6 Conclusion

6.1 Summary

This dissertation has attempted to present a detailed analysis of the phonology of Shaoxing (SX) Chinese, including (i) the surface inventory of consonants and vowels and their distribution, (ii) the underlying vowel system, (iii) the syllable structure, focusing in particular on the status of the prenuclear glide in the syllable, (iv) the phonotactics of SX, in particular the possible Finals and their combination with possible Initials in the syllable, (v) the tonal inventory of SX, (vi) the consonant-tone interactions, and (vii) the tone sandhi rules. The most important conclusion that can be drawn from the analysis I have presented is that SX has a phonological system that works in comparable ways to other languages of the world, in the sense that much of its behaviour follows common linguistic principles, albeit with specific variations on universal themes. I will briefly report on general conclusions with respect to specific phonological phenomena in SX in the following section.

6.2 Main Conclusions

6.2.1 The vowel and consonant inventory

Languages differ considerably regarding their inventories of consonants and vowels, and also with regard to the phonological grammar that specifies how these sounds can be combined to form words and utterances (Kay 1989). What makes SX different from other languages is its rather large inventory of consonants and vowels. As was discussed in chapter 2, SX has 29 initial consonants and 14 surface vowels, which form 48 Final combinations. Among the Chinese languages, the Wu language family (including SX) has more initial consonants than others. This is related to the fact that it still retains the historical voiced obstruents, while all the other six Chinese language families have (more or less) lost the voiced obstruents, resulting in inventories of around 20 initial consonants or even fewer (e.g. Hakka has 17 initial consonants and Cantonese has 16, according to Campbell 2003). There are three remarkable characteristics in the SX consonant system. First, the language displays a distinction between voiceless aspirated, voiceless unaspirated and voiced obstruents. Secondly, SX has a relatively symmetric system of eight voiced and voiceless fricatives, while there are fewer fricatives in other Chinese language families. Thirdly, the “filler” onset consonants [ʔ] and [ɦ], correlated with the register division, are also features of SX that call out for analysis.

Vowels in SX form a more complicated system in SX than in other Chinese languages. Vowels display a large number of surface variants, according to phonetic environment. I assume in chapter 3 that of the 14 surface vowels in SX, there are only six underlying segments (/i u e ɤ o a/), i.e. quite close to a basic five-vowel system (/i u e o a /) which is found more often in the world’s languages. The fact that there is a large difference in the number of surface vowels and underlying vowels makes it necessary to postulate a number of phonetic realisation rules.

The analysis I presented of the underlying vowel system of SX is intended to present a clear picture of the overall distribution of the 14 surface vowels in SX. I have also presented all the phonological rules and constraints concerning the vowel distribution in SX, which shows that the phonological principles are the same, although phonological behaviour may be different from language to language.

A number of claims that were made in the course of the discussion of vowels and consonants are the following:

(i) Affricates are single segments;
(ii) All vowels in open syllables must be [+tense];
(iii) Glide-Vowel combinations cannot share [+high];
(iv) Vowel-Glide combinations are not permitted;
(v) The two parts of a diphthong cannot agree for both [high] and [back].

6.2.2 Syllable structure

Syllable structure has attracted phonologists’ attention for many decades; the syllable allows the formulation of many generalizations both at the segmental level and at higher prosodic levels. There have been many approaches to the internal structure of the syllable. This dissertation proposes a syntactic approach to internal syllable structure, especially to shed light on the status of prenuclear glides in SX. Following Levin (1985) and Chomsky (1995), I have adopted a multiple-Spec X-bar syllable theory, which allows a syllable maximally to have three sub-constituents: N'' (Final), N' (Rhyme) and N^0 (Nucleus). In this X-bar schema, a syllable is maximally parsed into Onset and Final, instead of Onset and Rhyme (as in the classical OR models), and the problematic prenuclear glide is located in the specifier position of N". The multiple-Spec X-bar structure not only solves the problem of the controversial syllabic position of the prenuclear glide, but also accounts for other data in the Chinese languages, including language games, the poetic rhyming system, loanword phonology and the traditional *Fanqie* system.

My multiple-Spec X-bar syllable structure is based on Levin's (1985) X-bar structure, but is also different from hers. In Levin's proposal, every consonant belongs to an independent N", which, however, is not a subconstituent, while in my proposal every binary node is a constituent projection. This follows the general linguistic principle that every constituent is binary (see Radford 1997). With the multiple-Spec X-bar schema in hand, I assume that the following generalizations hold for the syllable structure of all Chinese languages, including SX:

(i) Onset clusters are not allowed.
(ii) Coda clusters are not allowed.
(iii) Onsetless syllables are permitted underlyingly.
(iv) A syllable is maximally parsed into Onset and Final.
(v) Prenuclear glides are in the Spec position of N".
(vi) The rhyme domain is the weight domain.

In future work, I will explore the consequences of the X-bar model for other Chinese languages.

6.2.3 Consonant-tone correlation

Although it is well documented that voiceless initial obstruents induce high tones and voiced initial obstruents induce low tones cross-linguistically, consonant-tone interaction is still a controversial issue, both phonetically and phonologically. The fact that voiceless obstruents and voiced obstruents and high-register tones and low-register tones, respectively, occur together in SX may lead to a chicken-and-egg situation: which determines which? In this dissertation, I have attempted to present an objective analytic description of consonant-tone interaction in SX, with evidence from, for instance, syllable merger in cliticization, phonetic onset insertion, sonorant initials, etc., and reached the conclusion that both voiced initial obstruents and low-register tones occur in underlying representation in SX.

Some of the dialects in the Wu language family, which is claimed to be the only Chinese language family that still retains the voiceless vs. voiced distinction in the obstruent system, are losing the voiced obstruents as well as the low-register tones (see Cao 2002). SX still preserves a clear-cut register division and the historical voiced obstruents. In some Wu dialects (e.g. Jinhua, Lanxi, Longquan, etc.), the original low-register tones are phonetically realized as high-tone pitches, and voiced and voiceless initial obstruents are beginning to appear with high and low register tones, respectively (Cao 2002). This phenomenon may also throw some light on the issue of consonant-tone interaction, and requires further study.

6.2.4 Tone sandhi rules

Tone sandhi is a common phenomenon in all tonal languages; yet its complexity and the sheer variety of sandhi rules have prevented a fully-fledged analysis in contemporary linguistic studies. SX is a typical tone language with eight tones, equally divided into high and low registers. Besides a systematic analysis of tone feature specifications and a discussion of the geometry of tone, I have made an effort to formalize the intricacies of tone sandhi in SX. We found that tone sandhi in SX is realized by tone feature spreading and delinking, and does not involve register features at all. In this dissertation I have presented an overview of disyllabic sandhi forms. Although not much has been done about systematic explicit formulation, either rule-based or constraint-based, of a tone sandhi system for any of the Chinese languages so far, I have presented a metrically-based analysis, claiming that SX is a right-prominent language and that the stress foot is the tone sandhi domain. Careful study and systematic analysis reveals the following generalizations with respect to tone sandhi:

(i) Tone sandhi in SX is phonologically realized by tone feature spreading or/and delinking.
(ii) Feature spreading can be progressive or regressive.
(iii) Feature spreading cannot cause association lines to cross.
(iv) Register features are never affected by tone sandhi in SX.
(v) In SX, identical contours are never allowed in a foot domain.
(vi) A *ru* tone never changes in SX tone sandhi.
(vii) No falling contour can occur on the left-hand syllable in SX.

Based on these generalizations, I have presented the following constraint ranking that regulates all the disyllabic tone sandhi in SX:

T, OCP(c), IDENT-BR[C], IDENT-*ru*, T-IN-SITU ≫ DEFAULT-T(R/L) ≫ IDENT-TT(R) ≫ WFC(F) ≫ IDENT-IO(T) ≫ *HD/L ≫ *NON-HD/H.

This constraint ranking precisely captures the tonal behaviour in sandhi and accounts for all the disyllabic sandhi rules in SX, as was discussed in Chapter 5. I hope that similar constraint rankings may be appropriate for the formalization of tone sandhi phenomena in other Chinese languages, which, however, requires more investigation.

Tone sandhi is still a linguistically mysterious issue: why are tones allowed to change so much, even in a tone language where lexical meaning is partly determined by pitch? I have made a systematic and hopefully exhaustive analysis of disyllabic tone sandhi in SX. Yet the sandhi rules of trisyllabic and polysyllabic tone sandhi remain unclear, in addition to the fact that the way in which tone sandhi operates differs considerably across linguistic areas (Gandour 1978). However, as long as there are rules, there is a way to formulate them in general. This is certainly a task for further studies.

6.3 Further Study

Some issues I have discussed in my dissertation still require further study, as I have mentioned above. Besides, there are some more issues which are very interesting in my view but are not discussed in this dissertation. For example, with respect to the consonant-tone correlation, the question can be raised whether the nucleus vowel can assign a register feature. How would this bear on the consonant-tone correlation? This question requires more phonetic and phonological investigation. Secondly, how do we account for (Chinese) languages in which there are counterexamples against the consonant-tone correlation? For example, [so^{221}] 'sit', [kɤ^{221}] 'dyke', [tɕye^{221}] 'column' in Qingyuan[1] (Cao 2002). These also require both diachronic and synchronic studies.

There is a Chinese saying "to cast a brick to attract jade". I hope my work on the phonology of Shaoxing is a brick which may cause jade to appear in future work.

[1] Qingyuan is a southern Wu dialect which also has eight tones, among which [33] and [221] are a pair of even tones in high and low registers, respectively, according to Cao (2002: 100).