

构词法

The Morphology of Chinese

A Linguistic and Cognitive Approach

JEROME L. PACKARD



PUBLISHED BY THE PRESS SYNDICATE OF THE UNIVERSITY OF CAMBRIDGE
The Pitt Building, Trumpington Street, Cambridge, United Kingdom

CAMBRIDGE UNIVERSITY PRESS

The Edinburgh Building, Cambridge CB2 2RU, UK www.cup.cam.ac.uk
40 West 20th Street, New York, NY 10011-4211, USA www.cup.org
10 Stamford Road, Oakleigh, Melbourne 3166, Australia
Ruiz de Alarcón 13, 28014 Madrid, Spain

© Jerome L. Packard, 2000

This book is in copyright. Subject to statutory exception
and to the provisions of relevant collective licensing agreements,
no reproduction of any part may take place without
the written permission of Cambridge University Press.

First published 2000

Printed in the United Kingdom at the University Press, Cambridge

Set in 9.5/13pt Utopia [GC]

A catalogue record for this book is available from the British Library

ISBN 0 521 771129 hardback

Contents

List of figures *xiii*

List of tables *xiv*

List of abbreviations *xvi*

1 Introduction 1

1.1 Rationale: why investigate Chinese words? 1

1.2 The scope of this work 4

2 Defining the word in Chinese 7

2.1 What is a 'word'? different views 7

2.1.1 Orthographic word 7

2.1.2 Sociological word 8

2.1.3 Lexical word 8

2.1.4 Semantic word 9

2.1.5 Phonological word 10

2.1.6 Morphological word 11

2.1.7 Syntactic word 12

2.1.8 Psycholinguistic word 13

2.2 The Chinese concept of 'word' 14

2.2.1 The reality of the 'word' in Chinese 16

2.3 How we will define 'word' in Chinese 18

3 Chinese word components 21

3.1 Describing the components 21

3.1.1 Possible descriptions 21

3.1.1.1 Relational description 21

3.1.1.2 Modification structure description 22

3.1.1.3 Semantic description 25

3.1.1.4	<i>Syntactic description</i>	27
3.1.1.5	<i>Form class description</i>	32
3.2	Form classes of the components	34
3.2.1	Form class identities within words	36
3.3	Criteria for determining form class of Chinese word components	64
3.4	Morphological analysis of Chinese word components	67
3.4.1	Distinguishing 'free' and 'bound'	67
3.4.2	Distinguishing 'content' and 'function'	69
3.4.3	Morpheme types	69
3.4.3.1	<i>Two types of affix</i>	70
3.4.3.2	<i>Word-forming affixes vs. bound roots</i>	71
3.4.4	Summary and some test cases	73
3.4.4.1	<i>Determiners, classifiers and numerals</i>	74
3.4.4.2	<i>Location morphemes</i>	75
3.5	The nature of the components	76
3.5.1	Affixes as word components	76
3.5.2	Bound roots as word components	77
3.5.3	Free ('root') words as word components	78
4	Gestalt Chinese words	80
4.1	Word types	80
4.2	Nouns	82
4.2.1	Noun types	82
4.2.1.1	<i>Noun compound words</i>	82
4.2.1.2	<i>Noun bound root words</i>	83
4.2.1.3	<i>Noun derived words</i>	84
4.2.1.4	<i>Noun grammatical words</i>	85
4.2.2	N ₁ -N ₂ words: kinds of relations	85
4.3	Verbs	89
4.3.1	Verb types	89
4.3.1.1	<i>Verb compound words</i>	90
4.3.1.2	<i>Verb bound root words</i>	90

4.3.1.3	<i>Verb derived words</i>	92
4.3.1.4	<i>Verb grammatical words</i>	93
4.3.2	V ₁ –V ₂ : kinds of relations	93
4.3.3	Resultative verbs	95
4.3.3.1	<i>Three classes of resultatives</i>	98
4.3.3.2	<i>Lexical resultatives vs. syntactic extent resultatives</i>	100
4.3.3.3	<i>Other properties of resultatives</i>	101
4.3.4	Verb–Object words	106
4.3.4.1	<i>The problem</i>	107
4.3.4.2	<i>Previous analyses</i>	109
4.3.4.3	<i>A proposed solution</i>	115
4.3.4.3.1	The underlying lexical identity of V–O forms	115
4.3.4.3.2	Lexicalization and phrase criteria	118
4.3.4.3.2.1	Construal as <i>either</i> word <i>or</i> phrase	123
4.4	Nouns and verbs by component form class: statistical tendencies	125
4.5	Chinese words: special properties	129
4.5.1	Other word properties: Y.R. Chao's insights	132
4.5.1.1	<i>Versatile–restricted</i>	132
4.5.1.2	<i>Positionally free or bound</i>	132
5	X-bar analysis of Chinese words	134
5.1	Basic X-bar properties	134
5.2	X-bar properties applied to words	135
5.2.1	Expectations regarding 'X-bar' notation applied to words	135
5.3	X-bar morphology: previous proposals	136
5.3.1	Selkirk	136
5.3.2	Sadock	144
5.3.3	Other proposals	148

- 5.3.3.1 *Scalise* 148
- 5.3.3.2 *Di Sciullo and Williams* 149
- 5.3.4 Discussion of Selkirk and Sadock 149
 - 5.3.4.1 *Problems with the Selkirk proposal* 153
 - 5.3.4.1.1 The limited role of X^{-1} 153
 - 5.3.4.1.2 Lexical listing of predictable information 156
- 5.3.5 Previous X-bar analyses of Chinese words 157
 - 5.3.5.1 *Tang* 158
 - 5.3.5.2 *Sproat and Shih* 163
- 5.4 An alternative proposal for Chinese X-bar morphology 163**
 - 5.4.1 Classification of primitives 165
 - 5.4.1.1 *Properties of word components* 165
 - 5.4.1.2 *Why list 'bound' and 'free' in the lexicon?* 166
 - 5.4.2 Rules of word formation 168
 - 5.4.3 Limiting lexical productivity: X^0 as the sole recursive node 168
 - 5.4.3.1 *A note on universals* 169
 - 5.4.4 Predicted word forms 170
 - 5.4.5 Single and multiple branching structures 173
 - 5.4.5.1 *Single branching* 175
 - 5.4.5.2 *Multiple branching* 177
 - 5.4.5.2.1 Right branching 177
 - 5.4.5.2.2 Left branching 183
 - 5.4.5.2.3 Some examples of multiple embedding 192
- 5.5 The concept of 'head' applied to Chinese words 194**
 - 5.5.1 'Canonical head' vs. 'virtual head' 194
 - 5.5.2 'Semantic head' vs. 'structural head' 195
 - 5.5.3 Headless words 196
- 5.6 The proposed analysis applied to English 196**
 - 5.6.1 Single branching 200
 - 5.6.2 Right branching 202
 - 5.6.3 Left branching 207

6	Lexicalization and Chinese words	216
6.1	Lexicalization and the relation between word and constituent	217
6.1.1	Semantic and grammatical reduction in lexicalization	217
6.1.2	Categories of lexicalization	219
6.1.2.1	<i>Conventional lexicalization</i>	219
6.1.2.2	<i>Metaphorical lexicalization</i>	220
6.1.2.3	<i>Asemantic lexicalization</i>	221
6.1.2.4	<i>Agrammatical lexicalization</i>	221
6.1.2.5	<i>Complete lexicalization</i>	222
6.1.2.6	<i>Validity of 'degree of lexicalization'</i>	223
6.1.2.7	<i>Categories of lexicalization and lexical strata</i>	223
6.1.3	Explaining exceptions to the Headedness Principle	225
6.1.3.1	<i>Systematic exceptions</i>	230
6.1.3.1.1	Phonetic loans	230
6.1.3.1.2	Neologisms	231
6.1.3.1.3	Left-modified verbs	233
6.1.3.1.4	Zero-derived complex nouns	234
6.1.3.1.5	Induced constituent reanalysis	235
6.1.3.2	<i>Other exceptions</i>	236
6.2	Lexicalization and the availability of word-internal information	237
6.2.1	Phonological information	238
6.2.2	Morphological information	245
6.2.3	Syntactic information: theta roles in complex verbs	250
6.2.3.1	<i>Availability of resultative V₂ argument structure</i>	250
6.2.3.2	<i>Availability of 'object' theta roles to [V-O]_v verbs</i>	258
6.2.3.3	<i>A note on non-head opacity</i>	260
6.2.4	Semantic information	260
6.3	Lexicalization and grammaticalization	262
6.4	Lexicalization and the formation of new words	265
6.4.1	Historical factors	265
6.4.2	The modern language	267
6.4.2.1	<i>Abbreviation and combination ('compounding')</i>	268

- 6.4.3 The creation of new morphemes in Chinese 275
 - 6.4.3.1 *Most new Chinese morphemes are bound roots* 280

7 Chinese words and the lexicon 284

- 7.1 What is ‘the lexicon’? 284
- 7.2 The lexicon and lexical access 285
- 7.3 Lexical access in Chinese 286
 - 7.3.1 Chinese speech comprehension and the lexicon 287
 - 7.3.2 Chinese speech production and the lexicon 292
 - 7.3.3 Experimental evidence demonstrating whole-word processing 294
- 7.4 The Chinese lexicon: what is ‘listed’? 296
 - 7.4.1 What is ‘listed’?: a proposal 299
- 7.5 Chinese characters and the lexicon 304
 - 7.5.1 Character sound and meaning come from the natural speech lexicon 304
 - 7.5.2 How do characters access the lexicon? 305
 - 7.5.3 Is Chinese writing ‘ideographic’? 309

8 Chinese words: conclusions 310

- 8.1 What have we discovered about words? 310
- 8.2 The reality of the ‘word’ 316

References 318

Index 328

Figures

- 1 Prosodic hierarchy *11*
- 2 Syntax–Morphology interface *147*
- 3 Sadock and Selkirk systems compared *152*
- 4 A model of the Chinese lexicon *303*
- 5 Relation between lexical entry and orthography *306*

Tables

1	Relational descriptions of Chinese words	22
2	'Syntactic' descriptions of Chinese words	28
3	Words containing <i>zhǐ</i> 'paper'	38-9
4	Words containing <i>zǒu</i> 'walk, go'	40-1
5	Words containing <i>huà</i>	43-5
6	Words containing <i>pái</i>	47-9
7	Words containing <i>shí</i>	51-3
8	Words containing <i>zhù</i>	54-5
9	Words containing <i>zhèng</i>	58-9
10	Words containing <i>zhī</i>	61-2
11	Example of <i>-zhě</i> and <i>-yuán</i>	72
12	Five morpheme types	74
13	Chinese word types	81
14	Noun word types by form class	82
15	Verb word types by form class	90
16	Resultative types	103-4
17	Verb-Object forms	121-2
18	Complex noun and verb structures	127
19	Bound root combinations in English	153
20	Classification of morphemes	165
21	Word component properties	166
22	Possible Chinese word forms	170
23	Predicted and actual Mandarin word types	171
24	Noun word structures	172
25	Verb word structures	173
26	Mandarin word-forming affixes	174
27	English bound roots	198
28	English word-forming affixes	199
29	Categories of lexicalization	222
30	Lexicalization categories and lexical strata	224
31	Other exceptions to the Headedness Principle	236
32	Meaning transparency in neutral-toned words	240-3
33	Internally affixed words	247-8
34	Thematic roles	251

35	Semantic opacity and metaphor in lexicalized words	261
36	Modern Mandarin abbreviations	271-2
37	Function words formed through combination	273
38	Combined content words in modern Chinese	274-5
39	Creation of bound roots	281-2
40	Lexically listed elements in Chinese	300

1 | Introduction

1.1 Rationale: why investigate Chinese words?

Why is Chinese morphology worth investigating? To many, the very posing of this question will seem to suggest an ironic lack of relevance, due to the common belief that Chinese ‘doesn’t have words’ but instead has ‘characters’, or that Chinese ‘has no morphology’ and so is ‘morphologically impoverished’. The powerful influence that characters have over conceptions of the Chinese language has led many investigators (e.g., Hoosain 1992, Xu 1997) to doubt the existence of words in Chinese. My goal is to demonstrate that speakers of Chinese compose and understand sentences just as speakers of any language do, by manipulating sentence constituents using rules of syntax, and that the smallest representatives of those constituents have the size, feel, shape and properties of words. And while Chinese may not have word forms that undergo morphological alternations such as *give, gave, giving* and *given*, Chinese does indeed have ‘morphology’, and the morphology that it has is of a most intriguing and enlightening sort.

Understanding how Chinese words are constructed and used is critical for a full understanding of how the Chinese language operates. Chinese native speakers possess implicit knowledge about the structure and use of words. For example, a native speaker knows that you can change *shuìjiào* 睡觉 sleep-sleep ‘sleep’ to *shuìguojiào* 睡过觉 sleep-ASP-sleep ‘have slept’ or *tiàowǔ* 跳舞 jump-dance ‘dance’ to *tiàoguowǔ* 跳过舞 jump-ASP-dance ‘have danced’, but that you can’t in the same way change *jiějué* 解决 undo-decide ‘decide’ / *chūbǎn* 出版 emit-edition ‘publish’ to get **jiěguojué* *解过决 undo-ASP-decide ‘have decided’ or **chūguobǎn* *出过版 emit-ASP-edition ‘have published’. By the same token, the native speaker knows that it is fine to say *tiàodegāo* 跳得高 jump-EXTENT-tall ‘can jump high’ but not **tuīdeguǎng* *推得广 push-EXTENT-wide ‘can push wide’. In this book, I will explain how the native speaker knows these facts about words by describing the form that this knowledge takes. I do this by proposing generalizations that explain the regularities in the creation and use of words, and then

offering principled explanations for the exceptions to those generalizations. Following current trends in cognitive science, I shall argue that much of what native speakers know about words and their structure occurs innately in the form of a hard-wired, specifically linguistic ‘program’ in the brain, and that such hard-wired word structure information is realized in surface form upon exposure to linguistic data.

Following that line of reasoning, Chinese words are worth investigating because they have the potential to tell us a great deal about the universal properties of words in natural language. Chinese words traditionally have been considered uninteresting as objects of morphological investigation because they do not manifest characteristics thought critical to the concept ‘morphology’ (such as grammatical agreement or morphophonemic and paradigmatic alternation). In the pages that follow I will show that Chinese words are particularly suitable for asking different but equally interesting questions about words – for example, how words evolve, how they come into being via lexicalization, abbreviation or borrowing, and how they pass out of existence through reduction or grammaticalization. Chinese is particularly suited to answer these questions because Chinese word components are relatively easy to isolate, identify and track over time.

Chinese words exhibit other properties that must be understood if we wish to claim a universal characterization of words. For example, to what extent is the concept of ‘bound root’ – which is important in Chinese (see 3.4) – relevant in other languages? Since Chinese is the world’s most widely spoken language, it is clear that any account of language that aspires to a claim of universality – including universals of word structure – must take the Chinese data into account. Chinese words have a story to tell about the degree to which words are susceptible to the algorithms of syntax, and whether there is a definition of *word* that works reasonably well across languages. Using Chinese to address these questions is bound to increase our understanding of universal word properties.

I will demonstrate how the structure I propose for Chinese words goes a long way toward explaining how these words have come to have the shape they now have, resulting in the present designation of Chinese as a language of ‘compounds’. If we want to know how Chinese words evolved to take their present shape, it is important to understand how word components evolve to take on the identity they have, and how that identity shifts over time as new words are created

and old ones discarded. It would be a mistake to overrely on contemporary data in addressing historical factors, but a good understanding of what is happening in the language now can offer a possible window into the past.

Another important issue this study addresses is the relationship between words and characters in Chinese. Time and again, when I tell people that I work in Chinese linguistics, I get a response like: 'Oh, Chinese makes sentences by putting characters together, right?', as if, unlike the rest of the world's languages, Chinese enables spoken communication by the oral exchange of little visual icons. People for the most part do not really think that Chinese speech communication occurs via 'characters', but many *do* believe that the spoken language unit represented by the character – the morpheme – is the unit that is used to create and understand Chinese sentences. This may seem more reasonable than the notion of little visual icons flying through the air among speakers, but it is quite nearly as untenable, as we shall see in 7.2.

This widely accepted belief that the morpheme is the unit of spoken language lexical access has coloured the attitudes of many who work in the psycholinguistics of Chinese language processing. For this reason, Chinese language perception and production studies have tended to focus on properties of Chinese orthography.¹ Chinese orthography is valuable because its special characteristics enable us to ask questions about the nature of reading that cannot be asked using other orthographies. But if we want to gain insight into the psycholinguistic properties of Chinese we must also focus on the perception and production of spoken Chinese. To do that requires a precise description of Chinese words and their structure. Some who work in Chinese psycholinguistics assume that words in Chinese cannot be defined easily, or that the concept *word* is somehow not relevant for Chinese. But Chinese forms phrases and sentences as do all natural languages, by using rules of syntax to string together words that are retrieved from a mental lexicon. In order to investigate sentence processing in Chinese, we must be able to identify those words and have an understanding of their properties. Only then can we ask how the on-line natural language processing or the first- and second-language acquisition of spoken Chinese occurs.

¹ A notable exception to this is the work of Xiaolin Zhou and William Marslen-Wilson (e.g., Zhou and Marslen-Wilson 1994, 1995).

1.2 The scope of this work

This volume is a combination of descriptive and theoretical approaches. Following this introductory chapter, I provide criteria for identifying Chinese words in chapter 2, and in chapter 3 I explain why word structure is optimally described in terms of the form class identity of word components and how that may be accomplished. Then I offer a morphological analysis of Chinese words in chapter 4, followed by a universal ('X-bar') analysis in chapter 5 that abstracts the morphological properties of words over different form class categories. In chapter 6, I discuss the phenomenon of lexicalization, including why it explains how the relation between the gestalt word and its constituents varies, and why this is an important factor in understanding how Chinese words have evolved into their present form. The nature of the Chinese mental lexicon is discussed in chapter 7, including how lexical access occurs in speaking, hearing and reading Chinese. Finally, in chapter 8 I offer a summary and some concluding remarks.

The working hypothesis of this book is that the entity 'word' is a real cognitive construct that is also a linguistic primitive in natural language, and that word properties and word-forming algorithms like those proposed for Chinese arise due to universal principles and constraints that apply to all languages, serving to circumscribe the range of possible word types that may occur. This critically involves the notion of lexical primitives (X^{-0} , X^{-1} etc., see chapter 5),² the existence and combination of which I propose constitute the universal character of word structure. It is proposed that words in all human natural languages are analysable into these lexical primitives and their concatenation, subject to limited parametric variation.

I shall be referring in all cases to Mandarin Chinese, transcribed using the pinyin system of phonetic romanization and represented using simplified Chinese characters. Also, I'll be dealing for the most part with only two-syllable words. There are many words of three, four and more syllables in Chinese, but I feel better able to investigate

² For the purposes of this study, the terms X^{-0} and X^0 (with negative and non-negative superscripts respectively) may be considered the same. I generally follow the convention of using negative superscripts for morphological objects as a notational device to distinguish them from syntactic objects.

the various aspects of word formation in depth by restricting the data base at present to words consisting of two syllables. To further restrict my data base, in this study I deal for the most part only with complex words formed from noun and verb elements.

I would like to thank for helpful comments or references (in more-or-less chronological order) Yingxing Yin, Joan Bybee, Isabel Wong, Michael Sawyer, Dick Anderson, Bill Nagy, Yu-chiao Jade Longenecker, Yu Shen, Yabing Wang, Xiaolin Hu, Tianwei Xie, Carl Pollard, Jim Dew, Vivian Ling, Mike Wright, Taiyuan Tseng, Richard Sproat, Kevin Miller, Chiung-chu Wang, Gary Feng, Shiou-yuan Chen, Bob Good, Chih-ping Sobelman, Jerry Morgan, Georgia Green, Jennifer Cole, Dan Silverman, Hans Hock, Adele Goldberg, Elabbas Benmamoun, Chin Woo Kim, James Tai, Yung-li Chang, James Myers, Jane Tsai, Shou-hsin Teng, C-C. Cheng, Benjamin Tsou, Liejiong Xu, Derek Herforth, Marcus Taft, Xiaolin Zhou, Tongqiang Xu, Charles N. Li, Tsu-lin Mei, Elizabeth Traugott, Wen-yu Chiang, Yuancheng Tu, Si-qing Chen, David Chen, Yan Chen, Shenghang Huang, Yu-min Ku, Kazue Hara, Shu-fen Chen, Gary Dell, Carol Packard, Jose Hualde, Jenn-Yeu Chen, James Yoon, Victor Mair and Stanley Starosta. I would especially like to thank my friend Shengli Feng, two anonymous Cambridge University Press reviewers and two additional anonymous reviewers for giving me valuable detailed feedback on draft versions of the manuscript. Special thanks also to Alain Peyraube for detailed comments on the manuscript and for many valuable references to complex word formation in earlier stages of the Chinese language. Thanks also to Christine Bartels and Kate Brett for having faith in my work, to Citi Potts for excellent copy editing, and to Barbara Cohen for making the index. I would like to thank the University of Illinois at Urbana-Champaign for granting the sabbatical leave allowing me to work on this book, and the UIUC Research Board for awarding the grant that enabled me to complete the project. Finally, I want to thank my fellow family members Carol, Errol, Sam and Eric, whose patience as I worked on this book was always appreciated (though it may not have seemed so at times), and whose dinner conversations have provided an endless font of linguistic and conceptual creativity as well as comic relief.

As the reader goes through this work, in many places it will become evident that I have remained overly simplistic, choosing to sidestep many questions of interest. In some cases I have remained at that

level intentionally, because to do otherwise would have resulted in great delays as I tackled problems of detail, and also because the resulting exposition has allowed me to make the points and address the issues I wish to focus on. There are also likely to be logical lacunae and analytical abysses in the interplay of ideas that I have forged in putting this work together. I invite the reader to point these out, and to offer suggestions and criticism.