

The So-Called "Original" and "Changed" Tones in Fukienese

—A Case Study of Chinese Tone Morphophonemics—

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"Every transcriber feels that somehow [ɛ] is a variety of [e] and not a variety of [a], [ɔ] is a variety of [o] and not a variety of [ɑ]. If we took our scheme of cardinal vowels seriously, we ought not to have such feelings."¹—Y. R. Chao

1. Introduction

Fukienese—Southern Min in particular—is well known for its intricate tone sandhi, in addition to the abundance of its musical accents commonly called 'tones'. What is referred to by this 'tone' is the syllabic intonation found in each syllable which in most cases happens to be a morpheme or word in any variety of the Chinese language. The pitch contour of these syllabic intonations which constitutes the major phonological features of tonemes and which is reported in any description on the Chinese language, is normally the one we find in a syllable (=morpheme or word) pronounced 'separately' or 'in isolation'—the one traditionally called 'original' in contrast to the modified or 'changed.' This is perhaps because the pitch contour of a musical accent in words pronounced 'in isolation' is believed to be the most neutral one which is not 'contaminated' by the preceding or following tones—to say nothing of the changes caused by the sentence intonation which can cooccur with sentence-final words and, overlapping the pitch contour of these sentence-final words, can greatly 'deform' their syllabic intonation (=tone).

According to the traditional view, Southern Min tone sandhi takes place such that a phonemic phrase or syntagma in Amoy (a representative of Southern

1. Chao 1934, 390 and Joos 1957, 51.

Min), for instance, is 'marked' by changing tones of all the syllables (morphemes) but the final one in the syntagma. In other words, most Amoy morphemes in actual sentences undergo this tone sandhi, their 'original' tone being modified into the 'sandhi form'; and very few maintain their 'original' tones. These 'modified' tones are normally called 'changed tones'. This Amoy type tone sandhi is regarded as a unique feature of Fukienese or Southern Min, and very few linguists have ever noticed its unnaturalness.²

In this study we would like to question this traditional treatment's plausibility and propose a solution which requires to construe a set of underlying forms of tones and derive from them various shandhi forms—what correspond to both 'original' and 'changed' tones, for a better description of Fukienese tones.

2. Backgrounds of the traditional treatment

An overall modification of primary phonemes in syntagmas or sentences is something we have seldom, in fact never, witnessed in natural languages, at least not to the degree found in this Amoy-type tonal changes.

The unnaturalness of this overall modification of syllabic intonations in the Amoy type Fukienese has seldom been felt by traditional linguists, due first of all to that wide-spread illusion that words pronounced 'in isolation' should be the least 'contaminated', but also to the fact that the secondary phonemes in many languages often undergo such drastic modifications. English stress reduction, Japanese and Southern Korean overall (except for the main one) reduction of accent nuclei within syntagmas, etc. are only a few instances of such modifications. It may also be due to the fact that intonational assimilation or dissimilation, not neutralization, among tones occurring in normal sentences takes place in non-final positions of syntagmas in many varieties of the Chinese language. However, syllabic intonations in tone languages have a very different nature from those of non-tonal languages and work as Bloomfield's 'primary phonemes';

2. I am glad to find, among those few, my old friend Ting Pang-hsin. Personal correspondence, March-April, 1981.

suprasegmental distinctions between Amoy first and second tones, for instance, constitute a phonological distinction as much as, if not more than, those between English *pot* vs. *kot*, or *shoe* vs. *due*.

Finally it may also be due to our ignorance on the phonological nature of the suprasegmental make-up of morphemes pronounced 'in isolation'. When we enumerate a certain number of words, those occurring in the final positions carry some distinct intonations very different from those of the non-final ones. Thus the first three words 'desk', 'chair', and 'blackboard' in the English phrase 'Desk, chair, blackboard, and chalk!' all carry a rising intonation, while the last word 'chalk' occurs with a falling intonation. English marks the end of this phrase with this falling intonation on the phrase-final words. When we quote a single word in isolation in English, the word is in fact uttered with this falling intonation. A similar phenomenon, though on a different level, can be observed in Amoy, too. As we mentioned above, a phonemic phrase in Amoy occurs with the tones of its non-final syllables (morphemes) all altered, leaving the final one intact, according to the traditional description. When a single syllable (morpheme) is uttered 'in isolation', it is not pronounced 'in isolation'; it is in fact uttered as the final syllable of a phonemic phrase which happened to consist of a single morpheme.

3. Basic premises of modern linguistic descriptions

When we find various contextual realizations of a linguistic form such that it occurs mostly as #A# but in some limited cases as #B#, modern linguists' description is, unless otherwise motivated or unless we find some strong evidence against, to set up the underlying form #A# whose contextual realizations should be defined by formulating a rule as follows:

$$\#A\# \longrightarrow \begin{cases} [B] / \text{---} C \\ [A] \text{ otherwise} \end{cases}$$

Thus if an Amoy toneme assumes its surface phonetic shapes as [A] in most cases but in some limited cases as [B], it is more reasonable to construe its underlying form as #A# than as #B#. Then, in the case of Amoy, too, what

has been regarded as the 'original' tone by the traditional linguists should be the derived, 'changed' tone, and the so-called 'changed' tones should be our underlying tones. In other words, Amoy marks its syntagmas such that the syntagma-final syllables (morphemes or words) undergo major modifications. In fact, there are a few pieces of good evidence to support this view of regarding the traditional linguists' 'original' tones as the derived, 'changed' tones, and the so-called 'changed' tones as the underlying, 'original' tones, in the Amoy dialect of Fukienese.

4. Evidence from other Chinese dialects

As have been discussed in detail elsewhere,³ quite a few northern Chinese dialects maintain some of their tonal categories mutually distinct only in non-final syllables (=morphemes) of a syntagma. The phonological distinction between Tones 1 and 2 in many Northwestern Chinese dialects, for instance, is neutralized in the syntagma-final positions. In other words, if we count Northwestern Chinese tones occurring in syllables (=morphemes) pronounced 'in isolation' and ignore those occurring in other positions we fail to recognize one toneme altogether. This is because morphemes pronounced 'in isolation' are in fact compounds whose non-final morphemes are zero's. As mentioned in the preceding section, morphemes pronounced 'in isolation' carry tones with their syntagma-final make-up. It is imperative, in other words, to consider tones in words not pronounced 'in isolation' in those dialects, in order to establish a correct tonal system.

The case for some Northern Chinese dialects, is even more serious. The Paoting dialect of Hopei, for instance, has in all six phonologically distinct tones. Among them, Tone 4 merges with Tone 6 in the non-final position of a syntagma but with Tone 3 in the syntagma-final position. In other words, Tone 4 in Paoting will become a *ghost tone*, unless a proper underlying toneme is set up for this elusive tone. In fact, an analysis of Paoting tones written some two decades ago describes the sandhi behavior of this tone in the following way:

3. Giet 1946, 251-3 and 1950, 105ff, Yang 1960, Zavjalova 1978 and 1979, and Hashimoto 1981.

The third tone (which in fact includes our Tones 3 and 4!) alternates with the fourth tone (our Tone 5) *in some words* but with the fifth tone (our Tone 6) *in some other words*.

In other words, what should be described as a purely phonological phenomenon is treated as a lexical one in this traditional analysis of Paoting tones.

These instances clearly show that a naive, traditional way of describing Chinese tones by counting tones in words pronounced 'in isolation' can be applicable to some simple dialects like Pekinese or some of its variants. For others—in fact even for Pekinese, as discussed elsewhere⁴—we definitely need a set of underlying tonemes determined independently of this 'pronunciation in isolation', in order to properly account for their intricate tone sandhi phenomena.

5. Amoy tones and their sandhi forms

Since the days of Chiu Bien-ming⁵, Amoy 'original tones' have been described to undergo the following 'tone-changes' and occur as 'changed tones' in non-final positions in ordinary syntagmas:

- Tone 1 (yin-p'ing: high-level) → Tone 5 (yang-ch'ü: middle-level)
 Tone 2 (yang-p'ing: high-rising) → Tone 5 (yang-ch'ü: middle-level)
 Tone 3 (yin-shang: high-falling) → Tone 1 (yin-p'ing: high-level)
 Tone 4 (yin-ch'ü: low-falling) → Tone 3 (yin-shang: high-falling)
 Tone 5 (yang-ch'ü: middle-level) → Tone 4 (yin-ch'ü: low-falling)
 Tone 6 (yin-ju: low-staccato) → Tone 7 (yang-ju: high-staccato)
 Tone 7 (yang-ju: high-staccato) → Tone 6 (yin-ju: low-staccato)



Chart 1: Amoy tone alternations in the traditional description

Now if most of those 'changed tones' can be assumed to represent the

4. Hashimoto 1981, 155.

5. Chiu 1934.

underlying forms of these seven tonemes, and if we substitute a middle-rising tone for Tone 2, the direction of this 'change' (alternation) can be reversed as shown in Chart 2.

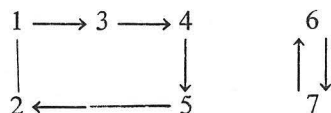
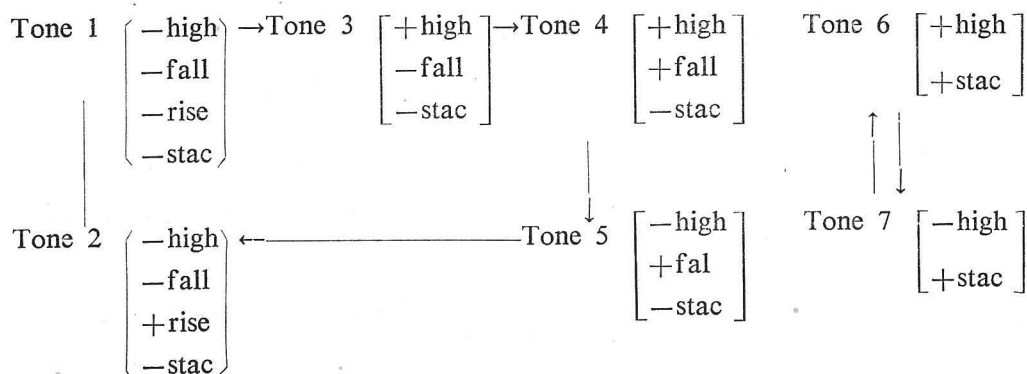


Chart 2: Amoy tone alternation in our treatment

In terms of the phonological features [high], [fall(ing)], [ris(ing)], and [stac(cato)], these seven tones can now be described to undergo the following alternations:



These alternations can be formulated as follows:

$$\left(\begin{array}{ll} [\alpha \text{ high}] \longrightarrow [-\alpha \text{ high}] & \text{if: } \begin{bmatrix} - \\ +\text{stac} \end{bmatrix} \\ [\alpha \text{ high}] \longrightarrow [-\beta \text{ high}] & \text{otherwise} \\ [\beta \text{ fall}] \longrightarrow [\alpha \text{ fall}] & \end{array} \right)$$

This rule is in fact little more than a mere 'translation' of William S-Y. Wang's rule.⁶

6. Advantages of our treatment

Advantages of our treatment can be seen in two aspects of Fukienese

6. Wang 1967, 103-105.

phonology. In the diachronic aspect, our treatment reflects certain historical developments of Fukienese phonology.

The general tendency of the historical change of Amoy (or similar Fukienese) tones is that the *yin* series (which used to constitute a high series) has been going to low, while the corresponding *yang* series (which can be assumed to have been a low group) has tended to go to high. Our derivation of the high sandhi tones of the *yang* group from the low underlying forms exactly reflects this tendency. Without understanding this general tendency and without taking into consideration the line of Fukienese tonal developments, the synchronic morphophonemic rules will turn out to be internally inconsistent—the traditional treatment gives us higher underlying tones for the *yang* series which have to be developed into low tones (Tone 2—from a high-rising tone to a low-level tone, Tone 5—from a middle-level tone to a low-falling tone, and Tone 7—from a high-staccato tone to a low-staccato tone), which is very obviously conflicting with this general tendency, as *yang* tones can be considered to have originally constituted a low series because of the voicing of the initial consonant of syllables which carried these tones—the change could not have been from high to low.

In the synchronic aspect, our treatment sheds much light on the study of the phonology of other Fukienese dialects. Fukienese spoken in Formosa is pretty close to this Amoy dialect; its tone sandhi is also practically identical with that of Amoy, in their tonal categories as well as in their tone values. Among the Fukienese dialects spoken in Formosa, that of Yilan, at least its sound system, differs very little from the standard Taipei dialect, though one can immediately detect dialectal differences between these two in their phonetics and lexicon. According to a traditional description, the Yilan dialect has the following seven tones which undergo tone sandhi as tabulated below:⁷

- | | |
|-------------------------------------|----------------------------------|
| Tone 1 (yin-p'ing: high-level)→ | Tone 5 (yang-ch'ü: middle-level) |
| Tone 2 (yang-p'ing: middle-rising)→ | Tone 5 (yang-ch'ü: middle-level) |
| Tone 3 (yin-shang: high-falling)→ | Tone 1 (yin-p'ing: high-level) |

7. Lan 1980, 41-43.

Tone 4 (yin-ch'ü: low-falling) → Tone 3 (yin-shang: high-falling)

Tone 5 (yang-ch'ü: middle-level) → Tone 4 (yin-ch'ü: low-falling)

Tone 6 (yin-ju: low-staccato) → Tone 7 (yang-ju: high-staccato)

Tone 7 (yang-ju: high-staccato) → Tone 6 (yin-ju: low-staccato)

Even though Yilan tones and their sandhi rules are, as one can see from the above chart, practically identical with those of Amoy, there are a couple of very puzzling, exceptional alternations—puzzling as long as we follow this traditional treatment.

First, Tone 6 (yin-ju; LOW in the traditional characterization), when carried by a syllable with a glottal stop ending, alternates with Tone 3 (yin-shang; HIGH-falling by the traditional description). In our treatment, the underlying form of Tone 6 is construed as a HIGH tone, which can easily go to Tone 3, a HIGH-level tone in our treatment, once the glottal stop ending of these Tone 6 syllables is lost in compounds. Second, Tone 4 (yin-ch'ü; LOW-falling in the traditional treatment) goes to Tone 1 (yin-p'ing; HIGH-level by the traditional description), when carried by a syllable (=morpheme) followed by a certain suffix. In our treatment, since the underlying form of Tone 4 (yin-ch'ü) is construed as a HIGH-falling tone, it is only natural that Tone 4 goes to Tone 1 (yin-p'ing) which, in our treatment, is at least a MIDDLE-level tone. Third, Tone 1 (yin-p'ing; HIGH-level according to the traditional treatment) and Tone 5 (yang-ch'ü: MIDDLE-level in the traditional treatment) go to Tone 2 (yang-p'ing; MIDDLE-rising in the traditional treatment) when they occur in triplicated stative adjectives—a unique word formation in Fukienese. A change from Tone 5 (MIDDLE-level) to Tone 2 (MIDDLE-rising) may not be too bad here, but a change from Tone 1 (HIGH-level) to Tone 2 (MIDDLE-rising) is not very natural. Again, switching of only one underlying tonal feature is necessary for the change from Tone 1 to 2, if one accepts our underlying forms of these tones.

7. Other Fukienese dialects

This analysis can be applied to most Southern Min dialects reported in various

publications, like Ch'üanchou and Lunghsi (two major variants of Southern Min), and to some Southern Min dialects spoken in the Kwangtung Province like Chiehyang. Two important points have to be clarified here, however, in order to avoid unnecessary misunderstandings.

As can be seen from our treatment of Tone 2 in Amoy (for which we construed a middle-rising underlying tone, instead of a middle-level), what we are proposing is to set up underlying forms for Chinese tones which will best account for their intricate tone sandhi phenomena, not necessarily proposing to regard all of the so-called 'changed tones' by the traditional analysis as the underlying tones. In the case of Amoy, it happened that most of the underlying forms thus construed coincide with the so-called 'changed tones'. It is thus a matter of convenience to have said above that what have been regarded as the 'changed tones' should be the underlying tones and what have been regarded as the 'original tones' have to be the derived tones—though it will really lead to a better solution in general, if we switch them around as proposed above, as less decayed forms can be better kept in compounds (as their non-final morphemes) than in words pronounced separately or 'in isolation'. There are, however, some Southern Min dialects to which such a switching is not applicable. The Ch'aoyang dialect of Fukienese spoken in Kwangtung Province is apparently one of them. Ch'aoyang tones undergo, as they are reported in recent publications,⁸ a greater neutralization of tonal distinctions in the non-final position of syntagmas than in the final position, so that tonal features in syllables occurring in the non-final position of syntagmas do not provide us with much clue for establishing appropriate underlying forms, at least not as much as Amoy 'changed tones' do.

The final advantage of our analysis we would like to point out here concerns the different phonological nature between the Amoy-type and the Foochow-type tone-sandhi.

The basic linguistic function of the Foochow-type tone-sandhi is also marking of syntagmas, just as in the case of Amoy. As it is reported in the *Outline of*

8. Chang 1979 and 1980.

Chinese Dialects,⁹ the Foochow tone sandhi observed in disyllabic words is clearly a matter of assimilation and/or dissimilation among cooccurring tones. The Foochow dialect has the following seven tones, as they are reported in the same publication:

- Tone 1 (yin-p'ing): a high-level tone
- Tone 2 (yang-p'ing): a high-falling tone
- Tone 3 (yin-shang): a low-falling tone
- Tone 4 (yin-ch'ü): a falling-rising tone
- Tone 5 (yang-ch'ü): a rising-falling tone
- Tone 6 (yin-ju): a low-staccato tone
- Tone 7 (yang-ju): a high-staccato tone

Foochow tone sandhi in disyllabic words takes place as follows:

- Tone 1 (high-level)+Tone 1 (high-level)→ high-level+high-level
- Tone 4 (falling-rising)+Tone 1 (high-level)→ high-level+high-level
- Tone 5 (rising-falling)+Tone 1 (high-level)→ high-level+high-level

- Tone 1 (high-level)+Tone 2 (high-falling)→ high-level+high-falling
- Tone 4 (falling-rising)+Tone 2 (high-falling)→ high-level+high-falling
- Tone 5 (rising-falling)+Tone 2 (high-falling)→ high-level+high-falling

What we observe here is very straightforward: any tone followed by a high tone goes to a high-level tone. This can be formulated as follows:

$$[X] \longrightarrow [\text{high level}] \quad / \text{ ______ } [\text{high tone}]$$

Needless to say that this is a very clear case of assimilation between cooccurring tones.

- Tone 1 (high-level)+Tone 4 (falling-rising)→ high-falling+falling-rising
- Tone 4 (falling-rising)+Tone 4 (falling-rising)→ high-falling+falling-rising
- Tone 5 (rising-falling)+Tone 4 (falling-rising)→ high-falling+falling-rising

9. Yuan *et al* 1962, 296-300.

Tone 1 (high-level)+Tone 3 (low-falling)→ high-falling+low-falling

Tone 4 (falling-rising)+Tone 3 (low-falling)→high-falling+low-falling

Tone 5 (rising-falling)+Tone 3 (low-falling)→high-falling+low-falling

Tone 1 (high-level)+Tone 6 (low-rising)→ high-falling+low-rising

Tone 4 (falling-rising)+Tone 6 (low-rising)→high-falling+low-rising

Tone 5 (rising-falling)+Tone 6 (low-rising)→high-falling+low-rising

Tone 1 (high-level)+Tone 5 (rising-falling)→ high-falling+low-rising-falling

Tone 4 (falling-rising)+Tone 5 (rising-falling)→high-falling+low-rising-falling

Tone 5 (rising-falling)+Tone 5 (rising-falling)→high-falling+low-rising-falling

What is underlying the above alternations is also quite clear; that is, any tone goes to a high-falling tone whenever followed by a tone which starts with a low beginning. This can be formulated as follows:

[X]→[high-falling] / _____ [low tone]

Somewhat different in its nature from the alternations listed above are the following changes:

Tone 3 (low-falling)+Tone 1 (high-level)→ high-rising+high-falling

Tone 3 (low-falling)+Tone 4 (falling-rising)→high-rising+falling-rising

Tone 3 (low-falling)+Tone 5 (rising-falling)→high-rising+rising-falling

The underlying regularity here is: a low-falling tone always goes to a high-rising tone whenever followed by another tone. We formulate this regularity as follows:

[low-falling]→[high-rising] / _____ [X]

This is obviously a case of neither assimilation nor dissimilation.

Thus a great majority of tone sandhi in Foochow is more like the Mandarin sandhi of Tone 3, namely:

Tone 3→Tone 2 / _____ Tone 3

They are very different from the Amoy-type sandhi. It seems that modern

Chinese dialects can have two different types of tone sandhi. One is for marking syntagmas through altering tones of the final syllables like Amoy. The other is also for marking syntagmas but in the form that certain tones within a syntagma undergo tonal alternations, due to the assimilation or dissimilation among themselves. It happened that Pekinese, the standard language of modern China, has both of them. First, Pekinese Tone 3 takes a special form, a falling-rising tone, when it occurs at the end of a syntagma, but otherwise remains as a low-level tone. Thus the occurrence of this falling-rising tone for Toneme 3 can mark the end of a syntagma. Second, Tone 3 alternates with Tone 2, when it occurs in the non-final position within a syntagma and followed by another Tone 3. Thus when we hear an underlying Tone 3 morphemes pronounced with Tone 2, we realize that we are still within one syntagma, not having reached the end.

Now a majority of tone sandhi in Northern Chinese is of the second type. It is prevalent in the so-called Central Plains dialects like Pekinese, but also found in many Northwestern Mandarin like Sian¹⁰ and many of the Dungan dialects spoken in Soviet Kirghizia, Kazakhstan and Uzbekistan (all originally from Northwestern China).¹¹ The first type seems to be wide-spread among southern dialects, particularly among Southern Min and in some Hakka dialects spoken near the Southern Min area. Considering the geographical location of Foochow dialect, it is then hardly suprising to find in Foochow more Northern type tone sandhi. We may also point out that the dialectal grouping like Fukienese does not assure that all the subdialects that fall in that group, regardless of their subgrouping or geographical location, share the identical phonological features. It is more reasonable to question phonological homogeneity of a large group of dialects. The Foochow dialect can be that much different from Amoy as far as their phonology is concerned, even though they may belong to the same dialect group and share many cognate lexical items and/or certain similar syntactic structures.

10. Sun 1961, 28.

11. Zavjalova 1979.

8. Summary

To regard most Amoy 'changed tones' in the traditional sense as their underlying forms is already implicit in an attempt at reconstructing Proto-Min tones by the internal reconstruction method based mainly on the 'changed tones.'¹² This view has also found a strong support in a typogeographical study of modern Chinese dialects in conjunction with the Altaic linguistic structure which invaded into Chinese from the north and with the Tai and/or Austroasiatic contact observed throughout southern half of the Chinese speaking territory—a study which lead to the interpretation that the Amoy-type tone-sandhi is basically a syntagma-final modification of tones instead of the non-final alternation.¹³ We have pointed out in this study that there are two different types of tone sandhi in modern Chinese dialects, and the reliance on the non-final, so-called 'changed tones' in construing the underlying forms is a mere accident in the case of Amoy tones—what is more essential is to determine a series of underlying tones with which we should be able to account for the tonal phenomena related to the syntagma marking in Chinese in general. This should be, and in fact have been, done for any reasonable description of linguistic structures, and the case for Chinese can not be an exception.

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12. Hirayama 1974.

13. Hashimoto 1979.

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