The phonology of Shaoxing Chinese
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Citation
Zhang, J. (2006, January 31). *The phonology of Shaoxing Chinese*. *LOT dissertation series*. LOT, Utrecht. Retrieved from https://hdl.handle.net/1887/4279

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1 Background

1.1 Introduction

There are seven large language families in China: the Northern family (which includes Mandarin, which is considered to be Standard Chinese), the Wu family (which includes Shaoxing, the topic of this dissertation), the Gan family, the Min family, the Xiang family, the Yue family (which includes Cantonese, which is the other most prestigious variety of Chinese), and the Hakka family (see e.g. Chao 1967; Zhan 1991; Simmons 1999; Campbell 2003). Wu and the Northern family are the largest Chinese language families. The Wu languages, which have about 75 million speakers, are spoken in the area around Shanghai, about one fourth of the Jiangsu Province, almost the whole of Zhejiang Province (where Shaoxing is located) and some northern parts of the Jiangxi and Fujiang provinces. Currently, 94 Wu languages (or dialects) are spoken in this area (Campbell 2003). Of the seven Chinese language families, the Wu languages show the largest amount of variation. Even within the Zhejiang Province, some Wu languages are too different to be mutually intelligible (Zhan 1991; Yan 1994; Cao 2002; among others). For example, Yangzhou and Wenzhou, which are both Wu languages, are mutually unintelligible (Cheng 1992).[1] As a Shaoxing native speaker, I am completely unable to communicate with Wenzhou native speakers in our own dialects.

This dissertation focuses on Shaoxing Chinese, which is spoken by the inhabitants of the city of Shaoxing. In 2003, the number of speakers was estimated at about 633,000 (Campbell 2003).

It is believed that Shaoxing originally dates back to the ancient dialect of Chu, which was spoken in the Zhanguo ("Warring States") Period (475–221 B.C.). During this period, there were seven kingdoms, including Yue (present-day Shaoxing and some other parts of Zhejiang), Wu (present-day Suzhou, the centre of the modern Wu languages), Chu

[1] Cheng (1992) presents a syllable/constituent-based analysis of mutual intelligibility between 17 Chinese dialects which are grouped into 136 pairs and finds that the Yangzhou-Wenzhou dialects (which are both Wu) rank among the lowest of these pairs, indicating very low mutual intelligibility.

(present-day Hubei), Qin (present-day Shanxi) and others. In 473 B.C. Yue conquered Wu. Later, in 333 B.C., Chu conquered Yue. Then Wu and Yue became part of the Chu Kingdom and the Chu language began to be used in both the Wu and the Yue areas. This probably represented the very beginning of the Wu language family, which underwent numerous changes through the next centuries. The Chu Kingdom rose to great power in Middle China before it was finally defeated by Qin in 223 B.C. Emperor Qin (221–210 BC) united China in 221 B.C. after conquering all other kingdoms and divided the country into 36 counties. He made Kuiji (present-day Shaoxing City) the capital of the Wu-Yue county. However, the Wu dialects began to diverge after the Tang Dynasty (618–907 A.D.) and developed as the second largest language family in China, which is called Wu because it historically centred on the “Three-Wu” area, which includes present-day Suzhou, Huzhou and Shaoxing.

Shaoxing is therefore among the earliest Wu dialects and began to spread to many other parts in China, and even abroad, in early times. It is believed that Japanese [ȵi] ‘two’ was borrowed from the ancient Shaoxing dialect (Chen 1994) and many other Shaoxing expressions, such as [naʔgoʔ naʔgoʔ] ‘very’, can be found in Japanese with similar meaning. The typical features of Shaoxing include an eight-tone system and an opposition between voiceless and voiced obstruents, which are regarded as characteristics of Middle Chinese (6^{th}–10^{th} centuries A.D.) (Chao 1928). There are some other remarkable linguistic phenomena in Shaoxing, such as a rich obstruent inventory, which is rare among Asian languages, clitic morphemes, which are generally regarded as impossible in strictly isolating languages like Chinese, and ablaut (which plays a role in the pronoun system, e.g. /ŋo/ ‘I, me’ vs. /ŋa/ ‘we, us’ and /noʔ/ ‘you-SING’ vs. /na/ ‘you-PLUR’), which is never possible in Mandarin.

Much research has been done on Chinese languages, including Wu. Most efforts, however, have been directed at the description of the linguistic representations of different dialects from the perspective of phonetics, phonology, lexicology or syntax, diachronically or synchronically. Previous studies include, for instance, the classification of languages or dialects (e.g. Simmons 1999), comparison between Chinese languages (e.g. Zhan 1991), the history of the Chinese languages (e.g. Chen 1994), and the diachronic description of language change (Ding 1992; Cao 1998). There are also some phonological studies focusing on the Wu languages, mainly concerned with Shanghai, the Suzhou dialect or the Wenzhou dialect, by Chao (1928), Fu (1986) and Cao (2002, 2004). Very little work has been done on Shaoxing, however, especially with regard to phonological aspects. This dissertation seeks to present an overall analysis of the phonology of Shaoxing.

1.2 Methodology

Besides a description of the overall features of Shaoxing phonology, this dissertation will explore analyses of many phonological questions that have remained unanswered so far, focusing on the phonological realizations of segments, the syllable structure, the tonal system, and the phonotactics of Shaoxing. As a result of our discussions, we also hope to cast some light on general phonological issues in Chinese. For instance, we will discuss the question whether Chinese has triphthongs (cf. Wiese 1997), and the issues of Chinese syllable structure, particularly the status of the Chinese medials (/j/ and /w/) in syllable structure (cf. Bao 1990; Wang 1999; Duanmu 2000a; Wang & Chang 2001). Data for this dissertation come from published sources, my own fieldwork and my intuitions as a native speaker.

Theories of phonetics and phonology, especially generative phonology, have sought to provide an explanatory approach to many linguistic issues and will be applied to my analyses of the phonology of Shaoxing. Segmental theories (e.g. Clements 1985; Sagey 1986a, 1986b; Harris 1994) provide representations of segmental structure and offer possible approaches to the representation of complexity in segmental phonology. Segmental theory also helps to postulate the underlying vowel inventory of Shaoxing through an analysis of the distribution of different allophones and the behaviour of vowels in processes of assimilation or dissimilation.

Experimental phonetics and phonology (van Heuven 1994, 2004; Lass 1995) help to shed light on the phonetic properties of consonants, the status of prenuclear glides within the syllabic structure, and the issue of consonant-tone interaction in Shaoxing.

Many previous studies have dealt with tone in Chinese languages (e.g. Wang 1967; Woo 1969; Yip 1980, 1989, 2002; Pulleyblank 1986; Chan 1991; Bao 1999; Chen 2000). In this dissertation, too, we will investigate the relation between tones and segments. My dissertation will provide more evidence for consonant-tone interaction and present the geometrical structure of tone correlated with the syllable structure in Shaoxing. The theory of tone register, especially that proposed by Yip

(1980, 1989, 2002) and Bao (1999), will turn out to be very helpful with respect to the tonal structure of Shaoxing, especially as regards the relationship between register and tone pitch and the formalisation of tone sandhi in Shaoxing.

Theories of the syllable (e.g. Selkirk 1984; Anderson & Ewen 1987; Harris 1994; Blevins 1995; Broselow 1995) provide an explicit analysis of the syllable structure of Shaoxing through different approaches, which will especially be directed at the problem of the status of Chinese medials, which has remained largely unsolved (Wang 1999; Duanmu 2000; Yip 2003). Following Levin (1985), my dissertation offers a multiple-specifier X-bar syllable structure for the analysis of the status of prenuclear glides in Shaoxing.

Optimality theory (OT) (Prince & Smolensky 1993; Gussenhoven & Jacobs 1998; Kager 1999) is committed to the view that the difference between grammars (and languages) is a difference in constraint rankings, and that the set of constraints is universal and violable. OT shares with the *Sound Pattern of English* (*SPE*) (Chomsky & Halle 1968) the notion of an underlying form, or input, and, of course, both theories produce outputs. The difference is that *SPE* moves from input to output in a series of stages, called a derivation, whereas in OT the well-formedness constraints apply simultaneously to representations of structures and select one output. OT will be applied to the description of Shaoxing in my analysis, especially with respect to loanword phonology, vowel distribution and tone sandhi.

In the next subsections I will present the different subtheories in greater detail. In §1.6 I will present the overall organization of the dissertation.

1.3 Syllable Theory

After *SPE*[2], syllable theories developed in various directions and are used, among other things, to account for the phonotactics of languages. Levin (1985) and van der Hulst & Ritter (1999) present the most influential theories of the syllable. Their study not only gives a very good picture of the syllable structure of most European languages, but can also be employed to shed light on the syllable structure of Shaoxing. Although a

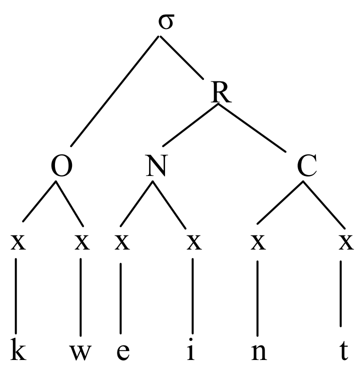
[2] *SPE* took a linear phonological approach and did not recognize syllable-internal structure.

full discussion of syllable theories is outside the scope of this thesis, I will briefly discuss some of the most important syllable theories, in particular the Onset-Rhyme model and mora theory.

1.3.1 Onset-Rhyme models

Onset-Rhyme (OR) models of syllable structure were developed in the mid twentieth century (see Pike & Pike 1947; Kuryłowicz 1948; Fudge 1969). Models like these maintain that the syllable is a prosodic unit with an internal hierarchical organization (Selkirk 1982, 1984) which maximally consists of Onset (O) and Rhyme (R). The Rhyme must have a Nucleus (N) and optionally also has a Coda (C). Since N is obligatory but the other constituents are not, possible structures are V, CV, VC, CVC, etc.: different languages permit different structures (see e.g. Blevins 1995). OR claims that the nodes can be maximally binary branching, so that the maximal syllable shape is CCVVCC (i.e. two onset consonants, a long vowel or diphthong as the nucleus and two coda consonants). Fudge (1969, 1987), Selkirk (1982) and many others analyze English syllable structure in terms of an OR model. In this model, the syllable structure of [kweint] 'quaint' is represented as in (1):

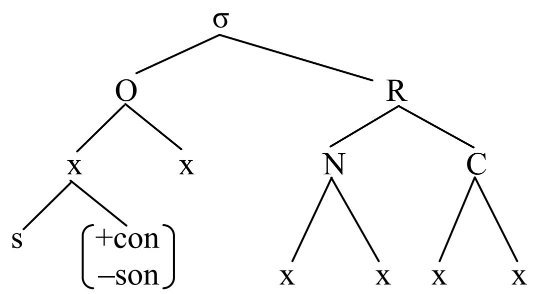
(1)



The structure in (1) represents a syllable with a branching onset and a branching rhyme, in which the R constituent dominates two further branching constituents: the nucleus and the coda. The terminals in this model are formed by the skeletal points (represented with x), i.e. the anchor point for root nodes or phonological features (Clements & Keyser 1983; van der Hulst & Ritter 1999). OR is adequate for most English syllables, except when it comes to three-member initial clusters such as [spr-], [str-], and [skr-], for which different solutions have been proposed.

Selkirk (1982) tried to solve this problem with an auxiliary syllable template, as shown in (2):

(2)



The template in (2) claims that [sp], [st], and [sk] in the sequences "spr-", "str-", and "scr-", respectively, all take up only one consonant slot. Note that words like /nekst/ 'next' remain a problem in such an approach. Selkirk (1982) did not apply the notion of initial [st-] to the same segment sequences in coda position because [-st] in the coda is well-formed according to the SSP[3] and is phonologically different from the initial [st-], but [kst] in [nekst] is still against SSP. However, the Chinese syllable structure cannot be fully parsed in OR models. Yip (2003) presents a critique of OR models in her discussion of the status of prenuclear glides in Chinese syllable structure. This issue will also be discussed in detail in chapter 4.

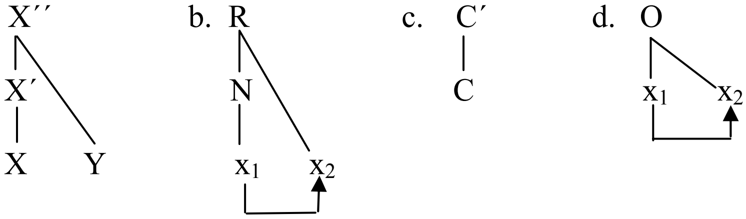
1.3.2 Dependency and Government Phonology

The fundamental contribution of Dependency Phonology is the claim that phonological structure involves head/dependency relations at all levels of organization (including intrasegmental organization), just as notions like government and headedness play a role in syntax and morphology (Anderson & Ewen 1987). This is referred to as the Structural Analogy Hypothesis. Government Phonology (GP) takes a very similar perspective regarding both this hypothesis and the organization of phonology proper (Kaye, Lowenstamm & Vergnaud 1985, 1990; van der Hulst & Ritter 1999). The GP approach is different from the OR approach, because in GP syllable structure is represented in the form of an X-bar syntactic structure, with the nucleus (X′) as a projection of V(X) (its head

[3] SSP, short for the Sonority Sequencing Principle (Hooper 1976; Kiparsky 1979; Clements 1990, among others), says that sonority should increase monotonically the closer one gets to the sonority peak, i.e. the vowel.

position), and the rhyme as the second projection (X′′) of a nuclear head position; if an onset head position is C, then the onset category is C′. In GP, there is no single constituent which corresponds to the traditional (OR) notion of 'coda'. The different structures that GP recognizes are illustrated in (3):[4]

(3) a. b. c. d.



The structure in (3a) shows some kind of X-bar-like structure disregarding 'coda' as a constituent, which presents the same notion of GP in (3b), both treating the coda position as a rhymal adjunct directly dominated by the rhymal node and the rhyme as a projection of the nucleus. The axiom of binary branchingness adopted in GP also allows just a limited array of options for the onset which is treated as a constituent in GP, as shown in (3c) and (3d). The direction of the government (head/dependent) relation is universally left to right (left-headed) within the syllable of constituent domain, as shown in (3b) and (3d).

GP captures the special character of the onset-rhyme relation by postulating a 'government relation', which means the nucleus is the head of the rhyme and their relations are manifested in terms of a licensing mechanism, which serves to authorize the units that comprise phonological representations. For the details of the licensing principles in GP, see Kaye, Lowenstamm and Vergnaud (1985), Anderson & Ewen (1987) and Harris (1994).

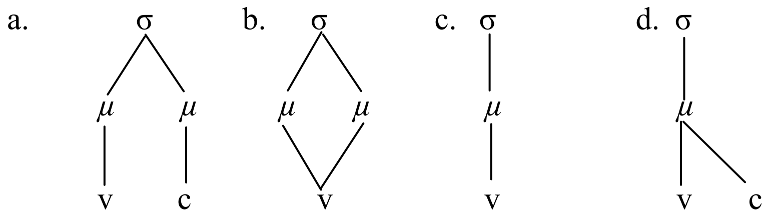
GP has been applied to a number of languages, clearly stating where a vowel should be inserted between consonants and where consonant gemination is possible and well licensed. Words such as *next* [nekst] may remain an unsolved problem. 'Superheavy' syllables with rhymes such as VVC, VCC, VVCC, or VCCC are all excluded in the government

[4] In (3a), X′′ refers to a maximal projection (i.e. a constituent) in X-bar structure, in which Y is not a constituent but a terminal slot; in (3b), R refers to Rhyme in the syllable structure, sharing the same constituent structure as (3a). In (3c), C′ refers to the onset category when Consonant (C) is the head of an onset. In this case, an onset may have a second consonant as a compliment of Onset (O), as shown in (3d).

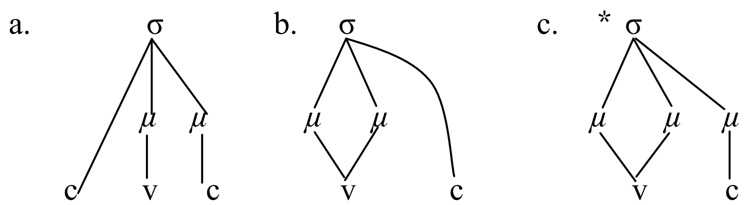
phonology approach, so that Harris (1994) introduced the concept of 'degenerate syllable', which means that an audible nucleus is absent after a word-final onset.

1.3.3 Moraic models

Another important and influential syllable theory is the mora model, in which, basically, some x-slots (in the nucleus and/or coda) but not others (in the onset) are mora positions (referred to as 'weight units' by Hyman 1985). In moraic theory, all vowels are moraic; a short vowel is monomoraic and a long vowel is bimoraic. Onset consonants are always non-moraic but a coda consonant can be assigned a mora according to the rule of Weight-by-Position (Hayes 1989). It is often argued that syllables are maximally bimoraic in moraic models (Hyman 1985; Davis 1999). As a result, the following structures are allowed for a moraic ("heavy") rhyme, a long vowel, a short vowel and a monomoraic rhyme, respectively:

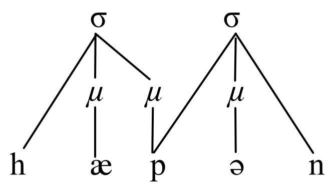
(4)


Any non-moraic consonant is directly attached to the syllable node, as in the case of an onset consonant and a consonant after a long vowel:

(5)


Davis (1999) claims that geminate consonants are inherently moraic and long vowels are bimoraic, so that true geminates can only be preceded by a short vowel. If the medial consonant in English word *happen* is regarded as a geminate, this explains why the vowel preceding this consonant must be short:

(6)



The moraic approach has been claimed to be superior to other syllable theories in some aspects (see van der Hulst & Ritter 1999 for discussion):

(a) Moras are better integrated into the prosodic hierarchy;
(b) The model expresses the weight-irrelevance of the onset;
(c) It expresses the variable nature of coda-weight;
(d) It offers an account of short vs. long vowels and singletons vs. geminates;
(e) It offers a way of expressing light, heavy and superheavy syllables.

However, problematic areas also exist in the moraic approach. The GP theory is better suited to account for phonotactics and to express the phonotactic independence of the onset with respect to its irrelevance for the prosodic hierarchy. Mora theory, since it does not recognize the onset as a constituent, cannot express the notion of onset well-formedness in a straightforward manner in that all onset consonants are non-moraic and directly connected to syllable node, ignoring the sonority difference between them. Another problem concerns the representation of glides, which is carried out exclusively by reference to the moraic level: vowels and glides are the same segment, the former being moraic and the latter being non-moraic (note that in Hyman's approach, by contrast, glides must be marked [–consonantal] at the melodic level) (Roca 1994). In this mirror, [wu] could be in fact a combination of *[uu] (differing in non-moraic and moraic status), which violates the OCP[5].

1.4 Tone Theory

It is estimated that about 60 to 70% of the world's languages are tone languages (Yip 2002). Theories of tone, however, have not developed to such a degree as theories of segmental or syllable structure. However, in

[5] Obligatory Contour Principle (OCP) (Roca 1994; Goldsmith 1990; Kenstrowicz 1994) will be discussed in chapter 2.

the past decades linguists have begun to pay more attention to tones with respect to their function, their phonetic realization and phonological behaviour, and the tonal structure of different languages. In both tone and non-tone languages, substituting a phoneme in a syllable or a lexical item may be responsible for a change in lexical meaning. In a tonal language, changing the tone on a syllable has the same effect. This is illustrated by the following examples from Shaoxing:

(7)	[tuŋ^{52}]	'east'	[duŋ^{31}]	'same'
	[tuŋ^{35}]	'understand'	[duŋ^{13}]	'pail'
	[tuŋ^{33}]	'freeze'	[duŋ^{22}]	'cave'

The examples in (7) show that tone plays as important a role in the representation of a lexical unit. The difference between phonemes can be described in terms of the distinctive features of which each phoneme consists. Tones can also be analysed in terms of features, which makes it possible that tones, like segments, can undergo processes like assimilation or dissimilation. There are two main issues concerning the internal structure of tone: the representation of tone features and that of register features.

1.4.1 Tone features

There are different traditions for marking tones in different languages. Chao (1928) marked the tone pitches of Chinese in a numerical system and divided them into five levels, with 1 as the lowest and 5 as the highest, as indicated in the examples in (7). Five seems to be the maximum number of levels used by any language (Yip 2002). Each syllable is marked by zero to three digits. Most syllables are given two digits (as in (7)), one for the starting pitch and one for the ending pitch. This is true even for level tones, unless the syllable is very short, in which case only one digit is usually used. Generally, there are at most three level tones in a language such as [55], [33] or [11], which are usually marked as H (High), M (Mid) and L (Low), respectively. [35] is a rising tone and [52] and [31] are falling tones; any non-level tone is referred to as a contour tone. A level tone is simpler than a contour, so that if a language has a contour tone, it must also have a level tone but the converse is not true. Three digits are used for tones which change direction in the middle of the syllable, such as [314], which are referred to as concave. A tone with a rise and a fall (e.g. [351]) is referred to as convex. As a rule of thumb, any contour with a two-digit difference between starting and ending points, such as 13 or 53, is probably phonologically a contour, but tones with only a one-digit difference, like 21 or 45, should be analysed with a degree of caution (Yip 2002). It has been argued in the literature that contour tones are sequences of level tones (Leben 1973; Yip 1989, 2002; Chen 2000).

The unit that bears the tone is called the tone-bearing unit (TBU). It is usually accepted that TBU cannot be the onset, which is weightless in the syllable and therefore non-moraic (Yip 1980; Pulleyblank 1986; Bao 1990). In some cases it is hard to decide what the exact TBU is in a particular language; it could be the vowel, the mora or the syllable in different languages, as Yip (2002: 73) illustrates (where T refers to a tone or set of tone features):

```
(8)  C V — T        or  CV           or  CV
       |                 |                 |
       μ                 μ — T             μ
       |                 |                 |
       σ                 σ                 σ — T
```

The minimal constituent which contains the TBU is the tone domain. We assume that the tone domain can be different from language to language. If a tone language has a moraic coda, the tone domain can be the rhyme constituent; if a tone language has a non-moraic coda, the tone domain can be the nucleus constituent. Whether tones are associated to a vowel, mora or syllable, tonal features can spread, assimilating or dissimilating, depending on the circumstances. Tonal assimilation or dissimilation is referred to as tone sandhi, which is a common phenomenon in Chinese languages. For example, when two rising tones occur in a lexical phrase in Shaoxing, the first rising tone is dissimilated to a level tone through a dissimilation rule, as illustrated in the example in (9):

(9) [tsɤ^{35}tsɤ^{35}] → [tsɤ^{33}tsɤ^{35}]
walk walk
'Take a walk.'
Rule: [lh] →[l] / __ [lh]

There are many different theories with respect to tone features, the behaviour of tone, their characteristics, their internal structure, and their phonological realizations, such as Halle & Stevens (1971), Yip (1980, 1989, 2002), Clements (1983) and Hyman (1986, 1993), Pulleyblank 1986), (Bao 1990, 1999), and Snider (1999), and these theories form a topic of controversy.

1.4.2 Register features

The relation between laryngeal features and the voice quality of consonants is a topic which has also inspired some debate in the literature (Halle & Stevens 1971; Bao 1999; Lombardi 1994; Snider 1999; Jansen 2004). One proposal holds that there are two laryngeal features: [stiff vocal cords] and [slack vocal cords] (Halle & Stevens 1971): [+stiff] specifies voicelessness in consonants and relatively high pitch in vowels, and [+slack] specifies voicing in consonants and relatively low pitch in vowels (Bao 1999). This captures directly the correlation between tone registers (H or L) and the voice qualities of obstruents (recall the data in (7), where this same relation is seen and which will be explored in more detail below). Yip (1980, 1989) formalizes this relation between vocal fold tension and voicelessness in obstruents on the one hand, and pitch in tone on the other by proposing that tone is not an indivisible entity in phonological representation. Rather, it consists of two parts, 'register' and 'tone', in which the two features play different roles. In Yip's theory, the register feature [+Upper] (marked by H) of a high rising tone is the Tonal root node, which dominates tone features (which may branch) (marked by *l* and *h*), as illustrated in the geometrical structure below (Yip 1989):

(10)

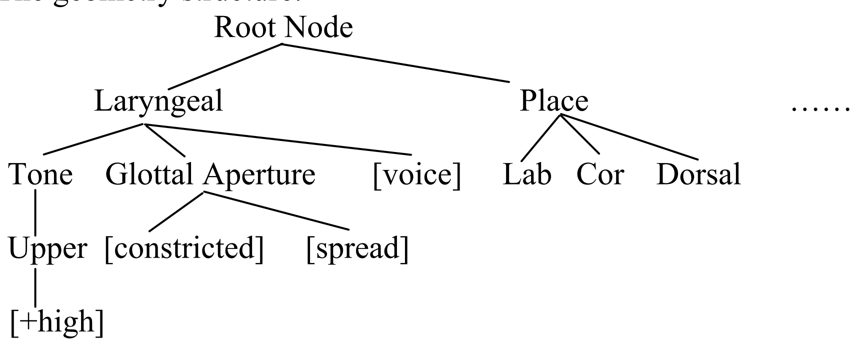
σ		
|		
H	Tonal Node	*register*
/ \		
l *h*		*tone*

Feature geometry provides the means to deal with some generalizations about laryngeal phonology that were impossible to capture in previous systems. In Yip's feature geometry in (10), Tone[6] features are differently represented compared to a model using H, M, and L features (Woo 1969; Clements 1985; Chen 2000) as mentioned above. In the

[6] The capitalized Tone refers to the whole tone feature structure, including register features and tone features.

feature geometry in (10), tones are dominated by [±Upper], which takes two values: high register [+Upper] or low register [–Upper]. In the low register, the highest pitch is maximally [3]. Thus if a tone [3] occurs in a L (low) register, the tone is *h* (high); if it occurs in a H (high) register, it is *l* (low). For example, the tone features of [35] in a H register are [H.lh]; and [31] in a L register is [L.hl].[7] The register feature [+Upper] (or H/L) is believed to be dominated, in turn, by laryngeal features. Yip (2002: 60) incorporates the Tone features in the feature geometry, as represented in (11):

(11) The geometry structure:



The geometry structure in (11) shows that tonal pitch is dominated by Upper (register); the tone features themselves are dominated by the laryngeal node. Just like segmental features, the tone feature(s) can spread, delete, assimilate or dissimilate since they are located within the segment domain in the geometry. This representation raises the question whether the TBU is necessarily the segment. However, some general points can be made regarding the behaviour of tone features. Yip (2002) lists the following properties:

(a) Mobility: Movement away from the original tone-bearing unit.[8]
(b) Stability: Survival after loss of original host segment.
(c) One-to-many: A single tonal feature shared by two or more segments.

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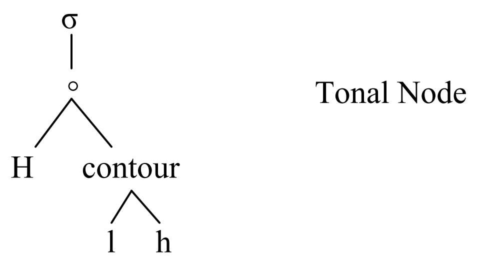
[7] H/L are used for the register feature; l/h for tone feature in Yip's model (2002). Thus, for example, [H.lh] represents a rising tone in a high register; while [L.hl] represents a falling tone in a low register.

[8] It is claimed that tone(s) can move away from the original TBU to an adjacent syllable progressively or regressively, as in the case of tone sandhi in Chinese (Yip 1980, 2002; Chen 2000, among others).

(d) Many-to-one: Multiple tonal features surfacing on a single host segment.
(e) Toneless segments: Potentially tone-bearing segments that never acquire phonological tone.

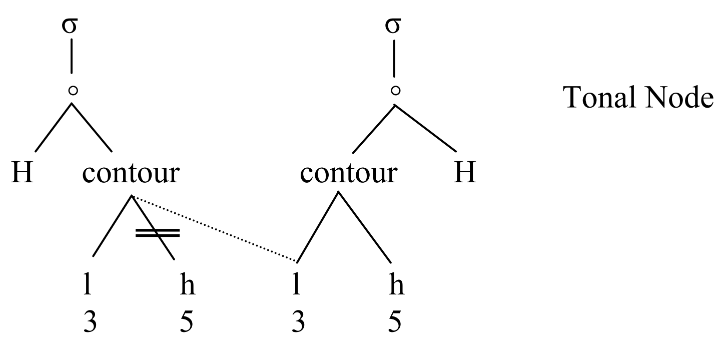
Although tone features are in one way or another similar to segmenal features, Yip's Tone theory offers a systematic, explanatory approach to Chinese tones. One disadvantage of Yip's tone model in (10) and (11) may be that it predicts that when a register feature spreads, it carries tone feature(s) with it, so that they spread together. The data of some languages, e.g. Chaozhou (Bao 1999), Shaoxing (Yang & Yang 2000), etc. suggest that register feature can spread in isolation, i.e. without carrying the tone feature along. For this reason, Bao (1999) proposes a different model to account for tone data in the Min language group, which can express register spreading without tone spreading, as shown in (12):

(12)



In (12), the register feature (H) and contour (tone) feature are in a sister relationship, so that register and tone can spread independently, or one tone feature can spread but the other does not, as in tone contour sandhi. For example, the tone sandhi rule in (9) can be expressed as follows:

(13)



The illustration in (13) expresses the rule in (9) and shows that it is a possible tone rule. In chapter 5 we will discuss the Shaoxing data with respect to tone in greater detail.

1.5 Data

Most of my data come from spoken Shaoxing, of which I am a native speaker. Some of the data were collected or used by other researchers or scholars, such as Chao (1928), Wang (1959), Chen (1982), Zhan (1991), and Yang & Yang (2000). Some of the data come from my own observations. I have also collected data from other native speakers who were deemed (by me) to have undergone little influence from Mandarin or other dialects in their pronunciation of their native language. Data from books were always checked against my own intuition and I omitted any data that did not comply with my intuitions.

Data from all other languages referred to in this dissertation are from books or journals or native speakers of the languages in question. Transcriptions follow the IPA system and are, if necessary, in narrow transcription. Tones are marked by numbers after each syllable; all tones are citation tones, except when discussing tone sandhi in chapter 5.

1.6 Organization

This dissertation presents an analysis of the overall phonology of Shaoxing Chinese from a synchronic perspective, with the secondary goal of casting some light on current issues in Modern Chinese (Mandarin).

Chapter 1 gives a general background, including a brief introduction to the historical profile of Shaoxing, a brief idea of the methodology adopted, some theoretical approaches applied in my dissertation, including syllable theory and tonal theory, and an overview of the data used in the dissertation.

Chapter 2 presents a general introduction to the consonants and vowels of Shaoxing in surface representation, providing an analytic description of its stops, affricates, fricatives, sonorant consonants, vowels, and all the possible forms of its complex "finals" (see ch. 2). I assume that the surface nasal vowels in Shaoxing are phonological sequences of vowel + nasal. In this chapter, I also offer a discussion of the phonological properties of all consonants in the initial position in Shaoxing and their distribution, which will make it possible to propose some constraints on phonotactics of Shaoxing. I make the claim that there are no complex onsets, no vowel-glide (VG) combinations, and no diphthongs in Shaoxing.

Chapter 3 sketches the distribution of the 14 surface vowels of Shaoxing through a description of different phonetic and phonological environments where complementary distribution occurs, with the aim of establishing the underlying vowel inventory of Shaoxing, which has only six phonemic vowels: /i u e ɤ o a/. In this chapter, I present an analysis from the perspective of Optimality Theory and propose a suitable constraint ranking for the relations between the 14 surface vowels and six phonemic vowels. I assume that the underlying forms of the three nasalized vowels [ẽ], [ɛ̃] and [ɵ̃] in Shaoxing are /en/, /an/ and /on/, respectively.

Chapter 4 presents a comparative analysis of the different approaches to the Chinese syllable structure, focusing on the prenuclear glide in the syllable of Shaoxing and Mandarin. I assume that the phonetic onsets [ʔ] and [ɦ] serve as 'tone assigners' when there is no other onset consonant and that there is a possible coda in Shaoxing syllable structure, which only allows [ʔ] and [ŋ]. I present a multiple-specifier X-bar syllable structure, assuming that the prenuclear glides are neither in the onset nor in the rhyme, but act like the specifier of N'', suggesting that N'' is a sub-constituent dominating N' (Rhyme). I also present a cross-tabulation of all the possible combinations of the Shaoxing syllables.

Chapter 5 gives an analysis of the tone system of Shaoxing, focusing on consonant-tone interactions. I assume that the voiced/low tone correlation is related to historical tonogenesis in Shaoxing and both voiceless and voiced initial obstruents and high and low tones occur in underlying forms. I formalize the complexity of tone sandhi in Shaoxing, assuming that tone sandhi is phonologically realized by way of tone feature spreading and delinking, and motivated by metrical mechanisms. I also present an OT analysis of all possible disyllabic tone sandhi rules in Shaoxing and offer a constraint ranking which explicitly accounts for all the disyllabic tone sandhi rules in Shaoxing.

Chapter 6 gives a summary of my dissertation and proposes topics for future studies.