

## Contents

*List of figures and tables xi*  
*Preface xiii*

### **1 Introduction 1**

- 1.1 The Chinese language family 1
- 1.2 Standard Chinese 2
- 1.3 Tone, syllable, morpheme, and word 3
- 1.4 Chinese characters, romanization, and pronunciation 5
- 1.5 Phonetics and phonology 8
  - 1.5.1 Phonetics 9
  - 1.5.2 Phonology 11
  - 1.5.3 Phonetics versus phonology 14
- 1.6 The organization of this book 14
  - Exercises 16

### **2 Consonants 19**

- 2.1 The production and classification of consonants 19
  - 2.1.1 The state of the glottis: voiced and voiceless sounds 19
  - 2.1.2 The vocal organs 22
  - 2.1.3 Place of articulation 24
    - 2.1.3.1 Labial: bilabial and labiodental 24
    - 2.1.3.2 Coronal: dental, alveolar, and post-alveolar 25
    - 2.1.3.3 Dorsal: velar 29
    - 2.1.3.4 Labiovelar and palatal 30
  - 2.1.4 Manner of articulation 31
    - 2.1.4.1 Stops: oral stops and nasal stops 31
    - 2.1.4.2 Fricatives 33
    - 2.1.4.3 Affricates 35

- 2.1.4.4 Approximants 36
- 2.1.4.5 The lateral [l] 36
- 2.1.5 Voice onset time: aspirated and unaspirated consonants 37
- 2.1.6 Summary and phonetic description 38
- 2.2 Consonants in SC 40
  - 2.2.1 Stops, nasals, and the lateral 41
  - 2.2.2 Labiodental and velar fricatives 43
  - 2.2.3 Dental affricates and fricative 44
  - 2.2.4 Post-alveolar consonants 45
  - 2.2.5 Alveolo-palatal consonants 47
  - 2.2.6 Glides 49
  - 2.2.7 SC consonant phonemes 49
- 2.3 Summary 50
  - Exercises 51

### **3 Vowels and glides 56**

- 3.1 The production and classification of vowels 56
  - 3.1.1 Aperture: high, mid, and low vowels 57
  - 3.1.2 Place of articulation: front, central, and back vowels 58
  - 3.1.3 Lip position: rounded and unrounded vowels 59
  - 3.1.4 Tense and lax vowels 60
  - 3.1.5 Modification of vowels 62
  - 3.1.6 Summary 63
- 3.2 Glides (semi-vowels) 66
- 3.3 Diphthongs 67
- 3.4 Vowels and glides in SC 70
  - 3.4.1 High vowels/glides and apical vowels 70
  - 3.4.2 Mid vowels 73
  - 3.4.3 Low vowels 77
  - 3.4.4 Diphthongs 78
  - 3.4.5 Rhotacized/Retroflexed vowels 80
  - 3.4.6 SC vowel phonemes 82
- 3.5 Summary 82
  - Exercises 83

### **4 Tone 88**

- 4.1 The phonetic properties and classification of tone 88
  - 4.1.1 What is tone? 88
  - 4.1.2 The phonetic properties of tone 90
  - 4.1.3 The tone bearing unit 91
  - 4.1.4 The classification and transcription of tone 92

- 4.2 Tones in SC 94
  - 4.2.1 The four phonemic tones 95
  - 4.2.2 The neutral tone 98
  - 4.2.3 Tonal variations 100
- 4.3 Summary 102
  - Exercises 103
  
- 5 Syllable structure 106**
- 5.1 The traditional view of Chinese syllable structure 106
- 5.2 Syllable structure and syllabification 108
  - 5.2.1 Hierarchical syllable structure 108
  - 5.2.2 Sonority Sequencing Principle 110
  - 5.2.3 Maximal Onset Principle 111
  - 5.2.4 Resyllabification and the zero-initial syllable 113
- 5.3 Phonotactic constraints and gaps in syllable types 115
- 5.4 Summary 120
  - Exercises 121
  
- 6 Phonetic transcription and *pīnyīn* 123**
- 6.1 IPA transcription and *pīnyīn* spelling 123
  - 6.1.1 Consonants and vowels 124
  - 6.1.2 Tone 129
- 6.2 *Pīnyīn* spelling conventions 131
- 6.3 Summary 134
  - Exercises 135
  
- 7 Segmental processes I 137**
- 7.1 Basic concepts 138
  - 7.1.1 Phonological features and natural classes of sounds 138
  - 7.1.2 Phonological processes and rules 144
    - 7.1.2.1 Assimilation 144
    - 7.1.2.2 Dissimilation 145
    - 7.1.2.3 Prosodically conditioned processes 145
    - 7.1.2.4 Phonological rules 146
  - 7.1.3 Rules and constraints 149
  - 7.1.4 Phonological rules versus phonetic rules 150
- 7.2 Assimilation in SC 150
  - 7.2.1 Palatalization 151
  - 7.2.2 Vowel nasalization 153

- 7.2.3 Low vowel assimilation 153
- 7.2.4 Mid vowel assimilation 155
- 7.3 Weakening and reduction in SC 158
  - 7.3.1 Consonant weakening 158
  - 7.3.2 Vowel reduction and rime reduction 160
  - 7.3.3 Vowel devoicing 163
- 7.4 Summary 165
  - Exercises 166
  
- 8 Segmental processes II 168**
- 8.1 Syllable-based processes 168
  - 8.1.1 Glide formation 168
  - 8.1.2 Syllabic consonants (apical vowels) 169
  - 8.1.3 Zero-initial syllables 171
  - 8.1.4 Mid vowel tensing 174
  - 8.1.5 Mid vowel insertion and high vowel split 175
  - 8.1.6 Syllable contraction 180
- 8.2 *r*-suffixation 182
  - 8.2.1 The use and function of the *r* suffix 182
  - 8.2.2 Phonological and phonetic representations of the suffix 184
  - 8.2.3 Suffixation to syllables with a simple rime 184
  - 8.2.4 Suffixation to syllables with a complex rime 186
- 8.3 Summary 189
  - Exercises 190
  
- 9 Tonal processes 193**
- 9.1 Tone features and tonal processes 193
- 9.2 Tonal processes for the four phonemic tones 196
  - 9.2.1 T3 and T4 reduction 196
  - 9.2.2 Tone 3 sandhi 197
  - 9.2.3 Tonal change for *yī* and *bù* 198
  - 9.2.4 Tonal changes in reduplication 199
  - 9.2.5 Tone 2 sandhi 200
- 9.3 The phonetic realizations of the neutral tone 201
- 9.4 Tone 3 sandhi in complex words and phrases 204
  - 9.4.1 Prosodic and morpho-syntactic domains 205
  - 9.4.2 Examples 209
- 9.5 Summary 217
  - Exercises 218

**10 Stress and intonation 222**

- 10.1 Stress and tone 222
  - 10.1.1 What is stress? 222
  - 10.1.2 Stress in SC and its interaction with tone 224
- 10.2 Intonation and tone 227
  - 10.2.1 What is intonation? 227
  - 10.2.2 Intonation in SC and its interaction with tone 228
- 10.3 Summary 232
  - Exercises 233

**11 Loanword adaptation 235**

- 11.1 Loanwords in SC 235
- 11.2 Sound adaptation in SC loanwords 239
- 11.3 Syllable structure adjustment 240
  - 11.3.1 Nucleus insertion 241
  - 11.3.2 Consonant deletion 243
- 11.4 Adaptation of consonants 245
  - 11.4.1 Coronal fricatives/affricates and velars 246
  - 11.4.2 Oral stops 248
  - 11.4.3 Liquids 249
  - 11.4.4 Nasals 251
- 11.5 Adaptation of vowels 252
  - 11.5.1 Front low vowel 253
  - 11.5.2 Front high and front mid vowels 254
  - 11.5.3 Back rounded vowels 255
  - 11.5.4 Glide-vowel sequences 257
  - 11.5.5 Mid central vowels 258
- 11.6 Summary 259
  - Exercises 261

**12 Variation in SC 263**

- 12.1 Chinese languages and dialects 263
- 12.2 Varieties of SC 265
- 12.3 SC in Taiwan 266
  - 12.3.1 Consonants 267
  - 12.3.2 Vowels 269
  - 12.3.3 Tone and stress 271
  - 12.3.4 Other differences 273

- 12.4 Summary 274  
Exercises 275

**Appendices** 277

- A The International Phonetic Alphabet 279  
B Tables for SC syllables: *pīnyīn* spelling and phonetic transcriptions 283  
C Internet resources 293

*Further reading* 295  
*References* 299  
*Glossary* 302  
*Index* 312