



Dissertation

Is San Diu a Cantonese variety or is it something else? A historical phonological analysis of the Sinitic words in San Diu

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Abstract

San Diu, a language spoken in Northern Vietnam which is mostly found in Tuyen Quang, Thai Nguyen, Vinh Phuc, Bac Giang and Quang Ninh provinces is understudied. The genetic relationship between San Diu and other languages is still not clear. There have been claims that San Diu is a form of Chinese language (Pham & Nguyen 2014: 89). Edmondson and Gregorson (2007: 744) stated that it is a form of archaic Cantonese, possibly related to Pinghua which is spoken in modern day Guangxi, China. Haudricourt (1960) compared a 5 language in the region of Moncay as well as Cantonese and Hakka and classified San Diu under Hakka. In Nguyen's (2013) study, she compared San Diu vocabularies with three Chinese dialects: Yue (Guangzhou), Hakka (Meixian) and Southern Min (Teochew) and found that around 2/3 of the San Diu vocabularies are similar to Hakka (lexically and for some, phonetically).

To explore the genetic classification of San Diu further, I will be using shared innovations as a criteria for classification in this paper. This is another way to falsify previous claims and the observation made by surface synchronic comparison between Chinese dialects and San Diu. Innovations that are prototypical and unique to three Chinese dialect groups were chosen and compared with San Diu. Over 400 syllables were analysed overall. The result shows that, firstly, a huge amount of words are not from a Sinitic origin. Secondly, San Diu shares innovations with Yue and Hakka. I argue that the Sinitic words in San Diu largely come from Yue, since more innovations are shared with Yue than Hakka. This does not dispute the possibility that Hakka words did not make their way to San Diu, however. Further studies are needed for a deeper understanding to the origin of this language.

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1 Introduction

San Diu is an isolating language spoken by the San Diu ethnic group in Northern Vietnam, the origin of which is unclear. Only one piece of research has been done on the phonetics of this language and very few other on other aspects (e.g. Haudricourt 1960). Haudricourt (1960) compared San Diu with other linguistic varieties found in the region of Moncay and classified San Diu under Hakka. In the comparison of San Diu with other Sinitic varieties (Nguyen 2013), namely Guangzhou Yue, Meixian Hakka and Teochew Min, the result shows resemblance with Hakka dialects. This however, contradicts with some of the claims in the literature, which stated that San Diu might be affiliated to another Chinese variety, namely Cantonese or Pinghua. These claims, however, were not backed up with any linguistic evidence.

The traditional method of dialect classification primarily relies on assessing the phonological reflexes of Middle Chinese in the modern Sinitic varieties (Zhan 2006: 53-55). This tradition is heavily influenced by the rhyme books which recorded how words were pronounced in different period in the Chinese history. Many of these rhyme books followed the tradition of *Qieyun*, which later developed into *Guangyun*, a rhyme book from the Song dynasty (Hu 2010: 36, 124, You 2016: 85; Yan et al. 2016: 53). Chinese dialectologists collect phonological dialect data with a character-by-character elicitation method (Zhan 2006: 119), which all the characters are organized in such a way that rhyme books were organized traditionally. This was a method first used by Karlgren for collecting Chinese dialect data and was later adapted as a standard procedure for data collect in Chinese dialectology by Chinese

dialectologists (Bai 2009: 38-39). Under this method, it implies that every Sinitic variety (possibly with the exception of Min) is a descendant of the variety which *Qieyun* and *Guangyun* were based on. This view was criticized by some scholars, e.g. the Princetonian School (Li 1998: 73), but this tradition goes on as the primary method for dialect data collection.

Shared innovations have been used in language subgrouping in Western historical phonology, but it is not common in traditional Chinese dialect classification. The aim of this paper is to use shared innovations to find out what relationship the Sinitic words in San Diu has with the modern Chinese dialects. I will start by giving an overview of the language situation in Northern Vietnam in section 2. In section 3, I will introduce the concepts and terminologies use in Chinese Historical Phonology and dialectology because the literature is heavily based on them and they are not self-explanatory. Next, in section 4, I will give a brief introduction to the modern Chinese dialects, then focus on the features of four dialect groups which I believe to be relevant in finding out the historical affiliation between San Diu and the Chinese dialects. Section 5 is an overview of the phonology of San Diu. Section 6 focusses on shared innovation and its importance to this study. It states which shared innovations of each dialect group are chosen for a comparison with San Diu. Section 7 will be the analysis. Lastly, section 8 and 9 will be the discussion and conclusion respectively. The feature(s) San Diu will determine the classification. The results show resemblance of a sub-dialect of Yue, but it also suggests a more complex history of the language.

2 Languages of Northern Vietnam

In Vietnam, the Kinh, otherwise known as ethnic Vietnamese, is the official major ethnic group (Edmondson and Gregerson 2007: 727). There are 53 other ethnic groups in Vietnam. The population of these ethnic groups speak languages from a number of language families: Austroasiatic, Sino-Tibetan, Tai-Kadai, Hmong-Mien and Austronesian (Edmondson and Gregerson 2007: 729). Here is a brief introduction to some of the languages spoken in Northern Vietnam.

2.1 Tai-Kadai languages

In the Northeastern area of Vietnam, from the border of China up to Cao Bang province, one of the most populous ethnic group is the Tay (Edmondson and Gregerson 2007: 731). They speak a Tai-Kadai language called Tay and it is related to Thai (spoken in Thailand) and Zhuang (spoken in China). Another language that belongs to the Tai-Kadai family is Nung. It is spoken by the Nung people and according to the *Minority peoples of Vietnam, the northern provinces (Các dân tộc ít người ở Việt Nam*, adapted from Edmondson and Gregerson (2007: 733)), these Nung people can be further divided into 15 subgroups which many correspond to the Zhuang people in China.

2.2 Hmong-Mien languages

Another family that is also populous in Northern Vietnam is the Hmong-Mien (also known as Miao-Yao) languages. In this family, the languages can be divided into two main branches: the Hmong and the Mien. The Hmong varieties have many relatives spoken in China, in the southern provinces near the border (Edmondson and Gregerson 2007: 737-738). The Mien varieties are spoken by the Dao people in Vietnam.

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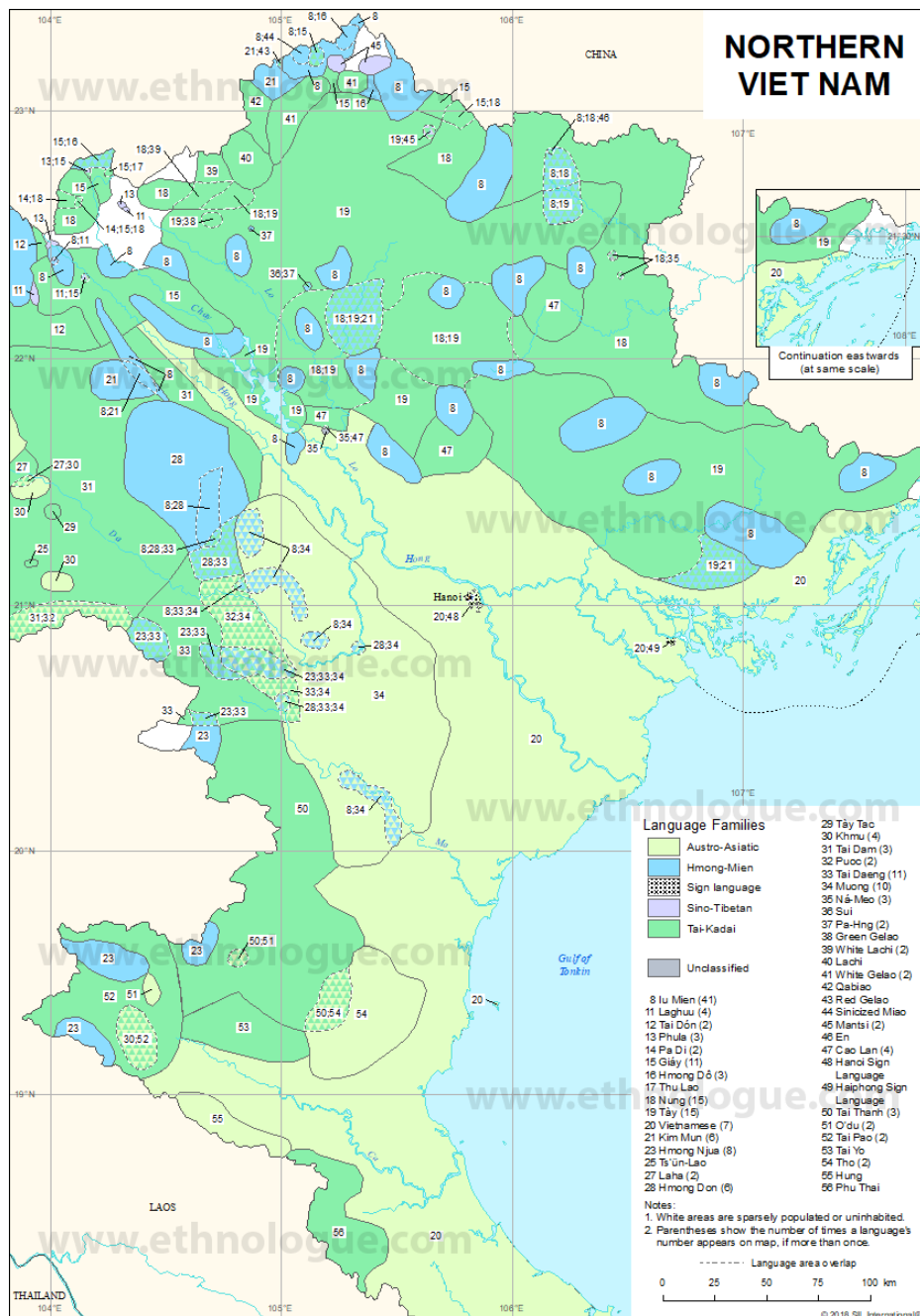


Figure 1. Languages in Northern Vietnam (from ethnologue.com).

2.3 Austroasiatic (Mon-Khmer) languages

Vietnamese is a language within the Austroasiatic language family (Edmondson and Gregerson 2007: 739-740). A close relative of Vietnamese is Muong. Ethnologue (Simons & Fennig 2018) stated Vietnamese is related to Khmer. Haudricourt (1954) found, famously, that Vietnamese used to be a tone-less language, like Khmer. However, through ‘tonogenesis’, it became tonal and now has six tones.

2.4 Sino-Tibetan languages

According to Edmondson and Gregerson (2007: 743-745), the Hoa people speak varieties of Sinitic languages such as Cantonese and Teochew. They form the largest minority group in Vietnam and they

are descendants of immigrants from the last three centuries. Other Sino-Tibetan languages spoken in Vietnam are Ngai, which is believed to be a form of Cantonese. Another language from the Sinitic group is San Diu, which is the language of study in this paper. There are other non-Sinitic languages (Tibeto-Burman) spoken in northern Vietnam too, such as Ha Nhi and La Hu.

3 Chinese dialectology

3.1 Traditional methodology

Traditional Chinese dialectology was built on a foundation where a lot of concepts were based on Middle Chinese phonology represented in ancient records. Modern Chinese dialectologists collect dialect data with an elicitation method based on a wordlist (Zhan 2006: 119). This method was first applied by Bernhard Karlgren, a Swedish Sinologist, in the early 20th century (Bai 2009: 38-39). Karlgren created a wordlist based on *Guangyun* to collect modern dialect data in order to apply the comparative method for the reconstruction of Middle Chinese. *Guangyun* is a rhyme book that records pronunciations of words in the Song dynasty (960-1279 AD), which is a modified and expanded version of an earlier rhyme book *Qieyun* from the Sui dynasty, which was published in 601 AD (You 2016: 85; Yan et al. 2016: 53). Since then, Chinese dialectologists have been following Karlgren’s tradition in data collection and *Guangyun*’s tradition dialect description (Bai 2009: 38-39). This methodology implies the assumption that all modern Chinese dialects (possibly with the exception of Min) are derived from the Middle Chinese (MC hereafter) variety described in *Guangyun*, which is a variety spoken for around 1000 years ago.

3.2 Phonological system in *Guangyun*

In *Guangyun*, the pronunciation of the syllables is represented by two characters, known as *Fanqie* (Sun 2018: 15-16). The former character will represent the onset of the syllable, known as the *initial*, and the latter represents the rhyme and the tone.

		Character	Represented Initial	Represented Rhyme	Represented Tone
Fanqie	Former character	作	ts	ak	Ru
	Latter character	孔	k	uŋ	Shang
Represented syllable		總	ts	uŋ	Shang
tsuŋ (with Shang tone)					

Table 1. Demonstration of Fanqie (adapted and modified from Sun 2018: 16).

By looking at the sound correspondences in modern dialect reflexes of the *Guangyun* phonological system, we can see sound changes, mergers (Li 2007: 122-125). By comparing the reflexes with *Guangyun*, it allows us to trace back the historical changes that are missing in historical records and also shows us historical affiliations between dialects.

3.2.1 *Initials*

Traditionally there are 36 initials in total (You 2016: 86). Each initial has their own place and manner of articulation, as well as their laryngeal contrasts. Chinese dialectologists added extra initials to the original set in their framework to 40 initials. The reason behind this increase of initials is that rhyme books published in the later dynasties have increased the number of initials, either to cope with the sound changes in Late Middle Chinese or to show some contrast that were missed by previous rhyme books. This does not mean all the Sinitic languages today have all of these contrasts. These 40 initials are used as reference points for changes or retentions from Middle Chinese in modern Chinese dialects.

Table 2 below shows the outline of the Middle Chinese initials:

	-voi, -s.g.	-voi, +s.g.	+voi	+nas	+lat
Bilabial stops and nasal	幫 p	滂 p ^h	並 b	明 m	
Labio-dental stops and nasal	非 pf	敷 pf ^h	奉 bv	微 m̥	
Alveolar stops and nasal	端 t	透 t ^h	定 d	泥 n	來 l
Alveolar affricates	精 ts	清 ts ^h	從 dz		
Alveolar fricatives	心 s		邪 z		
Retroflex affricates	莊 tʃ	初 tʃ ^h	崇 dʒ		
Retroflex fricatives	生 ʃ				
Palato-alveolar affricates	章 tʃe	昌 tʃe ^h	船 tʃe		
Palato-alveolar fricatives	書 ʃe		禪 z		
Palatal stops and nasal	知 c	徹 c ^h	澄 tʃ	娘 ɲ	
Velar stops and nasal	見 k	溪 k ^h	群 g	疑 ŋ	
Velar Fricatives	曉 x		匣 ɣ		
Miscellaneous	云 ʏ ^j	以 Ø			
Glottal stop	影 ʔ				
Nasal affricate	日 ɲz				

Table 2. *Traditional layout of the Middle Chinese initials used in Chinese dialectology (adapted from You 2016: 87)*

There are disagreements with the reconstruction of these initials. These particular reconstructions are based on Zhu (2016: 328).

3.2.2 *Rhymes*

In Chinese phonology, the rhyme consists of a medial, a nucleus and a coda (Lu 2014:49-50).

	Rhyme		
	medial	nucleus	coda
Example	u	a	n

Table 3. *Rhyme structure in Chinese phonology with a non-word example (Lu 2014: 50).*

3.2.2.1 *Medials*

A medial is a glide that precedes the nucleus and follows an initial. There are two medials in Middle Chinese, *-i-/ *-j- and *-u-, and they are indicated through the placement of the syllable in a specific slot in the rhyme table (Zhu 2016: 328-329, 334-336).

The existence of medial *-u- in a syllable is indicated by *Hu*. If a syllable is assigned under ‘close’ *Hu* in a rhyme table, it means the syllable has a medial *-u-. On the other hand, if it does not have a medial *-u-, then it will be placed under ‘open’ *Hu*.

Medial *-i- is present in syllables which are placed under *Division III* (and also *Division IV*, depending on the reconstruction) in a rhyme table. Table 4 demonstrates the contexts which each medial will occur in within a rhyme group.

<i>Hu</i>	Open (no -u- medial)	Close (have -u- medial)
Division I	-an, -at	-uan, -uat
Division II	-an, -at	-uan, -uat
Division III	-jæn, -jæt	-juæn, -juæt
Division IV	-iæn, -iæt	-iuæn, -iuæt

Table 4. *The division in the Shan (山) Group (from Dong 2001: 171).*

3.2.2.2 *Nucleus and coda*

In the description of sounds in the rhyme books, we have established earlier that two characters are used, the latter being the representation of the rhyme. In later rhyme books such as *Sishengdengzi* (Hu 2010: 139), syllables are organized by rhyme groups instead of individual vowels. There are 16 different rhyme groups (You 2016: 88-89).

A rhyme group categorizes a few different aspects of the rhymes in Chinese syllable structure. Firstly it sets out what kind of a syllable it is, i.e. if it has a monophthong or a diphthong, whether it has a nasal coda or not. Vowel qualities are represented by the Divisions (from I to IV), but not all rhyme groups have all four divisions (there are gaps in these syllable structures). In later rhyme books, tones of the syllables are organized in columns.

Nucleus	Coda					
	-∅	-i	-u	-m/ -p	-n/ -t	-ŋ/ -k
ɑ,æ	果,假	蟹	效	咸	山	宕,江
ə		止	流	深	臻	曾,梗
u	遇					通

Table 5. *Types of rhymes by syllable type (from Zhu 2016: 364).*

This concept is similar to Wells’ (1982) *lexical sets*. Wells uses one word to represent a group of words which share the same vowel. In rhyme books, a character is used to represent a group of syllables that share the same classes of vowels and the same coda. For example, *an, *an, *æn and *en will be considered as part of the *Shan* (山) Rhyme group because they all share the low/ front vowel as well as a -n coda (see table 4). The different nuclei within this rhyme group will be indicated by the divisions within the rhyme group. Division I will indicate *an, Division II will indicate *an etc. (see table 4).

3.2.3 Tones

For tones, Chinese dialectologists use the same terminologies as *Guangyun*: *Ping* (level), *Shang* (rising), *Qu* (falling) and *Ru* (entering) tone categories (You 2016: 92-93), together with the numeric representation of tone contours. It has been found that the number of tonal contours will not exceed 5 levels cross-linguistically (Yip 2002: 20). Tone contours in Chinese dialectology are represented by the numbers 1 to 5, 1 being the lowest level and 5 being the highest in terms of the pitch range.

Since some dialects experience devoicing of voiced obstruent consonants, this caused these categories to split into *yin* and *yang* registers (usually *yin* tones have a higher F0 and *yang* tones have a lower F0 in modern dialects, see table 6 below).

Meaning	‘drag’	‘camel’
MC tones	<i>Ping</i> (level)	<i>Ping</i> (level)
MC reconstruction	*t ^h a	*da
Modern Guangzhou Yue	[t ^h ɔ̌ 55]	[t ^h ɔ̌ 11]
Modern Guangzhou Yue tone category	<i>Yin Ping</i>	<i>Yang Ping</i>

Table 6. *Demonstration of the split of yin and yang in MC tones from Modern Guangzhou Yue.*

It is important to note that MC tones do not indicate the actual tone contours in modern Chinese dialects. The labels are used for comparative purposes, i.e. looking at split and mergers across dialects. Table 7 demonstrates a tone merger in the Ningbo dialect with modern tone correspondences to the MC tonal system.

	<i>Ping</i>	<i>Shang</i>	<i>Qu</i>	<i>Ru</i>
<i>Yin</i>	53	35	44	55
<i>Yang</i>	24	213		12

Table 7. *Modern Ningbo phonetic tones in Middle Chinese tonal categories (You 2016: 101).*

3.3 Discussions on initials

The miscellaneous initials and the nasal affricate require some explanation. *y^j- is a reconstruction which comes from retentions in modern Chinese dialects and palatalisation comes from the occurrence of the initial under *Division III* in a rhyme table (Zhu 2016: 321-322). *∅- is reconstructed from the absence of an initial in most modern Chinese dialects.

The modern realizations of *Ri* initial (*ɲz-) are extremely complicated (Zhu 2016: 323-328). Here are some of the realizations that you can find in modern dialects: [l-], [n-], [z-], [j-], [ɲ-] and [ẓ-]. The fragments of some phonological description of Chinese from the late Tang dynasty (around the 10th century) shows that the *Ri* initial was a nasal consonant. An explanation is required for the development from a nasal to a fricative in some dialects. What Chinese phonologists are sure is that *Ri* had some elements of a palatal nasal, but it differs from the well supported initial *ɲ-. Scholars argued that at some point, *ɲ- developed secondary-articulated frication, then when the nasal is lost, the fricative is the left-over consonant. This reconstruction allows us to keep the contrast between *ɲz- and *ɲ- in Middle Chinese and also shows the possible pathway for change from MC to modern dialects.

4 Introduction to Chinese dialects

There are 10 major dialect groups in Chinese (Atlas¹ 2012: 8). They are Guanhua, Jin, Wu, Hui, Xiang, Gan, Hakka, Yue, Pinghua and Min (see Figure 2 for the distribution).

Guanhua is spoken in the widest area in China, from the north-most province of Heilongjiang to Guangxi province; from Xinjiang to Jiangsu (Atlas 2012: 9). Jin dialects are spoken mainly in the Shanxi province and Hui varieties are mainly spoken in Anhui province. Wu, Gan and Xiang dialects are spoken in the provinces in central China and lastly, Yue, Hakka, Min and Pinghua dialects are spoken in southern China.



Figure 2. Chinese dialect map of China (scanned from Atlas 2012: A2).

The descriptions of dialects below involve mostly shared retentions from the *Qieyun* / *Guangyun* system and also modern realization of the selected sound categories. These dialects are chosen based on how closed they are geographically to where San Diu is spoken and also previous mention of possible origin of San Diu from the literature. This forms a good hypothesis to testify in the analysis.

4.1 Characteristics of Yue dialects

According to the description in the *Language Atlas of China*, prototypical dialects of Yue have the following characteristics (Wu 2007: 167-176):

- a) Merger of MC voiced and voiceless obstruent stops and affricates in prototypical Yue dialects. Initials with MC level and rising tones merge with MC aspirated stops and fricatives; Initials with MC falling and entering tones merge with MC unaspirated stops and fricatives.
- b) MC *m- and *m̥- merge to [m-]
- c) Presence of only one series of affricates [ts-, ts^h-]
- d) Velar consonants and h- are not palatalized (although this does not apply in some western dialects)

¹ Atlas refers to the ‘*Language atlas of China*’ edited by the Department of Social Sciences of China et al.

- in Guangdong)
- e) Merger of MC *k^h- and *h-; *k^h became an f- before a medial *-u- historically
 - f) Absence of apical vowels; they are realized as an [i], [y, u] in some dialects
 - g) Presence of an /a : ə/ distinction
 - h) Absence of contrast with Division I and III in the 流(*liu*) and 臻(*zhen*) rhyme groups
 - i) Retention of all the nasal and stop codas from Middle Chinese
 - j) All the MC tones split into *Yin* and *Yang* registers; entering tone split in 3 or 4 phonetic tones

Mai (2011: 295-299) evaluated Wu's criteria for characterizing Yue dialects and he concluded that only g), h) and reflexes of MC *s- as a lateral or interdental fricative are the shared innovations for Yue dialects. This is because he argued that Wu's criteria are mostly shared retention or innovations that are shared with other Chinese dialects. The last criterion that he added was rejected by Wu. Wu argued that MC *s- realized as other fricatives is a minority feature. However, Mai argued that it is far from being a minority feature, since many varieties outside the sociolinguistic "Prestige dialects" of Yue do have this feature. Lastly, Mai pointed out that criterion h) is essentially the loss of the medial *-i-.

4.2 Characteristics of Hakka dialects

It is unfortunate that there is no "unique and unambiguous" criteria for classifying Hakka dialects (Sagart 1998: 281). However, some scholars still proposed some prototypical criteria for Hakka (Xie & Huang 2007: 241; Zhan 1981: 152-154):

- a) Merger of MC voiced stops and affricates with voiceless aspirated stops and affricates
- b) Merger of *Yin Ping* and *Yang Shang* tones
- c) Entering tones split into *yin* and *yang* registers; the F₀ for the *yang* entering tone is higher than the *yin* entering tone category
- d) Preserving different codas depending on which sub-dialect group it is
- e) Most dialects have one series of affricates
- f) MC *xu- and *hu- merged with *f-
- g) The MC labio-dental series remains labial
- h) MC *k-, *k^h-, *x- before medial *-i- remains unpalatalised in many varieties
- i) Presence of [v-] (from MC *ŋ-, *ʔu-, *Ø-)
- j) Presence of [ŋ-, ɲ-]
- k) Have 6 tones

4.3 Characteristics of Pinghua dialects

The status of Pinghua as a separate Chinese dialect is very controversial. This is because scholars have found a lot of similarities and a few differences between Pinghua and Yue dialects (Tan 2007: 177-180). Within the Pinghua dialect, there are two main sub-dialect groups: Northern Guei and Southern Guei. The controversy comes from both of the sub-dialects: Southern Guei resembles a sub-dialect of Yue (Wu-Hua) and Northern Guei dialects have a very large inter-dialectal variation. This might be the result from Pinghua being in a continuum of Yue (for Southern Guei dialects) and independent developments in isolation (for Northern Guei dialects).

Because there is such disagreement in the classification of Pinghua, with the uncertainties of the relationship between Pinghua and Yue and the huge inter-'dialectal' variation. Because there is no immediate obvious shared innovations that is conclusive enough to contribute to the analysis of San Diu, I will not include Pinghua in the analysis, except one feature that everyone agrees on, which is all MC voiced stops were devoiced and became unaspirated voiceless stops.

4.4 Characteristics of Hainan Min

Hainan Min, also known as the Qiongwen dialect, is spoken on the Hainan Island, which is located at the east of Northern Vietnam. It is classified as a Min dialects based on the shared features that it has with other Min varieties which are spoken mainly in the Fujian province (Zhang 1985: 174-175). I have chosen this dialect to for the analysis because it is geographically close to where San Diu is spoken and some features are interesting and it resembles some San Diu features. Here are the features of Hainan Min dialects (Liang 1984: 264-266):

- a) Having [ʔb] and [ʔd]
- b) MC coronal affricates and sibilants can be realized as [t]
- c) Does not have aspirated stops. Aspirated stops in Middle Chinese are realized as the following segments: labial stops: [f-]; coronal stops and affricates: [s-] and velar stops: [x-]
- d) There is no [y] in the rhyme
- e) [-p, -t, -k, -m, -n, -ŋ] are retained from MC, some dialects allow [-ʔ] as a coda as well

5 San Diu

5.1 San Diu people

The San Diu ethnic group is one of the 54 ethnic groups in Vietnam (Pham & Nguyen 2014). According to the census, the San Diu population in Vietnam was 146, 821 in 2009 (Nguyen 2013: 14-17). The San Diu people mostly live in the mountain areas in Quang Ninh, Bac Giang, Phu Tho, Thai Nguyen and Tuyen Quang provinces (Pham & Nguyen 2014: 89).

5.2 Origin of the San Diu people

A number of claims have been made that the San Diu people moved to Vietnam around 300 years ago, and have been stable there since then (Nguyen 2013: 14, Pham & Nguyen 2014: 89), although some have claimed that they have been settled in Vietnam since the 16th century (Edmondson and Gregerson 2007: 744). Many sources state that the San Diu people migrated from southern China to northern Vietnam (Edmondson and Gregerson 2007: 744, Nguyen 2013: 14, Pham & Nguyen 2014: 89, Nguyen 2018: 213). In Vietnam, the government classify them as a separate ethnicity (oppose to Hoa, which means “Chinese” as another ethnicity in Vietnam). However, in China, they are classified as Yao (Nguyen 2018: 213).

5.3 San Diu phonology

5.3.1 Consonant inventory

	Labial		Alveolar		Palatal	Velar		Glottal
Plosive	p	b	t	d	c		k	
Aspirated Plosive			t ^h					
Fricative	f	v	s	z		x	ɣ	h
Affricate			ts	dz				
Nasal		m		n	ɲ		ŋ	
Lateral				l				

Table 8. *Phonemic consonant inventory of San Diu (Nguyen 2013: 64).*

5.3.2 Vowel inventory

	Front		Central		Back
	Unrounded	Rounded	Short	Long	Rounded
Close	i	y		u	u
Close mid	e		ɿ	ɤ	o
Open mid	ɛ				ɔ
Open			ǎ	a	

Table 9. *Phonemic inventory for vowels in San Diu (Nguyen 2013: 80).*

5.3.3 Syllable structure

The syllable structure follows the template below:

$$(C) (M) V (V/C) + T$$

C = Consonant

M = Medial

V = Vowels

T = Tone

For the consonants, only /p, t, c, k/ and /m, n, ɲ, ŋ/ are permitted in both the initial and the coda position of a syllable. Otherwise, all the consonants will only be allowed in the onset.

5.3.4 Tones

There are 6 tones in total. Tone 1, 3, 5 belong to the high register and tone 2, 4, 6 belong to the low register.

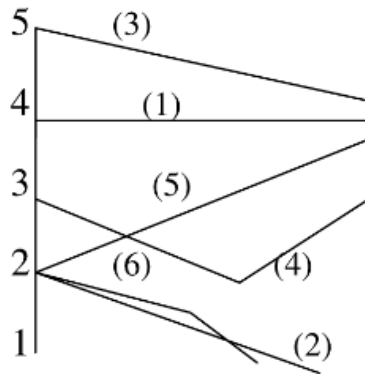


Figure 3. *Tones in San Diu (from Nguyen 2013: 103).*

There are tone sandhi processes in San Diu. Here are the contexts for the sandhi processes (Nguyen 2013: 104-107):

- i) T5 → T6 / _ T6
- ii) T1 → T2 / _ T1
- iii) T3 → T1 / _ T1 and T5

5.4 Previous work on the classification of San Diu

There are claims that the San Diu people speak a variety of the Chinese language (Pham & Nguyen 2014: 89), although it is unclear what variety or which dialect group this variety belongs to. Edmondson and Gregerson (2007: 744) stated that the San Diu people were immigrants from Southern China to Northern Vietnam in the 16th century and they speak an archaic form of Cantonese. They suspect that it is related to a variety called *Pinghua* found in modern day Guangxi in China.

However, in Nguyen's (2013) study, she found a different result. By comparing the vocabulary of San Diu with three major southern Chinese dialects: Guangdong Cantonese, Meixian Hakka and Teochew Min, she found that San Diu has a lot of similarities with Hakka, with 66% similarity out of 212 words; 58% of them are similar in pronunciation. Among those words, all the similarities are found with basic words. This shows the close relation of San Diu with Hakka. At the end of this paper, the author felt the need of further research to explore the historical side of San Diu by applying other linguistic methods.

In Haudricourt's (1960: 173-177) *Note on the dialects of the region of Moncay*, he compared seven languages in the region, namely Cantonese, Hakka, San Diu and Nung. He classified San Diu (San-Gieu in his paper) under Hakka instead of Yue ('Cantonais' in his paper) based on a comparison of vowels, reflexes of Middle Chinese voiced stops, some function words (e.g. 1st person pronoun, question word) and the presence of [y]. His final remark of San Diu in his paper was that "it does not seem that in these vocabularies a non-Chinese residue can give us an indication of the origin language of San Diu. I would be willing to believe in the antiquity of language change; the Hakka dialect comes from the mountains separating Guangdong from Jiangxi, a region which Yao dialects are also found. It is not surprising that the Yao people have abandoned their language for Hakka. Moreover, one may wonder whether Cantonese and Hakka should be considered as the result of the evolution of Chinese respectively on a Thai and on a Yao substrate" (Haudricourt 1960: 177).

6 Dialect classification

6.1 Problems with the traditional method in Chinese dialectology

Sagart (1998: 297-299) discusses the problems in the methodology of dialect classification in Chinese dialectology. Very often a ‘strict’ criterion has been given to a certain dialect group, e.g. the merger pattern with the MC voiced stop and affricate initials. With the advances in dialectology, we know that not all dialects fit into one criterion. Using only one criterion (e.g. which MC category MC voiced stops merge to) for classification is also ‘tautological’, because choosing another criterion (e.g. coda-mergers/deletion) would yield a very different classification. Another problem is that the traditional method uses innovations and retentions together, where only innovations are accepted to be the criteria for classification. It is also said that these criteria are not ‘time-resistant’. A dialect without the prototypical feature of a dialect group does not belong to that dialect group theoretically, but we should not reject the fact that dialects can change. Another problem is that dialectologists have their own subjective classification criteria. This leads to disagreements in how many dialect groups there should be, how dialects should be classified and where the dialect boundaries are etc. This is the reason why Pinghua is not included in the analysis.

6.2 Shared innovations

As Sagart said above, shared innovation is a well-accepted criterion for language subgrouping (Campbell 2013: 175). The logic behind this criterion is that a group of linguistic varieties share a feature that other subgroups from the Proto-language don’t, therefore the subgroup shares the evidence (the innovation) of being the same variety (by undergoing the same change). Dixon (1997: 49) pointed out that “a number of distinctive shared innovations” should be used as evidence for subgroup, although these evidence may not always be available. Another important point is raised that areal feature must be taken into account (Dixon 1997: 50). If neighbouring languages have the same feature, it is likely to be an areal feature. For this paper, if a feature is shared by two adjacent Chinese dialect groups, it will be considered as an areal feature and therefore will not be included in the analysis.

Using shared innovations as a criteria for subgrouping is largely different from the traditional classification in Chinese dialectology. The challenge will be isolating the shared innovations for each dialect group and avoiding areal features from the literature.

6.3 Using shared innovations to classify San Diu

From the dialect features in section 4.1-4.4, I have chosen the shared innovations that are useful for the classification of San Diu:

Dialect group	Features
-	a) MC voiced stop merger patterns
Yue	b) Presence of an /a : ɐ/ distinction
Yue	c) the loss of *-i- medial
Yue	d) [ɬ] as a reflex of MC *s-
Hakka	e) [v-] as a reflex of MC *mj-, *ʔu-, *Ø-
Hainan Min	f) Presence of [ʔb] and [ʔd]
Hainan Min	g) MC coronal affricates and sibilants realized as [t-]
Hainan Min	h) Absence of aspirated stops

Table 10. *Shared innovations of various dialect groups.*

Criterion a) is used as an initial diagnostic feature to narrow down the potential dialect groups that San Diu might belong to. Criteria b), c) and d) are innovations of Yue dialects that are not shared with other dialects. e) is useful to distinguish Hakka dialects. There are other shared innovations for prototypical Hakka dialects, but this paper focuses on segmental analysis, tonal features will be left out. Lastly, f), g) and h) are Hainan Min innovations that are not shared by Yue and Hakka dialects. These criteria will be examined in the analysis (Section 7). As mentioned before, there is no agreement with the classification of Pinghua, this paper will not include features of Pinghua.

If San Diu only possess shared innovations of a particular dialect group, it will suggest a closer relationship between San Diu and that particular group. However, if San Diu has innovations from two or more dialect groups, this might mean that the formation of San Diu might involve some kind of dialect contact. If San Diu does not have any shared innovations with these Chinese dialects, then it can suggest a few things: a) it is not related to the dialect groups mentioned above, but related to some other dialects that have not been mentioned above; b) it might have some newer innovations after breaking off from these dialect groups and these innovations have covered some of the original innovations.

7 Analysis

7.1 Mergers of MC voiced initials

In the history from Middle Chinese to modern dialects, many dialects went through devoicing of obstruent initials (Yan 2006: (Guanhua) 70-71, (Gan) 151, (Hakka) 174, (Yue) 198-199; Yuan 2001: (Guanhua) 23, (Hakka) 148; Li & Xiang 2010: (New Xiang dialect) 152-153, (Gan) 167-168, (Yue) 197, (Pinghua) 204, (Hakka) 212, (Min) 226). The result of this historical change caused mergers of stop initials in modern dialects, from a three-way contrast to a two-way contrast. There are different types of merger patterns across different varieties of Chinese. Chinese dialectologists look at these merger patterns in the modern dialects as a diagnostic feature for dialect classification (Ding 1982: 257). Affricates will be classified as ‘stops’ as well, because they the same property as a stop, except they differ from stops with the feature [Delay Release] (Odden 2013: 56).

7.1.1 Merger patterns

a) No merger

Some dialects retain the three-way contrast of stop initials, this is primarily found in most Wu and Old Xiang dialects (Li & Xiang 2010: 182, 152-153; Yan 2006: 91, 109).

Here is an example of the three-way contrast in the Suzhou dialect:

MC initial	Example	Meaning
*p-	[pu]	‘to fill, to fix’
*p ^h -	[p ^h u]	‘store’
*b	[bu]	‘step’

Table 11. *The three-way contrast of stops in the Suzhou dialect (ZH² 1989: 99-101).*

Since the voiced stops are still retained in these dialect, there is no merger.

b) *Merger into two different categories*

Some dialects have a merger with both voiceless unaspirated stops and voiceless aspirated stops. The condition for the merger is the tone category of the syllable. There are two main patterns for this type of merger: Guanhua and Yue.

In Guanhua dialects, devoiced stops will only have aspiration in words with the MC *ping* tone category (Yan 2006: 70-71; Yuan 2001: 23). For prototypical Yue dialects, devoiced stops will only have aspiration in words with the MC *ping* and *shang* tone categories (Yan 2006: 198-199; Li & Xiang: 197). The rest of the devoiced stops are unaspirated, and therefore merge with the MC unaspirated voice stop initials.

Dialects	MC Ping (*d-)	MC Shang (*dz-)	MC Qu (*d-)	MC Ru (*dz-)
Mandarin (Beijing)	[t ^h i] ‘question’	[tsuo] ‘sit’	[ti] ‘floor’	[tɛi] ‘disease’
Yue (Guangzhou)	[t ^h ɛi] ‘question’	[tʃ ^h ɔ] ‘sit’	[tei] ‘floor’	[tʃɛt] ‘disease’

Table 12. *MC tone categories and aspiration patterns in initial devoicing in Beijing Mandarin and Guangzhou Yue (ZH 1989: 36, 77, 78, 85).*

Lastly, MC voiced stops in Min dialects mostly merged with unaspirated voiceless stops (Li & Xiang 2010: 226). It is unclear why some of these stops became aspirated. Unlike Yue and Guanhua dialects, aspiration is not dependent on the MC tonal categories.

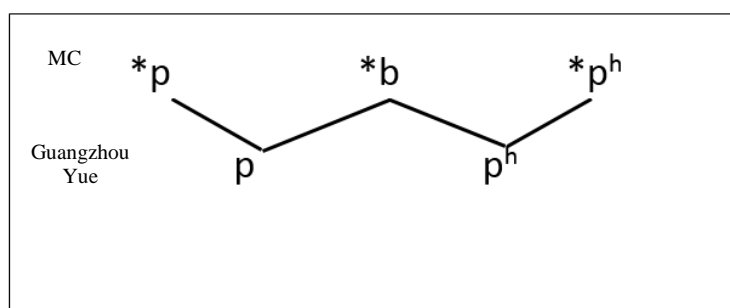


Figure 4. *Merger of MC voiced into two different categories in Guangzhou Yue.*

² ‘ZH’ refers to *Vocabularies with Chinese dialect pronunciations* edited by Linguistic Teaching and Research Group of the Chinese language and Literature department of Beijing University.

c) *Full merger*

Full merger refers to MC voiced initials merging with one voiceless initial category only. There are two patterns: MC voiced initials merging with MC voiceless unaspirated stops or voiceless aspirated stops.

i) MC voiced stop merging with MC voiceless unaspirated stops

All MC voiced stops in the Pinghua dialects went through devoicing and became unaspirated voiceless stops (Wang 2005: 109). This is largely the same for the Gou-Lou dialect sub-group of Yue (He 1997: 47). New Xiang dialects (e.g. the Changsha dialect), also have the same merger (Li & Xiang 2010: 152-153).

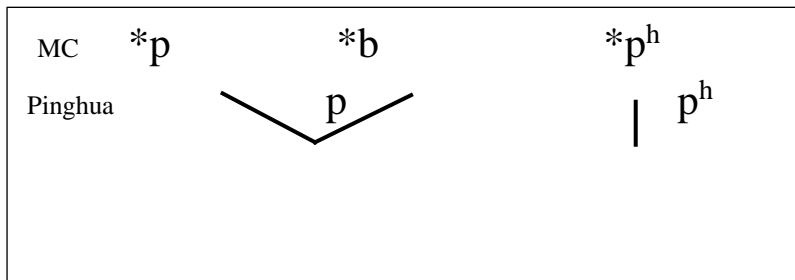


Figure 5. Merger of MC voiced and voiceless labial stops in Pinghua.

ii) MC voiced stop merging with MC voiceless aspirated stops

In Gan and Hakka dialects, MC voiced stops became aspirated voiceless stops after devoicing (Yan 2006: 151, 174; Yuan 2001: 148; Li & Xiang 2010: 167-168, 212). This means that all the aspirated voiceless stops from Middle Chinese now merge with the MC aspirated stops categories. The Wu-Hua sub-dialect group of the Yue dialects also has the same kind of merger (Huang 2017).

Dialects	MC Ping (*d-)	MC Shang (*dz-)	MC Qu (*d-)	MC Ru (*dz-)
Gan (Nanchang)	[t ^h i] ‘question’	[ts ^h ɔ] ‘sit’	[t ^h i] ‘floor’	[tɛ ^h it] ‘disease’
Hakka (Meixian)	[t ^h i] ‘question’	[ts ^h ɔ] ‘sit’	[t ^h i] ‘floor’	[ts ^h it] ‘disease’
Gou-Lou Yue (Lianxian)	[tai] ‘question’	[tsɔ] ‘sit’	[tɛi] ‘floor’	[tsɛt] ‘disease’
Pinghua (Nanning)	[tɛi] ‘question’	[tɛu] ‘sit’	[ti] ‘floor’	[tɛiɛt] ‘disease’

Table 13. MC tone categories and aspiration patterns in initial devoicing in 4 different dialects (ZH 1989; CRR³: 2011).

³ Chinese Character Readings (CCR) refers to an online database for dialect survey data and Chinese historical phonology resources. It is run by the Chinese department of Taiwan University and the Institute of Linguistics, Academic Sinica.

7.1.2 *Pattern in San Diu*

Table 14 shows the distribution and the tokens of obstruent stops in modern San Diu in MC categories. The different series of MC affricates are treated as one in San Diu because they have all merged together.

Middle Chinese Categories	[-voi, -sg]	[-voi, +sg]	[+voi, -sg]
Labial	b (14/16) h (2/15)	f (1/1)	f (8/10) v (1/10) h (1/10)
Alveolar	t (16/17) d (1/17)	t ^h (10/11) t (1/11)	t ^h (25/28) t (2/28) d (1/28)
All 4 series of affricates	ts/c (42/46) s (1/46) z (1/46) dz (1/46) t (1/46)	s (11/12) ts (1/12)	s (20/27) c (2/27) dz (2/27) ts (1/27) z (1/27) t (1/27)
Velar	k (48/52) h (4/52)	h (13/18) χ (3/18) v(2/18)	χ (7/8) k (1/8)

Table 14. *Obstruent stops of modern San Diu in MC categories based on the places of articulation.*

In Table 14, the obstruent stops of all places of articulation show the same pattern: the majority of the MC voiced stops and MC aspirated voiceless stops share the same consonant in modern San Diu. It means that like many modern Chinese dialects, MC voiced stops have gone through devoicing in San Diu, and the devoiced MC stops merged with the MC aspirated stops.

For many MC initials, there is a huge variation of realizations in San Diu. This is the most obvious with the MC voiced affricates. There are two possibilities for this. Perhaps some realizations are the relic pronunciation of certain categories before it went through some sound changes. I cannot find evidence for this from the data unfortunately. Another possibility is that there might be contact in the formation of San Diu which created a lexicon with various pronunciation from the ancestor dialects or several lexical strata were established. It is unclear what the cause is, further research is needed.

In order to further compare the patterns of San Diu and the other Chinese dialect groups, it is necessary to look at the distribution of the aspirated stops in the MC tonal categories. If the merger happens across tone categories, we can make some conclusions about San Diu's origin.

MC tonal categories	<i>Ping</i>	<i>Shang</i>	<i>Qu</i>	<i>Ru</i>
Labial	✓	n/a	n/a	✓
Alveolar	✓	✓	✓	✓
Affricates	✓	✓	✓	✓
Velar	✓	✓	✓	n/a

Table 15. *Mergers of MC voiced stops and MC aspirated voiceless stops in each MC tonal category.*

Table 15 shows the occurrences of the merger in each MC tonal category. Due to the data we have for San Diu, I do not have all the tokens needed in order to look at the mergers in all the MC tonal categories at all the places of articulation. However, the distribution of alveolar stops and the affricates might give us some insights.

For alveolar stops and the affricates, it is clear that the merger occurs in all the tonal categories. For the velar stops, this is nearly the case, except we do not have data for the *Ru* category. For the labial stops, it is unfortunate that there is no data for the *Shang* and *Qu* categories.

Based on the distribution of aspirated alveolar stops and affricates, if we make an assumption that the velar and labial stops follows the same pattern as the alveolar stops, we can assume that the merger occurs in all tonal categories. Having the assumption that MC voiced stops merge with MC unaspirated voiceless stops in all MC tonal categories, the result suggests that the Sinitic words in San Diu might come from a Hakka, Gan or Wu-Hua Yue origin.

7.2 Presence of the /a : ɐ/ contrast

Mai (2011: 296) considers the /a : ɐ/ contrast as an important characteristic for Yue dialects. He also elaborated that Yue doesn't only have the contrast with /a : ɐ/, but the varieties also exhibit a general length (long vs. short) and quality (e.g. [a] vs. [ɐ]) contrast with the vowels. Yue is the only dialect which systematically has this type of vowel contrast. It has also been widely accepted that this feature is a 'birth mark' of the substrate Tai-Kadai languages in the formation of early Yue, because present-day Tai-Kadai language have the exact same kind of contrast. Looking from the angle of Middle Chinese, having a /a : ɐ/ contrast (and all other contrasts with vowel length) is an innovation, since it is a contact-induced change that is shared by most Yue varieties.

This contrast is usually seen in the following rhyme groups: *Xie* (蟹), *Shan* (山), *Liu* (流), *Xiao* (效), *Xian* (咸), *Shen* (深), *Zhen* (臻), *Ceng* (曾) and *Geng* (梗) (based on Chen 2011: 162). Sometimes the contrast is within each rhyme group (in different divisions), sometimes the contrast is between rhyme groups. The following rhyme groups are paired up as minimal pairs for comparison. I will state below what the expected vowels would be if San Diu has the same feature as Yue. Here are some examples in Guangzhou Cantonese (data from (ZH 1989)):

Divisions	<i>Xie</i> group	Expected vowel
Division II, without -u-	[mai] 'buy'	[a]
Division IV, without -u-	[mɛi] 'rice'	[ɐ]

Table 16. *Vowel contrast within a rhyme group.*

	<i>Xian</i> group Division I, without -u-	<i>Shen</i> group Division III, without -u-
Examples	[sam] 'three'	[sɐm] 'heart'
Expected vowel	[a]	[ɐ]

Table 17. *Vowel contrast between rhyme groups.*

Below are the nucleus vowels found in San Diu and their token numbers. Each comparison is organized in the fashion that they are comparable as the vowels are put in a minimal pair rhyme group. The frequency of each vowel is shown next to the phonetic realization. The expected vowel distribution are also given for the comparison with Yue.

<i>Xie</i> group Division II, without -u- (expected vowel: [a])	<i>Xie</i> group Division IV, without -u- (expected vowel: [ɐ])
[a] 4/5 [ɔ] 1/5	[ǎ] 11/14 [a] 1/14 [ɛ] 1/14 [i] 1/14

Table 18. *Nucleus vowels of the Xie rhyme group in San Diu.*

Division	<i>Xian</i> group
Division I, without -u- (expected vowel: [a])	[a] 6/9 [ǎ] 1/9 [ɔ] 1/9 [o] 1/9
Division II, without -u- (expected vowel: [a])	[a] 6/8 [ǎ] 1/8 [ɛ] 1/8
Division	<i>Shen</i> group
Division III, without -u- (expected vowel: [ɐ])	[i] 9/11 [ǎ] 1/11 [a] 1/11

Table 19. *Nucleus vowels of the Xian and Shen rhyme groups in San Diu.*

Division	<i>Shen</i> group
Division II, without -u- (expected vowel: [a])	[a] 7/7
Division II, with -u- (expected vowel: [a])	[a] 1/1
Division	<i>Zhen</i> group
Division III, without -u- (expected vowel: [ɐ])	[i] 9/17 [e] 3/17 [u] 3/17 [ɛ] 2/17

Table 20. *Nucleus vowels of the Shen and Zhen rhyme groups in San Diu.*

Division	<i>Xiao</i> group
Division II, without -u- (expected vowel: [a])	[a] 10/11 [u] 1/11
<hr/>	
Division	<i>Liu</i> group
Division I, without -u- (expected vowel: [ɤ])	[ɔ] 5/7 [ǰ] 1/7 [o] 1/7
Division III, without -u- (expected vowel: [ɤ])	[i] 8/14 [ɯ] 3/14 [u] 2/14 [ɔ] 1/14

Table 21. *Nucleus vowels of the Xiao and Liu rhyme groups in San Diu.*

Division	<i>Geng</i> group
Division II, without -u- (expected vowel: [a])	[a] 14/14
<hr/>	
Division	<i>Ceng</i> group
Division I, without -u- (expected vowel: [ɤ])	[a] 2/4 [e] 2/4

Table 22. *Nucleus vowels of the Geng and Ceng rhyme groups in San Diu.*

Table 18-22 show that overall, it is not clear if there is some kind of phonemic contrast which is parallel to the Yue /a : ɤ/ except for the *Xie* rhyme group (table 18). Firstly, [a] and [ǰ] within the *Xie* rhyme group are certainly contrastive, as both phones are in parallel distribution. Essentially all the words in the *Xie* group are semantically different, therefore these contrasts are phonological. Although the surface realization of the Yue phoneme /ɤ/ and San Diu /ǰ/ are different, they are both short in vowel length phonetically and they are also contrastive within the linguistic system. Therefore, the vowel contrast within the *Xie* group in San Diu aligns with Guangzhou Yue. It is convincing to conclude that the contrast we see in the *Xie* rhyme group resembles the typical Yue feature mentioned in the literature, although the existence of the contrasts in other rhyme groups is unclear.

7.3 The loss of *-i- medial

In different Sinitic varieties, there are different instances of the loss of medials. However, Yue is the only variety that have a severe loss of medial in the phonology (Mai 2011: 297). Therefore, losing *-i- is a feature that singles Yue dialects out. There are some exceptions to this feature, though. For instance, the Siyi sub-dialect group and some other Western Yue varieties (Xiao 2010: 119). In Siyi dialects, the -i- medial still exists, e.g. [ts^hia] ‘car’ in the Jiangmen dialect (Zhan 2002: 144), oppose to Guangzhou Yue [ts^hɛ] ‘car’. In the Western Yue dialects, -i- occurs in more frequent words. However, many other dialects are losing, or on the way to losing this feature (Xiao 2010: 119).

If San Diu exhibits the -i- medial, it means that the origin of San Diu is possibly not a typical Yue variety, but perhaps related to the Siyi or some Western sub-dialects or other Sinitic languages such as Hakka. Another possibility is San Diu might have preserved the older form of Yue which -i- medials

were yet lost in the language. Something to keep in mind, the retention of -i- should not be the main evidence for the classification.

The rhyme groups that typically show -i- in other varieties are: *Xiao* (效), *Xian* (咸), *Shan* (山), *Dang* (宕), *Jia* (假) and *Geng* (梗).

Table 22-24 show the number of tokens of -i- and zero-medial of the words in San Diu that contained an *-i- in Middle Chinese:

Ø	-i-
45 (44%)	58 (56%)

Table 23. Overall tokens of modern realizations of Middle Chinese *-i-.

Rhyme groups \ Medials	Ø	-i-
Dang	13	0
Jia	2	1
Geng	7	9
Xian	2	8
Xiao	8	3
Shan	5	12
Total:	39	33

Table 24. Realizations of MC medial *-i- in Division III of various rhyme groups.

Rhyme groups \ Medials	Ø	-i-
Dang	0	0
Jia	0	0
Geng	1	5
Xian	0	3
Xiao	3	2
Shan	4	15
Total:	8	25

Table 25. Realizations of MC medial *-i- in Division IV of various rhyme groups.

The San Diu data shows that the medial -i- does exist in San Diu, and it appears in the majority of the tokens. Synchronically speaking, this data suggests that San Diu may not be related to the prototypical varieties of Yue, but it does not dispute the possibility. Some of the words might belong to a lexical stratum which originates from some varieties of Yue. The absence of -i- is such a salient feature for Yue is the evidence for such stratum.

It is difficult to come to a conclusion just by looking at one feature in the data. We should not dismiss the possible relationship between San Diu and Yue without aggregating other features in Section 7.

7.4 [ɿ] as a reflex of MC *s-

Mai (2011: 298) reinterpreted Wu (2007: 170)'s criterion of the modern MC realization of *s- in present day Yue dialects. His interpretation is that [ɿ-] or [θ-] are innovations of Early Yue dialects/ Southern

(Ningnan) Chinese, and a later innovation is [s-] as a reflex of MC *s-. This is supported by the geographical distribution of fricatives that correspond to MC *s-.

In most dialects outside the Pearl Delta, [t-] or [θ-] are the most common initials for MC *s-. Dialects that were brought to Guangxi from the Pearl Delta region in the Ming Dynasty, e.g. Yongxun Yue, also retain [t-]. It is believed that [t-] is a retention because it is unlikely that an *s- would turn into [t-] rather than the other way round. This means that the [s-] in Pearl Delta varieties is an even later innovated reflex of MC *s- (*s- > *t- > s-). By looking at the modern realization of MC *s- in San Diu, we can possibly find two things about the language: a) if San Diu is a Yue dialect and if so, b) around what time speakers of this variety of Yue might have migrated to Vietnam.

In the whole San Diu data provided by Ngyuen (2013), there is no single instance of the phone [t-]. Here are the modern reflexes of Middle Chinese *s-:

Middle Chinese	San Diu	Tokens
*s-	[dz]	17
	[s]	4
	[z]	3
	[ts]	2
	[c]	1
	[t]	1
	Total:	27

Table 26. *Realizations of MC *s- in San Diu.*

Since there is no [t-] or [θ-] in San Diu, it is not immediate obvious if San Diu is related to Yue based on this feature. However, if other features supports San Diu having a Yue origin, having [s-] corresponding to MC *s- can assist us to find out when the speakers of Yue moved to Vietnam. Mai said that some Yue varieties spoken in Guangxi are from the Pearl Delta region with the retention of [t-], therefore the shift from [t-] to [s-] is a later innovation. Since San Diu has no [t-], if other features in Section 7 suggest San Diu as a Yue variety, this feature might be an evidence to when San Diu moved to Vietnam.

The result from the San Diu data shows something interesting. The most abundant tokens corresponding to MC *s- is [dz], which is unexpected. There are three possibilities for this outcome: a) there were further changes after the formation of San Diu after splitting from Yue or other dialects, b) [dz] is a retention from other dialects that are not addressed in the literature review and c) it might be an outcome of contact with the local languages which are spoken around San Diu. It is possible that San Diu had both contact with other languages and later sound changes which caused variation in the correspondences of MC *s-.

7.5 [v-] as a reflex of MC *ṃ-, *ʔu-, *Ø-

According to Zhan (1981: 153), the majority of the present-day Hakka dialects have the [v-] initial. [v-] essentially evolves from MC *ṃ-, *ʔu-, *Ø-. By examining the correspondences of the San Diu [v-] and Middle Chinese can tell us if San Diu is related to Hakka.

MC initials	Present-day San Diu realizations
*Ø-	v 2/4 h 1/4 z 1/4
*ʔu-	Ø 1/1
*ŋ-	m 4/4

Table 27. *San Diu realizations of MC *ŋ-, *ʔu-, *y^j- initials.*

Only two tokens of [v-] are found in words that have MC *w-. All other tokens have other realizations. The word that is pronounced with a [h-] for MC *w- is [hoŋ] ‘bear’. This is shared with Guangzhou Yue (ZH 1989: 369) and also some other Hakka varieties (Li & Zhang 1992: 156). Zhu (2016: 322) stated that this [h-] realization is the development of an archaic pronunciation that is retained in many dialects, hence a lexical exception. With the [z-], it occurs in the word [ziw] ‘have’. This is the same realization as the words with MC *y^j- initial. MC *Ø- and *y^j- initial might have merged in this particular items which caused variation. For *ʔu- and *ŋ-, it does not show any sign that it is a Hakka dialect. Perhaps there is simply not enough data to see a full correspondences of [v-] and MC initials, but the data does not support San Diu to be a Hakka variety.

7.6 [ʔb] and [ʔd] corresponding to some MC initials

In Liang’s (1984: 264) description of Hainan Min, MC *p-, *b- (non-level tones) and a few words with *pf- and *bv- are realized as [ʔb]; MC *t-, *d- (non-level tones) and some words with *c- and *ʃ- are realized as [ʔd]. Here are some examples from this dialect from Liang (1984):

MC initials	Sample word	Meaning
*p-	[ʔbun]	Classifier for books
*b- (with non-level tone)	[ʔbun]	Stupid
*pv-	[ʔbue]	To fly
*bv-	[ʔbak]	Tied
*t-	[ʔdo]	Knife
*d- (with non-level tone)	[ʔdek]	Special
*c-	[ʔdu]	Pig
*ʃ-	[ʔdi]	Late

Table 28. *Examples of [ʔb] and [ʔd] in Hainan Min.*

San Diu has [b] and [d], but are slightly different from voiced stops in Hainan Min. Their distributions do not match the ones in Hainan Min either:

MC initials	San Diu initials
*p-	b 14/15 h 1/15
*b- (with non-level tone)	f 8/12 p ^h 1/12 b 1/12 v 1/12 h 1/12
*pf-	v 3/5 h 2/5
*bv-	f 3/6 h 2/6 b 1/6
*t-	t 16/17 d 1/17
*d- (with non-level tone)	t ^h 24/28 t 2/28 d 1/28 l 1/28
*c-	c 8/11 ts 2/11 t 1/11
*J-	s 9/11 z 1/11 ts 1/11

Table 29. *Correspondences of San Diu initials with MC initials.*

MC *p- corresponds mostly to San Diu [b-], which might resembles part of the pattern of Hainan Min. However, the rest of the data do not show the expected pattern if San Diu shares this innovation with Hainan Min. We have seen in Section 7.1.2, MC voiced stops have devoiced and merge with the MC aspirated voiceless stops in San Diu mainly. It is not surprising to have different patterns of correspondences from San Diu and Hainan Min with Middle Chinese.

The huge variation of reflexes for each MC initial suggests a complex background of San Diu. It is possible that these instances of reflexes are from different dialects. For instance, MC *pf- is realized as [v-] and [h-] in San Diu. In many dialects, *pf- is realized with an [f-]. [v-] in San Diu might come from [f-], which went through voicing (a later innovation). *pf > h-/ x- is common feature in Min dialects (Zhang 1985: 176). Although we cannot be sure, words with *pf > h- might come from a Min origin, perhaps they are borrowings. For *c-, [c-] and [ts-] are in complementary distribution, where [c-] occurs before an [i] and [ts-] occurs elsewhere which suggests they are allophones.

On the topic of voicing, [v-] is not the only initial which went from voiceless to voiced. It appears that MC *p- also went through voicing in San Diu. Although this innovation does not come from Hainan Min, Liang's (1984: 264) argument of Hainan Min pre-glottal voiced stops as a result of language contact can give us some insights. Liang stated that the distribution of [ʔb] and [ʔd] are different from other Min varieties in Fujian, but are the same in other indigenous languages on the Hainan Island, such as Be and Lhai. The origin of San Diu may not be Hainan Min, but it might have gone through contact with indigenous languages in Northern Vietnam and acquired voiced stops and fricatives, similar to

Hainan Min. While we cannot be certain which language caused this change, the dialect evidence from Nguyen (2013: 115-117) shows that some initials are not voiced (e.g. MC *p > p, MC *pf > f), which means voicing is an innovation after San Diu speakers migrated to Vietnam.

7.7 MC coronal affricates and sibilants realized as [t-]

In Hainan Min, many words with MC coronal initials seem to have merged together as [t-]. According to Liang (1984: 266), this merger affected many words, but not all of them. If San Diu has this innovation, we would expect the majority of these MC coronal initials to be realized as a [t-], with occasional reflexes of other initials. In the tables below, I will present the data by San Diu realizations.

San Diu initials	MC initials								
	*ts-	*ts ^h -	*dz-	*s-	*z-	*tʃ-	*tʃ ^h -	*dʒ	*ʃ-
c-	✓		✓	✓			✓		
dz-	✓			✓	✓				✓
s-	✓		✓	✓	✓		✓	✓	✓
z-				✓					✓
ts-				✓					
t-			✓	✓					
h-									

Table 30. MC coronal initials in San Diu (part 1).

San Diu initials	MC initials								
	*tɕ-	*tɕ ^h -	*dz-	*ɕ-	*z-	*c-	*c ^h -	*ʃ	*tɕ-
c-		✓				✓			
dz-			✓	✓	✓				
s-	✓	✓		✓				✓	✓
z-	✓		✓	✓				✓	✓
ts-	✓					✓			✓
t-						✓			
h-					✓				

Table 31. MC coronal initials in San Diu (part 2).

There are only 3 correspondences of [t-] in San Diu with MC coronal initials (*dz-, *s- and *z-) out of all coronal initials. San Diu does not exhibit this feature of Hainan Min.

There is also a great range of reflexes for each MC initial in San Diu. Like other reflexes we have looked at, it highly suggests a possibility of contact at the formation of San Diu, perhaps between different Chinese dialects, and perhaps with some indigenous languages as well. Again, it is unclear what the situation was like at the formation of this variety, further work has to be done to examine whether there are different lexical strata and if so, where are they from. Since some MC fricative initials are realized as affricates now, there might be some other innovations happening during or after the formation of San Diu. This adds an extra complication to the formation process and is challenging for researchers to unfold the history of San Diu.

7.8 Absence of aspirated stops

Aspirated stops in Middle Chinese are realized as the following segments in Hainan Min: labial stops: [f-]; coronal stops and affricates: [s-] and velar stops: [x-]. In Section 5.3.1, we can see from table 8 that there is only one aspirated stop, which is interesting. In Section 7.1.2, we see a merger pattern with MC voiced stops and MC aspirated stops and these tokens are mostly fricatives instead of stops. Since the comparison has already been done in Section 7.1.2, I will not repeat myself, but move on to the analysis.

Middle Chinese Categories	[-voi, -sg]	[-voi, +sg]	[+voi, -sg]
Labial	b (14/16) h (2/15)	f (1/1)	f (8/10) v (1/10) h (1/10)
Alveolar	t (16/17) d (1/17)	t ^h (10/11) t (1/11)	t ^h (25/28) t (2/28) d (1/28)
All 4 series of affricates	ts/c (42/46) s (1/46) z (1/46) dz (1/46) t (1/46)	s (11/12) ts (1/12)	s (20/27) c (2/27) dz (2/27) ts (1/27) z (1/27) t (1/27)
Velar	k (48/52) h (4/52)	h (13/18) χ (3/18) v(2/18)	χ (7/8) k (1/8)

Table 14. *Obstruent stops of modern San Diu in MC categories based on the places of articulation (repeat).*

There is a very high proportion of fricatives in the MC aspirated voiceless stops and the voice stops, except the alveolar plosives. The merger suggests that MC voiced stops and affricates became voiceless aspirated initials before both became spirantised. The question now is whether spirantisation in San Diu is independent from Hainan Min or other languages. It is plausible that the change might be related to Hainan Min, despite the exception with the alveolar stop. This can only be proven if we know when spirantisation occurred in both varieties and the order which stops went through this change. If the alveolar stops spirantised the last out of all place of articulations, it implies that San Diu might have split from Hainan Min before the change completed throughout all aspirated stops. Another possibility is the influence from neighbouring languages. There are Tay varieties spoken in Northern Vietnam. According to Ethnologue (Simons & Fennig 2018), there are Red Tai speakers around Hoa Binh, which is where some San Diu speakers are from too. Ferlus (2008: 301) noted that there is an absence of [p^h] in Red Tai. Proto-Tai *p^h and *p^{hr} (which also became *p^h) merged with *f. While this might just be a coincidence since spirantisation is a common process, it is interesting there are languages in Northern Vietnam undergoing similar changes. While it could be an independent change for San Diu which happened around the same time at a particular region (perhaps due to contact), further research is needed to determine where the change comes from.

8 Discussion

8.1 The overall picture

Dialect group:	Shared innovations:	San Diu features:
-	a) MC voiced stop merger patterns	Same as Hakka, Gan or Wu-Hua Yue
Yue	b) Presence of an /a : ɐ/ distinction	✓
Yue	c) the loss of *-i- medial	✗
Yue	d) [ɬ] as a reflex of MC *s-	✗
Hakka	e) [v-] as a reflex of MC *ŋ-, *ʔu-, *Ø-	✗
Hainan Min	f) Presence of [ʔb] and [ʔd]	✗
Hainan Min	g) MC coronal affricates and sibilants realized as [t-]	✗
Hainan Min	h) Absence of aspirated stops	✓

Table 32. *Shared innovations from different Chinese dialects and San Diu.*

Looking at table 32, the Sinitic words in San Diu possess innovations mainly from Yue, Wu-Hua Yue to be more specific. This is because San Diu has an /a : ɐ/ distinction which implies it is a Yue dialect and the MC stop merger pattern matches Wu-Hua Yue, the only sub-dialect with the same pattern. While shared retentions are not considered in this analysis, the retention of medial -i- as a feature of Western Yue dialects does not conflict with San Diu being related to Wu-Hua Yue. Negative evidence of other features also suggests that the main historical affiliation San Diu has is with Yue, but not with other dialects. For h), it is unclear where the change comes from, but it is possible that it is an areal effect from neighbouring languages which is a later innovation. This result is different from Nguyen's (2013) speculation with the similarity between San Diu and Hakka and Haudricourt's (1960) classification of San Diu under Hakka. Although MC voiced stop merger pattern as a shared innovation resembles Hakka, San Diu having the /a : ɐ/ distinction as well as the same merger pattern indicates a Yue origin.

8.2 Issues yet to be resolved in this paper

Table 32 is a simplified picture of the Sinitic words in San Diu. The table is binary, with the exception of feature a), which means the variations we have seen in Section 7 cannot be accounted on this simplified table. This limits the accuracy of the analysis, especially when most of these variations are unexplained. While one question seems to be answered, more have been raised, e.g. which varieties does the variation of correspondences come from? When did the changes of these items occur if each item involves a unique sound change? There are also some other features found in the analysis which does not resemble any Chinese dialectal innovations. Voicing of the MC voiceless obstruents found in Section 7.6 suggests language contact, although the languages involved are unclear. Having variation of correspondences in San Diu Sinitic words and gaining new features imply that San Diu has a more complex history which this paper is not able to unfold all at once.

This paper has not addressed whether the core vocabulary (i.e. words from the Swadesh list) are more likely to show less variation, oppose to all other vocabularies. It is also unclear if frequency plays a role in the likelihood of showing Yue characteristics. In Section 7, lexical strata has been mentioned

as a potential explanation for such variation. More work has to be done to investigate if such strata exist and which dialect groups these strata are from.

The data size is also not big enough. The data is taken from Nguyen's (2013) appendix. Originally there are more than 1800 items. But after taking out the duplicated items and singling out the Sinitic items, the data shrank to over 400 items only. Ideally we would want more data to work with. Another issue is that this paper focuses on Sinitic words in San Diu. There are other words in the language also has similar structure as the Sinitic words, but they are not cognates of Chinese. It is unclear which language these words might be from. While we have a clearer idea that some of these Sinitic words has a Yue origin, the rest of the non-Sinitic lexicon is still unknown, unfortunately. This paper also only focus on the phonology of San Diu, it has not looked at other parts of the grammar at all. More fieldwork has to be done with San Diu in order to find out more about this little-known language. This might explain why the result of this paper contradicts with Haudricourt's (1960) classification, where lexical items as well as phonological features were compared.

To some extent, the foundation of this study is flawed. This paper relies on shared innovations in order to find historical relationship between San Diu Sinitic words and modern Chinese dialects. In traditional Chinese dialectology, the literature mainly describes dialects and dialect groups with retentions from Middle Chinese that was recorded in the rhyme books. Firstly, these descriptions highly restricted how much analysis I can do as there are not enough distinctive, exclusive innovations for each dialect group in the literature. This paper might have missed out decisive clues that can further indicate the origin of San Diu because of the lack of relative studies of shared innovations in Chinese dialects.

9 Conclusion

There has not been a lot of research done on the San Diu language. Previously, Nguyen (2013) found that San Diu is the closest to Hakka by comparing three prestigious Chinese dialects with San Diu and Haudricourt (1960) classified it under Hakka based on a comparison with a few features. In this paper, I have use shared innovations from different Chinese dialect groups in order to find out the historical affiliation San Diu Sinitic words have with modern Chinese dialects.

The result shows that San Diu has characteristics of Yue. Some Sinitic words exhibit an /a : ə/ contrast, which is a distinctive feature of Yue. The MC voiced stop merger pattern narrows the sub-dialect to the Wu-Hua sub-dialect group. San Diu shows little or no features from other dialect groups. However, the data also shows a high degree of variation with the correspondences of MC initial and rhymes. Some other features that do not resemble any Chinese dialects are also found. Having a high degree of variation and new features suggest a complex history in the formation of San Diu, which this paper cannot address to. More research is required because there are still a lot of areas yet to explore, e.g. the non-Sinitic words and other parts of grammar. Lastly, more dialect descriptions which focus on shared innovations will be a massive advancement for similar research.

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