On Demographically Motivated Abrupt Sound Change in Taiwanese*

1. Introduction

The purpose of this paper is to illustrate that abrupt sound change needs extralinguistic factors. The factor which interests us here is the language population change.[1] The late Professor Mantaro J. Hashimoto believed that the replacement of the Chinese population by the Altaic people in North China after the invasions of China by the northern nomadic tribes and the subsequent replacement of the Altaic languages by the Northern Chinese language contributed to the drastic phonological change in Mandarin.[2] This demographic view of sound change is supported by many other cases around the world in history. In Taiwan, it is supported by the phonology of Taipei Chinese ("台北國語", mainly Wu and other southern Sinitic substratum), the phonology of Taiwan Chinese ("台灣國語", Taiwanese substratum), the phonology of the Taiwanese of assimilated Hakka communities ("Hó̍h-ló客", Hakka substratum), and especially by the case of the sudden destruction of the century-old stability of Taiwanese Hokkien (hereafter Taiwanese or TW) phonology by the alienized (Mandarinized) youngsters who tried to regain Taiwanese. This paper treats only the last case.

The approach of this paper is to describe and compare features of Taiwanese in three steps. It will begin by stating modern Taiwanese dialectal and general features, from which Taiwanese dialects of the 19th Century can be compared in the second step. The third step is to compare modern established Taiwanese with the Taiwanese of the de-alienized and the de-alienizing Taiwanese nationals. In the former comparison we see that Taiwanese segmentals seems to have not undergone phonological change during the past 115 years, and in the latter we see that abrupt changes are triggered by the interference from Chinese phonology. The first two steps take up the largest part of the paper. It is, nevertheless, necessary to be so, so as to provide enough evidence for the fact that the current abrupt sound change might not have occurred in Taiwanese if there were no demographic change.

The alienization and de-alienization are both on-going processes in Taiwan. However, alienization is a 55 year old process and has been overwhelming, directed by government machines and supported by the major media. De-alienization, on the other hand, has only a history of about 10 years and is the result of individual ethnic awareness. It may not prevail under the pressure of alienization. Even if that would be the case, current alien TW of the alienized population (including the de-alienizing and the de-alienized) still supports the theory of demographical motivation of abrupt sound change.

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[1]"Demography" in this paper refers only to the language population.

[2]Prof. Hashimoto expressed this view in many occasions, private and public. In Hashimoto (1985:184–186) there is also a related statement on the makeup of modern ethnic northern Chinese. During the 16th Sino-Tibetan Conference (Seattle, 1983) he was challenged by Prof. Chou Fa-kao〈周法高〉, who argued that since Hashimoto was Japanese and Japanese was Altaic, Hashimoto's opinion was "unfair". Hashimoto could be wrong in one point, however. In the 6th and 7th centuries, many Chinese began to speak Altaic. Therefore, the later Chinese speaking population might have included former ethnic Chinese — the "Altaized" Chinese.

2. Phonological Features of Modern Taiwanese Dialects

Modern TW dialects are popularly divided into the "Coastal" dialects 〈海口腔〉 and the "Inland" dialects 〈內山腔〉. However, the latter can be further divided into at least 3 major groups: the Old Standard (which is the closest to Amoy), Common Taiwanese, and "Northeastern" Taiwanese (which is the most conservative variety of the Chiang-chiu 〈漳州〉 branch in Taiwan, covering the northeast and the northwest, cf. S2 in §2.1 below). The Coastal dialects and the Northeastern dialects are the only two near-prototypes of all Taiwanese dialects.

2.1 Specific Dialectal Features

The present day Taiwanese speakers comprise primarily of the descendents of immigrants from Fukien, assimilated aboriginal Formosans (notably the Sirayans in the south and southwest, the Kavalans in the northeast, the Babuzas and the Pazehs in the west), and assimilated Hakkas (notably the descendents of Hakka immigrants settled in Hong-goân 〈豐原〉 (Haluton) and its vicinity and in Oân-lîm 〈員林〉 and its vicinity). Immigrants settled in patches, breaking up the original geographical patterns of dialects in Fukien, and migrations took place after immigration, further disturbing the geographical picture. As such, Taiwanese dialects are not easily described geographically (cf. my comments on Higuchi (1988) in ibid.:13–14). Although the 400 years of immigration, migrations, settlements, and assimilations gave rise to the geographically conspicuous Southern dialect group and Northeastern dialect group, there are other locations where dialects similar to these are spoken. Besides, the most conspicuous Coastal dialects do not occupy most of the coasts, and they are also spoken inland. Therefore, Taiwanese dialects are better identified in terms of features rather than in terms of geographical regions. These features do not necessarily define geographical regions.

The following are common phonological features that specify TW dialects. All these feature distinctions are becoming blurred to different degrees owing to analogy and dialect contacts. Examples are written in Taiwan's POJ orthography, POJ being the abbreviation of *Pe̍h-ōe-jī* 〈白話字〉 'Colloquial Script'. Exceptions to specific dialectal feature correspondences are expected to occur to individual words.

S1. **Marked Vowels** dialects vs. **Unmarked Vowels** dialects: The markedness of vowels is the main distinction between the Coastal dialects and Inland dialects. The former still have the non-front unrounded vowels *i·* [ɨ/ɯ] and *e·* [ə/ɤ]. For examples, *soán-kí·* 〈選舉〉 'election', *hé·-lô·* 〈火爐〉 'stove'. They have an eight-oral-vowel system; whereas the other dialects have a six-oral-vowel system.[3]

i	ɨ	u
e	ə	o
a		ɔ

These marked vowels each corresponds to two unmarked vowels or vowel cluster in the Inland dialects, for which see features S7 and S6 below.

S2. **Nūi^{n}-thng** dialects vs. **Nn̄g-thng** dialects:[4] The *-ui^{n}* rime, corresponding to *-ng* in all other dialects, is a phonological marker of the Gî-lân 〈宜蘭〉 (Kavalan) dialects to the Northeast and some of the Thô-hn̂g/-hûi^{n} 〈桃園〉 dialects to the

[3] Some more recently assimilated Hakka's have a five-vowel system, but such system is not deemed authentic.

[4] *Nūi^{n}-/nn̄g-thng* 〈卵湯〉 'egg soup'. Maeda (1900:143) enters *thui^{n}* for 'soup'. Judged from historical comparison, it must have been an idiocyncratic case of analogy. Ogawa (1932) does not have *thui^{n}* and seems to consider *thng* for 'soup' as universal in Taiwanese. My field record (Tē^{n}, Tiu^{n}, and Iâu 1993) for 'soup' is also *thng*.

Superscript ^{n} indicates vocalic nasality and is often omitted when there is a nasal initial.

Northwest, south of Taipei. In these dialects, *-ng* and *-ui^n* rimes are in contrast, e.g., *tn̄g* 〈丈〉 '10 feet', *tūi^n* 〈斷〉 'break; sever'.

S3. **Pē^n-ī^n** dialects vs. **Pī^n-ī^n** dialects (or **E^n-full** dialects vs. **E^n-less** dialects):[5] Pī^n-ī^n dialects do not have the nasalized mid-front *e^n*, which merges with *i^n*; whereas in Pē^n-ī^n dialects these vowels are in contrast, e.g., *ê^n-á* 〈楹仔〉 'beam; rafter', *î^n-á* 〈圓仔〉 'round dumpling'.

S4. **Tiong-siāng-téng** dialects, **Tiong-siōng-téng** dialects, and **Teng-siāng-téng** dialects:[6] Tiong-siōng-téng dialects lack historical *-iang* rime, thus *tāi-chiòng* for both 〈大將〉'high-ranking officer' and 〈大眾〉'the masses', and Teng-siāng-téng dialects lack *-iong* rime, thus *tāi-chèng* for both 〈大眾〉'the masses' and 〈大正〉'Taishō, a Japanese emperor's reign title (1911–1926)'. Whereas Tiong-siāng-téng dialects have all the *-iang, -iong, -eng* rimes, thus *tāi-chiàng* 〈大將〉'high-ranking officer', *tāi-chiòng* 〈大眾〉'the masses', and *tāi-chèng* 〈大正〉'Taishō (1911–1926)'.

S5. **Jī-gō·-la̍k** dialects, **Lī-gō·-la̍k** dialects, and **Gī-gō·-la̍k** dialects:[7] In Lī-gō·-la̍k dialects, *j-* merges with *l-*, thus *jîn-bîn* 〈人民〉 'the people' occurs as *lîn-bîn* and *joa̍h-thi^n* 〈熱天〉 'summer' occurs as *loa̍h-thi^n*. In Gī-gō·-la̍k dialects, *j-* merges with *g-* before the high-front vowel *-i* and merges with *l-* elsewhere, thus *jîn-bîn* 〈人民〉 'the people' occurs as *gîn-bîn* and *joa̍h-thi^n* 〈熱天〉 'summer' occurs as *loa̍h-thi^n*.

S6. **Kòe-ke** dialects vs. **Kè-koe** dialects:[8] The Coastal dialects' mid non-front unrounded vowel *e·* corresponds to two forms in the Inland dialects: *oe* and *e* respectively. For instance, 〈過街〉 'to cross the street' is *kè·-koe* in the Coastal dialects, and it is *kòe-ke* in Kòe-ke dialects and *kè-koe* in Kè-koe dialects. On the contrary, 〈雞髻〉 'cock's comb' is *koe-kè·* in the Coastal dialects, and it is *ke-kòe* in Kòe-ke dialects and *koe-kè* in Kè-koe dialects. There is a flip-flop of the rimes *-e* and *-oe* in the two Inland groups. Kè-koe dialects are actually derived from Marked Vowels dialects by losing the marked non-front unrounded feature of non-low vowels.

S7. **Kim-gîn-gû** dialects vs. **Kim-gûn-gû** dialects:[9] The Coastal dialects' high non-front unrounded vowel *i·* corresponds to two forms in the Inland dialects: *i* and *u* respectively. For instance, 〈煮飯〉 'to cook (a meal)' is *chí· -pn̄g* in Marked Vowels dialects, but *chí-pn̄g* in Kim-gîn-gû dialects and *chú-pn̄g* in Kim-gûn-gû dialects.

S8. **IE** dialects vs. **EI** dialects: The nucleus of *-eng* and *-ek* vary from a single vowel to different ways of breaking. They can be categorized into two groups: on-gliding (IE) and off-gliding (EI), with the single vowel nucleus variety belonging to the latter group. The phonetic realizations in IE dialects are [ieŋ/i̯eŋ/i̯ə̯ŋ] and [iek/i̯ek/i̯ə̯k], and those in EI dialects are [ɛŋ/ɛi̯ŋ] and [ɛk/ɛi̯k]. For instance, *chheng-peng* 〈清冰〉 'grated ice flavored with only syrup' is [ts^{h}ieŋ^{33} pieŋ^{55}], etc., in IE dialects and mainly [ts^{h}ɛŋ^{33} pɛŋ^{55}] in EI dialects.[10]

S9. **Ko·-p[**o^{13}**]** dialects vs. **Ko·-p[**ɤ^{13}**]** dialects:[11] On the phonetic level, [o]

[5] *Pē^n-/pī^n-ī^n* 〈病院〉 'hospital'.

[6] *Tiong-siāng-téng/tiong-siōng-téng/teng-siāng-téng* 〈中上等〉'upper-middle (class)'.

[7] *Jī-/lī-/gī-gō·-la̍k* 〈二五、六〉 '25 to 26'.

[8] *Kòe-ke/kè-koe/kè·-koe* 〈過街〉 'to cross the street'.

[9] *Kim-gîn-/kim-gûn-/kim-gîn-gû* 〈金、銀牛〉 'gold and/or silver bulls — millionaires who spent big personal money to get elected, especially as council members.'

[10] Pitch ^{33} is mid-level, and ^{55} is high-level.

[11] *Ko·-pô* 〈姑婆〉 'grandfather's sister.' Pitch ^{13} is low-rising.

corresponds to [ɤ] (/ə/) between these two groups. Although this phonetic difference is structurally insignificant, it results in different vowel systems, as shown below.

Ko͘-p[o^{13}]:	i	u		Ko͘-p[ɤ^{13}]:	i		u
	e	o			e	ə	ɔ
	a	ɔ				a	

Since there is no evidence in the 19th Century written records telling the phonetic value of the closed *o*, this feature distinction shall be ignored in the following discussions.[12]

S10. **Iâng-Category** dialects vs. **Im-Category** dialects: In Coastal dialects, Tone 7 (C2 in Chinese linguistics) words of the literary stratum have become Tone 3 (C1) words, and Tone 8 (D2) words of the literary stratum have become Tone 4 (D1) words. For instance, 〈院長〉 'dean of a college; director of a museum or hospital' becomes *i̍^{n}-tiú^{n}*, whereas it is *ī^{n}-tiú^{n}* in the Inland dialects, and 〈複雜〉 'complicated' becomes *ho̍k-cha̍p*, whereas it is *ho̍k-cha̍p* in the Inland dialects.

S11. **A1-Combination** dialects vs. **C2-Combination** dialects: In Inland dialects, Tone 5 (A2) in combination has the same pitch value as Tone 1 (A1) in combination, whereas in Coastal dialects it has the same low-level pitch value as Tone 7 (C2) in combination. For instance, in A1 dialects 〈楹仔〉 (*ê^{n}-á*) 'rafter; beam' and 〈嬰仔〉 (*e^{n}-á*) 'baby' are identical, and in C2 dialects 〈陽具〉 (*iông-kū*) 'the male reproductive organ' and 〈用具〉 (*iōng-kū*) 'utensil; apparatus; appliance' are identical.

2.2 Redundant Dialectal Features

A Marked Vowels dialect is at the same time a Nn̄g-thng dialect, a Pī^{n}-ī^{n} dialect, a Tiong-siōng-téng dialect, a Lī-gō͘-la̍k dialect, an Im-Category dialect, and a C2-combination dialect. A Nūi^{n}-thng dialect is at the same time a Pē^{n}-ī^{n} dialect, a Tiong-siāng-téng dialect, a Kòe-ke dialect, a Kim-gîn-gû dialect, a Iâng-Category dialect, and a A1-combination dialect. These bundles of isoglosses are now being broken up gradually, however.

2.3 General Features

In spite of the specific differences, all Taiwanese dialects share the following distinctive phonological features. These features are selected here for their relevance to the Japanese transcriptions and to the Taiwanese language of the alienized. They also will be referred to in various passages of this paper. Descriptions and theories of TW phonology are numerous. Here I only make a sketch of the relevant features.

G1. **Aspiration**: Voiceless stops and affricates are either aspirated or unaspirated, e.g., *chhiú* 〈手〉 'hand', *chiú* 〈酒〉 'liquor; wine'.

G2. **Voicing**: Obstruents are either voiced or voiceless, e.g., *bah* 〈肉〉 'meat; flesh', *pah* 〈百〉 '100' (contrasting aspirated *phah* 〈扑〉 'hit; strike' as in feature G1 above). Voiced obstruents are fully voiced and are lenis. Voiced stops *b-* and *g-* are in free variation with their homorganic affricate and fricative, and the voiced

[12] One could argue that since all the Japanese authors (§3.2) confused *o* and *o͘*, the phonetic value of *o* must have been [o] rather than [ə]. However, one could as well argue that there was [ə] and that the value of *o͘* was [o] rather than [ɔ], as it is now in some southern dialects.

dental affricate is in free variation with voiced dental fricative. The voiced dental stop is in free variation with lateral liquid and flap.

G3. **Nasality**: Syllables are either oral or nasalized, and nasalized syllables do not have a coda, e.g., *koa* 〈歌〉 'song', and *koa*^{n} 〈肝〉 'liver' vs. *koan* 〈關〉 'gateway; pass'. Following a nasal initial, all vowels are nasalized, e.g., *móa* [mɔ̃ã^{53}] 〈滿〉 'full to the brim'.[13] This is a phonetic assimilation.

G4. **Glottality**: Syllables are either smooth or glottalized, e.g., *pē* 〈父〉 'father' vs. *pe̍h* 〈白〉 'white', and *peng* 〈冰〉 'ice' vs. *pek* 〈逼〉 'force; press for'. Glottalized open syllables are realized as having a glottal stop final, which is spelt with an *h*.

G5. **Tones**: There are five live historical tones and two checked historical tones,[14] e.g., *kun* 〈君〉 'checkmate', *kûn* 〈裙〉 'skirt', *kún* 〈滾〉 'boiling', *kùn* 〈棍〉 'rod; stick', *kūn* 〈郡〉 'county', *kut* 〈骨〉 'bone', *ku̍t* 〈滑〉 'slippery'.

G6. **Canonical Forms:** Syllables with a nasal initial cannot have a coda (cf. G3), except for a glottal stop, which is the realization of glottality (G4), e.g., *me̍h* 〈脈〉 'pulse', but not **me̍k* or **mēng*.

G7. **Codas**: A live syllable's coda is realized in one of the three places of articulation, labial, dental, and velar, e.g., *kam* 〈柑〉 'mandarin orange', *kan* 〈矸〉 'bottle', *kang* 〈工〉 'work; labor'. A checked syllable's coda is realized in one of the four places of articulation, labial, dental, velar, and glottal, *kap* 〈合〉 'combine', *kat* 〈結〉 'a knot', *kak* 〈角〉 'horn', *kah* 〈甲〉 'an acre'. All stop finals are unreleased.

G8. **Vowel Heights**: There is a contrast between closed *o* and open *o·*, e.g., *pó* 〈寶〉 'treasure', *pó·* 〈脯〉 'withered; dehydrated'.[15]

G9. **Dental Series**: There is a contrast between dental stops and homoraganic affricates, e.g., *tián* 〈展〉 'show-off' vs. *chián* 〈剪〉 'cut; trim', and *tōa*^{n} 〈彈〉 'catapult' vs. *chōa*^{n} 〈濺〉 'spurt; gush'.

3. The Phonology of 19th Century Taiwanese Dialects

The 19th Century Taiwanese texts and dictionaries left by local bards, local Christians, Western missionaries, and Japanese military interpreters belong to four dialects corresponding to those mentioned in §2 above. They are written in *kanji* (Chinese characters), in *kana* (Japanese syllabary), or in POJ (Roman letters). The texts in *kanji* and *kana* were interpreted, reconstructed, and transliterated into POJ by the present author for the purpose of comparing with modern dialects in order to compare their historical relationships.

3.1 POJ Data

The richest sources of Taiwanese and other Hokkien data in the 19th Century are written in POJ. The most convenient Taiwan POJ data is the *Newsletters* (Church 1885) issued by the Presbyterian Church of Taiwan (台灣府城教會報, founded 1885, renamed as 台灣教會公報 later). Starting from January 1970, the *Newsletters* were ordered to be issued in Chinese language (written in *kanji*) instead of Taiwanese language (written in POJ). The ban became ineffective after the lifting of the martial law, but the *Newsletters* are still being issued in Chinese,

[13] Pitch ^{53} is high-falling.

[14] There are other TW tones that do not correspond to any other Sinitic languages.

[15] The distributions of these two vowels are not the same in all dialects, however. The *o*'s in the literary stratum are *o·*'s in the Coastal dialects. For examples see §3.4.4.

for now there are not many people left who are literate in Taiwanese, and even less people who can read POJ.[16] Beginning October 1998, sellected articles from the 19th Century *Newsletters* are occasionally reproduced in the Chinese language *Newsletters* to remind the readers of their Taiwanese linguistic and cultural heritage. I am not yet able to access the original 19th Century *Newsletters*. The data used for this paper are from the modern edition.

The language of the POJ data agrees with modern Taiwanese in every phonological feature. The dialectal phonetic phenomena not evidenced in this spelling system are nucleus breaking (S8), mid-back vowel value (S9), and tone change (S11). The only unknown general phenomenon is the phonetic nasal assimilation (G3), e.g., *miâ* 'name' and *nā* 'if' being spelt as such. Nevertheless, in the contemporary Douglas (1899) (Amoy & Taiwanese) and in Barclay's (1923) *Supplement* (Taiwanese) to Douglas (1873), these words are spelled $mi\hat{a}^n$ and $n\bar{a}^n$ respectively. It seems that there has been no agreement whether to mark nasality or not. The history of POJ shows that the treatments of nasal assimilation are not consistent.[17]

		Marking of Nasal Assimilation
1873	Douglas	+
1885	*Newsletters*	−
1899	Douglas	+
1913	Campbell	−
1923	Barclay	+

Still, it is safe to conclude that nasal assimilation occurred in the 19th Century Taiwanese and that the assimilation was treated as a redundant feature in the environment of a nasal initial by the *Newsletters* and by Campbell (1913).

3.2 Kana Data

Our 19th Century data of the Old Standard prepared by the Japanese is *Taiwanese* (臺灣語) by Tauchi Yaokuma (田內八百久萬), printed in November 1895 (5 months after Japanese takeover of Taiwan). The only 19th-century Common TW *kana* data available is *Taiwanese for Servicemen* (軍人用臺灣語) by Matano Kazuyoshi (俣野和吉) and published in 1897. The term "common" is dubbed on the basis of the present day status of this dialect group. There is no information on the extent to which the dialect prevailed. The data of the Northeastern dialects in the 19th Century also has only a single source, *Taiwanese Conversation Primarily for Military Use* (軍隊主用日臺會話) by Maeda Tetsunosuke (前田鐵之助), printed in June 1900. All these data are transcribed in *kana*, but the transcription systems vary.

The following is a brief description of the three dialects reconstructed from these texts. Emphases will be placed on the problems raised by *kana* transcriptions. I will begin with individual Japanese treatments of TW general features to see how much Taiwanese phonology has changed or how steadfast it has been during the past century. Then I will match these dialects with the language of the *Newsletters* and with modern specific dialect features.

In all the figures below, the romanized syllables (in alphabetical order unless for highlighting) preceding the *kana* are equivalents of what the *kana* were intended to represent. The romanized syllables following the examples are modern dialectal forms in POJ. The *kanji* are original in the texts; that which cannot be processed by the computer are either substituted by a variant, if any, or left out. The symbol | indicates lengthening, and reduced *kana* symbolizes less prominence (with many typographical mistakes). These authors' accuracy will be judged according to modern TW for easy discussion.

[16] Taiwanese have been written in *kanji* (continuing Teochew and Hokkien tradition, since before 1566), in POJ (continuing Hokkien tradition, since 1832), and in a combination of these (since 1977).

[17] The inconsistency is also revealed in the *kana* data (§3.2) and in the writing of modern POJ users.

3.2.1 Tauchi 1895 (*Taiwanese*)

In Tauchi's transcriptions, the indication of aspiration distinction (G1) only applies to affricates but not stops, e.g.,

Aspirated	chai	ツアイ	現在 'now'	hiān-*chāi*
	chiu(h)	ツィウ	酒 'liquor; wine'	*chiú*
	chun	ツウ|ン	時候 'time; moment'	sî-*chūn*
Unaspirated	chhai	チアイ	菜 'vegetable'	*chhài*
	chhiu(h)	チユウ	秋 'autumn'	*chhiu*
	chhun	チユン	春 'springtime'	*chhun*
Asp./Unasp.	k(h)un	クン	滾 'boiling'	*kún*
			芹菜 'celery'	*khûn*-chhài
	p(h)au(h)	パウ	麵包 'bread'	mī-*pau*
			泡 'make tea'	*phàu*
	t(h)au	タウ	中午 'noon'	ji̍t-*tàu*
			起頭 'beginning'	khí-*thâu*

Whereas aspiration distinction can be a problem for Japanese speakers, voicing is not. Tauchi and all the authors clearly distinguished TW voiced and voiceless initials. E.g.,

bau(h)	バウ	卯時 '5–7 a.m.'	*báu*-sî
p(h)au(h)	パウ	麵包 'bread'	mī-*pau*
be(h)	ベ	尾 'tail'	*bé*
p(h)e(h)	ペ	把 'bundle'	*pé*
go·	ゴ|	正午 'noon'	*gō·*
k(h)o·	コ	菰 'mushroom'	*ko·*

Glottalality (G4) in open syllables was either not noticed or interpreted as length. That is, golttality is either rendered identical to smoothness or even longer than smooth syllables! E.g.,

Identical	choe(h)	ツオエ	若干 'how much'	jōa-*chōe*
			截 'cut short'	*choe̍h*
	gia(h)	ギア	夯 'carry heavy stuff'	*giâ*
			滿足 'enough'	kàu-*gia̍h*
	phau(h)	パウ	泡 'make tea'	*phàu*
			雹 'the hail'	*pha̍uh*
Longer	a(h)	ア	鏢仔 'a watch'	pió-*á*
		ア|	鴨 'duck'	*ah*
	sa(h)	サ	紅鯊 '*Pampus argeneus* (fish)'	âng-*sa*
		サ|	'cook by boiling'	*sa̍h*
	se(h)	セ	脫鯊 'sole (fish)'	thoah-*se*
		セ|	雪 'snow'	*seh*

Tones (G5) are not marked as such, though they sometimes seem to be also felt as vowel length. It seems that Tauchi heard syllables with low rising contour (Tone 5, or A2), low level pitch in combination (Tone 7, or C2), or mid level pitch in isolation (Tone 7), as longer. Again, he is not consistent. In the next figure, all other pitches and contours are put in parentheses. Items above the double lines are examples of the seeming regularity, and those below the double lines are counterexamples.

low-level comb.	au(h)	アウ|	後年 'year after next'	*āu*-nî
(low-falling)		アウ	臭 'rotten'	*àu*
low-rising	hu	フウ	魚 'fish'	*hû*
(low-falling)		フ	吩咐 'tell; instruct'	hoan-*hù*
low-rising	hun	フウン	雲 'cloud'	*hûn*
(high-level)		フン	黃昏 'dusk'	hông-*hun*
(high-falling)		フン	麵粉 'flour'	mī-*hún*
mid-level iso.	k(h)au(h)	カアウ	厚 'thick'	*kāu*
(high-falling comb.)		カウ	滿足 'enough'	*kàu*-gia̍h
mid-level iso.	o·	オ|	芋 'taro'	*ō·*
(mid-level comb.)		オ	烏仔魚 'snakehead (fish)'	*o·*-á-hî
(high-level comb.)	he(h)	ヘ	火雞 'turkey'	*hé*-koe
(low-falling)		ヘ|	歲 'year of age'	*hè*
low-rising	lau(h)	ラウ	流 'flow'	*lâu*
mid-level iso.		ラアウ	漏 'to leak'	*lāu*
low-rising	sin	シ|ン	星辰 'stars'	chhi^{n}-*sîn*
mid-level com.	sin	シイン	辰時 '7 a.m. to 9 a.m.'	*sîn*-sî
mid-level com.		シン	申時 '3 p.m. to 5 p.m.'	*sin*-sî
low-level comb.	t(h)oa(h)	トア	大薯 'yam'	*tōa*-chû
(high-falling comb.)		トオア	脫鯊 'sole (fish)'	*thoah*-se

The above examples show that Tauchi marked some TW segmentals as more prominent than regular. He also marked some others as less prominent than regular.

Normal	chai	ツアイ	現在 'now'	hiān-*chāi*
Less Prominent	chai	ツァイ	在早 'before; previously'	*chāi*-chá

According to Tauchi's transcription system, nasalized vowels should be marked with a reduced ン, but in the majority of cases it appears as a normal-sized ン, which indicates *-n* or the *-n* in *-ng* (G3, G7). In other words, the segmental nasal is transcribed with ン, and vowel nasality with both ン and ン.

chhi^{n}	チン	生 'raw'	*chhi*^{n}	occurs once
	チン	生 'raw'	*chhi*^{n}	occurs twice
t(h)i^{n}	チン	甜 'sweet'	*ti*^{n}	occurs once
	チン	甜 'sweet'	*ti*^{n}	occurs once
	チン	天 'sky'	*thi*^{n}	occurs 15 times
	チン	添 'add'	*thi*^{n}	occurs 7 times
chhin	ヂン	稱重 'weigh'	*chhìn*-tāng	
t(h)in	チイン	斟 'pour (tea)'	*thîn*	

It is more likely that Tauchi confused the two sounds than that the typesetters failed to distinguish the *kana*'s sizes, for there is no instance where the segment *n* is written with a reduced ン. No matter what, we understand that many of the normal-sized ン 's also represent nasalization. This understanding makes it possible to interpret the transcriptions of syllables with a nasal initial consonant.

me^{n}	メエン	明年 'next year'	*mê*-nî
na^{n}	ナン	電 'lightning'	sih-*nà*

The symbol indicates nasality, not coda. As such, there were no syllables like **miân* or **nàn* (G6). Tauchi observed that vowels following a nasal initial are nasalized, and he marked it accordingly, but he confused the suprasegmental symbol with the segmental.

As for other final nasals, Tauchi was able to make unambiguous distinctions. The following figure includes all three nasal codas.

am	アム	汫 'cooked rice-water'	*ám*
an	アヌ	安更 '7–9 p.m.'	*an*-ki^{n}
ang	アンヶ	紅柿 'persimmon'	*âng*-khī

Unreleased final stops (G7) was also perceived. The Japanese way of indicating *sokkuon* (checked syllables) was employed, i.e., using a reduced ッ. However, Tauchi was handicapped by the Japanese orthography. He could only deal with the dental stop final by transcribing it with a reduced ッ. The other final stops are transcribed in normal-sized *kana*.

sip	シプ	濕 'damp'	*sip*
sit	シッ	失日 'solar eclipse'	*sit*-ji̍t
sek	セク	熟 'cooked'	*se̍k*

Finally, closed *o* and open *o·* are not distinguished (G8), e.g.,

chho(h)	チオ	剉 'to mince'	*chò*
chho·	チオ	醋 'vinegar'	*chhò·*
k(h)o(h)	コ	糕丕 'coffee'	*ko*-pi
k(h)o·	コ	菰 'mushroom'	*ko·*
o(h)	オ	筒蒿 'crown daisy chrysanthemum'	tang-*o*
o·	オ	烏仔魚 'snakehead (fish)'	*o·*-á-hî

and dental stops and dental affricates are identical before -i and -u (G9), e.g.,

ch(h)i^{n}	チン	星 'star'	*chhi*^{n}
t(h)i^{n}	チン	天 'sky'	*thi*^{n}
ch(h)iu	チユウ	秋 'automn'	*chhiu*
t(h)iu	チユ	丑時 '1–3 a.m.'	*thiú*-sî

3.2.2 Matano 1897 (*Taiwanese for Servicemen*)

Matano (1897) represents the Common Inland Taiwanese. The original text was written from top to bottom. Reduced *kana* are lined up with normal-sized ones to the right in the typesetting. In many instances they are not lined well, so when smaller normal-sized *kana* line up with larger reduced ones, it is difficult to see the compiler's intention.

Phonemically, the compiler clearly distinguished *t(h)i-* from *ch(h)i-* and *t(h)u-* from *ch(h)u-*. He also distinguished the functions of the *kana* チ (*chi-/chhi-*) and ツ (*chu-/chhu-*) almost all the time (G9).

テ^{o} = t(h)i	テ = t(h)e
チ^{o} = t(h)i	チ = ch(h)i
ト^{o} = t(h)u	ト = t(h)o/t(h)o·
ツ^{o} = t(h)u	ツ = ch(h)u

However, whereas Tauchi distinguished the aspirated affricate from its unaspirated counterpart, Matano did not make any aspiration distinction at all (G1). And like Tauchi, he did not indicate tones (G5). He tried to distinguish *o* and *o·* by using ヲ for the former (and ヨ for *io* in many cases) and オ or no vowel symbol for the latter (G8), but most of the time he either did not make the distinction or made distinctions which did not occur.

ch(h)oa	ツホ|ア	'to lead the way'	*chhōa*
ch(h)oa^{n}	ツヲアン	泉 'spring; well'	*chôa*^{n}
ho	ホヲ	河 'river'	*hô*
	ホ|	這號 'this (kind)'	chit-*hō*
t(h)o	ト	何位 'where'	*tó*-ūi
t(h)o·	ト	路途 'way; journy'	lō·-*tô·*

Furthermore, like Tauchi, he heard different degrees of prominence of the segmentals. He also marked the degrees of prominence of nasality (G3) and glottality (G4). He succeeded in transcribing all unreleased stop finals with a reduced *kana*.

k(h)ap	カプ	共 'and; with'	*kap*
p(h)at	パッ	別位 'other place'	*pa̍t*-ūi
k(h)ak	カク	角半 '15 cents'	*kak*-pòa^{n}

Nevertheless, his transcriptions of others are inconsistent, i.e., the same TW segmentals or suprasegmentals are sometimes transcribed as long or prominent, sometimes not.

Vowel	ch(h)ai	ツアイ	地方 'place'	só͘-*chāi*
		ツア|イ	所在 'place'	só͘-*chāi*
	e	ヱ/エ	的 '(particle)'	*ê*
		エヘ	下淡水 '(place name)'	*Ē*-tām-chúi
		ヱ|	能 'be able; likely'	*ē*
	k(h)a	カ	加苳 '(a tree)'	*ka*-tang
		カハ	腳 'foot; leg'	*kha*
	t(h)am	タム	淡水 '(place name)'	*Tām*-chúi
		タ|ム	淡水 '(place name)'	*Tām*-chúi
	u	ウ	有 'have'	*ū*
		ウ|	有 'have'	*ū*
Consonant	m	ゥム	不 'not'	*m̄*
		ウム	乎 'or not'	*m̄*
Nasality	go͘	ゴ	五 'five'	*gō͘*
		ンゴ	五 'five'	*gō͘*
	na	ナハ	若 'if'	*nā*
		ナ|ン	竹林 'bamboo grove'	tek-*nâ*
	ni	ニ^{o}	如此 'like this'	án-*ni*
		ニィン	年 'year'	*nî*
Glottality		カハ	與 'and; with'	*kah*
		カハ	較多 'more (in number)'	*khah*-chē
	mih	ミヒ	甚麼 'what'	sím-*mih*
		ミヒ	甚麼 'what'	sím-*mih*
	p(h)ah	パハ	百 'hundred'	*pah*
		パハ|	打 'beat; hit'	*phah*

Matano also recorded junctures. In the texts, junctures are marked with a small circle to the bottom (reproduced as to the right here) of the *kanji* concerned. Circles in parentheses are where the presence of junctures seems strange. Most of his junctures overlap with tones in isolation. However, it is very likely that he was not recording tones in isolation, because at the end of each sentence there is no circle.

若有白賊講○我就要殺你(○)性命 (*Nā ū pe̍h-chha̍t-kóng, góa chiū ài thâi lí sè^{n}-miā.*)
'If you lied, I'll kill you.'

3.2.3 Maeda 1900 (*Taiwanese Conversation Primarily for Military Use*)

Maeda was the only person who was unable to distinguish final *-n* from final *-ng* (G7).

an	アン	年限 'fixed number of years'	nî-*ān*
ang	アン	夫妻 'husband and wife'	*ang*-bó͘
ch(h)ian	チェン	淺 'shallow'	*chhián*
ch(h)eng	チェン	銃架 'rifle rack'	*chhèng*-kè

Like the other authors, he did not record aspiration (G1) and tones (G5) and did record the degrees of sound prominence. Except for checked syllables ending in *-p, -t, -k*, his recording of prominence is inconsistent.[18]

a	ア	牌仔 'card'	pâi-*á*
	ア|	也 'also'	*ā*
ang	アン	夫妻 'husband and wife'	*ang*-bó·
	ア|ン	紅色 'red'	*âng*-sek
bin	ビン	對面 'in front'	tùi-*bīn*
	ビ|ン	後面 'behind'	āu-*bī*
ch(h)eng	チェン	銃架 'rifle rack'	*chhèng*-kè
	チエン	清氣 'clean'	*chheng*-khì

On the other hand, like Matano, he was successful in treating the dental series (G9). He is also successful in marking nasality (G3). Dental stops preceding *i* and *u* in this book are marked by overscoring homorganic affricate symbols,[19] e.g.,

ch(h)ioh	チョ	蓆 'sleeping mat'	*chhio͡h*
t(h)ioh	ㇵョ	著 'hit target'	*tio͡h*
ch(h)ui	ツイ	水 'water'	*chúi*
t(h)ui	ㇵイ	對中 'center'	*tùi*-tiong

and dental affricates preceding *e, a, o, o·* are marked by overscoring homorganic affricate symbols, e.g.,

ch(h)e	ㇶエ	坐轎 'to travel by sedan'	*chē*-kiō
t(h)e	テエ	地板 'floor'	*tē*-pán
ch(h)ai	ㇲイ	所在 'place; location'	só·-*chāi*
t(h)ai	タイ	事情 'affair; matter'	*tāi*-chì
ch(h)o	ㇷウ	做 'do; make'	*chò*
t(h)o	トウ	顛倒 'put upside down'	tian-*tò*
ch(h)o·	ㇷオ	祖公 'male ancestor'	*chó͘*-kong
t(h)o·	トオ	腹肚 'abdomen; stomach'	pak-*tó͘*

Nasality is treated as a non-segmental feature. It is sometimes marked in the transciptions with a reduced reduplication of the *kana*. However, most of the time nasalized syllables are transcribed identical to oral syllables. No matter whether nasality is transcribed, the feature is marked with a small triangle, or a small target (⊙, mainly for Tone 2, i.e., B1 in Chinese linguistics), to the left side of the *kanji*, e.g.,

ch(h)ia	チア	火車 'train'	hóe-*chhia*
ch(h)ia^{n}	チア	△倩 'hire'	*chhià*^{n}
ch(h)iu	チウ	手 'hand'	*chhiú*
ch(h)iu^{n}	チウゥ	⊙搶劫 'rob'	*chhiú*^{n}-kiap
hia^{n}	ヒアァ	△兄弟 'borthers'	*hia*^{n}-tī
	ヒア	大△兄 'elder brother'	tōa-*hia*^{n}

There are *kanji* that are not marked with a triangle or a target for nasality, but they are rare and should be treated as a result of typographical mistakes.

Maeda tried to capture glottality (G4) in his transcriptions by treating it as a less prominent segmental.

[18] The typesetting of Maeda (1900) does not keep a clear distance between normal-sized and reduced *kana*. It makes it very difficult to read correctly, especially between normal-sized エ and reduced ㇶ. As a result, I could have committed many mistakes trying to interpret the text.

[19] This way of distinction had since been used till the Japanese left Taiwan in 1945.

se	セエ	洗 'wash'	*sé*
seh	セェ	雪 'snow'	*seh*
a	ア	牌仔 'card'	pâi-*á*
ah	アァ	鴨 'duck'	*ah*
ko	コオ	竹竿 'bamboo pole'	tek-*ko*
oh	オォ	學 'learn'	*o̍h*

However, he failed to hear it oftentimes and confused it with final *-t* or *-k* sometimes.

He also tried to distinguish closed *o* from open *o·* with little success (G8). In the following figure, items above the line show his success, and those below the line show his failure.

ho	ホウ	號令 'verbal command'	*hō*-lēng
ho·	ホオ|	雨傘 'umbrella'	*hō·*-sòa^{n}
bo	ボウ	拳頭拇 'fist'	kûn-*thâu-bó*
bo·	ボウ	翁某 'husband and wife'	ang-*bó·*
t(h)o	トウ	顛捯 'upside down'	tian-*tò*
	トオ	跋倒 'tip and fall'	poa̍h-*tó*
t(h)o·	トオ	腹肚 'abdomen; stomach'	pak-*tó·*

Like Matano, Maeda recorded junctures. And like Matano, he recorded them where there seemed to be no prominence.

無了了○去年(○)被土匪燒去了 (*Bô-liáu-liáu. Kū-nî hō· thó·-húi sio-·khì liáu.*)[20]
'There is none left. They were burned by the bandits last year.'

3.2.4 The Emics and Etics in the Kana Data

Without care scrutiny, the *kana* transcriptions would make one wonder whether the compilers recorded dialects that do not conform to modern Taiwanese general features or their trascriptions are imperfect. A Sinitic language without aspiration and tones is unimaginable. A Hokkien in the end of the 19th Century without glottality is also impossible, for documents before and after these works show open syllable glottality as universally distinctive. Therefore, one can be sure that the lack of aspiration (G1), glottality (G4) and tones (G5) in these transciptions is due to the authors' inability to hear them at all; or if they heard them, they did not hear them correctly; or if they heard them correctly, they lacked a way to present them correctly. It shows that they suffered great limitations by their native language and orthography.

Japanese speakers are generally not senstive to some contrasts in Taiwanese. Except for trained ears, they sometimes captured the contrasts and sometimes missed them. And except for gifted minds, they may not consider what they heard as distinctive in nature. This understanding explains the lack or inconsistence in transcribing TW general features, especially G1, G4, and G5. Besides, Japanese does not distinguish close *o* and open *o·* (G8), so the interpreters did not distinguish them or had difficulties distinguishing them. Japanese dental stops and dental affricates were not in contrast phonemically, so Tauchi had difficulties distinguishing them (G9). On the other hand, Japanese speakers are sensitive to segmental and pitch prominences, whereas Taiwanese speakers are not.[21] In other words, the Japanese interpreters were sensitive to what TW speakers uttered in free variation. This understanding

[20] I do not know whether it is Maeda's Taiwanese language helper who was reading the *kanji* 了 or it is the particle *liáu* actually occured in the 19th Century TW. In modern Singaporean Hokkien, the particle *liáu* without tonal neutralization was attested during my stay there between 1973 and 1979. It was the most common particle equivalent to TW *·a* or *·lo·*.

[21] TW speakers take pitch hights to be tonal differences (Tiu^{n} J. 1993). Although there are *-p, -t, -k* codas in TW, many TW speakers have difficulties in pronouncing Japanese checked syllable before an intervocalic obstruent cluster.

explains the inconsistence in transcribing TW as having prominence contrasts. It also explains the alternative transcriptions. They show that the interpreters sometimes heard some features and sometimes did not hear them. Segmental prominence in TW cannot be proved to be distinctive in 19th Century Taiwanese. In the 19th Century POJ data we do not find prominence contrasts either.

All these authors noticed the nasal assimilation of vowels following a nasal initial. That is, all vowels following a nasal initial are nasalized (G3). This phenomena is discussed in §3.1 and is supported by the *kanji* data to be discussed in §3.3. Matano further noticed that TW voiced labial stop was different from its Japanese counterpart (G2). The TW feature that he noticed was probably the lenis characteristic mentioned in the statement of G2 in §2.3. He transcribed the voiced labial stop with a voiced symbol (two dots) at the upper right corner of a nasal *kana* rather than the orthographic way of distinguishing Japanese voiced stops from their voiceless counterparts. The following show a comparison of the two different transcriptions.

Syllabic Type	Taiwanese	Japanese
bin	ミン	ビン
bo	モ	ボ

He also transcribed initial TW voiced velar stop sometimes as ンゴ and sometimes simply as ゴ. Since ミ, モ, and ン symbolize nasality in Japanese, one wonders whether Matano is dealing with slight nasalization in syllables with a voiced stop initial. Nevertheless, there is no further evidence.

The third subphonemic feature observable is nucleus breaking (S8). Maeda (1900) transcribed syllables with the *-eng* rime or the *-ek* rime inconsistently. The first *kana* transcription in each pair below indicates nucleur breaking; the second one does not.

k(h)eng	キェン	洗浴間 'bathroom'	sé-e̍k-*keng*
	ケェン	浴間 'bathroom'	e̍k-*keng*
t(h)ek	チェク	竹竿 'bamboo pole'	*tek*-ko
	テク	敵兵 'enemy soldier'	*te̍k*-peng

After eliminating the noises in trascriptions, we find that these dialects conform to the general features of modern Taiwanese. Summing up the transcriptions in the three texts and comparing them with modern TW general features, we made a list as the following showing the known general features of 19th Century Taiwanese. In the list, phonetic features are also entered, including nasal assimilation, the unreleased characteristic of stop finals, as well as segmental and suprasegmental prominences, which is enumerated *ad hoc* as General Feature 10. A + means conformation; a (+) means partial conformation; a − means no distinctions made; a ± means confusion.

		Tauchi	Matano	Maeda	Confirmed Features
G1.	Aspiration	(+)	−	−	+
G2a.	Voiced vs. Voiceless	+	+	+	+
G2b.	Lenis Voiced Stops	−	+	−	+
G3a.	Nasal vs. Oral	+	+	+	+
G3b.	Nasality vs. Coda	±	+	+	+
G3c.	Nasal Assimilation	+	±	+	+
G4.	Glottality	−	−	±	
G5.	Tones	−	−	−	
G6.	Canonical Forms	+	+	+	+
G7a.	*-n* vs. *-ng*	+	+	−	+
G7b.	Unreleased Stop Finals	+	+	+	+
G8.	*o* vs. *o·*	−	±	±	
G9.	*ch(h)i/ch(h)u* v.s. *t(h)i/t(h)u*	−	+	+	+
G10.	Prominence	±	±	±	

All the confirmed features conform to modern general features. All others except for prominence are also confirmed by the POJ data. As such, the 19th Century TW dialects had exactly the same phonological distinctiveness and specific phonetic features as modern ones.

3.3 Kanji Data

The only dated 19th Century TW data written in *kanji* known to the author is an improvised ballad composed by a Taipei minstrel self-titled Hiáu-sîn the Minstrel (曉神[郎]君兄), *The Ballad of the Democratic Republic of Taiwan* (台省民主歌/民主國歌), published in 1897. The present statement of the minstrel's and scribe's dialect is based on Tiu^{n} J. (1999).

The reconstruction of the language of the *Ballad* can only be done on the bases of *kanji* substitution and riming. For instance of substitution, 〈人〉 (*jîn* in Common TW) is written instead of 〈憐〉 for *khó·-lîn* 'pitiable', thus 〈可人〉, which indicates that this is a Lī-gō·-la̍k dialect (S5). For instance of riming, 〈冥、天、鄭、錢〉 (*mê, thi^{n}, tē^{n}*, and *chî^{n}* respectively in Common TW) rime with each other, which indicates that it is a Pī^{n}-ī^{n} dialect (S3) and that these four syllables were meant to be read *mî, thi^{n}, tī^{n}*, and *chî^{n}* respectively.

Kanji substitution and riming cannot tell us about aspiration (G1) and voicing (G2), and riming tells nothing about tones (G5). There are also features that substitution and riming could have shown, but they are not available in the present text, such as glottality (G4) and the syllabic nasals (S2). Nevertheless, if this dialect is proved to be a Coastal dialect, the discussions of many other dialectal features become redundant (cf. §2.2).

The following is a check list of the known General features with some examples. Feature G9 (the dental series) is ignored here, for it is in fact not necessary in discussing TW phonology, as we have concluded from the examinations of the *kana* data.

G3. **Nasality**: Nasal syllables are in contrast with oral ones, thus 〈州、遊、手、休〉 (*chiu, iû, chhiú, hiu*) rime with each other, and 〈鄉、場、想、洋〉 (*hiu^{n}, tiû^{n}, siū^{n}, iû^{n}*) rime with each other. There are only two exceptions: 〈備、星、死、伊〉 (*pī, chhi^{n}, sí, i*) and 〈是、年、字、伊〉 (*sī, nî, lī, i*).[22] The latter set of riming, together with other sets such as 〈淺、錢、天、年〉 (*chhí^{n}, chî^{n}, thi^{n}, nî*) and 〈行、名、定、迎〉 (*kiâ^{n}, miâ, tiā^{n}, ngiâ*), also reveal that the vowels are nasalized following a nasal initial but such nasalization is not always felt by native speakers (cf. §3.1).

[22] For the riming between oral and nasal syllables, see Tiu^{n} J. (1989).

G4. **Glottality**: Glottality with a coda is always felt as the coda and rimed as such, e.g., 〈國、祿、福、毒〉 (*kok, lo̍k, hok, to̍k*); otherwise, it is ignored in singing, which see Tiu^{n} J. (1989), e.g., 〈到、灼、號、落〉 (*tò, to̍h, hō, lo̍h*). It is worth noting that in all except one case, i.e., 〈鐵、伊、微、喜〉 (*thih, i, bi, hí*), all the glottolized syllables riming with smooth open syllables are Tone 8 (D2 in Chinese linguistics) syllables, which is phonetically long in Coastal dialects. The foregoing cannot prove that the language of the *Ballad* has a contrast between glottal and smooth open syllables, however.

G5. **Tones**: Riming does not require having the same tones. As such, tonal traits can only be solicited from *kanji* substitutions. Since it involves dialectal features, it will be discussed in §3.4.4.

G7. **Codas**: Rimings in the *Ballad* show the language has a *-k* final, as seen in 〈國、祿、福、毒〉 above, and all the nasal codas. However, the minstrel was very likely an assimilated non-Hokkien. In a few places he confused *-m, -n* and *-ng*, namely, 〈陣、謹、情、面〉 (*tīn, kín, chêng, bīn* in TW), 〈淨、兵、淨、民〉 (*chēng, peng, chēng, bîn* in TW), 〈清、燈、陣、心〉 (*chheng, teng, tīn, sim* in TW), and 〈先、前、兵、然〉 (*sian/seng, chiân/chêng, peng, jiân* in TW). Nevertheless, the statement is not conclusive, for modern Taiwanese pop song writers also confused the places of articulation sometimes (cf. Paul Li 1986).

G8. **Vowel Hights**: Except for the literary stratum words corresponding to words with an *-o* vowel in other dialects (see §3.4.4), non-high back rounded vowels correspond to other dilaects regularly. In other words, closed *o* and open *o·* appears to be in contrast in the *Ballad*, e.g., 〈報、落、號、和〉 (*pò, lo̍h, hō, hô*) and 〈步、路、苦、部〉 (*pō·, lō·, khó·, pō·*).[23]

3.4 Dialects Now and Then

The four 19th Century dialects examined above not only conform to the general phonological features but also are identical with the four modern main dialects as far as the data are concerned. We will state their dialectal identity indivisually below.

3.4.1 The Old Standard Dialects

The Old Standard dialect group includes the language of the Hokkien *Bible*. Because of its great similarity to Amoy, this variety of Taiwanese was deemed as standard by the Japanese administrators and scholars during the complete time span of Japanese rule over Taiwan from 1895 to 1945. Even down to the 1970's, some local and foreign lexicographers still considered the Old Standard as "the" Taiwanese. It has been the artificial language of the Church and the natural language of the residents of Tōa-tiū-tiâ^{n} 〈大稻埕〉 where foreign trade firms in Taipei concentrated.

Comparing its known features to the dialect group of the *Bible*, of some *Newsletters* contributors and of Tauchi (1895), we find that they are identical with each other. They belong to the same dialect group with the following specific features. Nucleus breaking (S8) is not recorded in the data and therefore is not listed here. Neither is S11.

S1. Unmarked Vowels dialect.

S2. Nn̄g-thng dialect.

S3. Pī^{n}-ī^{n} dialect.

S4. Tiong-siōng-téng dialect.

[23] A carpet search for Coastal words with closed *o* and open *o·* is necessary for future studies.

S5. Jī-gō͘-la̍k dialect.

S6. Kim-gûn-gû dialect.

S7. Kè-koe dialect.

S10. Iâng-category dialect.

3.4.2 The Common Inland Dialects

The *Newsletters* are being published in Tainan. The 19th Century language of Matano (1897) and many *Newsletters* contributors are identical to modern Tainan dialect in phonology, except that there are traces showing that some contributors were affected by the Old Standard lexicon to different degrees.

The general features of the Common Inland dialect are as follows. Nucleus breaking and tone change are also not recorded and thus not listed here.

S1. Unmarked Vowel dialect.

S2. Nn̄g-thng dialect.

S3. Pē^{n}-ī^{n} dialect.

S4. Tiong-siōng-téng dialect.

S5. Jī-gō͘-la̍k dialect.

S6. Kim-gîn-gû dialect.

S7. Kòe-ke dialect.

S10. Iâng-category dialect.

3.4.3 The Northeastern Dialects

Maeda's dialect is one of the Nūi-thng dialects. Its specific distinctive features are identical to those stated in §2.2, that is,

S1. Unmarked Vowel dialect.

S2. Nūi-thng dialect.

S3. Pē^{n}-ī^{n} dialect.

S4. Tiong-siāng-téng dialect.

S5. Jī-gō͘-la̍k dialect.

S6. Kim-gîn-gû dialect.

S7. Kòe-ke dialect.

S8. IE dialect.

S10. Iâng-category dialect.

3.4.4 The Coastal Dialects

As it is already stated in §2.1, modern Coastal dialects are Marked Vowels dialects (S1). In the *Ballad*, there are no cases of a marked vowel syllable riming with an unmarked vowel syllable, and there is only one instance (4 lines) where marked vowel syllables rime with each other.

火車卻客吹水螺　lê·
卜放盡磅著添火　hé·
大甲溪中造難過　kè·
并無賢人可收尾　bé·

In spite of this meager evidence, I conclude that the *Ballad* was composed in a Coastal dialect. The conclusion is supported by other pieces of evidence. First of all, the redundant features of Feature S1 are present in the *Ballad* (§2.2). Secondly, the merger of *-o* rime words of the literary stratum with the *-o·* rime words, which was mentioned earlier, is another Coastal feature. Such merger is witnessed by *kanji* substitution and riming in the *Ballad*, e.g., writing 〈路漢〉 (*lō·* and *hàn* in other dialect groups) for *lô·-hàn* 〈羅漢〉 (*lô-hàn* in other dialects) 'unmarried tramp', and riming 〈勞〉 with 〈埔〉 (*lô* and *po·* respectively in other dialects.). Thirdly, in the 〈路漢〉 case above, Tone 5 (A2) in combination is identical to Tone 7 (C2) in combination, i.e., $lô^{\cdot 13}$ + *hàn* → $lô^{\cdot 21}$*-hàn*, which clearly shows that this is a Coastal C2-dialect (S11). Fourthly, the minstrel borrowed 〈貝心〉 (*pòe* and *sim* in other dialect groups) for *pòe-sim* 〈背心〉 (*pōe-sim* in other dialects) 'betray', which is another Coastal behavior (S10).

The known features of the language of the *Ballad* are identical with modern Marked Vowels dialects as the following.

S1. Marked Vowels dialect.

S3. $\text{P}\bar{\text{ı}}^{\text{n}}$-$\bar{\text{ı}}^{\text{n}}$ dialect.

S4. Tiong-siōng-téng dialect.

S5. Lī-gō͘-la̍k dialect.

S6. Kim-gûn-gû dialect.

S7. Kè-koe dialect.

S10. Im-Category dialect.

S11. C2-Combination dialect.

4. Taiwanese Phonology of the Alienized

In over a century of smooth transition, Taiwanese does not appear to have changed phonologically as evidenced by known language data. However, as the transition is being interrupted, drastic changes are occurring among a fraction of the TW speaking population. This group of people mainly consist of youth around thirty years old and younger. There are also some middle-aged individuals who speak the same vairety of deviate Taiwanese. No matter their ages, they are the same products of the Chinese National Language policy and education. Many of them either acquired the common language first and learned their mother tongue later or lost their mother tongue after receiving formal education.

In the following passages I shall give a short account of the language policy and education, their demographic outcome, and the linguistic features of the language of the alienized.

4.1 Pro-Chinese Language Politics and Its Aftermath

Immediately after the Nationalist Chinese occupation of Taiwan in 1945, the Chinese governor announced his determination to promote Chinese in Taiwan. Japanese reading material was banned 6 months later. Japanese music records were banned in 1947. Formosan Austronesians, who used Japanese as the only lingua franca, were discouraged from speaking Japanese, and later in 1958 Japanese was forbidden on campuses. "Dialects" began to be forbidden on campuses as early as 1951. Other oppressions on Taiwan languages followed soon after. More and more limitations on "dialect" use were added. POJ was suppressed and then banned. In the stark 1970's, Chinese was made the only language in public places. Taiwanese programs on TV were drastically reduced, finally to two songs per day.[24] The *Bible* in local languages were

[24] There were no Hakka programs, and there have never been Formosan Austronesian programs.

confisticated. In the 1980's the persecutions continued almost toward the end of the decade. A language law was drafted to outlaw all indigenous languages, decreeing that only Chinese was allowed even in private gatherings. It was later withdrawed.

During the final decade of the 20th Century, Taiwan's language politics turned a new page. The KMT government finally accepted indigenous languages, as well as English, into primary school curriculum reluctantly, but more emphasis has been placed on foreign languages than on mother tongues. In 1992, one of the prefectures governed by the opposition democratic party began teaching indigenous Taiwan languages as a choice item of the two-hours-per-week extracurricular activities alotted by the Ministry of Education to primary schools. A few opposition prefectures followed suit. The Ministry later acquiesced in the teaching of Taiwanese and other indigenous languages during extracurricular hours. According to its guidelines (Ministry of Education n.d.), beginning 1998 and starting from the third grade up to the sixth grade, ethnic language can be taught as a part of "Homeland Studies", an extracurricular activity, up to one hour a week in every other week. No teachers training was planned by the Ministry. On the other hand, arround 1991, the Ministry was still vowing that teaching English at primary schools was absolutely impermissible. However, just as the idea of *learning mother tongue in schools* is gaining public acceptance in spite of the poor teaching results, the Ministry suddenly announced in 1997 that, beginning Fall 2001, English would be taught at primary schools starting from the fifth grade, 2 regular hours per week. Teachers training started in the summer of 1999. Some thinking Taiwanese see the Ministry's new attitute toward English as a measure to undermine the feeble indigenous language teaching. Under the pressure of concerned groups and scholars, the Minister of Education announced in July 1999 that the Ministry will make plans to make ethnic language a required course either from the first grade or from the third grade to the ninth grade, 2 regular hours per week, beginning Fall 2001. Under further attacks, the Ministry finally agreed to starting from the first grade, but still without teachers training. The language right tug-of-war is still going on.

In the 55 years of vigorous indoctrination and assimilation, the government and media made most Taiwanese see Chinese as not only the *de facto* and *de jure* language of (the Republic of China on) Taiwan but also the *devine* language of the country. They agree with the government that Taiwanese, Hakka, and all the Austronesian languages in Taiwan are "dialects". Dialects have to yield to the national "language". This Chinese value of language urges parents not to pass on their mother tongue. In spite of the changes in the 1990's, parents facing the so-called "national" language (Chinese), which has been taught and used from kindergarten to graduate school tens of hours per week, and the international language (English), which everybody is eager to master, continue to prefer their children not to "waste" time learning their ethnic language. More and more children are being deprived of the opportunity to acquire their ethnic language. Alienized Taiwanese are on the increase at high speed. As such, current alien TW is expected to be "the standard Taiwanese" in the future, if it survives.

Meanwhile, the promotion of Chinese has continued without interruption for 55 years. Chinese took over school campuses first, then public places, and then families. It took over the communication media between teachers and students, then between classmates, then between siblings, then between parents and children, then between grandparents and the Chinese speaking or Chinese-speaking-to-be grandchildren. This language epidemic started from the capital where Chinese refugees concentrated since 1949. It has now spread into other cities, towns, and villages.

Phang's (1999) study of the language proficiency of 4-year-olds and 6-year-olds in Taipei shows that her "bilingual" subjects (in Taiwanese and Chinese) were not functional bilinguals. Her Taiwanese conversation test consists of only 12 simple questions, and, still, the mean scores are below 10 per cent, as shown in the figure below.[25] (The figure is a partial reproduction of

[25] All the tests were conducted in Chinese. If a "Mandarin conversation" test were given, the scores would be 100.00.

the original manuscript, Chap.3, p.7.)

	4-year-olds	6-year-olds
1. Mandarin vocabulary test	35.05	48.28
2. Mandarin picture naming	19.79	22.23
3. Taiwanese conversation	7.16	7.00
4. Taiwanese vocabulary test	18.74	25.38
5. Taiwanese picture naming	3.42	7.34

The scores on picture naming tests in both languages are also low, but there are great differences between the scores on Chinese and those on Taiwanese. In the vocabulary tests, the children were asked to point to pictures, each in a group of four, that were named by the experimenter. They did not have to speak; so their Taiwanese scores are higher in this test.

Tân & Î (1997:150) interviewed Taipei primary school children on their ethnic language use and had the following results. The authors divided the children into two categories: those who chose learning mother tongue in the extracurricular activities and those who did not participate in such activity.

Ethnic Language Use	Nonparticipants	Participants
Speaking to parents	9.1%	12.1%
Speaking to friends	0.0%	0.0%
Praying & other religious activities	19.4%	33.3%
Learning & acquiring knowledge	0.0%	0.0%

Apparently those who participated in the language activities know some mother tongue. There is no data showing the percentage of the students who participated, however.

In Taiwan as a whole, the picture is not brighter. The mean scores in the following figure, translated from Formosa Foundation (1996:5, Fig. 10), show the language use of the 18–30 year old Taiwanese. The information on the proportion between ethnic Taiwanese (Ho̍h-ló) and ethnic Taiwanese Hakka samples is not available. Austronesian samples were too few to be statistically useful and were discarded by Formosa Foundation.

	Chinese	Taiwanese	Mixed	Hakka
Speaking to parents	15.4	65.5	14.8	4.3
Speaking to siblings	34.1	37.2	26.6	2.2
Speaking to friends or classmates	41.7	23.9	34.4	0.0

4.2 Alien Phonological Features

For decades, children have not been given much chance to learn their mother tongue, not to mention acquiring it. They have become more Chinese than Taiwanese in many ways. Linguistically, they have become more and more unfamiliar with their ethnic language. Many of those who can speak it speak with a foreign accent. Their variety of deviate Taiwanese is dubbed "milk-smelling" Taiwanese 〈臭奶呆台語〉 by those who speak authentic Taiwanese, implying the alien TW's similarity to the phonological pecularity of toddlers and young children, who "still smell of their mother's milk".[26]

My statement of alien Taiwanese is based on three kinds of data: (1) two decades of attentive observations and notes on the deviation, (2) two recordings of a young lady hosting a radio program (TNT radio) in May 1999 and two ladies reporting news (FTV radio) in the same month, (3) tests from an articulatory phonetic course in Spring 1999. Data (2) is not the best

[26] There are no previous studies on Taiwanese phonology acquisition or on alien Taiwanese known to the author. As such, there is no way to compare the two language varieties to evaluate the dubbing.

sample of alien Taiwanese, for it lacks personal backgrounds of the speakers, and data (3) is not a designed experiment but a test on perception. However, both of them confirm the observations in data (1).

4.2.1 Production

Today's alien Taiwanese in effect is Chinese (Mandarin) Taiwanese. Whichever phonological feature the Chinese have difficulties distinguishing the alienized Taiwanese do as well. The most conspicuous deviation concerns voicing and coda and occasionally concerns nasality. Data (2) shows that the speakers has problem with some of the final stops. It is combined with data (1) and stated in the description below. Data (3) is a test on coda. The results of it will be given following the statement of alien TW features to confirm that the difficulties that the Chinese speaking Taiwanese have with TW coda come from Chinese phonology.

V2. **Voicing**: Phonetically, TW voiced obstruents are fully voiced and lenis, as stated in §2.2 (G2) and summed up in §3.2.4. Unlike their perception of English voiced obstruents as voiceless ones, Chinese speakers do not hear TW voiced obsturents as voiceless unaspirated. Lexically, TW voiced labial stop corresponds to Chinese labial nasal or labial glide, and voiced velar stop corresponds to zero initial in Chinese. Phonemically, TW voiced stops and nasals are in complementary distribution. Therefore, the best substitutions for TW voiced stops would be nasals. In low-proficiency alien Taiwanese, *bah* 〈肉〉 'meat; flesh' can become *mah*. Since TW dental stop and lateral merged and are in free variation, they become dental lateral invariably in alien Taiwanese. Standard Chinese does not have a *ng-* initial; so TW *g-* cannot be substituted by *ng-*. It is deleted instead, e.g., *Ka-ī* for *Ka-gī* 〈嘉義〉 '(place name)', and *ōa-kháu* for *gōa-kháu* 〈外口〉 'outside'. The lack of *g-* is the most common phenomenon of alien TW phonology.

V3. **Nasality**: Taipei Chinese borrowed some Taiwanese nasalized final particals such as *hǒ·* ^{n} [hɔ̃^{35}] 'you see'. The borrowing seems to function as a catalyst for the alienized Taiwanese to accquire the contrast between oral and nasal syllables. However, since Chinese is overwhelming in Taiwan, alien TW nasal syllables seem to be rather in the process of becoming oral, such as *hē* ·*a* 'yes' (from *hē*^{n} ·*a*). The full picture of alien nasality, however, needs further studies.

V6. **Canonical Forms:** There are constraints on the combinations of TW vowels and finals, as the following:

	-m/-p	-n/-t	-ng/-k
i-	im	in	
	ip	it	
e-			eng [ieŋ/i̯eŋ/iə̯ŋ/ɛŋ/ɛi̯ŋ]
			ek [iek/i̯ek/iə̯k/ɛk/ɛi̯k]
a-	am	an	ang
	ap	at	ak
ia-	iam	ian [i̯en/i̯æn/ɛn]	iang
	iap	iat [i̯et/i̯æt/ɛt]	iak
oa-		oan	oang
		oat	oak
u-		un	
		ut	
iu-		—	
		iut	
o-	om		ong
	op		ok
io-			iong
			iok

The ensuing change following the substitution of *b-* by *m-* is a deviation from the canonical forms, e.g., *mān* 〈慢〉 'slow' (from *bān*), *mîng* 〈明〉 'clear' (from *bêng*). These violations are motivated by Chinese phonology.

V7. **Codas**: Chinese does not have an obstruent coda, and a nasal coda only occurs in one of the two places of articulation, dental and velar. There is no labial coda. In Standard Taipei Chinese *-in* merged with *-ing*, and in other varieties of Chinese in Taiwan, *-n* and *-ng* are confused. Alien Taiwanese reveals all these Chinese features. Labial nasal finals become dental finals, e.g., *kam* 〈柑〉 'mandarin orange' becomes identical with *kan* 〈矸〉 'bottle', and the dental and velar series are either confused or are conditioned by its following segmental, e.g., *kan* 〈矸〉 'bottle' and *kang* 〈工〉 'work; labor' are in variation. Rime *-in* invariably becomes *-ing*, and *-eng* becomes *-ing* (see V9 below, cf. V6), thus *kim* 〈金〉 'gold', *kin* 〈筋〉 'tendon; sinew' and *keng* 〈弓〉 'bow' all become *king* in low-proficiency alien TW.[27] The unreleased stop final of checked syllables may be realeased by alien TW speakers like in English, but in most cases they are not. Instead, labial, dental, and velar stops are either confused, paralleling the pattern of the nasal finals, or become an unreleased glottal stop, especially in low-proficiency alien TW, e.g., *kap* 〈合〉 'combine', *kat* 〈結〉 'a knot' and *kak* 〈角〉 'horn' all merged with *kah* 〈甲〉 'an acre'.

V8. **Vowel Heights**: If speaking the southern variety of Taiwanese, the alienized do not have problem with the contrast between *o* and *o·*, for *o* is realized as a non-front unrounded vowel (S9) and can easily be subsituted by Chinese ㄜ [ɤ]. However, the contrast between closed *o* [o] and open *o·* [ɔ] in other dialects could be a problem. The alienized often cannot distinguish the two vowels, thus, for instance, *pó* 〈寶〉 'treasure' and *pó·* 〈脯〉 'wither; dehydrate' become identical.

V9. **Nucleus Breaking**: TW *-eng* and *-ek* rimes have diphthongal nucleus in the majority of dialects (S8). This nucleus breaking is a great challenge to the

[27] In 1991, I warned the members of Taiwan Languages Association not to change POJ spelling of *-eng* and *-ek* to *-ing* and *-ik* respectively lest the *-ing* spelling accelerates the merger of *-im*, *-in*, and *-eng* rimes under Taipei Chinese pressure. The warning was ignored.

alienized. Most of them failed to break it, and *-ing* and *-ik* respectively are the most common subsitutions. For instance, *chheng-peng* 〈清冰〉 'grated ice flavored with only syrup' becomes *chhing-ping*.

4.2.2 Perception

Data (3) is to reassure that the peculiar features of alien TW comes from Chinese. When a speaker has difficulties with a series of sounds in one language, he/she will have the same difficulties in others. Chinese speakers render all forte [b, d, g] (voiced) as [p, t, k] (voiceless unaspirated). In Taiwan, they have great difficulties learning stop initials in Japanese, French, and Austronesian languages. For instance, during the 1999 Indonesian riots, a reporter proudly wrote Indonesian *terima kase* 'thanks' as "*DELIMAGASE*" (capitals original) in a Chinese language newspaper.

The test is on closed and open short syllables. The language used is Standard Thai. Test items are embedded in phrases and sentences. There are 30 instances of live closed syllables and 19 of "dead" (checked) syllables. Some syllables occur more than once. Test questions were read from behind the students so that they did not see my mouth shapes. The phrases and sentences were repeated as many times as the students requested.

Eighteen students participated in this test. They range from speaking only Chinese to being competent in Taiwanese or Indonesian. The results of the test are given bellow. In the first figure, the first column of each section shows the target syllables, and the rest show the perceptions of the final consonants. "Others" include hearing nasal finals as stops, hearing stop finals as nasal, and leaving blanks on the answer sheet. Numerals show the number of answers.

	-∅	-m	-n	-ŋ	Others
mɛ̀m	1	4	9	3	1
t^{h}am	8	4	4	2	1
nám	2	5	8	3	
p^{h}ǒm	2	5	7	4	
sǒm	1	6	7	4	
nǒm	2	4	6	6	
k^{h}om	1	4	6	6	1
pen	1	2	14	1	
sên	1	2	14	1	
p^{h}an	1		15	2	
č^{h}án	4	3	17	11	1
sân	2	3	29	1	1
k^{h}un	2	5	10		
bon	1	4	10	3	
k^{h}on	6	4	31	13	
p^{h}ûʌn	3	5	9	1	
dɯʌn	7		7	2	1
čîŋ	2	2	8	6	
paŋ	1		14	3	
jaŋ	1	1	5	11	
luŋ	2	2	4	10	
klɔ̂ŋ	2	5	5	5	1
nɯ̀ŋ	5	2	8	3	
k^{h}rûŋ	3	2	7	6	
p^{h}âŋ	2	1	6	9	
mɯʌŋ	6	3	7	2	

	-∅	-p	-t	-k	Others
klàp	13				5
k^{h}àp	2	16			1
k^{h}ráp	8	9	1		
sìp	4	11	1	2	
p^{h}óp	7	4	3	2	2
tìt	6	1	6	4	1
sèt	6	3	8	1	
p^{h}àt	7	1	7	3	
wàt	4		8	1	5
rót	9	1	7		1
nék	8		4	6	
p^{h}àk	8	2	5	3	
sàk	4	1	2	1	10
rîak	8	2	4	1	3
t^{h}úk	9	4	3	1	1
mók	9	4	2	3	
čòk	10	2	2	2	2
hòk	8	5	3	1	1
rɔ̀k	11	1	5		1

The scores of the students on closed syllable finals are as follows.

Score on Nasals	Number of Students	Score on Stops	Number of Students
93	1	68	1
80	1	58	1
60	1	47	2
50	1	37	2
47	3	26	1
40	1	21	1
37	1	11	2
33	4	16	2
30	1	05	2
0	1	0	1

The student who scored the highest for nasal finals is Indonesian speaking, and she scored the second highest for stop finals. The student who scored the highest for stop finals is Taiwanese speaking and was then learning Vietnamese, and he scored the second highest for nasal finals. It is certainly not easy to hear the final consonants of an unknown language correctly, especially the nuances of vowels preceding an unreleased stop. However, since the phrases and sentences were repeated over and over again till the students were satisfied, I tend to consider the scores as a good indication of the students' ability to hear the finals.[28] Besides, those who scored low for nasal finals generally scored low for stop finals also. It means that they confused the sounds that do not occur in their Chinese, like the Japanese military interpreters in the 19th Century. The high number of leaving out stop finals in the "-∅" column in the last figure indicates either the inability to determine the places of articulation or the inability to hear the presence of the unreleased stops, or both. All the students learned English for at least 7 years; so they have less problems with nasal finals. Another reson for the higher scores on nasals is that nasals are sonorant and therefore are more audible. In spite of these advantages, many students still have great difficulties with the labial nasal and considerable difficulties with the distinction between dental and velar nasals. Whatever problems they have with Thai are often the problems they have with Taiwanese. The same test was given to 23 students in May 2000 with confirming results.

5. Conclusion

The present paper is an amalgamation of the phonology of three stages of Taiwanese, the 19th Century, the modern established, and the emerging. This amalgamation enables the reader to see that abrupt sound change needs stimulus. The distance between the first stage and the second is more than 100 years; yet there is no phonological change observable. The deviation of the emerging phonology from the established one started to be felt less than a quarter of a century ago; yet there are many drastic changes in it. This emerging TW phonology is attributed to linguistic population change. It is the phonology of the interlanguage that the Chinese speakers targeted on Taiwanese.

To illustrate that there has been no phonological change between late 19th Century TW and the modern established TW, their known general phonological features and specific dialectal features are compared. My findings are as follows.

(1) The sound systems are the same.
(2) The phonetic peculiarities are the same:
  (a) Voiced stops are lenis.

[28] The unsatisfactory scores of the best students are partly due to some syllable types that do not occur in TW or Indonesian and partly due to the tension during the test. The student who missed all syllable finals was phonetically "challenged". She also could not hear most other sounds correctly.

(b) Vowels are nasalized following a nasal initial.

(3) The corresponding dialects of the two stages are identical phonemically and phonetically.

(4) The phonetic nucleus breaking in *-eng* and *-ek* in the Northeastern dialect group remains unchanged.

To know the extent of phonological change occuring in alien TW, alien phonology is chceked against the established phonology. The following major trends of deviation are discovered.

(1) The phonation types of stop initials are being reduced to two: voiceless aspirated and voiceless unaspirated.

(2) The places of articulation of nasal coda are being reduced to dental and velar, which are non-contrastive in various cases, especially following *i* vowel.

(3) Phonotactic constraints are being eased, with new types of syllables occurring.

To explain the alien TW phonological features, a survey of Taiwan's language politics is given. The ROC Chinese language policy has converted the majority of Taiwanese youth to Chinese and half-Chinese by depriving them of their ethnic language. These alienized Taiwanese speak little or no mother tongue. When they managed to learn their ethnic language, they introduced Chinese linguistic features into Taiwanese, including the lack of distinctiveness of features that are distinctive in Taiwanese.

To check the alienized's unawareness of authentic TW distinctive features that are lacking in Chinese, the results of a test on the perception of Thai codas are employed. The test results show that since the alienized Taiwanese do not have equal ability with the unalienized to clearly distinguish codas in Taiwanese, they are also unable to distinguish as well in other languages.

Alien Taiwanese is in effect the Taiwanese of the Chinese speaking population. Analogically, Northern Chinese language could once be alienized Chinese or alien Chinese, the Chinese of the Altaic speaking people, as Hashimoto presented it.