varieties.

2. The morpheme *ke* 可 'can' was consistently pronounced as [kʰɔ] and not [kʰɤ], as it is in Northern Mandarin. Syllable [kʰɔ] reflects the same segments as in Zhongshan Cantonese (contra Standard Cantonese, where it is pronounced as [hɔ]). Similar to Zhongshan dialect, 可 is pronounced [kʰɔ] in the Nanjing dialect (Chao, 1929; Li, 1995).

3. The number 'six,' *liu* 六, was pronounced as [lu.51] by Dr. Sun, which was puzzling. If it came from the Nanjing dialect, one would expect a checked syllable in preserving the *Ru* (入) tone. Chao (1929:1032) gives 六 a colloquial (*bai* 白) reading of [luʔ], which is also

the pronunciation given more recently in Li (1995:324). However, the mystery is solved in consulting Mateer (1906:2) who, besides giving the regular pronunciation of 六 as *liu4*, also notes that 六 is "often read *lu4* by literary men" but no further explanation was offered. Dr. Sun was definitely a well-educated, literary man, and he must have cultivated similar-minded cohorts during his years of revolutionary visions, hence he may have picked up such pronunciation.

The present study of Dr. Sun's Mandarin speech corpus is still very preliminary, mainly providing some glimpses into his D3 acquisition. The recording was made at a time when there was not a clear and agreed-upon national standard for the spoken language that textbooks, dictionaries, and other educational resources could refer to and rely on. Dr. Sun's Mandarin speech perhaps was not so different from other educated speakers of Cantonese and other non-Mandarin dialects who needed to use Mandarin to communicate with Mandarin speakers when they traveled in China.

7. Concluding remarks

This paper makes use of two spoken corpora, namely, two recorded speeches, one in Cantonese and one in Mandarin given by Dr. Sun Yat-sen in 1924 and made commercially available on the Fourth Anniversary of his death (12 March 1929). The recordings are precious, given that they were produced during the early decades of recording in China, the earliest being 1901 (Crowe, 2019), with Chinese opera recordings—Peking and Cantonese operas—in particular, dominating the Chinese recording industry during those first two decades of the 20th century (Liao, 2017).

The recordings represent a valuable resource for studying one individual's D2 and D3 acquisition, with D2 (Standard Cantonese) belonging to the same dialect group as D1 (Zhongshan Cantonese), and D3 (Mandarin) belonging to a different dialect group. The patterns

that emerge in the D2 acquisition study were analyzed with respect to the different mappings from source to target dialect, which are more transparent in the D2 case precisely because the phonological systems of D1 and D2 are more clearly established. The picture is murkier for the D3 case because there is not a clear notion of the exact target for D3, and the presence of two sources, namely, D1 and D2, that can influence D3 acquisition makes things even more complex.

The strategy of studying patterns involving mapping—one-to-one, one-to-two, two-to-one, or multi-directional mapping—between source and target provides a concrete layout that learners might otherwise simply view as cases of substitution: substituting the sounds of their source dialect with the sounds of their target language. Such a scenario only holds for a one-to-one mapping, and fails to account for other mappings from source to target. A one-to-one mapping is the simplest scenario. However, as shown in this study, mergers in the target dialect as opposed to the source dialect make a difference when it comes to how easy or difficult it is for a learner to accurately produce the target forms.

The mapping strategy adopted here can essentially be viewed as a pre-linguistic, pre-rule-governed approach to dialect acquisition. And this is exactly where one can see the difference between language acquisition, such as between English and Chinese, and dialect acquisition that takes place between different dialects of Chinese, be them within the same dialect group or across two different dialect groups.

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