

# SINO-TIBETAN LINGUISTICS

Critical Concepts in Linguistics

*Edited by*  
*Randy J. LaPolla*

**Volume III**

**Sinitic**

 **Routledge**  
Taylor & Francis Group  
LONDON AND NEW YORK

First published 2019  
by Routledge  
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge  
711 Third Avenue, New York, NY 10017

*Routledge is an imprint of the Taylor & Francis Group, an informa business*

© 2018 selection and editorial matter, Randy J. LaPolla; individual owners retain copyright in their own material.

The right of Randy J. LaPolla to be identified as the author of the editorial material, and of the authors for their individual chapters, has been asserted in accordance with sections 77 and 78 of the Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this book may be reprinted or reproduced or utilised in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

*Trademark notice:* Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

*British Library Cataloguing-in-Publication Data*

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

*Library of Congress Cataloging-in-Publication Data*

Names: LaPolla, Randy J., editor.

Title: Sino-Tibetan linguistics : critical concepts in linguistics / edited by Randy J. LaPolla.

Description: London ; New York, NY : Routledge, 2018. | Includes bibliographical references and index. Contents: v. 1. Establishing the relationships—

v. 2. Language Contact and Areal Features—v. 3. Sinitic—v. 4. Tibeto-Burman.

Identifiers: LCCN 2018012985 | ISBN 9780415577397 (set) | ISBN 9780415579766 (v. 1) | ISBN 9780415579759 (v. 2) | ISBN 9780415579742 (v. 3) | ISBN 9780415579735 (v. 4)

Subjects: LCSH: Sino-Tibetan languages.

Classification: LCC PL3521 .S565 2018 | DDC 495—dc23

LC record available at <https://lcn.loc.gov/2018012985>

ISBN: 978-0-415-57739-7 (set)

ISBN: 978-0-415-57974-2 (Volume III)

Typeset in Times New Roman  
by Apex CoVantage, LLC

**Publisher's Note**

References within each chapter are as they appear in the original complete work

## CONTENTS

### VOLUME III SINITIC

*Acknowledgements* vii

**Introduction to Volume III: Sinitic** 1

### PART 1

**Archaic/Old Chinese and Ancient/Middle Chinese** 19

**35 Word families in Chinese** 21

BERNHARD KARLGREN

**36 Cognate words in the Chinese phonetic series** 121

BERNHARD KARLGREN

**37 Derivation by tone-change in Classical Chinese** 141

G. B. DOWNER

**38 Tones and prosody in Middle Chinese and the origin of the rising tone** 176

MEI TSU-LIN

**39 Some new hypotheses concerning word families in Chinese** 196

E. G. PULLEYBLANK

**40 Some further evidence regarding Old Chinese -s and its time of disappearance** 210

E. G. PULLEYBLANK

**41 *Fangyan* gleanings** 216

W. SOUTH COBLIN



42	<b>A new approach to Chinese historical linguistics</b>	247
	JERRY L. NORMAN AND W. SOUTH COBLIN	
43	<b>A case of radical ambiguity in Old Chinese: some notes toward a discourse-based grammar</b>	262
	DEREK D. HERFORTH	
44	<b>The adposition <i>yi</i> and word order in Classical Chinese</b>	273
	CHAOFEN SUN	
<b>PART 2</b>		
	<b>Modern varieties</b>	285
45	<b>A system of tone "letters"</b>	287
	YUEN-REN CHAO	
46	<b>The non-uniqueness of phonemic solutions of phonetic systems</b>	290
	YUEN-REN CHAO	
47	<b>Peiping phonology</b>	321
	CHARLES F. HOCKETT	
48	<b>The zero initial and the zero syllabic</b>	344
	FANG-KUEI LI	
49	<b>A systemic interpretation of Peking syllable finals</b>	347
	M. A. K. HALLIDAY	
50	<b>Tonal development in Min</b>	372
	JERRY NORMAN	
51	<b>Hakka in Wellentheorie perspective</b>	390
	MANTARO J. HASHIMOTO	
52	<b>The lexicon in syntactic change: lexical diffusion in Chinese syntax</b>	421
	ANNE YUE-HASHIMOTO	
53	<b>Arguments against 'subject' and 'direct object' as viable concepts in Chinese</b>	446
	RANDY J. LAPOLLA	

## ACKNOWLEDGEMENTS

The publishers would like to thank the following for permission to reprint their material:

The National Museums of World Culture for permission to reprint Bernhard Karlgren, 'Word Families in Chinese', *Bulletin of the Museum of Far Eastern Antiquities* 5, 1933, 9–120.

The National Museums of World Culture for permission to reprint Bernhard Karlgren, 'Cognate Words in the Chinese Phonetic Series', *Bulletin of the Museum of Far Eastern Antiquities* 28, 1956, 1–18.

Cambridge University Press for permission to reprint G. B. Downer, 'Derivation by Tone-change in Classical Chinese', *Bulletin of the School of Oriental and African Studies* 22, 1/3, 1959, 258–290.

Harvard-Yenching Institute for permission to reprint Mei Tsu-lin, 'Tones and Prosody in Middle Chinese and the Origin of the Rising Tone', *Harvard Journal of Asiatic Studies* 30, 1970, 86–110.

*Journal of Chinese Linguistics* for permission to reprint Edwin G. Pulleyblank, 'Some New Hypotheses Concerning Word Families in Chinese', *Journal of Chinese Linguistics* 1, 1973, 113–125.

Cambridge University Press for permission to reprint Edwin G. Pulleyblank, 'Some Further Evidence Regarding Old Chinese -s and Its Time of Disappearance', *Bulletin of the School of Oriental and African Studies* 36, 2, 1973, 368–373.

Taylor & Francis for permission to reprint W. South Coblin, 'Fangyan Gleanings', *Monumenta Serica* 37, 1986/87, 113–143.

*Journal of Chinese Linguistics* for permission to reprint Chaofen Sun, 'The Adposition *Yi* and Word Order in Classical Chinese', *Journal of Chinese Linguistics* 19, 2, 1991, 203–218.

The International Phonetics Association for permission to reprint Yuen-Ren Chao, 'A System of Tone "Letters"', *Le Maître Phonétique* 45, 1930, 24–7.

The Institute of History and Philology for permission to reprint Yuen-Ren Chao, 'The Non-uniqueness of Phonemic Solutions of Phonetic Systems', *Bulletin of the Institute of History and Philology* 4, 1934, 363–97. Reprinted in Martin Joos (ed.), *Readings in Linguistics* (Chicago: The University of Chicago Press, 1957), 38–54.

The Linguistic Society of America for permission to reprint Fang-kuei Li, 'The Zero Initial and the Zero Syllabic', *Language* 42, 2, 1966, 300–302.

The author for permission to reprint M. A. K. Halliday, 'A Systemic Interpretation of Peking Syllable Finals', in P. Tench (ed.), *Studies in Systemic Phonology* (London & New York: Pinter, 1992), pp. 98–121.

*Journal of Chinese Linguistics* for permission to reprint Jerry L. Norman, 'Tonal Development in Min', *Journal of Chinese Linguistics* 1, 2, 1973, 222–238.

*Journal of Chinese Linguistics* for permission to reprint Mantaro J. Hashimoto, 'Hakka in Wellentheorie Perspective', *Journal of Chinese Linguistics* 20, 1992, 1–48.

*Journal of Chinese Linguistics* for permission to reprint Anne Yue-Hashimoto, 'The Lexicon in Syntactic Change: Lexical Diffusion in Chinese Syntax', *Journal of Chinese Linguistics* 21, 1993, 213–253.

The Institute of History and Philology for permission to reprint Randy J. LaPolla, 'Arguments Against "Subject" and "Direct Object" as Viable Concepts in Chinese', *Bulletin of the Institute of History and Philology* 63/4, 1993, 759–813.

### Disclaimer

The publishers have made every effort to contact authors/copyright holders of works reprinted in *Sino-Tibetan Linguistics: Critical Concepts in Linguistics*. This has not been possible in every case, however, and we would welcome correspondence from those individuals/companies whom we have been unable to trace.

## INTRODUCTION TO VOLUME III

### Sinitic

This volume of the set is devoted to articles about the Sinitic varieties, particularly the historical development of this branch of the family.

We begin in Part I with studies on Old Chinese, in particular the identification of word families ("groups of words which may be suspected of being cognate" Karlgren 1956: 1), a methodology followed by every major figure working on historical linguistics in Sino-Tibetan. The first application of this concept within Sino-Tibetan is probably Stuart Wolfenden's 1928 article on word families in Tibetan, but as Walter Simon (1949: 3) mentions, Wolfenden's work in this area got a boost from our first article in this volume, Chapter 35, Bernhard Karlgren's "Word families in Chinese" (1933). Karlgren's basic insight is that:

Chinese does not consist of so and so many thousands of independent monosyllables, none of them cognate to any others; in Chinese, as in all other languages, the words form families, groups of cognate words formed from one and the same primary stem.

(p. 9)

Because of this, in doing internal reconstruction and in doing comparative work we need to first identify as many members of a particular word family as possible, and then analyse all of the members of the word family in order to isolate the root and affixes, if possible, in doing internal reconstruction, and also to identify the correct cognate forms when comparing with other languages (see also Wolfenden (1937), Chapter 14 in Volume I). This paper deals only with the internal identification of word families in Old Chinese. Except for a short note at the very end that some of the alternations involve "different parts of speech or similar grammatical distinctions" (p. 119), Karlgren does not discuss the variations as derivation. Karlgren says this very long paper is just a "short preliminary note" (p. 10), and he will expound on word families at greater length later, but from this article we can see the tremendous amount of work that went into collecting and comparing the different words to group 693 of them into word families. We of course could disagree with certain of his decisions, and with his reconstructions of Archaic (Old) Chinese, which are what he is often basing his families on, but we cannot



deny that this article led to a lot of very useful work in Chinese historical phonology and morphology, and is still a valuable resource on its own. Karlgren himself later (1956: 1) says of this paper:

My list was, of course, only tentative: in a great many of the cases adduced the affinity is obvious and undeniable, in other cases it is only probable or even merely possible and it was left to future research to determine which of the stem alternations proposed could be proved.

Chapter 36, Karlgren 1956, “Cognate words in the Chinese phonetic series”, is a short follow-up on Karlgren’s 1933 paper on word families, showing how the Chinese intellectuals who created the Chinese characters must have understood the word family relations among the members of many word families because of the way they used the same character to represent two words, or used similar characters to represent related words. He distinguishes cases where an element is used purely as a phonetic and cases where what might be considered the phonetic is in fact the basic root, e.g. he argues, for example, that 牙 “tooth” and 芽 “sprout” are the same word, and the second character is simply disambiguated by the addition of the “grass” radical, but 訝 “to welcome, receive” is different in that the “tooth” character has been borrowed (假借) for its sound alone, and then later disambiguated from “tooth” with the “to speak” radical, and so only in this case can we talk about the character being a combination of phonetic and radical. He gives pairs of words that he argues are variants of the same root, organized by the type of variation in initial or final (all together 546 characters are discussed, but this involves more than 546 words, as Karlgren only gives one number to a character used for two different words).

Karlgren stopped at identifying the variations and argued the alternations were part of Archaic Chinese (Wang Li’s view as well, e.g. 1979, 1982). In some cases that is all we can do, though in many cases we can identify the morphology involved in the variations. The third article in this set, Chapter 37, Downer’s seminal article, “Derivation by tone-change in Classical Chinese” (1959), was inspired by Wang Li’s (1958) insight that at least some of the tonal variation can be considered morphological derivation, with the *píng*, *shǎng*, and *rù* tones considered basic, and many of the *qù* tones considered derived.<sup>1</sup> Downer attempts to develop this idea. He gives a long list of forms broken down into the different types of semantic contrast between the two forms. He also mentions the alternation in voicing of initial segment in some pairs of words (including forms that also contrast in tone), and sees a similarity in the sorts of derivations found. Although he is aware of Haudricourt’s suggestion of an \*-s suffix as the source of the *qù* tone, he does not discuss that and sees the variants simply as a difference in tone. He seems to not accept the possibility of affixes in Chinese. In his discussion of the difference in voicing of initials he says “. . . it is difficult to account for the incidence of voiced and voiceless initials. It seems that here there is only alternation, no system of derivation being demonstrable” (p. 263).<sup>2</sup> Now the idea of an

\*-s suffix as the origin of the *qù* tone is generally accepted, and although there is still controversy about what affixes there were other than that and what they did, there is general agreement that affixation was a part of the earliest stages of Chinese, and Proto-Sino-Tibetan as well (see LaPolla (1994, 2017a)).

Chapter 38, Mei Tsu-lin’s 1970 classic, “Tones and prosody in Middle Chinese and the origin of the rising tone” brings together evidence from modern dialects, Buddhist sources with descriptions of Middle Chinese, and old Sino-Vietnamese loans to support Pulleyblank’s (1962) proposal that a glottal stop was the origin of the *shǎng* (rising) tone, a hypothesis that is now widely accepted. From the Buddhist sources Prof. Mei concludes that:

the tonal system of Middle Chinese around the eighth century is found to be (1) level tone: long, level, and low; (2) rising tone: short, level, and high; (3) departing tone: longishness about to be lost and probably high in pitch and rising in contour; and (4) entering tone: short, with uncertain pitch and contour . . .

(p. 110)

Given that there are some Min varieties that still have glottal stop in the rising tone, and given that the old (Han era) Sino-Vietnamese loans also point to a final glottal stop in those loan words, and given that glottal stop has been shown in other related languages to develop into a high tone, he concludes that the rising tone should have originated in a glottal stop.

Our fifth paper returns to the methodology of word families, in this case trying to find morphological explanations for the variant forms. Unlike Karlgren, who thought there was no discernable pattern that could be identified, Prof. Edwin G. Pulleyblank has quite a few papers on this issue, and here we reproduce two of them (see also Pulleyblank (1977–1978)). The first one, Chapter 39, is his “Some new hypotheses concerning word families in Chinese” (1973a), a follow-up to his two-part 1962 article on word families mentioned earlier in the discussion of Prof. Mei’s article. This article discusses the \*-s suffix which is said to have resulted in the departing tone; a voiced glottal fricative prefix which he argues was the source of the voiced/voiceless initial alternations; an \*-s- prefix which in some cases has a causative or transitivising function (see also Bodman (1973)); an \*-r- prefix with a causative sense; and a vocalic ablaut. Prof. Pulleyblank presents word families in Chinese and Tibetan to support the reconstruction of these features in Chinese, and to show the parallels in the morphology between the two branches of the family. He also gives evidence from Chinese renderings (transcriptions) of foreign terms (expounded on more fully in the next article) in support of the \*-s suffix. In support of his idea of a voiced prefix as the source of the voiced/voiceless initial variants he equates this prefix with the Tibetan prefix *ṣ*, which appears often as prenasalization before consonants in modern dialects, and has been argued to have been a voiced velar or glottal fricative in Old Tibetan (Coblin 2002; Hill 2009). As discussed in LaPolla (2017a), the association of this Tibetan prefix with



the Chinese voicing distinctions is problematic, as the Tibetan form did not have that function, and the voicing alternations are independent of that prefix. Currently some scholars argue that the variants were due to an \*s- prefix (e.g. Dai (2001); Gong (2000, 2001); Phua (2004); and Mei (2012)) while Sagart and Baxter (2010, 2012) argue for an \*N- prefix as the cause of many of the voicing contrasts said by the others to be due to \*s-. My own view, argued in LaPolla (2017a), is that:

all three phenomena exist; while some of the voicing distinctions can be shown to be due to either an \*s- prefix or a \*nasal prefix, we need to also recognize the possibility that some of the voicing contrasts can't be explained by either of these prefixes and so are an independent phenomenon.

(p. 32)

The \*s- prefix in Chinese and its correspondence with a similar prefix in many Tibeto-Burman languages is well accepted, though as mentioned earlier, there is controversy about which particular words it applied to in Chinese. The next few items discussed by Pulleyblank are not so well accepted, but stimulated thought about the issues he is trying to address. The first is what he initially calls an “\*-r- infix associated with causative meaning” (1973a: 118),<sup>3</sup> but then a couple of lines down he says, “This could well reflect an original *r* prefix which has left its trace as retroflexion of the following dental initial” (p. 118), and he compares it with the *r*- prefix in Tibetan, so it seems he intends it to be a prefix in the proto-language. Next he talks about vowel variations or ablaut, though does not give any meaning associated with the differences, so this does not seem to be derivational morphology. One very important contribution of this article is the move beyond the more limited sense of word family of Karlgren and others to allowing any sort of variation. As Pulleyblank discusses, Karlgren limited his word families to words that had finals of the same kind, and he mentions Tōdō Akiyasu's (1962) etymological dictionary of word families as being even more strict in terms of limiting the word families to words that were in the same rhyme category in the *Shījīng*. But there is no reason to be so strict. Pulleyblank gives a number of word families that show different types of variations, in initial, in final, or in vowel (see LaPolla (1994) for many examples where the forms differ only in the final consonant).

Chapter 40, also by Pulleyblank (1973b: “Some further evidence regarding Old Chinese -s and its time of disappearance”) is also a follow-up on his 1962 article. In the 1962 article Prof. Pulleyblank had given evidence from Chinese translations of foreign words for the persistence of a sibilant final in some words in the departing (*qù*) tone until the third century CE, and in this article he presents more evidence to push that date up to the sixth century CE in some areas. He also gives a justification for the use of transcription (transliteration) evidence in historical linguistics, which up to that time had not been widely used. He hypothesises that in those finals where there was no longer the original \*-s (< \*-ts), there was still a final \*-h (< \*-s) at the time the tone categories were recognized (late

fifth century), and all the words with sibilant finals were considered departing tone words.

The next article, Chapter 41, is only one of many I could have included from the many important works produced by W. South Coblin on the dialects of the Western and Eastern Han dynasty periods based on sound glosses, transcriptions, and other relevant materials (see the 15 works listed for Prof. Coblin between 1977 and 1994 in the references section). This was before he turned to looking at the dialects of the Tang period, the Qing period, and the modern period (e.g. Coblin (2005, 2011); see Simmons and Van Auken (2014) for a full listing of Prof. Coblin's publications up to 2014). The book *Fang Yan (The speech of different locales)* is an obvious source for people looking for dialect material, and Serruys had done important work on this (1955, 1959, etc.), but was criticized by Miller (1975) for assuming that the words in the *Fang Yan* were cognate. Prof. Coblin acknowledges that many of the sets are not cognate, but goes on to give lists of words that we could see as cognate, and compares them in terms of differing in initial, final, or tone, showing that there is regularity to the differences in the forms that could help us identify different dialects.

Up to this point, the work we have been looking at generally followed Karlgren's view that the *Qiyèyùn* (601 CE), on which Karlgren based his reconstruction of Ancient Chinese (now more often called “Middle Chinese”), was a real language and was a direct descendant of Archaic Chinese (roughly 1000 BCE, now called “Old Chinese”), and so the latter could be reconstructed at least partly on the basis of working backward from the former. Our next article, Chapter 42, Jerry L. Norman and W. South Coblin's, “A new approach to Chinese historical linguistics” (1995), breaks with that tradition, pointing out the problems with these assumptions and the whole methodology of relying solely on rhyme books and written materials rather than spoken dialect data in doing Chinese historical linguistics, and arguing for a more empirical approach to Chinese historical linguistics and dialect studies. It argues that the *Qiyèyùn* not only does not represent the Cháng'ān dialect of the Súi period, as Karlgren had assumed, it does not represent the phonological system of any single variety (as also argued by a number of the most eminent Chinese scholars): “. . . it is rather an inventory of a tradition of phonological glossing. As such, the *Chieh-yun* system is not really a language in any common sense of the term” (p. 580). As it does not represent the spoken language of any particular place or time, the *Qiyèyùn (Chieh-yun)* system cannot be the origin of the modern dialects. The modern dialects derive from earlier spoken languages. As Prof. Norman also argues in his 2014 article, the sources used for reconstructing Middle and Old Chinese are heterogeneous, and so can't reflect a single variety, and so we should work back from the spoken languages and reconstruct a much simpler proto-system. To do proper work on reconstructing Chinese, scholars need to collect full descriptions of modern and earlier documented dialects, compare the different dialects using the comparative method, and also work out the migration history to try to explain how the varieties came to be the way they are.



These ideas were largely due to Prof. Norman,<sup>4</sup> who was, to Prof. Coblin (2013: 222), “the most original thinker in the field of Chinese linguistics encountered in nearly fifty years spent in the field. Simply put, he changed forever the way we perceive and think about Chinese”.<sup>5</sup> The ideas presented in this article, like some of Prof. Norman’s other ideas, were ahead of their time and did not go down well with many of those working within the established traditions, and so aside from some of Prof. Norman’s students and colleagues who have focused on natural dialect data (e.g. Prof. Coblin, Kevin O’Connor, Richard V. Simmons, David Prager Branner, Zev Handel—see also LaPolla (2001) on the migrations and their influence on the dialects), most in the field did not heed the call of this article and are still mainly working within the old tradition based on the old problematic assumptions.

The final two papers in this part are on the grammar of Old Chinese. As mentioned (and criticized) in Norman and Coblin’s paper (Chapter 42), not much attention was paid to the grammar and lexicon of Old Chinese or later periods, as the focus was only on the phonology.

In Chapter 43, Derek D. Herforth’s paper, “A case of radical ambiguity in Old Chinese: some notes toward a discourse-based grammar” (1987), the point is not so much a description of the grammar, though some of that is included, but how readers of Old Chinese can understand expressions in context even though there is no redundancy in the language, and so all interpretation is context dependent. Although not mentioned by Herforth, the article is in line with W. von Humboldt’s view that Chinese “consigns all grammatical form of the language to the work of the mind” (1863[1988]: 230), and it presages David Gil’s work on Riau Indonesian, showing how little grammatical structure is necessary for communication (e.g. Gil (1994, 2008, 2013)). It also presages the constructionist approach, as it argues that much of the interpretation is based on the overall construction of the expression (see LaPolla 2013 for a constructionist approach to Modern Mandarin). It was also influential in the development of the ideas initially expressed in LaPolla 1990, 1993, 1995. Working with Chinese and seeing how different languages can be in terms of what they make explicit and what they don’t led me also to an understanding of communication that does not assume a coding-decoding model, but instead depends on abductive inference of the communicator’s intention in performing an act that the communicator intends for the addressee to infer the intention of (e.g. LaPolla (2015a)). My one quibble with the article is that it makes a distinction between topic and subject on the basis of semantics rather than any grammatical features, and so argues that topics cannot be arguments of the verb. This is a very different use of the terms from the usual typological literature, where topic is a pragmatic notion, what the clause is about (whether or not it is an argument of the verb), and subject is a grammatical notion that must be shown to have grammaticalized in the language.

The last paper in this part, Chapter 44, Sun Chao-fen’s “The adposition *yi* and word order in Classical Chinese” (1991), discusses the history and distribution of phrases formed with *yi* 以, which Sun treats as an adposition (in Old Chinese it

had verbal uses as well). He shows that within the adposition phrase (AP) *yi* can occur before or after its complement, i.e. as preposition or postposition, and the whole adposition phrase can occur before or after the verb, though the postpositional AP does not appear postverbally. Based on topic continuity counts of the type used in Givón 1983, he argues that the position of the prepositional AP before or after the verb is related to discourse-pragmatic factors—the preverbal type is more likely to be used in contrastive contexts. Sun also suggests that the postpositional, preverbal AP is the archaic order, in contrast to some scholars who argued that it was a newer order. See LaPolla 2015b for the significance of this.

In Part 2 we turn to the modern varieties of Sinitic.

The first paper, Chapter 45, written entirely in the International Phonetic Alphabet, as was the custom for the *Journal of the International Phonetic Association*, is the very famous and often cited but rarely read classic by Prof. Yuen-Ren Chao (1930) introducing his system for transcribing tones and intonation. This system has become standard in Sino-Tibetan studies and beyond. It involves seeing the tones as being on a five-level scale, and so the tones can be represented using numerals that refer to the levels, e.g. 33 for a mid level tone, and 53 for a high falling tone. He also created “tone letters” for expressing the same concept, such as ʃ (= 33) and ʋ (= 53).

Chapter 46 is also a classic by Prof. Chao (1934), in this case a classic for Structuralist linguistics generally, and is not normally thought of as a paper on Chinese linguistics, even though it uses examples from Chinese varieties. It points out the fact that a phonemic analysis is a model of a language, and different models may be constructed for different purposes, and so an analysis is not correct or incorrect, but good or bad for particular purposes. Prof. Chao puts forward a new and broader concept of the phoneme:

A phoneme is one of an exhaustive list of classes of sounds in a language, such that every word in the language can be given as an ordered series of one or more of these classes and such that two different words which are not considered as having the same pronunciation differ in the order or in the constituency of the classes which make up the word.

(pp. 39–40)

Prof. Chao points out that this proposal “leaves unspecified the scope of the word ‘sound’ as regards size and kind, i.e. the degree of analysis into successive elements and the degree of differentiation into kinds” (p. 40), and so the phoneme is not limited to individual segments. This concept was echoed by Firth (1957), and has recently been developed in Chinese linguistics by Shen Ruiqing, building on the concept of emergent phonology. Another thing that sets Prof. Chao’s view apart from much modern work is his awareness of the temporal aspect of communicative interaction, something that was lost in the latter part of the twentieth century, as scholars just worked with abstract symbols on paper (and so talk about “left edge” or “right edge” phenomena, showing how divorced they are from actual



speech). Only recently have efforts within Interactional Linguistics attempted to bring temporality back into linguistic analysis (e.g. Auer 2009, Hopper 2011).

Prof. Chao's article was considered very important in the development of Structuralist linguistics. Voegelin and Voegelin (1999: 79) said that "one of the longest critical bibliographies in the history of twentieth century linguistics will be concerned with tracing the reactions that followed Yuen-ren Chao's stimulus". Because of this importance it was selected for inclusion in Martin Joos' *Readings in Linguistics* (1957), a selection of important works in the Structuralist tradition.<sup>6</sup>

We see in Prof. Chao's paper an ability to think in an unbiased way about issues from different perspectives. One thing that strikes a reader of early twentieth century linguistics articles is the free-thinking nature of the discussions. This changed in the latter part of the twentieth century in the US, as Chomskyan dogma held sway. The next three articles are included here to show how differently people could think about certain issues, as discussed by Chao as well—in this case, how to analyse the phonemic system of the Beijing dialect of Chinese. Chapter 47 is Charles F. Hockett's "Peiping phonology" (1947), which argues for a different approach to phonology based on a non-traditional conception of distinctive features, where what is important is identifying a small set of "determining features" as opposed to "determined features", which allow us to create a minimal set of such features for distinguishing the different phonemes of the language. Like Chao and Firth, Hockett also argues for a non-linear approach to phonology, quite different from late twentieth century phonology, which as I mentioned was based on left-to-right written data, and so depended quite a bit on linearity. Hockett says (p. 255):

Phonological description thus consists of: (a) a list of the determining features (with alternative statements if alternatives exist); (b) a statement of the arrangements in which determining features occur in utterances; (c) a statement of the circumstances under which each determined feature occurs.<sup>7</sup>

The rest of the article is an application of this approach to the Beijing dialect of Chinese.

The next, Chapter 48, is Fang-Kuei Li's short article, "The zero initial and the zero syllabic" (1966), which I have selected because of Prof. Li's status in the field,<sup>8</sup> but also because it presents a rather radical analysis, even suggesting the possibility of a vowelless analysis of Mandarin.

The next, Chapter 49, is Michael Halliday's article, "A systemic interpretation of Peking syllable finals" (1992), which argues for an approach that is a combination of the traditional Chinese approach which Prof. Halliday learned from Wang Li and Luo Changpei and the prosodic approach which Prof. Halliday learned from J. R. Firth (cf. Firth and Rogers 1937). Prof. Halliday explains his four principles of analysis:

One is the Chinese phonological principle whereby all syllables are structured simply as initial plus final. The second is the Firthian prosodic

principle whereby features such as posture (y/a/w) and resonance (nasal/oral) are treated nonsegmentally. The third is the paradigmatic principle whereby features are interpreted as terms in systems, each system having a specified condition of entry . . . The fourth is the dynamic principle whereby the syllable is envisaged as a wave, a periodic pattern of movement characterized by a kind of 'flow-and-return'.

(p. 435)

Prof. Halliday's approach is highly original and insightful, and not based on segmental phonemes, and the article contrasts the prosodic approach and the traditional segmental approach. It also suggests a typology of features, but one that is quite different from that of Hockett, as it classifies the syllables in terms of the initial and final prosodic systems, the initial systems being "alignment (place)" (pointed vs. flat), "manner", "voice onset" (early (unaspirated) vs. late (aspirated)), and "posture" (a-posture vs. y-posture vs. w-posture) and the final systems being "posture" (a-posture vs. y-posture vs. w-posture), "resonance" (oral vs. nasal), "aperture" (close, half-close, open), and "tone" (high level, mid rising, low rising, falling). "Posture shift" within the syllable is seen as yet another prosodic system.

We now turn to two articles on non-Mandarin varieties. The first is Jerry Norman's "Tonal development in Min" (1973), Chapter 50, which is relevant to Part 1, as it was sort of a forerunner of the article by Norman and Coblin (Chapter 42) discussed there, but as it is about a single group, Min, it is included here. It uses the comparative method to reconstruct the system of initial stops in Proto-Min in order to explain the tonal and initial correspondences between the different Min dialects. In doing this it shows that a six-way system of initial stops (plus voiceless resonants) is needed to explain the correspondences, which implies that the *Qièyùn* system, which only has a three-way system of initial stops, cannot be the ancestor of the Min group. What has stimulated a lot of interest in this article is Norman's reconstruction of a series of "softened initials", which he suggests might have been due to some sort of prefix.<sup>9</sup> This has stimulated much work on this question, e.g. Handel (2003, 2010a, 2010b), and Baxter (2014).

Our next item, Chapter 51, Mantaro J. Hashimoto's 1992<sup>10</sup> article "Hakka in Wellentheorie perspective", could have been included in Volume II, as it deals with language contact, but as it is mainly about a single branch of Sinitic, Hakka, I have included it here. It is very much the sort of dialect geography discussed in the introduction to Volume II of this set, in this case as a way to identify what is unique about the Hakka varieties, and to show how the correspondences between initials and tones is due to a particular wave of migration out of the Central Plains, which forms a ring around the Central Plains (see the maps given in the article). This also ties in with Prof. Chao and Prof. Norman's work on the dialects, as it argues for the same empirical approach involving comparing existing varieties.

Next we have Anne Oi-kan Yue-Hashimoto's "The lexicon in syntactic change: lexical diffusion in Chinese syntax" (1993a). I mentioned earlier how little attention had been given to the grammar of Sinitic varieties other than Mandarin due



to the nature of how fieldwork on the dialects simply involved asking people how to say certain characters so the researcher could see how that dialect related to Middle Chinese, plus there was the mistaken assumption that the grammar of the Sinitic varieties is basically the same, yet one researcher, Anne Oi-kan Yue-Hashimoto, has steadfastly been working on the grammar of the different varieties (see for example Yue-Hashimoto (1993b), Yue (2017)), aside from her excellent work on Cantonese. A student of William S-Y. Wang and also of Yuen-Ren Chao, she has taken from both teachers a concern for the non-Mandarin varieties of Sinitic and for an empirical approach. In this paper she argues for applying Prof. Wang's approach of looking at the spread of change through a language, generally discussed as "lexical diffusion" (e.g. Wang (1969, 1979); Wang & Lien (1993)), but in this case applied to grammatical changes.<sup>11</sup> She combines this with the geographical approach of Mantaro Hashimoto (her husband) and the language contact that is made manifest by looking at the distribution of forms to argue that there is stratification of language due to contact (see also Yue-Hashimoto (1991)) and that the strata can influence each other and create hybrid forms, much like Prof. Wang and Prof. Lien had shown for phonology.

Our last article in this volume, Chapter 53, Randy J. LaPolla's "Arguments against 'subject' and 'direct object' as viable concepts in Chinese" (1993), argues that the sort of restricted neutralizations in certain constructions that we associate with the ideas of "subject" and "direct object", to the extent that they exist, are grammaticalized, and so there is no certainty that all languages will have them, and they must be justified on grammatical grounds for such terms to be used. The article surveys a large number of constructions in Chinese usually associated with grammatical relations, and finds that Mandarin Chinese has not grammaticalized such restricted neutralizations, and so there is no validity in talking about grammatical relations in Chinese. As Yuen-Ren Chao (1955, 1959, 1968) and Lü Shuxiang (1979) had argued, all clauses in Chinese are topic-comment, and so, as they pointed out, what they called "subject" or "zhǔyǔ" in Chinese is not a grammatical relation, but simply a topic. As argued in LaPolla (1990, 1995, 2009), and LaPolla and Poa (2005, 2006), word order is based on a simple principle of information structure, with topical elements occurring before the verb, and non-topical and focal elements occurring after the verb. This simple principle can explain all of the word order patterns in Mandarin Chinese. This expanded the typology of alignment systems to include languages with no alignment, like Chinese. This view was not widely accepted when it was first proposed, as most linguists at the time simply imposed prefabricated generative metalanguages based on English (e.g. LFG, GPSG, HPSG, GB, etc.) onto Chinese, without questioning whether the categories assumed actually were manifested in the language. The work presented here actually developed out of an attempt to apply the Lexical Mapping Theory of LFG to Chinese. When done honestly, it didn't work, and this led to using a framework that did not assume grammatical relations as universals (Role and Reference Grammar) as a way to understand why Chinese was so different from other languages. Now there is more of a trend to analyse languages on their

own terms, and so the view expounded here is becoming more accepted within the field of linguistic typology and also in the field of Chinese linguistics, including being supported in a recent paper by Prof. Shen Jiaxuan, former Director of the Institute of Linguistics in the Chinese Academy of Social Sciences (Shen 2017).

### Notes

- 1 Maspero (1935), Yu Min (1948), and Haudricourt (1954) had also argued that the variants involved derivation. Forrest (1960) followed Haudricourt's view of the *qù* tone being due to an \*-s suffix and equated it with the -s suffix in Old Tibetan.
- 2 One problem for Downer is his acceptance of Karlgren's reconstruction of a voiced stop final in cases where there is rhyming or *xiéshēng* "contact" between *rù* tone (stopped) and *qù* tone (non-stopped) words (instead of an affix added after the stop final that led to its loss, as Haudricourt had suggested), as it is then not a tonal or affixal difference but a difference in final. This limits his thinking on the matter.
- 3 Bodman (1980) and Sagart (1999, 2001) accepted the idea of an \*-r- infix. Bodman did not discuss its meaning; Sagart (1999) gives its meaning as 'repeated or strenuous action', but Sagart 2001 says it "derives nouns for plural objects and verbs of distributed actions" (p. 134).
- 4 See also Norman (2014) for a more recent statement of these views, and Coblin (2013), which reproduces correspondence between Prof. Norman and Prof. Coblin on these matters. See also Handel (2010b) for discussion of the differences in the two methodologies.
- 5 See also Sagart (2012) for an excellent summary and similar appreciation of Prof. Norman's influence.
- 6 For more on the life and work of Prof. Chao, see Chao (1977) and LaPolla (2006a, 2017b) (which contain somewhat different information).
- 7 See also Hockett (1950). While it seems the system he is presenting is similar to the idea of distinctive features, the concepts do not seem to be the same, and there is no mention of Jakobson (1941) or the ideas therein.
- 8 See LaPolla (2006b) and Li (1989) for the life and work of Prof. Li. It should be mentioned here for those new to the field that Prof. Chao and Prof. Li were the two major figures in the field of Chinese linguistics in the mid twentieth century aside from Karlgren, and many of the other scholars whose papers appear here or are mentioned here were students or colleagues of one or both of these scholars, and were greatly influenced by them.
- 9 See also Norman (1974) for reconstruction of the full set of initials; Norman (1986) for the view that the "softened initials" derive from prenasalized stops, based on comparison with Hmong-Mien loan data; and O'Connor (1976) and Norman (1986) for evidence of the distinction beyond Min. As Sagart (2012) points out, reaction to this article led to Prof. Norman working out the historical strata in Min (Norman 1979), which influenced work on other varieties in this regard (see the introduction to Volume II of this series).
- 10 This article was originally presented at a conference in 1986, and published posthumously, as Prof. Hashimoto passed away in 1987.
- 11 Although she calls what she is doing "lexical diffusion in Chinese grammar" in the article (p. 241), she is actually looking at constructions, and is in a sense ahead of her time in recognizing that grammaticalization is of constructions, not individual words.

### References

- Auer, Peter. 2009. 'On-line syntax: thoughts on the temporality of spoken language'. *Language Sciences* 31: 1–13.
- Baxter, William H. 2014. 'Northern Min "softened" initials in borrowed vocabulary'. In Richard VanNess Simmons and Newell Ann Van Auken (eds), *Studies in Chinese and*



- Sino-Tibetan Linguistics: Dialect, Phonology, Transcription and Text (Language and Linguistics Monograph Series 53)*. Taipei: Institute of Linguistics, Academia Sinica, 53–72.
- Bodman, Nicholas C. 1973. 'Some Chinese reflexes of Sino-Tibetan *s*-clusters'. *Journal of Chinese Linguistics* 1: 383–396.
- Bodman, Nicholas C. 1980. 'Proto-Chinese and Sino-Tibetan: data towards establishing the nature of the relationship'. In F. Van Coetsem and L. R. Waugh (eds), *Contributions to Historical Linguistics*. Leiden: E. J. Brill, 34–199.
- Chao, Yuen-Ren. 1930. 'A system of tone "letters"'. *Le Maître Phonétique* 45: 24–27.
- Chao, Yuen-Ren. 1934. 'The non-uniqueness of phonemic solutions of phonetic systems'. *Bulletin of the Institute of History and Philology, Academia Sinica* IV 4: 363–397. Reprinted in Martin Joos (ed.), *Readings in Linguistics*. Chicago: The University of Chicago Press, 1957, 38–54.
- Chao, Yuen-Ren. 1955 [1976]. 'Notes on Chinese grammar and logic'. In Anwar S. Dil (ed.), *Aspects of Chinese Sociolinguistics: Essays by Yuen Ren Chao*. Stanford, CA: Stanford University Press, 237–249.
- Chao, Yuen-Ren. 1959 [1976]. 'How Chinese logic operates'. In Anwar S. Dil (ed.), *Aspects of Chinese Sociolinguistics: Essays by Yuen Ren Chao*. Stanford, CA: Stanford University Press, 250–259.
- Chao, Yuen-Ren. 1968. *A Grammar of Spoken Chinese*. Berkeley/Los Angeles, CA: University of California Press.
- Chao, Yuen-Ren. 1977. *Yuen Ren Chao: Chinese Linguist, Phonologist, Composer, and Author. Oral History Based on Interviews by Rosemary Levenson*. Berkeley, CA: Regional Oral History Office, a department of the Bancroft Library, UC Berkeley.
- Coblin, W. South. 1977/1978. 'The initials of the Eastern Han period as reflected in phonological glosses'. *Monumenta Serica* 33: 207–247.
- Coblin, W. South. 1978. 'The initials of Xu Shen's language as reflected in the Shuowen *duruo* glosses'. *Journal of Chinese Linguistics* 6.1: 27–75.
- Coblin, W. South. 1979. 'The finals of Xu Shen's language as reflected in the Shuowen *duruo* glosses'. *Journal of Chinese Linguistics* 7.2: 181–245.
- Coblin, W. South. 1979/1980. 'The finals of Cheng Hsüan's language as reflected in phonological glosses'. *Monumenta Serica* 34: 263–317.
- Coblin, W. South. 1981. 'Notes on the dialect of the Han Buddhist transcriptions'. *Proceedings of the International Conference on Sinology: Section on Linguistics and Paleography*. Taipei: Academia Sinica, 121–183.
- Coblin, W. South. 1982. 'Notes on the Western Han initials'. *Tsing Hua Journal of Chinese Studies* 14: 111–133.
- Coblin, W. South. 1983. *A Handbook of Eastern Han Sound Glosses*. Hong Kong: The Chinese University Press, Chinese University of Hong Kong.
- Coblin, W. South. 1984. 'The finals of Yang Xiong's language'. *Journal of Chinese Linguistics* 12.1: 1–52.
- Coblin, W. South. 1986a. 'Some sound changes in the Western Han dialect of Shu'. *Journal of Chinese Linguistics* 14.2: 184–226.
- Coblin, W. South. 1986b. 'The finals of the *Shiming* language'. In John McCoy and Timothy Light (eds), *Contributions to Sino-Tibetan Studies*. Leiden: Brill, 283–344.
- Coblin, W. South. 1986c. 'The rimes of Chang-an in Middle Han times: Part I: the late Western Han period'. *Acta Orientalia* 47: 93–131.
- Coblin, W. South. 1986/1987. 'Fangyan gleanings'. *Monumenta Serica* 37: 113–143.

- Coblin, W. South. 1987. 'The rimes of Chang-an in Middle Han times: Part II: the early Eastern Han period'. *Acta Orientalia* 48: 89–110.
- Coblin, W. South. 1993. 'BTD revisited: a reconsideration of the Han Buddhist transcriptional dialect'. *Bulletin of the Institute of History and Philology, Academia Sinica* 63.4: 867–943.
- Coblin, W. South. 1994. 'Remarks on some early Buddhist transcriptional data from north-west China'. *Monumenta Serica* 42: 151–169.
- Coblin, W. South. 2002. 'On certain functions of 'a-chung in early Tibetan transcriptional texts'. *Linguistics of the Tibeto-Burman Area* 25.2: 169–184.
- Coblin, W. South. 2005. *Comparative Phonology of the Huang-Xiao Dialects*. Taipei: Institute of Linguistics, Academia Sinica.
- Coblin, W. South. 2011. *Comparative Phonology of the Central Xiang Dialects*. Taipei: Institute of Linguistics, Academia Sinica.
- Coblin, W. South. 2013. 'Jerry Norman: remembering the man and his perspectives on Chinese linguistic history'. *Journal of Chinese Linguistics* 41.1: 219–245.
- Dai, Qingxia. 2001. 'Zangmian yuzu yuyan shidong fanchou de lishi yanbian [Historical changes in the causative category of Tibeto-Burman languages]'. *Journal of Chinese Linguistics* 29.1: 1–10.
- Downer, G. B. 1959. 'Derivation by tone-change in Classical Chinese'. *Bulletin of the School of Oriental and African Studies, University of London* 22.1/3: 258–290.
- Firth, J. R. 1957. *Papers in Linguistics 1934–51*. Oxford: Oxford University Press.
- Firth, J. R. and B. B. Rogers. 1937. 'The structure of the Chinese monosyllable in a Hunanese dialect (Changsha)'. *Bulletin of the School of Oriental Studies* 8.4: 1055–1074.
- Forrest, R. A. D. 1960. 'Les occlusive finales en Chinois archaïque'. *Bulletin de la Société de Linguistique de Paris* 55(1960): 228–239.
- Gil, David. 1994. 'The structure of Riau Indonesian'. *Nordic Journal of Linguistics* 17: 179–200.
- Gil, David. 2008. 'How much grammar does it take to sail a boat? (or, what can material artefacts tell us about the evolution of language?)'. In Andrew D. M. Smith, Kenny Smith and Ramon Ferrer i. Cancho (eds), *The Evolution of Language*. Hackensack, NJ: World Scientific, 123–130.
- Gil, David. 2013. 'Riau Indonesian: a language without nouns and verbs'. In J. Rijkhoff and E. van Lier (eds), *Flexible Word Classes: Typological Studies of Underspecified Parts of Speech*. Oxford: Oxford University Press, 89–130.
- Givón, T. 1983. 'Topic continuity in discourse: an introduction'. In T. Givón (ed.), *Topic Continuity in Discourse: A Quantitative Cross Language Study*. Amsterdam/Philadelphia, PA: John Benjamins Publishing Company, 5–41.
- Gong, Hwang-chen. 2000. 'Cong Han-Zangyu de bijiao kan Shanggu Hanyu de citou wenti [Looking at the problem of prefixes in Old Chinese through Sino-Tibetan comparisons]'. *Language and Linguistics* 1.2: 39–62.
- Gong, Hwang-chen. 2001. 'Shanggu Hanyu yu yuanshi Han-Zangyu dai r yu l fushengme de gouni [A reconstruction of consonant clusters with -r- and -l- as the second elements in Old Chinese and Proto-Sino-Tibetan]'. *Humanitas Taiwanica* 54: 1–36.
- Halliday, M. A. K. 1992. 'A systemic interpretation of Peking syllable finals'. In P. Tench (ed.), *Studies in Systemic Phonology*, London/New York: Pinter, 98–121; reprinted in J. J. Webster (ed.) 2005. *Studies in Chinese Language*, 294–320. (Vol. 8 in the Collected Works of M.A.K. Halliday) London: Continuum.
- Handel, Zev. 2003. 'Northern Min tone values and the reconstruction of "softened initials"'. *Language and Linguistics* 4.1: 47–84.



- Handel, Zev. 2010a. 'Old Chinese and Min'. *Chuangoku Gogaku* 中国語学 257: 34–68.
- Handel, Zev. 2010b. 'Competing methodologies of Chinese dialect fieldwork, and their implications for the study of the history of the Northern Min dialects'. In Weldon South Coblin and Anne O. Yue-Hashimoto (eds), *Studies in Honor of Jerry Norman*. Hong Kong: Ng Tor-Tai Chinese Language Research Centre, Institute of Chinese Studies, The Chinese University of Hong Kong, 13–39.
- Hashimoto, Mantaro J. 1992. 'Hakka in Wellentheorie perspective'. *Journal of Chinese Linguistics* 20.1: 1–48.
- Haudricourt, Andre-Georges. 1954. 'Comment reconstruire le chinois archaïque'. *Word* 10: 351–364.
- Herforth, Derek D. 1987. 'A case of radical ambiguity in Old Chinese: some notes toward a discourse-based grammar'. *Suzugamine Joshi Tanki Daigaku Bulletin of Humanities and Social Science Research* 34: 31–40.
- Hill, Nathan W. 2009. 'Tibetan <h> as a plain initial and its place in Old Tibetan phonology'. *Linguistics of the Tibeto-Burman Area* 32.1: 115–140.
- Hockett, Charles F. 1947. 'Peiping phonology'. *Journal of the American Oriental Society* 67.4: 253–267.
- Hockett, Charles F. 1950. 'Peiping morphophonemics'. *Language* 26: 63–85.
- Hopper, Paul. 2011. 'Emergent grammar and temporality in interactional linguistics'. In P. Auer and S. Pfänder (eds), *Constructions: Emerging and Emergent*. Berlin: Walter de Gruyter, 22–44.
- Humboldt, Wilhelm von. 1863 [1988]. *On Language: The Diversity of Human Language-structure and its Influence on the Mental Development of Mankind* [Über die Verschiedenheit des menschlichen Sprachbaues und ihren Einfluss auf die geistige Entwicklung des Menschengeschlechts]. Translated by Peter Heath. Cambridge: Cambridge University Press.
- Jakobson, Roman. 1941. *Kindersprache, Aphasie und allgemeine Lautgesetze*. Uppsala: Almqvist and Wiksells [1968 *Child Language, Aphasia, and Phonological Universals*. The Hague/Paris: Mouton].
- Joos, Martin. 1957. *Readings in Linguistics: The Development of Descriptive Linguistics in America 1925–26*. Chicago, IL: The University of Chicago Press.
- Karlgren, Bernhard. 1933. 'Word families in Chinese'. *Bulletin of the Museum of Far Eastern Antiquities* 5: 9–120.
- Karlgren, Bernhard. 1956. 'Cognate words in the Chinese phonetic series'. *Bulletin of the Museum of Far Eastern Antiquities* 28: 1–18.
- LaPolla, Randy J. 1990. *Grammatical Relations in Chinese: Synchronic and Diachronic Considerations*. PhD dissertation, University of California, Berkeley.
- LaPolla, Randy J. 1993. 'Arguments against "subject" and "direct object" as viable concepts in Chinese'. *Bulletin of the Institute of History and Philology* 63/4: 759–813.
- LaPolla, Randy J. 1994. 'Variable finals in Proto-Sino-Tibetan'. *Bulletin of the Institute of History and Philology* 65.1: 131–173.
- LaPolla, Randy J. 1995. 'Pragmatic relations and word order in Chinese'. In Pamela Downing and Michael Noonan (eds), *Word Order in Discourse*. Amsterdam/Philadelphia, PA: John Benjamins Publishing Company, 297–329.
- LaPolla, Randy J. 2001. 'The role of migration and language contact in the development of the Sino-Tibetan language family'. In R. M. W. Dixon and A. Y. Aikhenvald (eds), *Areal Diffusion and Genetic Inheritance: Case Studies in Language Change*. Oxford: Oxford University Press, 225–254.

- LaPolla, Randy J. 2006a. 'Chao, Yuen Ren (1892–1982)'. In Keith Brown (ed.), *Encyclopedia of Language and Linguistics, 2nd edn*. London: Elsevier, 295–296.
- LaPolla, Randy J. 2006b. 'Li Fang-Kuei (1902–1987)'. In Keith Brown (ed.), *Encyclopedia of Language and Linguistics, 2nd edn*. London: Elsevier, 153–154.
- LaPolla, Randy J. 2009. 'Chinese as a Topic-Comment (not Topic-Prominent and not SVO) language'. In Janet Xing (ed.), *Studies of Chinese Linguistics: Functional Approaches*. Hong Kong: Hong Kong University Press, 9–22.
- LaPolla, Randy J. 2013. 'Arguments for a construction-based approach to the analysis of Chinese'. In Tseng Chiu-yu (ed.), *Human Language Resources and Linguistic Typology, Papers from the Fourth International Conference on Sinology*. Taiwan: Academia Sinica, 33–57.
- LaPolla, Randy J. 2015a. 'On the logical necessity of a cultural connection for all aspects of linguistic structure'. In Rik De Busser and Randy J. LaPolla (eds), *Language Structure and Environment: Social, Cultural, and Natural Factors*. Amsterdam/Philadelphia, PA: John Benjamins Publishing Company, 33–44.
- LaPolla, Randy J. 2015b. 'Sino-Tibetan syntax'. In William S-Y Wang and Chaofen Sun (eds), *The Oxford Handbook of Chinese Linguistics*. Oxford: Oxford University Press, 45–57.
- LaPolla, Randy J. 2017a. 'Overview of Sino-Tibetan morphosyntax'. In Graham Thurgood and Randy J. LaPolla (eds), *The Sino-Tibetan Languages, 2nd edn*. Abingdon/New York: Routledge, 40–69.
- LaPolla, Randy J. 2017b. 'Chao Yuen Ren [Zhào Yuánrèn 趙元任] (1892–1982)'. In Rint Sybesma (ed.), *Encyclopedia of Chinese Language and Linguistics*. Leiden: Brill.
- LaPolla, Randy J. and Dory Poa. 2005. 'Jiaodian jiegou de leixing ji qi dui Hanyu cixu de yingxiang [The typology of focus structures and their effect on word order in Chinese]'. In Xu Liejiong and Haihua Pan (eds), *Jiaodian jiegou he yuyi de yanjiu [Studies on the Structure and Semantics of Focus]*. Beijing: Beijing Foreign Studies University Press, 57–78.
- LaPolla, Randy J. and Dory Poa. 2006. 'On describing word order'. In Felix Ameka, Alan Dench and Nicholas Evans (eds), *Catching Language: The Standing Challenge of Grammar Writing*. Berlin: Mouton de Gruyter, 269–295.
- Li, Fang-Kuei. 1966. 'The zero initial and the zero syllabic'. *Language* 42.2: 300–302.
- Li, Fang-Kuei. 1989. *Linguistics East and West: Sino-Tibetan, Tai, and American Indian, Oral History Based on Interviews by Randy J. LaPolla and Ning-ping Chan*. Berkeley, CA: The Regional Oral History Office, a department of the Bancroft Library, University of California, Berkeley.
- Lü Shuxiang. 1979. *Hanyu yufa fenxi wenti [Questions in the Analysis of Chinese Grammar]*. Beijing: Commercial Press.
- Maspero, Henri. 1935. 'Préfixes et dérivation en chinois archaïque'. *Mémoires de la Société de Linguistique de Paris* 23.5: 313–327.
- Mei Tsu-lin. 1970. 'Tones and prosody in Middle Chinese and the origin of the rising tone'. *Harvard Journal of Asiatic Studies* 30: 86–110.
- Mei, Tsu-lin. 2012. 'The causative \*-s- and nominalizing \*-s in Old Chinese and related matters in Proto-Sino-Tibetan'. *Language and Linguistics* 13.1: 1–28.
- Miller, Roy A. 1975. 'The Far East'. In Thomas A. Sebeok (ed.), *Current Trends in Linguistics: Vol. 13.2: Historiography of Linguistics*. The Hague/Paris: Mouton, 1213–1264.
- Norman, Jerry L. 1973. 'Tonal development in Min'. *Journal of Chinese Linguistics* 1.2: 222–238.
- Norman, Jerry L. 1974. 'The initials of Proto-Min'. *Journal of Chinese Linguistics* 2.1: 27–36.



- Norman, Jerry. 1979. 'Chronological strata in the Min dialects'. *Fangyan* 4: 268–274.
- Norman, Jerry L. 1986. 'The origin of Proto-Min softened stops'. In John McCoy and Timothy Light (eds), *Contributions to Sino-Tibetan Studies*. Leiden: E. J. Brill, 375–384.
- Norman, Jerry L. 2014. 'A model for Chinese dialect evolution'. In Richard VanNess Simmons and Newell Ann Van Auken (eds), *Studies in Chinese and Sino-Tibetan Linguistics: Dialect, Phonology, Transcription and Text (Language and Linguistics Monograph Series 53)*. Taipei: Institute of Linguistics, Academia Sinica, 1–26.
- Norman, Jerry L. and W. South Coblin. 1995. 'A new approach to Chinese historical linguistics'. *Journal of the American Oriental Society* 115.4: 576–584.
- O'Connor, Kevin. 1976. 'Proto-Hakka'. *Journal of Asian and African Studies* 11: 1–64.
- Phua, Chiew Pheng. 2004. 'Shanggu Hanyu zhong de qing-zhuo bieyi ji qi xiangguan de wenti [Alternations of voiced and voiceless initials in Old Chinese and its problems]'. *Ding Bangxin Jiaoshou Rongxiu Jinian Lunwenji [Collected Essays in Honor of Professor Ting Pang-Hsin on his Retirement]*, 1–67. Hong Kong: Center for Chinese Linguistics, Division of Humanities, Hong Kong University of Science and Technology.
- Pulleyblank, Edwin G. 1962. 'The consonantal system of Old Chinese'. *Asia Major* 9: 58–144 and 206–255.
- Pulleyblank, Edwin G. 1973a. 'Some new hypotheses concerning word families in Chinese'. *Journal of Chinese Linguistics* 1: 111–125.
- Pulleyblank, Edwin G. 1973b. 'Some further evidence regarding Old Chinese -s and its time of disappearance'. *Bulletin of the School of Oriental and African Studies* 36.2: 368–373.
- Pulleyblank, Edwin G. 1977–1978. 'The final consonants of Old Chinese'. *Monumenta Serica* 33: 180–206.
- Sagart, Laurent. 1999. *The Roots of Old Chinese*. Amsterdam/Philadelphia, PA: John Benjamins Publishing Company.
- Sagart, Laurent. 2001. 'Vestiges of Archaic Chinese derivational affixes in Modern Chinese dialects'. In Hillary Chappell (ed.), *Sinitic Grammar: Synchronic and Diachronic Perspectives*. New York: Oxford University Press, 123–142.
- Sagart, Laurent. 2012. 'Jerry Norman'. *Cahiers de linguistique – Asie orientale* 41.2: 341–351.
- Sagart, Laurent [Shā Jiā'ěr] and William H. Baxter [Bái Yíping]. 2010. 'Shàngǔ Hànyǔ de N- hé m- qiánzhuì [The N- and m- prefixes in Old Chinese]'. *Journal of Sino-Tibetan Linguistics* 4: 62–69.
- Sagart, Laurent and William H. Baxter. 2012. 'Reconstructing the \*s- prefix in Old Chinese'. *Language and Linguistics* 13.1: 29–59.
- Simmons, Richard VanNess and Newell Ann Van Auken (eds). 2014. *Studies in Chinese and Sino-Tibetan Linguistics: Dialect, Phonology, Transcription and Text (Language and Linguistics Monograph Series 53)*. Taipei: Academia Sinica Institute of Linguistics.
- Simon, Walter. 1949. 'The range of sound alternations in Tibetan word families'. *Asia Major (New Series)* 1: 1–15.
- Serruys, Paul L-M. 1955. 'Prolegomena to the study of the Chinese dialects of Han time according to *Fang Yen*'. Doctoral Dissertation, University of California, Berkeley.
- Serruys, Paul L-M. 1959. 'The Chinese dialects of Han time according to *Fang Yen*'. Berkeley/Los Angeles, CA: University of California Press.
- Shen, Jiakuan. 2017. 'Hanyu you meiyou "zhu-wei jieou" [Does Chinese have a "subject-predicate structure"]'. *Xiandai Waiyu [Modern Foreign Languages]* 40.1: 1–14.
- Sun, Chao-fen. 1991. 'The adposition *yi* and word order in Classical Chinese'. *Journal of Chinese Linguistics* 19.2: 202–218.

- Voegelin, Charels F. and Florence M. Voegelin. 1999. 'On the history of structuralizing in twentieth-century America'. *Anthropological Linguistics* 5/1, 1963, 12–37; Reprinted in J. G. Fought (ed.), *Leonard Bloomfield. Critical Assessments of Leading Linguists: Vol. 1, Biographical Sketches*. London: Routledge, 60–86.
- Wang Li. 1958. *Hanyu shigao (Monograph on the history of the Chinese language)*. Beijing: Zhonghua Shuju.
- Wang Li. 1979. 'Tongyuanzi lun [On cognate words]'. *Zhongguo Yuwen* 144.1: 28–33.
- Wang Li. 1982. *Tongyuan Zidian [Dictionary of Cognate Words]*. Beijing: Shangwu Yinshuguan.
- Wang, William S-Y. 1969. 'Competing sound change as a cause of residue'. *Language* 45: 9–25.
- Wang, William S-Y. 1979. 'Language change: a lexical perspective'. *Annual Review of Anthropology* 8: 353–71.
- Wang, William S-Y. and Chinfa Lien. 1993. 'Bidirectional diffusion in sound change'. In Charles Jones (ed.), *Historical Linguistics: Problems and Perspectives*. London: Longman Group Ltd., 345–400.
- Wolfenden, Stuart N. 1928. 'The prefix *m-* with certain substantives in Tibetan'. *Language* 4: 277–280.
- Wolfenden, Stuart N. 1937. 'Concerning the variation of final consonants in the word families of Tibetan, Kachin, and Chinese'. *Journal of the Royal Asiatic Society of Great Britain and Ireland* 4: 625–655.
- Yu Min. 1948. 'Lun guyun he, tie, xue, mo, he wubu zhi tongzhuān 《论古韵合估屑没曷五部之通转》 [Word derivation in Archaic Chinese through the annexing of the suffix DJ]'. *Yanjing Xuebao [Yenjing Journal of Chinese Studies]* 34, June: 29–48.
- Yue, Anne O. 2017. 'The Sinitic languages: grammar'. In Graham Thurgood and Randy J. LaPolla (eds), *The Sino-Tibetan Languages, 2nd edn*. Abingdon/New York: Routledge, 114–163.
- Yue-Hashimoto, Anne Oi-Kan. 1991. 'Stratification in comparative dialectal grammar: a case in Southern Min'. *Journal of Chinese Linguistics* 19.2: 172–201.
- Yue-Hashimoto, Anne Oi-Kan. 1993a. 'The lexicon in syntactic change: lexical diffusion in Chinese syntax'. *Journal of Chinese Linguistics* 21.2: 213–253.
- Yue-Hashimoto, Anne Oi-Kan. 1993b. *Comparative Chinese Dialectal Grammar: Handbook for Investigators*. Paris: École des Hautes Études en Sciences Sociales (CRLAO).

Part 1

ARCHAIC/OLD CHINESE AND  
ANCIENT/MIDDLE CHINESE



## WORD FAMILIES IN CHINESE

*Bernhard Karlgren*Source: *Bulletin of the Museum of Far Eastern Antiquities* 5, 1933, 9–120.

One of the great goals of Chinese historical phonetics is to prepare the ground for comparative Sinitic linguistics—a systematic comparison of Chinese, the T'ai languages and the Tibeto-Burman languages, which are all undoubtedly cognate though widely differentiated idioms. But in my opinion it will not do to pick out isolated Chinese *words* and compare them with isolated Tibetan or Siamese words. It stands to reason that Chinese does not consist of so and so many thousands of independent monosyllables, none of them cognate to any others; in Chinese, as in all other languages, the words form families, groups of cognate words formed from one and the same primary stem. It is not allowable to identify Chinese 目 Arch. *mjók*<sup>1</sup> 'eye' with Tibetan *mig* 'eye' so long as we have not first established the word family to which *mjók* belongs. Akin to *mjók* is undoubtedly the word 眸 Arch. *mjōg* 'pupil of the eye': and it is just as likely that it is this *mjōg* which corresponds directly to the Tibetan *mig*. In other words: before Sinitic comparative linguistics can be safely tackled there remains a great task to be solved in each of the language groups concerned. In Chinese the words must be sorted and grouped according to genetic affinity, and the same must be done in T'ai and in Tibeto-Burman. Then, but only then, we can start comparing the *word groups* of these three great branches and hope for reliable results.

That some words in Chinese are cognate to others is of course no new idea. Already August Conrady in his pioneer work: *Eine Indo-Chinesische Causativ-Denominativ-Bildung*, 1896, had this as a fundamental point of departure. In my *Analytic Dictionary* I have pointed out, in many cases, such affinities between words, not only examples in which one and the same word happens to be represented by two different characters, e. g. 集 *dz'jəp*: 輯 *dz'jəp*, and hence appears to be two different words, but also cases like 夾 Anc. *kap* 'to press': 狹 Anc. *γap* 'narrow' etc., which are clearly cognate words. Indeed, even the Chinese script often indicates two forms as cognate by designing them with one and the same character: 長 *d'jang*<sup>2</sup> 'long': 長 *ŋjang* 'grow long, grow up'. But it is important to take up this problem of the Chinese word



families for a more systematic investigation. The present paper is intended to be a short preliminary notice, as a kind of introduction to a larger work, which I hope to be able to publish soon.

Before entering upon this principal theme I shall have to give some long preparatory chapters. We must not build our study of Chinese word families on the language of the Ts'ie yün (Anc.) which is comparatively late (6th c. A. D.), since we can attain to a fairly detailed knowledge of Archaic Chinese, the language of the Shī king and the (slightly older) *hie sheng* characters (phonetic compound characters) dating from the early part of the Chou epoch. It is about this latter language I first wish to make some fairly extensive remarks.

In my »Shī king Researches« (this Bulletin vol. 4) I have studied certain phonetic categories in Archaic Chinese, and I wish to revert here to some points connected with those categories; and in that work I left the reconstruction of certain other Shī king rime categories for future discussion, and I wish to take them up here for a detailed analysis.

### Categories ending in Arch. dental consonant

In Ancient Chinese (Ts'ie yün) there are two rimes *-jan* and *-jĕn* between which the words are distributed in an obviously mechanized fashion (Phonol. Chin. p. 174):

*kjĕn, kjuĕn; tĕjĕn, tĕjuĕn; ljĕn, ljuĕn; tsjĕn, tsjuĕn; pjĕn, 〇;*  
*kjan, kjuan; 〇 〇 〇 〇 〇 〇 〇 〇 pjuan.*

The final *jan, juan* does not exist after palatals and dentals, only after gutturals and labials. It is natural to suspect that this is a result of the general tendency of nivellation, so strongly at work in Chinese, and that Arch. Chinese had both types: *tĕjĕn* and *tĕjan*, but that these have been confounded in Anc. *tĕjĕn*.

That this really was so is confirmed by the Shī king rimes. Let us state first that from the word groups here concerned we have to keep entirely separate words with Archaic *ā, a* (long) and *ǎ* (short). They form a Shī king rime category here called A, which is no. 14 in Tuan Yü-ts'ai's famous Liu shu yin kün piao and cat. 9 in Wang Nien-sun's equally important Ku yün pu (in Kao-yu Wang shī i shu). I need not reproduce their tables completely; they can be conveniently summed up in a few type words, for which I insert the Arch. and Anc. sounds:<sup>3</sup>

干管 顏關 展轉 見渴 閱憲 言原。

Arch. *kân, kwân; ngan, kwan; tjan, tĕjan; kian, kiwan; kǎn, g'wǎn; ngiǎn,*  
*ngiwǎn.*

Anc. *kân, kwân; ngan, kwan; tĕän, tĕwän; kien, kiwen; kan, ywan; ngjon,*  
*ngiwn.*

From this rime category A are well distinguished two other Shī rime categories: B, cat. 12 of Tuan's = cat. 7 of Wang's. Here the principal words are:

賢年天田甸顛闕電填千翩。淵。  
烟咽引棟漆臻綦陳臣塵身中仲人仁麟親信薪盡燼  
膚瀆頽頽泯。均甸詢洵。

1. had Anc. *-ien* : *yien* etc.;
2. had Anc. *-iwen* : *iwen*;
3. had Anc. *-jĕn* : *jĕn* etc.;
4. had Anc. *-juĕn* : *kjuĕn* etc.

C, cat. 13 of Tuan's = cat. 8 of Wang's. Here the principal words are:

昆跟。昆呼存殮孩趣奔瑞門。  
勤芹欣隱。君車訓無愷云雲員芬焚勞聞聞。  
振辰晨吟忍負絡瘡。昔濟順鴉梓輪洽。  
先洒珍。艱。鯨。鯨。  
巾埤殷怒。說闕。限困。

1. had Anc. *-an* : *kân*;
2. had Anc. *-uan* : *kuân* etc.;
3. had Anc. *-jan* : *g'jan* etc.;
4. had Anc. *-juan* : *kjuân* etc.;
5. had Anc. *-jĕn* : *tĕjĕn* etc.;
6. had Anc. *-juĕn* : *tĕjuĕn* etc.;
7. had Anc. *-ien* : *sien* etc.;
8. had Anc. *-an* : *kan*;
9. had Anc. *-wan* : *kwân* etc.;
10. had Anc. *-jĕn* : *kjĕn* etc.;
11. had Anc. *-jen* : *tĕjen* etc.;
12. had Anc. *-jwen* : *jĕwen* etc.

Two preliminary remarks:

Firstly, I have entered, in a few cases, characters which do not occur in the Shī rimes but which belong to the category, as revealed by rimes in other Archaic texts or by their »phonetics«. Secondly, the second character in line 11 according to its Anc. sound should stand in the *w* line (12); I have placed it in the *w*-less line (11), since it had no *w* in Archaic Chinese.

This latter phenomenon is an important point, which concerns several common words. I have arrived at the opinion that in Ts'ie yün time there were two kinds of *ho k'ou w*: one is genuine and Archaic, occurring after all kinds of initials, one is secondary and late, occurring only after *p, p', b', m* and due to an exaggerated labial articulation of the initial. Whereas genuine *pĕw*- regularly gives *f(w)*- at the very time of the Ts'ie yün: 方 *pĕwang* > *fwang*, 分 *pĕwân* > *fuân*, 非 *pĕwei* > *fwĕi* etc., a secondary and evidently more volatile and weak *w* causes no such change. That 丙 Anc. *pĕwang*, 平 *b'ĕwang*, 明 *mĕwǒng* had really a *w* in Ts'ie yün time is certain (丙 is spelled by 丞), but since this *pĕw*- has not given *fw*- I conclude that the Arch. forms were *pĕäng, b'jǎng, mĕjäng*, and that the *w* is secondary and parasitic. Such cases are to be found, besides in the table »*keng*«, also in the tables



»chü», »sham» and »chen» of the Sung rime tables (Phonol. Chin. pp. 149, 171, 177, 185).

If we now revert to our Shī king rime categories B and C and scrutinize them, we find that cat. B in the Ts'ie yün language had exclusively *e* vowels: *-en* or *-ĕn*; cat. C had a rich part with *a*: *-ən*, *-uən*, *-jən*, *-juən*, and then both *-ĕn*, *-en*, *-ən* and *-en*. To my mind there cannot be the slightest doubt that here in C the *-ən* vocalism is primary and principal, and that all the *-ĕn* and *-en* are secondary. Thus line C 5 was Arch. *ĥjən* etc. and line 6 was Arch. *ĥ'jwən* etc.; but whereas *-jən* after the gutturals and labials with *ho k'ou* was preserved down to Ts'ie yün time: line 2 *g'jən*, line 4 *kjuən*, *pjuən*, after palatals and dentals and after labials with *k'ai k'ou*, *-ən* became *> -ĕn*: line 5 Arch. *ĥjən* *>* Anc. *tšjĕn*, line 6 Arch. *ĥ'jwən* *>* Anc. *tš'juĕn*. This explains the gaps in the scheme of p. 2 above! In Ts'ie yün there are only types *kjən*, *kjuən* and *pjuən* but no types *ĥjən*, *ĥjuən*, *tšjĕn*, *tšjuən* etc.—because the latter, which existed in Arch. Chinese, have passed over to *tšjĕn*, *tšjuĕn*, *tšjĕn*, *tšjuĕn*, thus coinciding with the original (Archaic) *jĕn*, *jwĕn* (lines 3 and 4) of cat. B. Line C 7 is easily explained in consistency with this: just as Arch. *sĥjən* (with short *j*) in line 5 became Anc. *sĥjĕn* (after dental), so Arch. *sjən* (with long *j*) became Anc. *sien* (equally after dental).

There seems to be a great difficulty which vetoes this general theory: the words which I have placed in line C 10: 巾 Anc. *kjĕn* etc. If an Arch. *kjən* kept its *a* (after guttural): line 2 *g'jən* etc., how could we explain the *kjĕn* etc. of line 10 with *ĕ* after guttural in this same rime category? The answer to this riddle will be given presently after we have discussed lines C 8, 9, 11 and 12.

The *-ən* in lines 8 and 9 cannot be original, for then the words of these lines would have rimed in cat. A above. What their Arch. value was is not difficult to find. In my Shī king Researches (pp. 157 and 160) I have shown that 華 Arch. *kek* (with an open, short, slack *ä*- sound: *ε*) and 戒 *keg* (*>* Anc. *kai*) rime with *-ək*, *-əg*. Thus *ε* and *ə* regularly go together in the Shī rimes. I conclude that the Anc. *-ən*, *-wən* (lines 8,9) in our cat. C derive from Arch. *-en*, *-wen*: 8 *ken*, 9 *kwen*.

Next we have lines C 11 and 12. I am happy to be able to improve here my reconstruction system of Anc. Chinese (Ts'ie yün) on this point. For line 11, which is a rime of its own in the Ts'ie yün (no. 19 in the Nei fu ts'ang T'ang sie pen Ts'ie yün and in the Kuang yün, p'ing sheng) I had not been able to give any independent final at all; for line 12 I had given a very unsatisfactory reconstruction: I had distinguished it from line 6 only by a difference in the *ho k'ou* *w*: 6 *-juĕn*: 12 *-jwĕn*. Now this was very artificial and doubtful, and I have myself stated earlier that a new solution had to be found (Shī king Researches p. 126). Our Shī rime system helps us to solve the riddle. Lines 11 and 12 are the *j* correspondences to the *-en*, *-wen* of lines 8 and 9: 11 *tšjĕn*, 12 *jwĕn* (Arch. *giwĕn*). Anticipating this discussion I have already entered these values in the table on p. 3 above.

We can now revert to the mysterious line 10 巾 Anc. *kjĕn*. It is explained by the system of lines 11 and 12. If we take the latter two together, we have *tšjĕn* and *mĥjĕn* and we have *giwĕn*, but we have no type *kjĕn*, i. e. the *k'ai k'ou* final *-jĕn* after gutturals and laryngals (which are the most frequent of the Chinese initials)

is missing. It is obvious that in line 10 巾, 𠂔 Anc. *kjĕn*, *jĕn*, which the Shī rimes do not carry to cat. B (Arch. *-jĕn*, *-ien*) but to cat. C (bringing them together with Arch. *-ən*, *-jən*, *-wən*, *-jwən*, *-iən*, *tšjĕn*, *-jwĕn*) we have the missing type Arch. *kjĕn*. Thus we get an explanation on the one hand of their placing in this rime category C (cf. rime cat. *ek*: *ək*, *eg*: *əg* of the Shī), on the other hand of their evolution down to Anc. Chinese:

Arch. *kjĕn* *>* Anc. *kjĕn*;  
 » *tšjĕn* *>* » *tšjĕn*;  
 » *kjwĕn* *>* » *kjwĕn*.

It might be expected that in *ho k'ou*, as well as in *k'ai k'ou*, after guttural *-jwĕn* would become *-jwĕn*. And indeed, there is a strong tendency in this direction. For the word 困 Kuang yün gives double readings *g'jwĕn* and *kjwĕn* (rime 𠂔, not rime *juĕn* 𠂔!), for 𠂔 it gives *kjwĕn* (not *juĕn*!).

There is one more very strong support for our theory that the Anc. *-jĕn* of line 10 (巾 etc.) has a different Arch. origin from the *-jĕn* of cat. B (type 𠂔), that indeed it stood closer to Arch. *-jən* (type 𠂔), C 3, than did type 𠂔 (B 3). In Go-on, the most ancient dialect of which we have a detailed knowledge, type 𠂔 (B 3), Arch. *-jĕn*, is rendered by *in*; type 𠂔, 𠂔 (C 3), Arch. *-jən*, is regularly rendered by *-on*; now, the words 巾, 𠂔, 𠂔 of line C 10 are, in Goon, not *kin*, *in*, *in*, but *kon*, *on*, *on*. Evidently, in the dialect that was the basis of Go-on, the Arch. *kjĕn*, *jĕn*, *jĕn* in these words had become *kjən*, *jən*, *jən*, thus joining the C 3 type (𠂔 *kjən*, 𠂔 *jən*) and not, as in Ts'ie yün, becoming *kjĕn*, *jĕn* (joining the B 3 type 𠂔 *jĕn*).

We are now able to fill in the Arch. values of our tables B and C:

B.	Arch.	Anc.	Arch.	Anc.
	1. <i>ien</i>	<i>&gt;</i> <i>ien</i> ;	2. <i>iwĕn</i>	<i>&gt;</i> <i>iwĕn</i> ;
	3. <i>jĕn</i>	<i>&gt;</i> <i>jĕn</i> ;	4. <i>jwĕn</i>	<i>&gt;</i> <i>juĕn</i> .
C.	Arch.	Anc.	Arch.	Anc.
	1. <i>ən</i>	<i>&gt;</i> <i>ən</i> ;	2. <i>wən</i>	<i>&gt;</i> <i>uən</i> ;
	3. <i>kjən</i>	<i>&gt;</i> <i>kjən</i> ;	4. <i>kjwən</i>	<i>&gt;</i> <i>kjuən</i> ;
	5. <i>ĥjən</i>	<i>&gt;</i> <i>tšjĕn</i> ;	6. <i>ĥjwən</i>	<i>&gt;</i> <i>tš'juĕn</i> ;
	7. <i>iən</i>	<i>&gt;</i> <i>ien</i> ;		
	8. <i>en</i>	<i>&gt;</i> <i>ən</i> ;	9. <i>wen</i>	<i>&gt;</i> <i>wən</i> ;
	10. <i>kjĕn</i>	<i>&gt;</i> <i>kjĕn</i> ;		
	11. <i>tšjĕn</i>	<i>&gt;</i> <i>tšjĕn</i> ;	12. <i>jwĕn</i>	<i>&gt;</i> <i>juĕn</i> .

To the three *-n* categories A, B and C studied above there correspond three categories D, E and F ending in *-t* and *-d*. Before taking them up for discussion I wish to make a preliminary remark. In my Analytic Dictionary of Chinese (1923) I pointed out that numerous *hie sheng* cases like 𠂔 Anc. *kāt*: 𠂔 *yāt*, 𠂔 *lĥāt*: 例 *lĥāt* reveal an Arch. final dental in *-āt*, *jāt* lost, or rather vocalized into *-i*, before the time of Anc. Chinese; and since there is regularly a falling tone in such cases,



I concluded that the loss of the dental which I interpreted as *-d* (*yád*, *liäd* in contradistinction to *kât*, *liät*) had entailed the falling tone. In some later articles I modified my theory and said that the Arch. final dental was a *-t* in *yâi* and *liäi* as well, and that the falling tone was primary and decided the evolution: whereas 割 *kât*, 列 *liät* preserved their *-t*, 害 *yât* and 例 *liät* vocalized it because of the falling tone (similarly 白 *b'vk* > *b'vk*; 怕 *p'vk* > *p'a*). This modified theory had great advantages (see Shī king Researches p. 119); and yet here I make a sudden *volte-face* and revert to my original theory such as it was sketched in my Analytic Dictionary. My reasons for so doing will be given on p. 23 below.

We now revert to the *-t*, *-d* correspondences to categories A, B and C. Two of them (the *-at* and the *-at* groups) Tuan Yü-ts'ai has erroneously confused into one: his cat. 15 (ju sheng section). This is one of the weakest spots in his otherwise excellent Shī rime treatise. Wang Nien-sun is superior on this point; he has clearly distinguished the three categories.

D. Cat. 14 of Wang's is part of Tuan's cat. 15, ju sheng section. The principal words are:

- 1 葛曷渴禍怛達圍。2 帶大害艾藹拔肺菝。3 括估沽閏減撥奪振擢莖撥株。4 外噉殺兇脫翹。5 殺。6 薑。7 八。8 噲敗蓮。9 焚搗帽孽舌烈滅。10 厘樹趨哲世泄總。11 說懷絕威。12 帆說衛武蹶。13 截。14 端。15 臺。16 瘞。17 刮。18 拜。19 擣搗保。20 刈。21 巖關月越鉞發伐繫。22 吹吹。

- |  |  |
|--|--|
| 1. had Anc. <i>-ât</i> : <i>kât</i> etc.;      | 2. had Anc. <i>-âi</i> : <i>tâi</i> etc.;      |
| 3. had Anc. <i>-uât</i> : <i>kuât</i> etc.;    | 4. had Anc. <i>-uâi</i> : <i>nguâi</i> etc.;   |
| 5. had Anc. <i>-at</i> : <i>sat</i> ;          | 6. had Anc. <i>-ai</i> : <i>t'ai</i> ;         |
| 7. had Anc. <i>-wat</i> : <i>pwat</i> ;        | 8. had Anc. <i>-wai</i> : <i>k'wai</i> etc.;   |
| 9. had Anc. <i>-jât</i> : <i>g'jât</i> etc.;   | 10. had Anc. <i>-jâi</i> : <i>liâi</i> etc.;   |
| 11. had Anc. <i>-jwât</i> : <i>jwât</i> etc.;  | 12. had Anc. <i>-jwâi</i> : <i>sjwâi</i> etc.; |
| 13. had Anc. <i>-iet</i> : <i>dz'iet</i> ;     | 14. had Anc. <i>-iei</i> : <i>tiei</i> ;       |
| 15. had Anc. <i>-at</i> : <i>kat</i> ;         | 16. had Anc. <i>-ai</i> : <i>t'ai</i> ;        |
| 17. had Anc. <i>-wat</i> : <i>kwat</i> ;       | 18. had Anc. <i>-wai</i> : <i>pwai</i> ;       |
| 19. had Anc. <i>-jpt</i> : <i>kjpt</i> etc.;   | 20. had Anc. <i>-jpi</i> : <i>ngipi</i> ;      |
| 21. had Anc. <i>-jwpt</i> : <i>kjwpt</i> etc.; | 22. had Anc. <i>-jwpi</i> : <i>b'jwpi</i> .    |

There is first a strict parallelism between lines with odd and even numbers. To the final *-t* of the former corresponds *-i* of the latter. This *-i* is the vestige of the lost *-d*, dropped and causing the falling tone (*k'ü sheng*): whereas 葛 *kât* has preserved its *-t*, 帶 *tâd* has become > *tâi*.

Further the whole of this category corresponds faithfully to the *-n* class in cat. A above. We therefore obtain the following Arch. values:

- |                  |                  |                   |                   |              |                 |
|------------------|------------------|-------------------|-------------------|--------------|-----------------|
| Category D:      |                  |                   |                   | Category A:  |                 |
| 1. <i>ât</i> ,   | 2. <i>âd</i> ;   | 3. <i>wât</i> ,   | 4. <i>wâd</i> ;   | <i>ân</i> ;  | <i>wân</i> ;    |
| 5. <i>at</i> ,   | 6. <i>ad</i> ;   | 7. <i>wat</i> ,   | 8. <i>wad</i> ;   | <i>an</i> ;  | <i>wan</i> ;    |
| 9. <i>jat</i> ,  | 10. <i>jad</i> ; | 11. <i>jwat</i>   | 12. <i>jwad</i> ; | <i>jan</i> ; | <i>jwan</i> ;   |
| 13. <i>iat</i> , | 14. <i>iad</i> ; | ○                 | ○                 | <i>ian</i> ; | <i>(iwan)</i> ; |
| 15. <i>ât</i> ,  | 16. <i>âd</i> ;  | 17. <i>wât</i> ,  | 18. <i>wâd</i> ;  | <i>ân</i> ;  | <i>wân</i> ;    |
| 19. <i>jât</i> , | 20. <i>jâd</i> ; | 21. <i>jwât</i> , | 22. <i>jwâd</i> ; | <i>jän</i> ; | <i>jwân</i> .   |

We can now pass on to cat. E, being the *-t* and *-d* correspondence to cat. B. The principal words are:

- 1 結結頤嗑峯埜株節。2 噉嗑。3 血穴。4 吉一逸宜實空秩挂櫛瑟日漆七疾粟僕匹釋駟空。5 至。6 恤。

- |   |   |
|---|---|
| 1. had Anc. <i>-iet</i> : <i>kiet</i> etc.;   | 2. had Anc. <i>-iei</i> : <i>tiei</i> etc.; |
| 3. had Anc. <i>-iwet</i> : <i>xiwet</i> etc.; |   |
| 4. had Anc. <i>-jēt</i> : <i>kjēt</i> etc.;   | 5. had Anc. <i>-i</i> : <i>tī</i> ;         |
| 6. had Anc. <i>-jwēt</i> : <i>sjwēt</i> .     |   |

Here again 1 and 2, and 4 and 5 respectively had the same Arch. final, differentiated only by the contrast *-t*: *-d*, the latter having vocalized into *-i* and causing a falling tone. We thus obtain the following Arch. values:

- |                  |                 |               |
|------------------|-----------------|---------------|
| Category E:      |                 | Category B:   |
| 1. <i>iet</i> ,  | 2. <i>ied</i> ; | <i>ien</i>    |
| 3. <i>iwet</i> ; |                 | <i>iwen</i>   |
| 4. <i>jēt</i> ,  | 5. <i>jēd</i> ; | <i>jěn</i>    |
| 6. <i>jwēt</i> . |                 | <i>jwěn</i> . |

Somewhat more complicated is cat. F, being the *-t* and *-d* correspondence to cat. C. The principal words are:

- 1 混受後。2 穿沒。3 對對退潰蓄妹內。4 仇。5 氣堅。6 鬱用着拂。7 貴謂渭蔚味。8 脆。9 利淮肄四駟似比紕寐界。10 出卒述歎率律。11 類遂棧越碎萃許瘁穗。12 擊。13 辰棘溥。14 閔。15 惠嚙。16 真。17 屈。18 滑。19 簣。20 豎。21 棄器。22 橋。23 匪季悻位。



- |   |  |
|---|--|
| 1. not represented;                                   | 2. had Anc. <i>-âi</i> : <i>kâi</i> etc.;      |
| 3. had Anc. <i>-uət</i> : <i>tsuət</i> etc.;          | 4. had Anc. <i>-uâi</i> : <i>tuâi</i> etc.;    |
| 5. had Anc. <i>-jət</i> : <i>ngjət</i> ;              | 6. had Anc. <i>-jɛi</i> : <i>k'jɛi</i> etc.;   |
| 7. had Anc. <i>-juət</i> : <i>juət</i> etc.;          | 8. had Anc. <i>-jwɛi</i> : <i>kjwɛi</i> etc.;  |
| 9. had Anc. <i>-jɛt</i> : <i>liɛt</i> ;               | 10. had Anc. <i>-i</i> : <i>lji</i> etc.;      |
| 11. had Anc. <i>-juɛt</i> : <i>t's'juɛt</i> etc.;     | 12. had Anc. <i>-wi</i> : <i>ljwi</i> etc.;    |
| 13. had Anc. <i>-iet</i> : <i>p'iet</i> ;             | 14. had Anc. <i>-iei</i> : <i>liei</i> etc.;   |
| 15. had Anc. <i>-iwet</i> : <i>k'iwet</i> ;           | 16. had Anc. <i>-iwei</i> : <i>ɣiwei</i> etc.; |
| 17. had Anc. <i>-at</i> : <i>kat</i> ;                | 18. had Anc. <i>-ai</i> : <i>kai</i> ;         |
| 19. had Anc. <i>-wat</i> : <i>ɣwat</i> ;              | 20. had Anc. <i>-wai</i> : <i>k'wai</i> ;      |
| 21. had Anc. <i>-jɛt</i> : <i>kjɛt</i> (family name); | 22. had Anc. <i>-i</i> : <i>k'ji</i> etc.;     |
| 23. had Anc. <i>-juɛt</i> : <i>kjuɛt</i> ;            | 24. had Anc. <i>-wi</i> : <i>kjwi</i> etc.     |

Here again, as in categories D and E, the even numbers had the same Arch. finals as the odd numbers, but for the *-d* of the former and the *-t* of the latter. The *-d* has become *-i* and given falling tone. *-əx* is not represented in the *-t* series (1. *-ət*) but only in the *-d* series: 2. *kəd* has become *> kâi* (cf. the *-g* category, where 來 Arch. *læg* has become *> Anc. lâi*, see Shī king Researches p. 124). In the same way 3. *-uət* (*-wət*) has been preserved, but 4. *-uəd* (*-wəd*) has become *uâi*. This is nicely confirmed by the char. 𪛗, which has both readings Anc. *t'uət* and *t'uâi* (Arch. *t'uət* and *t'uəd*).

Furthermore, that 6. *-jɛi* is the *-d* correspondence to 5. *-jət*, and *-jwɛi* to *-juət* is proved by a large number of double readings and *hie sheng*, e. g. 𪛗 both readings *k'jət* and *k'jɛi* (Arch. *k'jət* and *k'jəd*); 𪛗 both readings *'juət* and *'jwɛi* (Arch. *'juət* and *'jwəd*); 𪛗 both readings *pjuət* and *pjwɛi* (Arch. *pjuət* and *pjwəd*); 𪛗 *pjuət* phonetic in 𪛗 *pjwɛi* (Arch. *pjuət* phon. in *pjwəd*) etc.

In this group, just as in cat. C, Arch. *-jət* had a different evolution according as it was preceded by a guttural and labial or by a palatal and dental. Just as Arch. *kljən* *>* Anc. *kljən*, but Arch. *l'jən* *>* Anc. *t'sjɛn* (see cat. C above), in the same way line 5. Arch. *kljət* *>* Anc. *kljət*, but 9. Arch. *l'jət* *>* Anc. *t'sjɛt*; and in the same way 6. Arch. *kljəd* *>* Anc. *kljɛi* but 10. Arch. *l'jəd* *>* Anc. *t'sli*. And the case of the *ho k'ou* words is exactly the same: 7. Arch. *kljwət* *>* Anc. *kljuət*, but 11. Arch. *l'jwət* *>* Anc. *t'sljuɛt*; and 8. Arch. *kljwəd* *>* Anc. *kljwɛi*, but 12. Arch. *l'jwəd* *>* Anc. *t'slwi*.

We can continue: just as, with long *i*, Arch. *-iən* *>* Anc. *-ien*, so here 13. Arch. *-iət* *>* Anc. *-iet* and 14. Arch. *-iəd* *>* Anc. *-iei*; 15. Arch. *-iwət* *>* Anc. *-iwet* and 16. Arch. *-iwəd* *>* Anc. *-iwei*.

Finally, just as Arch. *-ən* *>* Anc. *-ən*, so 17. Arch. *-ət* *>* Anc. *-at* and 18. Arch. *-əd* *>* Anc. *-ai*; 19. Arch. *-wet* *>* Anc. *wat*, and 20. Arch. *-wəd* *>* Anc. *-wai*. And corresponding to Arch. *-jən*, *-jwən* we have here 21. Arch. *kljɛt* *>* Anc. *kljɛt* and 22. Arch. *kljɛd* *>* Anc. *klji*; 23. Arch. *kljwɛt* *>* Anc. *kljuɛt*, and 24. Arch. *kljwɛd* *>* Anc. *kljwi*.

We can sum up all this in the following table:

Category F.				Category C.	
Arch.	Anc.		Arch.	Anc.	
1. (ət)	2. əd	1. (ət)	2. âi	ən	ən
3. wət	4. wəd	3. uət	4. uâi	wən	uən
5. kljət	6. kljəd	5. kljət	6. kljɛi	kljən	kljən
7. kljwət	8. kljwəd	7. kljuət	8. kljwɛi	kljən	kljuən
9. l'jət	10. l'jəd	9. t'sjɛt	10. t'sli	l'jən	t'sljɛn
11. l'jwət	12. l'jwəd	11. t'sljuɛt	12. t'slwi	l'jən	t'sljuɛn
13. iət	14. iəd	13. iet	14. iei	iən	ien
15. iwət	16. iwəd	15. iwet	16. iwei	○	○
17. et	18. ed	17. at	18. ai	en	ən
19. wet	20. wəd	19. wat	20. wai	wen	wən
21. jɛt	22. jɛd	21. jɛt	22. i	jɛn	jɛn, jɛn
23. jwɛt	24. jwɛd	23. juɛt	24. wi	jwɛn	jwɛn, jwɛn

In this last category, F, we have had a large number of words with Anc. final *-ɛi* and *-i*, and I have shown that these are remnants of an Arch. *-d*. Now, the same finals, *-ɛi* and *-i*, occur in still another great rime category of the Shī, which it is necessary to take up for examination: cat. G, which is cat. 13 of Wang Nien-sun's = cat. 15 of Tuan Yü-ts'ai's (one half of this latter only). The principal words are:

- 1 衰。2 回竄隨推頓摧罪雷壘杓。  
 3 幾篋豈頗睇衣依。\* 歸達煒葦園韓異威飛菲聯駢  
 𪛗微薇尾。  
 4 脂指与坻蕃底邱祗鴉破繻遲師尸屎矢視君莠搢  
 𪛗質茨咎妬泚毗柎私死兇履毗臑匕毗悲美眉泥糜靡。  
 5 迤水維唯鶯惟崔綰釐蕪。  
 6 氏弟涕體婁婁樓淒齊齋齋蟻躄躄濟濟洙犀彌滷  
 𪛗禮黎泥迭。\* 皆借階階潛。\* 懷壞。10 凡飢郁伊。  
 11 突駮遺。12 通漏。13 譔萎。

- |   |  |
|---|--|
| 1. had Anc. <i>-âi</i> : <i>-âi</i> ;       | 2. had Anc. <i>-uâi</i> : <i>ɣuâi</i> etc.;  |
| 3. had Anc. <i>-ɛi</i> : <i>kjɛi</i> etc.;  | 4. had Anc. <i>-wɛi</i> : <i>kjwɛi</i> etc.; |
| 5. had Anc. <i>-i</i> : <i>t'si</i> etc.;   | 6. had Anc. <i>-wi</i> : <i>t'wi</i> etc.;   |
| 7. had Anc. <i>-iei</i> : <i>tiei</i> etc.; |  |
| 8. had Anc. <i>-ai</i> : <i>kai</i> etc.;   | 9. had Anc. <i>-wai</i> : <i>ɣwai</i> etc.;  |
| 10. had Anc. <i>-i</i> : <i>kji</i> etc.;   | 11. had Anc. <i>-wi</i> : <i>g'jwi</i> etc.; |
| 12. had Anc. <i>-iɛ</i> : <i>nziɛ</i> etc.; | 13. had Anc. <i>-wiɛ</i> : <i>ɣjwiɛ</i> etc. |

The interpretation of this category might seem to be very simple: nearly all the words end in *-i* and thus rime, and we could, for that matter, suppose it to



represent words with original, Archaic final *-i*. But the question is in fact infinitely more complicated and necessitates an extensive investigation.

In the discussion of cat. C above I have purposely left out a few curious rimes, in which Anc. *-ən* rimes with Anc. *-ɛi*, e. g. 晨: 輝: 旂 Anc. *ʒjɛn* (< Arch. *ʒjɛn*): *χjwɛi*: *g'jɛi* (ode T'ing liao); 芹: 旂 Anc. *g'jɛn*: *g'jɛi* (ode Ts'ai shu). These cases are all the more interesting since 輝 *χjwɛi* has for phonetic 軍 Anc. *kjuən* (with *-n*) and 旂 has for phonetic 斤 *kjɛn*. They naturally call to mind cases with other vowels in which similarly words with *-n* have riming or *hie sheng* connections with words ending in vowel, e. g. 儺 Anc. *nā* with phon. 難 *nân*; 幡 *b'uâ* with phon. 番 *b'jwɔn* and riming with 幡 *γân* (Yi king, kua 22); 單 *d'â* with phon. 單 *tân* and riming with 單 *γân* (Tso chuan, Süan 2nd year). In all these cases it is very natural to think of nasalization phenomena, so that certain *-ân* have become *-a<sup>n</sup>* > *-â*, certain *-jɛn* have become *jɛ<sup>n</sup>* > *jɛi*. I suggested this in this Bulletin, vol. I, p. 182, and the same has been proposed by Prof. Lin Yü-t'ang in his Yü yen lun ts'ung pp. 82 ff.

The theory would purport that 儺 was originally *\*nân*, 幡 *\*b'wân* and 單 *\*d'ân*, and that 旂 was originally *\*g'jɛn*, which by nasalization became Anc. *nâ*, *b'uâ*, *d'â* and *g'jɛi* respectively. But if so, we have to answer the question: how did this nasalization work? If 單 was Arch. *tân* and has always kept its *-n* (Anc. *tân*, Peking *tan*), how could 單, if it was Arch. *\*d'ân*, get its *-n* eliminated by nasalization and become Anc. *d'â* (Peking *t'o*)? How could they develop differently? In the same way, if both 旂 and 芹 were Arch. *g'jɛn*, how could the former become Anc. *g'jɛi* (Peking *k'i*) and the latter Anc. *g'jɛn* (Peking *k'in*)? There is no possibility of this within the same line of the language. If it were so, it must be due to a mixing of dialects. Whereas *-n*, in the main line of the language, that of the Shī king and the *hie sheng* characters, High Chinese, was preserved and lived down to Ts'ie yün time, it has been nasalized in one or several dialects which were on the side of (parallel with) the High Chinese: from this side-track dialect, so to speak, a few forms like 單 *d'â*, 旂 *g'jɛi* have then penetrated into High Chinese and there ousted the regular forms *\*d'ân*, *\*g'jɛn* for these words and taken their place. Thus, in Ancient Chinese (Ts'ie yün) we have obtained 單 *d'â* (dialectal loan word) but 單 *tân* (regular form), 旂 *g'jɛi* (dialect form) but 芹 *g'jɛn* (regular form).

In principle, there would be nothing against such an explanation. We could find numerous parallels in other languages. In French, for instance, we have the words *cage*, *canevas*, *caillou*. In High French they should properly read *chage*, *chanevas*, *chaillo* according to the regular phonetic laws of that language, and such forms with *ch-* have really existed earlier, but have been ousted, in High French, by the dialect forms (Picardie, Normandie) *cage*, *canevas*, *caillou*. Again, in High Swedish, the words *spår* (*spör*), *län*, *stråk* (*strök*), *påse* (*pöse*) should regularly have been *spörr*, *lënn*, *strökk*, *pösse* (cf. *börr*, *tënn*, *lökk*, *mösse*), but have got long vowels because they are forms loaned from other dialects than the one which is the regular basis of High Swedish. The same phenomenon can be observed in Pekinese in certain sporadic cases. 孕 and 眞 should regularly give Pek. »ying» and

»cheng», but they are pronounced »yün» and »chen» through influence of some dialect in which *-ng* > *-n*. And certain Archaic words have similarly jumped over into Anc. Chin. categories where they should not properly belong: 生 Arch. *səng* should be Anc. *seng* (Kuang yün rime 13) but was really *song* (Kuang yün rime 12); 川 Arch. *t'jwən* (cat. C above) should give Anc. *t'j'uən* (Kuang yün rime 18) but has given Anc. *t'j'wän* (Kuang yün rime II, 2). It is here always a question of sporadic irregularities.

For a long time, indeed, I have imagined that this solution was the correct one. But the longer I have studied the question, the more I have become convinced that it must be wrong. I have gradually been brought to an opinion which approaches that expressed by W. Simon (Zur Rekonstruktion der altchinesischen Endkonsonanten II, p. 8), though it is by no means identical.

It is necessary here to make a survey of all the most important cases of interchange of final *-n* with final vowel in Arch. rimes, *hie sheng* characters and *kia tsie*. I limit the list to those cases that are pre-Han or Han; later examples out of the Ts'ie yün and Tsi yün, concerning words not attested before Liu ch'ao time of course prove nothing about Archaic Chinese. The readings given in this survey are all in Anc. Chinese.

1 儺	2 左	3 難	4 瘡	5 薑	6 龜	7 瘡	8 瘡	9 瘡	10 瘡	11 團
12 擗	13 瑞	14 瑞	15 溫	16 戰	17 纓	18 造	19 端	20 端	21 擊	22 擊
23 擊	24 擊	25 擊	26 擊	27 擊	28 擊	29 擊	30 擊	31 擊	32 擊	33 擊
34 擊	35 擊	36 擊	37 擊	38 擊	39 擊	40 擊	41 擊	42 擊	43 擊	44 擊
45 擊	46 擊	47 擊	48 擊	49 擊	50 擊	51 擊	52 擊	53 擊	54 擊	55 擊
56 擊	57 擊	58 擊	59 擊	60 擊	61 擊	62 擊	63 擊	64 擊	65 擊	66 擊
67 擊	68 擊	69 擊	70 擊	71 擊	72 擊	73 擊	74 擊	75 擊	76 擊	77 擊
78 擊	79 擊	80 擊	81 擊	82 擊	83 擊	84 擊	85 擊	86 擊	87 擊	88 擊
89 擊	90 擊	91 擊	92 擊	93 擊	94 擊	95 擊	96 擊	97 擊	98 擊	99 擊
100 擊	101 擊	102 擊	103 擊	104 擊	105 擊	106 擊	107 擊	108 擊	109 擊	110 擊
111 擊	112 擊	113 擊	114 擊	115 擊	116 擊	117 擊	118 擊	119 擊	120 擊	121 擊
122 擊	123 擊	124 擊	125 擊	126 擊	127 擊	128 擊	129 擊	130 擊	131 擊	132 擊

- This is the already mentioned 1. *nâ* which in Shī (Chu kan) rimes with 2. *tsâ* and yet has *nân* as phonetic.
- The word *nâ* 'ample' (Shī, Si sang) is written (kia tsie) 3. *nân*.
- The word 4. has two Kuang yün readings *tân* and *tâ*; phonetic *tân*. Rimes as *tân* in Shī, Pan.
- Is the already mentioned 5. *d'â* (Ts'ie yün but not Kuang yün has an alternative reading *d'ân*!) with phon. *tân* and riming with 6. *ngiwwn* (Li ki, Yü ling).
7. Ts'ie yün *t'â* and *t'ân* (T'ang yün also *tâ*, not in the Ts'ie yün); has phon. *tâ*. Shuo wen quotes Shī, Si mu, as 7.; the Mao version has 8. *t'ân*.
9. *tuâ*, Shuo wen 'a horse whip', phon. *tuân*. No pre-Han text example.



- VII. 10. Anc. *t's'wię* 'to measure', phon. *tuân*. Used *kia tsie* for 11. *d'uân* in a *fu* written by Kia Yi († 168 B. C.) in *Ts'ien Han shu* (k. 48, p. 3 a). Kuo P'o, comm. to Fang yen, reads it *zjwän*.
- VIII. 13. *z'wię*, phon. *tuân*.
- IX. 14. *t's'wię*, phon. *tuân*, rimes (Shī, Siao yüan) with 15. *'uən* and 16. *t'sjän*, and (Chuang-tsī, Ts'i wu lun) with 17. *muân*. For 14. in Mengtsi II (Legge p. 187) the Ting version has 18. read *t'sjwän*.
- X. 19. Yü p'ien *tuân* and *tuâ*, phon. *tuân*; Shuo wen says »read like 20. (*tuân*)».
- XI. 21. *b'uân* and *b'uâ*, phon. *puân*.
- XII. 22. *b'uân* and *b'uâ*; it occurs in the bisyllabic expression 23. *b'uânsân* (Sima Siang-ju, Tsī-hü fu, Wen süan 7, p. 14 a; Li Shan indicates the reading *b'uân*), but this is evidently the same as Shī (Tung men chī fen) 24. *b'uâ-sa* (so also Er ya).
- XIII. 25. *kuân* 'libation'. All ancient commentators (Mao Heng, Hü Shen, Cheng Chung, Cheng Hüan) define it as 26. *kuân* 'libation', and it must be etymologically cognate to this; yet it has 27. *kuâ* as phonetic.
- XIV. 28. *b'jwön* 'a track', *p'jwön* 'a turn', *b'uân*, *p'uân*, *b'uâ* various place-names, *puâ* 'courageous'. In Shī (Sung kao) it rimes with 29 *tân*, *yan*, *xiön*.
- XV. 30. *b'uâ*, *puâ*. Rimes in Yi king (kua 22) with 31. *yan*, in Tso chuan (Süan 2) with 32. *yan*.
- XVI. 33. *b'uân* a place-name, *puâ* 'stone used for arrow point', cf. 34. *puâ*.
- XVII. 35. *puâ*; rimes in Kuan-tsī (Ti tsī chī, chapter 59) with 36. *b'uân* (the present text is corrupted by adding a word which spoils the rhythm and should be eliminated).
- XVIII. 37. *luâ*, phon. *luân*.
- XIX. 38. *muâi*, has phon. *mjän* and rimes in Shī (Sin t'ai) with 39. Arch. *d'ian*; there was, however, also a reading *muân* given by the T'ang commentator Ting Kung-chu (*ap.* Sun Shī) to Meng-tsī II (Legge p. 207), and already by Kuo P'o († 324 A. D.) in his comm. to Fang yen (k. 3, p. 4 a).
- XX. 40. *xiwön* 'to dry', Yi king (Shuo kua); *xiwię* 'fire', Chou li (Sī kwei shī), so read in Kuang yün and King tien shī wen. Both build on Cheng Hüan, who says it is read like 41. (the Ts'i dial. word for 42).
- XXI. 43. *t'się* (Kuang yün, Yü p'ien, King tien shī wen to Li ki T'an kung, and Tsī lin *ap.* King tien shī wen). Phonetic *tan*. Shuo wen gives a variant 44. with phon. *zjën*.
- XXII. 45. *niei*, phon. *nân*.
- XXIII. 46. frequent in various readings and meanings (many of them *kia tsie*): *tuän*, *t'sjuën*, *t'uän*, *d'uän*, *d'uân*, *tuâi*. In Shī (Pei men) it rimes with 47. *jwi*, *ts'uâi*; it is then read *tuän* by Mao Heng, *tuâi* by Cheng Hüan.
- XXIV. 48. *zjuën* (Arch. *djwän*), *tuän* 'a kind of bell'; *d'uâi* 'butt of a spear'. As *d'uâi* it rimes in Shī (Siao jung) with 49. *g'juän*.

- XXV. 50. *d'uâi* with phon. 46. *tuän*. In Sung Yü, Feng fu (Wen süan 13, p. 2 b), it occurs in a bi-nom 51. *d'uâi-yuän*, which I suspect should be read *d'uän-yuän* (after the pattern of innumerable such bi-noms) in spite of the *d'uâi* gloss of the commentary.
- XXVI. 52. *t'uän* and *t'uâi*. Rimes in Shī (Ts'ai k'i) with 53. *luâi*, *jwęi*.
- XXVII. 54. has a series of Anc. readings: *pjię*, *b'jwęi*, *b'juän*, *pjuän*, *b'uän*. To the *pjię* of Yi king (kua 22) Cheng Hüan (*ap.* King tien shī wen) says: »it means 55. *pjän*», which is evidently a phonetic gloss (the sense explained by an approximate homophone). In the reading *puän* it rimes with 56. *zjën* (Arch. *djän*) in Tso chuan (Hi 5).
- XXVIII. 57. *hjuën* serves as *kia tsie* for 58. *tuâi* in Chuang-tsī (Chī lo, last section).
- XXIX. 59. *xiwęi*, phon. *kjuän*.
- XXX. 60. *yuän* 'curved handle of a plough'; *xiwęi* 'a clothes-peg'.
- XXXI. 61. *xiwęi* 'light, brightness' rimes in Shī (T'ing liao) with 62. *zjën* (Legge translates it 'smoke' and reads it »*huâm*» i. e. Anc. *xiuän* and Couvreur translates 'fumée' and reads *hiun* i. e. Anc. *xiuän*; they both have followed Chu Hi, who has fabricated a »poetical« reading; Mao Heng says it means *kuang* 'brightness', indicating the ordinary sense and reading of the word; Lu Tê-ming underlines this by saying: »read 63. *xiwęi*). Other readings given by Kuang yün and Tsi yün are *xiuän*, *xiwön*, *yuän*, for which, however, there are no pre-Han examples. But it is used as *kia tsie* for 64. *jjuän* in Chou li (Shī tsin) and for 65. *jjuän* in Li ki (Tsi t'ung).
- XXXII. 66. *nguâi* and 67. *jwię* rime in Shī (Ku feng) with *jwön*.
- XXXIII. About 68. *kjwen* Shuo wen says: »it is read like 69. *jwęi*.
- XXXIV. 70. *kjwęi* rimes in Shī (Tung shan) with 71. *şan* (not recognized by Tuan Yü-ts'ai, but by both Wang Nien-sun, Kiang Yu-kao and Chu Tsün-sheng).
- XXXV. 72. *kai* and 73. *nzię* both rime in Shī (Ti tu) with 74. *g'jän*.
- XXXVI. 75. *mjwęi* rimes in Ta Tai li (Wu ti tê) with 76. *jwön*.
- XXXVII. 77. *g'jęi* 'to pray' has phon. *kjän*.
- XXXVIII. 78. 'name of a herb' read *g'jęi* and *g'jän*, has phon. *kjän* and is used as *kia tsie* on the one hand for 77. *g'jęi* 'to pray' (so often in bronze inscriptions), on the other hand for 79. *kjän* in Chang Heng, Si king fu (Wen süan k. 2, p. 7 a).
- XXXIX. 80. *g'jęi* has phon. *kjän* and rimes in Shī (T'ing liao) and in Tso chuan (Hi 5) with 62. *zjën*, and in Shī (Ts'ai shu) with 81. *g'jän*.
- XL. 82. *g'jęi*, which in Shī (Shī jen) rimes with 83. *'jęi*, *ts'iei*, *si*, has *kjän* as phonetic and is used as *kia tsie* in Li (T'an kung) either for 84. *k'än* (so acc. to Lu Tê-ning) or rather for 74. *g'jän* (so Chu Tsün-sheng, based on Cheng Hüan's gloss: »equal to 85.«), and also as *kia tsie* in Chou li (K'ao kung ki, Chou jen) for a word 'strong' which Cheng Chung (1 st c. A. D.) reads *k'än*.
- XLI. 86. *g'jęi*, id. with 87. *g'jęi*, is also used for 88. *ngjän* and has phon. *kjän*.
- XLII. 89. *ngjęi* has phon. *kjän* and is used as *kia tsie* for 88. *ngjän* (Ts'ien Han shu, Sü chuan).



- XLIII. 90. 'jei rimes in Ch'u ts'i (Pu kü) with 91. *kuân*.
- XLIV. 92. Arch. 'jen is said by Cheng Hün (comm. to Li Ki, Chung yung) to be read like 90. 'jei by the people of Ts'i (cf. Lin Yü-t'ang, Yü yen lun ts'ung).
- XLV. 93. *pjwei* is used as kia tsie for 94. *pjuän* in Chou li (Chung tsai) — so already acc. to Cheng Chung (1st c. A. D).
- XLVI. 74. *g'jän* is used as kia tsie for 80 (77) *g'jei* in Li ki (Tsi fa, Couvreur p. 259) — so already acc. to Cheng Hün.
- XLVII. 95. *sien* and *siei*; phon. *sien*.
- XLVIII. 96. *siei* 'bird's nest' = 97. *siei*. Applied as kia tsie to *siei* 'west'. But it is phon. in 98. *ts'ien* and 99. *sjän*. For the name 100. »Si shü» Mei Sheng in his Ts'i fa (Wen süan 34, p. 5 a) writes 101. »Sien shü», and the T'ang commentator Li Shan in his note to this passage quotes Chan kuo ts'ê (Ts'i ts'ê 4) so as to show that his Kuo ts'ê version had »Sien shü». 96. *siei* rimes, on the one hand in Shī (Liu yüe) with 102. *siei*, *g'jwi*, on the other hand with various *-n* words: in Shī (Sang jou) with 103. 'jen, *zjän*; in Li ki (Tsi i) with 104. *zjwän*; in the the Yi lin (3: 1, 11: 54, 12: 37, 12: 51, 13: 7, 13: 34, 27: 14, 32: 54, 37: 54, 43: 12, 51: 8) with a long series of *-n* words (105. *tsjän* etc.).
- XLIX. 106. *sai* 'to sprinkle', *siei* 'to wash'. In the latter reading it is identical with 95. above (*siei*, *sien*). And the character is used as kia tsie for various other words in *-n*: *sien* 'respectful' (Li ki, Yü tiao), *sien* and *siei* 'scared' Chuang-tsi, Keng-sang-ch'u). In Shī (Sin t'ai) Lu Tê-ming reads it *ts'uäi*, but it rimes with 107. *d'ien*. *sai* 'to sprinkle' should be compared with 108. *sjän*, *sien* 'to sprinkle'.
- L. 109. *siei*, phon. *sjän*.
- LI. 110. is read both *jän* and *i* by Ts'ie yün, by Yü p'ien and by Lu Têming (Shang shu yin i 1, 3 a). 110. does not occur as a rime, but it is phonetic in various words ending in *-n*.
- LII. 111. *b'jän* and *b'ji* (Yü p'ien, Kuang yün, King tien shī wen). It rimes in Lao-tsi with 112. *si*.
- LIII. 113. 'i is used as kia tsie for 114. 'jän in the chapter Hung fan of Shang shu on the stone classics of the Tung Han Hi-p'ing period.
- LIV. For 115. *tsi* in Li ki (Nei tsê, Couvreur p. 666) Cheng Hün gives the variant 116. *tsjän*, and the same character in Shang shu (Wu yi, Couvreur p. 291) is rendered by 117. *tsjän* by Si-ma Ts'ien (Chou kung shī kia).
- LV. Instead of the char. 116. (var. 117) *tsjän* in Yi king (kua 32) Shuo wen cites 118. *tsi*.
- LVI. 119. *liet* rimes in Li ki (Li yün) with 120. *sjwän*.
- LVII. 121. *siei* rimes in Ch'u ts'i (Chao hun) with 122. *sien*, *ywan*.
- LVIII. 123. *ts'i* and 124. *mjiç* rime in Shī (Sin t'ai) with 125. *sjän*.
- LIX. 126. *swi* and 127. *d'iei* rime in Shī (Mien shuei) with 128. *tsjwän*.
- LX. 129. *pjwi* rimes in the Yi lin (64: 5) with 130. *muän*.

We see that the contacts of *-n* words with words ending in vowel are quite numerous, and the dialectal nasalization explanation becomes *eo ipso* somewhat dubious. But it becomes all the more so if we examine some of these cases more closely; the theory is indeed quite hopeless.

In the first place we should have to have recourse to *two* different nasalization phenomena:

- a). In cases like XXXIX 旂 *g'jei* with phon. 旂 *kjän* and riming with 旂 *zjän*, Arch. *djän*, we should have to say that the Anc. *-i* word 旂 *g'jei* had *-n* originally: \**g'jän* and therefore got its phonetic 旂 and rimed with the *-n* word *djän*. But dialectally it developed \**g'jän* > *g'jä<sup>n</sup>* > *g'jei*. In other words, a nasalization which did *not* exist in the Shī king language, nor in the *hie sheng* language nor in the main line of the later High Chinese, occurred dialectally, and from this unknown dialect penetrated (through a certain number of loan words) in the Ts'ie yün language.
- b). On the other hand, in cases like LVIII 泚 *ts'i* riming with 泚 *sjän*, we should have to suppose that it was the Anc. *-n* word *sjän* which in some Archaic dialect had been nasalized: *sjän* > *sjä<sup>n</sup>* > *sjäi* and therefore could — in a dialectally coloured Shī ode — rime with the *-i* word 泚 *ts'i*. In other words: a Shī ode would have revealed to us a nasalization that has left no trace whatever in later times and has not been mirrored in the Ts'ie yün language.

The necessity for two different nasalization theories is already very disturbing; and we should furthermore have to operate with the whole transitions *jän* > *jä<sup>n</sup>* > *jäi* and *än* > *ä<sup>n</sup>* > *äi* dialectally already in Shī king time. Whereas 旂 still had its *-n*: \**g'jän* in a dialect which is the base of a rime like 旂: 旂 *g'jän* (Shī, Ts'ai shu), the originally homophonous 旂 \**g'jän* would already have become *g'jei* in another dialect which is the base of a rime like 旂: 旂 *jei*: 旂 *ts'iei* (Shī, Shī jen). Similarly 西 (XLVIII) would have been \**siän* in the dialect of the ode Sang jou, but *siei* in the dialect of the ode Liu yüe. Whereas 旂 was \**d'än* in a dialect which is the base of the *hie sheng* character (phonetic 單 *tän*) and of the rime 旂: 旂 *ngjwän* in Li ki, Yü ling, 旂 \**nän* would have been \**nä* already in Shī time in the dialect of the ode Chu kan (riming with 旂 *tsä*). All this is extremely unlikely.

In the third place — and worst of all — it is very difficult to imagine the nature of a dialectal nasalization which could explain the *-i* *-n* contacts listed above. It is all very well to say that 旂 *sjän* had become dialectally *sjä<sup>n</sup>* > *sjäi* in order to rime with 泚 *ts'i*. But what about 旂 *san* (Arch. *sän*) riming with 旂 *kjwei*, or 旂 *kuän* riming with 旂 *jei*? Here we could not very well postulate dialectal transitions *sän* > \**sai*, > *kuän* > \**kuäi*. And even if we were so bold, it would lead to impossible consequences; for if *kuän* > dial. \**kuäi*, in order to rime with *kjwei* (with original *-i*), how could 旂 \**nän* > dial. \**nä* in order to rime with 旂 *tsä*, and not *näi*? All this is plainly impossible.

We have, then, to abandon the nasalization theory as a means of explaining the totality of these *-i* *-n* contacts and search for other ways.



We could, in the next place, imagine the possibility that we have not to do with a dialectal phenomenon but that 旂 was a true Arch. *-n* word (since it had *kjən* as phonetic and rimed with *-n* words) and yet in some way different from 旂 *g'jən*; this, then, would explain why the former has become Anc. *g'jɛi* and the latter Anc. *g'jən*. A glance at the cases listed above, in which there is contact between *-n* words and vowel-ending words, convinces us that it cannot have been a question of the vocalism — there are all types of vowels, all of which simultaneously occur in words with *-n* preserved to this day. Nor can it have been a question of tone.

For certain words it might be tempting to assume a palatalized *-n*: 旂 \**g'jəŋ*: 旂 *g'jən*. This would explain very nicely why *g'jən* has become *g'jɛi* but *g'jən* kept its *-n*: *g'jən*. On the other hand it would furnish a passable explanation why a supposed 旂 \**g'jəŋ* could rime with a 衣 *jɛi* — because of its yodized (*i*-tasting) final *-n*. But we realize immediately the impossibility of this explanation. It would explain only a few cases. It could never be applied to cases like 山 Arch. *sān* riming with 齋 *kjwɛi*, or 匪 *pjwɛi* kia tsie for 分 *pjwən*, for we cannot suppose a palatal *-n* in *sān* and *pjwən*, which have their *-n* preserved in Ts'ie yün and down to our time; nor would it be applicable to cases like 讎 *nā* (< \**nān*?) riming with 左 *tsā*, 𠵹 *b'uā* riming with 𠵹 *γān*. And it is obvious that no explanation is plausible which does not solve *all* these contact problems, which are certainly connected and must have a common explanation. It would, moreover, be very bold to construct an Archaic antithesis 旂 *g'jəŋ*: 旂 *g'jən*, for then we should have to find a reason why *-n* in the one case was »mouillé»: *-n*, in the other not: *-n*; simply to say that this is due to unknown earlier phenomena (in Proto-Chinese) would be very unsatisfactory.

We could, finally, imagine that in all these cases (I—LX) the member ending in Anc. vowel has had an Arch. *-n*, but an *-n* that was weaker than *-n* that was preserved: 旂 *g'jən* (short *-n*): 旂 *g'jən* (long *-n*), 讎 *nān* (short *-n*): 讎 *nān* (long *-n*), etc. But this would be, again, to construe a difference imputable to Proto-Chinese phonology, of which we know nothing, which is in itself risky, as just stated. Moreover, since the various *-i* words of I—LX above freely rime with the words of the entire Shǐ rime cat. G above, we should have to construe a weak final *-n* in the whole of this category; and this is absolutely impossible, for then we could never explain why this category in normal cases is well distinguished from our cat. C (*-ən* group) above.

We see that all these tentative solutions fail. We cannot arrive at a satisfactory explanation so long as we insist upon all these words of types 讎, 𠵹 *b'uā*, 旂 *g'jɛi* etc. having really an Arch. *-n*, which has been lost in one way or another. We shall have to start at another end and look more closely into the big group of words ending in *-i* (cat. G) and examine whether their *-i* cannot have represented something else than *-n* or *-i* in Arch. Chinese.

Experience from the guttural groups has taught us that Arch. final *-g* has to a large extent dropped and given rise to *-i*, e. g. 來 *læg* > *lāi*, 戒 *kæg* > *kai*, 子 *tsjæg* > *tsi*, 𠵹 *χwæg* > *χuəi* > *χuāi*. Similarly *-d* has become *-i*, as described above (categories D, E, F): *liəd* > *liāi*, *ŋjēt* > *tsi*, *g'ād* > *γāi* etc. When we now, in our present

*-i* group (cat. G), find words of the types *-āi*, *-qi*, *-ei*, *-iei* etc., it is very natural to suspect that all these *-i* are vocalizations of some final consonant; that would only be in accordance with the well-attested general evolution of the Chinese language. The frequent interchange with words in *-n* shows that in such a case it must be a question of some kind of dental final.

This is underlined by the fact that besides the numerous contacts between *-i* and *-n* words in rimes, hie sheng and kia tsie adduced above, also an etymological connection between *-i* and *-n* words can be traced with a great amount of certainty in many cases:

- Between 衣 *jɛi* 'clothes' and 𠵹 *jən* 'to cover; conceal';
- Between 屛 *jɛi* 'a screen', 𠵹 *iei* 'a screen' and 𠵹 *jən* 'to cover, conceal';
- Between 依 *jɛi* 'to lean on' and 𠵹 *jən* 'to lean on' (common expression: »*yin ki*» 'to lean on a stool');
- Between 幾 *kjɛi* 'near to' (common expression *ki hu* 'near to') and 旂 *g'jən* 'near to';
- Between 畿 *g'jɛi* ('close quarters:') 'Royal domain proper' and 旂 *g'jən* 'near to';
- Between 饑 *kjɛi* 'famine', 飢 *kji* 'famine' and 饑 *g'jɛn* 'famine';
- Between 水 *swi* 'water' and 準 *tsjuən* (Arch. *ŋwən*) 'a water level';
- Between 圍 *jwɛi* 'to encircle, surround': and 運 *jiuən* 'to turn round';
- Between 緯 *jwɛi* 'woof': and 緯 *jiuən* 'woof'.
- Between 飛 *pjwɛi* 'to fly' and 奮 *pjuən* 'to start flying'.

Here, still more than in the rimes, the hie sheng and the kia tsie, it comes out clearly that *-i* is the vestige of a lost dental.

When it now comes to determining the nature of this dental final, it will not do at all to pose, as W. Simon (*op. cit.*) does, the same dental here as in categories D, E, F: cases like 例 *liäi* which has 列 *liät* as phonetic (Simon writes 例 *liäd*, 旂 *g'jed*). They are absolutely different. In the *liäi* type (cat. D, E, F) — Arch. *-d* — there is an interchange with *-t* in rimes and hie sheng; here, in the 旂 *g'jɛi* type (cat. G) there is an interchange with *-n* (cases I—LX above). The two types practically never mix.

In the *-i* words of our cat. G, the dental final cannot have been a *-t*, for as a rule they do not rime with ju sheng *-t*; we cannot suppose 旂 Arch. *g'jet* etc.

It cannot have been a *-d* for the same reason. The *-d* words are in cat. F, and rime frequently with the *-t* words, just as experience from other groups shows us that e. g. *-ək* and *-əg* rime quite freely. But with cat. F our cat. G here has very few rime connections (see p. 24 below); on the other hand, the *-t*, *-d* words practically never rime with *-n* words, but we have just seen how our cat. G here has quite considerable *-n* connections. A *-d* is therefore just as much excluded as a *-t*; we cannot construe 旂 Arch. *g'jed* etc.

It cannot have been an *-n*. We have already discussed extensively why 旂 cannot have had an *-n*. To suppose 旂 \**g'jən* (>*g'jɛi*) 讎 \**lien* (>*liei*), 𠵹 \**g'uən*



(> *yuâi*) is impossible, for then we could never explain why we have Anc. 近 *g'jæn*, 麟 *lien*, 丸 *yuân* with preserved *-n*.

In other words: the final dental cannot have been *-t* or *-d* or *-n*. What is then left? Evidently *-r*, *-l* and *-s*.

It is a remarkable fact that Tibetan, to which Chinese is undoubtedly cognate, has a great number of words of the types *-r*, *-l*, *-s*, e. g. *dur*, *dul*, *dus* etc. It is but reasonable to expect some corresponding word types in Chinese, and the only phonological group in which these can very well be suspected of lurking is our very category G of the Shī rimes, i. e. words ending in Anc. *-i*. I have stated elsewhere and on p. 1. above that I consider it premature to try to compare isolated Tibetan and Chinese words; the following cases are therefore not meant as positive identifications but only as examples of how it might turn out that Chinese words correspond to Tibetan *-s*, *-r* and *-l* words:

Tib. *g-nis* 'two' = Chin. 二 *ní* (W. Simon, Tibetisch-Chinesische Wortgleichungen 1930, p. 29);

Tib. *lus* 'body' = Chin. 體 *t'iei* (Simon p. 30; the phonetic of the char. is *liei*);

Tib. *bras* 'rice' = Chin. 米 *miei* 'rice' (Simon, p. 30);

Tib. 'p'ur 'to fly' = Chin. 飛 *pjwēi*;

Tib. *k'or* 'to return' = Chin. 歸 *kjwēi*;

Tib. *ser* 'finger' = Chin. 指 *tši*;

Tib. *ts'il* 'fat, grease' = Chin. 脂 *tši* (Simon, p. 27).

A possible indication of a final *-r* is to be found in the word 獅 Anc. *ši*, belonging to our cat. G, which was applied in early Han time to denote the 'lion', an animal earlier unknown in China. The question is interestingly linked with another loan word, designated by various words of the category. Pelliot has cleverly seen that all these forms point to an *-r*. He writes (T. P. XXVI, 1929, p. 141): »La boucle de ceinture en métal fut désignée d'un nom Hiong-nou, qui apparaît dans les textes chinois sous les transcriptions 鮮卑 *šjān-pjiē*, 師比 *ši pji* . . . 犀毗 *siei-b'ji*, 犀比 *siei-pji* . . . 犀比 *si-b'ji*; la forme originale du nom est inconnue . . . naturellement le nom . . . évoque spontanément celui des tribus *Sien-pi* (écrit de même manière) . . . il n'est pas impossible que le vieux nom des *Sien-pi* survive dans les tribus 塞 葷<sup>4</sup> *che-wei* des T'ang, et ceci supposerait un original ancien du type \**Sārbi*, \**Serbi* (par une coïncidence curieuse, le 獅 de 師 比 a servi de transcrire sous les Han un nom étranger du lion qui pourrait bien être aussi à *-r* finale et s'apparenter au persan *šēr*)». Pelliot is very probably right about the final *-r* in these words. *ši* 'lion' would then transcribe an Iranian *šary*, according to what my friend Prof. G. Morgenstierne tells me.

If thus the words of our cat. G. ended primarily in *-r*, *-l*, *-s*, it is clear that in Shī king time they did not end, some of them in *-r*, others in *-l* and others again in *-s*. They all rime regularly and freely with each other, and there is no possibility of subdividing the category into smaller groups according to *-r*: *-l*: *-s*. Either all had *-r* or all had *-l* or all had *-s*.

The choice is not difficult. The final in question was *-r*. An *-s* in them all is easily excluded. In rimes like 旂 *g'jēi*: 旂 *g'jæn* we cannot pose a 旂 *g'jās*, and 旂 *kjæn* could not serve as phonetic in a 旂 *g'jās*; nor could 旂 *pjwēi*, if it were an Arch. *pjwās*, serve as kia tsie for 旂 *pjwæn*. *-r* and *-l* are equally possible from the point of view of rimes, hie sheng and kia tsie. A rime like 旂 *g'jār*: 旂 *g'jæn*, a hie sheng like 旂 *g'jār*: 旂 *kjæn* and a kia tsie like 旂 *pjwār* for 旂 *pjwæn* are passable; they are not good, and therefore only occur as exceptions (cases I—LX above), being indeed makeshift rimes and somewhat poor hie sheng and kia tsie, but still they might occur occasionally; *-l* would be equally good and equally bad as *-r*: *g'jāl*: *g'jæn*, *pjwāl*: *pjwæn*. But my decision for *-r* and against *-l* depends upon the fact that it is easier to imagine an evolution Proto-Chinese *-s* > Arch. *-r* (e. g. 二 *njās* > *njār*) than P. C. *-s* > Arch. *-l* (*njās* > *njāl*). The latter would go against all linguistic experience. The former is a common and well-known transformation. I need only recall the Germanic final *-s*, which regularly gives Old Icelandic *-r*: Got. *sunus*: Icel. *sunr*; and of the »rhotacism» in Latin (*genes-* > *gener-* in *generis*, *es* > *er* in the verb *esse*). Particularly suggestive, moreover, is the cognate language Tibetan, where there is sometimes an interchange of *-s*: *-r* as final consonant: *mdzes-pa* 'beautiful': *mts'ar-ba* 'beautiful'; *byus* 'misfortune': *byur* 'misfortune', etc.

I conclude, therefore, that the three Proto-Chinese types *a | s*, *a | l*, *a | r* have all become Arch. *a | r* and that the whole of our cat. G ended in *-r*.

That I am here on the right track seems to me to be confirmed, once we go back to the table of cat. G on p. 11 above and fill in the Arch. values. It turns out that this category with dental final, *-r*, forms an exact parallel to two other categories with dental finals, *-n* and *-t* (*-d*) studied earlier, categories C and F, and this I consider to be a strong corroboration:

Cat. G. (p. 11)		Cat. F. (p. 10)		Cat. C. (p. 10)	
Arch.	Anc.	Arch.	Anc.	Arch.	Anc.
1. <i>ər</i>	> <i>âi</i>	(ət), <i>əd</i>	> —, <i>âi`</i>	<i>ən</i>	> <i>ən</i>
2. <i>wər</i>	> <i>uâi</i>	<i>wət</i> , <i>wəd</i>	> <i>uət</i> , <i>uâi`</i>	<i>wən</i>	> <i>uən</i>
3. <i>kljər</i>	> <i>kljēi</i>	<i>kljət</i> , <i>kljəd</i>	> <i>kljət</i> , <i>kljēi`</i>	<i>kljən</i>	> <i>kljən</i>
4. <i>kljwər</i>	> <i>kljwēi</i>	<i>kljwət</i> , <i>kljwəd</i>	> <i>kljwət</i> , <i>kljwēi`</i>	<i>kljwən</i>	> <i>kljwən</i>
5. <i>ʃljər</i>	> <i>tšli</i>	<i>ʃljət</i> , <i>ʃljəd</i>	> <i>tšljēt</i> , <i>tšli`</i>	<i>ʃljən</i>	> <i>tšljēn</i>
6. <i>ʃljwər</i>	> <i>tšlwi</i>	<i>ʃljwət</i> , <i>ʃljwəd</i>	> <i>tšljwēt</i> , <i>tšlwi`</i>	<i>ʃljwən</i>	> <i>tšljwēn</i>
7. <i>iər</i>	> <i>iei</i>	<i>iət</i> , <i>iəd</i>	> <i>iet</i> , <i>iei`</i>	<i>iən</i>	> <i>ien</i>
8. <i>er</i>	> <i>ai</i>	<i>et</i> , <i>ed</i>	> <i>at</i> , <i>ai`</i>	<i>en</i>	> <i>an</i>
9. <i>wer</i>	> <i>wai</i>	<i>wet</i> , <i>wed</i>	> <i>wat</i> , <i>wai`</i>	<i>wen</i>	> <i>wan</i>
10. <i>jər</i>	> <i>i</i>	<i>jēt</i> , <i>jəd</i>	> <i>jēt</i> , <i>i`</i>	<i>jən</i>	> <i>jēn</i> , <i>jēn</i>
11. <i>jwər</i>	> <i>wi</i>	<i>jwēt</i> , <i>jwəd</i>	> <i>juēt</i> , <i>wi`</i>	<i>jwən</i>	> <i>jwēn</i> , <i>iwēn</i>

This tallies beautifully as far as lines 1—11 of the G table on p. 11 are concerned. There are then but two lines left to be explained: 12. Anc. *nziē* and 13.



*χjwię*. The rime examples of these two lines are very few and have to be considered as exceptional, just as occasional confusions can occur between other regularly distinguished categories. Just as there are irregular rime contacts *a : ə* (categories A : C) e. g. in Shī, Ch'u ts'ī: 燻 *χán* (A): 懸 *k'ian* (A): 孫 *suən* (C); in Shī, Siao jung: 羸 *g'iwən* (C): 羸 *iwān* (A); so we have here some occasional *a : ə* contacts: line 12. Arch. *njar, mjar*; 13. Arch. *χjwar, iwār* riming with *-ər* words).<sup>5</sup>

In connection with our table above it is the proper place here for reverting to the question of the Arch. final *-d* (see p. 7 above). That I have had to abandon my idea of *-t* in falling tone  $> -i$  and go back to my construction *-d > -i* of my Analytic Dictionary is just because the *-t* theory does not satisfy the general system of the Archaic language. I have shown earlier (following up ideas first advanced by W. Simon) that Arch. Chinese had both *-k* words and very large groups of *-g* words. It would be strange indeed if it possessed *-t* words and *-r* words but no *-d* words. All probability, then, speaks in favour of a *-d*, not *-t*, in the *-i* sections of categories D, E, F above. But probability is not the same as proof. I have obtained the proof in another way. I have stated above that cat. F. does *not* rime, as a rule, with cat. G, i. e. *-r* words. But there are some exceptions, and these are highly significant. I shall give some examples:

， 閏濟 ； 至禮 ； 利濟 ； 利禮 ； 致示死 ； 隨衰階 ； 至  
濟死 ； 比累水 ； 衰飢 ； 至視 ； 至利視 ； 利威指 ； 位  
氣威 ； 痔理 ； 懷叙 。

1. Shī, Tsai ch'ī; 2. Shī, Pin chī ch'u yen; 3. Yi, Hi ts'ī, hia; 4. Li ki, Fang ki; 5. Li ki, Ju hing; 6. Li ki, K'ü li; 7. Ch'u ts'ī, Kiu pien 6; 8. Sung Yü, Kao t'ang fu; 9. Shu, Shun tien; 10. Chuang-tsī, Chī pei yu; 11. Sün-tsī, Ch'eng siang; 12. Han Fei-tsī, Chu tao; 13. Han Fei-tsī, Kie Lao; 14. Kuan-tsī, Sin shu; 15. Sung Yü, Feng fu.

The words to the left of the colon belong to cat. F, those to the right to cat. G (*-r*). Now, the striking fact is that in one case only (15) have I been able to find a real ju sheng *-t* riming with *-r*. In all the other cases it is a question of the final dental, which was lost before Anc. Chinese, causing a falling tone, the dental which I had first interpreted as *-d* and later as *-t*. It is quite evident here that the former interpretation must be right. For if it had been a *-t*, there is no reason whatever why *-r* should rime more with *-t* than with *-t*. If, on the other hand, it was a *-d*, it is but reasonable that *-r* rimes more easily with *-d* than with *-t*. We can then well understand the cases above: as a rule neither *-t* nor *-d* rimed with *-r*; yet exceptional rimes *-d : -r* could sometimes occur, *-d* and *-r* being sufficiently similar phonetically, but hardly ever *-t : -r*.

These are the considerations that have forced me back to my original construction of *-d* (and of *-g* in 惟 etc.) in my Analytic Dictionary. It is true that it will then be necessary to find an explanation of the phenomena discussed in my Shī king Researches p. 120. I shall revert to that question on another occasion.

If we now, having arrived at a final *-r* as the solution of cat. G, go back to the cases I—LX on p. 13 above — it must be remembered that after all they are exceptional cases, makeshift rimes, hie sheng and kia tsie — we obtain the following results:

- i. 1. *nār* has phon. *nān* and exceptionally rimes with 2. *tsā* (an occasional contact *-ār : -ā* is phonetically not very shocking; cf. the High English pronunciation of *far* with the *-r* brought out practically only when followed by a vowel).
- ii. *nār* 'ample' is written kia tsie by 3. *nān*.
- iii. 4. double readings *tār* and *tān*.
- iv. 5. *d'ār* and *d'ān* has phon. *tān* and rimes with 6. *ngiwān*;
- v. 7. *t'ār* and *t'ān* with phon. *tā* (cf. I above).
- vi. 9. *twār* with phon. *twān*.
- vii. 10. *t'iwār*, phon. *twān*, used kia tsie for 11., 12. *d'wān*, read *z'iwān* < *điwān* by Kuo P'o.
- viii. 13. *điwār*, with phon. *twān*.
- ix. 14. *tiwār*, with phon. *twān*, riming with 15. *'wān*, 16. *tiān*, 17. *mwān*. For *tiwār* in Meng-tsī Ting reads 18. *tiwān*.
- x. 19. *twān* and *twār*, phon. *twān*, Shuo wen: »read like 20. *twān*»
- xI, xII. 21, 22. *b'wān* and *b'wār*, phon. *b'wān*.
- xIII. 25. *kwān*, phon. 27 *kwār* (that this »kuo» series had all *-r* is confirmed by the fact that it does not rime in the *-ā* category (Tuan cat. 17).
- xIV. 28. *b'iwān*, *p'iwān*, *b'wān*, *p'wān*, *b'wār*, *pwār*.
- xV. 30. *b'wār*, *pwār* riming with 31, 32 *g'ān*.
- xVI. 33. *b'wān*, *pwār*. How this stands to 34. *pwā* is an intricate question; it must reasonably show that forms with lost *-r* must already have existed very early.
- xVII. 35. *pwār*, riming with 36. *b'wān*.
- xVII. 37. *lwār*, phon. *lwān*.
- xIX. 38. *mwār*, *mwān*.
- xx. 40. *χiwān*, *χjwār*, 41. *χjwār*; observe that 42. must have had two Arch. readings: *χwār* in the Shī king (rimes regularly in cat. G) and *χwār* > T'sie yün *χwā* > Mand. »huo».
- xxI. 43. *tiār*, phon. *tān* (or 44. *điān*).
- xxII. 45. *niār*, phon. *nān*.
- xxIII. 46. *twān*, *tiwān*, *t'wān*, *d'wān*, *d'wān*, *d'wār* (riming with 47. *g'iwār*, *ts'wār*).
- xxIV. 48. *điwān*, *twān*, *d'wār* (*d'wār* riming with 49. *g'iwān*).
- xxV. 50. *d'wār*.
- xxVI. 52. *t'wān*, *t'wār*; riming with 53. *lwār*, *'iwār*.
- xxVII. 54. *pjār*, *b'iwār*, *b'iwān*, *pjwān*, *b'wān*; *pjār* explained (Cheng Hüan) by 55. *pjān* (< *pjān*).
- xxVIII. 57. *tiwān* kia tsie for 58. *twār*.



- XXIX. 59. *xiwər*, phon. *kjwən*.  
 XXX. 60. *g'wən* and *xiwər*.  
 XXXI. 61. *xiwər*, riming with 62. *djən*, kia tsie for 64, 65. *giwən*.  
 XXXII. 66. *ngwər* and 67. *iwar* riming with *iwǎn*.  
 XXXIII. 68. *kjwən*. Shuo wen says: »read like *iwər*» (a gloss based on an approximate phonetic resemblance).  
 XXXIV. 70. *kjwər* riming exceptionally with 71. *sǎn*.  
 XXXV. 72. *kər* and 73. *hjar* riming with 74. *g'jən*.  
 XXXVI. 75. *mjwər* riming with 76. *giwǎn*.  
 XXXVII. 77. *g'jər*, phon. *kjən*.  
 XXXVIII. 78. *g'jər* and *g'jən*, kia tsie for 77. *g'jər* and for 79. *g'jən*.  
 XXXIX. 80. *g'jər* with phon. *kjən* rimes with 62. *djən* and 81. *g'jən*.  
 XL. 82. *g'jər* rimes with 83. *iər*, *ts'iər*, *sjər*, has phon. *kjən* and serves as kia tsie for 84. *k'ən* or more probably for 74. *g'jən*.  
 XLI. 86. *g'jər* serves as kia tsie for 88. *ngjən*.  
 XLII. 89. *ngjər* has phon. *kjən* and is used as kia tsie for 88. *ngjən*.  
 XLIII. 90. *iər* rimes exceptionally with 91. *kwǎn*.  
 XLIV. 92. *jən* is said by Cheng Hūan to be read, by the Ts'i people, like 90. *iər*.  
 XLV. 93. *piwər* used as kia tsie for 94. *piwǎn*.  
 XLVI. 94. *g'jən* used as kia tsie for 80. (77.) *g'jər*.  
 XLVII. 95. *siən* and *siər* with phon. *siən*.  
 XLVIII. 96. *siər* = 97. *siər*, kia tsie for *siər* 'West', phon. in 98. *ts'iən* and 99. *sjən*. The *siər* 'West' rimes with 102. *siər*, *g'iwer*, and with 103. *jən*, *djən*, 104. *dz'iwən* etc.  
 XLIX. 106. *ser* 'sprinkle', *siər* 'to wash', kia tsie for *siən* 'respectful', *siər* 'scared'. In Shī, Sin t'ai, read *ts'wər*, riming with 107. *d'iən*; cognate to 108. *sjən* 'to sprinkle'.  
 L. 109. *siər*, with phon. *sjən*.  
 LI. 110. *djən* and *djər*.  
 LII. 111. *b'jən* and *b'jər*, riming with 112. *sjər*.  
 LIII. 113. *jər*, used as kia tsie for 114. *jən*.  
 LIV. 115. *tjər*, has the variant 116. *tjən*.  
 LV. 116. (117.) *tjən* has the variant 118. *tjər*.  
 LVI. 119. *liər* rimes exceptionally with 120. *sjwǎn*.  
 LVII. 121. *siər* rimes with 122. *siən*, *g'wən*.  
 LVIII. 123. *ts'jər* and 124. *mjar* rime with 125. *sjən*.  
 LIX. 126. *sjwər* and 127. *d'iər* rime with 128. *tjwǎn*.  
 LX. 129. *pjər* rimes with 130. *mwən*.

Though these rimes, hie sheng and kia tsie are exceptional, yet they are sufficiently numerous to show that the Chinese in Archaic times had a very strong feeling for the close affinity between *-n* and *-r* words. This was *not only* due to the phonetic similarity (a rime like *jər*: *kwǎn* must be said to be phonetically very poor) but also and above all because they had numerous word pairs in *-n*: *-r* which

they knew and felt to be cognate, two aspects of the same stem. Here we revert to the examples on p. 20 above:

- a) *iər* 'clothes': *jən*, 'to cover, conceal';
- b) *iər* 'a screen', *iər* 'a screen': *jən* 'to cover, conceal';
- c) *iər* 'to lean on': *jən* 'to lean on';
- d) *kjər* 'near to': *g'jən* 'near to';
- e) *g'jər* 'close quarters, Royal domain proper': *g'jən* 'near to';
- f) *kjər* 'famine', *kjər* 'famine': *g'jən* 'famine';
- g) *sjwər* 'water': *tjwǎn* 'a water-level';
- h) *giwər* 'to encircle': *giwǎn* 'to turn round';
- i) *giwər* 'a woof': *giwǎn* 'a woof';
- k) *piwər* 'to fly': *piwǎn* 'to start flying'.

To these cases we can now add the following, out of our cases I—LX above, which are clearly such double aspects of the same stem:

- III, 4. *tār* and *tān* 'distressed';
- IV, 5. *d'ār* and *d'ān* 'iguana';
- V, 7. *t'ār* and *t'ān* 'exhausted';
- X, 19. *twār* and *twān* 'hanging ears of grain';
- XI, 21. *b'wār* and *b'wān* 'to eliminate';
- XIX, 38. *mwār* and *mwān* 'to defile';
- XX, 42, 41, 40. *xwər*, *xwār*, *xiwər* and *xiwǎn* 'fire';
- XXVI, 52. *t'wər* and *t'wǎn* 'in complete array';
- XXXVIII, 78. *g'jər* and *g'jən* 'name of a herb';
- XLVII, 95. *siər* and *siən* 'to wash';
- XLIX, 106. *ser* and *sjən* 'to sprinkle';
- LI, 110. *djər* and *djən* 'respectful';
- LII, 111. *b'jər* and *b'jən* 'female'.

The cases are sufficiently numerous to make a seemingly bold theory of an alternation *-r ~ -n* within the same word stem plausible. Moreover, we find a very suggestive parallel to this in Tibetan, where there is a frequent alternation both of *-r ~ -n*, of *-l ~ -n* and of *-r ~ -l*:

-r ~ -n:

- sbur-ma* 'chaff': *spun-pa*, *sbun-pa*, 'chaff';  
*gčər-ba* 'bare, naked': *rjən-pa* 'bare, naked';  
*'byor-ba* 'to arrive': *'byon-ba* 'to arrive';  
*dkor* 'rare, precious': *dkon* 'precious thing';  
*gnyer-ba* 'take pains with': *nyen-pa* 'to be pained, labour hard';  
*nyer-ba* 'to tan, make soft': *mnyen-pa* 'flexible, soft';  
*star-ba* 'to tie fast': *brtan-pa* 'firm', *gtan* 'to bar (a door)';



-l ~ -n:

*p'ul* 'complete, perfect': *p'un* 'complete, perfect';  
*rtsol-ba* 'to be diligent, to endeavour': *brison-pa* 'to be diligent, to  
endeavour';  
*'dral-ba* 'to pull down, tear to pieces': *'dren-ba* 'to pull, tear out';

-r ~ -l:

*dgar-ba* 'to separate': *'gol-ba* 'to separate';  
*'byer-ba* 'to give way, be removed': *'byol-ba* 'to give way, step aside';  
*gžor-ba*, *gžer-ba* 'to weigh': *gžal-ba* 'to weigh';  
*k'al* 'a burden, load': *k'ur* 'a burden, load';  
*'jur-ba*, *'dzur-ba*, *'č'or-ba* 'to evade': *'jol-ba* 'to evade';  
*sbyor-ba* 'to join, mix': *spel-ba* 'to join, mix';  
*'k'yer-ba* 'to carry away', *'k'ur-ba* 'to carry': *skyel-ba* 'to carry away',  
*'k'yol-ba* 'to be carried';  
*'k'or-ba*, *k'yir-ba* 'to turn round': *'k'al-ba*, *'kel-ba* 'to twist, to spin',  
*'k'yil-ba* 'to twist';  
*sgor-ba* 'to boil': *skol-ba* 'to boil'.

The reconstruction system of Archaic Chinese sketched here means that I have come to the conclusion that an *-i* as final and principal vowel of an Arch. syllable did not exist at all; *i* (strong, vocalic) or *i* (short, consonantic) occurred exclusively as a »medial *i*», a subordinate element inside the syllable, combined with other vowels. This means that on an important point I have to waive my objections (»Tibetan and Chinese«, TP 1931, p. 24 ff.) to W. Simon's reconstructions, in so far as he has concluded a final dental in our cat. G (though not the *-r* at which I have arrived). It might seem that I should then also have to give up my there expressed criticism of and objections to his general theories of the Sinitic final consonants. I have (*loc. cit.* p. 31, 32) adduced a great number of forms from all kinds of Sinitic languages for the word stems 'four' (四 Anc. *si*), 'to die' (死 Anc. *si*) and 'water' (水 Anc. *šwi*) and shown that everything points to Sinitic roots ending in vowel, not in dental consonant; I have therefore objected to Simon's construing a Proto-Tibetan 四 *bžið* and 死 *šið* on the strength of Chinese forms in dental — a dental which I contested. Now, when because of rimes like 四: 緄: 罍 (*si:*) *biəd*: *piəd* (the *-d* in the last two is certain for hie sheng reasons) I have to acknowledge the *-d* in 四 *siəd*; and when, for all the various reasons given above, I have to admit the *-r* in 死, it would seem to be a corollary that I accept Simon's Proto-Tibetan *bžið*, *šið* (or such-like, at least some dental final) which would mean a dental final in these words in Sinitic.

But in spite of appearances it does not. In my article just quoted I have given ample examples showing that we have to distinguish Chinese *-k* and *-t* words with

primary (general Sinitic) *-k* and *-t*, e. g. 六 Arch. *liók* (p. 18), 八 *pwat* (p. 15) which have their *-k* and *-t* in the great majority of the Sinitic languages, and words with Chinese *-k* and *-t*, in which these *-k* and *-t* must be an innovation, some kind of suffix in one or several Sinitic languages but not primary and common to them all. As such examples I have given 百 Arch. *pāk* 'hundred', (p. 17), 日 *hjet* 'sun' (p. 19), 月 *ngiwāt* 'moon' (p. 21) — they all have typically vowel-ending Sinitic roots. It is just the same with the final *-g* in 九 *kjüg* 'nine', which must be a special Chinese feature, without correspondence in other Sinitic languages (Tib. *dgu* etc., *op. cit.* p. 36). Now, the words 'four' (Tibetan *bži* etc.), 'to die' (Tib. *ši* etc.) and 'water' (Tibetan *č'u* etc.) are typical vowel-ending Sinitic roots (*op. cit.* pp. 31, 32) and from the Arch. Chin. 四 *siəd*, 死 *šjər*, 水 *šiwər* I dare not, by any means, conclude any Sinitic dental finals. Their final consonants may be just as particularly Chinese as the *-t* in 日 *hjet* and 月 *ngiwāt*.

It should be emphasized that it is only because of the contrast with the well-known cases with real Sinitic *-k*, *-t* (六, 八), in which *-k* and *-t* do appear in a great number of Sinitic languages, showing that Sinitic *-k*, *-t* should not disappear in all languages except Chinese, that I refuse to see a primary Sinitic *-t* in cases like 日 *hjet*, 月 *ngiwāt*, and *-d* in 四 *siəd*. If it were not for that contrast, I would not deny the theoretical possibility of a primary Sinitic *-d* in the latter, having been dropped in all languages except Chinese. This would in itself be theoretically admissible. We must remember that — apart from Chinese — for one language only, Tibetan, we know a stage as ancient as the 7th c. A. D.; for Siamese only the 13th c. A. D. Most of the Sinitic languages we know only in their modern and certainly very strongly evolved forms. We could never, from all the modern Germanic languages, reconstruct an Ancient Germanic language in the very least similar to the Anc. Germanic we know thanks to Gothic texts and to comparative Indo-European linguistics. From Icelandic *steinn*, German *Stein*, Swedish *sten*, English *stone* we could never suspect the Anc. Germanic *stainaz*. The reason for this is obvious. There were inherent in the Germanic peoples certain common psychological tendencies which have caused their languages to evolve — even after the cohabitation of the peoples was broken — along parallel lines. Hence *stainaz* has lost its final consonant and its vowel of the ending in these languages independently of each other and by a parallel evolution. Just the same may have taken place in all the Sinitic languages, so that by a parallel evolution they all lost their *-d* in 'four' except Arch. Chinese (and later on Chinese as well). That is why I say that I conclude against such a wholesale dropping of a final *-d* in 四 *siəd* only because of the contrast with words with preserved Sinitic final consonants.

It is quite necessary to keep in mind this possibility of independent and yet parallel evolutions, once we think of a comparison between e. g. Siamese and Chinese. In his work »Le dialecte de Tch'ang-ngan sous les T'ang« (BEFEO 1920) H. Maspero has given a series of Siamese-Chinese word comparisons, some of which seem quite convincing.<sup>6</sup> If we dress a table with the Siamese forms, the Anc. Chinese (6th c. A. D.) and the Arch. Chinese as reconstructed



by me, the Siamese forms seem to afford crushing evidence against my Archaic reconstructions:

	S.	Anc.	Arch.
九	<i>kgo</i>	<i>kjəu</i>	<i>kjūg</i>
舊	<i>kuo</i>	<i>g'jəu</i>	<i>g'jūg</i>
丘	<i>k'go</i>	<i>k'jəu</i>	<i>k'jūg</i>
牛	<i>nguə</i>	<i>ngjəu</i>	<i>ngjūg</i>
告	<i>klau</i>	<i>kəu</i>	<i>kəg</i>
袋	<i>tai</i>	<i>d'ai</i>	<i>d'əg</i>
害	<i>hai</i>	<i>γai</i>	<i>g'əd</i>
雞	<i>kai</i>	<i>kiei</i>	<i>kier</i>

It would seem that Siamese forbids the reconstruction of the Arch. final consonants. And yet, in several of these very words there are absolute proofs of their existence:

- 舊 rimes in Shī with 時, which frequently rimes with *-k* (e. g. Chuang-tsī: Ta tsung shī, Huai-nan-tsī: Lan ming, Yi Chou shu: Tu hūn etc.);
- 丘 rimes in Ch'ü tsī with 之, which frequently rimes with *-k* (e. g. Shu: Lü hing, Sün-tsī: Kün tao); and it rimes in Sün-tsī: Ta lüe with 背, the final *-g* of which is certain from the element 北 *pək*;
- 牛 rimes in Shī with 哉, which frequently rimes with *-k* (e. g. Chuang-tsī: Ta tsung shī and Shan mu etc. and which has the same phonetic as 載, which latter again regularly rimes with *-k* and is used for 載 *tsək*) and in Chuang-tsī with 來 which regularly rimes with *-k* (dozens of examples);
- 告 has two Anc. readings *kəu* and *kuək* and regularly rimes with *-k* (*passim*); there cannot be the slightest doubt about its Arch. final guttural;
- 袋 has the same phonetic as 戴 *d'ək*, and as 貸 *t'ai* and *t'ək*; its phonetic 代 has phon. 𠵹 (*djək*);
- 害 *γai* is phonetic in 割 *kāt* and serves as *kia tsie* for 曷 *γāt*.

Thus, in spite of Siamese, we cannot but acknowledge the Arch. final consonants in these words, and I can see no reason why Proto-T'ai could not have had final consonants as well, lost or changed into *-u*, *-i* in the same fashion as in Chinese, and thanks to parallel evolutions.

It is, indeed, interesting, in this context, to observe the parallelism of Tibetan and Chinese sound evolutions during the last millennium on several striking points. Just as the ju sheng *-t* has been lost in the whole of Northern China: 𠵹 *pwat* > *pa*, 𠵹 *ts'jēt* > *ts'i*, 𠵹 *kuət* > *ku* etc., so Tib. final *-d* has been lost in the Central provinces: *nad* > *nä*, *bod* > *b'ö*, *dpwid* > *ci* etc. And just as certain voiced initials, i. e. explosives, affricates and fricatives, have become surd in the whole of Chinese, except the Wu dialects, so certain voiced initials, namely fricatives, have become surd in Tibetan: Chin. 𠵹 *zię*, > *šj*, 𠵹 *zjang* > *siang*, Tib. *ža* > *ša*, *za* > *sa*.

### Categories ending in Arch. guttural consonant

Having finished the investigation of the words ending in Arch. dental, I wish to take up once more the question of the word groups ending in *-k*, *-g*, *-ng*, extensively treated in my Shī king Researches. Professor Li Fang-kuei has recently published an article: »Ancient Chinese *-ung*, *-uk*, *-uong*, *uok* etc. in Archaic Chinese» (Bull. Nat. Research Inst. Hist. Phil. vol. III, pt. 3, 1933), which is largely a polemic against my conclusions and a system of reconstruction of his own. This article is full of interesting observations and ideas, and on some points I can revise my system thanks to his proposals; on the whole, however, I cannot accept his conclusions, and his reconstruction scheme is in my opinion quite impossible.

Among the points which seem to me to be acceptable, I first mention his opinion that the hie sheng characters must be somewhat older than the Shī king odes, a fact which I had doubted earlier. In fact, in the *-ət* category above (F) there are certain phenomena which confirm Li's opinion. We find there, quite regularly, 𠵹 and 𠵹 riming with *-t* words, which clearly indicates Shī *nwəd*, *twəd*. But that 𠵹 had originally a *-b* is quite certain. The labial final is brought out by 𠵹 Arch. *nəp* (Anc. *nāp*, Mand. *na*), originally written simply 𠵹, and it is obvious that this Arch. *nəp* 'to bring in': 𠵹 *nwəb* 'interior': 𠵹 *njəp* 'to enter' are but three aspects of the same stem. And 𠵹 *twəb* 'to answer, vis-à-vis, etc.' stands to 𠵹 *təp* 'to answer' just as *nwəb* 'interior' stands to *nəp* 'to bring in'. In Shī time *nwəb* had become *nwəd* by dissimilation).<sup>7</sup>

Another valuable point in Li's treatise concerns the words treated on pp. 136–140 in my Shī king Researches, e. g. 𠵹. This was an original *gläg*, since it had 𠵹 *klāk* for phonetic. And yet it rimes in Shī king with words of type 𠵹 *ko* and never with ju sheng *tsāk* etc. Li had assumed earlier that it had lost its final *-g* already between hie sheng time and Shī king time. But since type 𠵹 *ko* regularly rimes with type 𠵹 *kā*, and type 𠵹 rimes with type 𠵹 *ko* but not with type 𠵹 *kā*, I had concluded that 𠵹 could not be simply *glo* in Shī, and so I had supposed an implosive final: 𠵹 *kā*: 𠵹 *ko*: 𠵹 *glo<sub>k</sub>*. Now Li proposes, instead, a final laryngal: 𠵹 *glo'* (»glottal stop»), which is an extremely common substitute in modern dialects for an earlier ju sheng *-k*, and he thus obtains a nice system of rimes: *kā*: *ko*: *glo'*; but never *kā*: *glo'*, the latter two being too dissimilar phonetically. This I think is much better than my own explanation. We have therefore to state that final *-g* was still living, in Shī times, after *e*, *a*, *o* and *u* (e. g. 𠵹 *læg* riming with *-k*) but that after the vowel *a* it very early became ' (glottal stop): 𠵹 *gläg*, 𠵹 *p'äg*, 𠵹 *zjag* became *glä'*, *p'a'*, *zja'*, and these again *glo'*, *p'o'*, *zjo'* in the Shī language, which explains the rimes in Tuan Yü-ts'ai's cat. 5, which are otherwise inexplicable.

So far, so good. But for the rest Li's constructions are very disappointing. He seems to start from an assumption that every Arch. vowel must exist in combination with every Arch. final consonant — if there are gaps, the construction must be wrong. The chess-board of  $8 \times 8 = 64$  squares must have every one of the 64 squares filled; if not, we are on the wrong track. This is a funny axiom, to say



the least of it. I know of no language with such a structure, and I fail to see why Chinese should be one. He finds in Anc. Chinese, in the *-əng* group:

1 登 2 肱 3 〇  
4 兢 5 〇 6 弓

1. əng      2. wəng      3. 〇  
4. jəng      5. 〇          6. jʉng

Since there is no Anc. *jwəng* and no Anc. *-ung* (in this Shī rime group), he concludes for Arch. Chinese:

1. əng      2. wəng      3. 〇  
4. jəng      5. 〇          6. jwəng.

This looks very nice indeed, but it is extremely embarrassing, once it has to be applied to the corresponding words with *-k* and *-g*:

1 得 2 國 3 〇  
4 互 5 域 6 國  
7 來 8 交 9 乎  
10 子 11 翹 12 久

In Anc. Chinese they were:

1. tək      2. kwək      3. 〇  
4. kɛk      5. jɛwək      6. jɛuk  
7. lái      8. ɣuái      9. mɛu  
10. tsi      11. kjwi      12. kɛɣu

On the analogy of his interpretation of the *-ng* words, Li has to assume *the same* Arch. final for 5. and 6.; for 8. and 9.; and for 11. and 12. Thus:

1. tək      2. kwək      3. 〇  
4. kɛk      5. gɛwək      6. gɛwək  
7. ləg      8. ɣwəg      9. mwəg  
10. tsɛg      11. kɛwəg      12. kɛwəg

But since it is impossible that an Arch. *-jwək* could give sometimes Anc. *-jwək* and sometimes *-juk*; that an Arch. *-wəg* could give sometimes Anc. *-uái* and sometimes *-ɣu*; and that an Arch. *-jwəg* could give sometimes *-wi* and sometimes *-jɛu*, he has to find explanations for these divergent treatments.

In the first place (5: 6) he has to deal partly with labial-initialled words, e. g. 國 *p'jwək*: 肱 *b'juk*. These cause no real difficulty, for in *p'jwək* the *w* is a »false ho k'ou» (see p. 4 above) and the Arch. form was *k'ai k'ou p'jək*. Partly he has to deal with guttural-initialled words: 域 (*g'jwək*): 國 (*g'juk*), and here Li has no better way out of the difficulty than to refer to »analogy»: 國 *\*g'jwək* has become Anc. (*g'juk*) by analogy, through influence of other *-juk* words in another Shī rime group — but 域 *g'wək* (Anc. *j'wək*) has *not* undergone this analogical influence! And he passes this somewhat severe judgment (p. 391): »We have so far in discussing Chinese phonology made little use of analogy, but such a forceful principle so well attested in many languages cannot leave no trace in Chinese . . . Karlgren's reconstructions, I believe, fail because . . . he fails to recognize certain analogical processes which are of paramount importance». I am afraid I know sufficiently well the part played by analogy in various languages to be aware that it cannot be drawn upon in Li's haphazard and hazy way: if we explain an evolution by analogy, we have to show which particular word or words have been influenced by which other particular word or words, and why they have done so; and we are certainly *not* allowed to explain a 國 *\*g'jwək* > *j'juk* by »analogy» unless we show at the same time why 域 *g'wək* has *not* equally become *j'juk* but remains Anc. *j'wək*. Li has here left the field of linguistic science.<sup>8</sup>

In the second place Li has to explain why certain *-wəg* have become *-uái* and others *-ɣu* (8: 9). Here he has found a very clever explanation. He thinks there is a tone difference: *-wəg* in shang sheng (rising tone) became *-ɣu*, *-wəg* in p'ing sheng (even tone) became *-uái*. This would be a brilliant expedient — if it were true. In order to prove it to be so Li gives statistics drawn from the Kuang yün. He serves us a series of characters many of which are of Liu ch'ao make and did not exist in Chou, Ts'in or Han time — and consequently prove nothing at all (this is a methodical fault which recurs throughout Li's paper). If we keep to the really pertinent words, above all those existing in the Shī king, we find e. g. 楷 *b'ɣu* in p'ing sheng which according to Li should be *b'uái*, and 每 *muái* and 悔 *ɣuái* in shang sheng, which according to him should be *mɣu*, *ɣɣu*. The latter two are particularly important, since they are two of the most common words in the language. Li has to consider these *muái*, *ɣuái* in shang sheng as »exceptional»!

If Li's tone theory is thus an obvious failure, I think none the less that I was wrong, in my Shī king Researches, in supposing 9. Arch. *mug*. It must be observed that 9. *-ɣu* occurs exclusively after labials: *pɣu*, *b'ɣu*, *mɣu*. And on the other hand 7. *ái* occurs after all kinds of initials: *kái*, *tái*, *lái*, *tsái*, except labials; there are no *pái*, *b'ái*, *mái*. I conclude that 9. *mɣu* is the labial-initialled class answering to those 7. *ái*: 7. *kəg* > *kái*, *ləg* > *lái*, *tsəg* > *tsái*: 9. *məg* > *mɣu*.

There is one objection to this theory which may seem fatal: a general rule in the hie sheng characters says that *k'ai k'ou* and *ho k'ou* words do not serve for each other. A *kân* is very rarely phonetic in a *kuân* or *vice versa*. But here we have 母 *mɣu* phonetic in 每 *muái*. Is it then possible to reconstruct 母 Arch. *məg* phonetic in 每 *mwəg*?



Yes, it is. For the words with labial initials are exceptions from the general rule. A few examples will suffice to show this:

非排·分貧·麻摩·曼慢·門闕·元晚·皮波。

1. Anc. *pjwɛi*: *b'ai*; 2. *pjwən*: *b'jɛn*; 3. *ma*: *muá*; 4. *muân*: *man*; 5. *muən*: *mjɛn*; 6. *mjân*: *mjwən*; 7. *b'jiɛ* (< *b'ia*): *puá*. Thus a *mæg* can very well serve as phonetic in a *mwæg*. Moreover, this same 每 *mwæg* is undeniably phonetic, again, in a plainly k'ai k'ou word: 海 *χái* (< *χmæg*).

In the third place Li has to explain why certain *-jwæg* become *-wi* and others *-jəu* (11: 12). It is true that half of the enigmatical cases in question can be eliminated. There are both guttural-initialled words (*kjwi*: *kjəu*) and labial-initialled words (*pjwi*: *pjəu*) in our category. The *pjwi* etc. have not become T'ang (and later) *fi*, but have preserved their *p-*, which shows the ho k'ou *w* here to be secondary, a parasitic addition to the initial *p-* (see p. 4 above). Thus they were not Arch. *pjwæg* but *pjæg* and need cause no trouble. But there always remains the contrast *kjwi*: *kjəu* for Li to explain; there he cannot refer to the tones, so he thinks that the contrast is due to »a dialectal difference or maybe variations in one dialect«. This, then, would be cases of the kind which I have exemplified on p. 12 above: a mixing of dialects, the Ts'ie yün language having obtained, from sister dialects, certain words *-wi* which have ousted the regular *-jəu* or *vice versa*.

This last idea is of course not impossible in itself, though we shall see presently that it is not at all necessary. But when we find that Li, in order to surmount the three serious difficulties which obstruct his reconstruction scheme, has to resort to three different explanations: one theory of analogy which is not scientifically founded; one tone theory which is disavowed by the most common of the words in question; and one theory of »dialectal variations« inside the Ts'ie yün language — then it is impossible to follow him.

The simple truth is that the five Anc. endings *-ək*, *-wək*, *-jək*, *-jwək*, *-juk* cannot successfully be reduced to one Arch. final (*i*)(*w*)*ək*; and the six Anc. endings *-ái*, *-uái*, *-əu*, *-i*, *-wi*, *-jəu* cannot successfully be reduced to one Arch. final *-(i)(w)əg*. I have every possible reason to remain by my own earlier reconstruction (except for 9.):

1. <i>ək</i>	2. <i>wək</i>	3. <i>o</i>
4. <i>jək</i>	5. <i>jwək</i>	6. <i>juk</i>
7. <i>kləg</i>	8. <i>wəg</i>	9. <i>mləg</i>
10. <i>jəg</i>	11. <i>jwəg</i>	12. <i>jug</i> .

If I do so, however, I have to give an acceptable answer to two questions: why did *-jung*, *-juk*, *-jug*, exist in this Shī rime group but no *-ung*, *-uk*, *-ug*? And why does *-jung* rime with *-əng*, *-jəng*, why does *-juk* rime with *-ək*, *-jək*, nay even with

*-ək* — an apparently very unsatisfactory rime from the acoustic point of view? I think it is possible to answer both these questions (see p. 43 below).

If Li has been so keen on eliminating my *jung*, *juk*, *jug* in this rime category, it is because he thinks he has found these Arch. finals in quite another Shī rime group cat. 9. of T'uan's, cat. 1. of Wang's. We find in this category words of the five Anc. types:

1. 江 Anc. *kāng*: 2. 工 *kung*: 3. 宮 *kjung*: 4. 冬 *tuong*: 5. 恭 *kjwong*.

And, correspondingly in the ju sheng:

1. 角 *kāk*: 2. 谷 *kuk*: 3. 菊 *kjuk*: 4. 酷 *k'uok*: 5. 曲 *k'iwok*.

It has been a much debated theme among Chinese philologists, whether Anc. *-āng*: *-ung*: *-jung*: *-uog*: *jwong* form one rime category in Shī king or two (and whether *-āk*: *-uk*: *-juk*: *-uok*: *-jwok* form one or two). The two greatest authorities, Tuan Yü-ts'ai and Wang Nien-sun both voted for one category (Wang, however, only as far as the *-ng* words were concerned), and they were followed by the brilliant linguist Chu Tsün-sheng. But two other great experts, K'ung Kuang-sen and Kiang Yu-kao, thought it possible to distinguish two *-ng* classes (and two *-k* classes). One is formed by Anc. *-āng*, *-ung* and *jwong*; one is formed by Anc. *-uog* and *-jung*. Li Fang-kuei follows the latter. By adducing extensive materials he shows that not only in the Shī rimes but also in the hie sheng characters there are frequent and close connections between Anc. *-āng*: *-ung*: *-jwong* (and between *-āk*: *-uk*: *-juk*: *-uok*) on the one hand, between *-uog*: *-jung* (and between *-uok*: *-juk*) on the other; but that a mixing of an *-uog* or an *-jung* into the *-āng*: *-ung*: *-jwong* series, or, *vice versa*, of an *-āng*, an *-ung* or an *jwong* into the *-uog*: *-jung* series (and similarly in the *-k* groups) is a comparatively rare phenomenon (though by no means unknown). There cannot be the slightest doubt, to my mind, that he is right. A seeming obstacle, the character 降 Anc. *kāng*, which regularly goes together with *-uog*, *-jung* and not with other *-āng* nor with *-ung*, *-jwong* he shrewdly guesses to be a word different from other Anc. *kāng*. He draws the perfectly legitimate conclusion that my earlier reconstruction system:

	1.	2.	3.	4.	5.
Arch.	<i>āng</i>	<i>ong</i>	<i>jong</i>	<i>uog</i>	<i>jwong</i>
Anc.	<i>āng</i>	<i>ung</i>	<i>jung</i>	<i>uog</i>	<i>jwong</i>

is defective, since it does not explain these curious rime and hie sheng interrelations 1: 2: 5 versus 3: 4. He therefore thinks that Anc. *-āng*: *-ung*: *-jwong* had one kind of principal vowel in Arch. Chinese, *-uog*: *jung* another. And since the former series contains *-āng*, he decides that those were Arch. 1. *-āng*: 2. *-ong*: 5. *-jong* (*-ong* becoming Anc. *-ung*, and *jong* breaking into *-jwong* just as *-jo* > *-jwo*,



proved by me), whereas the latter were 4. *-ung*: 3. *-jung* (*-ung* breaking into Anc. *-uoug*). Similarly Anc. 1. *-âk*: 2. *-uk*: 5. *-jwok* were Arch. *-âk*: *-ok*: *jok*, forming one rime group, and Anc. 4. *-uok*: 3. *-juk* were Arch. *-uk*: *-juk* forming another rime group.

This looks all very nice, and I admit that at first sight I was strongly tempted to accept it. And yet it is inadmissible. There are various obstacles. So far Li is right that the two sub-categories had a difference in principal vowel; but for the rest he is quite off the right track.

In the first place it must be remembered that a *strict* distinction between the two groups is not maintained. They are confused often enough to cause Tuan and Wang to join them in one great category (the latter only the *-ng* words). When Shī (Lie wen) rimes 邦 *pāng*: 崇 *tš'jung* and Yi king frequently rimes 邦 *pāng*: 中 *tjung*, then Li's Arch. values: *pāng*: *tš'jung*, *pāng*: *tjung* are not very convincing.

In the second place it might be argued that it goes against the testimony of the ancient dialects. When I proposed, in my Shī king Researches, that Anc. 工 *-ung*, 谷 *-uk* and 宮 *-jung*, 菊 *-juk* derived from Arch. *-ong*, *-ok*, *-jong*, *-jok*, (*ung* < *ong* accepted by Li), it was because I could show that even in Ts'ie yün time there were considerable dialects which had an *o* vocalism. Now, that is true not only of *-uk* (谷, Li Arch. *-ok*) but also of *-juk* (菊, Li Arch. *-juk*), which has *o* regularly in Go-on (see Shī king Researches p. 127): Ts'ie yün *kjuk*, *tš'juk*, *ljuk*, *sjuk*, *piuk*, *mjuk* = Go-on *koku*, *soku*, *roku*, *soku*, *poku*, *moku*, and after labials also in Kan-on and Sino-Corean: Ts'ie yün *mjuk* = Kan-on *boku*, Cor. *mok*. And even more serious: the Ts'ie yün rime 冬, which would have been Arch. *-ung* according to Li, has perfectly regularly *-ong* in Sino-Corean and *-ou* in both Kan-on and Go-on! If we conclude Arch. *-ong*, *-ok* for 冬, 菊, Ts'ie yün *-ung*, *-uk*, because sister dialects of the Ts'ie yün language had *o*, we seem forced to pose an Arch. *-o* also for 冬 (Ts'ie yün *-uoug*), which shows exactly the same phenomenon. This objection, however, is not very fatal, for, as we shall see, I was wrong in surmising Arch. 工 *-ong*, 谷 *-ok* for Ts'ie yün *-ung*, *-uk* (I shall revert to that presently); indeed, the various Sui time dialects had a most variable pattern answering to these finals in Arch. Chinese, and it is dangerous to draw far-reaching conclusions from them.

In the third place there is an objection which is much more serious. There are certain Arch. rimes which are irreconcilable with Li's interpretation. There crop up, here and there, some freer rimes due to *licentia poetica*, contacts between different rime categories, and these are often very telling. When we find in Shī (Lie wen) 崇 Anc. *dž'jung*: 皇 *γwāng*; in Yi king (*ken*) 躬 *kjung*: 正 *tš'jäng*: 終 *tšjung*; in Ch'u ts'ī (Kiu chang) 中 *tjung*: 窮 *g'jung*: 行 *γwng* (< *g'äng*), and so on, then we can safely say that Arch. *-jung* for Anc. *jung* is absolutely excluded. A make-shift rime *-ong*: *äng*, an *-ong*: *-äng*, an *-ong*: *-äng* might pass, but not an *-ung*: *äng*, an *-ung*: *-äng*, an *-ung*: *-äng*. No, Anc. *-jung* was undoubtedly Arch. *-jong* of some kind; and that Anc. *-uoug* had some kind of *o* is indisputable.

How, then, are we to explain the two sub-categories, since my earlier reconstruction obviously fails (see p. 37 above) to account for them? I think we had better start our investigation not from the *-ng* words but from the *-k* and *-g* words;

for here, as in the *-əng* category, it turns out that the *-ng* words are less fully represented in all the possible combinations than the *-k* and *-g* words. Let us draw a table of type words, representing the various Anc. finals which fall in the three (for the *-ng* words only two) categories of the Shī king, which tally very well (it is highly important to observe this) with the distinctions in the hie sheng characters. I arrange them in a peculiar way with a view to the following discussion.

I			II			III		
1 學	2 包	11 樂	12 郊	23 角	24 穀			
3 皓	4 老	13 較	14 郊	25 谷	26 啓			
5 旬	6 休	15 沃	16 高	27 曲	28 仆			
7 陶	8 陶	17 藿	18 餒					
9 威	10 蕭	19 處	20 廟					
		21 的	22 苜					
29 降				32 江				
30 冬				33 工				
31 宮				34 恭				

(24, 26 and 28 are erroneously placed by Tuan in other categories; their phonetics prove them to belong to our cat. III here).

The Anc. values of these type-words were:

I		II		III	
		11. <i>âk</i>	12. <i>o</i>		
1. <i>âk</i>	2. <i>au</i>	13. <i>âk</i>	14. <i>au</i>	23. <i>âk</i>	24. <i>əu</i>
3. <i>uok</i>	4. <i>âu</i>	15. <i>uok</i>	16. <i>âu</i>	25. <i>uk</i>	26. <i>əu</i>
5. <i>juk</i>	6. <i>jəu</i>	17. <i>juk</i>	18. <i>jwo</i>	27. <i>jwok</i>	28. <i>ju</i>
7. <i>o</i>	8. <i>jäu</i>	19. <i>jak</i>	20. <i>jäu</i>		
9. <i>iek</i>	10. <i>ieu</i>	21. <i>iek</i>	22. <i>ieu</i>		
29. <i>äng</i>				32. <i>äng</i>	
30. <i>uong</i>				33. <i>ung</i>	
31. <i>jung</i>				34. <i>jwong</i>	

I have placed the *-k* and *-u* words abreast in the way hie sheng characters with double readings show them to belong together. There is e. g. 覺 read both *kâk* (1) and *kau* (2); 告 read both *kuok* (3) and *kâu* (4); 祝 read *tšjuk* (5) and *tšjəu* (6) — and so on.

Cat. I is Wang Nien-sun's cat. 21, II his cat. 20 and III his cat. 19 (ju sheng). There are a considerable number of rime contacts between the three categories; and in my Shī king Researches I even called in question the correctness of distinguishing I and II. Prolonged deliberation has convinced me that after all it is necessary to accept such a distinction. It is necessary to keep apart I and II, insignificant though the difference must have been, not only because of the rimes in the Shī and other classics, which in spite of numerous contacts on the whole must be



said to keep these classes apart from each other; it is also and above all because the very same three-class distinctions are clearly discernible in the hie sheng characters, an extremely interesting and important fact. Li Fang-kuei has brought out this in a very meritorious way).<sup>9</sup>

So far, therefore, he has convinced me. But his reconstruction scheme suffers from such great faults that it is entirely unacceptable. In order to get a different principal vowel in the three categories he introduces, besides the ordinary *o* and the open *â*, which is »half-way between» *o* and *â* (as in Engl. *all*), still a third open *o* sound, written *ω* »half-way between» *â* and *â!* This is of course phonetically extremely unnatural and impossible. Still more unnatural is the way in which Li has worked out this idea:

I		II		III	
		11. <i>ok</i> (> <i>âk</i> )	12. ○		
1. ?	2. <i>og</i> (> <i>au</i> )	13. <i>âk</i> (> <i>âk</i> )	14. <i>âg</i> (> <i>au</i> )	23. <i>âk</i> (> <i>âk</i> )	24. ?
3. <i>uk</i> (> <i>uok</i> )	4. <i>ug</i> (> <i>âu</i> )	15. <i>wok</i> (> <i>uok</i> )	16. <i>ωg</i> (> <i>âu</i> )	25. <i>ok</i> (> <i>uk</i> )	26. ?
5. <i>juk</i> (> <i>juk</i> )	6. <i>jug</i> (> <i>jâu</i> )	17. ?	18. ?	27. <i>jok</i> (> <i>jwok</i> )	28. ?
7. ○	8. ?	19. <i>jok</i> (> <i>jak</i> )	20. <i>jog</i> (> <i>jâu</i> )		
9. <i>iuk</i> (> <i>iek</i> )	10. <i>iug</i> (> <i>ieu</i> )	21. <i>iok</i> (> <i>iek</i> )	22. <i>iog</i> (> <i>ieu</i> )		
29. ?				32. <i>âng</i> (> <i>âng</i> )	
30. <i>ung</i> (> <i>uong</i> )				33. <i>ong</i> (> <i>ung</i> )	
31. <i>jung</i> (> <i>jung</i> )				34. <i>jong</i> (> <i>jwong</i> )	

We can see at a glance how unsatisfactory all this is:

- 1) Can anyone seriously believe that such different Arch. values as those in Li's cat. I (nearly all with a *u* vocalism) could give in nearly every detail the same Anc. results as those in cat. II (nearly all with a vowel more open than *â*, practically an *â*)?
- 2) What about all the empty spaces, in particular 1, 24, 26, 28, 29 (8, 17, 18 are of little consequence, as we shall see presently)? How will it be possible, under Li's system, to fill in logically any Arch. values in them? Li has wisely abstained from saying anything about them at all. And yet these words (and many others for which they serve as type words) clearly belong to these categories. If, with Tuan Yü-ts'ai, Li would place 26 and 28 not in III but in I, he would jump from the frying-pan into the fire; it would make it still more impossible for him to find separate Arch. values for these word types. His system here breaks down entirely.
- 3) If II had a vowel intermediate between *â* and *â*, how is it possible that II does not interchange frequently with words of type 作 Arch. *tsâk* etc. (Tuan's cat. 5) and with cat. III (*âk* according to Li) but does so, in numerous cases of contact between I and II, with *-u-* words? That is perfectly inexplicable.
- 4) Why do not 13. »âk», 14 »âg» rime with 23 »âk»?

All this is plainly impossible. We shall have to find ways of approach quite different from those of Li.

Let us start with rime cat. III, and acknowledge at once a fundamental fault committed in Shī king Researches: the endeavour to elucidate it by aid of such late dialects as Sino-Japanese and Sino-Corean. My conclusion that Anc. 25. *kuk* was Arch. *kok* was devoid of value. Leaving apart, for the moment, 24, 26, 28 and concentrating upon the principal types: 23, 25, 27, Anc. *âk*, *uk*, *jwok*, which, as vindicated by K'ung Kuang-sen and Kiang Yukao, form a rime category distinguished from I and II, we shall have to judge them in the light of Arch. Chinese itself. There are two salient facts to be taken into account:

- 1) Whereas the *âk*, *uok*, *juk* of I and II have frequent connections, in rimes and hie sheng, with words of types Anc. *âk*, *jak*, *iek*, *jâu*, *ieu*, words which obviously all had k'ai k'ou, the *âk*, *uk*, *jwok* of III have no such connections (yet see note on p. 40).
- 2) In irregular rimes, III very often (but I and II never) mixes with Tuan's cat. 4, which quite certainly was Arch. *-u*, *-ju* (see Shī king Researches p. 145). Examples:

「驅績數」奕祿「木附屬」谷穀始「屬貝」谷黜漏

1. (Shī, Siao jung) Anc. *k'ju*: *zjwok*: *kuk*; 2. (Shī, Ch'u ts'i) Anc. *tsju* (< *tsu*): *luk*;
3. (Shī, K'ue kung) *muk*: *b'ju*: *zjwok*; 4. (Shī, Sang jou) *kuk*: *kuk*: *kju* (< *ku*); 5. (Li sao) *zjwok*: *g'ju*; 6. (Yi king, *tsing*) *kuk*: *b'ju*: *lju* (< *lu*).

Indeed, this phenomenon is so marked that Wang Nien-sun has placed our cat. III (Anc. *âk*, *uk*, *jwok*) as the ju sheng correspondence to Anc. *ju*, *ju* (Arch. *u*, *ju*).

These two facts remove all doubt about the Arch. values of types 25. 谷 Anc. *kuk*. 27. 曲 *k'jwok*. They were not, as I supposed in Shī king researches, *ok*, *jwok*; nor were they, as Li supposes, *ok*, *jok*. They were clearly ho k'ou words: 25 *uk*, 27. *juk*. Therefore makeshift rimes were possible such as those in the table p. 41 above: Arch. 1. *k'ju*: *dzjuk*: *kuk*; 2. *tsu*: *luk*; 3. *muk*: *b'ju*: *âjuk*; 4. *kuk*: *kuk*: *ku*; 5. *âjuk*: *g'ju*; 6. *kuk*: *b'ju*: *lu*. (With Li's system: 1. *k'ju*: *dzjok*: *kok*; 2. *tsu*: *lok* etc. would be quite inexplicable).

The Arch. *-uk* was preserved in the Ts'ie yün dialect, but in other ancient dialects it was broken into *uok* (S.-Jap. spells 屋 *woku*, 翁 *wou*); *juk* was broken into *jwok*. Yet in the corresponding *-ng* words the Arch. 34. *-jung* peeps through in the oldest Anc. dialect we know of, the Wu dialect, which was the base of Go-on. We find (Karlgren, Phonol. Chin. p. 853) Ts'ie yün *kjwong*, *g'jwong*, *jwong*, *h'wong*, *ljwong*, *sjwong* etc. = Go-on *ku*, *gu*, *iu*, *çu*, *riu*, *šu* etc.

So far all is plain sailing. But type 23. Anc. *âk* seems to form a serious obstacle. If 25. was Arch. *uk* and 27. *juk*, what was this 23. *âk*?

It is obvious that *âk* III (23) had a different Arch. origin from *âk* I (1) and *âk* II (13), since none of the three types rimes with any of the others. *âk* III (23), which



corresponds to the Arch. -g word 24. Anc. -*ɤu*, whereas *âk* I (1) and *âk* II (13) correspond to 2, 14 Anc. *au*, evidently had a *darker* vowel than the others. Since it rimes with 25. Arch. *uk* and 27. Arch. *juk* and constantly interchanges with them in the hie sheng, it must have been some kind of *u*. But what was the difference? I think the secret lies in the *quantity*.

H. Maspero was the first to emphasize the great and fundamental difference between long-vowelled (tense-vowelled) and short-vowelled (slack-vowelled) syllables in Anc. (and of course in Arch.) Chinese. This was a fecund idea, and it has enabled us to solve a long series of riddles. There was this contrast in nearly every Arch. category. There were *ang*: *ǎng*; *iang*: *iǎng*; *an*: *ǎn*; *ian*: *iǎn*; *ien*: *iĕn*; *ieng*: *iĕng*; *am*: *ǎm*; *iam*: *iǎm*. If we examine the short-vowelled rimes in the *a*-groups, we find that when having medial *i* they existed only after gutturals (with laryngals) and labials, but not after palatals and dentals: Anc. types *kjɔn*, *kjwɔn*, *pjwɔn*; *kjɔng*, *kjwɔng*, *pjwɔng* etc.; furthermore that when they had no medial *i*, they existed after the said gutturals and labials, and besides that, in some cases, after *t*, *tʰ*, *tʰʰ*, *dz*', but not after *l*, *l*', *d*', *ts*', *ts*', *dz*', *s*: types *kɔn*, *pɔn*, *ʃɔn*. Here, in our present categories I, II and III, we find that the three Anc. *âk* types (1, 13, 23) had exactly this peculiarity: they existed principally after gutturals and labials (*kâk*, *pâk*) and in a few cases like 𠄎 *tʰâk* etc. Similarly the two Anc. *ǎng* types 29, 32, were *kǎng*, *pǎng* and an occasional 𠄎 *ʃǎng* etc. I conclude that the types 1, 13, 23, 29, 32 belonged to this class of short-vowelled syllables, and this gives us the key to various distinctions in our tables I, II and III which otherwise would be inexplicable. If we revert, first, to cat. III, we can now fill in the Arch. values:

23. Arch. *ŭk* > *ǒk* > Anc. *âk*; 25. Arch. *uk* > Anc. *uk*; 27. Arch. *juk* > Anc. *iwok*;  
And, in the corresponding -g series:  
24. Arch. *ŭg* > *u* > Anc. *ɤu* (just as 𠄎 Arch. *ku* > Anc. *kɤu*); 26. Arch. *ug* > *u* > Anc. *ɤu*; 28. Arch. *jug* > Anc. *iu*.

In the -ng series:

32. Arch. *ŭng* > *ǒng* > Anc. *ǎng*; 33. Arch. *ung* > Anc. *ung*; 34. Arch. *jung* > Anc. *iwong*.

And here we obtain quite unexpectedly the solution of the riddle that puzzled us in the *a* category above (p. 36). In that Arch. category:

<i>ang</i>	<i>wang</i>	○
<i>iang</i>	—	<i>jung</i>
<i>ak</i>	<i>wak</i>	○
<i>jak</i>	<i>iwak</i>	<i>juk</i>
<i>ag</i>	<i>wag</i>	○
<i>ig</i>	<i>iwag</i>	<i>jug</i>

we had *jung*, *juk*, *jug*, but, strange to say, no *ung*, *uk*, *ug*.

In the present category:

<i>ŭng</i> , <i>ŭk</i> , <i>ŭg</i>	○ ○ ○
<i>ung</i> , <i>uk</i> , <i>ug</i>	<i>jung</i> , <i>juk</i> , <i>jug</i>

we have *ŭng*, *ŭk*, *ŭg* but no *jŭg*, *jŭk*, *jŭg*! When we find that in the *a* category the 𠄎 *jung* 𠄎 *juk*, 𠄎 *jug* existed only after gutturals (laryngals) and labials, types *kjung*, *kjuk*, *pjuk*, *kjug*, *pjug*, but after no other initials, and thus clearly agreed with the short-vowelled types in the *a*-groups (*kjǎn*, *kjwǎn*, *pjwǎn* but no other initials), we can see at a glance that the 𠄎, 𠄎, 𠄎 in the *a* category are the very types (short-vowelled): *jŭng*, *jŭk*, *jŭg* which are missing in our cat. III here.

Why, then, should they rime, not with *ŭng*, *ŭk*, *ŭg* in our cat. III here but with the *ang*, *ak*, *ag* in the *a* category? It stands to reason that the short *ŭ* must have been modified, when preceded by an *j*, so as to make the sound less labial and less velar than in *ŭng*, *ŭk*, *ŭg*. It must have been something similar to the Swedish *u* in *kung* or the English *u* in *value*. This, indeed, stands genetically and acoustically fairly close to *a*, and we easily understand that in rimes and hie sheng it goes together rather with *a* than with a narrowly labialized and strongly velar *ŭ* and *u*. This once said, and this peculiarity in script and rimes nicely explained, we can be satisfied to write it, etymologically correct, 𠄎 *kjŭng*, 𠄎 *gjŭk*, 𠄎 *kjŭg*, keeping in mind that the *ŭ* in these syllable types had a different and more open *timbre* than the *ŭ* in types *kŭng*, *kŭk*, *kŭg*.

Let us now take up for examination the intricate categories I and II on p. 39 above. If we look at their Anc. values, there is an almost shocking similarity. It would seem to be absolutely futile to endeavour to find a difference in quality of the principal vowel for these two Arch. categories. And yet such a difference must have existed, since they are distinguished fairly clearly as rime categories — with numerous confusions, it is true. And we have necessarily to solve the riddle.

In the first place we shall somewhat reduce the apparent similarity of the two categories. The table on p. 39 above is correct, yet it is somewhat misleading. For all the types there given are not equally normal and frequent. The normal types in cat. I are 1, 2, 3, 4, 5, 6, 9, 10; the type 8. *iǎu* is hardly existent. It is represented by the word 陶 Anc. *iǎu* in some rimes. Moreover, Tuan brings in 𠄎 *g'ǎu* and 𠄎 *tsǎu* in our cat. I, because of their phonetics, but in Shí they only rime with each other once and with no other words, so we cannot know exactly whether they belong in I or in II. Among the words with Anc. *iǎu* in the Ts'ie yŭn the great majority are obviously words of cat. II, having phonetics belonging to that category; a few words have phonetics belonging to cat. I, but that does not necessarily place those words in the Arch. cat. I, for these characters may be due to contact between the (undoubtedly very similar) categories I and II in the hie sheng. Altogether it can be said that the Anc. *iǎu*, regular and frequent in cat. II, as a rule does not exist in cat. I, just as *iəu* (I, 6), regular and frequent in cat. I, does not exist at all in cat. II. Here, then, is a strong and real difference between I and II.



In cat. II the normal types are 11, 13, 14, 15, 16, 19, 20, 21, 22. Types 17 and 18 are represented each only by an isolated word, and these we must disregard, since they cannot be built upon. They may be due to some special conditions in individual cases. We may therefore reduce somewhat our scheme of the normal type words of our three categories, and rewrite it thus:

I		II		III	
1 學	2 包	9 樂	10 〇	19 角	20 穀
3 皓	4 老	11 較	12 郊	21 谷	22 替
5 菊	6 休	13 沃	14 高	23 曲	24 仆
7 威	8 蕭	15 處	16 廟		
		17 的	18 茗		
25 降				28 江	
26 冬				29 工	
27 宮				30 禁	

In Anc. Chinese:

I		II		III	
		9. <i>âk</i>	10. <i>o</i>		
1. <i>âk</i>	2. <i>au</i>	11. <i>âk</i>	12. <i>au</i>	19. <i>âk</i>	20. <i>əu</i>
3. <i>uok</i>	4. <i>âu</i>	13. <i>uok</i>	14. <i>âu</i>	21. <i>uk</i>	22. <i>əu</i>
5. <i>juk</i>	6. <i>ïəu</i>	15. <i>jak</i>	16. <i>jäu</i>	23. <i>iwok</i>	24. <i>iu</i>
7. <i>iek</i>	8. <i>ieu</i>	17. <i>iek</i>	18. <i>ieu</i>		
25. <i>ang</i>				28. <i>ang</i>	
26. <i>uong</i>				29. <i>ung</i>	
27. <i>jung</i>				30. <i>iwong</i>	

Since cat. III had *u*, I and II cannot possibly have had *u*. And since *ək*, *ek*, *âk*, *ak*, *ek* are to be found in other Shī king rime categories, neatly distinguished from our categories I and II here, I maintain what I said in my Shī king Researches, against Li Fang-kuei's proposals: these two categories had some kind of *o* for principal vowels. But Li is surely right in saying that II must have had a more open principal vowel than I. This gives us closed *o*: *ô* for I, open *o*: *o* and *â* for II. And then we have to apply the distinction we have already determined between long-vowelled and short-vowelled syllables: *ô* as against *o*, *ô* as against *ô* (for typographical reasons, in order to avoid an ugly *ô*, I write the short *ô* thus: *ô*). And we are finally able to fill in our scheme with Archaic values which will nicely explain both the distinction between the three categories in rimes and hie sheng, and the

considerable number of exceptional contacts between them, equally in rimes as well as in hie sheng. Observe that the *-ng* group is much poorer than the *-k* and *-g* groups. It has fewer forms with medial *i*, and it has forms corresponding only to I and III, not to II. Whether the latter is due to confusion of two primarily different groups it is impossible to tell; we can merely state that neither Shī rimes nor hie sheng indicate a distinction here similar to that in the *-k* and *-g* words.

I		II		III	
		9. <i>âk</i> (> <i>âk</i> )	10. <i>o</i>		
1. <i>ôk</i> (> <i>âk</i> )	2. <i>ôg</i> (> <i>au</i> )	11. <i>ôk</i> (> <i>âk</i> )	12. <i>ôg</i> (> <i>au</i> )	19. <i>ük</i> (> <i>âk</i> )	20. <i>üg</i> (> <i>əu</i> )
3. <i>âk</i> (> <i>uok</i> )	4. <i>ôg</i> (> <i>âu</i> )	13. <i>ok</i> (> <i>uok</i> )	14. <i>og</i> (> <i>âu</i> )	21. <i>uk</i> (> <i>uk</i> )	22. <i>ug</i> (> <i>əu</i> )
5. <i>ïok</i> (> <i>ïuk</i> )	6. <i>ïog</i> (> <i>ïəu</i> )	15. <i>ïok</i> (> <i>ïak</i> )	16. <i>ïog</i> (> <i>ïəu</i> )	23. <i>ïuk</i> (> <i>ïwok</i> )	24. <i>ïug</i> (> <i>ïu</i> )
7. <i>ïok</i> (> <i>iek</i> )	8. <i>ïog</i> (> <i>ieu</i> )	17. <i>iok</i> (> <i>iek</i> )	18. <i>iog</i> (> <i>ieu</i> )		
25. <i>ang</i> (> <i>ang</i> )				28. <i>wng</i> (> <i>ang</i> )	
26. <i>ong</i> (> <i>uong</i> )				29. <i>wng</i> (> <i>wng</i> )	
27. <i>jong</i> (> <i>jung</i> )				30. <i>jung</i> (> <i>iwong</i> )	

There is one more group with guttural finals which needs a few words of elucidation. Tuan's cat. 11, Wang's cat. 6 contains words with Anc. *eng*, *jäng*, *ieng*,<sup>10</sup> and since it never rimes with the *ang*, *jang*, *ang*, *jäng* etc. of Tuan's cat. 10, we can see that the palatal vowel was Archaic. To this *-ng* category correspond as *-k* and *-g* words Tuan's cat. 16, Wang's cat. 11, with Anc. *-ig*, *iei*, *ai*, *iwei*. The *ie* of this category should be well distinguished from the *ie* (< *ia*) of Tuan's cat. 17, e. g. 何 Anc. *ya*, 遇 *kuâ* (< *kwâ*), 皮 *b'jię* (< *b'ia*), 爲 *jwię* (> *gwia*), 加 *ka*, which had *-a* (open syllable) in Arch. Chinese. The *-ie* in cat. 16. is the *-g* correspondence to Anc. *-jäng*.

In Shī king Researches (p. 157) I stated that the Anc. *-eng*, *-ek* rimes: 耕 *keng*, 革 *kek* etc., rime, in the Shī, the former in the *e* group, i. e. with *-jäng*, *-ieng*, the latter in the *ə* group, i. e. with *-ak*, *-əg*. This is true, but not the whole truth. Anc. *eng* (*ek*) contains characters of two quite different Arch. origins. One of them, with an open, slack *ä* sound: Arch. *-eng*, *-ek*, rimes with the neutral slack *ə*: *əng*, *ək*; the other, which in Anc. Chinese coincided with the open *ε* (since 耕 *eng*: 清 *jäng*: 青 *ieng* are different rimes in the Ts'ie yün) must have been another kind of *ä* or *e* in Arch. Chinese. On the analogy of cat. B above (pp. 3, 6), where we have Arch. *iën*: *ien* as rimes, I conclude in our present category that the three principal endings were *ěng*: *jäng*: *ieng*, and I obtain the following scheme: Archaic *ε* class, riming in the *-əng*, *-ək* category:

1 橙 2 革 3 戒  
4 宏 5 葵 6 徑

1. <i>eng</i> (> <i>eng</i> )	2. <i>ek</i> (> <i>ek</i> )	3. <i>eg</i> (> <i>ai</i> )
4. <i>weng</i> (> <i>weng</i> )	5. <i>wek</i> (> <i>wek</i> )	6. <i>weg</i> (> <i>wai</i> )



Archaic *e* and *ě* class, forming Tuan's categories 11 and 16:

1	耕	3	危	3	解
4	嶺	3	割	6	挂
7	清	8	易	9	知
10	莖	11	○	12	○
13	青	14	錫	15	提
16	后	17	昊	18	圭

- |                                    |                                  |  |
|------------------------------------|----------------------------------|--|
| 1. <i>ěng</i> (> <i>eng</i> )      | 2. <i>ěk</i> (> <i>ek</i> )      | 3. <i>ěg</i> (> <i>ai</i> )              |
| 4. <i>wěng</i> (> <i>weng</i> )    | 5. <i>wěk</i> (> <i>wek</i> )    | 6. <i>wěg</i> (> <i>wai</i> )            |
| 7. <i>jěng</i> (> <i>jäng</i> )    | 8. <i>jěk</i> (> <i>jäk</i> )    | 9. <i>jěg</i> (> <i>ia</i> > <i>ię</i> ) |
| 10. <i>iwěng</i> (> <i>iwäng</i> ) | 11. ○                            | 12. ○                                    |
| 13. <i>ieng</i> (> <i>ieng</i> )   | 14. <i>iek</i> (> <i>iek</i> )   | 15. <i>ieg</i> (> <i>iei</i> )           |
| 16. <i>iweng</i> (> <i>iweng</i> ) | 17. <i>iwek</i> (> <i>iwek</i> ) | 18. <i>iweg</i> (> <i>iwei</i> ).        |

For 3. *ěg* > *ěi* > *ai* cf. German *ei* > *ai*. The transition *jěg* > *ia* must have taken place quite early, for the Anc. *ię* < Arch. *jěg* (our present cat., Tuan 16) and the Anc. *ię* < Arch. *ia* (Tuan cat. 17), which are neatly distinguished in the Shī king, rime quite freely already in Lao-tsī and Chuang-tsī.

\* \* \*

It might seem bold to reconstruct in its petty details Archaic Chinese, a language of some 2500 years ago, by aid exclusively of internal evidence, without comparative Sinitic materials, nay, on some points even seemingly against the evidence of e. g. Siamese (cf. p. 30 above). It must be observed, however, that in certain important respects we are much better situated for such a reconstruction than the scholar who has to reconstruct an earlier stage of a language exclusively by aid of divergent but *later* materials. The example adduced on p. 30 above: *steinn*, *Stein*, *sten*, *stone*: *stainaz* is very instructive as to the dangers the latter runs. There may be important features in the early language which the late materials never reveal. Our position is very much more favourable in as far as we have sources for Arch. Chinese dating back to the very period of the language (say roughly 1000—600 B. C.), sources which give no concrete sound values, it is true, but which give so to speak the *frame* to be filled out, the phonological categories which need only be interpreted. And the value of these early sources is enhanced enormously by the fact that they are of two kinds absolutely independent of each other: the Shī rimes and the hie sheng characters. By a very lucky chance these two sources throw light upon a practically identical language. On a few points, it is true, the

hie sheng reveal a slightly older stage of the language (see p. 32 above). But in most categories the accord is astoundingly good: the same distinctions, the same division of words into phonological groups can be observed in both sources. It is evident that the Shī king odes were given their final form and the standard set of hie sheng (originally *kia tsie*) were invented in one and the same centre, presumably the Chou court, and that dialectal aberrations were allowed to appear in the rimes and in the script only in sporadic cases.

There is, however, one great deficiency to be pointed out. If we are favourably placed, thanks to the double sources, for the reconstruction of the Arch. vowels and the final consonants, we are greatly handicapped when it comes to the initials, by our having recourse here only to *one* set of materials, the hie sheng; here, of course, the poetry fails us entirely. It is true that the hie sheng have made it possible on many important points to discern Arch. initials very different from the Anc. ones (*g*' > *γ*, *đ* > *ž*, *n* > *ńž*, *t* > *tš*, *s* | *a* > *ša*, *gi* > *ji*, *dj* > *j* etc., see my Analytic Dictionary); but many differences between the Arch. and the Anc. initial system, which do not happen to be revealed by this single source, the hie sheng, are sure to have escaped us. In particular I am afraid that many consonant groups may have existed where we can only discern single consonants. The possibility of such *x*'s in our equations, which can only be filled out in future by Sinitic comparisons, must never be forgotten. To a certain extent they will make the following investigation less reliable than it would appear at first sight. In spite of this we have to attempt it, confident that though a revision may be necessary on isolated points, the system as a whole must be fairly reliable.

There is one point regarding initial consonant groups on which I wish to say a few words. When we have the well-known alternation *k*-: *l*- and *p*-: *l*- in the hie sheng, e. g. 各 Anc. *kāk*: 洛 *lāk*, 變 *piän*: 罽 *ljwän*, it might seem dubious whether the consonant group existed in the *k* (*p*) member or in the *l* member or in both members. Thus three interpretations seem *a priori* possible:

A. 各 *klāk*: 洛 *lāk*; B. 各 *kāk*: 洛 *klāk* (*glāk*); C. 各 *klāk*: 洛 *glāk*.

There is, of course, no fixed rule to be expected for this, for not all hie sheng characters may have been built on exactly the same principles. But in many cases there is one of these three alternatives which is decidedly the most plausible: the alternative C.

Alt. A. is excluded in several examples where we can build on reliable testimonies. There is, first, the case 藍 Anc. *lām* 'indigo', often discussed earlier. Here we have, fortunately, double *points d'appui*, which fact admits of a definite conclusion. When on the one hand we have 監 Anc. *kam* as phonetic, on the other hand Siamese *k'ram* 'indigo' < older *gram*, then the Arch. guttural before *lām* is certain: Arch. *glām* 'indigo'. Again, there is an interesting case in which the guttural before *l* can be shown to have lived down to early Han time, which Prof. G. Morgenstierne has pointed out to me. The city Lou-lan at Lop-nor, first found and excavated by Sven Hedin, was called 樓蘭 already in Chang K'ien's travel report (2d c. B. C.), and this transcription of the foreign word must be approximately of



that age. The *lou* has the same phonetic as 𩇛 *g'ju*, revealing a guttural, and the city is called *Kroraimna* in Kharoshti documents (Stein, Serindia p. 41 a). So *l̥əu* was Han *glu*. In both these examples the alt. A. is excluded.

H. Maspero (Le dialecte de Tch'ang-ngan sous les T'ang) has identified 變 *piän* (phon. *liwän*) with Siamese *plien*. If this is right, which seems probable, then this is a case where alt. B. is excluded. And here again we can find a trace of a *kl-* in the Anc. *k-* member (各 *kák*) even down in Han time. 各 *kák* has as homophone 關 *kák*. 各 serves as phonetic in 洛 *glák* (with the *g-* restituted according to what was said of alt. A. above). Was 關 Arch. *kák* or *klák*? It occurs in Shī king, Sī kan, in a phrase 約之關關 where *kák* 'chamber' gives no sense. Mao Heng (middle of 2nd c. B. C.) explains it by a method often resorted to by early commentators. He considers it as a *kia tsie* for another word with a similar sound, and says »*kák kák* is equal to 歷歷 *liek liek*.« This phonetic gloss, impossible and meaningless if 關 were an Arch. *kák*, is comprehensible if it was an Arch. *klák*: »*klák-klák* is equal to *liek-liek* (such a measure of phonetic dissimilarity occurs sometimes in the *kia tsie*). This decidedly speaks in favour of alt. C, and therefore we obtain 各 *klák*: 洛 *glák* etc.

Even if we can obtain a definite answer in this case, and if it seems probable that there are many analogous cases, we must not, on the other hand, generalize too rigidly and conclude that it was always so; there is of course no guarantee that the *hie sheng* creators did not apply sometimes the A type and sometimes the B type just as well as the C type.

\* \* \*

We are now, finally, going to dress a series of tables of words which can be suspected of being cognate, i. e. of forming word families. In order to be cautious at the start, I shall keep within certain fairly narrow limits in the present paper. In the first place I leave out entirely words which consist of only *two* elements, an initial and a vowel (or diphtong). A comparison of words like *ku: ko, pâ: pia* etc. is very risky, because the word bodies are too short. There is infinitely greater chance of hitting the truth in words with *three* elements: initial, vowel (diphtong) and final: *kân, gian: k'jwan; tung: tók: d'ôg* and such-like. In the second place, it is quite possible that words with extremely different initials are really cognate — especially in the light of other Sinitic languages which show us that a simple Chinese initial is often a violent reduction of a long consonant group (Tib. *brgyad* = Chin. *pwat* 'eight') — and that e. g. 時 Arch. *đjag* may be in affinity with 期 *g'jag*; 𩇛 *đjôg* with 考 *k'ôg* and 老 *lôg*. But at present I leave all such questions open as a *cura posterior*. Here I keep within the limits of phonetically cognate groups, and quite arbitrarily I decide not to go outside the following principal categories.

First I divide the words into three great groups according to finals:

1. *-ng, -k, -g*;
2. *-m, -p, -b*;
3. *-n, -t, -d, -r*.

Then I subdivide these principal groups into categories according to Archaic initials:

- A. *k-, k'-, g-, g'-, ng-χ-, ';*
- B. *t-, t'-, d-, d'-, t̥-, t̥'-, d̥-, d̥'--; ts-, ts'-, dz-, dz'-, tʃ-, tʃ'-, dz'--; s-, s-, z-, -ʃ;*
- C. *n-, n-, l-;*
- D. *p-, p'-, b'-, m-*.

(Words with initial consonant groups (*kl-*, *gl-* etc.) I consider to be so risky materials that I have only adduced them in a few cases).

For the vowels, on the contrary, I make no group limitations. Experience from Tibetan teaches us that this language has a richly developed *Ablaut* which allows of the most varied vocalism inside the same word stem. I have come to the conviction that the same phenomenon obtains in Chinese.

Of the tones I take no notice at all. It would not do simply to apply the Anc. tones to the Arch. words, and it is doubtful if we can ever arrive at a detailed knowledge of the Arch. tone system. Hence the phonetic difference between the words of my tables is often greater than it appears from the forms given: there is often a tonal difference as well, which is not marked in my transcriptions. I hope to revert to this question in a future paper.

The purport of the tables should not be misunderstood. I am very far from affirming that all the words in each group *are* cognate; I only mean to say that they may be suspected of being cognate. In a few cases the affinity is absolutely obvious and certain. In many more it is strongly probable. In the rest it is only possible and at least worth discussion. So each small »family group« has to be considered merely as a kind of *frame*, containing materials from which a choice will have to be made in future. Definite results can only be gained by comparative Sinitic researches, for the phonetic similarity can sometimes very well be deceptive. There is, for instance, such a large number of Chinese words which all end in *-ng* that we may well suspect that many of them derive from Sinitic words ending in quite other consonants. Again, the *č-* and *ʃ-* series may be a result of a simplification of the most varied Sinitic consonant groups. Therefore, at best, only a part of the combinations can be true word families; many similarities must reasonably be due to chance. And yet I do not hesitate to put up these frames, for a start has to be made and I see no other way of tackling the problem.

The present collection of possibly cognate words is not meant to be exhaustive; very many more could be adduced, but at present I only wish to give a few examples.

For an investigation like the present one it is necessary to be critical as to the words adduced. They must be words well known to have been real, living words. If we should draw upon the Kuang yün and Tsi yün, with their tens of thousands of »dictionary words«, or even if we took all words for granted which are given in the earliest dictionaries, Er ya, Ts'ang kie p'ien, Fang yen, Shuo wen kie tsī,



Kuang ya, we could easily obtain very large groups of »cognate words«. But such materials are not acceptable. I adduce only words which either belong to the most common and current words of the language — these are the majority in my tables — or, if less common, are well attested in early *texts*.

## A. Words of type K-NG

1 果 2 鏡 3 光 4 晃 5 煌 6 旺 7 望 8 耿 9 頌 10 炯 11 熒  
 12 螢 13 杲 14 赫 15 旭 16 熙 17 晞 18 曉 19 映 20 行 21 徑 22  
 往 23 迂 24 街 25 巷 26 邀 27 語 28 告 29 更 30 改 31 趨  
 32 酵 33 迎 34 逆 35 穰 36 穀 37 穀 38 癩 39 癩 40 鴻  
 41 鵠 42 浴 43 沃 44 澗 45 形 46 營 47 影 48 亢 49 狂 50  
 競 51 衡 52 橫 53 局 54 杠 55 至 56 涇 57 漿 58 澄 59 江 60  
 漢 61 洋 62 泳 63 澤 64 洪 65 浩 66 頃 67 洵 68 決 69 注 70 滄  
 71 擴 72 恆 73 驚 74 警 75 敬 76 惶 77 恆 78 競 79 恭 80 恐 81  
 翼 82 懼 83 駭 84 忌 85 惡 86 愕 87 恍 88 恂 89 嚇 90 覷 91 罔  
 92 擊 93 陞 94 嶺 95 扛 96 企 97 起 98 高 99 踞 100 喬 101 翹 102 丘  
 103 印 104 昂 105 仰 106 嶸 107 額 108 嶽 109 崖 110 危 111 傲 112 堯 113 峴  
 114 興 115 奮 116 慶 117 馨 118 炕 119 曠 120 洞 121 嬰 122 檣 123 檣  
 124 莢 125 稂 126 熬 127 烘 128 煨 129 頸 130 剽 131 項 132 脛 133 骸  
 134 康 135 慶 136 幸 137 祺 138 喜 139 好 140 誑 141 誑 142 惑 143 乘  
 144 誑 145 詭 146 怪 147 欺 148 充 149 狡 150 矯 151 疑 152 詭

1. *kjǎng* bright, light, scenery etc.: 2. *kjǎng* (light-reflector:) mirror: 3. *kwáng* light, brightness: 4. *g'wáng* bright: 5. *g'wáng* bright, to blaze: 6. *giwang* bright: 7. *giwǎng* glittering, as a gem: 8. *kěng* brilliant: 9, 10. *kiweng* light, bright: 11. *g'iweng* bright, lights: 12. *g'iweng* glow-worm, firefly: 13. *kog* bright; 14. *χǎk* burning, brilliant: 15. *χjuk* brightness: 16. *χjǎg* bright: 17. *χjǎg* bright: 18. *χjog* dawn, light; 19. *jǎng* bright.

20. *g'ǎng* to walk, go, a street: 21. *g'wáng* to go to and fro: 22. *giwang* to walk, go: 23. *giwang* to walk, go: 24. *kěg* street: 25. *g'üng* street, lane; 26. *ngog* to ramble, stroll.

27. *kǔng* to speak, explain: 28. *kôk, kôg* to tell.

29. *kǎng* to change, alter: 30. *kəg* to change, alter.

31. *k'jok* leaven, yeast: 32. *kôg* leaven, yeast.

33. *ngiǎng* to meet, go out to meet: 34. *ngiǎk* to go out to meet, go against, oppose.

35. *k'áng* husk of grain: 36. *k'ük* husk of grain: 37. *kuk* (husked things:) grain.

38. *jěng* a swelling, tumour: 39. *jung* carbuncle, ulcer.

40. *g'ung* wild goose, wild swan: 41. *kôk* snow-goose, swan.

42. *giuk* to bathe; 43. *'ok* to soak, moisten: 44. *'ük* to soak.

45. *g'ieŋg* contour, shape, form: 46. *giwěng* to draw a plan, to plan (to build etc.); 47. *'jǎng* form, image, shadow.

48. *k'àng* violent: 49. *g'iwang* violent, mad, furious: 50. *g'jǎng* to be violent, quarrel.

51. *g'ǎng* yoke of an ox, horizontal bar of a balance, cross-wise: 52. *g'wǎng* cross-wise, horizontal: 53. *kiweng* door-bar, bolt: 54. *kǔng* cross-bar.

55. *kieng* underground stream: 56. *kieng* to flow: 57. *g'iweng* rivulet: 58. *giwěng* rivulet: 59. *kǔng* river: 60. *g'wáng* accumulated water: 61. *g'ieŋg* watery expanse: 62. *giwěng* to wade in water: 63. *kôŋg* flood, inundation: 64. *g'ung* flood, inundation: 65. *g'og* expanse of water; 66. *χung* expanse of water: 67. *χjung* to flow, rushing water; 68. *'jǎng* to flow, float: 69. *'wáng* expanse of water: 70. *'ung* to flow, float.

71. *k'wáng* to hate, be annoyed at, abhor: 72. *g'ieŋg* to be annoyed.

73. *kjǎng* frightened: 74. *kjǎng* (to frighten:) to warn: 75. *kjǎng* (awed:) respectful: 76. *g'wáng* frightened: 77. *k'iwang* frightened: 78. *kjǎng* frightened, respectful: 79. *kjung* respectful: 80. *k'jung* to be frightened, fear: 81. *kjwak* frightened looks: 82. *kjwak* startled: 83. *g'eg* frightened: 84. *g'jǎg* to fear; 85, 86. *ngák* to scare, scared; 87. *χwáng* troubled: 88. *χjung* frightened: 89. *χǎk* frightened: 90. *χǎk* frightened.

91. *káng* mountain ridge: 92. *g'jǎng* to lift: 93. *g'ieŋg* cliff, precipitous: 94. *g'wěng* lofty: 95. *kǔng* to lift: 96. *k'jěg* to raise oneself on the toes: 97. *k'jǎg* to lift, rise: 98. *kog* high: 99. *k'jog* to raise oneself on the toes: 101. *g'jog* to lift: 102. *k'jog* hill; 103, 104. *ngáng* high, to raise: 105. *ngiang* to raise the eyes, lift the face, look upwards: 106. *ngák* cliff, hill-side, edge: 107. *ngǎk* top of the head, forehead: 108. *ngôk* mountain, peak: 109. *ngěg* cliff, hill-side, edge: 110. *ngiwěg* high, precipitous, dangerous: 111. *ngog* haughty: 112. *ngiog* high, lofty: 113. *ngiog* high, precipitous; 114. *χjǎng* to lift, raise.

115. *χiang* fragrant: 116. *χiang* musk: 117. *χieŋg* fragrant.

118. *k'àng* to dry: 119. *k'wáng* sunburnt, desolate, waste: 120. *g'ák* to dry up: 121. *g'ôk* a spring drying up, become dry: 122. *kog* straw: 123. *kog* dry, withered, rotten: 124. *kôg* dried grass: 125. *k'jog* parched rice, dry provisions; 126. *ngog* to dry, roast; 127. *χung* to burn, roast: 128. *χok* hot, burning.

129. *kjěng* neck, throat: 130. *kieng* to cut the neck, behead: 131. *g'üŋg* neck.

132. *g'ieŋg* shin-bone, shank: 133. *g'eg* shin-bone, shank.

134. *k'áng* rich year, prosperity: 135. *k'jǎng* felicity, blessings, to felicitate: 136. *g'ěng* luck, fortunate: 137. *g'jǎg* felicity; 138. *χjǎg* joy, to rejoice: 139. *χog* to find pleasure in, to love.

140. *kjwang* to deceive, cheat: 141. *g'iwang* to deceive, lie: 142. *g'wák* deceive, mislead, doubt: 143. *kwěg* deceitful, crafty: 144. *kwěg* to deceive: 145. *kjwěg* deceitful, to deceive: 146. *kweg* bewildered, astonished: 147. *k'jǎg* to deceive, to cheat: 148. *kjwǎg* traitor: 149. *kog* crafty: 150. *kjog* to feign; 151. *ngiǎg* doubt, to be in doubt; 152. *χwáng* to lie.



153 梗 154 穎 155 荊 156 鋸 157 鋸 158 穎 159 刑 160 研 161 榑 162 刻 163 棘  
 164 馘 165 剄 166 鋸 167 鋸 168 疆 169 竟 170 澆 171 垆 172 互 173 齋 174  
 鄣 175 極 176 國 177 域 178 國 179 永 180 詠 181 恆 182 久 183 咬 184  
 綱 185 綆 186 韉 187 繩 188 經 189 紘 190 鞅 191 望 192 羅 193 繫 194 系 195  
 係 196 絞 197 絞 198 繳 199 糾 200 纏 201 鞅 202 縶 203 縶 204 縶 205 約 206  
 坑 207 坑 208 隆 209 礦 210 磬 211 磬 212 望 213 孔 214 空 215 腔 216 望  
 217 谷 218 壞 219 臼 220 竅 221 峇 222 胸 223 壑 224 洩 225 榜 226 膚 227 臆  
 228 紅 229 頰 230 頰 231 弘 232 擴 233 廓 234 吳 235 呼 236 瓊 237 緋  
 238 舊 239 算 240 翁 241 剛 242 鋼 243 僵 244 強 245 競 246 勁 247 確 248 硬  
 249 凝 250 垣 251 缸 252 鈞 253 盜 254 嬰 255 嬰 256 寶 257 柱 258 肱  
 259 弓 260 鏗 261 曲 262 踣 263 尸 264 冠 265 奧 266 澳 267 皇 268 王  
 269 獲 270 攬 271 勾 272 拘 273 搗 274 搗 275 右 276 有 277 握 278 握 279  
 厄 280 扼 281 扼 282 扼 283 扼 284 扼 285 扼 286 扼 287 扼 288 扼  
 289 楚 300 考 301 敲 302 縞 303 皓 304 皚 305 皚 306 皎 307 皎

153. *kǎng* spinous tree, thorny: 154. *kǎng* fish-bones, pricking: 155. *kǎng* bramble, thorn: 156. *kwǎng* awn of wheat etc: 157. *kěng* plough-bill: 158. *giwěng* awn, tip, sharp: 159. *g'ieng* (to cut:) to amputate, punish: 160. *g'ieng* (sharpener:) whetstone: 161. *g'wāk* to cut the grain: 162. *k'ək* to cut: 163. *k'jak* brambles, thorny: 164. *kwək* cut off the ear (of an enemy, trophy): 165. *k'iweg* to stab, to cut: 166. *kog* sharp point, scissors; 167. *ngāk* point, edge of a blade.

168. *k'iang* limit, boundary, frontier: 169. *k'iang* limit, end, finish: 170. *k'iang* limit, boundary, region: 171. *kiweng* border regions, frontier area: 172. *kəng* extreme, limit: 173. *g'jūng* extreme, limit, end, go to the extreme, exhaust, poor: 174. *kwāk* outer wall of a city (its boundary): 175. *g'jak* extreme, end: 176. *kwək* (delimited, bounded area:) state, country: 177. *giwək* boundary, region, state: 178. *giŋg*, *giŋk* (fenced area:) park.

179. *giwǎng* long, distant, continuous, eternal: 180. *giwǎng* (to draw out the words:) recite, sing: 181. *g'əng* perpetual, constant: 182. *k'jūg* a long time, long: 183. *k'jūg* chronic disease.

184. *kāng* string, tie, bond: 185. *kāng* a long rope: 186. *k'iang* reins, bridle: 187. *k'iang* strings by which to wrap a child and carry it on the back: 188. *kieng* threads of a warp: 189. *g'weng* hat string, to tie: 190. *k'ung* bridle, halter: 191. *k'jung* to tie with a leather strap: 192. *k'jēg* halter: 193. *g'ieg* to tie, bind: 194, 195. *g'ieg* to bind, connect: 196. *kog* to wrap, to wind around, strangle: 197. *k'jog* to tie: 198. *kiog* to wind around, bind: 199. *k'jog* threefold cord, to tie; 200. *χwāk* string; 201. *'iang* halter: 202. *'jēng* cap string, tassel: 203. *'iwēng* entwine: 204. *'iek* to strangle: 205. *'jok* to bind.

206. *k'āng* hole, pit, moat, canal: 207. *k'wāng* grave, tomb, vault: 208. *g'wāng* empty, city moat: 209. *kwāng* a mine: 210. *k'ieng* empty, hollow: 211. *k'ieng* (hollow stone:) instrument of sonorous stone: 212. *giwěng* grave: 213. *k'ung* hole: 214. *k'ung* hollow, empty: 215. *k'ūng* chest: 216. *k'jung* eyehole in axe: 217. *kuk* ravine, valley: 218. *g'og* moat: 219. *g'jog* mortar: 220. *k'iog* hole: 221. *kog* cave; 222. *χiung* chest: 223. *χāk* ravine, gully: 224. *χiwək* moat, canal: 225. *χiog* hollow tree, hollow, empty; 226. *'jəng* chest, breast: 227. *'jak* breast.

228. *k'āng* wide-hearted, magnanimous: 229. *kwāng* wide, broad, vast: 230. *g'weng* spacious, large hall: 231. *g'wəng* vast, liberal: 232. *k'wāk* to widen, enlarge, extend: 233. *k'wāk* wide, vast: 234. *g'og* vast (as the sky): 235. *χiog* vast.

236. *g'iwěng* red-coloured precious stone: 237. *kəng* strong red, purple: 238. *g'ung* red.

239. *g'àng* to go down in flying (birds): 240. *k'iang* to fall down, prostrate: 241. *k'jwěng* to fall down, tumble over: 242. *kəng* to descend, go down, throw down.

243. *g'àng* square raft, two boats lashed together so as to form a square: 244. *k'iwang* square.

245. *kung* »old man«, father: 246. *k'og* old: 247. *g'jog* ancient, old: 248. *g'jog* (»old man«:) uncle: 249. *'ung*, father, old man. Possibly *χiwǎng*, Mand. »hiung« 'elder brother' belongs here too.

250. *kāng* hard: 251. *kāng* steel: 252. *k'iang* stiff, rigid: 253. *g'jāng* strong: 254. *g'jāng* strong (see Tso chuan, Hi, 7th year): 255. *k'jēng* strong, vigorous: 256. *k'ok* solid, hard; 257. *ngāng* hard: 258. *ngiang* (frozen water:) to become hard, solid, congeal.

259. *kūng* jar: 260. *g'ūng* jar: 261. *g'ieng* soup-tureen; 262. *'āng* bowl, basin: 263, 264. *'əng* jar: 265. *'ung* jar.

266. *giwang* to bend, crooked: 267. *kwəng* (bending part:) elbow: 268. *k'jūng* a bow: 269. *k'iwak* hook: 270. *k'juk* to bend, crooked: 271. *g'juk* crooked, cramped: 272. *k'jog* hook; 273. *'wāng* crooked leg, lame: 274. *'og* angle, corner of the house: 275. *'jok* (»hook«:) the concave side of a bend in a meandering river.

276. *g'wāng* emperor, imperial: 277. *giwang* king, royal.

278. *g'wāk* to catch, seize: 279. *k'iwak* to grasp, seize: 280. *k'jok* a handful: 281. *k'jok* to hold in both hands: 282. *k'iwag* to lay hands on, seize, hold: 283. *g'ieg* to hold by the hand, lead: 284. *giŋg* right hand: 285. *giŋg* to hold, have; 286. *'uk* to grasp, seize.

287. *'jung* to press: 288. *'ək* narrow, straits: 289. *'ək* to press, throttle, grasp firmly: 290. *'ək* narrow pass, defile: 291. *'ək* yoke, to restrain: 292. *'jēk* throat: 293. *'jak* to press down: 294. *'ēg* a pass, straits, narrow.

295. *k'jak* long lance: 296. *k'iek* to beat, strike, kill: 297. *kwək* to beat: 298. *k'jak* to kill: 299. *kog* large drum (which is beaten): 300. *k'og* to beat: 301. *k'og* to beat.



302. *kog* white silk: 303, 304. *g'og* white: 305. *kjög* white: 306. *kiog* white.

307 鞠 308 鞠 ○ 309 亟 310 處 311 霍 312 癩 ○ 313 胎 314 鞋 ○ 315 隙 316  
 317 霏 318 隔 319 膈 320 解 321 異 ○ 322 殃 323 惡 324 亞 325 虐 ○ 326  
 327 欲 328 求 329 要 ○ 330 鞞 331 革 ○ 332 頰 333 頤 ○ 334 跪 335 踞  
 ○ 336 蟹 337 蟄 ○ 338 蟹 339 學 340 校 341 效 342 教 343 數 344 巧 345 考  
 ○ 346 衰 347 驍 348 起 ○ 349 奇 350 幽 351 黝 352 窈 ○ 353 嬌 354 夭 355  
 妖 356 么 ○ 357 交 358 交 ○ 359 纒 360 球 361 毬 ○ 362 烏 363 鴉 364 鴛  
 365 毫 366 裘 367 九 368 透 ○ 369 覽 ○

307. *kjök* to rear, nourish: 308. *xiök* to rear, nourish.

309. *kjak* haste, urgent: 310. *g'iwag* sudden, rapid: 311. *xwäk* sudden: 312. *xwäk* (sudden illness:) cholera.

313. *kjak* leg, foot: 314. *g'ëg* boot.

315. *k'jak* rift, crack: 316. *k'jäk* (to separate oneself from:) reject, decline:

317. *k'wäk* rift in the clouds, weather clearing: 318. *këk* to separate, partition:

319. *këk* diaphragm: 320. *këg* to separate, divide, dissolve: 321. *giäg* separate, different.

322. *iang* misfortune, calamity, to destroy: 323. *'äk* bad, vicious, wicked: 323. *'äg* to hate: 324. *'äg* inferior: 325. *ngiök* cruel, wicked, to maltreat, destroy.

326. *kjak* to wish, hope for: 327. *giuk* to wish, desire: 328. *g'jög* to seek for, pray for, entreat, aim at: 329. *jog* to wish, seek for.

330. *k'wäk* leather: 331. *kek* hide, skin, to flay.

332. *g'æg* chin, jaw: 333. *giäg* chin, jaw.

334. *g'jwëg* to kneel: 335. *g'jæg* to kneel.

336. *g'ëg* crab: 337. *g'jæg* small crab.

338. *g'wäng* school: 339. *g'ök* to study, learn, a school: 340. *kög* school: 340. *g'ög* to study, examine, compare: 341. *g'ög* (to learn:) to imitate: 342. *kög* to teach: 343. *g'ög* to teach: 344. *k'ög* (trained:) skilled: 345. *k'ög* (to study:) to examine.

346. *g'og* vigorous, martial, brave: 347. *kiog* vigorous: 348. *kiög* vigorous, courageous.

349. *'iog* sundown, darkness: 350, 351. *'jög* dark, black: 352. *'iög* secluded.

353. *kjög* delicate, beautiful: 354. *'jog* young, delicate, tender, fresh, beautiful:

355. *jog* to die young: 356. *'iög* small, tender.

357. *kög* to cross, entwine: 358. *g'ög* to cross.

359. *kjök* foot-ball: 360. *g'jög* jade ball: 361. *g'jög* ball.

362. *kiög* owl: 363. *giog* (so in Ts'ie yü) owl (the dialects point to an Arch (*xiog*); 364. *xiög* owl.

365. *g'og* hair: 366. *g'jög* fur.

367. *kjüg* nine: 368. *g'jwæg* point where nine roads meet.

369. *kök* to wake up: 369. *kög* to wake up.

## B. Words of type T-NG

1 償 2 貽 3 朋 4 贈 5 賞 6 賜 ○ 7 正 8 政 9 整 10 征 11  
 懲 12 董 13 職 14 飭 15 勅 16 帝 17 治 18 則 19 司 ○ 20 正 21 直  
 22 植 23 置 24 蒔 25 栽 ○ 26 章 27 程 28 稱 29 度 30 尺 31 測 32  
 商 33 升 ○ 34 通 35 桶 36 筭 37 筒 38 衙 39 街 40 銃 41 瀆 42 資  
 43 窗 ○ 44 檣 45 撐 46 椈 47 璋 48 杖 49 丈 50 珽 51 挺 52 筵 53  
 挺 54 楨 55 楹 56 樁 57 杙 58 支 59 枝 60 肢 61 保 62 樁 63 柵 ○  
 64 上 65 尚 66 揚 67 賜 68 頂 69 登 70 乘 71 棟 72 冢 73 塚 74 戴  
 75 陟 76 卓 77 提 78 臺 79 擡 80 崇 81 截 82 穎 83 昇 84 嵩 ○ 85  
 盈 86 贏 87 贏 88 盛 89 充 90 容 ○ 91 勇 92 馭 93 獎 94 壯 95 勝  
 ○ 96 寵 97 憚 98 祉 99 怡 100 悰 ○ 101 偵 102 瞪 103 督 104 覲 105 矚  
 106 眈 107 眺 108 相 109 懼 110 省 111 伺 ○ 112 打 113 鉦 114 沖 115 撞 116  
 鐘 117 衝 118 鑄 119 柝 120 鐸 121 權 122 策 123 極 124 錫 125 觸 126 咎 127  
 擡 128 昏 ○ 129 膛 130 宕 131 洞 132 井 133 井 ○ 134 中 135 仲 ○ 136 堂  
 137 廷 138 庭 139 寺 140 宗 ○ 141 脈 142 漲 143 腫 144 瘡 145 瘡 ○ 147 成  
 148 終 149 已 ○

1. *djang* to give compensation: 2. *djæg* to give, bequeath: 3. *fiög* to give; 4. *de'äng* to give, bestow; 5. *sjang* to give, bestow, reward: 6. *sjëg* to give, bestow.

7. *fiëng* straight, correct: 8. *fiëng* (correcting, regulating, adjustment:) government, administration: 9. *fiëng* (to make straight:) to adjust: 10. *fiëng* (to correct:) to punish: 11. *d'jang* to correct, punish: 12. *tung* to correct, govern: 13. *fiäk* to direct, govern, office, official: 14, 15. *t'jak* to direct, to order: 16. *tiæg* ruler, emperor: 17. *d'jæg* to govern; 18. *tsæk* law, rule; 19. *sjæg* to direct, govern, manage.

20. (cf. the preceding) *fiëng* straight: 21. *d'jak* straight, upright: 22. *djak* doorpost, to set upright, to erect, to plant: 23. *tiæg* to put up, establish, place: 24. *djak* to erect, to plant; 25. *tsæg* to plant.

26. *fiang* a measure, norm, rule: 27. *d'jëng* measure, to measure (weight, length, volume): 28. *fi'jang* to weigh, steelyard: 29. *d'äk* to measure, *d'äg* a measure: 30. *fi'jak* a measure of ten inches; 31. *ts'jak* to measure, to fathom; 32. *sjang* to measure, to appreciate, to deliberate: 33. *sjang* a pint.

34. *t'ung* to pass through, communicate (all through, all etc.): 35. *t'ung* (tube-formed:) tub, barrel: 36, 37. *d'ung* tube, pipe: 38. *d'ung* passage, connecting lane: 39. *fi'jung* passage, connecting lane: 40. *fi'jông* hole through the head of an axe: 41. *d'uk* sluice, drain, gutter, ditch: 42. *d'üg* sluice, drain, gutter, ditch; 43. *ts'üng* vent, flue, window.

44, 45. *t'äng* a post, pole, to pole: 46. *d'äng* a prop, post: 47. *fiang* sceptre: 48. *d'jang* staff, pole: 49. *d'jang* a length of ten feet: 50. *t'ieng* sceptre, baton: 51. *t'ieng*, *d'ieng* to stick out, stiff: 52. *d'ieng* stalk, straw, small beam: 53. *d'ieng* stalk, stick, staff: 54. *tiëng* pole: 55. *djëng* pillar, column: 56. *tüng* pole, post,



stake: 57. *djak* stake: 58, 59. *tiēg* branch: 60. *tiēg* limb: 61. *d'ioḡ* branch, stick: 62. *dz'iang* boom, spar: 63. *ts'ēk* bars, fence, palisade.

64. *ḍiang* above, on top, high, ascend: 65. *ḍiang* high: 66. *ḍiang* to raise, lift: 67. *ḍiang* tossed up by the wind: 68. *tieng* top of the head, to carry on the head, summit: 69. *təng* to ascend, rise, mount: 70. *d'iəng* to ascend, to mount, ride on: 71. *tung* ridge-pole, the top: 72. *tiung* peak, lofty, mound, tumulus: 73. *tiung* tumulus, tomb: 74. *təg* to carry on the head: 75. *tiək* to ascend, rise: 76. *tōk* high, lofty: 77. *d'ieg* to raise high, lift: 78. *d'əg* elevated platform, a look-out, high: 79. *d'əg* to raise high, lift, carry: 80. *dz'ioṅ* high, lofty: 81. *tsəg* (put on top:) to load (as a car): 82. *səng* (top of the head:) forehead: 83. *siəng* to ascend, rise: 84. *siōng* lofty.

85. *ḍiēng* full: 86. *ḍiēng* full, ample, surplus: 87. *ḍiēng* abundant, surplus: 88. *ḍiēng* to be full of, hold, contain; abundant, overflow: 89. *t'ioṅ* full, to fill: 90. *ḍiung* (to be full of:) contain, hold.

91. *ḍiung* vigorous, brave: 92. *tsəng* strong horse: 93. *tsiang* to encourage: 94. *tsiang* strong, vigorous, robust: 95. *siəng* to have the force for doing, capable; (to be the stronger:) to conquer.

96. *t'jung* to find pleasure in; be in favour: 97. *djak* pleased, happy, joy: 98. *t'jəg* happy, happiness: 99. *djəg* pleased, joy: 100. *dz'ōng* pleased, glad, joy.

101. *t'jēng* to spy: 102. *d'eng* to stare: 103. *tōk* to supervise, inspect, examine: 104. *d'ioḡ* to see: 105. *tiuk* to look, stare: 106. *t'jəg* to stare: 107. *t'ioḡ* to stare: 108. *siəng* to gaze, look, consider, regard: 109. *sieng* (discerning, mentally clear-sighted:) intelligent, to understand: 110. *siēng* to watch, look, examine: 111. *siəg* to watch, spy.

112. *tieng* to beat: 113. *tiēng* a small bell (which is struck): 114. *d'ioṅ* to dash against: 115. *d'ūng* to strike, beat, knock against: 116. *tiung* a bell: 117. *t'jung* rush against: 118. *ḍiung* a big bell: 119. *t'āk* »beater«, wooden knocker used by night guards: 120. *d'āk* bell with clapper: 121. *d'ōk* (beater, propeller:) oar, scull: 122. *tiōk* to ram, pound, build: 123. *tūk* to beat, strike: 124. *d'ūk* small bell: 125. *t'juk* to butt, knock against, rush against, strike: 126. *t'jəg* to beat, flog: 127. *tōg* to pound; 128. *siung* to pound, to ram.

129. *t'āng* (the dialects indicate a *d'āng*) cavity, hollow, chest, palate: 130. *d'āng* cave, cavern, grotto: 131. *d'ung* cave, hole, pit, ravine: 132. *tsiēng* a well: 133. *dz'jēng* pit, pit-fall, hole.

134. *tiōng* middle, centre, interior, inside: 135. *d'ioṅ* (the middle one:) second of three (or four) brothers, second of three months.

136. *d'āng* hall: 137. *d'ieṅ* court: 138. *d'ieṅ* hall, court: 139. *dzjəg* hall: 140. *tsōng* ancestral hall, temple (the last, however, more probably to gr. 542 below).

141. *tiang* to swell, swelled abdomen, dropsical: 142. *tiang* swelling water, to flood, to rise: 143. *tiung* to swell, tumefy, tumour: 144, 145. *ḍiung* dropsy of leg.

147. *ḍiēng* to complete, finish, achieve: 148. *tiōng* to finish, end: 149. *ziəg* to finish, end.

150. *t'āk* to cleave, split: 151. *tiək* to hew, chop: 152. *tiək* barb of arrow: 153. *tēk* (to prick:) to blame, criticise: 154. *t'iek* to cut asunder: 155. *tūk* to cut, chop,

hew: 156. *tūk* to cut gems: 157. *tiēg* a spinous orange tree, thorn: 158. *t'jəg* tooth, esp. front tooth: 159. *tog* knife: 160, 161. *tiōg* to cut gems, carve: 162. *dz'iang* to wound, kill: 163. *ts'iang* a wound, sore: 164. *ts'iang* to wound: 165. *tsjak* to cut off: 166. *ts'ēk* thorn: 167. *ts'ēk* to blame, criticize: 168. *ts'jēk*, *ts'jēg* thorn, to sting, blame, criticize: 169. *dz'āk* a cut-throat, bandit; to hurt, to wound: 170. *ts'jak* a sharp plough share: 171. *dz'āk* chisel, bore: 172. *tsuk* barb of arrow: 173. *ts'ūk* to spear fish, pierce, stab: 174. *ts'jēg* thorn: 175. *ts'jēg* to blame, criticize: 176. *tsəg* to slaughter: 177. *dz'əg* to cut: 178. *tsjəg* a hoe: 179. *tsjəg* to cut, slice, mince: 180. *tsjəg* to stab: 181. *dzjəg* plough-share: 182. *tsōg* jujube (thorny): 183. *tsjog* to

150 拆 151 斫 152 鏞 153 誦 154 剔 155 斲 156 琢 157 枳 158 齒 159 刀 160 珣  
161 彫 162 戕 163 瘡 164 創 165 斲 166 萊 167 賁 168 刺 169 賊 170 戩 171 鑿  
172 鏃 173 擗 174 刺 175 諫 176 宰 177 裁 178 鉞 179 戡 180 剗 181 起 182 剷  
183 剗 184 傷 185 整 186 斲 187 削 188 斲 189 擗 190 張 191 長 192 昶 193  
腸 194 塤 195 掌 196 常 197 敞 198 堂 199 同 200 銅 201 調 202 相 203  
等 204 嶺 205 增 206 層 207 陟 208 腺 209 腥 210 糖 211 棠 212 橙 213  
蔗 214 飴 215 錫 216 疼 217 痛 218 恫 219 葬 220 賊 221 倉 222 藏  
223 湧 224 溶 225 濤 226 滔 227 漾 228 澤 229 滴 230 涿 231 涎 232 漬 233  
滋 234 液 235 濯 236 滌 237 洮 238 淥 239 淞 240 漱 241 滄 242 陽 243  
昌 244 瞳 245 的 246 燭 247 熾 248 朝 249 潮 250 耀 251 耀 252 燦 253 昭 254  
照 255 晝 256 晶 257 晴 258 晴 259 燦 260 星 261 晰 262 燦 263 陽 264 湯  
265 煬 266 鼎 267 蒸 268 蒸 269 融 270 鎔 271 蕪 272 炙 273 灼 274 粥 275 熟  
276 勻 277 陶 278 鑄 279 涓 280 奎 281 奎 282 鼎 283 炒 284 竈 285 焦 286 湘  
287 醃 288 腊 289 鍊 290 燥 291 燒 292 脩 293 銷 294 消 295 精 296 清 297  
淨 298 澌 299 澄 300 澌 301 澌 302 澌

cut off; 184. *siəng* to wound, injure: 185. *siək* to sting: 186. *siək* to cut asunder, cleave: 187. *siok* to slice off, cut off, to pare: 188, 189. *siēg* to cleave.

190. *tiang* to extend, draw out, spread, expanse, surface: 191. *tiang* become long, grow up: 192. *t'iang* a long day: 191. *d'iang* extended, long: 193. *d'iang* (the long ones:) bowels: 194. *d'iang* area, arena, open space: 195. *tiang* palm of the hand: 196. *ḍiang* (long:) constant: 197. *t'iang* plateau, high open space.

198. *tāng* league, union, party, faction: 199. *d'ung* join, together: 200. *d'ung* alloy, bronze: 201. *d'ioḡ* to join, mix; 202. *siəng* joined, together, mutual.

203. *təng* steps of staircase, ledge, section, degree: 204. *təng* ledges, tiers of a hill; 205. *tsəng* (to place layer on layer:) to pile up, accumulate, add, increase: 206. *dz'əng* layer, stratum, storey, degree: 207. *dz'əg* staircase.

208. *sog* fat, smell of raw meat, rancid: 209. *sieng* fat, smell of raw meat, rancid.

210. *d'āng* sugar: 211. *d'āng* sweet apple: 212. *d'eng* orange (cf. *kan* orange = *kan* the sweet fruit): 213. *tiag* sugar cane: 214. *djəg* sugar, sweet; 215. *dz'jēng* sugar, sweets.



216. *d'ông* pain, to ache: 217. *t'ung* pain, to ache: 218. *t'ung* pained, to suffer, moan.

219. *tsâng* to hide, bury: 220. *tsâng* hidden goods: 221. *ts'âng* store-room, granary: 222. *dz'âng* to hide, to store, store-room.

223. *djung* to well up (as water): 224. *djung* overflowing water: 225. *d'ôg* great waves: 226. *t'ôg* swelling and rushing water: 227. *ziang* moving water, waves.

228. *d'âk* to soak: 229. *tiek* to drop, drip: 230. *tûk* to drip, trickle: 231. *dz'ûk* to soak: 232. *dz'jêg* to soak: 233. *tsjæg* to soak: 234. *ziak* fluid, juice.

235. *d'ôk*, *d'ôg* to wash, rinse: 236. *d'iôk* to wash, scour: 237. *t'og* to wash, rinse: 238. *tsog* to bathe: 239. *siek* to wash rice: 240. *sjôg* to rinse: 241. *sjôg* water in which rice has been washed.

242. *djang* light and heat of the sun: 243. *t'jang* sunshine, shining: 244. *d'ung* sun just rising: 245. *tiok* bright: 246. *tjuk* torch: 247. *t'jag* to blaze: 248. *tjog* dawn, morning: 249. *d'jog* morning ceremony, audience etc.: 249. *d'jog* morning tide: 250, 251. *djog* bright: 252. *djog* bright, to enlighten: 253. *tjog* bright, brilliant: 254. *tjog* to shine upon, enlighten: 255. *tjôg* day-light, day-time (as opp. to night): 256. *tsjêng* bright, clear, crystal: 257. *tsjêng* iris of the eye: 258. *dz'jêng* clearing sky, light: 259. *tsjok* torch, to light; *sieng* star: 261. *siek* bright: 262. *sjok* bright, flashing.

263. (cf. the preceding group) *djang* light and heat of the sun: 264. *t'âng* hot liquid: 265. *djang* to roast, to heat, to fuse: 266. *tieng* (boiler:) tripod: 267. *tjäng* to steam: 268. *tjäng* firewood, to smoke: 269. *djông* to steam, to heat: 270. *djung* to fuse metal: 271. *t'âk* withered leaves: 272. *tjak*, *tjag* to roast: 273. *tjok* to roast, burn: 274. *tjok* to boil rice, gruel: 275. *djôk* heated through, well cooked, ripe: 276, 277. *d'ôg* (burner, burnt goods:) kiln; pottery: 278. *tjôg* to fuse, cast metal: 279. *tiôg* fade, wither: 280. *djog* kiln: 281. *djog* jar (burnt piece): 282. *tsjæg* a kind of tripod (boiler): 283. *ts'ôg* to fry, roast: 284. *tsôg* stove, furnace: 285. *tsjog* to scorch, burn: 286. *sjang* to boil: 287. *sjang* to boil: 288. *sjak* dried meat: 289. *sjok* to melt; bright: 290. *sog* to dry: 291. *sjog* to burn, bake: 292. *sjôg* dried meat: 293, 294. *sjog* to melt (metal).

295. *tsjêng* pure, fine, essence: 296. *ts'jêng* pure, clean, limpid: 297. *dz'jêng* clean, pure, cleanse: 298, 299. *d'jäng* clear, pure, limpid: 300. *djæk* pure, clean water: 301. *djôk* pure.

302, 303, 304. *dz'jêng* quiet, still: 305. *dz'iek* quiet, still.

306. *t'jang* dejected, disappointed: 307. *t'jang* dejected: 308. *t'jông* grieved: 309. *d'ieg* to wail: 310. *tog* grieved: 311. *d'og* grieved: 312. *t'jog* grieved: 313. *djog* distressed: 314. *t'jôg* dejected: 315. *d'jôg* sorry: 316. *ts'jang* grieved: 317. *ts'jak* grief, pity: 318. *ts'og* sad: 319. *ts'jog* grief, sorry: 320. *dz'jog* distressed: 321. *dz'jôg* grief; 322. *sâng* mourning: 323. *sjak* pained, grief, pity.

324. *t'iek* to fear, respectful: 325. *dz'âk* bashful: 326, 327. *sjung* terrified, respectful: 328. *sjok* terrified, respectful: 329. *sjag* to fear.

330. *t'jêng* red: 331. *d'jêng* naked (red, flesh-coloured): 332. *d'ông* red: 333. *t'jak*

302 靖 303 靜 304 靜 305 寂 ○ 306 悵 307 悄 308 忡 309 啼 310 忉 311 悼 312  
 招 213 摺 314 惆 315 怵 316 淒 317 惻 318 悵 319 悄 320 惟 321 愁 322 喪 323  
 惜 ○ 324 悵 325 怵 326 疎 327 悚 328 肅 329 蕙 ○ 330 穎 331 程 332 彤 333  
 赤 334 駢 335 莢 336 蕩 337 蕙 ○ 338 蒼 339 青 ○ 340 醒 341 耐 342 耐 343  
 洒 344 苗 ○ 345 碇 346 訂 347 定 348 亭 停 滄 ○ 349 孕 350 育 351 畜 352  
 胎 353 子 354 孽 字 355 生 356 姓 357 性 ○ 358 虹 359 虹 360 蜻 ○ 361 倉 362  
 息 363 在 364 覺 365 促 366 躁 367 造 368 倏 369 倏 370 速 ○ 371 羊 372  
 咩 ○ 373 洋 374 瀛 ○ 375 聰 376 聰 ○ 377 頑 378 藏 379 祥 380 祚 ○ 381  
 像 382 似 383 俏 384 肖 385 猶 ○ 386 童 387 種 388 續 ○ 389 冬 390 凍 391  
 滄 392 清 393 霜 ○ 394 知 395 智 396 志 397 誌 398 悠 399 想 400 諒 401 思  
 402 猶 ○ 403 擋 404 塘 405 塘 406 帳 407 障 408 障 409 廠 410 城 411 登 412  
 町 413 幢 414 墻 415 場 416 遮 417 幃 418 疇 419 稠 420 侑 421 悵 422 膏 ○  
 423 擢 424 擢 425 由 426 抽 ○ 427 當 428 食 429 饒 430 饒 431 飼 ○

red; 334. *sjêng* red horse: 335. *sjak* red: 336. *sjak* a red flower: 337. *sjôg* Rubia, red-colouring stuff.

338. *ts'âng* green, blue: 339. *ts'ien* green, blue.

340. *d'jêng* drunk: 341. *tieng* drunk: 342. *d'iôg* fine spirits: 343. *tsjôg* spirits: 344. *dz'jôg* spirits.

345. *tieng* (a »fixer«) anchor: 346. *t'ien* (to settle:) to judge, decide: 347. *d'ien* to fix, settle: 348 a. *d'ien* to settle, to stop: 348 b. *d'ien* stopping place, resting place, pavilion: 348 c. *d'ien* stagnant water.

349. *djang* pregnant: 350. *djôk* to rear and foster children: 351. *t'jôk* to rear, nourish, feed: 352. *t'æg* womb, pregnant; 353. *tsjæg* (progeny:) son: 354. *dz'jæg* to breed, rear, bear, nurture; 355. *sêng* to bear, beget; live: 356. *sjêng* (maternity:) clan (issuing from the same mother): 357. *sjêng* (innate qualities:) nature, natural disposition.

358. *tieng* dragon fly: 359. *d'ien* dragon fly; 360. *ts'ien* dragon fly.

361. *ts'âng* hurried: 362. *ts'ung* hurried: 363. *tsâng* suddenly, abruptly: 364. *tsjôk* to urge, urgent: 365. *ts'juk* to urge: 366. *tsog* to hasten, quickly: 367. *ts'og* to hasten: 368, 369. *sjôk* suddenly, quickly: 370. *suk* to hurry, quickly.

371. *ziang* sheep (male and female): 372. *tsâng* sheep (female).

373. *ziang* ocean: 374. *djêng* ocean.

375. *t'ien* to hear: 376. *ts'ung* acute of hearing.

377. *tjêng* auspicious; 378. *tsâng* auspicious: 379. *dzjang* auspicious: 380. *dz'ag* auspicious.

381. *dzjang* image, shape, form, like: 382. *dzjæg* like, resembling: 383. *ts'jog* like, resembling; 384. *sjog* like, resembling: 385. *zjôg* like, resembling.

386. *d'ung* youngster, young boy or girl: 387. *d'ung* hornless calf: 388. *d'uk* calf.



389. *tóng* winter: 390. *tung* to freeze; 391. *ts'iang* cold: 392. *ts'jěng* cold; 393. *sjang* frost.

394. *tjěg* (to have in the mind:) to know: 395. *tjěg* knowledge, wisdom: 396. *tjæg* mind, thought, will, resolution: 397. *tjæg* (to have in the mind:) to remember; a record: 398. *djög* to think (of); 399. *sjang* to think (of): 400. *sjæk* to know: 401. *sjæg* to think (of): 402. *zjög* a counsel, a plan.

403. *täng* to screen, protect, prevent, resist: 404. *d'äng* to obstruct, parry: 405. *d'äng* dyke: 406. *tjang* curtain: 407. *tjang* dyke, bank: 408. *tjang* dyke, screen, barricade, partition: 409. *t'jang* cover, shelter, shed: 410. *djěng* city wall: 411. *täng* umbrella: 412. *t'jeng* raised path (dyke) between fields: 413. *d'üng* a plume fan, to screen, curtain: 414. *djung* a wall: 415. *djěk* dyke between fields, boundary: 416. *tjæg* to screen, protect, cover, hide: 417. *d'ög* a covering, *d'jög* a screen, curtain: 418. *d'jög* dyke between fields, field: 419. *d'jög* coverlet, curtain: 420. *tjög* to veil, conceal; 421. *dz'jang* wall; 422. *sěng* film over the eye; obstruction, calamity.

423. *d'ök* to pull out: 424. *t'ög* to draw out, pull out: 425. *djög* come out, out from, from: 426. *t'jög* to draw out, pull out.

427. *djang* to taste: 428. *d'jak* to eat: 429. *t'jæg* nourishment, food and drink: 430. *t'og* to eat gluttonously; 431. *dzjæg* food.

432 愈 433 綽 434 詔 435 縱 436 釋 437 赦 438 寫 439 瀉 ○ 440 踹 441 倒 ○  
 442 膏 443 函 ○ 444 暉 445 易 446 竭 447 遞 448 代 449 琳 ○ 450 夕 451 汐  
 452 宿 453 夙 454 夜 455 舍 456 寄 ○ 457 贖 458 籍 459 冊 460 策 ○ 461 貨  
 462 借 463 債 ○ 464 等 465 侍 466 侍 467 伎 468 廡 469 伺 ○ 470 膝 471 繩  
 472 統 473 緹 474 縵 475 繳 476 勒 477 屬 478 妨 479 締 480 緝 481 僂 482 紹 483 續  
 484 紬 485 倭 486 紆 487 綰 488 緝 489 綜 490 總 491 席 492 績 493 績  
 494 擊 495 緇 496 緇 497 囚 498 素 499 束 500 縮 501 結 502 縲 503 跣 504 躄  
 ○ 505 腰 506 踉 507 踉 508 躄 509 躄 510 躄 511 躄 512 躄 513 躄 514 之 515  
 踏 516 躄 517 從 518 踏 519 踏 520 跡 521 躄 522 躄 523 足 524 躄 525 躄 526  
 適 527 躄 ○ 528 承 529 擇 530 拏 531 拏 532 持 533 受 534 投 535 將 536 捉  
 537 采 538 操 539 縵 540 以 541 收 ○ 542 烝 543 衆 544 氏 545 僑 546 崇 547  
 叢 548 績 549 族 550 曹 ○ 551 稍 552 小 553 少 ○ 554 親 555 釋 556 置 557  
 韜 558 鞘 ○ 559 鷓 560 鷓 561 鷓 ○ 562 笛 563 饑 564 饑 565 清 566 蕭 ○  
 567 旌 568 幟 ○ 569 得 570 迨 571 到 ○ 572 即 573 就 ○ 574 作 575 造 ○

432. *d'æg* remiss, careless: 433. *t'jök* to slacken, indulgent: 434. *t'jög* to unbend a bow, to slacken, release: 435. *tsjung* to slacken the rein, lax, loose; 436. *sjak* to loosen, let go: 437. *sjag* (to let off:) to pardon, amnesty: 438. *sjag* to let loose, to ease, release: 439. *sjag* (to let loose water:) to drain.

440. *d'äng* to fall, slip: 441. *tog* to fall.

442. *tsjěng* leek flower: 443. *ts'ung* leek, onion.

444. *djak* relay of horses, post: 445. *djěk* to change, *djěg* (changeable, mobile:) easy: 446. *djěk* chameleon, lizard: 447. *d'ieg* to substitute, take the place of, change: 448. *d'æg* to substitute, take the place of, change; 449. *siek* chameleon, lizard.

450. *dziak* evening: 451. *dziak* evening tide: 452. *sjök* to pass the night: 453. *sjök* early morning (before dawn): 454. *zjæg* night: 455. *sjag* (place for passing the night:) hotel, lodging, house: 456. *sjog* night, darkness.

457. *d'uk* writing tablet, document; 458. *dz'jak* writing tablet, list, register, record: 459, 460. *ts'ěk* writing tablet, list, register, record.

461. *t'æg* to lend, to loan (on interest); 462. *tsjak*, *tsjag* to lend, to loan: 463. *tsěg* debt, to owe money.

464. *täng* to wait: 465. *d'æg* to wait, to wait upon, to treat: 466. *djæg* to wait upon; 467. *dz'jæg* to wait; 468. *sjěg* waiter, attendant: 469. *sjæg* to wait, to wait upon.

470. *d'æng* string, cord, to tie, to bind: 471. *djang* string, cord: 472. *t'ung* a thread, to attach, join: 473. *djak* to draw out threads (from cocoons), unravel: 474. *tjæk* to weave: 475. *tjök* silk string (tied to arrow): 476. *tiok* reins: 477. *tjuk* tied to, attached to; *djuk* attached, subordinated: 478. *tjěg* (»weaver») spider: 479. *d'ieg* to tie, knot: 480. *d'ög* to twist, bind: 481. *t'ög* twisted silk cord: 482. *djög* (»anknüpfen») to join on, continue: 483. *d'jög* thread, to weave, woven silk: 484. *d'jög* leather reins: 485. *d'jög* crupper: 486. *d'jög* to bind, tie: 487. *djög* seal ribbon; 488. *tsäng* woven silk: 489. *tsóng* warp, to weave: 490. *tsung* to tie together, collect: 491. *dzjak* (plaited, woven thing:) mat: 492. *tsiek* to twist, spin: 493. *dzjuk* (»anknüpfen») to join on, continue: 494. *tsjög* to bind, tie together: 495, 496. *ts'jög* crupper: 497. *dzjög* to tie, bind, captivate, a captive; 498. *sák* cord: 499. *sjuk* to tie together, bundle: 500. *sjuk* to bind, bind together, restrict etc.: 501. *sjæg* silk thread: 502. *sog* to draw out threads (from cocoons), unravel: 503. *şög* (»weaver») spider: 504. *siög* spider.

505. *djang* to follow, escort: 506. *tjung* heel, to follow: 507. *tjak* to tread, trample, foot-sole: 508. *d'jök* to tread, walk: 509. *d'juk* to tread, foot-print: 510. *d'ieg* to tread on, kick: 511. *d'ieg* hoof: 512. *d'ieg* leather shoes: 513. *tjæg* foot, toes: 514. *tjæg* to go to: 515. *d'ög* to trample; 516. *tsjung* footsteps, to follow: 517. *dz'jung* to follow: 518. *tsjak* to walk carefully: 519. *tsjak* to walk with small step: 520. *tsjěk* foot-prints, traces: 521. *tsjök* to walk carefully: 522. *ts'jök* to trample, kick: 523. *tsjuk* foot: 524. *dzjæg* to follow after, succeed: 525. *sjak* slipper: 526. *sjěk* to go to: 527. *sjök* to walk carefully.

528. *djang* to hold, receive, present: 529. *d'äk* to pick, select: 530. *tjak* to pick up, take: 531. *těk* to take, to pick: 532. *d'jæg* to grasp, hold: 533. *djög* to receive (534. *djög* to pass from hand to hand, transmit, same word); 535. *tsjang* to take, bring: 536. *tsük* to catch, seize: 537. *ts'æg* to take, pick: 538. *ts'og* to grasp, hold; 539. *sjæk* to harvest: 540. *zjæg* to take: 541. *şjög* to take, collect, gather, harvest.

542. *tjang* all: 543. *tjung* a crowd, many, all: 544. *djěg* (a group:) a clan, family: 545. *d'jög* a group, flock, party; comrade; 546. *tsóng* a clan; ancestors etc.: 547. *dz'ung* to crowd, crowded: 548. *tsjěk* to accumulate, collect, many; *tsjěg*



provisions: 549. *dz'uk* bundle, crowd, group, clan: 550. *dz'og* group, flock, partner, plural mark.

551. *şog* small quantity, little: 552. *şog* small: 553. *şog* little, few.

554. *t'iang* bow case: 555. *t'ak* sheath of bamboo: 556. *d'uk* a case, sheath: 557. *t'og* sword case, sheath: 558. *şog* sword case, sheath.

559. *diog* bird of prey, kite, falcon: 560. *tiog* eagle: 561. *dz'ioğ* eagle, vulture.

562. *d'ioğ* flute: 563, 564. *d'jög* flute: 565. *siog* to blow, whistle: 566. *siog* flute.

567. *tsjeng* flag, banner: 568. *tjak* flag, banner.

569. *tak* to reach, obtain: 570. *d'æg* to reach: 571. *tog* to reach.

572. *tsjak* to go to: 573. *dz'ioğ* to go to.

574. *tsak* to make, do, act: 575. *dz'og* to make.

576 勺杓 577 酌 578 匙 579 匙 580 卮 581 卮 582 挑 583 卮 584 卮 585 斤  
 586 逐 587 止 588 島 589 州 590 洲 591 逐 592 逐 593 逐 594 箭 595  
 程 596 賈 597 市 598 售 599 翟 600 帶 601 埽 602 杯 603 騰 604 踊 605  
 躍 606 跳 607 超 608 蒸 609 蒸 610 請 611 祝 612 咒 613 祝 614 禱 615  
 討 616 軸 617 周 618 週 619 嘍 620 嘲 621 譙 622 笑 623 媿 624 媿  
 625 伺 626 意 627 慙 628 瘕 629 瘕 630 是 631 之 632 茲 633 斯 634  
 傲 635 擊 636 始 637 賈 638 袋 639 箱 640 筍 641 婿 642 敵 643 擊  
 644 漳 645 槽 646 袋 647 緇 648 朔 649 早 650 皂 651 稻 652 稷 653  
 粟 654 再 655 雙 656 恥 657 羞 658 役 659 徕 660 碩 661 變  
 662 射 663 弋 664 矰 665 撻 666 瓜 667 豕 668 撻 669 駮 670 肘 671 袖  
 672 手 673 昨 674 昔 675 則 676 即 677 招 678 召 679 誘 680 證  
 681 徵 682 執 683 矜 684 植 685 獨 686 動 687 墮 688 掉 689 搖  
 690 馬 691 逃 692 盜 693 趙

576. *djok* spoon, ladle: 577. *tjak* (to ladle a cup full:) to fill a cup of wine, to pledge: 578. *djög* spoon, ladle: 579. *diog* ladle: 580. *djög* to fill a cup, to pledge (a host pledging a guest); 581. *dz'ak* to fill a cup, to pledge (a guest pledging the host): 582. *t'ioğ* big ladle: 583. *tsjog* to fill a cup and drink it: 584. *tsjog* (to ladle out wine:) libation sacrifice.

585. *t'jak* to drive, expel: 586. *d'jok* to drive, expel.

587. *tjæg* islet: 588. *tog* island: 589, 590. *tjög* islet.

591. *t'iek* far off, distant: 592. *djog* far off, distant: 593. *d'ioğ* far off, distant.

594. *djök* to sell: 595. *d'ioğ* to buy grain: 596. *djuk* to trade, to deal: 597. *djæg* market, fair: 598. *djög* to sell, to buy: 599. *t'ioğ* to sell grain.

600. *tjög* broom: 601, 602. *sog* to sweep.

603. *d'æng* to jump: 604. *djung* to jump, leap: 605. *djok* to jump, skip, leap: 606. *d'ioğ* to jump, skip, leap: 607. *t'ioğ* to leap, skip.

608. *tjög* grasshopper: 609. *d'jög* insects, vermin.

610. *ts'jeng* to request, pray, seek: 611. *tjök* to pray to: 612, 613. *tjög* imprecation: 614. *tog* to pray: 615. *t'og* to ask for, to seek.

616. *d'jök* a roller, a pivot: 617. *tjög* a circle, all round: 618. *tjög* a circle, a revolution, a year.

619. *t'jæg* to laugh: 620. *tög* to deride, to ridicule: 621. *dz'jog* to ridicule, to scold: 622. *şog* to laugh.

623. *t'jæg* ugly: 624. *t'jög* ugly.

625. *t'ung* stupid: 626. *t'ung* stupid: 627. *tjög* stupid: 628. *t'jæg* stupid: 629. *t'jæg* stupid.

630. *djög* this: 631. *tjæg* him, her, it: 632. *tsjæg* this: 633. *şjög* this.

634. *t'jök* to begin: 635. *d'ioğ* to begin: 636. *şjæg* to begin.

637. *t'ak* bag, sack: 638. *d'æg* bag, sack.

639. *şiang* hack of a car, box: 640. *şjæg* square box.

641. *tiek* (a *vis-à-vis*, a partner, an equal:) principal wife: 642. *d'iek* (a *vis-à-vis*:) adversary, opponent, enemy: 643. *djög* (a *vis-à-vis*:) adversary, opponent, enemy; to answer back.

644. *tsjæg* dregs: 645. *tsög* dregs.

646. *d'æg* to blacken the eyebrows: 647. *tsjæg* black: 648. *şak* 1st day of the moon; North (the fundamental sense, therefore, must be 'dark'): 649. *tsög* early morning: 650. *dz'og* black.

651. *d'og* rice: 652. *tsjak* millet: 653. *şjuk* millet, grain (generally).

654. *tsæg* twice, a second time: 655. *şung* two, a pair, both.

656. *t'jæg* shame: 657. *şjög* shame.

658. *djök* forced labour, expedition: 659. *diog* forced labour, expedition.

660. *djak* great: 661. *djök* great.

662. *d'jak*, *d'jæg* to shoot with bow and arrow: 663. *djak* arrow with string attached; 664. *tsæng* arrow with string attached.

665. *d'jök* to scratch: 666. *tsög* nail, claw: 667. *tsög* to scratch; a flea: 668. *sog* to scratch with the nails: 669. *sog* to rub a horse.

670. *tjög* arm, elbow: 671. *dzjög* sleeve: 672. *şjög* hand, arm.

673. *dz'ak* yesterday: 674. *şjak* yesterday, previously, long ago.

675. *tsæk* then, thereupon: 676. *tsjak* then, thereupon.

677. *tjog* to call, beckon: 678. *d'ioğ* to call, summon: 679. *dzjög* to call, allure, entice.

680. *tjæng* to verify, prove, testify, evidence: 681. *tjæng* to verify, prove, testify, evidence.

682. *djök* who, which: 683. *d'jög* who?

684. *d'æk* alone, single: 685. *d'uk* alone, single.

686. *d'ung* to move: 687. *d'ung* moved, excited: 688. *d'ioğ* to shake: 689. *diog* to shake.

690. *t'jeng* to run, gallop: 691. *d'og* to run, to run away: 692. *d'og* a run-away, a bandit: 693. *d'jog* to run, hasten.



## C. Words of type N-NG

1 溯 2 理 3 壤 4 農 5 諾 6 若 7 聆 8 耳 9 擡  
 10 掠 11 擗 12 撈 13 撩 14 量 15 料 16 朗 17 亮 18 烙 19 琮  
 20 瞭 21 燎 22 力 23 勞 24 輻 25 輳 26 輟 27 輳 28 輟 29  
 樂 30 祿 31 苓 32 籠 33 麓 34 撓 35 擾 36 繞 37 滾 38 零  
 39 漚 40 漉 41 露 42 雷 43 溜 44 圖 45 牢 46 戮 47 劉 48  
 繞 49 扭 50 紐 51 縲 52 樓 53 菱 54 能 55 耐 56 曩 57 仍  
 58 良 59 令 60 靈 61 陵 62 醜 63 涼 64 冷 65 凌 66 膿  
 67 濃 68 醜 69 浪 70 漉 71 流 72 乃 73 而

1. *lak* veins in stone and mineral: 2. *liəg* veins in stone and mineral.  
 3. *ɲiəŋ* fertile and arable soil, worked soil: 4. *nóng* to work the soil, agriculture.  
 5. *nāk* (like that, thus, *sic.*) yes, to say yes: 6. *ɲiak* to resemble, like, as, according to.  
 7. *liəŋ* to hear: 8. *ɲiəg* ear.  
 9. *ɲiəŋ* to grasp, seize, snatch: 10. *gliəŋ*, *gliək* to grasp, seize, snatch: 11. *nək* to grasp, seize: 12. *log* to seize, take out: 13. *liog* to grasp, take.  
 14. *liəŋ* to measure: 15. *liog* to measure.  
 16. *lāŋ* bright, clear: 17. *gliəŋ* bright, clear: 18. *glāk* to burn: 19. *liok* lustre, brilliancy (of gems): 20. *liog* bright, clear (said of eyes): 21. *liog* torch, to blaze, burn, shine, bright.  
 22. *liək* force, strength: 23. *log* to use force, to toil.  
 24. *liəŋ* a car (the explanation »a pair» i. e. two-wheeled car is a folk etymology, as shown by the existence of cognate words »car»): 25. *gliəŋ* a car where there is place to lie down: 26. *liəŋ* to crush under car wheels: 27. *liok* to crush under car wheels: 28. *glāg* chariot.  
 29. *lāk* joy: 30. *luk* happiness.  
 31. *liəŋ* basket: 32. *lung* basket: 33. *luk* basket.  
 34. *nōg* to disturb, to trouble: 35. *ɲiog* to disturb, to trouble: 36. *niog* to trouble, molest.  
 37. *ɲiəŋ* to drip, dew: 38. *liəŋ* dropping rain, to drip: 39. *liək* to drip, soak: 40. *luk* to drip, soak: 41. *glāg* dew: 42. *liōg* opening in the roof (of the ancient house) for allowing rain water to drip down; to drip: 43. *liōg* to drip.  
 44. *liəŋ* prison: 45. *lōg* a fold, enclosure, prison.  
 46. *gliōk* to kill: 47. *liōg* to kill, slay.  
 48. *ɲiog* to tie, wind round: 49. *ɲiōg* to tie, twist: 50. *ɲiōg* to tie, a knot: 51. *liog* to tie, twist, coil.  
 52. *ləŋ* square piece of wood, angle, angular, edge, corner, lozenge-shaped: 53. *liəŋ* (the lozenge-shaped fruit:) water-chestnut.  
 54. *nəŋ* be able to, can: 55. *nəg* capable of, to endure, bear (55. sometimes used for 54., e. g. in Li ki: Li yün).

56. *nəŋ* of old, anciently: 57. *ɲiəŋ* as of old, as before.  
 58. *liəŋ* good: 59. *liəŋg* good: 60. *liəŋ* wonderful, divine.  
 61. *liəŋ* mound, tumulus: 62. *liəŋg* mound, tumulus.  
 63. *gliəŋ* cold: 64. *liəŋ* cold (the dialects point to an Arch. *lěŋ*): 65. *liəŋ* ice.  
 66. *nōŋ* (thick fluid:) pus, matter: 67. *ɲiəŋg* thick, rich (fluid): 68. *ɲiəŋg* strong, rich (wine).  
 69. *lāŋ* waves: 70. *log* torrent, flood: 71. *liōg* to flow.  
 72. *nəg* then, thereupon: 73. *ɲiəg* then, thereupon).<sup>11</sup>

## D. Words of type P-NG

1 棚 2 幃 3 蓬 4 覆 5 幙 6 盲 7 虱 8 冥 9 瞑 10 傍 11 蒙  
 12 朦 13 夢 14 幪 15 暮 16 幪 17 頃 18 幕 19 膜 20 眈 21 昌 22 幅  
 23 霧 24 默 25 墨 26 黑 27 煤 28 溟 29 濛 30 第 31 旁 32  
 傍 33 勝 34 傍 35 蚌 36 扇 37 蚌 38 井 39 竝 40 朋 41 副 42 陪  
 43 明 44 望 45 亨 46 炳 47 病 48 烽 49 爆 50 曝 51 卜 52 暴 53  
 炮 54 庖 55 燦 56 烽 57 白 58 帛 59 伯 60 目 61 眸 62 兵  
 63 鋒 64 蜂 65 峯 66 剝 67 芒 68 鉅 69 蟲 70 萌 71 苗 72 烏 73  
 雀 74 毛 75 旄 76 芑 77 博 78 丕 79 茫 80 滂 81 龐 82 苾 83  
 防 84 屏 85 鞞 86 邦 87 封 88 障 89 擗 90 棒 91 擗 92 柏 93 擗  
 94 撲 95 秉 96 柄 97 捧 98 奉 99 俸 100 擗 101 擗 102 擗 103 擗  
 104 擗 105 擗 106 關 107 派 108 剖 109 瓶 110 缶 111 甌 112 杯 113 鱗  
 114 紡 115 縛 116 保 117 包 118 袍 119 袍 120 經 121 北 122 背 123 背  
 124 信 125 負 126 脩 127 干 128 朽 129 燻 130 碑 131 鈞 132 崩 133 匄 134  
 踏 135 伏 136 服 137 仆 138 馱 139 馱 140 馱 141 馱 142 馱 143 馱 144  
 馱 145 馱 146 馱 147 馱 148 馱 149 馱 150 馱 151 馱

1. *b'āŋ* awning, shelter, shed: 2. *pěŋg* shelter, awning: 3. *b'ung* mat cover, awning, sail: 4. *p'iōk* to cover: 5. *b'iuk* cover for the head, head-towel, turban, cap: 6. *mǎŋ* blind: 7. *mǎŋ* (»the stupid ones», *yü min.*) the common people: 8. *miəŋ* (sun covered:) darkness, dark: 9. *miəŋ* to shut the eyes, bad sight: 10. *məŋg* darkened, stupid, ignorant: 11. *mung* to cover; ignorant: 12. *mung* a film over the pupil, blind, ignorant: 13. *mung* (shut eyes:) to sleep, dream: 14. *mung* a cover, head-towel: 15. *miek* to cover with a towel: 16. *miek* to cover, a veil: 17. *miek* to cover with plaster: 18. *māg* (a cover:) veil, curtain: 19. *māg* membrane covering a muscle: 20. *mog* dim-sighted: 21. *mōg* to cover, veil, cap: 22. *mōg* a cap: 23. *müŋg* fog, mist.  
 24. *mək* black, dark, silent: 25. *mək* ink (made from soot): 26. *ɣmək* black: 27. *mwəg* soot-black, ink; coal.  
 28. *miəŋg* drizzle: 29. *mung*: drizzle.



30. *pwāng* (be at the side of:) to assist, help: 31, 32. *b'wāng* side, beside: 33. *b'wāng* sides of the body, loins: 34. *b'wāng* to walk beside, accompany: 35. *b'wāng* (»side-walker») crab: 36. *b'iwang* side-room: 37. *b'āng* crab: 38. *piēng* side by side, two together, abreast: 39. *b'ieŋg* side by side, two together, abreast: 40. *b'əng* companion, associate, friend; a pair: 41. *p'jūk* an associate, assistant: 42. *b'wəg* (to be at the side of:) to accompany, to second, aid.

43. *mjǎng* bright, luminous, clear: 44. *mjwang* full moon.

45. *p'āng* to boil, fry: 46. *piǎng* to blaze, flame, luminous: 47. *b'jǎng* (fever:) sickness: 48. *p'jung* to burn, to blaze, beacon: 49. *b'ok* to burn: 50. *b'ok* to dry in the sun: 51. *puk* to burn tortoise shell for divination: 52. *b'og* scorching heat: 53. *b'og* to fry: 54. *b'og* kitchen: 55. *piog* leaping flames: 56. *b'jog* to steam, to heat.

57. *b'āk* white: 58. *b'āk* white silk: 59. *pāk* (the white one, white-haired:) old man, eldest, eldest brother etc.

60. *mjōk* eye: 61. *mjōg* pupil of the eye.

62. *piǎng* a pointed weapon: 63. *p'jung* point of a weapon, sharp point: 64. *p'jung* wasp, bee, hornet: 65. *p'jung* point of a mountain, peak: 66. *p'jog* sharp point, to pierce: 67. *māng* point of grass, awn: 68. *mjwang* sharp point of a weapon: 69. *māng* gadfly: 70. *māng* sprouts: 71. *mjog* sprouts.

72. *piog* long hair; 73. *mǔng* long-haired: 74. *mog* hair: 75. *mog* yak's tail used as a flag: 76. *mog* grass covering the earth (like hair), herbs, edible herbs etc.

77. *pāk* wide, vast: 78. *p'jog* wide, vast, great; 79, 80. *māng* wide, vast: 81. *mǔng* wide, vast: 82. *mjog* vast as sea.

83. *b'iwang* rampart, embankment, to guard, protect: 84. *piēng* to screen, protect, *b'ieŋg* protecting wall, screen: 85. *b'ieŋg* screened carriage: 86. *pǔng* (walled territory:) state, country: 87. *piung* frontier wall, boundary, fief: 88. *b'jēg* parapet, wall.

89. *b'āng* to beat, fustigate: 90. *b'ūng* cudgel, to beat: 91. *pāk* to beat: 92. *p'āk* to beat: 93. *b'iek* to beat the breast: 94. *p'uk* to beat.

95. *piǎng* to grasp, hold: 96. *piǎng* a handle: 97. *p'jung* to hold with both hands: 98. *b'jung* to hold in both hands, receive, present: 99. *b'jung* (what is received:) salary: 100. *pāk* to grasp: 101, 102. *b'ūg* to grasp; 103. *māk* to take in the hand, grasp, feel.

104. *pēk* to cleave, split: 105. *p'iek* to cleave, split: 106. *b'iek* to open: 107. *p'ēg* (to cleave:) to bifurcate, to branch (flowing water): 108. *p'ūg* to cleave, split.

109. *b'ieŋg* jug, vase, bottle: 110. *piōg* earthenware jar, jug, pot, bottle: 111. *p'ūg* jar, pot: 112. *pwəg* cup. (The Fang yen defines 110. by 111. and 109. as a small 111.).

113. *peng* to tie, bind, wrap, swaddle: 114. *p'iwang* to bind, twist, spin: 115. *b'iwak* to tie, bind: 116. *pōg* (to swaddle:) to protect, guard (the same char. enlarged by rad. 145 means 'swaddling clothes'): 117. *pōg* to wrap: 118. *b'og* (a wrapper:) a long robe: 119. *b'og* to enfold, embrace; 120. *māk* to bind, a cord.

121. *pāk* (back side:) North: 122. *pwəg* back; behind: 123, 124. *b'wəg* to turn the back, turn round: 125. *b'jūg* to carry on the back.

126. *pāng* flat board, tablet: 127. *b'jāng* level, flat, even: 128. *b'jāng* to plane: 129. *b'ēg* flat board, tablet: 130. *piēg* stone tablet, stele: 131. *b'og* to plane.

132. *pəng* mountain collapsing, land-slip, to collapse: 133, 134. *b'wək* to fall to the ground, fall prostrate: 135. *b'jūk* fall to the ground, fall prostrate: 136. *b'jūk* to throw down, subdue, throw oneself down, submit: 137. *p'jug* to fall prostrate.

138, 139. *piog* whirl-wind: 140, 141. *p'jog* whirl-wind: 142. *b'jog* whirl-wind (these readings in the Ts'ie yün ms. from Tun-huang, Stein coll., London).

143. *māng* toad: 144. *māg* frog, toad.

145. *p'wəg* foetus, embryo: 146. *p'og* placenta.

147. *pōk* streaked horse, streaked: 148. *pōg* (striped animal:) leopard: 149. *piog* stripes of a tiger, stripes, streaked.

150. *p'og* bladder: 151. *b'jog* fish's air bladder.

152 匏 153 瓢 ○ 154 復 155 覆 156 報 ○ 157 步 158 拜 ○ 159 頁 160 葉 161 倅 ○ 162 椶 163 華 164 貌 165 描 ○ 166 芥 167 馥 ○ 168 洒 169 迫 170 逼 ○ 171 板 172 倍 ○ 173 賈 174 賈 175 貿 ○ 176 福 177 富 ○ 178 護 179 煤 180 謀 ○ 181 漂 182 浮 ○ 183 訪 184 聘 ○ 185 豐 186 華 187 丰 ○ 188 培

152. *b'og* gourd: 153. *b'jog* gourd (cognate to 150, 151: bladder-shaped?)

154. *b'jōk* to turn, return, go back: 155. *p'jōk* to turn over, capsize: 156. *pōg* (to return:) to give back, requite, recompense, report etc.: 154. *b'jōg* (reverting:) again.

157. *mwek* wheat, barley: 158. *mjōg* barley.

159. *miek* to strive for, to seek: 160. *māg* to long for, to seek: 161. *mjōg* to covet.

162. *māg* model, pattern: 163. *māg* follow a pattern: 164. *mōg* form, shape: 165. *mjog* to trace according to a pattern, to depict.

166. *p'iwang* fragrant: 167. *b'jōk* fragrant.

168. *pāk* to press: 169. *pāk* to press: 170. *piək* to press.

171. *piōk* double: 172. *b'wəg* double.

173. *mēg* to buy: 174. *mēg* to sell: 175. *mug* to buy and sell, trade.

176. *piūk* happiness, prosperity: 177. *piūg* wealth.

178. *māg* to scheme, to plan: 179. *mwəg* (schemer, planner:) a marriage go-between: 180. *mjūg* to scheme, to plan.

181. *p'jog* to float: 182. *b'jōg* to float.

183. *p'iwang* to enquire: 184. *p'jēng* to enquire.

185. *p'jōng* luxuriant, rich, ample, fine: 186. *pung* luxuriant, rich (growth): 187. *p'jung* luxuriant, fine.

188. *b'ūg* a small mound: 188. *b'wəg* to earth up a plant (make a small mound around).



## E. Words of type K-N

1 軒	2 九	3 還	4 圍	5 寰	6 盤	7 環	8 卷	9 圍	10 捲	11 拳
12 圍	13 員	14 環	15 圍	16 纒	17 鉉	18 困	19 袞	20 輓	21 圍	22 軍
23 運	24 暈	25 衛	26 回	27 涸	28 歸	29 圍	30 尗	31 盃	32 軒	33 乾
34 旱	35 暈	36 燿	37 炫	38 焜	39 渴	40 焯	41 煖	42 煊	43 斫	44 煊
45 煊	46 煊	47 煊	48 煊	49 煊	50 煊	51 煊	52 煊	53 煊	54 煊	55 煊
56 冠	57 秦	58 綵	59 朝	60 繫	61 絃	62 弦	63 緄	64 緄	65 緄	66 括
67 結	68 髻	69 繼	70 絹	71 紉	72 縞	73 裏	74 緯	75 緇	76 緇	77 訖
78 居	79 季	80 既	81 醫	82 迄	83 奸	84 姦	85 幻	86 猜	87 講	88 捨
89 諷	90 質	91 罵	92 駭	93 快	94 遠	95 越	96 遠	97 曷	98 曷	99 曷
100 豈	101 安	102 焉	103 寬	104 闊	105 懇	106 悃	107 慨	108 乞	109 乞	110 乞
111 祈	112 挺	113 結	114 翠	115 搗	116 搗	117 獻	118 齷	119 齷	120 齷	121 齷
122 齷	123 齷	124 齷	125 齷	126 齷	127 齷	128 齷	129 齷	130 齷	131 齷	132 齷
133 官	134 宦	135 君	136 尹	137 看	138 見	139 見	140 現	141 觀	142 晉	143 觀
144 觀	145 頤	146 睇	147 眼	148 云	149 曰	150 話	151 謂	152 言	153 諺	154 諺
155 怒	156 怒	157 怒	158 怒	159 怒	160 怒	161 怒	162 怒	163 怒	164 怒	165 怒
166 挽	167 堅	168 盤	169 澹	170 宛	171 宛	172 宛	173 宛	174 宛	175 宛	176 宛

1. *kwân* a crank, to turn round, to wind: 2. *g'wân* rolling object, ball: 3. *g'wan* revolve, return: 4. *g'wan* revolve, surround: 5. *g'wan* surrounding wall: 6. *g'wan* to wind the hair into a knot: 7. *g'wan* a ring, to surround: 8. *k'jwan* a roll, a scroll: 9. *g'jwan* enclosure, *k'jwan* circle, encircle: 10. *k'jwan* round wooden bowl: 8. *g'jwan* curved: 11. *g'jwân* (hand made round:) fist: 12. *giwan* round: 13. *giwan*, *giwân* jade ring: 14. *giwân* (enclosure:) garden, park: 15. *g'iwēn* to encircle, wind round, bind: 16. *g'iwēn* tripod handle rings: 17. *k'wân* surrounded, enclosed, pressed: 18. *kwân* dress embroidered with curled dragons: 19. *kwân* to revolve smoothly (a wheel): 20. *k'jwēn* round granary: 21. *k'jwēn* troupe, army (escorting footmen surrounding the war chariot; so the character): 22. *giwân* to revolve: 23. *giwân* a halo round the sun or the moon: 24. *giwad* (to surround:) to escort, guard: 25. *g'wār* to revolve, a circuit, come back, return, a turn: 26. *g'wār* eddy: 27. *k'jwār* to return: 28. *giwār* to surround; 29. *ngwân* to cut round (cut off corners so as to make a thing round); 30. *wân* round bowl: 31. *wât* a crank, to turn round, to wind.

32. *kân* dry, *g'jan* (sunshine:) Heaven: 33. *g'ân* drought, dry: 34. *g'ian* dawn, beginning sunshine: 35. *kwân* to make fire by a burning mirror: 36. *g'iwēn* light, dazzling: 37. *g'wân* light, fire, flames: 38. *k'ât* (dry:) thirsty: 39. *giwār* blazing, red as fire; 40. *χân* dry, hot, parched: 41. *χiwân* to dry in the sun, heat, light: 42. *χjân* dawn, beginning sun-shine: 43. *χjân* brightness, heat: 44. *χjwar* to make fire by a burning mirror: 45. *χjār* dawn, to dry in the sun: 46. *χwār*, *χwâr*, fire: 47.

*χiwār*, *χjwar*, *χwâr* fire, to blaze, burn: 48. *χiwār* bright, blazing; 49. *wân* warm: 50. *jât* to suffer from heat: 51. *wār* fire in a brazier.

52. *k'jan* to attach: 53. *kwân* band holding together the hair (Shuo wen), cap: 54. *k'jwân* string which ties up a sleeve: 55. *k'jwân* to attach: 56. *g'jwan* bindings of a harness: 57. *k'jēn* to tie tightly: 58. *g'ien* string: 59. *g'ien* bow string: 60. *kwân* cord, girdle: 61, 62. *k'wân* to tie together: 63. *kwât* to bind: 64. *kiet* to tie, a knot: 65. *kied* top-knot of hair: 66. *kied* (»anknüpfen«:) to connect, continue: 67. *kwät* to tie: 68. *g'wät* tassel: 69. *giwet* well-rope: 70. *kwâr* to bind: 71. *giwār* wool thread.

72. *g'jat* to exhaust, finish: 73. *k'jat* to finish, end, stop, reach to: 74. *ked* to end, finish, reach to: 75. *k'jed* end of a season, last: 76. *k'jad* to end, finished: 77. *k'jad* to end, finish, reach to; 78. *χjät* to reach to.

79. *kân* fornication, to deceive: 80. *kan* fornication, to deceive: 81. *g'wân* to cheat, trick, magic: 82. *g'wet* deceitful: 83. *kiwat* deceitful: 84. *kwäd* deceitful; 85. *χiwân* deceitful; 86. *ngan* counterfeit, false: 87. *ngjēn* deceitful.

88. *kiwat* swift horse: 89. *k'wad* swift, quick.

90. *giwân* distant, go away: 91. *giwät* pass away, pass over, transgress: 92. *giwār* distant, pass away, transgress.

93. *g'ât* how, what, why?: 94. *k'jār* how?: 95. *'ân* how?: 96. *'jan* how?

97. *k'wân* broad, wide, magnanimous: 98. *k'wät* broad, wide, magnanimous.

99. *k'ân* intense feelings, earnestly: 100. *k'wân* intense feelings, earnestly: 101. *käd* intense feelings, suppressed feelings.

102. *k'jät* to beg: 103. *käd* to beg: 104. *g'jār* to beg, to pray.

105. *g'jan* to lift: 106. *kat* to tuck up the skirt: 107. *k'iat* to lift: 108. *kjät*, *g'jat*, *k'jad* to lift: 109. *χjân* to lift: 110. *χjân* to lift up and present.

111. *k'ân* to gnaw: 112. *g'wät* to gnaw: 113. *ngiat* to gnaw.

114. *k'wân* a hole: 115. *kiwan* a dug ditch, canal: 116. *k'jwät* a hole in a wall, opening, gate: 117. *g'jwät* to make a hole, *g'jwät* to dig, excavate: 118. *g'iwet* hole, pit, cave: 119. *k'wät* hole, pit, cave: 120. *kwät* to dig, make a pit: 121. *wân* to scoop out, dig: 122. *wät* to dig, excavate: 123. *jwät* to dig out (e. g. the eyes of a person).

124. *kwân* officer, official: 125. *g'wan* officer, official: 126. *k'jwân* chief, prince: 127. *giwēn* officer, governor.

128. *k'ân* to look, see: 129. *kian* to look, see: 130, 131, *g'ian* become visible, appear: 132. *kwân* to look, regard: 133. *k'jwan* to regard, love etc.: 134. *g'jân* (to be seen, appear:) have audience; 135. *χian* visible, manifest, display: 136. *χjār* to regard; 137. *ngēn* eye.

138. *giwân* to say, to have said: 139. *giwät* to say: 140. *g'wad* talk, speech, words: 141. *giwad* to say; 142. *ngjân* to talk: 143. *ngjan* a saying, proverb; 144. *jât* to tell, report.

145. *jēn* oppressed, anxious, zealous: 146. *jwät* oppressed, anxious: 147. *jwār* awe, to fear: 148. *jwār* awe-inspiring.

149. *kwân* reed, pipe, flute: 150. *g'wân* sedge: 151. *k'wad* reed: 152. *giwār* reed.



153. 'iān bend, bend down: 154, 155. 'wān the wrist: 156. 'wan to bend, curve: 157. 'wan a bend, a bay: 158, 159. 'iwān (bending:) soft, yielding, docile: 160. 'iwān crooked, a wrong: 161. 'iwar to bend down, crooked: 162. 'wər a bay.

163, 164, 165. g'wən confused, turbid: 166. kwət confused, turbid.  
167. giwən a fragrant herb; 168. xiwən fragrant: 169. xiwən onions and other strong-smelling food stuffs: 170. xiwən reeking of liquor: 171. xiwən smoke: 172. g'iwəd fragrant orchid; 173. 'ien smoke.

174. k'iad to stop, rest: 175. xiāt to stop, rest: 176, 177. 'āt to stop, rest.  
178. 'ān peace, tranquillity: 179. 'an peace, tranquillity: 180, 181. 'ian at ease, feast.

182. g'en threshold: 183. k'wən threshold: 184. kiwāt threshold.  
185. g'ān bar, bolt: 186. g'iān bar, bolt: 187. kwan bar, bolt.  
188. g'wan market wall: 189. giwān wall; 190. ngiwān walled-in premises, court-yard; 191. 'iān embankment, dyke: 192. 'iwān (fenced-in area:) park: 193. 'ien dyke, to dam.

163 混	164 涸	165 渾	166 滑	167 芸	168 薰	169 葷	170 醺	171 熏	172 蕙	173
烟	174 愒	175 歇	176 遏	177 闕	178 安	179 晏	180 燕	181 宴	182 限	
183 梱	184 榘	185 閑	186 榘	187 闕	188 闕	189 垣	190 院	191 堦	192 苑	
193 豆	194 閑	195 閑	196 閑	197 閒	198 閑	199 采	200 希	201 稀		
202 壑	203 閑	204 閑	205 啓	206 權	207 勻	208 均	209 鈞	210 計	211 揆	
	212 閑	213 訓	214 困	215 茵	216 隱	217 依	218 隱	219 衣	220 辰	221
222 醫	223 諱	224 艱	225 堅	226 侃	227 悍	228 佃	229 搦	230 健	231	
232 劾	233 偈	234 傑	235 佹	236 活	237 滑	238 滑	239 灌	240 裸	241	
242 澆	243 澆	244 澆	245 澆	246 澆	247 介	248 鎧	249 憫	250 歡	251	
252 欣	253 按	254 印	255 軋	256 抑	257 尉	258 慰	259 苑	260 蕙	261	
262 苑	263 藹	264 表	265 裙	266 氤	267 氲	268 飲	269 餽	270 餽	271	
	271 干	272 杆	273 許	274 稽	275 饑	276 飢	277 餓	278 恨	279 忤	
280 悃	281 怨	282 愠	283 恩	284 愛	285 毀	286 壞	287 咽	288 噎		
289 皆	290 諧	291 摻	292 攀	293 援	294 輟	295 牽	296 縶	297 摻	298 摻	299
300 握	301 刊	302 券	303 虔	304 痕	305 斤	306 剗	307 剗	308 鉞	309 鉞	
310 刷	311 害	312 臆	313 劍	314 剗	315 剗	316 剗	317 契	318 剗	319 剗	320 剗
321 剗	322 近	323 饒	324 饒	325 捐	326 拏	327 棄	328 遺	329 燕	330	
331 餽	332 餽	333 買	334 買							

194. kǎn interstice, interval: 195. g'ān (interval in time:) leisure: 196, 197. kǎn (to peep through a crevice:) to peep, spy; 198. xiēn crevice, interstice, disaccord, feud.

199. xān rare, sparse, few: 200. xiār rare, sparse, few: 201. xiār sparse, thin.

202. k'ān to open up new soil: 203. k'ər to open: 204. k'ər to open: 205. k'ār to open.

206. g'iwān steelyard, to weigh with a steelyard: 207. giwēn equal, even: 208, 209. kiwēn equal, equalize, in balance.

210. kiār to reckon, calculate: 211. g'iwēr to reckon, calculate, measure.

212. g'ān to train, teach, exercise: 213. xiwān to teach.

214. 'iēn to base oneself upon, rely on, because of etc.: 215. 'iēn support, cushion: 216. 'iān to lean upon: 217. 'iār to lean upon, rely upon.

218. 'iān to conceal, hide, cover, screen: 219. 'iār (covering:) clothes: 220. 'iār a screen: 221. 'iār a screen: 222. 'iār cataract over eye; 223. xiwār to conceal, hide, taboo.

224. kēn hard-broken soil, hard, difficult: 225. kiēn hard, firm.

226. k'ān strong-minded, bold, straightforward: 227. g'ān energetic, courageous: 228, 229. g'ān strong, energetic, martial: 230. g'iān strong, robust: 231. k'at energetic: 232, 233. g'iat strong, martial, heroic: 234. g'jēt strong, robust: 235. ngiāt strong, martial.

236. g'wāt moist (as opp. to dry), living, to live etc.: 237. g'wet slippery.

238. kwān (to pour water over:) to wash the hands: 239. kwān to pour water, to water, to wash: 240. kwān to pour out wine, libation: 241, 242. g'wān to wash: 243. kiwēn clean: 244. kiāt clean, to cleanse: 245. kəd to pour water, wash; 246. xwəd to wash the face.

247. kād scales, armour: 248. k'ər armour.

249. g'ān glad, pleased; 250. xwān glad, pleased: 251. xiān glad, pleased.

252. 'ān to press down, lay hand on: 253. 'iēn (to press down:) to seal, a seal: 254. 'at to press down under the wheels, to crush: 255. 'jēt to press down, repress ('jēt as shown by Shī rimes; the same character is also used for a synonymous word 'jək): 256. 'iwət (to press:) to iron linen: 257. 'iwəd to press down, subdue, pacify: 258. 'iwəd to pacify, soothe, to comfort.

259. 'iwān rich vegetation, luxuriant: 260. 'iwān rich vegetation, luxuriant:

261. 'iwāt rich vegetation, luxuriant: 262. 'ād rich vegetation, luxuriant.

263. giwān long robe: 264. g'iwān skirt.

265. 'iēn aura: 266. 'iwān aura.

267. xād spoilt tainted food; 268. 'iād spoilt tainted food: 269. 'jēd spoilt tainted food: 270. 'iwād spoilt tainted food.

271. kǎn shield: 272. g'ān to ward off, protect.

273. k'jēt to investigate, examine: 274. kiār to investigate, examine.

275. g'jen famine: 276. kjer famine: 277. kjer famine.

278. g'ān to hate, angry: 279. ngiāt aversion; 280. 'iwān angry: 281. 'iwān to hate, resentment: 282. 'iwān to hate, resentment.

283. 'ēn love: 284. 'əd love.

285. xiwār to destroy: 286. g'wēr to destroy.

287. 'ien throat, to swallow: 288. 'iet food sticking in the throat, to choke.

289. kēr all: 290. g'er all together, in union, harmony.

291, 292. g'ian to pull out, seize: 293. giwān to pull out, draw, drag, seize: 294. giwān (»pullers») cart shafts: 295. k'ien to haul, drag, lead: 296. k'ien tow-rope, to haul: 297, 298. kiwān to take, pick up; 299. 'at to pull up.



300. *k'ân* to cut: 301. *k'jwân* (a cut notch:) notch, tally, bond, deed: 302. *g'jan* to cut, kill (char. used *kia tsie*): 303. *g'an* (a cut:) scar: 304. *kjan* (cutter:) axe: 305. *kât* to cut: 306. *ket* lance: 307. *kwât* cut off, scrape off: 308. *giwât* halberd: 309. *k'iat* sickle, to cut: 310. *giwât* to incise: 311. *g'ad* (to cut:) to injure: 312. *kwâd* to cut meat to pieces, to mince: 313. *kwâd* cut off: 314. *kwâd*, *kjad* to cut, to wound: 315. *kjwâd* sharp, to cut, to wound: 316, 317. *k'iad* to cut, a notch: 318. *kær*, *ngær* scythe, sharp, to sharpen: 319. *ngwât*, *ngjwât*, *ngwât* to amputate, cut off the feet: 320. *ngiäd* to mow, cut: 321. *ngjäd* to amputate, cut off the nose.

322. *g'jan* close, near: 323. *g'jar* (close quarters:) Royal domain proper: 324. *kjar* near (in the common expression »*ki hu*«).

325. *giwân* to throw away: 326. *giwân* to drop, to lose: 327. *k'jed* to throw away: 328. *giwer* to leave behind, lose.

329. *'ian* swallow: 330. *'at* swallow.

331. *kjan* sinew: 332. *g'jän* ends of a sinew.

333. *kwân* to perforate, pass through: 334. *g'wan* to perforate, pass through.

#### F. Words of type T-N

1 緣 2 絕 3 經 4 紹 5 第 6 維 7 篋 8 續 9 紉 10 綰 11 綫  
 12 紳 13 綫 14 紉 15 割 16 短 17 斷 18 段 19 割 20 膊 21 鉗 22  
 制 23 製 24 荆 25 薙 26 割 27 剪 28 剪 29 打 30 截 31 絕 32 節 33  
 切 34 疊 35 劑 36 檣 37 刪 38 端 39 銳 40 鉗 41 箭 42 錢 43 錫  
 44 笋 45 矢 46 娠 47 產 48 死 49 尸 50 鞞 51 鞞 52 晒 53  
 啞 54 童 55 道 56 信 57 恂 58 閱 59 察 60 親 61 樹 62 襯  
 63 嶂 64 岬 65 崖 66 山 67 峻 68 珍 69 殘 70 散 71 撒  
 72 醜 73 瓚 74 袒 75 顛 76 脫 77 蛻 78 穿 79 鑽 80 墩 81  
 頓 82 堆 83 趁 84 逮 85 至 86 致 87 臻 88 前 89 進 90 晉 91  
 費 92 贖 93 祭 94 贖 95 先 96 出 97 黜 98 津 99 濟 100 吞 101  
 餐 102 喂 103 探 104 掣 105 掇 106 奪 107 篋 108 掇 109 撮 110 齋 111 拈  
 112 跟 113 踮 114 踐 115 踐 116 躄 117 躄 118 順 119 述 120 迨 121 殉  
 122 遵 123 循 124 馴 125 遂 126 珠 127 帥 128 率 129 推 130 搯 131 催  
 132 造 133 突 134 駢 135 駢 136 俊 137 狝 138 迅 139 豚 140 脬 141 逸  
 142 伏 143 恣 144 濞 145 洩 146 泄 147 涕 148 滂 149 泗 150 屯 151 隊  
 152 最 153 萃 154 賑 155 資 156 彗 157 刷 158 慨 159 帥 160 怛 161  
 情 162 怛 163 怛 164 悵 165 悵 166 悵 167 悵 168 悵

1. *djwan* border band (on dress), along the edge, along, sequel, cause: 2. *djwan* silk thread: 3. *d'iet* band of hemp worn on mourning dress: 4. *tjwat*, *tjwad* to tie, fasten, sew; (»anknüpfen«:) connect, continue: 5. *täd* band round the waist, girdle: 6. *djwær* a string, to tie: 7. *tswân* red string, to tie together, compile: 8. *tswân*

(»anknüpfen«:) continue: 9. *dziwân* silk cord, to bind: 10, 11. *sjan* cord, thread: 12. *sjên* band round the waist, girdle: 13, 14. *sjat* to tie, fasten.

15. *twân* to cut to pieces: 16. *twân* (cut short:) short: 17. *twân*, *d'wân* to cut off: 18. *d'wân* (a cut-off piece:) section, piece, slice: 19. *d'wân*, *ijwan* to cut to pieces: 20. *djwan* to mince meat: 21. *tjët* sickle, to cut grain: 22. *ijad* to cut, trim, restrain, regulate: 23. *ijad* to cut: 24. *t'iar* to cut hair: 25. *t'iar* to cut grass: 26. *ts'an* to cut, cut off: 27, 28. *tsjan* to cut, clip: 29. *ts'wân* to cut to pieces: 30. *dz'iat* to cut off: 31. *dz'iwat* to cut off: 32. *tsiet* section: 33. *ts'iet* to cut: 34. *tsjar* to mince: 35. *dz'iar* to cut, to trim: 36. *dz'iar* to cut grain: 37. *san* to cut.

38. *twân* point, tip, end: 39. *djwad* pointed, sharp: 40. *ijwær* pointed, sharp, awl, tip: 41. *tsjan* arrow: 42. *tsjan* a hoe: 43. *tsjwan* to pierce, engrave, incise: 44. *sjwan* (points:) bamboo shoots: 45. *sjær* arrow. (This group may be cognate to the preceding).

46. *ijän*, *sjän* pregnant: 47. *san* to bear.

48. *sjær* to die: 49. *sjær* corpse.

50, 51. *t'jan* to laugh: 52. *sjän* to laugh: 53. *d'iet* to laugh.

54. *tân* true, sincere: 55. *ijên* true, sincere: 56. *sjên* true, believe, faith: 57. *sjwên* true, sincere.

58. *djwat* to examine: 59. *ts'at* to examine.

60. *ts'jên* close, intimate, love etc.: 61. *ts'jên* inner coffin (closest to the body): 62. *ts'jên* inner garments.

63. *tswân* high as a mountain, lofty: 64. *dz'iwät*, *tsjwäd* mountain peak: 65. *ts'wær*, *dz'wær* high, lofty, precipitous: 66. *sän* mountain: 67. *sjwän* high, steep, lofty.

68. *d'ian* to destroy, annihilate: 69. *dz'an* to murder, kill, destroy.

70. *sân* to scatter: 71. *sât* to scatter.

72. *tsän* wine cup: 73. *dz'an* libation cup.

74. *d'an* to strip, doff, take off clothes, lay bare: 75. *tjan* pellicule, to peel off: 76. *t'wät* to peel off, strip, doff, undress; 77. *sjwad* cast off skin (as reptiles).

78. *ijwan* to bore through, to pierce: 79. *tswân* to bore, awl.

80, 81. *twän* mound, heap: 82. *twær* mound, heap.

83. *t'jan* to reach to, catch up: 84. *d'äd* to reach, catch up: 85. *ijäd* to arrive, reach to, go to: 86. *tjäd* to cause to go (causative to 85.); 87. *tsjên* to arrive, reach to.

88. *dz'ian* to advance, precede, before: 89. *tsjên* to advance, bring forward: 90. *tsjên* to advance: 91, 92. *dz'jên* to bring forward as a present, a gift: 93. *tsjad* to bring forward in sacrifice, to sacrifice: 94. *tsjar* to bring forward as a present, a gift; 95. *sian* to advance, precede, before.

96. *ijwat* to come out, bring out, out: 97. *t'jwat* to eliminate, degrade.

98. *tsjên* to ford, a ford: 99. *tsjar* to ford, à ford.

100. *t'wän* to swallow, gulp down, devour: 101. *ts'an* to swallow, gulp down, devour: 102. *ts'wad* to devour (swallow a whole slice of meat in one mouthful).

103. *d'jat* to seize: 104. *ijjat* to grasp, lay hold of: 105. *twät* to pluck, take, grasp: 106. *d'wät* to snatch, carry off, take by force; 107. *ts'wan* to take by force,



grab: 108. *tswən* to pinch, lay hand on: 109. *ts'wāt* to pinch, pick, gather: 110. *ts'iat* to snatch, steal: 111. *dz'wət* to grasp, seize.

112. *tjan* to tread, trample: 113. *djwan* heel, to trample; 114. *dz'jan* to tread, trample: 115. *dz'wən* to kick, trample: 116. *dz'wət* to trample: 117. *ts'iar* to tread, trample.

118. *d'iwən* to follow, obey, accord with: 119. *d'iwət* to follow: 120. *tjwər* to follow after; 121. *dziwən* to follow in death: 122. *tsjwən* to follow, obey, accord with: 123. *dzjwən* to follow, accord with: 124. *dzjwən* (obeying:) docile, tamed (horse): 125. *dzjwəd* to follow; 126. *swən* (follower:) grandson: 127, 128. *sjwət* to follow; (cause to follow:) to lead: 127, 128. *sjwəd* leader.

129. *t'wər* to push; 130. *dz'wər* to push, press, thrust: 131. *ts'wər* to push, to urge.

132. *djwan* quickly, to hasten: 133. *d'wət* quickly, suddenly, rush out: 134. *t'wəd* fleet horse, to run swiftly; 135. *tsjwən* fleet horse: 136. *tsjwən* quick-witted, intelligent, gifted: 137. *ts'wət* abruptly; 138. *sjěn* quick.

139. *d'wən* pig: 140. *t'wət* pork fat.

141, 142. *djět* to let loose, escape, relieve, leisure; 143. *tsjar* to let loose, unrestrained, licentious; 144. *sjat* to let out water, leak, disperse: 145. *sjat* to let out water, leak, relieve, disperse; *zjad* to disperse: 146. *zjad* to let out water, let loose, relieve, leisure.

147. *t'iar* dripping from the eye, tears: 148. *t'iar*, *djar* dripping from the nose, nasal mucus; 149. *sjəd* nasal mucus.

150. *d'wən* to collect, to mass; a group of soldiers, a camp, to camp: 151. *d'wəd* a group of soldiers, a regiment: 152. *dz'wəd* to collect, to assemble, accumulate: 153. *dz'iwəd* to collect, numerous, dense, thicket.

154. *hjan* property; 155. *tsjar* property.

156. *dzjwad* broom; 157. *sjwat* to brush, to scrape clean: 158. *sjwad*, *sjwat* towel, kerchief: 159. *sjwat* towel, kerchief.

160. *tân* grieved, distressed: 161. *d'wân* grieved, distressed: 162. *d'wən* grieved, sad: 163. *tât* grieved, distressed: 164. *tjwat* grieved, sad: 165. *hjar* sad, anxious; 166. *ts'wət*, *dz'iwəd* grieved, sad: 167. *ts'iar* grieved, distressed; 168. *sjwět* pained, grieved, to pity.

169 統 170 前 ○ 171 戰 172 鋸 173 頓 174 換 175 捷 176 扶 177 執 178 抵 179  
 180 推 181 確 182 桂 183 椎 184 確 ○ 185 攤 186 誕 187 闌 188 挺 189 延  
 190 筵 191 演 192 陳 193 陣 194 引 195 示 196 申 197 伸 198 肆 ○ 199 躡 200  
 201 跌 202 躡 203 躡 ○ 204 腦 205 臂 206 腿 ○ 207 輝 208 輝 209 前 210  
 211 鑿 212 饗 213 饗 214 煖 215 燧 ○ 216 款 217 諄 ○ 218 炭 219 杉 220  
 221 鬚 ○ 222 田 223 畛 ○ 224 銓 225 付 226 寸 227 揣 228 算 ○ 229 獸 230 顫  
 231 振 232 震 233 電 ○ 234 灌 235 凌 236 潛 237 邃 238 秩 239 第 240 第  
 241 梯 242 次 ○ 243 際 244 輟 245 竣 246 卒 ○ 247 撤 248 逝 249 逝 250  
 251 還 ○ 252 歡 253 碎 ○ 254 績 255 綴 ○ 256 賤 257 仇 258 肩 259 細 ○ 259

260 彈 261 辰 262 輟 263 纏 264 躍 265 遭 266 團 267 搏 268 轉 269 傳 270 棟 270  
 271 紛 272 旋 273 聰 274 漩 275 蛟 276 璿 277 徇 278 自 279 巡 280 晬 281 宣 281  
 282 躡 283 歲 ○ 284 坦 285 壇 286 埠 ○ 287 咒 288 屏 ○ 289 迭 290 替 ○ 290  
 291 準 292 水 ○ 293 大 294 大 295 蟬 296 蝶 297 蛩 ○ 298 單 299 禪 300  
 301 但 302 禮 303 擅 304 專 ○ 305 滿 306 汎 307 洗 308 洒 ○ 309 損 310 衰 ○  
 311 旦 312 晨 313 曠 ○ 314 填 315 瑣 316 空 ○ 317 達 318 徹 ○ 319 丹 319  
 320 旂 321 縉 322 苗 323 績 324 紫 ○ 325 齊 326 妻 327 儕 ○ 328 術 329 隧 ○  
 330 遁 331 遊 332 退 333 遠 334 遜 ○ 335 鮮 336 新 ○ 337 折 338 脍 339 碎  
 ○ 340 舌 341 警 342 說 ○ 343 陸 344 隕 ○ 345 鐵 346 鑄 ○ 347 鈇 348 桎  
 ○ 349 瘡 350 疾 351 瘡 352 瘡 ○ 353 盡 ○ 354 軼 ○

169. *d'jět* to sew: 170. *tjar* to sew, embroider.

171. *hjan* to fight, battle: 172. *twän* to hammer, to forge: 173. *twən* to beat the head against the floor: 174. *d'ien* to beat, to drum: 175. *t'ät* to beat, flog: 176. *t'jět* to beat, flog: 177. *tjar* to butt, resist: 178. *tjar* to knock against, resist: 179. *twər* to throw: 180. *twər* pestle: 181, 182. *hjar* to beat: 183. *d'iwər* to beat, hammer, pestle.

185. *t'än* to extend, spread: 186. *d'än* to extend, enlarge, large, exaggerate: 187. *t'jan* to enlarge, open out: 188. *t'jan* drawn out, long: 189. *djan* to extend, spread out, prolong etc.: 190. *djan* (what is spread out:) mat: 191. *djan* to expand, extend: 192. *d'jën* to spread out in a row, arrange: 193. *d'jën* a troupe spread out in a row, array: 194. *djën* to draw out, stretch; lead etc.: 195. *djar* (to spread out:) make known, exhibit, proclaim, announcement, presage; 196. *sjën* to extend, expand, make known, repeat etc.: 197. *sjën* to extend, stretch out: 198. *sjar* to extend, spread out, display etc.

199. *tien* to stumble: 200. *d'iet* to stumble: 201. *t'ät*, 202, 203. *tjar* to stumble.

204. *djwan* calf of the leg: 205. *d'wən* rump, buttocks: 206. *t'wər* leg, thigh, ham.

207. *t'jan* to burn, to cook: 208. *t'wən* colour of fire, *d'wən* torch for burning divination shell; 209. *tsjan* to roast, fry: 210. *ts'wän* to make fire, burn, cook: 211, 212. *dz'wan* cooked food: 213. *tsjwən* fire-prepared, cooked food: 214. *tswən*, *tsiwən*, *ts'wət* to make fire, burn: 215. *dzjwəd* to ignite, draw fire.

216. *twən* firm, solid: 217. *hjarwən* (to make solid:) inculcate.

218. *t'än* coal: 219. *hjan* black clothes: 220. *hjen* black hair.

221. *d'ien* cultivated field: 222. *hjan* raised borders of the fields.

223. *ts'jwan*: 224. *ts'wən* to calculate, measure: 225. *ts'wən* inch: 226. *ts'jwar* to measure, estimate: 227. *swän* to calculate, estimate, reckon.

228, 229. *hjan* to tremble, shiver, shake: 230. *hjan* to shake: 231. *hjan* shock of thunder, shake: 232. *d'ien* (vibration in atmosphere:) lightning, thunder.

233. *ts'wər* deep: 234, 235. *sjwən* deep: 236. *sjwəd* deep.

237. *d'jět* order, series, degree, rank: 238. *d'iar* order, series, sequence, degree: 239. *d'iar* (the next one, the second as opp. to the first:) younger brother: 240. *d'iar*



younger sister: 241. *t'iar* steps (in sequence), stairs: 242. *ts'iar* order, sequence, the next one, the second.

243. *t'jad* to stop, finish (Ch'u dialect): 244. *tjwat* to stop, finish: 245. *ts'jwən* to stop, finish: 246. *tsjwət* to stop, finish, die.

247. *t'jat*, *d'jat* to remove: 248. *đjad* to go away, pass away, die: 249. *d'iad* to go away: 250. *ts'ian* 'to go away, remove'.

251. *tjwat* to drink: 252. *tsjwəd* drunk.

253. *tjěn* fine and tight textile: 254. *d'jěd* fine and tight textile.

255. *dz'jan* petty, cheap, mean: 256. *ts'iar* small, petty: 257. *sjat* small, trifling, petty: 258. *sjar* small, fine, thin.

259. *d'an* bullet, to shoot with bullet: 260. *tjan* to unroll, open out, turn round: 261. *tjan* to turn round: 262. *d'jan* to wind round, wrap up: 263. *d'jan* to go round, revolution of a celestial body, path etc.: 264. *d'jan* to turn round (Ch'u dialect): 265. *d'wán* round: 266. *d'wán* to roll round: 267. *tjwan* to revolve, turn round: 268. *d'jwan* (to circulate:) to hand over from one to another, transmit: 269. *d'jwan* round spars, rafters (round, see Tso chuan, Huan 14th year, comm.): 270. *tjən* to twist, revolve; 271. *dziwan* to turn round, revolve: 272. *dziwan* whirl-wind: 273. *dziwan* circling water: 274. *dziwan* snail: 275. *dziwan* sphere: 276. *dziwěn* all round: 277. *dziwěn* a cycle of 10 days: 278. *dziwən* to go round, patrol: 279. *tswád* (a complete cycle:) a complete year: 280. *sjwan* to revolve, go everywhere, to pass round, circulate, proclaim: 281. *sjan* to whirl, pirouette: 282. *sjwad* a cycle, a year.

283. *t'an* level, even, flat: 284. *d'an* altar: 285. *đjan* cleared (levelled, flat) open area (for sacrifices).

286. *dzjar* rhinoceros: 287. *sjar* rhinoceros.

288. *d'iet* (to substitute one for another:) to alternate, change: 289. *t'iad* to substitute, change, instead of.

290. *tjwən* a water level: 291. *sjwər* water.

292. *d'ád* great: 293, 294. *t'ád* great.

295. *đjan* cicada; 296. *dz'jěn* small cicada: 297. *tsat* small cicada.

298. *tán* single, alone, only: 299. *tán* single, unlined dress: 300. *d'an* single, alone, only: 301. *tjan* single (not double, e. g. mat): 302. *đjan* to act alone, on one's own responsibility, dictatorial: 303. *tjwan* single, alone, special, particular.

304. *tsjan* to wash: 305. *sjěn* to throw water over, sprinkle: 306. *sjan* to wash the feet: 306, 307. *sjar* to wash: 307. *ser* to throw water over, sprinkle.

308. *swən* to diminish: 309. *sjwər* to diminish.

310. *tán* dawn, morning: 311. *đjan*, *d'jən* dawn, morning: 312. *t'wən* sun just rising.

313. *d'ien* to block, fill up, stop up: 314. *t'ien*, *tjěn* ear-stopper: 315. *tjět*, *tiet* to block, fill up, stop up.

316. *d'át* to penetrate, pass through, communicate, everywhere: 317. *d'jat*, *t'jat* to penetrate, pass through, communicate, everywhere.

318. *tán* cinnabar, red: 319. *tjan* red banner: 320. *tsjěn* light red silk, red: 321. *ts'ien* Rubia, red-colouring stuff: 322. *ts'ien* red-coloured silk: 323. *tsjar* purple silk, purple.

324. *dz'iar* uniform, equal, even: 325. *ts'iar* wife of first rank (equal, mate): 326. *dz'er* group of equals, category, class, company.

327. *d'iwət* road, way; method etc.: 328. *dziwəd* road, way; tunnel.

329, 330. *d'wən* to draw back, retire, skulk, flee: 331. *t'wər* to draw back, withdraw, retire; 332. *ts'iwən* to draw back, shrink: 333. *swən* to recede, give way, yield.

334. *sjan* fresh, new: 335. *sjěn* new.

336. *tjat* to break, snap, *d'jat* fracture: 337. *ts'iwəd* easy to break, brittle: 338. *swəd* to break into pieces, fragments.

339. *d'jat* tongue: 340. *đjad* a speech, pronouncement, declaration: 341. *sjwat* to speak, explain, *sjwad* to speak to.

342. *d'iwəd* to fall down, collapse: 343. *d'wər* to fall down, collapse.

344. *d'wər* metal butt on spear shaft: 345. *dz'wən* metal butt on spear shaft.

346. *d'iad* fetters on the feet: 347. *tjět* fetters on the feet.

348. *tien* sickness, ill; 349. *dz'jět* sickness, ill: 350. *tsed* sickness, ill: 351. *tsjar* sickness, ill.

352. *tsjěn* to exhaust: 352. *dz'jěn* exhausted, empty.

353. *d'iet*, *djět* a car passing another.

### G. Words of type N-N

1 赧 2 然 3 燃 4 烜 5 煖 6 煖 7 湫 8 熬 9 熬 10 日 11 爛  
 12 鍊 13 煉 14 烈 15 聯 16 連 17 綸 18 倫 19 緯 20 累 21 纒  
 22 縲 23 紉 24 衛 25 刺 26 鍊 27 列 28 裂 29 厲 30 礪 31 利 32  
 犁 33 耒 34 刃 35 賴 36 利 37 躡 38 躡 39 履 40 鄰 41 和  
 42 睨 43 睨 44 尼 45 通 46 賴 47 媿 48 蠟 49 蠟 50 河 51 漂

1. *nan* (hot in the face:) to blush, ashamed: 2, 3. *njan* to burn, roast: 4, 5. *nwán* hot, warm: 6. *nwán* hot water: 7. *njat* hot, heat: 8. *njwat* to burn, to heat: 9. *njět* sun, sun heat: 10. *njar* (hot in the face:) to blush, ashamed; 11. *glán* heated through, well-cooked etc.: 12, 13. *gljan* to smelt, refine: 14. *ljat* burning, flaming, bright.

15, 16. *ljan* to string together, connect, join: 17. *ljwən* silk strings: 18. *ljwən* ties, human relationships: 19. *sljwət* rope, cord: 20, 21. *ljwər* to tie, bind, string: 22. *ljwər* to tie, bind, string; 23. *njan* to thread, string.

24. *ljwan* (*bljwan*?) to slice, slice: 25. *lât* to cut: 26. *lât* (cutting:) sharp, pungent: 27. *ljat* (to cut apart:) to divide, distribute: 28. *ljat* to cleave, split: 29, 30. *ljad* (sharpener:) whetstone: 31. *ljəd* sharp: 32. *liər* («cleaver, cutter») plough: 33. *lwər* plough; 34. *njan* edge, blade.

35. *lād* profit, benefit: 36. *ljəd* profit (probably same stem as the preceding group: the cuttings, the harvest).

37, 38. *ljěn* to tread, trample: 39. *ljər* to tread, trample, a shoe.

40. *ljěn* near, neighbour: 41. *njět* clothes nearest to the body: 42, 43. *niət* near: 44. *njar* near: 45. *njar* near.

46. *njwan* weak, soft: 47. *nwən* weak, soft.

48. *ljad* oyster: 49. *ljəd* oyster.

50. *ljat* cold: 51. *ljět* cold.



## H. Words of type P-N

1 翻 2 翩 3 奮 4 扮 5 飛 6 踏 7 跋 8 般 9 拚 10 撥  
 11 潑 12 發 13 被 14 廢 15 費 16 播 17 駢 18 蟻 19 匹 20 比 21  
 22 妃 23 媿 24 妃 25 配 26 北 27 采 28 辨 29 辯 30 片 31 篇 32 半  
 33 判 34 胖 35 班 36 板 37 版 38 扁 39 分 40 別 41 伐 42 剗 43 似  
 44 判 45 勿 46 辦 47 伴 48 編 49 幘 50 紵 51 紵 52 響 53  
 54 坊 55 粉 56 季 57 拂 58 悖 59 許 60 聞 61 味 62  
 63 拜 64 憤 65 悲 66 問 67 逆 68 閱 69 兇 70 怖 71 扮 72  
 73 拊 74 繁 75 縮 76 紡 77 芥 78 菜 79 辭 80 苾 81 緋 82  
 83 不 84 尤 85 喘 86 匪 87 非 88 末 89 茂 90 勿 91 未 92  
 93 愧 94 瞞 95 悟 96 悟 97 民 98 眠 99 昏 100 賤 101 悞 102 悞  
 103 婚 104 昧 105 忽 106 昧 107 昧 108 寐 109 迷 110 轄 111 藩 112 藩 113  
 114 閉 115 韉 116 筆 117 市 118 芾 119 鞞 120 第 121 第 122 敵 123 閉 124  
 125 庇 126 芾 127 扉 128 扉 129 悞 130 墜 131 門 132 閤 133 幘 134 密  
 135 本 136 莢 137 拔 138 跋 139 肺 140 鼻 141 泥 142 泥 143 敗 144  
 145 弊 146 弊 147 畢 148 墻 149 墻 150 蕪 151 肥 152 邊 153 偏  
 154 瀆 155 曼

1. *p'iwǎn* to fly: 2. *p'ien* to fly: 3, 4. *piwǎn* to fly: 5. *piwər* to fly.  
 6. *b'iwǎn* animal's foot, paw: 7. *b'wāt* foot, heel, trample, march.  
 8. *pwǎn* to transport away, distribute etc.: 9. *p'wǎn* throw away (dialectal word):  
 10. *pwāt* to spread, distribute, scatter, transfer, throw away, dismiss: 11. *p'wāt* to  
 throw, spill: 12. *piwāt* to throw out, launch, send out, issue: 13. *p'iwāt* to throw  
 out bad influences, expel: 14. *p'iwǎd* to throw away: 15. *p'iwəd* (to throw away:)  
 to spend, to waste: 16. *pwār* to spread out, sow; throw away.  
 17. *b'ien* two horses abreast, a pair: 18. *b'jǐn* mate, wife: 19. *p'jǐt* mate: 20. *b'jət*, *b'jər*,  
*piər* (a pair, two together:) to bring together, compare etc.: 21. *piər* (mate of the father:)  
 deceased mother: 22. *p'jər* mate: 23. *p'jwər* mate, wife: 24. *p'wər* to mate, match.  
 25. *b'jən* female (of animals): 25. *b'jər* female (of animals) — possibly cognate  
 to the preceding group: the mate of the male animal.  
 26. *b'ǎn* to separate, distinguish, discriminate: 27. *b'ǎn*, *b'jan* to divide, distin-  
 guish, discriminate: 28. *b'jan* to distinguish, discriminate, argue: 29. *p'ian* cleft  
 wood, splint, slice, slip, board, tablet: 30. *p'jan* (cleft wood:) writing tablet: 31.  
*pwǎn* divide in half, half: 32. *p'wǎn* to cleave, divide, discriminate: 33. *p'wǎn* one  
 half of a victim divided in two parts: 34. *pwǎn* to distribute: 35, 36. *pwǎn* board:  
 37. *pien* board, tablet, flat: 38. *piwen* to divide, *b'jwen* a part: 39. *piat*, *b'jat* to  
 cleave, separate, divide: 40. *b'iwāt* to cut, attack: 41. *b'iwət* to cut, attack: 42.  
*p'jər* to separate, part: 43. *b'jwər* to cut off the feet, amputate; 44. *mjwən* to cut,  
 cut the throat.

45. *b'jan* to twist cord: 46. *pwǎn* (to tie:) fetter, hobble: 47. *pien* to tie together:  
 48. *b'iwǎn* cords on horse's bit: 49, 50. *piwət* rope: 51. *piwət* silk band: 52. *piər*  
 (cords:) reins, bridle: 53. *mjən* cord, string.  
 54. *b'iwǎn* dust: 55. *piwǎn* (powdered:) flour: 56. *piwǎn* to dust: 57. *p'iwət* to dust.  
 58, 59. *b'wād*, *b'wət* disorderly, rebellious.  
 60. *mjwǎn* to hear, to smell (perceive by the senses): 61. *mjwəd* to taste, taste.  
 62. *pād* cowry shell, valuables: 63. *pwād* (to bring cowry shells as presents,  
 present valuables:) to salute (this primary sense of »*pai*» is revealed by the earliest  
 bronze inscriptions which show a man presenting strings of cowries).  
 64. *b'iwǎn* to grieve: 65. *piər* to grieve: 66, 67. *mwǎn* to grieve: 68. *mjən* to  
 grieve: 69. *mjwǎn* mourning hair dress: 70. *b'iwət* distressed.  
 71. *b'iwǎn* to grasp, seize: 72. *mwǎn* to grasp, seize.  
 73. *b'iwǎn* mixed and numerous, multitudinous: 74. *p'jǐn* tangled, confused, mul-  
 titudinous: 75. *piwǎn* tangled, confused, multitudinous; 76. *mjwǎn* tangled, confused.  
 77. *p'iwǎn* strong-smelling, fragrant: 78. *b'iwǎn* fragrant wood, aromatic wood:  
 79. *b'wət* fragrant: 80. *b'jǐt* fragrant: 81. *piwər* fragrant: 82. *b'jwər* stinking insects.  
 83. *pwət* not (no such reading in the ancient dictionaries, but indicated by all the  
 dialects): 84. *piwət* not (with the modal sense of 'not be able to, not be willing to'):  
 85. *b'iwət* to say no, contradict: 86. *piwər* not: 87. *piwər* is not; 88. *mwāt* not (char.  
 used *kia tsie*): 89. *miat* not (char. used *kia tsie*): 90. *mjwət* don't: 91. *mjwəd* not yet.  
 92. *man* careless, forgetful, negligent: 93. *mwǎn* careless, forgetful.  
 94. *mwǎn* closed eyes, darkened sight: 95, 96. *mjǐn* darkened intelligence, stu-  
 pid: 97. *mjǐn* the common people (the »darkened, stupid ones», »*yü min*» stupid  
 people): 98. *mjǐn* closed eyes, to sleep: 99. *χmwǎn* darkness, darkened, darkened  
 intelligence, stupid: 100, 101, 102, 103. *χmwǎn* dim sight, darkened intelligence:  
 104. *mwāt* troubled sight: 105. *χmwət* not discerning, stupid, careless: 106. *mwād*  
 troubled sight: 107. *mwād* darkness before dawn: 108. *mjəd* to sleep: 109. *miər*  
 something in the eye, troubled sight: 110. *miər* (to blind:) to confuse, lead astray.  
 111. *p'iwǎn* (a cover:) carriage screen: 112. *piwǎn* (cover:) hedge: 113. *b'jǐn* knee  
 cap (bone which is like a cover, a cap): 114. *piat* to shut a door, close, cover: 115.  
*pijət* knee cover: 116. *pijət* (cover, screen:) wicker hedge, shutter, small door made  
 of branches: 117, 118, 119. *piwət* knee cover: 120, 121. *piwət* carriage screen: 122.  
*piad* to cover, conceal: 123. *piad* to shut a door, close, cover: 124. *pijəd* to shut a  
 door, shut, covered, hidden, secret: 125. *pijəd* to cover, screen: 126. *piwəd* covering,  
 shady: 127. *piwər* (a shutter:) door-leaf: 128. *b'jwər* covered, screened, secret; 129.  
*mwǎn* screen, curtain: 130. *mwǎn* (covering:) plaster on a wall: 131. *mwǎn* (shut-  
 ters:) door-leaves, door, gate: 132. *χmwǎn* gate-keeper: 133. *miat* a cover on the front  
 part of a carriage: 134. *mjǐt* shut off, covered, concealed, solitary, secret, silent.  
 135. *pwǎn* lower part of a tree or a plant, stem, root (as opp. to top, branches, ear  
 of grain): 136. *pwāt* lower part of a tree or a plant, stem, root; straw (as opp.- to  
 ear): 137. *b'wət* to uproot, pull up: 138. *b'wāt* lowest part of a vertical object, base,  
 foot, heel, to trample (cf. »*ken*» which means both 'stem, root' and 'heel').  
 139. *piwǎd* (breathers:) lungs: 140. *b'jəd* (breather:) nose.  
 141. *pijəd* to gush forth (as a source): 142. *piwəd* to gush forth.



143. *b'wad* to destroy, ruin, spoil, defeat: 144. *b'jad* to spoil, ruin, wear out: 145. *b'jad* spoiled, bad: 146. *b'jad* (destruction:) death: 147. *piët* (destroy:) make an end to, to end, finish.

148. *b'jwân* grave-mound: 149. *b'jwân* grave-mound.

150. *piwân* fertilizer, ordure, manure: 151. *b'jwâr* fat, rich, fertile.

152. *pian* side, edge, border: 153. *p'jan* on one side, oblique: 154. *piën* (side, edge of the water:) shore, beach.

155. *mwân* long, extended: 155. *mjwân* long, extended.

### I. Words of type K-M

1 闔 2 闔 3 食 4 闔 5 闔 6 蓋 7 蓋 8 暗 9 掩 10 奄 11 闔  
12 黯 13 翕 14 揜 15 堵 16 闔 17 暗 18 黯 19 蔭 20 陰 21 頤 22  
函 23 銜 24 頷 25 含 26 珍 27 頰 28 頷 29 拮 30 鉗 31 夾 32 扶  
33 狎 34 陟 35 鈇 36 扶 37 扶 38 肱 39 脇 40 鹽 41 鹹 42 醜 43  
43 飲 44 吸 45 噏 46 飲 47 坎 48 陷 49 珍 50 壓 51 壓 52  
錫 53 甲 54 橙 55 輕 56 桺 57 陸 58 龜 59 匱 60 匣 61 屐 62  
62 崑 63 嶽 64 巖 65 陳 66 峯 67 險 68 瞰 69 監 70 鑑 71 覽 72  
72 兼 73 咸 74 協 75 洽 76 裕 77 合 78 會 79 會 80 翕 81 飲 82  
謙 83 歎 84 欠 85 感 86 撼 87 劍 88 戣

1. *giam* (shutter:) gate: 2. *g'iem* dark, black: 3. *k'jam* (covering:) coverlet: 4. *g'ap* (shutter:) door, to close: 5. *kəp* (shutter:) inner door (to the harem): 6, 7. *g'ap*, *kāb* covering, to cover: 8. *'ām* covered, obscured, dark: 9. *'jam* to cover, conceal: 10. *'jam* to cover, all-covering: 11. *'jam* (the man who covers, shuts, keeps the doors of the harem shut, cf. 132 above:) door-keeper, eunuch: 12. *'em* dark, black: 13, 14. *'iem* to cover, conceal: 15. *'əm* to cover with earth, bury: 16. *'əm* to shut a door, shut, closed, covered, dark: 17. *'əm* darkened sun, dark, darkness: 18. *'əm* black: 19. *'jam* (covering:) shade: 20. *'jam* darkness, dark, shade, North side etc. For the connection between 'to cover' and 'dark': 'to shut': 'gate', cf. group H 111—134 above.

21. *g'am* jaws, jowl: 22. *g'am* to hold in the mouth: 23. *g'em* (what is »jawed», bitten:) horse's bit, to hold in the mouth: 24. *g'am* jaws, jowl: 25. *g'am* to hold in the mouth, contain: 26. *g'am* objects put in a corpse's mouth: 27. *kiap* jaws, jowl, cheeks: 28. *g'ap* jaws, jowl (possibly cognate to next group: »pincher» = jaw?).

29. *g'iam* to press from both sides, pinch: 30. *g'iam* (pincher:) iron collar; gyves; pincers: 31. *kap* to grasp from both sides, squeeze, pinch: 32. *g'ap* (pressing from both sides:) narrow: 33. *g'ap* (pressing:) close; intimate: 34. *g'ap* (narrow, pressing from both sides:) chasm, pass: 35. *kiap* pincers: 36. *kiap* pincers, chopsticks: 37. *g'iap* to press from both sides, hold under the arms, clasp under the arm to support; to press, coerce: 38. *k'jāp* to open the sides, to rifle; *k'jwāb* sides of the body, flanks: 39. *xiāp* sides of the body, flanks; to press from both sides, to press, coerce.

40. *giam* salt: 41. *g'em* salty, salted: 42. *ngiām* soda (drawn from salty soil).

43. *χəp* to suck in, draw in, swallow, drink: 44, 45. *xiəp* to suck in, draw in, swallow: 46. *'jam* to swallow, drink.

47. *k'am* pit: 48. *g'am* pit, throw or fall into a pit: 49. *k'jam* pit.

50. *'ap* to press down: 51. *'iap* put down the finger on.

52. *g'am* mail: 53. *kap* scales, mail.

54. *g'am* cage (for wild animals etc.): 55. *g'am* car with cage on: 56. *g'ap* cage (for wild animals etc.): 57. *k'jwāb* pen, enclosure for wild animals.

58. *k'am* to hold, contain, receptacle, box: 59. *k'iap* box, satchel: 60. *g'ap* case, box: 61. *g'iep*, *g'jəp* satchel, book box.

62. *k'am* cliff: 63. *k'jam* high, precipitous: 64. *ngam* cliff: 65. *ngiam* high bank: 66. *ngiam* high ridge of cliff: 67. *xiām* high, precipitous, difficult of access, perilous.

68. *k'am* (*k'lām*?) to see, watch: 69. *klam* to see, examine, inspect: 70. *klam* mirror: 71. *glām* to see, watch.

72. *kiam* (*kliam*?) to join two or several things, bring together, combine, unite, both: 73. *g'em* (several united:) all: 74. *g'iap* to unite, accord, harmony: 75. *g'ep* accord: 76. *g'ep* collective sacrifice (to all ancestors): 77. *g'əp* to join, bring together, unite, accord: 78. *g'wəb* (> *Shi* *g'wəd* > Anc. *yūāi*) to come together, bring together, unite, accord: 79. *kwəb* (to add up:) to make up accounts: 80. *xiəp* to unite, accord, harmony.

81. *k'am* (to make oneself defective, imperfect:) to humble oneself: 82. *k'iam* to humble oneself: 83. *k'am*, *k'iam* insufficient food, insufficient: 84. *k'jām* deficient (char. used *kia tsie*).

85. *kəm* to move, be moved: 86. *g'am* to move, shake.

87. *kjām* sword: 88. *k'am* to stab, cut down.

### K. Words of types T-M, N-M, P-M

1 鑿 2 鑿 3 刻 4 搥 5 鐵 6 尖 7 鑿 8 鑿 9 箴 10 鉞 11 錐  
12 插 13 鉞 14 斬 15 芟 16 疊 17 鑿 18 褶 19 襲 20 擗 21  
慄 22 惛 23 慄 24 織 25 撈 26 湛 27 潛 28 潭 29 沈 30 墊 31  
添 32 僣 33 擔 34 恬 35 帖 36 寔 37 駁 38 捷 39 駁 40 慄  
41 炎 42 燂 43 熯 44 疔 45 濕 46 隰 47 繫 48 緝 49 瞻 50  
覘 51 執 52 拾 53 繫 54 擊 55 捷 56 攝 57 談 58 屨 59 譚 60  
諧 61 喋 62 沾 63 露 64 漸 65 澌 66 浸 67 滂 68 淫 69 灑 70  
忝 71 慄 72 譚 73 諧 74 參 75 參 76 參 77 僣 78 參 79  
選 80 接 81 雜 82 集 83 輯 84 戢 85 答 86 對 87 納 88 內 89  
內 90 入 91 範 92 法

1. *tsām* awl, chisel, to pierce: 2. *dz'am* awl, chisel: 3. *djam* sharp-pointed, sharp: 4. *tjam* to pierce: 5. *tsjam* awl, sharp: 6. *tsjam* sharp point, sharp: 7. *tsəm* needle: 8. *tsjam* hair pin: 9, 10. *tjam* needle: 11. *ts'ap* long needle: 12. *ts'ap* to put a spit through, pierce: 15. *səp* chisel, to engrave.

14. *tsam* to cut off, decapitate: 15. *sam* to cut grass, to mow.



16. *d'iap* layer, to fold: 17, 18. *d'iap* dress with two layers of stuff, lined, double; put in layers, to fold; 19. *dzjap* dress with two layers of stuff, lined, double; put in layers, to fold.

20. *h̄iap* to fear, afraid: 21. *d'iap* afraid: 22. *h̄iep* to fear, afraid: 23. *h̄iap* to fear, afraid.

24. *sjam* slender, thin, fine, small: 25. *sem* slender, delicate.

26. *d'em* to sink in water, deep water: 27. *dz'iem* to go down in the deep, go down in water, lie hidden: 28. *d'am* deep, deep water, abyss: 29. *d'iam* to go down in the deep, sink in water: 30. *d'iam* down in the depths of earth, deep down: 31. *šjam* deep water, deep.

32, 33. *d'am* quiet, peaceful: 34. *d'iam* quiet, peaceful: 35. *t'iap* quiet, peaceful.

36. *tsam* swift: 37. *ts'jam*, *ts'iam* to gallop, run swiftly: 38. *dz'jap* swift: 39. *sap* to gallop, run swiftly.

40. *d'am* to burn: 41. *djam* to blaze, flame: 42. *d'am*, *dz'iem* to burn, to heat: 43. *d'iam* stove: 44. *šjam* fever.

45. *šjap* moist, wet, damp: 46. *dzjap* marsh.

47. *tjap* to bind, tie: 48. *ts'jap* to bind together.

49. *h̄iam* to look, see: 50. *t'iam* to look, see.

51. *h̄iap* to catch, grasp, seize: 52. *d̄iap* to seize, grasp, pick up: 53. *h̄iab* (a «catcher»): bird of prey: 54. *h̄iab* to grasp: 55. *dz'jap* (to catch:) to take booty, quarry, game: 56. *šjap* to grasp, hold.

57. *d'am* to talk, chat: 58. *h̄iam* to chatter: 59. *d'am* to talk, chat: 60. *d'ap* to chatter: 61. *d'iap* to chatter.

62, 63. *tjam* to soak: 64, 65. *tsjam* to soak: 66. *tsjam* to soak: 67. *šjam* to soak: 68, 69. *zjam* soaking rain.

70. *t'iam* to put to shame, disgrace: 71. *dz'am* shame, to be ashamed.

72. *dz'am* to slander: 73. *dz'jam* to slander.

74. *sam* three: 75. *ts'am* three (persons or things) together, a triad: 76. *šjam* (the three-star constellation:) Orion.

77. *dz'am* of unequal length: 78. *ts'jam* of unequal length.

79. *d'ap* mixed: 80. *tsjap* to bring together, join: 81. *dz'ap* collected, mixed: 82. *dz'jap* to bring together, gather, collect, mix: 83. *dz'jap* to bring together, gather, harmony: 84. *tsjap* to collect.

85. *tap* to answer: 86. *twab* (> Shī *twad* > Anc. *tuái*) to answer.

87, 88. *n̄ap* (to cause to enter, causative to 90:) to bring in, to present: 89. *nwab* (> Shī *nwad* > Anc. *nuái*) interior, inside, in: 90. *h̄jap* to enter.

91. *b'jwām* pattern, rule, law, norm: 92. *pjwāp* pattern, rule law, norm.

\*\*\*

### Laws of alternations

At a first glance at the word families established above the reader may well ask: is it not extremely farfetched to imagine an etymological connection between words which are so strongly dissimilar phonetically as many of the cases proposed? Is it

not unreasonable to combine e. g. A 213 *k'ung*: 225 *χjog*; B. 64 *d̄iang*: 76 *tök*: 79 *d'ag*; E 93 *g'ât*: 94 *k'iar*; E 142 *ngiän*: 140 *g'wad*; F. 66 *sän*: 65 *dz'war* — when in all such cases there is not one consonant or vowel common to the two members of the combination? This objection may seem quite justified. Yet a rash judgment of the kind is not just; all the families proposed must be seen in the light of the general laws of alternations which can be derived from the materials adduced. In the following résumé I shall pick out a number of comparatively safe and convincing examples of those various laws.

### The final consonants

Here we have three undeniable series of alternations:

1. *ng ~ k ~ g*;
2. *n ~ t ~ d ~ r*;
3. *m ~ p ~ b*.  
*ng ~ k*:

A 33. *ngiäng*: 34. *ngiäk*; 103. *ngäng*: 106. *ngäk*; 118. *k'äng*: 120. *g'äk*; 155. *kjäng*: 163. *kjäk*; 172. *käng*: 175. *g'jæk*; 226. *'jäng*: 227. *'jæk*; 229. *kwäng*: 232. *k'wäk*; 268. *kjung*: 270. *k'juk*, 271. *g'juk*; B 69. *täng*, 70. *d'jäng*: 75. *tjæk*; 115. *d'üng*: 123. *tük*; 260. *sieng*: 261. *siek*; 269. *djông*: 275. *d̄jök*; 298. *d'jäng*: 300. *d̄jæk*; 302. *dz'jäng*: 305. *dz'iek*; 322. *säng*: 323. *sjæk*; 387. *d'ung*: 388. *d'uk*; 516. *tsjung*: 523. *tsjuk*; 547. *dz'ung*: 549. *dz'uk*; C 10. *gliang* and *gliæk*; 32. *lung*: 33. *luk*; 38. *lieng*: 39. *liek*; D 8,9. *mieng*: 15—17. *miek*; 114. *p'iwang*: 115. *b'iwäk*.

*ng ~ g*:

A 29. *käng*: 30. *kæg*; 63. *kông*: 65. *g'óg*; 73. *kjäng*: 84. *g'jæg*; 92. *g'jäng*: 97. *k'jæg*; 135. *k'jäng*: 137. *g'jæg*; 132. *g'ieng*: 133. *g'eg*; B 69. *täng*: 79. *d'æg*; 210. *d'äng*: 213. *h̄jæg*; 308. *t'jông*: 314. *t'jög*; 378. *tsäng*: 380. *dz'äg*; 408. *h̄jäng*: 416. *h̄jæg*; 464. *täng*: 465. *d'æg*; 528. *d̄jäng*: 532. *d'jæg*; C 25. *gliang*: 28. *gläg*; 54. *näng*: 55. *næg*; D 84. *pjäng*, *b'ieng*: 88. *b'jæg*; 143. *mäng*: 144. *mäg*.

*k ~ g*:

A 28. *kök* and *kög*; 31. *k'jök*: 32. *kög*; 279. *kjwäk*: 282. *kjwäg*; 290. *'ék*: 294. *'æg*; 318. *kök*: 320. *kæg*; 323. *'äk* and *'äg*; 339. *g'ök*: 343. *g'ög*; 342. *kög*, 340. *kög*, *g'ög*; 369. *kök* and *kög*; 22. *d̄jök*: 24. *d̄jög*; B 29. *d'äk* and *d'äg*; 41. *d'uk*: 42. *d'üg*; 169. *dz'ök*: 177. *dz'æg*; 168. *ts'jök* and *ts'jög*; 170. *ts'jök*: 181. *dzjög*; 235. *d'ök* and *d'ög*; 272. *h̄jök* and *h̄jög*; 289. *sjök*: 291. *sjög*, 293. *sjög*; 436. *sjök*: 437. *sjög*; 445. *d̄jök* and *d̄jög*; 450. *dzjök*: 454. *zjög*; 452. *sjök*: 456. *sjög*; 462. *tsjök* and *tsjög*; 548. *tsjök* and *tsjög*; 565. *siök*: 566. *siög*; 569. *tök*: 570. *d'æg*; 576. *d̄jök*: 579. *djög*; 595. *d'ök*: 599. *t'jög*; 594. *d̄jök*: 598. *d̄jög*; 605. *djök*: 606. *d'jög*, 607. *t'jög*; 611. *h̄jök*: 612. *h̄jög*; 662. *d'jök* and *d'jög*: 682. *d̄jök*: 683. *d'jög*; C 1. *lök*: 2. *ljög*; D 24,25. *mök*: 27. *mwög*; 49. *b'ök*: 52. *b'ög*; 60. *mjök*: 61. *mjög*; 104. *pök*: 107. *p'ög*; 121.



*pək*: 122. *pwæg*, 123, 124. *b'wæg*; 135. *b'jūk*: 137. *p'jug*; 147. *pök*: 148. *pög*; 154. *b'jök* and *b'jóg*; 176. *pjūk*: 177. *pjüg*.

*n ~ t*:

E 1. *kwân* and *'wât*; 32. *kân*: 38. *k'ât*; 53. *kwân*: 63. *kwât*; 90. *giwân*: 91. *giwât*; 97. *k'wân*: 98. *k'wât*; 105. *g'ian*: 108. *g'iat*; 121. *'wân*: 122. *'wât*; 138. *giwân*: 139. *giwât*; 163. *g'wân*: 166. *kwät*; 226. *k'ân*: 231. *k'at*; 230. *g'jân*: 232, 233. *g'jat*; 252. *'ân*: 254. *'at*; 253. *'jên*: 255. *'jët*; 260. *'jwân*: 261. *'jwät*; 287. *'ien*: 288. *'iet*; 300. *k'ân*: 305. *kât*; 329. *'ian*: 330. *'at*; F 10. *sjan*: 13. *sjat*; 27. *tsjan*: 30. *dz'iat*; 70. *sân*: 71. *sât*; 108. *tswân*: 111. *dz'wät*; 115. *dz'wân*: 116. *dz'wät*; 118. *d'jwân*: 119. *d'jwät*; 139. *d'wân*: 140. *t'wät*; 160. *tân* and *tât*; 214. *tswân* and *ts'wät*; 245. *ts'jwân*: 246. *tsjwät*; 314. *tjên*: 315. *tjët*; 313. *d'ien*: 315. *tiet*; G 2, 3. *hjan*: 7. *hjat*; 4, 5. *mwân*: 8. *hjat*; H 27. *b'jan*: 39. *b'jat*; 48. *b'jwân*: 49—51. *pjwät*; 56. *pjwân*, 54. *b'jwân*: 57. *p'jwät*; 64. *b'jwân*: 70. *b'jwät*; 78. *b'jwân*: 79. *b'wät*; 94. *mwân*: 104. *mwät*; 99—103. *χmwân*: 105. *χmwät*; 113. *b'jên*: 115. *pjët*.

*n ~ d*:

E 12. *giwan*: 24. *giwad*; 105. *g'ian*: 108. *k'jad*; 138. *giwân*: 141. *giwäd*; 149. *kwân*, 150. *g'wân*: 151. *k'wad*; 167. *giwân*: 172. *g'iwäd*; 283. *'ên*: 284. *'äd*; 300. *k'ân*: 316, 317. *k'iad*; F 123. *dzjwân*: 125. *dzjwäd*; 150. *d'wân*: 151. *d'wäd*; 214. *tsjwân*: 215. *dzjwäd*; 234. *sjwân*: 236. *sjwäd*; H 94. *mwân*: 106. *mwäd*; 98. *mien*: 108. *mjäd*.

*n ~ r*:

A series of examples of this alternation has already been given on pp. 20, 27 above. We have furthermore: E 19. *kwân*, 22. *giwân*: 25. *g'wâr*, 27. *kjwâr*, 28. *giwâr*; 37. *g'wân*: 39. *giwâr*; 42. *χjân*: 45. *χjâr*; 49. *'wân*: 51. *'wâr*; 53. *kwân*: 70. *kwâr*; 158, 160. *'jwân*: 161. *'jwâr*; 202. *k'ân*: 203, 204. *k'âr*; F 2. *d'jwân*: 6. *d'jwâr*; 80. *twân*: 82. *twâr*; 89, 90. *tsjên*: 94. *tsiâr*; 98. *tsjên*: 99. *tsiâr*; 118. *d'jwân*: 120. *tjwâr*; 205. *d'wân*: 206. *t'wâr*; 223. *ts'jwân*: 226. *ts'jwâr*; 306. *siân* and *siâr*; 308. *swân*: 309. *sjwâr*; 329. *d'wân*: 331. *t'wâr*; 345. *dz'wân*: 344. *d'wâr*; G 17. *ljwân*: 22. *ljwâr*; 37, 38. *ljên*: 39. *ljâr*; H 77. *p'jwân*, 78. *b'jwân*: 81. *pjwâr*, 82. *b'jwâr*; 95, 96. *mjên*: 110. *miâr*; 150. *pjwân*: 151. *b'jwâr*.

*t ~ d*:

E 64. *kiet*: 65, 66. *kied*; 73. *kjät*: 76, 77. *kjäd*; 83. *kiwat*: 84. *kwäd*; 88. *kiwat*: 89. *k'wad*; 108. *kjät*, *g'iat* and *k'iad*; 107. *k'iat*: 108. *k'iad*; 139. *giwät*: 140. *g'wad*, 141. *giwäd*; 256. *'jwät*: 257. *'jwäd*; 305. *kât*: 311. *g'äd*; 307. *kwät*: 313. *kwäd*; 308. *giwät*: 315. *kjwäd*; 309. *k'iat*: 316, 317. *k'iad*; 319. *ngiwät*: 320. *ngiäd*; F 4. *tjwat* and *tjwad*; 64. *dz'jwät* and *tsjwäd*; 127, 128. *sjwät* and *sjwad*; 144, 145. *sjat*: 146. *zjad*; 157. *sjwat*: 158. *sjwad*; 166. *ts'wät* and *dz'jwäd*; 341. *šjwat* and *šjwad*; G 25. *lät*, 27. *ljat*: 29, 30. *ljäd*; H 12. *pjwät*, 11. *p'wät*: 14. *p'jwäd*; 13. *p'jwät*: 15. *p'jwäd*; 58, 59. *b'wät* and *b'wäd*; 90. *mjwät*: 91. *mjwäd*; 104. *mwät*: 106. *mwäd*; 114. *piat*: 123. *piäd*; 116. *pjët*: 124. *pjäd*; 120, 121. *pjwät*: 126. *pjwäd*.

*t ~ r*:

E 63. *kwät*: 70. *kwâr*; 102. *k'jät*: 104. *g'jâr*; 146. *'jwät*: 147, 148. *'jwâr*; F 64. *dz'jwät*: 65. *dz'wâr*; 119. *d'jwät*: 120. *tjwâr*; 164. *tjwat*: 165. *tjwâr*; G 42, 43. *njät*: 44. *njâr*; H 10. *pwät*: 16. *pwâr*; 20. *b'jät* and *b'jâr*; 41. *b'jwät*: 43. *b'jwâr*; 79. *b'wät*: 81. *pjwâr*, 82. *b'jwâr*; 84. *pjwät*: 86, 87. *pjwâr*; 120, 121. *pjwät*: 128. *b'jwâr*.

*d ~ r*:

E 24. *giwad*: 28. *giwâr*; 247. *käd*: 248. *k'âr*; F 64. *tsjwad*: 65. *ts'wâr*; 236. *sjwad*: 233. *ts'wâr*; G 31. *ljäd*: 32. *ljâr*; H 126. *pjwad*: 128. *b'jwâr*.

*m ~ p*:

I 1. *giam* 4. *g'áp*; 21, 22. *g'am*: 27. *kiap*; 24—26. *g'am*: 28. *g'áp*; 29, 30. *g'iam*: 37. *g'iap*; 52. *g'am*: 53. *kap*; 54. *g'am*: 56. *g'áp*; 72. *kiam*: 74. *g'iap*; 73. *g'em*: 75, 76. *g'ep*; K 34. *d'iam*: 35. *t'iap*; 36. *tsám*: 38. *dz'iap*; 37. *ts'iam*: 39. *sáp*; 57. *d'am*: 60. *d'áp*.

*p ~ b*:

I 38. *k'jáp* and *k'jwáb*; 77. *g'áp*: 78. *g'wáb*; K 51. *tjáp*: 53, 54. *tjáb*; 87. *náp*: 89. *mwáb*; 85. *táp*: 86. *twáb*.

For further examples of these alternations of final consonants see pp. 107—110 below.

### The initial consonants

Here we have first four great series of consonants, the members of which interchange freely in the formation of words from one and the same stem:

1. *k ~ k' ~ g ~ g'*;
2. *t ~ t' ~ d ~ d' ~ f ~ f' ~ d̄ ~ d̄'*;
3. *ts ~ ts' ~ dz ~ dz' ~ tš ~ tš' ~ dz' ~ s ~ š ~ z ~ z'*;
4. *p ~ p' ~ b'*.

Examples:

*k ~ k'*:

A 32. *kóg*: 31. *k'jök*; 37. *kuk*: 36. *k'ük*; 79. *kjung*: 80. *k'jung*; 148. *kjwæg*: 147. *k'jæg*; 191. *kjung*: 190. *k'ung*; 268. *kjüng*: 270. *k'juk*; 331. *kek*: 330. *k'wák*; 342. *kóg*: 344. *k'óg*; E 120. *kwät*: 119. *k'wät*; 129. *kian*, 132. *kwân*: 128. *k'ân*; 149. *kwân*: 151. *k'wad*.

*k ~ g*:

A 3. *kwáng*: 6. *giwang*; 156. *kwäng*: 158. *giwäng*; 176. *kwæk*: 177. *giwæk*; 209. *kwäng*: 212. *giwäng*; 362. *kióg*: 363. *gióg*; E 19. *kwân*: 22. *giwân*; 208. *kjwên*: 207. *giwên*; E 315. *kjwäd*: 308. *giwät*.

*k ~ g'*:

A 3. *kwáng*: 4, 5. *g'wäng*; 98. *kog*: 100. *g'jog*; 140. *kjwang*: 141. *g'jwang*; 172. *käng*: 175. *g'jök*; 237. *köng*: 238. *g'ung*; 250. *käng*: 253. *g'jang*; 259. *kjng*: 260.



*g'üŋg*; 268. *kjüŋg*: 271. *g'juk*; 279. *kjwak*: 278. *g'wäk*; 302. *kog*: 303. *g'ög*; 340. *kög* and *g'ög*; 342. *kög*: 343. *g'ög*; 347. *kioŋg*: 346. *g'og*; 357. *kög*: 358. *g'ög*; E 1. *kwân*: 2. *g'wân*, 3—7. *g'wan*; 8. *kjwan* and *g'jwan*; 32. *kân* and *g'jan*; 32. *kân*: 33. *g'ân*; 57. *kjën*: 58. *g'ien*; 67. *kwät*: 68. *g'wät*; 108. *kjät* and *g'jat*; 124. *kwân*: 125. *g'wan*; 129. *kian*: 130. *g'ian*; 149. *kwân*: 150. *g'wân*; 166. *kwät*: 163. *g'wän*; 187. *kwän*: 185. *g'än*; 195. *kän* and *g'än*; 238. *kwân*: 241, 242. *g'wân*; 271. *kân*: 272. *g'än*; 276. *kjer*: 275. *g'jen*; 289. *ker*: 290. *g'er*; 305. *kät*: 311. *g'äd*; 333. *kwân*: 334. *g'wan*; I 31. *kap*: 32—34. *g'ap*; 35, 36. *kiap*: 37. *g'iap*; 72. *kiam*: 74. *g'iap*; 79. *kwäb*: 78. *g'wäb*; 85. *käm*: 86. *g'am*.

*k' ~ g*:

E 9. *k'jwan*: 12. *gjwan*; 301. *k'jwän*: 310. *gjwät*.

*k' ~ g'*:

A 77. *k'jwang*: 76. *g'wäng*; 207. *k'wäng*: 208. *g'wäng*; 246. *k'ög*: 247. *g'jög*; 270. *k'juk*: 271. *g'juk*; E 9. *k'jwan* and *g'jwan*; 10. *k'jwan*: 11. *g'jwan*; 102. *k'jät*: 104. *g'jät*; 116. *k'jwät*: 117. *g'jwät*; 119. *k'wät*: 117. *g'jwät*; 151. *k'wad*: 150. *g'wän*; 226. *k'än*: 227. *g'än*; 300. *k'än*: 302. *g'jan*; I 47. *k'am*: 48. *g'am*; 59. *k'iap*: 60. *g'ap*.

*g ~ g'*:

A. 6. *gjwang*: 4. *g'wäng*; 22, 23. *gjwang*: 21. *g'wäng*; 58. *gjwäng*: 57. *g'iweng*; 277. *gjwang*: 276. *g'wäng*; 333. *gjäg*: 332. *g'äg*; E 39. *gjwät*: 37. *g'wän*; I 40. *gjam*: 41. *g'em*.

*t ~ t'*:

B 190, 191. *tjang*: 192. *t'jang*; 310. *tog*: 312. *t'jog*; 614. *tög*: 615. *t'ög*; 627. *tüŋg*: 626. *t'üŋg*.

*t ~ d*:

B. 248. *tjog*: 250. *djog*; 560. *tiög*: 559. *djog*.

*t ~ d'*:

B. 69. *täng*: 79. *d'äg*; 103. *tök*: 104. *d'ök*; 123. *tük*: 124. *d'ük*; 134. *tjông*: 135. *d'jông*; 191. *tjang* and *d'jang*; 248. *tjog*: 249. *d'jog*; 310. *tog*: 311. *d'og*; 358. *tieng*: 359. *d'ieng*; 403. *täng*: 404, 405. *d'äng*; 420. *tjög*: 417, 419. *d'jög*; 531. *tëk*: 529. *d'äk*; 569. *tæk*: 570. *d'äg*; 641. *tiek*: 642. *d'iek*; F. 17. *twân* and *d'wân*; 180. *twät*: 183. *d'jwät*; 261. *tjan*: 262, 263. *d'jan*; 267. *tjwan*: 268. *d'jwan*; 298. *tän*: 300. *d'än*; 314. *tjën*: 313. *d'ien*.

*t ~ t'*:

B. 190. *tjang*: 195. *t'jang*; 248. *tjog*: 253. *t'jog*; 588. *tog*: 589. *tjög*; 614. *tög*: 613. *tjög*; 681. *tjäŋg*: 680. *tjäŋg*; F. 86. *tjäd*: 85. *tjäd*; 164. *tjwät*: 165. *tjwar*; 216. *twän*: 217. *tjwän*; K 4. *tjäm*: 9. *tjäm*.

*t ~ t'*:

B. 123. *tük*: 125. *t'juk*; 190. *tjang*: 197. *t'jang*.

*t ~ d*:

B. 23. *tjäg*: 24. *djäg*; 464. *täng*: 466. *djäg*; F. 112. *tjan*: 113. *djwan*; 301. *tjan*: 302. *djan*.

*t ~ d'*:

B. 69. *täng*, 75. *tjak*: 70. *d'jäŋg*.

*t' ~ d*:

B. 98. *t'jäg*: 99. *djäg*; 312. *t'jog*: 313. *djog*; 351. *t'jök*: 350. *djök*; 426. *t'jög*: 425. *djög*; 582. *t'jog*: 579. *djog*; F 148. *t'jät* and *djät*; 188. *t'jan*: 189. *djan*.

*t' ~ d'*:

B. 34. *t'ung*: 38. *d'ung*; 44. *t'äng*: 46. *d'äng*; 51. *t'ieng* and *d'ieng*; 119. *t'äk*: 120. *d'äk*; 192. *t'jang*: 191. *d'jang*; 217. *t'ung*: 216. *d'öŋg*; 226. *t'ög*: 225. *d'ög*: 237. *t'og*: 235. *d'ög*; 314. *t'jög*: 315. *d'jög*; 330. *t'jäng*: 331. *d'jäng*; 346. *t'ieng*: 347. *d'ieng*; 481. *t'ög*: 480. *d'ög*; 599. *t'jog*: 595. *d'jog*; 607. *t'jog*: 606. *d'jog*; F. 140. *t'wät*: 139. *d'wät*; 185. *t'än*: 186. *d'än*; 206. *t'wät*: 205. *d'wät*; 208. *t'wät* and *d'wät*; 241. *t'jät*: 238. *d'jät*; 247. *t'jät* and *d'jät*; 283. *t'än*: 284. *d'än*; 314. *t'ien*: 313. *d'ien*; 317. *t'jät* and *d'jät*; 331. *t'wät*: 329. *d'wät*.

*t' ~ t'*:

B. 14. *t'jak*: 13. *tjak*; K. 50. *t'jam*: 49. *tjam*.

*t' ~ t'*:

B. 306. *t'jang*: 307. *t'jang*; 628. *t'jäg*: 629. *t'jäg*; F. 97. *t'jwät*: 96. *t'jwät*.

*t' ~ d*:

B. 599. *t'jog*: 598. *djög*; F. 283. *t'än*: 285. *djan*.

*t' ~ d'*:

F. 312. *t'wän*: 311. *d'jän*.

*d ~ d'*:

B. 280. *djog*: 277. *d'ög*; 445. *diëk*; : 447. *d'ieg*; 592. *djog*: 593. *d'jog*; 605. *djök*: 606. *d'jog*; 689. *djog*: 688. *d'jog*; F. 189. *djan*: 186. *d'än*; 194. *djën*: 192. *d'jën*; 353. *djët* and *d'iet*.

*d ~ t'*:

B. 118. *djung*: 116. *tjung*; 250. *djog*: 253. *tjog*.

*d ~ t'*:

B. 242. *djang*: 243. *t'jang*; F. 189. *djan*: 187. *t'jan*.

*d ~ d*:

B. 66. *djang*: 64. *djang*; 85. *djäng*: 88. *djäng*; 269. *djông*: 275. *djök*; 594. *djök*: 596. *djuk*, 598. *djög*.

*d ~ d'*:

B. 66. *djang*: 70. *d'jäŋg*; 663. *djak*: 672. *d'jak*.

*d' ~ t'*:

B. 609. *d'jông*: 608. *tjông*; 678. *d'jog*: 677. *tjog*; F. 19. *d'wän* and *tjwan*; 183. *d'jwät*: 181. *tjwät*; K. 21. *d'iap*: 20. *tjap*.

*d' ~ t'*:

B. 29. *d'äk*: 30. *t'jak*; 635. *d'jog*: 634. *t'jök*.



*d' ~ d̂:*

B. 21. *d'jak*: 22. *d̂jak*; 298. *d'jəng*: 300. *d̂jak*; 465. *d'əg*: 466. *d̂jəg*; 470. *d'əng*: 471. *d̂jəng*; 532. *d'jəg*: 528. *d̂jəng*; 683; *d'jōg*: 682. *d̂jōk*; F. 284. *d'ân*: 285. *d̂jan*.

*d' ~ d̂':*

B. 79. *d'əg*: 70. *d̂'jəng*.

*î ~ î':*

B. 116. *îjung*: 117. *î'jung*.

*î ~ â:*

B. 143. *îjung*: 144. *d̂jung*; 274. *îjōk*: 275. *d̂jōk*; 577. *îjok*: 576. *d̂jok*; F. 19. *îwan*: 20. *d̂jwan*; K. 51. *îəp*: 52. *d̂jəp*.

*ts ~ ts':*

B. 219, 220. *tsəng*: 221. *ts'əng*; 295. *tsjəng*: 296. *ts'jəng*; 366. *tsog*: 367. *ts'og*; F. 32. *tsiet*: 33. *ts'iet*; 214. *tswən* and *ts'wət*; 246. *tsjwət*: 245. *ts'jwən*.

*ts ~ dz:*

B. 178. *tsjəg*: 181. *dziəg*; 378. *tsəng*: 379. *dziəng*; F. 89. *tsjěn*: 91. *dziěn*; 122. *tsjwən*: 123. *dziwən*; 214. *tsjwən*: 215. *dziwəd*.

*ts ~ dz':*

B. 132. *tsjəng*: 133. *dz'jəng*; 176. *tsəg*: 177. *dz'əg*; 205. *tsəng*: 206. *dz'əng*; 219. *tsəng*: 222. *dz'əng*; 256. *tsjəng*: 258. *dz'jəng*; 295. *tsjəng*: 297. *dz'jəng*; 343. *tsjōg*: 344. *dz'jōg*; 353. *tsjəg*: 354. *dz'jəg*; 378. *tsəng*: 380. *dz'əg*; 516. *tsjung*: 517. *dz'jung*; F. 34. *tsjər*: 35. *dz'jər*; 27. *tsjan*: 30. *dz'iat*; 64. *tsjwəd* and *dz'jwət*; 72. *tsăn*: 73. *dz'ân*; 108. *tswən*: 111. *dz'wət*; 352. *tsjěn* and *dz'jěn*.

*ts ~ tʃ:*

B. 93. *tsjəng*: 94. *tsjəng*; 176. *tsəg*: 179. *tsjəg*; K. 7. *tsəm*: 8. *tsjəm*.

*ts ~ tʃ':*

B. 172. *tsuk*: 173. *tʃ'ük*; 284. *tsog*: 283. *tʃ'ög*.

*ts ~ s:*

B. 238. *tsog*: 241. *sjōg*; 667. *tsōg*: 668. *sōg*; F. 279. *tswād*: 282. *sjwad*; K. 14. *tsam*: 15. *sam*.

*ts ~ ʃ:*

B. 238. *tsog*: 240. *sjōg*; 521. *tsjōk*: 527. *sjōk*; K. 66. *tsjəm*: 67. *sjəm*.

*ts ~ ś:*

B. 259. *tsjok*: 262. *śjok*; 285. *tsjog*: 291. *śjog*; 364. *tsjōk*: 368. *śjōk*.

*ts ~ z:*

B. 372. *tsəng*: 371. *zjəng*; K. 66. *tsjəm*: 68. *zjəm*.

*ts' ~ dz:*

B. 495. *ts'jōg*: 497. *dziōg*.

*ts' ~ dz':*

B. 221. *ts'əng*: 222. *dz'əng*; 296. *ts'jəng*: 297. *dz'jəng*; 319. *ts'jog*: 320. *dz'jog*; F. 65. *ts'wər* and *dz'wər*; 131. *ts'wər*: 130. *dz'wər*; 166. *ts'wət* and *dz'jwəd*; 210. *ts'wən*: 211. *dz'wan*; 325. *ts'jər*: 324. *dz'jər*.

*ts ~ tʃ:*

B. 168. *ts'jək*: 167. *tʃək*.

*ts' ~ tʃ':*

F. 60. *ts'jěn*: 61, 62. *tʃ'jěn*; 223. *ts'jwan*: 226. *tʃ'jwar*.

*ts' ~ dz':*

B. 319. *ts'jog*: 321. *dz'jōg*.

*ts' ~ s:*

B. 365. *ts'juk*: 370. *suk*; 383. *ts'jog*: 384. *sjog*; F. 26. *ts'ăn*: 37. *san*; 332. *ts'jwən*: 333. *swən*; K. 75. *ts'am*: 74. *səm*.

*ts' ~ ʃ:*

K. 75. *ts'am*: 76. *sjəm*.

*ts' ~ ś:*

B. 168. *ts'jək*: 185. *śjak*.

*ts' ~ z:*

B. 383. *ts'jog*: 385. *zjōg*.

*dz ~ tʃ:*

B. 181. *dziəg*: 180. *tsjəg*.

*dz ~ tʃ':*

B. 181. *dziəg*: 170. *tʃ'jək*.

*dz ~ s:*

F. 271. *dziwan*: 280. *sjwan*; 286. *dziər*: 287. *siər*.

*dz ~ ʃ:*

B. 493. *dziuk*: 500. *sjuk*; F. 125. *dziwəd*: 127. *sjwəd*.

*dz ~ ś:*

B. 671. *dziōg*: 672. *śjōg*; K. 46. *dziəp*: 45. *śjəp*.

*dz ~ z:*

B. 450. *dziak*: 454. *zjag*.

*dz' ~ tʃ:*

B. 177. *dz'əg*: 179. *tsjəg*; K. 82. *dz'jər*: 84. *tʃəp*.

*dz ~ tʃ':*

B. 162. *dz'jəng*: 163, 164. *tʃ'jəng*; 458. *dz'jək*: 459. *tʃ'ək*.

*dz ~ dz':*

B. 320. *dz'jog*: 321. *dz'jōg*.



dz' ~ s:

B 621. dz'jog: 622. sjog; 673. dz'äk: 674. sjak.

dz' ~ s':

B 162. dz'jang: 184. sjang; K 55. dz'jap: 56. sjap.

tʃ ~ tʃ':

B 167. tʃëk: 166. tʃ'ëk.

tʃ ~ s:

B 666. tʃög: 668. sög.

tʃ' ~ s:

B. 316. tʃ'jang: 322. säng.

tʃ' ~ s':

B 391. tʃ'jang: 393. sjang.

tʃ' ~ s':

B 164. tʃ'jang: 184. sjang.

dz' ~ s:

B 80. dz'jông: 84. sjông; 467. dz'jæg: 469. sjæg.

s ~ ʃ:

B 241. sjög: 240. sjög; 504. siög: 503. şög; K 74. sam: 76. sjäm.

s ~ s':

B 286. sjang: 287. sjang; 293. sjog: 289. sjok; 552. sjog: 553. sjog; F 48. sjær: 49. sjær.

s ~ z:

B 384. sjog: 385. zjög; F 144, 145. sjat: 146. zjad.

ʃ ~ s':

B 500. sjuk: 499. sjuk.

ʃ ~ z:

K 67. sjäm: 68. zjäm.

p ~ p':

D 91. päk: 92. p'äk; 104. pëk: 105. p'iek; 138, 139. pjog: 141. p'jog; 186. pung: 187. p'jung; H 12. pijät: 11. p'wät, 14. p'jwäd; 21. pijær: 22. p'iar; 31. pwän: 32, 33. p'wän; 152. pian: 153. p'ian.

p ~ b':

D 30. pwäng: 31—35. b'wäng; 38. piëng: 39. b'ieing; 46. piäng: 47. b'iäng; 59. päk: 57, 58. b'äk; 84. piëng and b'ieing; 117. pög, 116. pög: 118, 119. b'ög; 122. pwæg: 123, 124. b'wæg; 130. piëg: 129. b'ëg; 138, 139. pjog: 142. b'jog; H 20. pijær and b'jær; b'jät; 38. pijwän and b'jwän; 39. pijät and b'jät; 56. pijwän: 54. b'jwän; 81. pijwær: 82. b'jwær; 84. pijwät: 85. b'jwät; 115. piëät: 113. b'jën; 120. pijwät, 126. pijwäd: 128. b'jwær; 150. pijwän: 151. b'jwær.

p' ~ b':

D 97. p'jung: 98. b'jung; 105. p'iek: 106. b'iek; 114. p'jwang: 115. b'jwak; 137. p'jog: 135. b'jök; 141. p'jog: 142. b'jog; 150. p'ög: 151. b'jog; 155. p'jök: 154. b'jök; 181. p'jog: 182. b'jög; H 29. p'ian, 30. p'ian: 27. b'ian; 77. p'jwän: 78. b'jwän.

It is easily seen that whereas some of the alternations in these four series are quite rare, others are extremely common and regular and can be said to be some of the principal instruments of the Chinese language in word derivation. As particularly important and normal I wish to point out two:

The alternation of unaspirated surd and aspirated sonant:  $t \sim d'$ ,  $k \sim g'$ ,  $ts \sim dz'$ ,  $p \sim b'$ ;

The alternation of aspirated surd and aspirated sonant:  $t' \sim d'$ ,  $k' \sim g'$ ,  $ts' \sim dz'$ ,  $p' \sim b'$ .

We have to take up next a very intricate question: whether these four series of initials can be proved to alternate with certain other initials not yet discussed, and whether some of these latter initials have alternations between themselves. There are here six questions which have to be answered. Is there an etymological connection between:

1. The  $k$  series and the laryngeal explosive ';
2. The  $k$  series and  $\chi$ ;
3. The  $k$  series and  $ng$ ;
4. The  $t$  series and the  $ts$  series;
5. The  $p$  series and  $m$ ;
6.  $n$ ,  $n'$  and  $l$ .

The first four of these questions I think must decidedly be answered in the affirmative; of the last two the good examples are so few as to leave room for doubt:

 $k$  etc. ~:.

A 1. kjang: 19. 'jäng; 60. g'wäng: 69. 'wäng; 186. kjang: 201. 'jang; 245. kung: 249. 'ung; 259. küng; 260. g'üng: 265. 'ung; 266. giwang: 273. 'wäng; 328. g'jög: 329. 'jog; 353. kjog: 354. 'jog; E 1. kwän and 'wät; 10. k'jwan: 30. 'wän; 37. g'wen: 49. 'wän; 114. k'wän: 121. 'wän; 117. g'jwät: 123. 'jwät; 189. giwän: 192. 'jwän; I 1. gjam: 11. 'jam; 2. g'jem: 12. 'em.

 $k$  etc. ~  $\chi$ :

A 64. g'ung: 66. chung; 76. g'wäng: 87. chwäng; 80. k'jung: 88. xjung; 140. kiwang, 141. g'jwang: 152. chwäng; 215. k'üng: 222. xjung; 307. kjök: 308. xjök; 362. kiög: 364. xjög; E 32. kân: 40. xän; 73. kjät: 78. xjät; 105. g'ian: 109. xjän; 129. kian, 130. g'ian: 135. xian; 167. giwän: 168. xjwän; 174. k'iad: 175. xjät; I 38. k'jap: 39. xjap; 77. g'ap: 80. xjap.

 $k$  etc. ~  $ng$ :

A 250. kang: 257. ngäng; E 2. g'wän: 29. ngwän; 79. kân, 80. kan: 86. ngan; 128. k'än, 129. kian: 137. ngen; 138. giwän: 142. ngjän; 189. giwän: 190. ngjwän;



234. g'jēt: 235. ngjət; 307. kwāt: 319. ngwāt; 318. kər and ngər; I 40. gjam: 42. ngjām; 63. k'jam: 66. ngjām.

*t etc. ~ ts etc.:*

B 1. d'iang: 5. s'iang; 17. d'jag: 19. sjag; 70. d'jang: 83. s'iang; 69. tang: 83. sjang; 101. t'jeng: 110. sjeng; 106. t'jag: 111. sjag; 151. t'jak: 165. tsjak; 153. t'ek: 167. ts'ek; 157. t'jēg: 174. ts'jēg; 203, 204. tang: 205. tsang, 206. dz'ang; 230. t'uk: 231. dz'uk; 237. t'og: 238. tsog; 264. t'ang: 286. s'iang; 271. t'ak: 288. s'jak; 278. t'og: 293. sjog; 306. t'iang, 307. t'iang: 316. ts'iang; 312. t'og: 319. ts'og; 320. dz'og; 314. t'og, 315. d'og: 321. dz'og; 330. t'ang: 334. sjeng; 333. t'jak: 335. s'jak; 342. d'og: 343. tsog, 344. dz'og; 358. tieng, 359. d'ieng: 360. ts'ieng; 397. t'ag: 400. s'jak, 401. sjag; 398. d'og: 402. z'og; 428. d'ak: 428. dz'ag; 429. t'ag: 431. dz'ag; 446. d'ek: 449. siek; 465. d'ag, 466. d'ag: 467. dz'ag; 469. sjag; 485. d'og: 495. ts'og; 532. d'ag: 540. z'ag; 543. t'ung: 547. dz'ung; 557. t'og: 558. s'og; 560. tiog, 559. d'og: 561. dz'og; 562. d'ok: 565. siog; 600. t'og: 601. s'og; 630. d'ek: 633. sjeg; 670. t'og: 671. dz'og, 672. s'og; F 2. d'jwan: 9. dz'jwan; 46. t'jan and s'jan; 50. t'jan: 52. s'jan; 55. t'jen: 56. sjen; 63. tswan: 67. s'jwan; 83. t'jen: 87. ts'jen; 112. t'jan: 114. dz'jan; 118. d'jwan: 122. ts'jwan, 123. dz'jwan; 119. d'jwat: 127, 128. s'jwat; 129. t'war: 131. ts'war; 130. dz'war; 133. d'wat: 137. ts'wat; 192. d'jen: 196. sjen; 290. t'jwan: 291. s'jwan; 327. d'jwat: 328. dz'jwat; 329. d'wan: 333. swan; 344. d'war: 345. dz'wan; K 3. d'jam: 5, 6. tsjam; 9. t'jam: 7. tsam, 8. tsjam; 16, 17. d'iap: 19. dz'iap; 26. d'em: 27. dz'jem; 28. d'am: 31. sjam; 40. d'am: 44. sjam; 41. d'am and dz'jem; 62. t'jam: 64. tsjam.

*p etc. ~ m:*

D 3. b'ung: 12. mung; 100. pak: 103. mak; H 64. b'jwan: 66, 67. mwan; 71. b'jwan: 72. mwan; 75. p'jwan: 76. m'jwan; 84. p'jwat: 90. m'jwat.

*n, n' ~ l:*

C 49, 50. njog, 48. njog: 51. liog; G 7. njat: 14. ljat; 23. njan: 17. ljwan.

### The medial (intercalary, subordinate) vowels

I shall design here the word type without *j, i, w* (type *kān* etc.) by 0. The theoretically possible alternations are the following:

1. 0 ~ *i*; 2. 0 ~ *i*; 3. 0 ~ *w*; 4. 0 ~ *iw*; 5. 0 ~ *iw*; 6. *i* ~ *i*; 7. *i* ~ *w*; 8. *i* ~ *w*; 9. *i* ~ *iw*. Most of them are well represented:

0 ~ *i*:

A 4. g'wāng: 6. g'iwang, 7. g'iwāng; 8. kēng: 1. k'jāng; 32. k'og: 31. k'jok; 66. xung; 67. x'ung; 76. g'wāng: 77. k'iwang; 83. g'eg: 84. g'jag; 89. x'ak: 90. x'ak; 98. kog: 100. g'og; 103. ngāng: 105. ngiang; 134. k'ang: 135. k'jāng; 143, 144. kwēg: 145. k'iwēg; 149. kog: 150. k'og; 153. kāng: 155. k'jāng; 156. kwāng: 158. g'iwēng; 172. kāng: 175. g'jak; 176. kwak: 177. g'iwak; 184. kāng, 185. kāng: 186. g'iwēng; 187. k'iang; 190. k'ung: 191. k'ung; 196. kog: 197. k'og; 209. kwāng: 212. g'iwēng;

213. k'ung: 216. k'jung; 246. k'og: 247. g'og; 250. kāng: 252. k'iang; 257. ngāng: 258. ngiang; 276. g'wāng: 277. g'iwang; 278. g'wāk: 279. k'iwak; 288, 289. 'ek: 292. 'jek; 302. kog: 305. k'og; 318. k'ek; 320. k'eg: 316. k'jāk; 332. g'ag: 333. g'ag; 336. g'eg: 337. g'jag; 365. g'og: 366. g'og; B 29. d'ak: 30. t'jak; 34. t'ung: 39. t'jung; 46. d'ang: 48. d'iang; 69. tang: 70. d'jeng; 69. tang: 75. t'jak; 71. tung; 72. t'ung; 92. tsang: 94. ts'iang; 150. t'ak: 151. t'jak; 166. ts'ek: 168. ts'jek; 176. tsag, 177. dz'ag: 178. ts'jag, 181. dz'jag, 179, 180. ts'jag; 210. d'ang: 213. t'jag; 264. t'ang: 265. d'iang; 276, 277. d'og: 280. d'og; 284. tsog: 285. ts'og; 290. sog: 292. s'og; 311. d'og, 310. tog: 313. d'og, 312. t'og; 318. ts'og: 319. ts'og; 322. s'ang: 323. s'jak; 355. s'eng: 356, 357. sjeng; 370. suk: 365. ts'juk; 372. tsang: 371. z'iang; 378. tsang: 379. dz'iang; 403. tang, 405. d'ang: 407, 408. t'iang; 417. d'og and d'og; 424. t'og: 426. t'og; 459. ts'ek: 458. dz'jak; 463. ts'eg: 462. ts'jag; 465. d'ag: 466. d'ag; 470. d'ang: 471. d'iang; 480. d'og: 485, 486. d'og; 551. s'og: 553. sjog; 588. tog: 589. t'og: 601. s'og: 600. t'og; 614. t'og: 612, 613. t'og; 673. dz'ak: 674. s'jak; 675. tsak: 676. ts'jak; 691. d'og: 693. d'og; C 1. lak: 2. ljag; 5. nak: 6. njak; 28. glag: 25. g'iang; 34. n'og: 35. njog; 52. lang: 53. ljang; 70. log: 71. ljog; 72. nag: 73. njog; D 31—35. b'wāng: 36. b'jwāng; 45. p'ang: 47. b'jāng; 53, 54. b'og: 56. b'og; 67. māng, 70. māng: 68. m'iwang; 86. p'ung: 87. p'jung; 126. p'ang: 127, 128. b'jāng; 129. b'eg: 130. p'jēg; 148. p'og: 149. p'og; 150. p'og: 151. b'og; 152. b'og: 153. b'og; 164. m'og: 165. m'og; 186. p'ung: 187. p'jung; E 1. kwān, 2. g'wān, 3—7. g'wan: 8. k'jwan, 9. g'jwan, k'jwan, 12. g'jwan; 19. kwān: 22. g'jwan; 25. g'war: 28. g'jwar; 32. kān and g'jan; 37. g'wan: 39. g'jwar; 46, 47. x'wān: 44, 47. x'jwar; 53. kwān: 54. k'jwān; 74. ked: 75. k'jed; 95. 'an: 96. 'jan; 106. kat: 108. k'jāt, g'jāt; 120. kwāt, 119. k'wāt: 117. g'jwāt; 122. 'wat: 123. 'jwat; 132. kwān: 133. k'jwan; 140. g'wad: 139. g'jwāt; 154. 'wān, 156. 'wan: 158. 'jwān, 161. 'jwar; 185. g'ān: 186. g'jān; 226. k'ān, 228. g'ān: 230. g'jān; 231. k'at: 232, 233. g'jāt; 300. k'ān: 302. g'jān; 312—314. kwād, 307. kwāt: 315. k'jwād; 319. ngwāt and ngjwāt; F 19. d'wān and t'jwan; 63. tswan: 64. ts'jwāt; 74. d'ān: 75. t'jan; 166. ts'wāt and dz'jwāt; 180. twar: 181, 182. t'jwar, 183, 184. d'jwāt; 185. t'ān, 186. d'ān: 188. t'jan, 187. t'jan, 189—191. d'jan; 214. tswan and ts'jwan; 214. tswan, ts'wāt: 215. dz'jwāt; 216. twan: 217. t'jwan; 233. ts'war: 234, 235. s'jwan, 236. s'jwāt; 259. d'ān: 262, 263. d'jan; 279. tswāt: 282. s'jwāt; 283. t'ān, 284. d'ān: 285. d'jan; 299. t'jan: 301. t'jan; 308. swan: 309. s'jwar; 316. d'āt: 317. d'jāt; 318. t'jan: 319. t'jan; 333. swan: 332. ts'jwan; 343. d'war: 342. d'jwāt; G 1. nan: 2, 3. njan; 25. lāt: 27, 28. ljat; H 10. pwāt, 11. p'wāt: 12. p'jwāt, 14. p'jwāt; 24. p'war: 23. p'jwar; 26, 27. b'ān: 27, 28. b'jan; 66, 67. mwān: 69. m'jwan; 79. b'wāt: 81. p'jwar; 83. pwāt: 84. p'jwāt, 87. p'jwar; 125. p'jāt: 126. p'jwāt; 155. mwān and m'jwāt; I 8. 'am: 9, 10. 'jam; 12. 'em: 13, 14. 'jem; 15—18. 'am: 19, 20. 'jam; 31. kap, 34. g'ap: 39. x'jap; 43. x'ap: 44, 45. x'jap; 50. 'ap: 51. 'jap; 62. k'am: 63. k'jam; 64. ngam: 65. ngiam; 77. g'ap: 80. x'jap; 83. k'am: 84. k'jam; K 1. tsām: 5, 6. tsjam; 7. tsam: 8. ts'jam; 28. d'am: 29. d'jam; 36. tsām: 38. dz'jap; 40. d'am: 41. d'jam; 42. d'am: 43. d'jam; 57. d'am: 58. t'jam; 74. sam: 76. sjam; 81. dz'ap: 82, 83. dz'jap; 87. nap: 90. njap.



0 ~ i:

A 133. g'eg: 132. g'ieng; 196. kog: 198. kiog; 303. g'og: 306. kiog; 346. g'og: 347. kiog; B 103. tók: 104. d'iók; 159. tog: 160. tiog; 153. tēk: 152. tiek; 235. d'ók: 236. d'iók; 480. d'óg: 484. d'ióg; 503. šog: 504. siog; C 12. log: 13. liog; 34. nōg: 36. niog; D 104. pēk: 105. p'iek; E 84. kwād: 83. kiwat; 89. k'wad: 88. kiwat; 106. kat: 107. k'iat; 128. k'ân: 129. kian; 178. 'ân, 179. 'an: 180, 181. 'ian; 203, 204. k'ar: 205. k'iar; 224. ken: 225. kien; 305. kât; 311. g'âd: 309. k'iat, 316, 317. k'iad; 330. 'at: 331. 'ian; F 307. ser and siar; 326. dz'er: 324. dz'iar; 350. tsed: 351. tsiar; G 11. glân: 12, 13. glian; I 21. g'am: 27. kiap; 31. kap, 32—34. g'ap: 35. kiap, 37. g'iap; 60. g'ap: 59. k'iap; 83. k'am and k'iam; K 32, 33. d'am: 34. d'iam; 60. d'âp: 61. d'iap.

0 ~ w:

A 20. g'äng: 21. g'wäng; 50. g'jäng: 49. g'jwang; 51. g'äng: 52. g'wäng; 73. kjäng: 77. k'jwang; 147. k'jag: 148. k'jwag; 202. 'jeng: 203. 'jweng; 206. k'äng: 207. k'wäng; 331. kek: 330. k'wák; 335. g'jag: 334. g'jwäg; D 24, 25. mak: 27. mwag; 37. b'äng: 35. b'wäng; 40. b'ang: 42. b'wag; 43. mjäng: 44. mjwang; 121. pak: 122. pwag; E 45. xiar; 42. xian; 46, 48. xiwar; 52. k'ian: 55. k'iwän; 79. kân, 80. kan: 81. g'wän; 99. k'an: 100. k'wan; 111. k'an: 112. g'wät; 128. k'ân: 132. kwân; 142. ngiän, 143. ngian: 139. giwät, 138. giwän; 153. 'jän: 158, 160. 'jwän; 185. g'än: 187. kwan; 265. 'jēn: 266. 'jwän; 268. 'jad: 270. 'iwäd; 291, 292. g'ian: 293, 294. giwän; 305. kât, 311. g'âd: 307. kwät, 312, 313. kwäd; F 41. tsian: 43. tsiwän; 112. tjan: 113. djwan; 160. tân: 161. d'wän; 259. d'ân: 265, 266. d'wän; 261. tjan: 267. tjwan; 302. djian: 303. tjwan; G 1. nan: 4, 5. nwän; 7. njat: 8. njwat; H 21. pjär: 23. p'jwär; 26, 27. b'än: 31. pwän, 32. p'wän; 68. mjen: 69. mjwän; I 38. k'jap and k'jwäb; 77. g'ap: 78. g'wäb; 85. tär: 86. twäb; K 87. när: 89. nwäb.

0 ~ iw:

A 20. g'äng: 22. giwang; 109. ngög: 110. ngiwög; 243. g'äng: 244. k'jwang; E 40. xän: 41. xiwän; 128. k'ân: 133. k'jwan; 300. k'ân: 301. k'jwän; 305. kât, 311. g'âd: 308. giwät, 315. k'iwäd; F 163. tât: 164. tjwat; 259. d'ân: 269. d'jwan.

0 ~ iw:

A 8. käng: 9, 10. kiweng, 11, 12. g'iweng.

j ~ i:

A 58. giwäng: 57. g'iweng; 129. kjäng: 130. kieng; 192. kjög: 193. g'ieg; 197. kjog: 198. kiog; 350. 'jog: 349. 'iog; 352. 'jog; 354. 'jog: 356. 'jog; 363. giog: 364. xjog: 362. kiog; B 54. tjäng: 53. d'ieng; 248. tjog, 253. fjog: 245. tiok; 302—304. dz'jäng: 305. dz'iek; 340. d'jäng: 341. tieng; 485. d'jog: 484. d'jog; 559. djog: 560. tiog; 579. djog: 582. t'jog; 592. djog: 593. d'jog; 598. djog: 599. t'jog; 605. djok, 607. t'jog: 606. d'jog; 689. djog: 688. d'jog; C 35. njog: 36. niog; D 38. pjäng: 39. b'ieng; 84. pjäng and b'ieng; E 108. kjat, g'jat: 107. k'iat; E 220. 'jar: 221. 'iar; F 114. dz'jan: 117. ts'iar; 148. djär and t'iar; 176. t'jät: 174. d'ien; 248. djad: 249. d'iad; 286. dzjar: 287. siar; 315. tjät and tiet; 314. tiän and t'ien; 353.

djät and d'iet; G 31. ljät: 32. liar; H 21. pjär: 22. p'iar; 30. p'jan: 29. p'ian; 153. p'jan: 152. pian; I 29. g'jam: 37. g'iap; 84. k'jäm: 83. k'iam.

i ~ w:

A 1. kjäng: 3. kwäng; 73. kjäng: 76. g'wäng; 315. k'jak: 317. k'wäk; E 52. k'jan: 53. kwän; 142. ngiän, 143. 'ngian: 140. g'wad; 153. 'jän: 154. 'wän, 156. 'wan; 186. g'jän: 187. kwan; F 105. twät: 106. d'wät: 104. f'jat, 103. d'jat; 209. tsjan: 210. ts'wän, 211, 212. dz'wan; 261. tjan: 266. d'wän; 311. djän, d'jän: 312. t'wän; G 2, 3. njän: 4, 5. nwän; H 21. pjär: 24. p'wär; 27. b'jan, 30. p'jan: 31. pwän, 32. p'wän; 45. b'jan: 48. pwän; 68. mjen: 66, 67. mwän; 144—146. b'jad: 143. b'wad.

i ~ w:

A 93. g'ieng: 94. g'wäng; E 129. kian: 132. kwän; 309. k'iat, 316, 317. k'iad: 307. kwät, 312—314. kwäd; G 32. liar: 33. lwär; H 22. p'iar: 24. p'wär; 29. p'ian: 32. p'wän; 89. miat: 88. mwät.

i ~ iw:

E 129. kian: 133. k'jwan; 210. kiär: 211. g'jwer; F 30. dz'iat: 31. dz'jwat; 281. siän: 278. dzjwän; H 22. p'iar: 23. p'jwär.

The examples given are sufficient to show that the alternations 0 ~ i, 0 ~ w, j ~ i, and quite particularly the first one (type kân ~ kjan), are among the fundamental means of the Chinese language for creating derivatives from one and the same word stem.

### The principal vowels

By alternations of all the vowels of the Archaic Chinese phonetic system the language has created an *Ablaut* system which is extremely rich and varied, and it is in this respect a true sister language of Tibetan, in which such an *Ablaut* plays a predominant part. I shall exemplify first the alternations of the different varieties of the same principal vowel (â: a: ä: o: ô: ô: é: e: ü: u), and then the alternations of the different principal vowels.

â ~ a:

For the very numerous cases of type â: ja (kân: kjan etc.) see alt. 0 ~ j above. Furthermore:

E 2. g'wän: 3—7. g'wan; 79. kân: 80. kan; 121. wän: 122. 'wat; 124. kwän: 125. g'wan; 154. 'wän: 156. 'wan; 178. 'ân: 179. 'an; 252. 'ân: 254. 'at; 333. kwän: 334. g'wan; F 210. ts'wän: 211, 212. dz'wan; G 4, 5. nwän: 1. nan; H 136. pwät: 137. b'wat; I 71. glâm: 69. klam; K 1. tsâm: 2. dz'am.

â ~ ä:

A 76. g'wäng: 73. kjäng; 134. k'äng: 135. k'jäng; 184. käng: 185. käng; 207. k'wäng: 209. kwäng; 206. k'äng; 250. käng; 257. ngäng; 323. 'äk, 'äg: 324. 'äg; D 35. b'wäng: 37. b'äng; 67. mäng: 70. mäng; 91. päk: 92. p'äk; 126. päng: 127, 128. b'jäng; 168. päk: 169. päk; 226. k'ân, 227. g'ân: 228, 229. g'än, 230. g'jän;



305. *kāt*, 312—314. *kwād*: 307. *kwāt*, 315. *kjwād*; F 73. *dz'ân*: 72. *tsân*; H 10. *pwât*: 12. *pjwât*; I 47. *k'âm*: 48. *g'âm*.

*a ~ ä:*

A 6. *giwang*: 7. *giwäng*; 22. *giwang*: 20. *g'äng*; 49. *g'jwang*: 50. *g'jäng*; 77. *k'jwang*: 73. *kjäng*; 168. *kjang*: 170. *kjäng*; 253. *g'jang*: 254. *g'jäng*; 279. *kjwak*: 278. *g'wäk*; B 48. *d'jang*: 46. *d'äng*; E 13. *giwan* and *giwän*; 56. *g'jwan*: 55. *k'jwän*; 108. *g'jat* and *kjät*; 143. *ngjan*: 142. *ngjän*; 161. *'jwar*: 160. *'jwän*; 280. *'jwan*: 281. *'jwän*; F 37. *san*: 26. *ts'än*; H 27. *b'jan* and *b'än*.

*ö ~ o:*

A 124. *kög*: 122, 123. *kog*; B 235. *d'ög*: 237. *t'og*; 283. *ts'ög*: 285. *tsjog*; 551. *šög*: 553. *šjog*; C 34. *nög*: 35. *njog*; D 148. *pög*: 149. *pjog*; 164. *mög*: 165. *mjog*.

*ō ~ ô:*

A 124. *kög*: 121. *g'ök*; 340. *kög*: 342. *kög*; 340, 341. *g'ög*: 343. *g'ög*; 339. *g'ök*.

*ō ~ ô:*

A 305. *kjög*: 306. *kiog*; 340. *g'ög*: 345. *k'ög*; B 235. *d'ök*: 236. *d'ioök*; 283. *ts'ög*: 284. *tsög*; 503. *šög*: 504. *siög*; 666. *tsög*: 667. *tsög*; 668. *sög*.

*o ~ ô:*

A 113. *ngiog*: 108. *ngök*; 122, 123. *kog*: 121. *g'ök*; 218. *g'og*: 221. *kög*; D 52. *b'og*; 49. *b'ok*: 53, 54. *b'ög*; 151. *b'jog*: 150. *p'ög*; 153. *b'jog*: 152. *b'ög*.

*o ~ ô:*

A 197. *kjog*: 199. *kjög*; 301. *k'og*: 300. *k'ög*; 302. *kog*: 303. *g'ög*; 347. *kiog*: 348. *kiög*; 349. *'iog*: 352. *'iög*; 354. *'jog*: 356. *'iög*; 363. *giog*: 362. *kiög*; B 248. *tjog*; 253. *tjög*: 255. *tjög*; 273. *tjök*: 274. *tjök*; 275. *đjök*; 280, 281. *đjog*: 276, 277. *d'ög*; 285. *tsjog*: 284. *tsög*; 312. *t'jog*; 313. *đjog*: 314. *t'jög*; 315. *d'jög*; 319. *ts'jog*; 320. *dz'jog*: 321. *dz'jög*; 366. *tsog*: 367. *ts'ög*; 456. *sjog*: 452. *sjök*; 559. *đjog*: 560. *tiög*; 588. *tog*: 589. *tjög*; 691. *d'og*: 692. *d'ög*; C 48. *njog*: 49, 50. *njög*; 70. *log*: 71. *ljög*; D 181. *p'jog*: 182. *b'jög*.

*ô ~ ô:*

A 121. *g'ök*: 125. *k'jög*; 344. *k'ög*: 345. *k'ög*; D 53, 54. *b'ög*: 56. *b'jög*; 117. *pög*: 118, 119. *b'ög*.

*ě ~ e:*

For the numerous cases of this alternation see alt. 0 ~ *j* and 0 ~ *i* above.

*ũ ~ u:*

A 36. *k'ük*: 37. *kuk*; 215. *k'üng*: 214. *k'ung*; 268. *kjüng*: 270. *k'juk*; B 42. *d'üg*: 41. *d'uk*; 123. *tük*: 125. *t'juk*; 115. *d'üng*: 116. *tjüng*; 626. *t'üng*: 625. *t'ung*; D 86. *püng*: 87. *pjüng*; 90. *b'üng*: 94. *p'uk*; 101, 102. *b'üg*: 98. *b'jüng*; 135, 136. *b'jük*: 137. *p'jüng*.

*a ~ e:*

A 1. *kjäng*: 8. *kěng*; 6. *giwang*. 7. *giwäng*: 11, 12. *g'iweng*; 52. *g'wäng*: 53. *kiweng*; 91. *käng*: 93. *g'iang*; 115. *xiang*: 117. *xieng*; 134. *k'äng*; 135. *k'jäng*: 136.

*g'ěng*; 184. *käng*, 185. *käng*: 188. *kieng*; 207. *k'wäng*, 209. *kwäng*: 212. *giwěng*; 240. *kjang*: 241. *k'iwěng*; 253. *g'iang*, 254. *g'jäng*: 255. *kjěng*; B 5. *sjang*: 6. *sjěg*; 48. *d'jang*: 53. *d'iang*; 46. *d'äng*, 44. *t'äng*: 54. *tjěng*; 108. *sjang*: 110. *sjěng*; 136. *d'äng*: 138. *d'iang*; 151. *fiak*: 154. *t'iek*; 265. *điang*, 264. *t'äng*: 266. *tieng*; 338. *ts'äng*: 339. *ts'iang*; 391. *ts'jang*: 392. *ts'jěng*; 405. *d'äng*, 407, 408. *fiang*: 410. *đieng*, 412. *t'iang*; 444. *điak*: 445. *đjěk*; 458. *dz'jak*: 459, 460. *ts'jěk*; 462. *tsjag*: 403. *tsjěg*; 529. *d'äk*: 531. *těk*; 660. *điak*: 661. *đjěk*; C 58. *liang*: 59. *ljěng*, 60. *lieng*; D 1. *b'äng*: 2. *pěng*; 6. *mäng*: 9. *mieng*; 31. *b'wäng*: 38. *pjěng*, 39. *b'iang*; 183. *p'iwang*: 184. *p'jěng*; E 9. *g'jwan*, 12. *giwan*, 13. *giwän*: 15, 16. *g'iweng*; 34. *g'ian*: 36. *g'iweng*; 52. *k'jan*: 57. *kjěng*, 58. *g'ien*; 63. *kwät*: 64. *kiet*; 86. *ngan*: 87. *ngieng*; 117. *g'jwät*: 118. *g'iwet*; 232, 233. *g'iat*: 234. *g'jět*; 252. *'än*: 253. *'jěng*; 254. *'at*: 255. *'jět*; 268. *'jad*: 269. *'jěd*; F 30. *dz'iat*: 32. *tsiet*, 33. *ts'iet*; 54. *tän*: 55. *tjěng*; 88. *dz'ian*: 89, 90. *tsjěng*; 175. *t'ät*: 176. *t'jět*; 186. *d'än*: 188. *t'jan*, 189. *đian*: 192. *d'jěng*, 194. *đjěng*; 201. *t'ät*: 200. *d'iet*; 218. *t'än*: 219, 220. *tjěng*; 271. *dzjwan*: 276, 277. *dzjwěng*; 334. *sjan*: 335. *sjěng*; 346. *d'iad*: 347. *đjět*; G 7. *njat*: 9. *njět*; 50. *liat*: 51. *ljět*; H 1. *p'jwän*: 2. *p'ien*; 29. *p'ian*, 30. *p'jan*: 37. *pieng*; 46. *pwän*, 45. *b'jan*: 47. *pieng*; 73. *b'jwän*: 74. *p'jěng*; 123. *piad*: 124. *pjěd*; 152. *pian*: 154. *pjěng*.

*a ~ a:*

A 29. *käng*: 30. *kөг*; 73. *kjäng*: 78. *kjang*; 92. *g'jäng*: 114. *xiang*; 153. *käng*, 155. *kjäng*: 163. *kjök*; 169. *kjäng*: 172. *kөng*, 175. *g'jök*; 229. *kwäng*: 231. *g'wäng*; 257. *ngäng*: 258. *ngiang*; B 64. *điang*: 70. *d'jäng*; 265. *điang*, 264. *t'äng*: 267. *tjäng*; 335. *sjak*: 336. *sjök*; 406. *tjang*: 411. *tөng*; 662. *d'jak*: 663. *đjak*; C 24. *liang*: 26. *ljäng*; 56. *näng*: 57. *njäng*; D 31. *b'wäng*: 40. *b'өng*, 42. *b'wөг*; 168. *päk*, 169. *päk*: 170. *pjök*; E 1. *kwän*, 2. *g'wän*, 3—7. *g'wan*, 12. *giwan*, 9. *g'jwan*, *k'jwan*, 13. *giwän*: 19. *kwän*, 17. *k'wän*, 22. *giwän*, 21. *kjwän*; 47. *xiwar* and *xiwät*; 53. *kwän*, 54. *kjwän*, 55. *k'jwän*: 60. *kwän*, 61. *k'wän*; 63. *kwät*: 67. *kwät*; 72. *g'iat*: 73. *kjät*; 117. *g'jwät*, 116. *k'jwät*: 117. *g'jwät*, 120. *kwät*, 119. *k'wät*; 130, 131. *g'ian*: 134. *g'jөн*; 143. *ngjan*, 142. *ngjän*: 139. *giwän*; 140. *g'wad*, 139. *giwät*: 141. *giwad*; 250. *xiwän*: 251. *xiөн*; 259. *'jwän*: 260. *'jwөн*; 263. *giwän*: 264. *g'jwän*; 280. *'jwan*, 281. *'jwän*: 282. *'jwөн*; 300. *k'än*, 302. *g'ian*: 303. *g'өн*, 304. *kjan*; 307. *kwät*, 308. *giwät*: 310. *giwät*; 314. *kwäd* and *kjäd*; 319. *ngwät*, *ngiwät* and *ngwät*; 320. *ngiäd*: 321. *ngjäd*; 325. *giwän*: 326. *giwөн*; 332. *g'jän*: 331. *kjөн*; F 1. *đjwan*: 2. *đjwөн*; 88. *dz'ian*: 95. *siөн*; 114. *dz'jan*: 115. *dz'wөн*; 152. *dz'wad*: 153. *dz'jwäd*; 158. *sjwad* and *sjwät*; 161. *d'wän*: 162. *d'wөн*; 210. *ts'wän*, 211. *dz'wan*: 214. *tswөн*, 213, 214. *tsjwөн*; 228, 229. *tjän*: 230, 231. *tjөн*; 271. *dzjwan*: 278. *dzjwөн*; 310. *tän*: 311. *đjөн*, *d'jөн*; 337. *ts'jwad*: 338. *swäd*; G 15, 16. *liar*: 17, 18. *ljwөн*; 29, 30. *liäd*: 49. *ljäd*; H 1. *p'jwän*: 3, 4. *pjwөн*; 12. *pjwät*, 14. *p'jwäd*: 13. *p'jwät*, 15. *p'jwäd*; 31. *pwän*, 32. *p'wän*, 27. *b'än*, *b'jan*: 38. *pjwөн*, *b'jwөн*; 40. *b'jwät*: 41. *b'jwät*; 58, 59. *b'wad* and *b'wät*; 73. *b'jwän*: 75. *pjwөн*; 88. *mwät*, 89. *miät*: 90. *mjwät*, 91. *mjwäd*; 92. *man*: 93. *mwөн*; 122. *pjad*: 125. *pjäd*; 148. *b'jwän*: 149. *b'jwөн*; I 4. *g'äp*: 5. *kөp*; 8. *'äm*, 9, 10. *'jam*: 15—18. *'өm*, 19, 20. *'jөm*; 21, 22. *g'äm*: 24—26. *g'өm*; 27. *kiap*: 28. *g'өp*; 47. *k'äm*: 49. *k'jөm*; 60. *g'ap*, 59. *k'iap*: 61. *g'jөp*; 64. *ngam*, 65. *ngiam*: 66. *ngjөm*; 74. *g'iap*: 77. *g'өp*; K



1. tsám, 2. dz'am, 5. tsjam; 7. tsam, 8. tsjam; 3. djam; 4. tjam, 9, 10. tjam; 20. tjam; 23. tjam; 36. tsám; 37. ts'jam; 38. dz'jam; 39. səp; 40. d'am, 41. djam; 43. djam; 57. d'am, 58. tjam; 59. d'am; 64, 65. tsjam; 66. tsjam; 72. dz'am; 73. dz'jam; 77. dz'am; 78. ts'jam.

## a - e:

A 184. káng; 189. g'weng; 229. kwáng; 230. g'weng; 330. k'wák; 331. kek; E 9. k'jwan, 12. giwen; 84. kwád, 83. kiwat; 82. g'wet; 124. kwán, 125. g'wan; 127. giwen; 128. k'an, 129. kian; 137. ngen; 191. 'jan; 193. 'jen; 236. g'wát; 237. g'wet; I 8. 'ám; 12. 'em; 9. 'jam; 13, 14. 'jem; 21, 22. g'am; 23. g'em; 40. giam; 41. g'em; 60. g'ap, 59. k'iap; 61. g'jep; 72. kiam; 73. g'em; 74. g'iap; 75. g'ep; K 20. tjam; 22. tjam; 24. sjam; 25. sem.

## a - o:

A 106. ngák; 108. ngók; 120. g'ák; 121. g'ók; 239. g'áng; 242. kóng; B 165. tsjak; 187. sjok; 265. djang, 264. t'áng; 269. djông; 272. tjak; 273. t'ók; 288. sjak; 292. sjók; 306. t'jang, 307. t'jang; 308. t'jông; 416. tjak; 420. t'ók, 417, 419. d'jók; 450. dzjak, 454. zjag; 452. sjók, 456. sjog; 518, 519. tsjak; 521. tsjók; 585. t'jak; 586. d'jók; C 3. njang; 4. nong; D 18. mág; 21. móg; 160. mág; 161. mjók; 162, 163. mág; 164. móg, 165. mjog.

## a - u:

A 14. xák; 15. xiuk; 20. g'áng; 25. g'úng; 51. g'áng; 54. kǔng; 73. kǎng, 77. k'jwang; 79. kǎng, 80. k'jung; 92. g'jǎng; 95. kǔng; 169. kǎng; 173. g'jǎng; B 46. d'ǎng, 44. t'ǎng; 56. túng; 119. t'ák; 123. túk; 120. d'ák; 124. d'úk; 130. d'áng; 131. d'ung; 141. tjang; 143. tjung; 151. tjak; 155. túk; 198. táng; 199. d'ung; 228. d'ák; 230. túk; 361. ts'áng; 362. ts'ung; 405. d'áng, 407, 408. tjang; 414. djung; 406. tjang; 413. d'ung; 498. sák; 500. sjuk, 499. sjuk; 507. tjak; 509. d'juk; D 1. b'ǎng; 3. b'ung; 6. mǎng; 12. mung; 46. piǎng; 48. p'jung; 62. piǎng; 63. p'jung; 79. mǎng; 81. mǔng; 83. b'jwang; 87. piung; 89. b'ǎng; 90. b'úng; 92. p'ák; 94. p'uk; 95. piǎng; 97. p'jung, 98. b'jung; 178. mág; 180. mjǔg.

## e - e:

B 101. t'jeng; 102. d'eng; E 64. kiet; 69. giwet; 225. kien; 224. ken.

## e - a:

A 145. kǎwǎg; 148. kǎwǎg; 288—291. 'ék; 293. 'jak; 296. kiek; 298. kǎk; 334. g'jwǎg; 335. g'jǎg; 336. g'ǎg; 337. g'jǎg; B 10. tǎng; 11. d'jǎng; 20. tǎng; 21. d'jǎk; 27. d'jǎng; 28. t'jǎng; 77. d'ieg; 79. d'ǎg; 232. dz'jǎg; 233. tsǎg; 266. tieng; 267. tǎng; 394, 395. tǎg; 396, 397. tǎg; 445. djǎk; 447. d'ieg; 448. d'ǎg; 468. sjǎg; 469. sjǎg; 510, 511. d'ieg; 513. tǎg; 630. djǎg; 631. tǎg; 633. sjǎg; 632. tsǎg; C 64. lieng; 65. lǎng; E 36. g'iwǎn; 37. g'wǎn; 57. kǎn, 58. g'ien; 60. kwǎn, 62. k'wǎn; 64. kiet; 67. kwǎt; 118. g'iwǎt; 120. kwǎt, 119. k'wǎt; 214, 215. 'jǎn; 216. 'jǎn; 265. 'jǎn; 266. 'jǎn; 283. 'ǎn; 284. 'ǎd; F 89. tsǎn; 95. siǎn; 121. dzǎwǎn; 123. dzǎwǎn; 232. d'ien; 231. tǎn; 276. dzǎwǎn; 281. siǎn; 288. d'iet; 289.

t'ǎd; 305. sjǎn; 306. siǎn; 320. tsǎn; 321, 322. ts'ǎn; H 74. p'jǎn; 75. piwǎn; 115. piǎt; 117—119. piwǎt; 116. piǎt; 120, 121. piwǎt; 124. piǎt; 125. piǎd, 126. piwǎd; 141. piǎd; 142. piwǎd.

## e - o:

A 96. k'jǎg; 99. k'jog; 109. ngǎg; 113. ngiog; 143, 144. kwǎg, 145. kǎwǎg; 149. kog, 150. kǎg; 193—195. g'ieg, 192. kǎg; 197. kǎg, 198. kǎg, 199. kǎg; B 58, 59. tǎg; 61. d'jog; 85. djǎng; 89. t'jog; 147. djǎng; 148. tǎg; 174. ts'jǎg; 182. tsog; 209. sieng; 208. sog; 261. siek; 262. sjok; 331. d'jǎng, 330. t'jǎng; 332. d'jog; 479. d'ieg; 486. d'jog; 578. djǎg; 579. djog; D 129. b'ǎg; 131. b'og.

## e - u:

A 129. kǎng, 130. kieng; 131. g'úng; 210, 211. k'ien; 214. k'ung, 215. k'ung; 264. 'ǎng; 265. 'ung; 283. g'ieg; 284, 285. giǔg; B 8. tǎng; 12. tung; 54. tǎng; 56. túng; 85. djǎng, 88. djǎng; 90. djung; 112. tieng; 115. d'úng; 113. tǎng; 116. tǎng, 118. djung; 154. t'iek; 155. túk; 229. tiek; 230. túk; 232. dz'jǎg; 231. dz'úk; 375. t'ien; 376. ts'ung; 410. djǎng; 414. djung; 442. tsǎng; 443. ts'ung; 520. tsǎk; 523. tsjuk; C 31. lieng; 32. lung; D 2. pǎng; 3. b'ung; 8, 9. mieng; 11, 12. mung; 28. mieng; 29. mung; 173, 174. mǎg; 175. mug.

## e - a:

A 83. g'eg; 84. g'jǎg; 230. g'weng; 231. g'wǎng; E 20. k'jwǎn; 22. giwǎn; 74. kǎd, 75. kǎd; 76, 77. kǎd; 137. ngen; 134. g'jǎn; 182. g'ien; 183. k'wǎn; 275. g'jen, 276. kǎt; 277. kǎt; F 307. ser and siǎr; 326 dz'er; 324. dz'iar; H 68. mǎn; 66, 67. mwǎn, 69. miwǎn; I 12. 'em, 13, 14. 'jem; 15—18. 'ǎm, 19, 20. 'jǎm; 23. g'em; 25. g'am; 61. g'jep and g'jǎp; 75, 76. g'ep; 77. g'ǎp; K 22. tǎp; 23. tǎp; 26. d'em; 28. d'am, 29. d'jǎm; 27. dz'jem; 31. sjǎm.

## e - o:

A 16, 17. xiǎg; 18. xiog; 97. k'jǎg; 99. k'jog; 101. g'jog; 138. xiǎg; 139. xog; 147. k'jǎg; 150. kǎg; B 2. djǎg; 3. tǎg; 106. t'jǎg; 107. t'jog; 176. tsǎg, 177. dz'ǎg, 179. tsǎg; 183. tsǎg; 247. t'jǎg; 253, 254. tǎg; 267. tǎg; 269. djông; 300. djǎk; 301. djǎk; 382. dzǎg; 383. ts'jog; 384. sjog; 385. zǎg; 401. sjǎg; 402. zǎg; 501. sjǎg; 502. sog; 513. tǎg; 515. d'og; 532. d'jǎg; 533. djǎg; 537. ts'ǎg; 538. ts'og; 570. d'ǎg; 571. tog; 587. tǎg; 588. tog; 589. tǎg; 597. djǎg; 598. djǎg; 619. t'jǎg; 620. tǎg; 623. t'jǎg; 624. t'jog; 644. tsǎg; 645. tsog; 647. tsǎg; 650. dz'og; D 145. p'wǎg; 146. p'og.

## e - u:

A 78. kǎng; 79. kǎng; 172. kǎng; 173. g'jǎng; 267. kwǎng; 268. kǎng; 326. kǎk; 327. giuk; 368. g'iwǎg; 367. kǎg; B 411. tǎng; 413. d'úng; 470. d'ǎng, 471. djǎng; 472. t'ung; 505. djǎng; 506. tǎng; 542. tǎng; 543. tǎng; 603. d'ǎng; 604. djung; 652. tsǎk; 653. sjuk; 684. d'ǎk; 685. d'uk; C 61. lǎng; 62. lǎng; D 10. mǎng; 11, 12. mung; 122. pwǎg, 123, 124. b'wǎg; 125. b'ǎg; 133, 134. b'wǎk; 135, 136. b'júk; 179. mwǎg; 180. mjǔg; 188. b'wǎg and b'úg.



*o ~ u:*

A 43. 'ok: 44. 'ūk; 63. kōng; 64. g'ung; B 89. t'jōng; 90. djung; 103. tók, 104. d'iók; 105. t'juk; 114. d'jōng; 117. t'jung; 122. t'jók; 123. t'úk; 216. d'óng; 217, 218. t'ung; 259. tsjok; 246. t'juk; 269. d'jōng; 270. djung; 369. sjók; 370. suk; 364. tsjók; 365. ts'juk; 389. tóng; 390. tung; 475. t'jok; 477. t'juk; 508. d'iók; 509. d'juk; 521. tsjók; 522. ts'jók; 523. tsjuk; 594. d'jók; 596. djuk; C 66. nōng; 67. njung; D 4. p'jók; 5. b'juk; 49. b'ok; 51. puk; 185. p'jōng; 187. p'jung.

### Combined alternations

We now revert to the question posed on p. 90 above. Is it reasonable to combine words which offer, not one alternation but two or more? Let us take the third example given there: E 93. g'át »how»: 94. k'jár »how». Semantically the combination is very good; but we have to accept no less than four alternations, concerning every element of the two words. We have attested above the indubitable existence of the four alternations: *g' ~ k'* (very common); *0 ~ j* (very common); *á ~ ə* (very common); *t ~ r* (quite certain and fairly common); are we then authorized to pose the affinity of the two words »how»: g'át: k'jár, which supposes those four alternations?

Theoretically, I should say that we are; but I want to emphasize that here, as in all linguistics, the conclusiveness of the argumentation depends upon the question whether we can find many parallel examples, showing the same combination of alternations. If we can, then I think nobody can deny the correctness of our deductions. That is why I wish to give here some fairly extensive examples of double alternations (in order to simplify matters I limit the demonstration to two elements: principal vowel and final consonant):

Alternations *a ~ e* and *ng ~ k ~ g* (*ang ~ ek, ang ~ eg, ak ~ eng, ak ~ eg*):

B 407. t'jang: 415. djěk; C 9. njang: 11. něk; A 140. k'iwang: 145. k'iwěg; 186. k'iang: 192. k'jěg; B 5. sjang: 6. sjěg; 48. d'jang: 58. t'jěg; D 127, 128. b'jǎng: 129. b'ěg; 130. pjěg; B 333. t'jak: 330. t'jěng; 335. sjak: 334. sjěng.

Alternations *a ~ ə* and *ng ~ k ~ g* (*ang ~ ək, ang ~ əg, ak ~ əg, ag ~ əng*):

A 155. k'jǎng: 163. k'jək; 168. k'jang; 169, 170. k'jǎng: 175. g'jək; B 427. d'jang: 428. d'jək; A 73. k'jǎng: 84. g'jəg; 92. g'jǎng: 97. k'jəg; 135. k'jǎng: 137. g'jəg; B 1. d'jang: 2. djəg; 66. d'jang: 79. d'əg; 108. sjang: 111. sjəg; 162. dz'jang: 177. dz'əg; 210. d'àng: 214. djəg; 243. t'jang: 247. t'jəg; 381. dz'jang: 382. dz'jəg; 399. sjang: 401. sjəg; 427. d'jang: 429. t'jəg; 535. ts'jang: 540. zjəg; 639. sjang: 640. sjəg; B 97. djak: 99. djəg; 119. t'ák: 126. t'jəg; 444. djak: 448. d'əg; 498. sák: 501. sjəg; 507. t'jak: 513. t'jəg; 637. t'ák: 638. d'əg; B 207. dz'ág: 206. dz'əng; 416. t'jag: 411. təng; D 18. mág: 10. məng.

Alternations *a ~ o* and *ng ~ k ~ g* (*ang ~ ok, ang ~ og, ak ~ og, ag ~ ok*):

A 118. k'àng: 121. g'ók; 201. 'jang: 205. 'jok; 250. k'àng: 256. k'ók; B 265. d'jang: 273. t'jok; 275. d'jók; 286. sjang; 287. sjang: 289. sjok; C 16. lǎng: 19. liok

24. liang: 27. liok; D 45. p'ǎng: 49. b'ok; A 118. k'àng: 122, 123. kog; 186, 187. k'iang: 197. k'jog; 199. k'jók; B 1. d'jang: 3. t'jók; 48. d'jang: 61. d'ióg; 242. d'iang: 250—252. djog; 265. d'iang: 280. djog; 278. t'jók; 307. t'jang: 312. t'jog; 314. t'jók; 361. ts'àng: 367. ts'ók; 381. dz'iang: 385. zjók; 399. sjang: 402. zjók; 407. t'jang: 418. d'jók; 406. t'jang: 420. t'jók; 440. d'àng: 441. tog; 554. t'jang: 557. t'ók; C 14. liang: 15. liog; 16. lǎng: 20, 21. liog; 69. lǎng: 70. log; 71. l'jók; D 6. mǎng: 20. mog; 45. p'ǎng: 53, 54. b'ók; 46. p'ǎng: 55. pjog; 62. p'ǎng: 66. p'jog; 67. mǎng; 70. mǎng: 71. mjog; 79, 80. mǎng: 82. mjog; 127, 128. b'jǎng: 131. b'ók; A 120. g'ák: 122, 123. kog; 124. k'ók; B 119. t'ák: 127. t'ók; 165. ts'jak: 183. ts'jog; 271. t'ák: 279. t'jók; 272. t'jak: 278. t'jók; 288. sjak: 292. sjók; 323. sjak: 319. ts'jog; 335. sjak: 337. sjók; 450. dz'jak: 456. sjog; 581. dz'ák: 583. ts'jog; B 454. z'jag: 452. sjók.

Alternations *a ~ u* and *ng ~ k ~ g* (*ang ~ uk, ak ~ ung, ag ~ ung*):

A 266. g'iwang: 271. g'juk; B 554. t'jang: 556. d'uk; D 89. b'àng: 94. p'uk; A 90. x'jǎk: 88. x'jung; B 120. d'ák: 116. t'jung; 119. t'ák: 115. d'ǔng; D 91. pák: 90. b'ǔng; 100. pák: 97. p'jung; 98. b'jung; D 18. mág: 11. mung.

Alternations *e ~ ə* and *ng ~ k ~ g* (*eng ~ ek, eng ~ eg, ek ~ eg*):

A 159. g'ieng: 162. k'ək; B 8. t'jěng: 13. t'jək; 53. d'ieng; 54. t'jěng: 57. djək; 68. tieng: 74. təg; A 136. g'ěng: 137. g'jəg; B 101. t'jěng: 106. t'jəg; 110. sjěng: 111. sjəg; 355. sěng; 356, 357. sjěng: 354. dz'jəg; 353. ts'jəg; 445. djěk: 448. d'əg; 520. ts'jək: 524. dz'jəg; 531. t'ěk: 532. d'jəg.

Alternations *e ~ o* and *ng ~ k ~ g* (*eng ~ ok, eng ~ og, ek ~ og, eg ~ ok*):

A 202. 'jěng: 205. 'jok; B 101. t'ieng: 104. d'iók; 112. tieng: 122. t'jók; A 8. k'ěng: 13. kog; 61. g'ieng: 65. g'ók; 93. g'ieng: 102. k'jók; 210, 211. k'ieng: 220. k'jog; B 53. d'ieng; 54. t'jěng: 61. d'ióg; 101. t'jěng: 107. t'jog; 112. tieng: 127. t'ók; 340. d'jěng; 341. tieng: 342. d'jók; 412. t'ieng: 418. d'jók; C 44. lieng: 45. l'óg; B 154. t'iek: 159. tog; 239. siek: 241. sjók; 415. djěk: 418. d'jók; 642. d'iek: 643. d'jók; 658. djěk: 659. djog; C 39. liek: 43. l'jók; D 15—17. miek: 21. m'óg; 159. miek: 161. mjók; A 109. ngěg: 108. ngók; B 510. d'ieg: 508. d'iók; 563. d'jěg: 562. d'iók; 578. djěg: 576. djók.

Alternations *e ~ u* and *ng ~ k ~ g* (*ek ~ ung, eg ~ ung, eg ~ uk*):

B 520. ts'jək: 516. ts'jung; D 15, 16. miek: 11. mung; A 24. k'ěg: 25. g'ǔng; 193. g'ieg: 191. k'jung; B 58. t'jěg: 56. t'jung; D 88. b'jěg: 87. p'jung; B 479. d'ieg: 477. t'juk; 510. d'ieg: 509. d'juk.

Alternations *ə ~ o* and *ng ~ k ~ g* (*əng ~ ok, əng ~ og, ək ~ og, əg ~ ok*):

B 267. t'jang: 274. t'jók; 298, 299. d'jəng: 301. d'jók; 470. d'əng; 471. d'jang: 475. t'jok; 603. d'əng: 605. djók; C 26. liang: 27. liok; B 411. təng: 417. d'ók; 470. d'əng; 471. d'jang: 483, 486. d'jók; 528. d'jang: 533. d'jók; 603. d'əng: 606. d'jog; D 10. mǎng: 21. m'óg; A 162. k'ək: 166. kog; 326. k'jak: 328. g'jók; B 57. djək: 61. d'ióg; 317. ts'jak: 319. ts'jog; 320. dz'jog; 321. dz'jók; 336. sjak: 337. sjók; 474. t'jak: 483. d'jók; 539. sjək: 541. sjók; 569. tək: 571. tog; 572. ts'jak; 573. dz'jók;



C 22. *liək*: 23. *log*; B 106. *t'jæg*: 104. *d'io̩k*; 126. *t'jæg*: 122. *ti̩k*; 179. *tsjæg*: 187. *sjo̩k*; 329. *sjæg*: 328. *sjo̩k*; 352. *t'æg*: 350. *djōk*; 597. *djæg*: 594. *djōk*; D 172. *b'wæg*: 171. *pjōk*.

Alternations *a ~ u* and *ng ~ k ~ g* (*əng ~ uk, əng ~ ug, əg ~ ung, əg ~ uk*):

D 40. *b'əng*: 41. *p'jūk*; 132. *pəng*: 135. *b'jūk*; A 181. *g'əng*: 182. *kjūg*; D 132. *pəng*: 137. *p'jūg*; A 84. *g'jæg*: 80. *k'jūng*, 79. *kjūng*; 97. *k'jæg*: 95. *kūng*; B 126. *t'jæg*: 115. *d'ūng*; 329. *sjæg*: 326. *sjūng*; 524. *dzjæg*: 516. *tsjūng*, 517. *dz'jūng*; 628. *t'jæg*, 629. *t'jæg*: 626. *t'ūng*, 625. *t'ūng*, 627. *tūng*; 654. *tsæg*: 655. *šūng*; B 106. *t'jæg*: 105. *tjūk*; 126. *t'jæg*: 123. *tūk*, 125. *t'jūk*; 513. *tjæg*: 509. *d'jūk*; 597. *djæg*: 596. *djūk*; D 42. *b'wæg*: 41. *p'jūk*.

Alternations *o ~ u* and *ng ~ k ~ g* (*ok ~ ung, og ~ ung, og ~ uk, ok ~ ug*):

A 41. *kōk*: 40. *g'ung*; 128. *χok*: 127. *χung*; B 76. *tōk*: 72. *tjūng*; 122. *ti̩k*: 115. *d'ūng*; 328. *sjo̩k*: 326. *sjūng*; 605. *djōk*: 604. *djūng*; A 65. *g'ōg*: 64. *g'ung*; 101. *g'jog*: 95. *kūng*; 220. *k'jog*: 213. *k'ung*, 216. *k'jūng*; 221. *kōg*: 214. *k'ung*; 225. *χjog*: 222. *χjūng*; B 127. *tōg*: 115. *d'ūng*; 225. *d'ōg*, 226. *t'ōg*: 223, 224. *djūng*; 417. *d'ōg*, 417, 419. *d'jōg*: 413. *d'ūng*; 494. *tsjōg*: 490. *tsung*; 481. *t'ōg*: 472. *t'ung*; 606. *d'jog*, 607. *t'jog*: 604. *djūng*; D 21. *mōg*: 11. *mung*; 55. *pjog*: 48. *p'jūng*; 66. *p'jog*: 63. *p'jūng*; 74. *mog*: 73. *mūng*; 82. *mjog*: 81. *mūng*; A 272. *kjōg*: 270. *k'jūk*; 328. *g'jōg*: 327. *gjūk*; B 107. *t'jog*: 105. *tjūk*; 127. *tōg*: 123. *tūk*, 125. *t'jūk*; 159. *tog*, 160. *ti̩g*: 155, 156. *tūk*; 253, 254. *tjog*: 246. *tjūk*; 367. *ts'ōg*: 365. *ts'jūk*; 486. *d'jōg*: 477. *tjūk*; 515. *d'ōg*: 509. *d'jūk*; 538. *ts'og*: 536. *tsūk*; 550. *dz'ōg*: 549. *dz'uk*; 557. *t'ōg*: 556. *d'uk*; C 42, 43. *li̩g*: 40. *luk*; A 280, 281. *kjōk*: 284, 285. *giūg*.

Alternations *a ~ e* and *n ~ t ~ d* (*an ~ et, ad ~ et, at ~ en*):

E 230. *g'jān*: 234. *g'jēt*; 252. *ān*: 255. *jēt*; F 346. *d'iad*: 347. *tjēt*; 297. *tsat*: 296. *dz'jēn*.

Alternations *a ~ ə* and *n ~ t ~ d ~ r* (*an ~ ət, an ~ əd, an ~ ər, at ~ ən, at ~ əd, at ~ ər, ad ~ ən, ad ~ ət, ad ~ ər*):

E 53. *kwān*: 67. *kwət*; 259. *jwān*: 261. *jwət*; F 107. *ts'wan*: 111. *dz'wət*; 132. *djwan*: 133. *d'wət*; H 111. *p'jwān*: 120, 121. *pjwət*; E 302. *g'jan*: 314. *kjəd*; F 210. *ts'wān*: 215. *dzjwəd*; H 112. *pjwān*: 126. *pjwəd*; E 1. *kwān*, 2. *g'wān*, 3. *g'wan*: 25, 26. *g'wər*; 40. *χān*: 45. *χjər*; 90. *giwān*: 92. *giwər*; 135. *χian*: 136. *χjər*; 149. *kwān*, 150. *g'wān*: 152. *giwər*; 157. *wān*: 162. *wər*; 199. *χān*: 200. *χjər*; F 27, 28. *tsjan*: 34. *tsjər*, 35. *dz'jər*; 172. *twān*: 180. *twər*; 304. *tsjan*: 306, 307. *sjər*; G 1. *nan*: 10. *njər*; H 45. *b'jan*: 52. *pjər*; E 63. *kwāt*: 60. *kwən*, 61, 62. *k'wən*; 139. *giwāt*: 138. *giwən*; 184. *kjwāt*: 183. *k'wən*; 305. *kāt*: 303. *g'ən*; F 109. *tswāt*: 108. *tswən*; 164. *tjwat*: 162. *d'wən*; H 39. *pjāt*, *b'jāt*: 38. *pjwən*, *b'jwən*; 136. *pwāt*: 135. *pwən*; E 72. *g'jāt*: 76. *kjəd*; 139. *giwāt*: 141. *giwəd*; 244. *kiat*: 245. *kəd*; 305. *kāt*: 314. *kjəd*; 319. *ngjwāt*: 321. *ngjəd*; G 26. *lāt*, 27. *ljāt*: 31. *ljəd*; H 11. *p'wāt*, 12. *pjwāt*: 15. *p'jwəd*; 114. *piat*: 125. *pjəd*; E 91. *giwāt*: 92. *giwər*; 93. *g'āt*: 94. *k'jər*; 305. *kāt*: 318. *kər*; F 4. *tjwat*: 6. *djwər*; 30. *dz'iat*: 34. *tsjər*, 35. *dz'jər*; 257.

*sjāt*: 258. *sjər*; E 24. *giwad*: 22. *giwən*; 140. *g'wad*: 138. *giwən*; 311. *g'ād*: 303. *g'ən*; F 279. *tswād*: 278. *dzjwən*; E 103. *kād*: 102. *k'jət*; 315. *kjwād*: 310. *giwət*; F 134. *t'wād*: 133. *d'wət*; 158. *sjwad* and *sjwət*; H 14. *p'jwād*: 13. *p'jwət*; H 58, 59. *b'wād* and *b'wət*; 122. *pjād*: 117, 118. *pjwət*; E 24. *giwad*: 28. *giwər*; 103. *kād*: 104. *g'jər*; 247. *kād*: 248. *k'ər*; F 4. *tjwad*: 6. *djwər*; 22, 23. *tjād*: 24, 25. *t'jər*; 39. *djwad*: 40. *tjwər*; 93. *tsjad*: 94. *tsjər*.

Alternations *e ~ ə* and *n ~ t ~ d ~ r* (*en ~ əd, en ~ ər, et ~ ən, et ~ əd, et ~ ər*):

E 283. *'ən*: 284. *'əd*; H 97. *mjēn*: 108. *mjəd*; 113. *b'jēn*: 125. *pjəd*; E 214. *jēn*: 217. *jər*; F 89. *tsjēn*: 94. *tsjər*; 98. *tsjēn*: 99. *tsjər*; 196, 197. *šjēn*: 198. *sjər*; 305. *sjēn*: 306, 307. *sjər*; G 37, 38. *ljēn*: 39. *ljər*; H 18. *b'jēn*: 21. *pjər*, 22. *p'jər*; 47. *pien*: 52. *pjər*; 95. *mjēn*: 110. *miər*; F 53. *d'iet*: 50. *t'jən*; 288. *d'iet*: 289. *t'iad*; E 273. *k'jēt*: 274. *kiər*; F 21. *tjēt*: 25. *t'jər*; 32. *tsiet*, 33. *ts'iet*: 34. *tsjər*, 35, 36. *dz'jər*; 169. *d'jēt*: 170. *tjēr*; 176. *t'jēt*: 178. *tiər*; 200. *d'iet*: 202, 203. *tjər*; 237. *d'jēt*: 238. *d'jər*; 349. *dz'jēt*: 351. *tsjər*; H 19. *p'jēt*: 22. *p'jər*.

I have quoted my materials so extensively in order to prove, by these ample series of parallel cases, that we are perfectly justified in operating with combined alternations. Hence the examples on p. 90 above: *k'ung*: *χjog*; *djāng*: *tōk*: *dæg*: *g'āt*: *k'jər*; *ngiān*: *g'wad*; *sān*: *dz'wər* are far from being so impossible as they look at first sight. They fall within series of well-established alternations, and there is in principle nothing against considering them as being polar extremes within large and richly varied word families.

### Final remarks

There are two more questions which should be touched upon before finishing this preliminary investigation of Chinese word families.

One of them is this: are all the materials adduced here homogeneous, i. e. do they belong to one and the same language, one Archaic dialect? If not, if there are certain words which come, so to speak, from a side-track, which have been incorporated in literature by picking up dialectal words outside the main branch of the language and in their dialectal phonetic garb, then this would necessarily disturb our circles and endanger our results. I must frankly point out that in a few cases there is a certain risk of such a source of error. Indeed, I have inserted in my tables half a dozen words which the ancient sources directly indicate as being dialect words (such are B 496, B 530, F. 243, H 9). But on the whole this risk is very small, since I have operated mainly with the most common words of the language (practically all of them are such as are to be found in Soothill's little Pocket Dictionary).

The second question concerns the grammatical nature of the alternations. We have seen thousands of examples in which the language by their aid has formed parallel words for the same notion or phonetically more or less differentiated words for kindred notions. But do the alternations not sometimes serve as



expressions for purely grammatical functions in a narrower sense? They certainly do, but this is an extremely complicated topic to which I hope to revert in another work. I shall point out here, merely as suggestive examples, a series of cases, in which our alternations studied above are expressions for different parts of speech or similar grammatical distinctions.

- B 517. *tsjung* a follower (noun): 517. *dz'jung* to follow (verb);  
 A 340. *kōg* a school (noun): 340. *g'ōg* to study (verb);  
 D 122. *pwæg* back (noun): 123, 124. *b'wæg* to turn the back (verb);  
 B 345. *tieng* («a fixer») anchor (noun): 347. *d'tieng* to fix (verb);  
 B 353. *tsjæg* child, son (noun): 354. *dz'jæg* to breed, beget (verb);  
 E 271. *kân* shield (noun): 272. *g'an* to ward off (verb);  
 H 38. *pjwæn* to divide (verb): 38. *b'jwæn* a part (noun);  
 B 134. *tjông* middle, centre (noun): 135. *d'jông* the middle one (adj.);  
 B 191. *tjang* to become long (verb): 191. *d'jang* long (adj.);  
 B 248. *tjog* dawn (noun): *d'jog* («the matutinal one», adj. =) morning ceremony, audience;  
 B 649. *tsôg* early morning (noun): 650. *dz'ôg* black (adj.);  
 E 32. *kân* dry (adj.): 32. *g'ian* (heat and light:). Heaven (noun);  
 E 129. *kian* to see (active): 129, 130. *g'ian* to be seen, appear (passive);  
 F 325. *ts'iar* (equal:) mate, wife (noun): 324. *dz'iar* equal (adj.);  
 H 152. *pian* side (noun): 153. *p'ian* oblique (adj.);  
 K 45. *sjæp* moist, wet (adj.): 46. *dzjæp* marsh (noun);  
 F 85. *tjêd* to go to (verb): 86. *tjêd* to cause to go to (causative verb to the preceding);  
 F 96. *t'jwæt* to come out, go out (verb): 97. *t'jwæt* to eliminate, degrade (causative verb to the preceding);  
 B 445. *djêk* to change (verb): 445. *djêg* (changeable:) easy (adj.);  
 A 323. *'âk* bad (adj.): 323. *'âg* to hate (verb);  
 F 127, 128. *sjwæt* to lead (verb): *sjwəd* leader (noun);  
 F 341. *sjwat* to speak (vb. intrans.): *sjwad* to speak to, to address (vb. trans.);  
 B 29. *d'âk* to measure (verb): 29. *d'âg* a measure (noun);  
 B 428. *d'jæk* to eat (verb): 428, 431. *dzjæg* food (noun);  
 D 154. *b'jök* to return (verb): 154. *b'jög* again (adv.);  
 A 229. *kwâng* wide (adj.): 232. *k'wâk* to widen (verb);  
 E 139. *g'wât* to say, said (vb. pres., past.): 138. *g'wæn* to have said (perfect);  
 B 552. *sjog* small (adj.): 551. *sōg* small quantity (noun);  
 A 129. *kjêng* neck (noun): 130. *kieng* to behead (verb);  
 E 142. *ngjân* to talk (verb): 143. *ngjan* a saying (noun);  
 H 138. *b'wât* base, foot, root (noun): 137. *b'wat* to uproot (verb);  
 B 355. *sêng* to bear (verb): 356. *sjêng* (maternity:) clan (noun), 357. *sjêng* innate qualities (noun);  
 F 216. *twæn* solid, firm: 217. *tjwæn* (to make solid:) inculcate (verb);  
 G 7. *njat* hot (adj.): 8. *njwat* to burn, to heat (verb);

H 83. *pwæt* not (general): 84. *pjwæt* not willing, not able (modal sense): 87. *pjuar* is not (with a noun for predicate): 90. *mjwæt* don't (imperative): 91. *mjwəd* not yet (perfective).

K 90. *njap* to enter (vb. trans. and intrans.): 87, 88. *nəp* to introduce (to cause to enter, causative): 89. *nwəb* the interior (noun).

## Notes

- In the present paper Arch. means Archaic Chinese, the language of the Shī king, and Anc. means Ancient Chinese, the language of the Ts'ie yün, time of the Sui dynasty.
- The typographical device, always used in my earlier works, of indicating palatal explosives thus: *t'*, *d'* etc. is inconvenient, since the apostrophe is easily confused with the aspiration mark, and is particularly clumsy in conjunction with it, e. g. *d''jang*. I therefore replace it, in the present article, by a bow over the consonant: *t̄*, *d̄*.
- The 7th character not in the Shī, yet belonging to this category.
- In T'ang time *sjjêd-jwəi*.
- The phonetic series 𠄎 is very enigmatic. Itself Anc. *nziē* < Arch. *nia*, the word had no final consonant. But on the one hand it is used as *kia tsie* for 𠄎 Arch. *njæg* and its derivates 𠄎 Anc. *mjiē* is used for 𠄎 *mjiē* < *mjēg*, which all points to final guttural; on the other hand it is phonetic in 𠄎 Anc. *niei* < *niar* and 𠄎 Anc. *nziē* < *niar* with dental final. To say, with Tuan Yü-ts'ai, that in Chou time it belonged to cat. 15 (-r) but in Han time to cat. 16 (-g) is a poor expedient. Very likely we have here several distinct series confused at a very early epoch.
- They are of course on the whole very uncertain; on p. 84 Siam *k'ao* is given as equivalent to Chin. 𠄎, on p. 86 Siam. *k'ug* as equivalent to the same word!
- When I speak of the age of the hie sheng characters, I should express myself more precisely. Many of the hie sheng characters of later ages were written in early Chou time without radicals, i. e. they were properly speaking only *kia tsie* characters to which later on specializing radicals were added. From the linguistic point of view it is of course immaterial whether the «phonetic» was used alone or whether it was written with an elucidating signific («radical»).
- It must be remembered that it is not a question here of a fluctuation between *jwək* and *juk*, such as in Pekinese, where 'to learn' can be read both *hüe* and *hiao* and *hüo*, 'horn' both *küe* and *kiao* and *küo* through a mixing of dialects. Here there are certain words which have exclusively Anc. *jwək* and certain others which have exclusively *juk*.
- There would seem to be an important exception to this rule. The Anc. *âu*, *au*, *jäu*, *ieu*, *jäu* of categories I and II interchange, in the hie sheng characters, not only with Anc. *uok*, *juk*, which they should do, in accordance with the Shī rime system of the table above, but also in some cases with Anc. *-uk* (III), which they should not, see my Shī king Researches p. 152 (table). But this is not so bad as it would seem. Against an overwhelming number of contacts with Anc. *uok*, *juk*, there are, in the table, only 6 cases of contact with *uk*; 5 of these are *puk*, *p'uk*, *muk* — evidently the labial initial has here confused an earlier *puok* or such-like. Moreover, of the 6 cases only 2 are characters existing in Han time or earlier. So the general rule is very safe.
- The series 𠄎 Anc. *spng* should be expected to be Arch. *säng* and rime in the *-ang* category. But it rimes quite regularly in the *äng-eng* group, which shows that an Arch. *äng* here has irregularly passed over to the Anc. *vng* rime.
- The word 72. Anc. *nâi*, Arch. *nəg* I have studied in my article «The pronoun *küe* in the Shu king» (Göteborgs Högskolas Arsskrift 1933). In classical script 72. serves



regularly for two words, Anc. *nái* 'then, thereupon' and Anc. *nái* 'your'. In the former sense the bronze inscriptions mostly have another character, yet 72. sometimes serves also in this sense of 'then' in Archaic script as well, e. g. in the O hou ting inscr. (K'i ku shí ki kin wen shu k 2, p. 7).

B. Schindler, in *Asia Major* 1933, has published a kind of »criticism» of my above-mentioned article. It is really discouraging to find that he studies Arch. grammatical particles by adducing examples right and left from all kinds of texts without discrimination and without suspecting an important fact which I proved a decennium ago (On the authenticity and nature of the Tso chuan): that the use of the grammatical particles was not at all the same in all Arch. texts but that marked differences existed, based on different dialects. Moreover, a good part of his Shu king examples are drawn from the *spurious* Shu king chapters!

## COGNATE WORDS IN THE CHINESE PHONETIC SERIES

*Bernhard Karlgren*

Source: *Bulletin of the Museum of Far Eastern Antiquities* 28, 1956, 1-18.

The fact that the Chinese monosyllabic words are not »isolated» units, each one unaffinite with all the rest, but that they often form groups of two or several, or even many, which are cognate, i. e. different aspects of one and the same word stem, was already recognized by the scholars of the 19th century, and the problem of such »word families» was taken up for examination by A. Conrady and others. Even a student who is not linguistically trained and who knows the Chinese words only in their modern phonetic garb will easily recognize the fact that, for instance, 看 k' a n 'to see' and 見 kien 'to see' and 觀 k u a n 'to see' must be cognate words, or that 不 p u 'not' and 弗 f u 'not' are affinite, that 吾 w u 'I, we' and 我 w o 'I, we' are allied, or that 死 s í 'to die' and 尸 s h í 'corpse' must be variants of one word stem. In the BMFEA 5 (1933) I published a paper: Word Families in Chinese, in which I took up this theme for more comprehensive treatment. At that time I was able to go much further than the early sinologues could do, thank to the fact that the pronunciation of the Chinese words in early Chou time, »Archaic Chinese», had been reconstructed by linguistic methods in its essential features. Phonetic similarities revealing real and reliable affinities, which are quite obscured in the modern readings of the words, owing to phonetic changes in the lapse of two and a half millennia, made it possible to establish large groups of words which may be suspected of being cognate (»word families»). My list was, of course, only tentative: in a great many of the cases adduced the affinity is obvious and undeniable, in other cases it is only probable or even merely possible and it was left to future research to determine which of the stem alternations proposed could be proved. Even so, a considerable number of alternations were represented by so many safe examples (e. g. those treated under A - D below) that they could be stated to be established facts. A small selection of such alternations have again been recorded by me in my popular book *The Chinese Language, an Essay on its Nature and History* (N. Y. 1949, pp. 79-95); a most important result in this context was the fact



that many of the said alternations implied different grammatical functions (e. g. 度 \*d'āk 'to measure', verb: same char. \*d'āg 'a measure', noun).

In the present paper I shall revert to this question from a different point of view and on a limited scale. The question I wish to pose is this: did the Chinese literary men of early Chou time ever feel and realize that two or several such affinite words really did belong together, were cognate, were different aspects of »one and the same word»? To a limited extent we are in a position to answer this question thanks to the peculiar nature of the Chinese script. The inventors of the graphs sometimes revealed how they felt in this respect.

In a great many cases they either had no such feeling or did not trouble to express it by the aid of the graphs they composed. Such is, for instance, the first example given above: when they wrote \*k'ân 看 but \*kian 見 and \*kwân 觀,<sup>1</sup> three characters that are quite dissimilar, they give no hint as to whether they felt those words to be cognate or not. But in a considerable number of other cases they indicated quite unmistakably that they were perfectly aware of the affinity of the words concerned. A fine example of this is the word 度 adduced above. They had one word \*d'āk 'to measure' and another word \*d'āg 'a measure', and the script inventors evidently realized their affinity and wrote them both with the same character: 度. When they had \*piwən / piuən / fen 'to divide' and \*b'iwən / b'iuən / fen 'a part, a share', they emphatically indicated that they were two variants of »one and the same word» by writing them both 分.

Examples like these are simple and undubitable, but from them we can proceed to somewhat more complicated cases. To begin with, some general principles have to be made clear.

When we have a »phonetic series» like this: 牙 \*ngā / nga / y a 'tooth': 芽 \*ngā / nga / y a 'a sprout': 訝 \*ngā / nga- / y a 'to welcome, receive', it looks at first sight as if the second and third characters are composed in exactly the same way: the second char. 'sprout' consists of »grass» as »radical» (sense determinator) and \*ngā 'tooth' as phonetic and, similarly, the third character 'to welcome' consists of »speak» as radical and \*ngā 'tooth' as phonetic. Yet this is quite erroneous. In the former case 芽 \*ngā 'sprout' is (etymologically) the same word as \*ngā 'tooth' (the sprouts being »teeth» shooting forth from the soil). The 牙 in 芽 is not a »phonetic» but the fundamental, primary graph, the same as 'tooth', and when the word, in one of its variants of sense, means the »teeth» on the soil, the original graph 牙 has merely been elucidatingly enlarged by the addition of »grass» on top. The case 訝 is quite different. Here the character 牙 \*ngā has been borrowed (kia tsie) to signify the homophonous word \*n g ā 'to welcome' – the two are in no way cognate; and when it has become too confusing to have 牙 in both these meanings there has been added, in the second case, a radical »to speak» in order to distinguish them. In this example, then, we have a *real* case of one radical and one phonetic.

It is now important to remember that the addition of radicals – whether as elucidating enlargements added to the primary graph, as in 芽, or as real distinguishing sense indicators added to phonetic-loan characters, as in 訝 – is on the whole a comparatively late phenomenon. The invention of the radical trick was made

quite early, as a few cases in Yin and early Chou inscriptions show, but it was only rarely applied in the early part of the Chou dynasty. In fact, radicals occur with some frequency only in the last centuries of the Chou era. There are still today a number of examples in which radicals were never added: 來 \*lāg / lāi / l a i 'a kind of wheat' (Shī king) was borrowed for \*lāg / lāi / l a i 'to come', and to this day 'to come' is still written 來 without any distinguishing addition. In the bronze inscriptions of the early Chou centuries this phenomenon (borrowed characters, kia tsie, without radicals) is almost the rule: 者 serves for 諸, 隹 for 唯, 乎 for 呼, 女 for 汝 (so often in the classical texts as well), 古 for 故 etc. The addition or non-addition of radicals is therefore, from our point of view in this paper, quite immaterial: if there is a radical, there are great chances that it was not there originally but was added in late Chou time or (sometimes) even in Han time.

Let us see what this important fact implies for the purpose of our investigation. Reverting to our series \*ngā / nga / y a above we may take it for granted that at an early stage 牙 alone served both for \*ngā 'tooth' and for \*ngā 'sprout' and for \*ngā 'to welcome', without any additional radicals; in other words that 牙 had its elucidating (specializing) »grass» and 訝 its distinguishing element »to speak» added later on. The problem, from our point of view, is then to decide whether 牙 in 芽 was, not a phonetic, but really the primary graph itself – in which case the script masters felt \*ngā 'tooth' and \*ngā 'sprout' to be one and the same word – or else it was merely a kia tsie phonetic loan for the word \*ngā 'sprout' (just as 牙 for 訝 was merely a phonetic loan) – in which case they did not realize the stem identity of \*ngā 'tooth' and \*ngā 'sprout'. Our criterion can here only be an affinity of meaning sufficiently obvious to convince us that the identity was conceived and expressed by the use of the same character 芽, just as \*piwən 'to divide' and \*b'iwən 'a share' were expressed by the use of the same character 分. If we are sufficiently cautious, we can very well find a long series of cases of this »identity» type, as will be shown below. It will suffice to state here that we need not consider the existence of a radical in the modern compound character as decisive. The case 牙 'tooth' and 芽 'sprout' (primarily 牙 'tooth' and 芽 'sprout') is in principle quite identical with the case 分 'divide' and 分 'share'.

We may, however, take one further step. We have three characters: 付 \*piu / piu- / f u 'to deliver' and 附 \*b'iu / b'iu- / f u 'to attach' to adjoin' and 駟 \*b'iu / b'iu- / f u 'additional horse' (to a team). The 付 \*piu 'deliver' is here obviously a typical loan character (kia tsie) for both words \*b'iu, it has no stem affinity with them. But the very fact that the same phonetic (kia tsie) 付 was used both for \*b'iu 'to adjoin' and for \*b'iu 'additional horse' is highly significant. The latter two are evidently one and the same word, in different variants of meaning. When the script masters borrowed 付 'to deliver' both for \*b'iu 'to adjoin' (later filled out into 附) and for \*b'iu 'additional horse' (later filled out into 駟), it seems evident that they felt the two \*b'iu to be one and the same word, or, let us say, two variants of the same stem. Here again we draw the conclusion: when two words in the orthodox script have the same phonetic and when their meaning unequivocally indicates stem affinity, we conclude that their affinity has been felt and realized by the script masters, irrespective of the different distinguishing radicals applied at a later date.



After these considerations of a general nature, let us pass on to a selection of illustrating examples. We may first dispose of the cases belonging to the category \*ngâ: \*ngâ discussed above (identity of two words). Most of them are so obvious<sup>2</sup> that there is no need to make a list of them: any reader of the Grammata Serica (a new edition of which, with tones recorded, is at present in the press) will after a rapid perusal find scores of such obvious instances. But we had better quote a few examples in which the etymological identity of the two members of a pair is not quite so self-evident: it shows the acumen of the ancient Chinese script masters in realizing their identity and hence placing them together in the script:

1. \*ngia / ngjiē- / y i right, righteous: 2. *id.* (i. e. same reading and with the same tone) to determine what is right, to discuss, a judgment;
3. \*kâ / ka / k i a house, family: 4. *id.* (to get a house:) to marry (said of a woman);
5. ko / kuo: / k u drum: 6. *id.* blind (»a drummer«): the blind were made musicians);
7. \*g'o / yuo- / h u intertwining, interlacery: 8. *id.* railings, fence;
9. \*tân / tân / t a n single, simple: 10. *id.* unlined garment;
11. \*xo / xuo: / h u tiger: 12. *id.* a tally (tiger-shaped);
13. \*dian / jän / y e n extend, spread out: 14. *id.* (a »spread«) a mat;
15. lian / liän / l i e n in a row, consecutively: 16. *id.* rippling waves;
17. \*dz'jwan / dz'jwän / t s' ü a n complete, faultless: 18. *id.* (faultless:) one-coloured sacrificial animal;
19. \*g'wan / ywan / h u a n turn round, return: 20. *id.* a ring;
21. \*mjwän / mjwän- / w a n extended, drawn out: 22. *id.* creeping plant;
23. \*d'jat / ä'jät / c h' e penetrate: 24. *id.* (penetrable:) limpid;
25. \*lijat / ljät / l i e divide, separate, distribute: 26. *id.* divide, tear apart;
27. \*kwät / kuät / k u o to bind, tie: 28. *id.* a hair knot;
29. \*kwäd / kuäi- / k u e i put together, to add up: 30. *id.* joining point of the ends of a belt;
31. \*lijad / lijäi- / l i sharp, piercing, cruel: *id.* epidemic, 33. *id.* a stinging insect;
34. \*b'jad / b'jäi- / p i damage, spoil, worn out: 35. *id.* to spoil, to ruin, 36. *id.* to kill, to die;
37. \*g'iwän / yiwän / h ü a n dark-coloured, black: 38. *id.* (darkened:) troubled sight;
39. \*jien / jien / y i n to rest upon, lean upon, rely upon etc.: 40. *id.* (what is leaned on:) a mat (the primary graph depicts a man outstretched on a mat);
41. \*g'wän / ywän- / h u n latrine: 42. *id.* soiled, disorderly;
43. 44. \*xiwän / xjuän / h ü n smoke, fume, fragrance: 45. *id.* merit;
46. \*dz'jät / dz'jät / t s i (to be pained by:) to hate: 47. *id.* jealous;
48. \*ijwät / ts'juät / c h' u go out, bring out: 49. *id.* expel, degrade;
50. \*d'jwät / dz'juät / s h u road, path: 51. *id.* (»to path«:) go along, follow, bring along, transmit;
52. \*dz'jwäd / zwi- / s u e i to progress, go along, follow: 53. *id.* channel, path, tunnel;
54. \*kjar / kjei / k i small: 55. *id.* delicate spring, fine mechanism;

56. \*mjär / mji / m e i (margin of the eye:) eyebrow: 57. *id.* margin of a stream;
58. \*g'ep / yäp / h i a accord with, unite, assemble: 59. *id.* sacrifice to the ancestors unitedly, collectively;
60. \*kwäk / kwäk / k u o outer wall of a city: 61. *id.* outer coffin;
62. \*sjäk / sjäk / s i o of old, formerly, yesterday: 63. *id.* (old meat:) dried meat;
64. \*sëng / spong / s h e n g to live: 65. *id.* (living creature:) (sacrificial) animal;
66. \*mieng / mieng / m i n g dark, darkened: 67. *id.* shut the eyes;
68. \*dz'äg / dz'äi / t s' a i (mental resources:) ability, talent: 69. *id.* stuff, material, disposition, 70. *id.* (economical resources:) wealth, valuables;
71. \*giüg / jiau- / y u right hand, on the right: 72. *id.* to assist;
73. \*pög / päu / p a o to wrap, contain: 74. *id.* womb;
75. \*kung / kung / k u n g work: 76. *id.* achievement, 77. *id.* to work at, enterprise etc.
78. \*d'ung / d'ung / t' u n g bring together, join, assemble: 79. *id.* (mixture:) bronze;
80. \*mung / mung / m e n g to cover: 81. *id.* (covered eyes:) blind.

From the preceding categories, in which it is obvious that the early script masters realized the etymological identity, we shall pass on to some more interesting categories, in which the two members are not phonetically identical (the tone inclusive, as in the case \*ngâ) but show a phonetic contrast.

A simple category is here, first, the one in which the stem variation consists exclusively in a change of tone. A well-known example is 好 where the character read \*xóg / xâu: / h a o (rising tone) means 'fine, good' and read \*xóg / xâu- / h a o

1. 義 2. 議 3. 眾 4. 嫁 5. 鼓 6. 替 7. 互 8. 桓 9. 單 10. 禪 11. 虎 12. 琥 13. 延 14. 筵 15. 連 16. 漣 17. 全 18. 痊 19. 遠 20. 環 21. 環 22. 蔓 23. 微 24. 澈 25. 列 26. 裂 27. 括 28. 髻 29. 會 30. 禮 31. 厲 32. 癩 33. 蠟 34. 敝 35. 弊 36. 斃 37. 玄 38. 眩 39. 囚 40. 茵 41. 困 42. 涸 43. 蕪 44. 蕪 45. 勳 46. 疾 47. 嫁 48. 出 49. 黜 50. 術 51. 述 52. 遂 53. 隧 54. 篋 55. 機 56. 眉 57. 湄 58. 洽 59. 裕 60. 鄣 61. 榔 62. 昔 63. 腊 64. 生 65. 牲 66. 冥 67. 瞑 68. 才 69. 材 70. 財 71. 右 72. 佑 73. 包 74. 胞 75. 工 76. 功 77. 攻 78. 同 79. 銅 80. 蒙 81. 蒙

(falling tone) means 'to love'. In this category as well, the early scribes undoubtedly felt that they had to do with one and the same »word« (word stem). The instances of this stem variation are very numerous, and we shall cite a sufficiently extensive list to show its importance:

82. \*tsâ / tsâ: / t s o left, to the left: 83. \*tsâ / tsâ- / t s o to assist;
84. \*ka / ka / k i a to add, apply: 85. \*ka / ka- / k i a (to apply horses to:) to yoke;
86. \*ngia / ngjiē- / y i right, righteous: 87. \*ngia / ngjiē / y i proper demeanour;
88. \*ko / kuo: / k u ancient: 89. ko / kuo- / k u anterior, ci-devant, premise, cause;
90. \*ts'wâ / ts'uâ- / t s' o to cut: 91. ts'wâ / ts'uâ: / t s' o to cut small;
92. \*kjo / kjo- / k ü to sit down: 93. \*kjo / kjo- / k ü to squat;



94. \*t'jo / ts'jwo / c h' u to dwell, to place: same char. \*t'jo / ts'jwo- / c h' u a place;  
 95. \*njo / n'jwo / n ü woman: same char. \*njo / n'jwo- / n ü to give a wife to;  
 96. \*slju / s'ju- / s h u number: same char. \*slju / s'ju / s h u to count;  
 97. \*dju / zju- / s h u tree: same char. \*dju / zju / s h u to plant, place upright;  
 98. \*ts'ju / ts'ju- / t s' ü to take: same char. and 98. \*ts'ju / ts'ju- / t s' ü to take wife;  
 100. \*pju / pju- / f u deliver: 101. \*pju / pju- / f u (the delivery place:) repository;  
 102. \*ân / ân / a n peace, tranquil: 103. \*ân / ân- / a n to tranquillize, repress;  
 104. \*d'ân / d'ân / t' a n shoot pellets at: same char. \*d'ân / d'ân- / t a n pellet;  
 105. \*nân / nân / n a n difficult: same char. \*nân / nân- / n a n difficulty;  
 106. \*kwân / kuân / k u a n cap: same char. \*kwân / kuân- / k u a n to cap, put a cap on;  
 107. \*kân / kân / k i e n interstice, interval: same char. \*kân / kân- / k i e n find a crevice, find fault with;  
 108. \*djan / zjan: / s h a n good: 109. \*djan / zjan- / s h a n delicacies, cooked food, and 110. \*djan / zjan- / s h a n (make good:) to repair;  
 111. \*d'jwan / d'jwân / c h' u a n to transmit: same char. \*d'jwan / d'jwân- / c h u a n (what has been transmitted:) a record;  
 112. \*tjwan / tjwân: / c h u a n turn round, transfer, remove: 113. \*tjwan / tjwân- / c h u a n (transferring, transmitting place:) relay (of post);  
 114. \*giwân / jiwân: / y ü a n far, distant: same char. \*giwân / jiwân- / y ü a n to keep far from, leave;  
 115. \*d'ien / d'ien / t' i e n field: same char. \*d'ien / d'ien- / t i e n to cultivate the land;  
 116. \*d'jên / jên: / y i n to pull: 117. \*d'jên / jên- / y i n strap for pulling carriage;  
 118. \*d'jên / d'jên / c h' e n set forth, arrange: same char. \*d'jên / d'jên- / c h e n battle array;  
 119. \*dzjên / dzjên: / t s i n exhaust, consume: 120. \*dz'jên / dz'jên- / t s i n ashes, combusted;  
 121. \*pjên / pjên / p i n guest: 122. \*pjên / pjên- / p i n guest receiver, to welcome;  
 123. \*dzjwên / zjwên / s ü n all round, a round, a decade (of days): 124. \*dzjwên / zjwên- / s ü n go everywhere, all round;  
 125. \*g'an / ɣan: / h e n oppose, refractory: 126. \*g'an / ɣan- / h e n to hate, displeased;  
 127. \*ts'wân / ts'wân- / t s' u n thumb, inch: 128. \*ts'wân / ts'wân- / t s' u n to measure;  
 129. \*mjwân / mjwân / w e n to hear: same char. \*mjwân / mjwân- / w e n to be heard, fame;  
 130. \*g'jan / g'jan: / k i n near: same char. \*g'jan / g'jan- / k i n to be near to;  
 131. \*sian / sien / s i e n before: same char. \*sian / sien- / s i e n to go before, precede;  
 132. \*kjar / kjei / k i small: same char. \*kjar / kjei: / k i few, (how few:) how many;  
 133. \*jar / jei / y i clothes: same char. \*jar / jei- / y i to wear;  
 134. \*ljwâr / ljwi / l e i to wind around, be attached to (as a liana): 135. \*ljwâr / ljwi: / l e i climbing plant;  
 136. \*pjwâr / pjwêi / f e i it is not: 137. \*pjwâr / pjwêi: / f e i not;  
 138. \*tiâr / tiei: / t i root, base, foundation, 139. *id.* bottom: 140. \*tiâr / tiei / t i to lower;  
 141. \*d'iar / d'iei: / t i younger brother: same char. \*d'iar / d'iei- / t i (younger-brotherly:) respectful towards elder brothers;

142. *ts'iar / ts'iei / t s' i* consort, wife: same char. \*ts'iar / ts'iei- / t s' i to give wife to;  
 143. \*d'iar / d'i / c h' i to tarry, slow: same char. \*d'iar / d'i- / c h i to wait;  
 144. \*p'jüm / p'jung / f e n g (wind:) air, tune: 145. \*p'jüm / p'jung- / f e n g to chant, recite;  
 147. \*säm / sâm / s a n three: same char. \*säm / sâm- / s a n thrice;  
 146. \*tâm / tâm / t a n to carry on the shoulder: same char. \*tâm / tâm- / t a n burden;  
 148. \*iäm / jäm / y i n northern side, shade, darkness: same char. \*iäm / jäm- / y i n to shelter;  
 149. \*iäm / jäm: / y i n to drink: same char. \*iäm / jäm- / y i n to give to drink;  
 150. \*šjäm / šjäm / s h e n deep: same char. \*šjäm / šjäm- / s h e n depth;  
 151. \*njäm / njäm / j e n to carry, sustain: same char. \*njäm / njäm- / j e n burden;  
 152. \*säng / säng / s a n g (loss:) mourning, burial: same char. \*säng / säng- / s a n g to lose;  
 153. \*d'iang / d'iang / c h' a n g long: same char. \*d'iang / d'iang- / c h a n g length, measure of length;  
 154. \*d'iang / d'iang: / c h a n g staff: same char. \*d'iang / d'iang- / c h a n g (have for staff:) lean on;  
 155. \*täng / täng / t a n g to be equal to, rank with, to match: same char. \*täng / täng- / t a n g suitable;  
 156. \*d'iang / zjang- / s h a n g up, above: same char. \*d'iang / zjang: / s h a n g to rise;  
 157. \*tsiang / tsiang / t s i a n g to bring, take, lead: same char. \*tsiang / tsiang- / t s i a n g leader;  
 158. \*dz'äng / dz'äng / t s' a n g to store: same char. \*dz'äng / dz'äng- / t s a n g a store;  
 159. \*njäng / njäng / j a n g to thrust aside, expel: 160. \*njäng / njäng- / j a n g to cede, withdraw, yield;  
 161. \*zjang / jang: / y a n g to nourish: same char. \*zjang / jang- / y a n g to support (sc. parents);  
 82左83佐84加85駕86義87儀88古89故90坐91姓92居93踞94處95女96數97樹98取99娶100付101府102安103按104穿105難106冠107閑108善109膳110結111傳112轉113傳114遠115田116引117第118陳119盡120燼121巔122價123旬124徇125很126恨127寸128付129聞130近131先132後133衣134纒135藟136非137匪138氏139底140低141弟142妻143遷144風145韻146擔147三148陰149飲150深151任152喪153長154杖155蓄156上157將158藏159攘160讓161養162兩  
 162. \*liang / liang: / l i a n g two, a pair: same char. \*liang / liang- / l i a n g (a two-wheeler:) carriage;  
 163. \*liang / liang / l i a n g a measure: same char. \*liang / liang- / l i a n g to measure;  
 164. \*giwang / jiwang / w a n g king: same char. \*giwang / jiwang- / w a n g to be king, to rule;  
 165. \*käng / käng / k e n g to change: same char. \*käng / käng- / k e n g again;  
 166. \*g'äng / ɣwng / h i n g to walk, a road, to act: same char. \*g'äng / ɣwng- / h i n g action;  
 167. \*kiäng / k'wng: / k i n g boundary, limit: same char. \*kiäng / k'wng- / k i n g end, in the end;



168. \**piǎng* / *piǎng*- / p i n g to hold, grasp: 169. \**piǎng* / *piǎng*- / p i n g a handle;  
 170. \**giwǎng* / *jiwǎng*- / y u n g long: 171. \**giwǎng* / *jiwǎng*- / y u n g (to draw out long:) to chant;  
 172. \**kǐěng* / *kǐng*- / k i n g reverent, respectful: 173. \**kǐěng* / *kǐng*- / k i n g (to overawe:) to warn, admonish;  
 174. \**điěng* / *ziǎng* / c h' e n g to load, to fill: same char. \**điěng* / *ziǎng*- / s h e n g (loaded full:) ample, abundant;  
 175. \**fiěng* / *tǐǎng*- / c h e n g straight, correct, regulate: same char. \**fiěng* / *tǐǎng* / c h e n g (regulating:) first (sc. month), and 176. *id.* (a correction:) a punitive expedition;  
 177. \**d'ieng* / *d'ieng*- / t' i n g stick, staff: 178. \**d'ieng* / *d'ieng*- / t' i n g stalk, stem;  
 179. \**t'ieng* / *t'ieng*- / t' i n g to hear: same char. \**t'ieng* / *t'ieng*- / t' i n g to listen to, obey;  
 180. \**tjěg* / *tī* / c h ĩ to know: same char. \**tjěg* / *tī*- / c h ĩ knowledge, wisdom;  
 181. \**jǎng* / *jǎng*- / y i n g to respond, correspond, conform: same char. \**jǎng* / *jǎng* / y i n g (conforming to what it should be:) ought, of right;  
 182. *šjǎng* / *šjǎng*- / s h e n g to vanquish, surpass: same char. \**šjǎng* / *šjǎng* / s h e n g equal to, capable of;  
 183. \**t'jǎng* / *t'jǎng* / c h' e n g to weigh: same char. \**t'jǎng* / *t'jǎng*- / c h' e n g (balancing:) equal to, corresponding to;  
 184. \**đjǎng* / *đjǎng* / c h' e n g to mount, ascend; same char. \**đjǎng* / *đjǎng*- / s h e n g (what is mounted:) carriage, and (what is set up, recorded:) records, annals;  
 185. \**ts'əg* / *ts'əi*- / t s' a i to cull, pluck: same char. \**ts'əg* / *ts'əi*- / t s' a i (what is culled for incomes:) appanage, and 186. \**ts'əg* / *ts'əi*- / t s' a i (culled herbs:) vegetables;  
 187. \**lǎg* / *lǎi* / l a i to come: same char. \**lǎg* / *lǎi*- / l a i (cause to come:) attract, stimulate;  
 188. \**tjōng* / *tjūng* / c h u n g middle, centre: same char. \**tjōng* / *tjūng*- / c h u n g to hit the centre, to hit;  
 189. \**điōg* / *ziǎu*- / s h o u to receive: 189 b. \**điōg* / *ziǎu*- / s h o u to hand over, give;  
 190. \**šjōg* / *šjǎu*- / s h o u to keep, to guard: same char. \**šjōg* / *šjǎu*- / s h o u territory in somebody's guard, fief;  
 191. *ts'og* / *ts'au*- / t s' a o to grasp, hold: same char. \**ts'og* / *ts'au*- / t s' a o (what is held on to:) purpose, intent;  
 192. \**log* / *lǎu* / l a o toil: same char. \**log* / *lǎu*- / l a o (acknowledge somebody's toil:) to recompense;  
 193. \**sjog* / *sjǎu*- / s i a o little, small: 194. \**sjog* / *sjǎu*- / s i a o (to be a miniature of:) similar to one's father, to take after the father;  
 195. \**mjog* / *mǎu*- / m i a o small, minute: 196. \**mjog* / *mǎu*- / m i a o (infinitesimal, incomprehensible:) mysterious, marvellous;  
 197. \**tjog* / *tjǎu* / c h a o bright: 198. \**tjog* / *tjǎu*- / c h a o to shine on;  
 199. \**điung* / *điwong*- / y u n g to use, employ: 200. \**điung* / *điwong* / y u n g to use, employ;

201. \**d'jung* / *d'iwong*- / c h u n g heavy: same char. \**d'jung* / *d'iwong* / c h' u n g double;  
 202. \**tjung* / *tšiwong*- / c h u n g seed, different kinds of grain: same char. \**tjung* / *tšiwong*- / c h u n g to sow;  
 203. \**dz'jung* / *dz'iwong* / t s' u n g to follow: same char. \**dz'jung* / *dz'iwong*- / t s u n g follower;  
 204. \**b'jung* / *b'iwong*- / f e n g to receive: 205. \**b'jung* / *b'iwong*- / f e n g (what is received:) salary.

In the following categories the answer to our principal question (whether the early script masters had a feeling of the affinity of two or more »words») is not so self-evident:

#### A. Stem variation consisting in an alternation of tenuis and aspirated media as initial

206. \**kia* / *kjię* / k i odd (number): same char. \**g'ia* / *g'jię* / k' i strange, extraordinary;  
 207. \**pwo* / *pwo* / p u to eat: 208. \**b'wo* / *b'uo*- / p u to have food in the mouth;  
 209. \**kjwo* / *kju*- / k ü frightened glance, anxious: 210. *g'jwo* / *g'ju*- / k ü to fear;  
 211. \**pjwo* / *pju*- / f u (»father»:) second part of honorific words, e. g. Kia-fu: same char. \**b'jwo* / *b'ju*- / f u father;  
 212. \**kju* / *kju* / k ü (complete:) all: 213. \**g'ju* / *g'ju*- / k ü provide, make complete, complete;  
 214. \**tju* / *tju*- / c h u to prop up, support: 215. \**d'ju* / *d'ju*- / c h u pillar;  
 216. \**kân* / *kân* / k a n shield: 217. \**g'ân* / *g'ân*- / h a n protect, ward off;  
 218. \**twân* / *tuân*- / t u a n a slice of dried meat: 219. \**d'wân* / *d'uân*- / t u a n torn to slices;  
 220. \**pwân* / *puân*- / p a n half: 221. \**b'wân* / *b'uân*- / p a n (cleaving:) dividing bank;  
 222. \**kân* / *kân* / k i e n interstice, space between: same char. \**g'ân* / *g'ân* / h i e n (interstice in time:) leisure;  
 223. \**kjwan* / *kjwân* / k ü a n to roll: same char. *g'jwan* / *g'jwân* / k' ü a n curved;  
 224. \**tjwan* / *tjwân*- / c h u a n transmitting place, relay (of post etc.): same char. \**d'jwan* / *d'jwân* / c h' u a n to transmit;

163. 量 164. 王 165. 更 166. 行 167. 竟 168. 秉 169. 棟 170. 承 171. 詠 172. 敬 173. 警 174. 盛 175. 正 176. 征 177. 挺 178. 莖 179. 聽 180. 知 181. 應 182. 勝 183. 稿 184. 乘 185. 采 186. 菜 187. 來 188. 中 189. 受 189b. 授 190. 守 191. 操 192. 勞 193. 小 194. 肖 195. 少 196. 妙 197. 昭 198. 照 199. 用 200. 庸 201. 重 202. 種 203. 從 204. 奉 205. 俸  
 206. 奇 207. 鋪 208. 哺 209. 瞿 210. 瞿 211. 父 212. 俱 213. 具 214. 柱 215. 柱 216. 干 217. 杆 218. 股 219. 段 220. 半 221. 畔 222. 間 223. 卷 224. 傳 225. 見 226. 會 227. 良 228. 很 229. 分 230. 絕 231. 絕 232. 比 233. 皆



225. \*kian / kien- / k i e n to see: same char. \*g'ian / yien- / h i e n (to be seen:) to appear, conspicuous;  
 226. \*kwād / kuāi- / k u e i (addition:) account: same char. \*g'wād / yuāi- / h u e i assemble, collect;  
 227. \*kən / kən- / k e n refractory, obstinate: 228. \*g'an / γən- / h e n oppose, quarrelsome;  
 229. \*piwən / piuan / f e n to divide: same char. \*b'iwən / b'juən- / f e n part, share;  
 230. \*kjar / kjei / k i near: 231. \*g'jar / g'jei / k' i (nearest to the capital:) Royal domain;  
 232. \*piar / pji- / p i combine, unite, compare: same char. \*b'jar / b'ji- / p i assemble, go together with;  
 233. \*ker / kái / k i e all: 234. \*g'er / γái / h i e in harmony;  
 235. \*tsjār / tsie / t s i defame, slander: 236. \*dz'jār / dz'ie / t s i a defect, fault;  
 237. \*tsjam / tsjäm / t s i e n to moisten, to flow to: same char. \*dz'jam / dz'jäm: / t s i e n dropwise, gradually;  
 238. \*klijam / kjäm: / k i e n to control, restrict: 239. \*g'lijam / g'jäm: / k i e n restrict, frugal;  
 240. káp / káp / k i a to press between, pinchers: 241. \*g'áp / γáp / h i a (pinched:) narrow;  
 242. \*kiap / kiep / k i e (pinchers:) chopsticks: 243. \*g'iap / γiep / h i e press under the arm;  
 244. \*kəp / kəp / k o (shutter:) gate: 245. \*g'əp / γəp / h o to join, unite, to shut;  
 246. \*tjang / tjang: / c h a n g to grow tall, grown up, senior: same char. \*d'jang / d'jang / c h' a n g long, tall;  
 247. \*pāk / pvk / p o (the white-haired one:) eldest, chief: 248. \*b'āk / b'vk / p o white;  
 249. \*tsjāk / tsjāk / t s i to walk reverently: same char. \*dz'jāk / dz'jāk / t s i to trample;  
 250. \*tsjäng / tsjäng: / t s i n g a well: 251. \*dz'jäng / dz'jäng: / t s i n g a pitfall, pit;  
 252. \*piäng / piäng- / p i n g grieved: 253. \*b'jäng / b'jäng- / p i n g distress, suffer, sickness;  
 254. \*kəg / kai / k i e to unloosen: same char. \*g'əg / γai: / h i e (unloosened:) remiss, lax, careless;  
 255. \*piək / piäk / p i ruler: same char. \*b'jək / b'jäk / p i law;  
 256. \*tsjək / tsjäk / t s i spine: 257. \*dz'jək / dz'jäk / t s i emaciated;  
 258. \*piəg / pje / p e i low: 259. \*b'jəg / b'je: / p e i low;  
 260. \*kiweng / kiweng / k i u n g outlying parts, far from the city: 261. \*g'iweng / γiweng: / h i u n g distant;  
 262. \*tiek / tiek / t i principal wife: 263. \*d'iek / d'iek / t i an equal, a match, opponent;  
 264. \*tieg / tiei- / t i sovereign, God: 265. \*d'ieg / d'iei- / t i sacrifice to the highest Spirit;  
 266. \*tieg / tiei / t i bank, dyke: 267. \*d'ieg / d'iei / t' i bank, dyke;  
 268. \*tsəng / tsəng / t s e n g to accumulate, double: 269. \*dz'əng / dz'əng / t s' e n g in two storeys or layers, double;

270. \*tsəg / tsəi- / t s a i to load: same char. \*dz'əg / dz'əi- / t s a i load;  
 271. \*pwəg / puāi- / p e i the back: same char. \*b'wəg / b'uāi- / p e i to turn the back on;  
 272. \*kijəg / kji / k i a full fixed time: \*g'jəg / g'ji / k' i a stipulated time, to expect;  
 273. \*tsjəg / tsi: / t s i child: 274. \*dz'jəg / dz'i- / t s i to breed;  
 275. \*kəg / kái- / k i e to guard against, warn: 276. \*g'əg / γai: / h i e to overawe, frighten;  
 277. \*tjōng / tjung / c h u n g middle: 278. \*d'jōng / d'jung- / c h u n g (the middle one:) the 2nd of brothers;  
 279. \*kōng / käng- / k i a n g descend: same char. \*g'ōng / γäng / h i a n g submit;  
 280. \*pōg / páu / p a o to wrap: 281. \*b'ōg / b'áu: / p a o to embrace, carry in the arms;  
 282. \*piók / piuk / f u double: 283. \*b'jók / b'juk / f u return, recommence, repeat;  
 284. \*kijóg / kiəu: / k i u to twist: 285. \*g'jóg / g'jəu / k' i u long and curved, horn-shaped;  
 286. \*tsjóg / tsjəu: / t s i u wine, spirits: 287. \*dz'jóg / dz'jəu / t s' i u wine-master;  
 288. \*kijog / kiäu / k i a o proud, arrogant: 289. \*g'jog / g'jäu / k' i a o high;  
 290. \*tjog / täu / c h a o morning: same char. \*d'jog / d'jäu / c h' a o (morning ceremony:) audience;  
 291. \*tsjog / tsjäu / t s i a o to roast, burn: 292. \*dz'jog / dz'jäu / t s' i a o firewood;  
 293. \*kijung / kijwong: / k u n g to join the hands: same char. \*g'jung / g'jwong- / k u n g together, all;  
 294. \*kijog / kiäu- / k i a o well-sweep: same char. \*g'jog / g'jäu / k' i a o cross-bar;  
 Further the following numbers below: 295:296; 334:335; 345:346; 357; 358:359; 468; 475:476.

The examples are surprisingly numerous, and many of them are so striking that there can be no doubt that the early literary men clearly felt the affinity between the members of each word pair and that they therefore expressed it in the script they created. They must have had quite as real a feeling for the affinity between 分 \*piwən 'to divide' and (same char.) \*b'iwən 'a share' as an ordinary Englishman has for the connection between 'to bind' and 'a bond', between 'clean' and 'to cleanse', between 'to lose' and 'lost'. The addition (mostly at a later date) of various radicals is indeed of no consequence and cannot invalidate our conclusion. The same conclusion may be drawn in regard to all the categories studied below.

## B. Alternation of final tenuis and final media

295. \*kât / kât / k o to cut: 296. \*g'ād / γai- / h a i to hurt, damage;  
 297. \*sât / šat / s h a to kill: same char. \*sād / šai- / s h a i to diminish, reduce;  
 298. \*k'iat / k'iet / k' i e to cut: 299. \*k'iād / k'iei- / k' i script notches;  
 300. \*šjwat / šjwät / s h u o to speak: same char. šjwad / šjwäi- / s h u e i to exhort;  
 301. \*piwät / piwät / f a to throw out, send forth: 302. \*piwäd / piwäi- / f e i cast aside;



303. \*kiet / ki et / k i e to tie, knot: 304. \*kied / kiei- / k i hair-knot;
- 234 籍 235 警 236 戒 237 漸 238 檢 239 儉 240 夾 241 狹 242 挾 243 挾 244 醫 245 合 246 長 247 伯  
248 白 249 踏 250 井 251 奔 252 丙 253 病 254 解 255 解 256 齊 257 瘠 258 卑 259 痺 260 同 261 同  
262 洞 263 女 264 商 265 商 266 帶 267 帶 268 帶 269 帶 270 戴 271 背 272 期 273 子 274 字  
275 戒 276 馮 277 中 278 仲 279 降 280 包 281 抱 282 複 283 復 284 4 糾 285 角 286 酒 287 苗 288  
馬 289 喬 290 朝 291 焦 292 林 293 共 294 林 295 刺 296 害 297 殺 298 銀 299 契 300 說 301 發 302
305. \*f'jwət / ts'juət / c h' u to go out, bring out: same char. \*f'jwəd / ts'wi- / c h' u e i to bring out, take out;
306. \*sljwət / sjuət / s h u a i to lead: same char. \*sljwəd / swi- / s h u a i leader;
307. \*tjəp / tsjəp / c h ĩ to seize, grasp: 308. \*tjəb / tsi- / c h ĩ bird of prey, to seize a prey;
309. \*d'āk / d'āk / t o to measure: same char. \*d'āg / d'uo- / t u a measure;
310. \*'āk / 'āk / o bad: same char. \*'āg / 'uo- / w u (to find bad:) to detest, hate;
311. \*χāk / χək / h o to scare: same char. \*χāg / χa- / h i a to scare;
312. \*d'jāk / dz'jāk / s h ĩ to shoot: same char. \*d'jāg / dz'ja- / s h ê to shoot;
313. \*'ək / 'ek / o a defile, a pass: same char. \*'ēg / 'ai- / y a i a defile, a pass;
314. \*tsək / tsek / t s ê to demand payment, to exact: same char. \*tsēg / tsai- / c h a i debt;
315. \*djək / jək / y i to change: same char. \*djēg / i- / y i (changeable:) easy;
316. \*tsjək / tsjək / t s i collect, accumulate: same char. \*tsjēg / tsjē- / t s ĩ to put in stack, stack, hoard;
317. \*g'wək / gwək / h u o to delineate: same char. \*g'wēg / gwai- / h u a to draw, a design;
318. \*sək / sək / s ê to block, a pass: same char. \*səg / sət- / s a i frontier pass;
319. \*'jək / 'jək / y i to keep in mind, remember: 320. \*'jəg / 'i- / y i to think;
321. \*pjūk / pjūk / f u happiness, blessing: 322. \*pjūg / pjū- / f u rich, wealth;
323. \*b'jūk / b'jūk / f u to lie prostrate: same char. \*b'jūg / b'jū- / f u to hatch;
324. \*kōk / kuk / k u to announce: same char. \*kōg / kâu- / k a o to announce;
325. \*tjōk / tsjūk / c h u to pray, prayer-master: same char. \*tjōg / tsjū- / c h o u to curse;
326. \*sjōk / sjūk / s u to lodge the night: same char. \*sjōg / sjū- / s i u (the sun's lodging-stations:) mansions, groups of constellations, parts of the zodiac;
327. \*b'jōk / b'jūk / f u return, repeat, recommence: same char. \*b'jōg / b'jū- / f u repeatedly, again;
328. \*kōk / kāk / k ü e to awake: same char. \*kōg / kau- / k i a o to awake;
329. \*g'ōk / γāk / h ü e to learn: 330. \*g'ōg / γau- / h i a o to teach;
331. \*'jok / 'jak / y ü e to bind, restrain: same char. 'jog / jäu- / y a o bond, contract;
332. \*tsjok / tsjak / t s ü e torch: same char. \*tsjog / tsjäu- / t s i a o to burn;
333. \*d'ōk / d'āk / c h o to wash: same char. \*d'ōg / d'au- / c h a o to wash clothes.
- Further 341:342; 352:353; 401:402; 414:415; 418:419; 428:429; 459:460; 478:479; 484; 486:487; 492.

C. Alternation of the vowels *â : a : ă*

334. \*ka / ka / k i a good, excellent: 335. \*g'â / γâ- / h o congratulate;
336. \*'ân / 'ân / a n peace, peaceful, tranquil: 337. \*'an / 'an- / y e n peace, peaceful;
338. \*ngiän / ngion / y e n to speak: 339. \*ngian / ngiän- / y e n to condole;
340. \*kwân / kuân- / k u a n to pass a string through, string together, bound together, intimate with: same char. \*kwan / kwan- / k u a n intimate with, familiar with;
341. \*kât / kât / k o to cut: 342. \*kad / kai- / k i e to castrate;
343. \*klam / kam / k i e n to see, inspect: 344. \*glâm / lâm: / l a n to see;
345. \*tsâm / tšäm: / c h a n to cut off: 346. \*dz'âm / dz'âm / c h a n Abschnitt, a short while;
347. \*g'äng / gwng / h i n g to walk, go, street: same char. \*g'äng / yäng / h a n g row of marching men;
348. \*kljäng / kjng: / k i n g bright: 349. \*gljäng / ljäng- / l i a n g enlighten;
350. \*g'wäk / gwök / h u o to catch, get: 351. \*g'wäk / gwäk / h u o to reap;
352. \*'ag / 'a- / y a inferior, second: 353. \*'äk / 'äk / o bad.
- Further: 357; 358:359; 360; 361:362; 370:371; 372:373; 414:415; 422:423; 426:427; 428:429; 434:435; 466:467; 504:505; 514:515.

D. Alternation of forms with and without medial *j*

354. \*ngu / ngɔu: / o u match, vis-a-vis: 355. \*ngju / ngju- / y ü to meet;
356. \*ts'u / ts'ɔu: / t s' o u to cause to run: same char. \*ts'ju / ts'ju- / t s' ü to run, hasten to;
357. \*kân / kân / k a n dry (warmed in the sun): same char. \*g'jan / g'jän / k' i e n heaven (sunny);
358. \*d'wân / d'uân / t' u a n round: 359. \*tjwan / tjwän: / c h u a n to turn round;
360. \*mwân / muân- / m a n (drawn out:) distant, unlimited: same char. \*mjwän / mjwän- / w a n extended, long;
361. \*ngäd / ngäi- / a i (cut off:) end, to end: 362. \*ngiäd / ngiwi- / y i (to cut:) to mow;
363. \*lwän / luän / l u n to assort, select: 364. \*ljwän / ljuän / l u n class, category;
365. \*tswät / tsuät / t s u (moriturus:) soldier: same char. \*tsjwät / tsjuät / t s u to die;
366. \*nəp / nāp / n a to bring in: 367. \*njəp / njjəp / j u to enter;
368. \*dz'əp / dz'āp / t s a brought together, mixed: 369. \*dz'jəp / dz'jəp / t s i to come together, assemble;
370. \*ngäng / ngäng / a n g high, to lift high: 371. \*ngiang / ngiang: / y a n g to lift the face;
372. \*nāk / nāk / n o to agree, say yes: 373. \*njak / njjak / j o to agree, conform to, like;
374. \*səng / svng / s h e n g to bear, be born, live: 375. \*sjəng / sjäng- / s i n g innate nature, life.
- Further: 391:392; 407:408; 422:423; 424:425; 426:427; 428:429; 434:435; 438:439; 452:453; 512:513; 514:515; 535:536; 540:541.



### E. Alternation of voiceless aspirate and voiced aspirate as initial

376. \*ts'ju / ts'ju: / t s' ü to take: 377. \*dz'ju / dz'ju- / t s ü to bring together, collect;  
 378. \*ts'ian / ts'ian: / t s' i e n shallow: 379. \*dz'ian / dz'ian: / t s i e n thin, shallow;  
 380. \*k'jwan / k'jwän / k' ü a n to bend, curved: 381. \*g'jwan / g'jwän / k' ü a n (rolled hand:) fist;  
 382. \*ts'jwan / ts'jwän / t s' ü a n healed, restored: 383. dz'jwan / dz'jwän / t s' ü a n complete, whole;

廢 303 結 309 警 305 出 306 帥 307 報 308 警 309 度 310 惡 311 嚇 312 射 313 院 314 貴 315 舅 316  
 積 317 盡 318 塞 319 意 320 意 321 福 322 富 323 伏 324 告 325 祝 326 宿 327 復 328 覺 329 學  
 330 歎 331 約 332 火 333 濯 334 嘉 335 賀 336 安 337 晏 338 言 339 啞 340 貫 341 割 342 屠 343 監  
 344 覽 345 斬 346 暫 347 行 348 景 349 亮 350 獲 351 獲 352 丑 353 惡 354 偶 355 遇 356  
 趣 357 乾 358 團 359 轉 360 曼 361 艾 362 火 363 掄 364 倫 365 卒 366 內 367 入 368 雜  
 369 集 370 仰 371 仰 372 諾 373 若 374 生 375 性 376 取 377 聚 378 澆 379 儻 380 卷 381

384. \*p'wân / p'uân- / p' a n to cleave, divide, separate: 385. \*b'wân / b'uân- / p a n to separate, dividing bank between fields;  
 386. \*t'ād / t'ai- / t' a i great: 387. \*d'ād / d'ai- / t a great;  
 388. \*k'ien / k'ien / k' i e n to pull: 389. \*g'ien / yien / h i e n (the thing that is pulled:) bow string;  
 390. \*p'jwäm / p'jwäm- / f a n to overflow, inundate: same char. \*b'jwäm / b'jwäm- / f a n to flow out, disperse;  
 391. \*k'wat / k'uat / k' u cave, hole: 392. \*g'jwat / g'jwat / k ü to excavate, dig a hole;  
 393. \*t'iar / t'iei / t' i (sequence of steps:) staircase: 394. \*d'iar / d'iei- / t i sequel, sequence, order;  
 395. \*ts'iar / ts'iei / t s' i (the counterpart, of equal standing:) consort, principal wife: 396. (the Arch. graph of which had the same upper part as 395) \*dz'iar / dz'iei / t s' i equal, uniform;  
 397. \*p'jök / p'juk / f u to turn round: 398. \*b'jök / b'juk / f u to return;  
 399. \*t'jög / t'jäu / c h' o u take out, pull out: 400. \*d'jög / d'jäu- / c h o u (the outcome:) descendants;  
 401. \*t'ioğ / t'ieu- / t' i a o to sell grain: 402. \*d'ioğ / d'iek / t i to buy grain;  
 403. \*p'jung / p'jwong: / f e n g to hold with both hands: 404. \*b'jung / b'jwong: / f e n g to hold with both hands.

### F. Alternation of tenuis and voiceless aspirate as initial

405. \*pwâ / puâ: / p o to walk lame: 406. \*p'wâ / p'uâ / p' o slanting, oblique, partial;  
 407. \*kio / kiwo / k ü chariot, carriage: 408. \*k'o / k'uo- / k' u storehouse for chariots, arsenal;

409. \*pwân / puân- / p a n half: 410. \*p'wân / p'uân- / p' a n to cleave;  
 411. \*k'jwan / k'jwän: / k ü a n to roll: same char. \*k'jwan / k'jwän / k' ü a n crooked, rolled up;  
 412. \*kiwat / kiwet / k ü e to cut off: 413. \*k'iwat / k'iwet / k' ü e to break, splinter, defective;  
 414. \*k'jap / k'jap / k i e (to take away:) to rob, plunder: 415. \*k'jab / k'jwo- / k' ü to go away, take away;  
 416. \*kwâng / kwâng: / k u a n g wide: 417. \*k'wâng / k'wâng: / k' u a n g (the wide parts:) the wilds;  
 418. \*pâk / pâk / p o wide, ample: 419. \*p'âg / p'uo- / p' u great, vast;  
 420. \*k'jung / k'jung / k u n g bow: 421. \*k'jüng / k'jüng / k' i u n g vaulted, vault.

### G. Alternation of media and voiced aspirate as initial

422. \*djan / jän / y e n extend, stretch out: 423. \*d'ân / d'ân: / t a n extend, make great;  
 424. \*g'jwan / j'jwän / y ü a n round: 425. \*g'wan / ywan / h u a n ring;  
 426. \*g'jwän / j'jwän / y ü a n dragging slowly: 427. \*g'wân / ywân: / h u a n slow, slack, remiss;  
 429. \*d'jwat / j'wät / y ü e glad, rejoice: 428. \*d'wäd / d'uâi- / t u e i merry;  
 430. \*d'jien / j'ien: / y i n to pull, lead: 431. \*d'jien / d'jien: / c h e n rope by which cattle are led;  
 432. \*d'jar / zi- / s h i to see: 433. \*d'jar / dz'i- / s h i (to cause to see:) to show, sign, signalize;  
 434. \*d'jam / jäm / y e n to blaze: 435. \*d'am / d'am / t' a n aflame;  
 436. \*d'jög / j'äu / y ü to come out from, from: 437. \*d'jög / d'jäu- / c h o u (outcome:) descendants;

### H. Alternation of media and tenuis as initial

438. \*g'jwäk / j'jwäk / y ü territory, state: 439. \*kwäk / kwäk / k u o state;  
 440. \*d'jök / z'jak / s h a o a ladle: 441. \*t'jök / t'jak / c h o to ladle;  
 442. \*d'jög / d'jög / z'jäu-, d'jäu- / s h a o, c h a o to summon: 443. t'jög / t'jäu / c h a o to summon;  
 444. \*d'juk / z'jwok / s h u to be attached to, belong to: same char. \*t'juk / t'jwok / c h u to attach.

### I. Alternation of media and voiceless aspirate as initial

445. \*g'jan / jän: / y e n to flow out, overflow, go to excess: 446. \*k'jan / k'jän / k' i e n exceed, excess, fault;  
 447. \*djan / jän / y e n extend, stretch out: 448. \*t'jan / t'jän / c h' a n long (sc. beams);  
 449. \*d'jög / j'äu / y u to come out from, from: 450. t'jög / t'jäu / c h' o u to take out, pull out.



**K. Alternation of *o* and *â* as principal vowel**

451. \**ko* / *kuo*: / k u merchant: same char. \**kâ* / *ka*- / k i a price;  
 452. \**ngio* / *ngiwo*: / y ü to withstand, a match, opponent: 453. \**ngâ* / *nga*- / y a to meet;  
 454. \**nglök* / *ngâk* / y ü e music: same char. \**glâk* / *lâk* / l o joy, rejoice.  
 Further: 512:513.

**L. Alternation of *ə* and *ɛ* as principal vowel**

457. \**g'ap* / *γâp* / h o to join, combine, collect: 458. \**g'ep* / *γâp* / h i a sacrifice to ancestors unitedly, collectively;  
 455. \**k'am* / *k'âm* / k' a n pit: 456. \**g'em* / *γâm*- / h i e n to fall into a pit.  
 Further: 461:462; 463:464;

**M. Alternation of forms with and without medial *i***

459. \**kwad* / *kwai*- / k u a i to divide: 460. \**kiwat* / *kiwet* / k ü e to cut off;

拳382 奎383 全384 判385 畔386 大太387 大388 牽389 弦390 汜391 窟392 掘393 梯394 第395 妻396 齋397 覆398 復399 抽400 冑401 罽402 罽403 捧404 牽405 跋406 頗407 車408 廬409 半410 判411 巷412 決413 缺414 劫415 去416 廣417 曠418 博419 寡420 弓421 穹422 延423 誼424 團425 環426 爰427 爰428 兗429 說430 引431 緝432 覓433 示434 災435 災436 由437 冑438 域439 國440 勺杓441 勺酌442 召443 招444 屬445 行446 懲447 延448 延449 由450 抽451 賈452 禦453 御454

461. \**dz'iar* / *dz'iei* / t s' i equal, uniform: 462. \**dz'er* / *dz'ai* / c h' a i equals, class;  
 463. \**siar* / *siei*: / s i to wash: same char. \**ser* / *šai* / s h a i to sprinkle, cleanse;  
 464. \**d'am* / *d'am* / t' a n extend, spread: 465. \**d'iam* / *d'iem*: / t i e n (a »spread«): a mat;  
 466. \**kâp* / *kâp* / k i a to press between, pinchers: 467. \**kiap* / *kiep* / k i e (pinchers:) chopsticks.  
 Further: 495; 504:505.

**N. Alternation of forms with medial *j* and medial *i***

468. \**dz'iar* / *dz'iei* / t s' i equal, uniform, even: same char. \**tsjar* / *tsi*- / t s' i hemmed (even) lower edge of garment;  
 469. \**kjäng* / *kjäng*: / k i n g neck: 470. \**kieng* / *kieng*: / k i n g to cut the neck;  
 471. \**tjäng* / *tjäng*- / c h e n g straight, correct, regulate: 472. \**d'ieng* / *d'ieng*- / t i n g (to put straight:) to fix, settle;  
 473. \**ñjäg* / *ñzi* / e r child: 474. \**ngieg* / *ngiei* / n i young and weak;

475. \**piäng* / *piäng*- / p i n g combine two, both: 476. \**b'ieng* / *b'ieng*: / p i n g side by side;  
 477. \**b'jäng* / *b'jäng* / p' i n g to screen off, remove: same char. \**b'ieng* / *b'ieng*: / p i n g a screen;  
 478. \**sjäg* / *siäg*- / s i to give: 479. \**siek* / *siek* / s i to give;  
 480. \**k'iwäg* / *k'iwäg*: / k' u e i a stride, distance covered by moving one leg: 481. \**k'iweg* / *k'iweg* / k' u e i crotch of a man's legs.  
 Further: 493:494.

**O. Alternation of forms with and without medial *w***

482. \**ñjat* / *ñjät* / j ê hot: 483. \**ñjwat* / *ñjwät* / j o to burn;  
 484. \**nâp* / *nâp* / n a to bring in: same char. \**nwâb* / *nuâi*- / n e i the interior;  
 485. \**g'äng* / *γwng* / h e n g crosspiece, crosswise: same char. \**g'wäng* / *γwäng* / h u n g to plow crosswise;  
 486. \**pâk* / *pâk* / p e i (the back side:) north: 487. \**pwäg* / *puâi*- / p e i the back, posterior part.  
 Further: 520:521.

In the following groups we find an interchange between dentals and palatals (*t*: *t̃* etc.) and between dentals and supradentals (*ts*': *ts̃*').

**P, a. Alternation of dental and palatal tenuis as initial**

488. \**tjat* / *tjät* / c h ê (breaking through:) penetrating, perspicacious: 489. \**t̃jat* / *t̃jät* / c h ê to break, decide;  
 490. \**tjäd* / *t̃jäd* / c h i (to cause to come:) to convey, transmit, bring about: 491. \**t̃jäd* / *t̃jäd* / c h i to come;  
 492. \**tjäd* / *t̃jäd* / c h i a pledge, a security given, a hostage: same char. \**t̃jät* / *t̃jät* / c h i substance, substantial matter;  
 493. \**tiok* / *tiek* / t i bright, brilliant: 494. \**t̃iok* / *t̃jak* / c h o to burn, brilliant;

**P, b. Alternation of dental and supradental affricate as initial**

495. *ts'a* / *ts'a* / c h' a to diverge, discrepancy: same char. \**ts'ia* / *ts'ie* / t s' i of different length;  
 496. \**ts'jën* / *ts'jën* / t s' i n near, close: 497. *ts'jën* / *ts'jën*- / c h' e n inner coffin (nearest to the body);  
 498. \**dz'jap* / *dz'jap* / t s i to bring together, hold together: 499. *tsjap* / *tsjap* / c h i to collect;



**Q. Alternation between palatal tenuis and dental media aspirata as initial (cf. A above)**

500. \**t̪io* / *t̪iwo* / c h u many all: 501. \**d'io* / *d'iwo* / c h' u to collect;  
502. \**t̪iog* / *t̪iəu* / c h o u circle, cycle, all round: 503. \**d'ioḡ* / *d'iəu* / c h' o u to bind round, wrap round.

**R. Alternation of dental tenuis and palatal voiceless aspirate as initial (cf. F above)**

504. \**tā* / *tā* / t o much, many: 505. \**t'ia* / *t's'ie*: / c h' i large, extravagant.

**S. Alternation of palatal media and dental media aspirata (cf. G above)**

506. \**ḡiəḡ* / *zi*: / s h i to wait upon: 待 \**d'əḡ* / *d'ai*: / t a i to wait;

**T. Alternation of dental media and palatal tenuis, or vice versa, as initial (cf. H. above)**

507. \**djōk* / *juk* / y ü to nourish: same char. \**t̪jōk* / *t̪juk* / c h u rice gruel;  
508. \**d̪ju* / *z̪ju* / s h u to kill: 509. \**t̪ju* / *t̪ju* / c h u to punish, to kill;  
510. \**d̪jo* / *z̪wo*- / s h u place, position: 511. \**t̪jo* / *t̪jo*- / c h u place, position.

**U. Alternation of palatal media and dental voiceless aspirata as initial (cf. I above)**

512. \**ḡiā* / *ziā*: / s h ê Spirit of the Soil: 513. \**t'o* / *t'uo*: / t' u earth soil.

To sum up, the alternations Q, R, S, T, U are additional examples of the same kinds of stem variation as those we studied under A, F, G, H, I above.

**V. Alternation of nasal and tenuis as final consonant**

514. \**kān* / *kān* / k a n knock against, attack: 515. \**k̪iat* / *kiāt* / k i e to accuse;  
516. \**gliang* / *liang*- / l i a n g to rob: same char. \**gliak* / *liak* / l i ü e to rob;

455 培 456 陪 457 合 458 恰 459 决 460 决 461 濟 462 濟 463 洒 464 覃 465 簾 466 夾 467 挾 468 濟 469 頸 470 頸 471 正 472 定 473 兒 474 悅 475 泔 476 併 477 屏 478 賜 479 錫 480 陸 481 奎 482 熬 483 藪 484 內 485 衡 486 北 487 背 488 折 489 折 490 致 491 至 492 贊 493 的 494 灼 495 差 496 親 497 標 498 輯 499 載 500 諧 501 儲 502 周 503 綢 504 多 505 侈 506 侍 507 鬻 508 殊 509 誅 510 署 511 著 512 社 513 土 514 干 515 訃 516 掠 517 廣 518 揆 519

517. \**kwāng* / *kwāng*: / k u a n g wide: 518. \**k'wāk* / *k'wāk* / k' u o to widen, enlarge;  
519. \**mieng* / *mieng* / m i n g dark, darkness: same char. \**miek* / *miek* / m i to cover;  
520. \**piām* / *piām*: / p i e n to diminish: 521. \**piwāp* / *piwāp* / f a to lack, exhaust;  
522. \**ts'am* / *ts'ām*: / t s' a n to hold in the mouth: same char. \**tsəp* / *tsəp* / t s a to bite.

**X. Alternation of n and r as final consonant**

523. \**b'ian* / *b'ien*: / p' i n female: same char. \**b'iar* / *b'ji*: / p i female;  
524. \**sian* / *sien*: / s i e n to wash: same char. \**siar* / *siei*: / s i to wash;  
525. \**xiwān* / *xiwān*: / h ü a n to sun, to dry in the sun: same char. \**xiwār* / *xiwiē*: / h u e i sunlight;  
526. \**nān* / *nān*- / n a n difficulty, disaster: same char. \**nār* / *nā* / n o to expel malign influences.

So far the fairly rational and regular alternations. Besides those, we find a number of more curious cases which should not be passed in silence. A few examples will illustrate this:

527. \**gwia* / *jwiē* / w e i to make: 528. \**ngwia* / *ngwiē*- / w e i to fake, spurious;  
529. \**k'io* / *k'wo* / k' ü ruins, waste: same char. \**xiō* / *xiwo* / h ü empty;  
530. \**χnək* / *χək* / h e i black: 531. \**mək* / *mək* / m o black, ink;  
532. \**pliam* / *piām*: p i n g rations: 533. \**bliām* / *liām*: / l i n granary;  
534. \**ts'am* / *ts'ām* / t s' a n three, triad: same char. \**siam* / *siam* / s h e n (the triad star:) Orion;  
535. \**g'əp* / *γəp* / h o to join, unite: 536. \**xiəp* / *xiəp* / h i united, harmonious;  
537. \**d'iäk*, *d'iäg* / *d'ziäk*, *d'ziä*- / s h i, s h ê to shoot: 538. \**dziäg* / *ziä*- / s i e archery hall;  
539. \**d'jək* / *d'ziək* / s h i to eat: same char. \**dziög* / *zi-* / s i food;  
540. \**t̪iog* / *t̪iəu*: / c h o u broom: 541. \**sög* / *säu*: / s a o to sweep;  
542. \**sjog* / *sjäu*: / s i a o small: 543. \**sjog* / *sjäu*: / s h a o few, a little;  
544. \**tsög* / *tsäu*: / t s a o flea: 545. \**sög* / *säu* / s a o to scratch;  
546. \**sjək* / *sjək* / s h i to know: same char. \**t̪iög* / *t̪i-* / c h i to remember, to record.

The conclusion to be drawn from the series of examples adduced above is clear: the early script masters had a surprisingly good idea of which variants in sound constituted natural alternations within one word-stem: they realized that a *tān* and a *d'an* could be »one and the same word« varied within clearly defined limits, and they expressed this knowledge in their choice of graphs. This evidence, furnished by the very Archaic Chinese scholars who lived in the early Chou era, offers strong support to our conclusion that the stem variations studied under A—X above (of which Q—U are mere corollaries to A and F—I) may be considered safely attested alternations in the Archaic Chinese language.

冥 520 賤 521 之 522 噲 523 挾 524 洗 525 烜 526 蕪 527 為 528 偽 529 虛 530 黑 531 墨 532 粟 533 藪 534 參 535 合 536 翁 537 射 538 榭 539 食 540 帚 541 掃 542 小 543 少 544 垂 545 擿 546 誅



## Notes

- 1 In the following pages the Archaic forms are given in italics with an asterisk, the Ancient forms in italics without asterisk, and the modern Mandarin forms in spaced Roman letters. The tones in Anc. Chin. are indicated by a colon for the shang sheng (rising tone), by a hyphen for the k'ü sheng (falling tone) and by the absence of a tone mark for the p'ing sheng (even tone): 姑 \**ko* / *kuo* / ku<sup>1</sup>: 古 \**ko* / *kuo*: / ku<sup>2</sup>: 故 \**ko* / *kuo*- / k u<sup>4</sup>.
- 2 E. g. 四 \**sjər* / *si*- / s i 'four': 驷 \**sjər* / *si*- / s i 'team of four horses': 參 \**ts'am* / *ts'əm* / t s' a n 'a triad': 駟 \**ts'am* / *ts'əm* / t s' a n 'team of three horses': 員 \**giwan* / *jiwän* / y ü a n 'round': 圓 \**giwan* / *jiwän* / y ü a n 'round'; etc.

DERIVATION BY TONE-CHANGE  
IN CLASSICAL CHINESEG. B. Downer<sup>1</sup>Source: *Bulletin of the School of Oriental and African Studies, University of London* 22, 1/3, 1959, 258-90.

## I. Introduction

Since Karlgren's 'Word families' first drew attention to the existence of large groups of cognate words in classical Chinese,<sup>2</sup> efforts have been made to define more closely the principal phonetic contrasts involved, and to find semantic relationships that would correspond regularly to the phonetic contrasts.<sup>3</sup> Karlgren himself came to the conclusion that in general it was impossible to find any regular semantic or grammatical correlations with the phonetic correspondence, and that Archaic Chinese showed only the last vestiges of a former inflectional system.<sup>4</sup>

With the material at our disposal, such a conclusion is probably inevitable for the majority of phonetic contrasts between cognate words. However, there is one contrast which, because of the large number of examples of it, has given better results. This is tonal contrast, where two cognate words differ only in tone, e.g.

好 °*χâu* 'to be pretty'; *χâu*° 'to love'<sup>5</sup>

including those cases where a *ruhsheng* word contrasts with the *chiuhsheng* corresponding to it by *shyesheng* 諧聲 rules, e.g.

惡 'ák 'to be evil'; 'uo° 'to hate'

In fact, in most cases of tonal contrast, one member of the pair has the *chiuhsheng*; this is so regular that in this article 'tonal contrast', unless otherwise specified, will refer to contrast between *pyng*, *shaang*, or *ruh* on the one hand and *chiuh* on the other. This kind of contrast has been studied by Jou Tzuumu and Jou Fahgau, who have shown that certain grammatical and semantic contrasts are regularly associated with the tonal contrast.<sup>6</sup> Both writers also included another phonetic contrast: contrasting voiceless and voiced initial, as in 見 *kien*° 'to see'; *yien*° 'to appear, to show'. Neither, however, gave a satisfactory explanation for the role



played by the *chiuhsheng* in tonal contrasts; in fact, Jou Tzuumu does not seem to have recognized the special nature of the *chiuhsheng* there. Jou Fahgau gave a 'phonetic' explanation for the occurrence of the *chiuhsheng*, saying that certain tones tended to 'interchange' 通用. This does not explain why the tonal contrast should be accompanied by a regular semantic contrast.<sup>7</sup>

In the present writer's opinion, Wang Lih has found the solution to this problem. He interprets tonal contrast as a system of word-derivation, with words in *pyng*, *shaang*, and *ruh* as basic forms, and the corresponding *chiuhsheng* words as derived.<sup>8</sup> Indeed, this explanation was given long ago for a few words by Maspero,<sup>9</sup> and more recently by Haudricourt,<sup>10</sup> and seems to be implicit in some remarks of Jou Tzuumu as well as in Jou Fahgau's arrangement of words,<sup>11</sup> although neither stated it explicitly. The over-all effect of the pairs of cognate words listed by Wang Lih is quite convincing, and the solution he offers seems to cover the facts as known.

Nevertheless, sufficient doubtful points remain to justify yet another study of the problem. First, the criteria for determining which of a pair of cognates is 'basic' and which 'derived' have never been discussed. Second, the dating of this derivation-system can with profit be gone into again, and the place it occupies in the general history of the Chinese language can be discussed. Third, previous studies have chiefly relied on traditional dictionary definitions for the semantic side of the problem. As a preliminary step, it seems advisable to find a homogeneous source for the *chiuhsheng* readings, and to tie down the definitions to the uses found in actual texts. For this purpose, an obvious choice is Luh Derming 陸德明, whose collection of readings, *Jingdean shyhwen* 經典釋文<sup>12</sup> has the advantages of being early in date (seventh century A.D.), of quoting extensively from earlier commentators, and of providing a large number of readings. An examination of his readings reveals a surprisingly large number of cognate words with minimal *chiuh*/non-*chiuh* contrast, and an examination of the way in which Luh used the contrasting forms reveals a rather more complicated picture of the semantic side of the contrast, and forces one to query some of the conclusions of earlier writers in this field. Finally, a list is given of the clearest examples of *chiuhsheng* derivation, as found in Luh Derming's works. As, however, it can be shown that *chiuhsheng* derivation was not confined to his usage, but was a general feature of early Chinese, examples from other writers are also included.

## II. The nature of the so-called 'tonal contrast'

Among the words in a family of apparently cognate words, we may suspect, *a priori*, that some are dialect forms that have entered the standard language (and, as such, are probably very hard to detect). Where, however, it is possible to show that regular phonetic relationships correlate with regular semantic contrasts, it is legitimate to assume that we are dealing with related forms from a homogeneous dialect.

The material presented in the lists on pp. 152-72 easily satisfies this requirement. In Groups A to G we have large numbers of pairs of words which share a common

phonetic contrast and a common semantic contrast of a general nature. There is no reason to doubt that we are dealing with cognate forms which have been differentiated internally, within a homogeneous dialect. Wang Lih and others, however, have gone further and suggested that it is possible to explain the occurrence of these forms historically by assuming that in each pair of words, the non-*chiuh* member is a basic form, while the *chiuhsheng* member is a derivative. The reasons for this assumption have never been made explicit. The present writer shares this assumption, and suggests that justification for it may be found in the following points.

- (1) The shapes of the characters bear out the theory. In most cases it is clear that the character is constructed to represent the meaning of the basic (non-*chiuh*) word. This is especially obvious in the characters of Groups A and B. Note also that where one member of a pair has an extra radical added, it is usually the *chiuh* member.
- (2) The above point suggests that the makers of characters regarded the non-*chiuh* form as basic. This is confirmed by Sheu Shenn's 許慎 definitions in the *Shuowen* 說文, which give the 'basic' meaning of the character (in Sheu Shenn's opinion). In most cases, this is the meaning of the non-*chiuh* member.<sup>13</sup>
- (3) Luh Derming, too, takes the non-*chiuh* member as the regular reading (marked *rutzyh* 如字), the *chiuh* reading presumably being a special case (and therefore specially marked).<sup>14</sup>
- (4) The fact that most of the *chiuhsheng* readings have, with time, been dropped from the standard reading pronunciation, as well as from the colloquial language, suggests that we are dealing with a morphological phenomenon which was always recognized as a special case, and that in time it had outlived its usefulness.
- (5) The use of special *chiuhsheng* forms in certain disyllabic expressions (Group H) with apparently no change in meaning, can only be explained as a remnant of some morphological process, by which the *chiuhsheng* was used in phrase-forming.
- (6) In many cases, but especially in Groups A and B, general linguistic experience supports this contention; it seems 'natural' that in these groups the non-*chiuh* forms should be basic, the others derived from them. Note too that the English translations often agree with the Chinese in the distribution of basic and derived (or secondary) forms. Such an impression, based chiefly on translation-meaning, is almost useless by itself, but in conjunction with the other reasons is not without value.

In the end, it is the number of examples that can be found that determines the acceptability of the theory. With over 200 pairs of words showing phonetic and semantic regularity, the present writer believes we have sufficient examples to accept the theory that in early Chinese, the *chiuhsheng*, unlike other tones,<sup>15</sup> had a special function, to create derived words, and that the special nature of these *chiuhsheng* words was realized by early writers, probably up till the time of Luh Derming.



Nevertheless, some problems remain. It may be asked whether, with many other cognates existing, it is possible to posit a one-to-one correspondence between *chiuh* and non-*chiuh* forms? Why pair 教 *γau*° 'to teach' with 學 *γāk* 'to learn' and not with 教 *kau*° 'to teach'? Or 去 *k'jwo*° 'to leave' with 去 *k'jwo*° 'to get rid of', and not with 祛 *k'jwo*° 'to exorcise'? While in both cases the latter form is almost certainly cognate, the fact that the pairs here chosen as examples of tonal contrast are written with the same character (or one close to it) shows that, at least in Hann times, when writing settled into its present form, a closer connexion was felt between the members of each pair than with the other words. This argument hinges on the date at which one assumes the tonal contrast to have been a living feature of the language.

It might be objected that it is curious that one morphological feature (*chiuhsheng*) should have such diverse semantic functions as changing nouns from verbs and vice versa, changing transitive verbs to intransitives and vice versa, etc. This objection has already been disposed of by Karlgren (speaking of other sound-changes), who pointed out that this is a common phenomenon found in many languages.<sup>16</sup> Nevertheless, some doubts may remain, especially if *chiuhsheng* derivation is regarded as something akin to word-formation in Indo-European and other language-families. The present writer holds the opinion that with our present knowledge of Classical Chinese, it is better to regard *chiuhsheng* derivation not as a remnant of a former inflectional system of the Indo-European type, but simply as a system of derivation and nothing more. When new words were needed, they were created by pronouncing the basic word in the *chiuhsheng*. The grammatical regularity found in many cases would then be in a way fortuitous, being the result not of grammatical inflection, but of the need to create new words. This is a very 'mentalist' explanation, but if an explanation for features of an ancient language such as this is being sought, it is unavoidable.

There are, however, other possibilities. A multiple origin for the phenomenon is not out of the question. The presence of *chiuhsheng* forms as the first element in certain compounds suggests that it might once have been used in a subordinating capacity.<sup>17</sup> Another possibility is that the *chiuhsheng* found in these words is the relic of a former suffix, since dropped. This has been suggested by Haudricourt for a few words,<sup>18</sup> and is quite plausible; but with our present knowledge all explanations for the origin of the derivation-system are purely conjectural.

A few words must be said about those characters which seem to show *chiuhsheng* derivative forms, but in which no perceptible distinction in meaning can be found.<sup>19</sup> Quite large numbers of these are to be found. Assuming that in these cases we have not simply missed the semantic distinction, these contrasting forms must be ascribed to differences of dialect (of either spatial or temporal nature),<sup>20</sup> although it is possible that once the derivational process has been established, parallel forms might be created by analogy, without change in meaning. An interesting feature of these characters is that in most cases the modern reading is the *chiuhsheng* form, the non-*chiuh* form having become obsolete. This contrasts with real *chiuhsheng* derivation where it is usually the *chiuh* member that is now lost.

Naturally, it is not claimed that all *chiuhsheng* words are derivative forms. Only a small proportion of the total number can be shown to be so: the majority are basic forms. For instance, there is no evidence to show that words such as 面, 賤, 卦, or 大 were ever anything but *chiuhsheng*.<sup>21</sup> Therefore, under the rubric '*chiuhsheng*' there are in fact two morphologically different kinds of words, (a) those like 大, etc., basically *chiuhsheng* words, and (b) words like 好, etc., which are *chiuhsheng* by derivation from words of other tones.

This raises the question of what method, if any, was used to form derived words from basically *chiuhsheng* words.

A likely answer is that in this case the ancient language had recourse to voiced/voiceless initial alternation. This is the only other alternation, besides *chiuh*/non-*chiuh* contrast, which occurs in considerable numbers. A few examples found in the *Lijih* and *Tzuoojuann* are:

見 <i>kien</i> °	to see	<i>γien</i> °	to be seen; to show
繫 <i>kiei</i> °	to attach, tie	<i>γiei</i> °	to be attached
壞 <i>kwāi</i> °	to destroy	<i>γwāi</i> °	to be destroyed
敗 <i>pwai</i> °	to defeat, to ruin	<i>b'wai</i> °	to be defeated, ruined
背 <i>puāi</i> °	the back	<i>b'uāi</i> °	to turn the back on
葬 <i>tsāng</i> °	to bury	<i>dz'āng</i> °	a grave ( <i>L. Tarncong</i> , j.2.2a (659) (reading by Shyu Moh)

This voiced/voiceless alternation is not confined to words with *chiuhsheng*.<sup>22</sup> Examples with other tones are also to be found.

The semantic relationships between the voiced/voiceless forms seem in general to be identical with those found in *chiuhsheng* derivation. Moreover, in many cases, there seem to be some grounds for taking the voiceless form as basic.

There are also some examples of words with both *chiuhsheng* derivation and voiced/voiceless contrast, e.g.:

糶 <i>d'iek</i>	to buy grain	糶 <i>t'ieu</i> °	to sell grain <sup>23</sup>
分 <i>pjuən</i>	to separate	份 <i>b'juən</i> °	a share <sup>24</sup>
割 <i>kāt</i>	to cut	害 <i>γāi</i> °	to injure <sup>23</sup>
感 <i>kām</i>	to move, affect	憾 <i>γām</i> °	to be resentful

From the point of view of *chiuhsheng* derivation these examples seem to be perfect semantically, but it is difficult to account for the incidence of voiced and voiceless initials. It seems that here there is only alternation, no system of derivation being demonstrable.



III. The date of *chiuhsheng* derivation

The pairs of tonally-contrasted words in the lists on pp. 152–72 may be roughly divided into two groups: those (the majority) in which the two members are usually written with the same character, and the few that are written with different characters. No problem is caused by the latter group, whose validity has never been questioned. However, especially since the rise of the study of historical phonology in the sixteenth century A.D., many scholars such as Guh Yanwu 顧炎武, Chyan Dahshin 錢大昕, Duann Yuhsair 段玉裁, and others have agreed that the tonal distinctions in the former group of characters were late in date, probably the creations of teachers of the fifth and sixth centuries A.D.<sup>25</sup>

This contention is not supported by the facts. Even if no other information was available, it is inherently unlikely that if these distinctions were in fact the creations of late pedants they would have been accepted by the majority of scholars. Yet, to give only a few examples of Tang times and earlier, the principle of semantic distinction by tone-contrast was accepted by Yan Jytuei 顏之推,<sup>26</sup> by Luh Fahyan 陸法言<sup>27</sup> and the compilers of rime-books that succeeded him, and by Jang Shoujye 張守節.<sup>28</sup> Moreover, the statement that these distinctions were created by teachers suggests that these are special pronunciations to be used in reading the classics. In fact, the phenomenon was not confined to classical readings. Non-classical examples occur quite early, for which there would be no pedants' tradition to follow;<sup>29</sup> and it has recently been demonstrated that the Tang poets regularly observed the *chiuhsheng* distinction semantically in many words in poetry.<sup>30</sup> These facts, and the occasional survival of *chiuhsheng* derivatives in modern dialects, formed on the same principles as the learned forms, such as Pekinese<sup>31</sup>

磨 <i>mo</i>	to grind	<i>moh</i>	(1) a mill (2) to mill
瓦 <i>woa</i>	a tile	<i>wah</i>	to tile
泥 <i>ni</i>	mud	<i>nih</i>	to daub on mud
鑽 <i>tzoan</i>	to drill	<i>tzuann</i>	a drill
搨 <i>shan</i>	to fan	扇 <i>shann</i>	a fan
牽 <i>chian</i>	to drag, draw	緣 <i>chiann</i>	a two-rope, a halter

suggest not that the Six Dynasties' pedants were creating new and eccentric pronunciations, but that their readings simply reflected a feature of ordinary speech, already existing.

On *a priori* grounds, therefore, the assumption that tonal contrast appeared late in the history of the language is not very satisfactory. Now, however, Jou Tzuumu has demonstrated convincingly that many of these *chiuhsheng* distinctions were in existence in Hann times.<sup>32</sup> This pushes back the date of their first appearance a few centuries. One can go further, for there is no reason for supposing that the system

of deriving words by tone-change was a creation of that time; the Hann dynasty is merely the earliest time in which we may expect to find explicit statements about the pronunciation of words.<sup>33</sup> In fact, there is additional evidence as to the date of the sound-change. This is the evidence afforded by the phonological relationships between *ruhsheng* words and their *chiuhsheng* derivatives. In the lists of words on pp. 152–72, the following words in which the basic form is *ruhsheng* occur:<sup>34</sup>

Basic form	Derived form
E.1. 告 <i>kôk/kuok</i>	<i>kôg/kâu</i>
G.3. 復 <i>b'îôk/b'îuk</i> (similarly A.54, A.57, B.39, D.10, H.15)	<i>b'îôg/b'îûu</i>
C.7 足 <i>tsjuk/tsiwok</i> (similarly A.64)	<i>tsjûg/tsjû</i>
A.28 責 <i>tsëk/tsek</i> (similarly A.62)	<i>tsëg/tšai</i>
A.61 獲 <i>g'wăk/γwëk</i>	獲 <i>g'wăg/γwə<sup>35</sup></i>
A.14 度 <i>d'âk/d'âk</i> (similarly C.14)	<i>d'âg/d'uo</i>
A.40 鑿 <i>dz'âk/dz'âk</i>	—/dz'âu <sup>36</sup>
F.1 覺 <i>kôk/kâk</i> (similarly C.19, H.7)	<i>kôg/kau</i>
A.48 削 <i>sjok/sjak</i>	<i>sjog/sjäu</i>
A.24 縛 <i>b'îwak/b'îwak</i>	—/b'îua <sup>37</sup>
F.8 射 <i>d'îâk/dz'îâk</i> (similarly A.30, C.6, C.10)	<i>d'îâg/dz'îa</i>
A.29 積 <i>tsjêk/tsjâk</i> (similarly A.35)	<i>tsjêg/tsjê</i>
A.31 織 <i>îjak/tšjak</i> (similarly C.11, E.5)	<i>îjag/tši</i>
A.16 滌 <i>d'îôk/d'iek</i>	<i>d'îôg/d'ieu</i> (as 條)
A.45 塞 <i>sak/sâk</i>	<i>sag/sâi</i>
D.3 渴 <i>k'ât/k'ât</i>	<i>k'âd/k'âi</i>
C.8 出 <i>t'iwət/tš'iuët</i> (similarly A.53)	<i>t'iwəd/tš'wi</i>
C.2 乞 <i>k'jət/k'jət</i>	<i>k'jəd/k'jêi</i> (as 气)
A.67 列 <i>liat/liät</i>	例 <i>liad/liäi</i>
A.7 結 <i>kiet/kiet</i>	繫 <i>kied/kiei</i>
A.20 納 <i>nâp/nâp</i> (similarly D.6)	內 <i>nwâb &gt; nwəd/nuâi<sup>38</sup></i>
A.32 執 <i>tšap/tšjap</i>	<i>tšab/tši</i>



In almost every instance the phonological relationship between the basic and derived forms in the Archaic readings fits the Archaic *shyesheng* system, going back to Chyn 秦 or earlier times.<sup>39</sup>

The present writer's view is that although the appearance of *chiuhsheng* derivation cannot be dated with precision, the likelihood is that it took place in late Archaic, possibly Chyn, times. Indeed, it may be the latest of the morphological processes of word-derivation in the Archaic language, since it occurs in the early commentaries in such large numbers and with such regular semantic correlation, in this way markedly different from most other phonetic contrasts, which may represent remnants of earlier derivational processes, their productive life long past.<sup>40</sup> In Hann times the system of *chiuhsheng* derivation was still very much alive, and used much more extensively than in Luh Derming's time five centuries later. After the Hann dynasty, a progressive loss of the *chiuhsheng* forms may be seen. In Swei and T'ang, many readings were still current, but others survived only as special readings to be used in classical texts. This is suggested by the special attention drawn to them by scholars of the time (such as those mentioned above),<sup>41</sup> and by the special mention accorded them by Luh Derming in the Introduction to his *Jingdean shyhwen*. By Song times so few of the *chiuhsheng* readings survived that concern was felt for their preservation, as may be seen from the publication of special lists and notations of them that took place then.<sup>42</sup> Ju Shi's 朱熹 commentaries, which appeared at this time, gave very few of the *chiuhsheng* forms that are to be found in Luh Derming's work. At the present day, only a handful of the variant pronunciations occur in the reading of non-classical texts.

#### IV. Luh Derming's use of *chiuhsheng* derivation

The categories into which the examples of *chiuhsheng* derivation are arranged in the lists on pp. 152-72 are chosen primarily to illustrate the derivative nature of the tonal contrast. They are notional categories, corresponding to well-known grammatical distinctions found in many languages, and in most cases are probably valid for Classical Chinese, although no rigorous grammatical analysis of this language has yet been made. These categories are as follows:

##### A. Basic form verbal—derived form nominal

This is the commonest kind of derivation. From the basic verbs are derived nouns of agency,<sup>43</sup> nouns of means,<sup>44</sup> nouns denoting the results of acts,<sup>45</sup> abstract nouns,<sup>46</sup> and so on. An interesting group is found in Nos. A.1, A.5, A.17, A.49, and A.60. With these the derived form is regularly used when followed by the amount measured, e.g.<sup>47</sup>

壘厚一丈高二丈

'The earthworks were 10 feet thick and 20 feet high'

##### B. Basic form nominal—derived form verbal

Most of the denominative verbs are transitive, though a few intransitives occur. Note that fully half of the characters are ideographs (*jiyshyh* 指事, *shianqshyng* 象形, and *hueyyih* 會意) representing the basic meaning—an argument for derivation as opposed to mere contrast.

##### C. Derived form causative

In addition to the usual kind of causative verb, this category includes a well-defined sub-group of words, in which the basic form signifies 'receiving' and the derived form 'giving' of some kind.<sup>48</sup>

##### D. Derived form 'effective'

This group is rather hard to define. The principal feature that the characters have in common is that in each of the derived members there is action on an object. This is clear enough when the basic member is intransitive, the derived form transitive; when both basic and derived members are transitive, the difference lies in the fact that the basic form refers to a specific act, whereas the derived form is used to denote the effect this act has on the (usually personal) object. I have therefore tentatively given the label 'effective' to cover this group.

Some of the pairs of words are only dubiously placed in this category. In fact, the boundaries between this group and the Groups C and E are somewhat nebulous.

##### E. Derived form with restricted meaning

In this group the derived form has a more specialized meaning than the basic form. A few honorifics are placed here too. Many of the derived words are notionally reminiscent of the derived intensive and meditative verbs of the Indo-European languages.<sup>49</sup> Again, some words in the two previous groups could have been placed here.

##### F. Derived form passive or neuter

This group is quite well-defined notionally, and seems to be the converse of Group C.

##### G. Derived form as adverb

This category contains five examples of the derived form used adverbially. The basic form is verbal.

##### H. Derived form used in compounds

This group is very interesting. In most cases there seems to be no semantic distinction involved. This is especially true of the examples in which the derived form is the first word in the compound. Where the derived word is the last element of the



compound, it could have been entered in one of the other groups if it had occurred alone. Where, however, the first is the derived form, the lack of semantic distinction suggests that the *chihsheng* was used (at least in some cases) to show subordination.

The examples of *chihsheng* derivation presented in the lists do not by any means exhaust the number of cases to be found. Generally speaking, the principle used in selecting characters for inclusion in the lists was to pick out those with unequivocal readings and meanings. This was not always possible, so in some cases words with alternative readings for the derived form are given. Since Luh Derming includes readings by earlier commentators, these are probably mostly due to real differences of interpretation of the text concerned. There are, however, grounds for believing that the tradition of *chihsheng* derivation was obsolescent by Luh's time.<sup>50</sup> This probably accounts for those cases where Luh prefers the basic form, but notes that earlier commentators have *chihsheng* readings.<sup>51</sup> This is in contrast to those cases of characters used in their basic sense, when no reading is usually given at all. There remain some characters, not in the lists, which are noted by Luh in so many different ways, or with so many alternative pronunciations, that I have been unable to disentangle the functions of the *chihsheng* readings, and have left them for later work.<sup>52</sup> Other omissions from the lists were caused by insufficient evidence of the semantic distinction. An example is the character *kiem* 兼, which in one phrase only<sup>53</sup> is noted as having a variant pronunciation with *chihsheng*. Since other occurrences of the character with apparently the same meaning are given no variant, an explanation of this reading must await study of other texts.

There remains a substantial body of characters with two regular readings, differing only in tone, in which no perceptible difference of meaning occurs. A few examples are given below.

壽	old age, long life	° <i>ziəu</i> , <i>ziəu</i> °	C, <i>Yiin</i> 11, comm., j.4.12b (888)
互	mutually	° <i>ɣuo</i> , <i>ɣuo</i> °	L, <i>Wangjyh</i> , comm., j.4.9b (687)
園	park <sup>54</sup>	<i>jiuk</i> ('old reading'), <i>jiəu</i> °	C, <i>Jau</i> 9, <i>Jing</i> , j.45.1a (1109)
淡	mild, insipid	° <i>d'am</i> , <i>d'am</i> °	L, <i>Jongyong</i> , j.16.15a (832)
錫, 賜	to give	<i>siek</i> , <i>sie</i> °	C, <i>Wen</i> 1, <i>Jing</i> , j.18.1b (951)
釀	to club together for drinks	<i>g'jak</i> , <i>g'jwo</i> °	L, <i>Liichih</i> , j.7.18b (726)
罽	small net	° <i>juət</i> , <i>jwət</i> °	L, <i>Wangjyh</i> , j.4.7a (686)
搖	to shake	° <i>iču</i> , <i>iču</i> °	L, <i>Sangdahjih</i> , comm., j.13.14b (803)
閉	to shut, close	<i>piet</i> , <i>piei</i> °	C, <i>Cherng</i> 8, j.26.12a (999)

迭	in turn, alternately	<i>d'iet</i> , <i>d'iei</i> °	L, <i>Liyyunn</i> , j.7.8a (721)
屨	to pull up	<i>kjwət</i> , <i>kjwäi</i>	C, <i>Shiang</i> 19, j.34.5a (1044)
斃	to fall down	<i>b'jät</i> , <i>b'jäi</i> °	L, <i>Yuehling</i> , j.5.18b (702)
蚋	mosquito	<i>nziwät</i> , <i>nziwäi</i> °	L, <i>Yuehling</i> , j.5.18b (702)
匄	to beg	<i>kät</i> ('old reading'), <i>käi</i> °	C, <i>Jau</i> 16, j.47.10b (1126)

These have already been discussed. More extended work may reveal semantic distinctions here, too.

In assigning names to the categories in the lists, an effort has been made to avoid as far as possible grammatical terms implying syntactic uses. In the absence of a grammatical analysis of Classical Chinese, the use of such terms would be meaningless, and could in fact invalidate the thesis of this article. Even terms such as 'transitive' and 'intransitive', without rigorous definition, can only mislead, although they would be very welcome in discussing the uses of derived words in Groups C, D, and E. For instance, it would be very tempting to take 遠 °*jiwon* (basic form)<sup>55</sup> as intransitive, *jiwon*° (derived form) as transitive; but, like many words of its kind, the basic form may also be used transitively, meaning 'to regard as distant', as in Mencius' 不遠千里而來. However, even if a satisfactory grammatical analysis of Classical Chinese existed, it is doubtful if *chihsheng* derivation could be treated at the grammatical level, except only incidentally. Even 'noun' and 'verb', as word classes, are dubious terms, although they have been used as labels of the categories in the lists, *faute de mieux*. For instance, B.1 家 *ka* (basic form) is usually nominal, and the derived form *ka*° is usually verbal; but the basic form is occasionally verbal too:

待西施毛嬙而爲配,則終身不家矣

'If you wait for a Shishy or Mauchyang to be your wife, you will never be married'.<sup>56</sup>

In some cases the derived form has (notionally) both nominal and verbal uses. Although it is possible to imagine an evolution

simple verb > derived verb > noun

as in D.15 to cause > to send on mission > envoy,

in other cases it is equally plausible to suggest

simple verb > derived noun > derived verb

as in E.3 to line up > line of battle > to form line of battle.



In fact, there is no evidence to support either of the suggested evolutions. If the former seems more likely in some cases, the latter in others, the decision is probably influenced by the translation-meaning of the words. Another possible treatment of such forms is to assume that the two uses of the derived form are simply two aspects of one word-class. This would probably be overambitious at this stage. Accordingly all such forms have been arbitrarily placed in the lists in the appropriate place for the derived verbal, except where there seems to be only a remote connexion between the verbal and nominal notionally, in which case they have been listed twice.

Many other uses of the *chiuhsheng* derivatives might be noticed. The use of tonal contrast in at least two cases<sup>57</sup> to distinguish honorific from humble verbs may be a relic of a former, more widespread phenomenon. It may also be connected with the use of derived forms as passives, which, by an evolution not unknown elsewhere, eventually acquired a connotation of status-differentiation.<sup>58</sup> The use of the basic form both as verb and as 'classifier' in the case of A.21 and A.22,<sup>59</sup> and the use of the basic form as verb and 'number' in the case of A.52,<sup>60</sup> in all three cases in contrast to the derived form, which is nominal, suggests that a more extended survey of Luh's use of *chiuhsheng* derivation, and of his readings in general,<sup>61</sup> would be of great value for the understanding of Classical Chinese grammar.

Lists<sup>62</sup>

## Group A. Basic form verbal—derived form nominal

1. 高	<i>kâu</i>	to be high	<i>kâu°</i>	height C, Yiin 1, comm., j.2.10a (879)
2. 監	<i>kam</i>	to oversee C, Shiuian 7, j.22.3b (976)	<i>kam°</i>	an overseer L, Wangjyh, j.4.4b (684)
3. 過 (see also D.2)	<i>kuā</i>	to pass C, Juang 10, j.8.13b (903) C, Shi 16, <i>Jing</i> , j.14.8a (929)	<i>kuā°</i>	a fault, excess
4. 觀 (see also C.1, H.3)	<i>kuân</i>	to look at	<i>kuân°</i>	a view, mound, tower C, Shiuian 12, j.23.10b (894) L, Liyunn, j.7.1a (717)
5. 廣	<i>kwâng</i>	to be wide	<i>kwâng°</i>	(1) width C, Juang 28, comm., j.10.8a (942)

					"	(2) troop, cohort C, Shiuian 12, j.23.6b (981)
6. 經, 徑	<i>kieng</i>	to pass through C, Cherng 13, comm., j.27.9a (1005)	<i>kieng°</i>		"	(1) a path (2) diameter
7. 結	<i>kiet</i>	to tie	<i>kié°</i>			C, Yiin 1, comm., j.2.10a (879) knot in hair, 'bun' C, Shiang 4, comm., j.29.14b (1019)
8. 卷	<i>kiwän</i>	to roll up L, Sangdahjij, comm., j.13.1b (796)	<i>kiwän°</i>			a roll, volume
9. 騎 (see also H.4)	<i>g'jié</i>	to ride	<i>g'jié°</i>			rider L, Chiulii, j.1.16a (650)
10. 研	<i>ngien</i>	to grind	<i>ngien°</i>			inkstone
11. 擔	<i>tâm</i>	to carry C, Jau 7, comm., j.44.6b (1106)	<i>tâm°</i>			a burden, load C, Shiang 2, comm., j.29.4b (1015)
12. 登	<i>täng</i>	to mount	<i>täng°</i>			stirrups
13. 張 (see also F.4)	<i>fiang</i>	to stretch, extend	<i>fiang°</i>			(1) tent (2) net
14. 度	<i>d'äk</i>	to measure L, Wangjyh, j.4.10a (688)	<i>d'uo°</i>			measurement, ruler L, Wangjyh, j.4.10a (688)
15. 彈	<i>d'an</i>	(1) to fillip L, Yuehjih, j.11.6b (774)	<i>d'an°</i>			crossbow
		"				(2) to shoot (a crossbow) C, Shiuian 2, j.21.5b (672)
16. 滌	<i>d'iek</i>	to wash, cleanse	<i>d'ieu°</i>			stables (Shyu Moh) L, Chiulii, comm., j.1.28a (657) L, Jiautehsheng, j.8.6a (731)
17. 長	<i>d'iang</i>	to be long	<i>d'iang°</i>			length L, Tarnngong, j.2.7a (663)



18. 傳	ˊd'iwän	to transmit	ˊd'iwän°	a record
19. 難	ˊnân	to be difficult	nân°	difficulty, hardship C, Hwan 5, comm., j.6.9a (893)
20. 內, 納	nâp	to bring in	nuâi°	inside
21. 把	°pa	to grasp	pa°	handle L, Chiulii, comm., j.1.13a (648) L, Shawyi, comm., j.10.18a (767)
22. 乘, 柄	°pîwng	to grasp	pîwng°	Handle C, Jau 7, j.44.8a (1106)
23. 封	ˊpîwng	to enfeof	pîwng°	feof (Shyu Moh) <i>Shujing, Tsayjong-jy minq</i> (SBBY ed.), j.17.2a (187)
24. 縛	b'iwak	to bind	b'iuä°	bonds (‘old reading’) C, Jau 4, j.42.15b (1096) C, Juang 9, comm., j.8.11b (903)
25. 飯	°b'iwon	to eat L, Chiulii, j.1.11b (646)  L, Tarncong, j.2.13b (667)	餼 b'iwon°	food (see Luh's note (645) to L, Chiulii, j.1.11a)
26. 縫	ˊb'iwong	to mend, stitch C, Shi 26, j.16.4a (940)	b'iwong°	a seam in cloth L, Shen'i, comm., j.18.15b (851)
27. 磨	ˊmuä	to grind	muä°	grindstone
28. 責	tšek	to exact, demand payment	債 tšai°	debt
29. 積	tšjäk	to pile up, amass	tšie°	hoard, stores C, Shi 33, j.17.8a (949) C, Shiang 5, j.30.3a (1020)
30. 炙	tšjäk	to roast L, Liyunn, j.7.3b (719)	tšja°	roast meat C, Ai 15, j.59.12b (1199)

31. 織	tšjäk	to weave	tši°	L, Chiulii, j.1.10b (645) patterned cloth L, Yuhtzao, j.9.5b (750) L, Shawyi, comm., j.10.13a (764)
32. 執	tšjap	to pick up, catch (see also H.8)	tši°	gift, offering L, Tarncong, j.3.16a (680)
33. 采, 採	°ts'âi	to pluck, pick	采 ts'âi°	herbs
34. 操	ˊts'âu	to grasp, hold L, Chiulii, j.1.3b (640)	ts'âu°	principles
35. 刺	tš'jäk	to prick, stab (see also D.11)	tš'ie°	thorn
36. 稱	ˊtš'jäng	to name, to claim L, Chiulii, j.1.3b (no note by Luh)	tš'jäng°	appellation C, Yiin 1, comm., j.2.13b (880) L, Chiulii, comm., j.1.3b (640)
37. 處	°tš'iwö	to live at, dwell	tš'iwö°	place C, Shi 25, comm., j.16.2b (939)
38. 吹	ˊtš'wie	to blow	tš'wie°	music L, Yuehling, j.5.21a (703) L, Yuehling, j.5.28a (707)
39. 裁	ˊdz'âi	to cut (cloth)	dz'âi°	cut, fashion L, Sangdahjih, j.13.9b (801)
40. 鑿	dz'äk	to bore, drill	dz'âu°	a hole Joulii 周禮, Kaogongjih 考工記 (SBBY ed.), j.39.10a (535)
41. 藏	ˊdz'äng	to hide, store	dz'äng°	storehouse C, Shi 24, j.15.8b (936) L, Huenyih, j.20.3b (864)



42. 乘	dz'jəng	to ride	dz'jəng°	chariot C, Yiin 1, j.2.11a (879)
43. 粟	dz'ju	to collect, gather	dz'ju°	(1) collection, stores C, Shiang 9, j.30.18a (1024) " (2) masses, group C, Cherng 13, j.27.7b (1004)
44. 坐	dz'uā	to sit	dz'uā°	seat C, Shiang 27, comm., j.38.6a (1064)
45. 塞	sək	to block C, Shi 20, j.14.13a (931)	səi°	border, frontier C, Juang 28, j.10.7b (911)
46. 算	suān	to count, reckon	suān°	a tally
47. 思	si	to think	si°	thought C, Shiang 29, j.39.7b (1070) C, Jau 1, comm., j.41.14b (1087)
48. 削	sjak	to pare L, Chiulii, j.1.12b (647)	sjaü°	dagger L, Shawyi, j.10.18a (767)
49. 深	sjəm	to be deep	sjəm°	depth L, Tarngong, j.3.17a (680)
50. 收	sjəu	to gather, receive	sjəu° (altern.)	harvest C, Wen 2, comm., j.18.5a (952) L, Yuehling, j.5.20b (703)
51. 守 (see also F.12, H.14)	sjəu	to guard, maintain	sjəu°  狩"	(1) governor C, Shi 24, j.15.9a (936)  (2) territory L, Wangjyh, j.4.5a (685) cf. also Mencius, Liang Hueywang B, 巡狩者巡所守也

52. 數	sjiu	to count	sjiu°	number C, Yiin 5, j.3.12b (884)
53. 帥, 率	sjuēt	to lead	swi°	leader, marshal C, Shiang 10, j.31.3a, no note by Luh  C, Ai 17, j.60.5a (1202)
54. 宿	sjuk	to stay overnight	sjəu°	celestial 'mansion' C, Jau 10, j.45.6b (1111)
55. 上	zjang	to ascend	zjang°	above, top C, Cherng 16, j.28.4b (1008)
56. 樹	zju	to stand up, set upright, to plant	zju°	tree L, Jihyih, j.14.14a, no note by Luh
57. 畜 (see also H.15)	xiuk	to rear, raise C, Shiuian 4, j.21.12a (975)	xiəu°	farmyard animal C, Shi 19, j.14.12a (931) L, Yuehling, j.5.10a (698)
58. 含	γəm	to hold in the mouth	哈, 哈 γəm°	pearl put in mouth of corpse C, Wen 5, Jing, j.19a.1a (955)
59. 號	γəu	to call, cry C, Cherng 7, comm., j.26.8b (997) L, Chiulii, j.1.27a (656)	γəu°	(1) title, appellation C, Shi 26, comm., j.16.3b, no note by Luh  " (2) slogan, command L, Yuehjih, j.11.20a (781)
60. 厚	γəu	to be thick	γəu°	thickness L, Yuehling, comm., j.5.22b (704)
61. 獲	γwek	to catch, get	獲 γwa°	trap L, Jongyong, j.16.2a (826)



62. 畫	<i>ɣwək</i>	to draw, demarcate C, Shiang 4, j.29.13b (1018)	<i>ɣwai°</i>	picture
63. 行 (see also D.18)	<i>ɣwŋg</i>	to walk, proceed; to practise, carry out	<i>ɣwŋg°</i>	action, behaviour C, Shiang 2, comm., j.29.3b (1015)
64. 欲	<i>ɣwək</i>	to want, desire	<i>ɣu°</i> (alternative reading)	lust <i>L, Chiulii,</i> j.1.1a (637) <i>L, Shyuejih, comm.,</i> j.11.3b (773)
65. 緣, 沿	<i>ɣwän</i>	to follow, go along C, Wen 10, j.19a.13a (960)	<i>ɣwän°</i>	rim, border <i>L, Yuehjih,</i> j.11.6b (779)
66. 量	<i>liang</i>	to measure C, Yiin 11, j.4.13b (888)	<i>liang°</i>	measurement, amount C, Yiin 3, comm., j.3.1a (881)
67. 列	<i>liät</i>	to arrange in line	<i>liäi°</i>	usage, rule
68. 論	<i>luən</i>	to discuss	<i>luən°</i>	theory C, Pref., j.1.15b (877)
69. 染	<i>ñziäm</i>	to dip, dye C, Shiuan 4, j.21.10b (974)	<i>ñziäm°</i>	kind of cloth <i>L, Liyyunn, comm.,</i> j.7.4a (719)

## Group B. Basic form nominal—derived form verbal

1. 家	<i>ka</i>	family	<i>ka°</i>	to marry (of a woman)
2. 間	<i>kän</i>	space between	<i>kän°</i>	to be (or place) between C, Yiin 3, j.3.4a (881)
3. 膏	<i>käu</i>	grease; richness C, Pref., j.1.7b (876)	<i>käu°</i>	to grease; to enrich <i>L, Neytzer,</i> j.8.15a (737) C, Shiang 19, j.34.24 (1043)
4. 棺	<i>kuän</i>	coffin	<i>kuän°</i>	to encoffin C, Shi 28, j.16.10a (942)

5. 冠	<i>kuän</i>	cap	<i>kuän°</i>	to cap (manhood ceremony) C, Shi 9, <i>Jing</i> comm., j.13.4b (921)
6. 魚	<i>ngiwo</i>	fish	<i>ngiwo°</i>	to fish <sup>63</sup>
7. 中 (see also H.6)	<i>tjung</i>	middle	<i>tjung°</i>	(1) to hit the middle C, Cherg 16, j.28.5a (1008) " (2) to be of middle length <i>Shujing, Yaudean</i> (135)
8. 種	<i>tjwong</i>	seed, kind C, Shi 33, comm., j.17.9a (950)	<i>tjwong°</i>	to plant <i>L, Liyyunn,</i> j.7.11a (722)
9. 道	<i>d'äu</i>	road, way	<i>d'äu°</i>	to lead the way C, Yiin 5, j.3.15b (884)
10. 弟	<i>d'iei</i>	younger brother	<i>d'iei°</i>	to act as a younger brother should act <i>L, Liyyunn,</i> j.7.7a (721)
11. 蹄	<i>d'iei</i>	hoof	<i>d'iei°</i>	to trample?; to kick? <i>L, Yuehling, comm.,</i> j.5.13a (699)
12. 田	<i>d'ien</i>	field	<i>d'ien°</i>	to work fields <i>Shy, Chyifeng,</i> 'Fuutyan' 甫田 (257)
13. 泥	<i>nei</i>	mud	<i>nei°</i>	to stick, adhere to
14. 女	<i>ñjwo</i>	daughter	<i>ñjwo°</i>	to give a daughter in marriage C, Hwan 11, j.7.6a (896)
15. 賓	<i>piën</i>	guest	<i>piën°</i>	to receive guests; to pay respects to <i>L, Liyyunn,</i> j.7.5b (720)
16. 氷	<i>piəng</i>	ice	<i>piəng°</i>	to freeze, congeal <i>Tarngshu</i> 唐書, <i>Wei</i> <i>Sychian juann</i> 章思謙傳: 澌酒氷須
17. 風	<i>piung</i>	wind	<i>piung°</i>	(1) to blow on (used of the wind)



			<i>Shuoyeuan</i> 說苑, <i>gweyder</i> 貴德: 以春風風人
		”	(2) to rumour, to satirize <i>Shy, guanjiu</i> pref. (202)
18. 帆	◦ <i>b'jwəm</i> sail	<i>b'jwəm</i> °	to raise wind by fanning? C, <i>Shiuan</i> 12, comm., j.23.10a (983)
19. 旁	◦ <i>b'wāng</i> side	<i>b'wāng</i> °	to be or go beside C, <i>Ai</i> 27, comm., j.60.13b (1209)
20. 名	◦ <i>mǎng</i> name	命 <i>miǎng</i> °	to name C, <i>Hwan</i> 2, j.5.11a (891) C, <i>Wen</i> 11, j.19b.2a (961)
21. 文	◦ <i>mǐuən</i> marks, literature	<i>mǐuən</i> °	to gloss over <i>L, Tarngong</i> , j.2.2a (659)
22. 左	◦ <i>tsá</i> left (side)	佐 <i>tsá</i> °	to assist C, <i>Yiin</i> 6, comm., j.4.2a (885) C, <i>Shiang</i> 10, j.31.7b (1027)
23. 子	◦ <i>tsi</i> child, son	<i>tsi</i> ° ( <i>Shyu Moh</i> ) <i>tsi</i> °	(1) to treat as a child <i>L, Jongyong</i> , j.16.8b (829) (2) to act as a child <i>L, Yuehjih</i> , j.11.23a (784)
24. 枕	◦ <i>tsjəm</i> pillow	<i>tsjəm</i> °	to pillow oneself on C, <i>Shi</i> 28, j.16.15a (945)
25. 妻	◦ <i>ts'iei</i> wife	<i>ts'iei</i> °	to give as wife C, <i>Yiin</i> 7, j.4.4a (886)
26. 先	◦ <i>sien</i> before, front	<i>sien</i> °	to put first C, <i>Pref.</i> , j.1.6b (875) <i>L, Yuhtzao</i> , j.9.11a (753)

27. 首	◦ <i>šjɛu</i> head	<i>šjɛu</i> °	to point head towards <i>L, Tarngong</i> , j.2.7b (664)
28. 衣	◦ <i>jěi</i> clothing	<i>jěi</i> °	(1) to wear (clothes) <i>L, Yuehjih</i> , comm., j.11.22b (783)
		”	(2) to clothe C, <i>Min</i> 2, j.11.7a (915)
29. 麾	◦ <i>χjwiɛ</i> banner	<i>χjwiɛ</i> °	to wave (alternative C, <i>Yiin</i> 11, reading) j.4.12b (888)
30. 下	◦ <i>ɣa</i> below	<i>ɣa</i> °	to put down, lower C, <i>Jau</i> 25, comm., j.51.9b (1098)
31. 後	◦ <i>ɣɛu</i> behind	<i>ɣɛu</i> °	to put afterwards C, <i>Pref.</i> , j.1.6b (875) <i>L, Yuhtzao</i> , j.9.11a (753)
32. 環	◦ <i>ɣwan</i> circle, ring	<i>ɣwan</i> ° ( <i>Shyu Moh</i> ) 環 <i>ɣwan</i> °	(1) to encircle C, <i>Shiang</i> 10, j.31.6b (1026) (2) to encircle oneself with, put on C, <i>Cherng</i> 2, j.25.6a (991)
33. 鹽	◦ <i>jäm</i> salt	<i>jäm</i> °	to salt, pickle <i>L, Neytzer</i> , j.8.24b (744)
34. 油	◦ <i>jɛu</i> oil	<i>jɛu</i> °	to oil, anoint Tsay <i>Shiang</i> 蔡襄, <i>Charluh</i> 茶錄 (Song period), 珍膏油其面 64
35. 右	◦ <i>jiɛu</i> right (side)	佑 <i>jiɛu</i> °	to assist C, <i>Shiang</i> 10, j.31.6b (1026) C, <i>Shiang</i> 10, j.31.7b (1027)
36. 雨	◦ <i>jju</i> rain	<i>jju</i> °	to rain (transitive: as, 'to rain grain')



37. 王	<i>jɿwang</i>	king	<i>jɿwang</i> <sup>o</sup>	C, Yiin 9, <i>Jing</i> , j.4.8a (886) to be king; to be king of C, Cherng 2, j.25.8a (992)
38. 耳	<sup>o</sup> <i>nɿzi</i>	ear	耳 <i>nɿzi</i> <sup>o</sup>	to cut off the ears <i>Shujing, Kanggaw</i> (SBBY ed.), j.14.4a (179)
39. 肉	<i>nɿziuk</i>	meat, flesh	<i>nɿziəu</i> <sup>o</sup>	to be fleshy, rich (chiefly used of music) <i>L, Yuehjih</i> , j.11.14a (778) <i>L, Yuehjih</i> , j.11.24a (784)

## Group C. Derived form causative

1. 觀	<i>kuân</i>	to look at (see also A.4, H.3)	<i>kuân</i> <sup>o</sup>	to show C, Jau 5, j.43.8a (1101) <i>L, Yuehling</i> , j.5.8a (697)
2. 乞	<i>k'jət</i>	to beg	<i>k'jei</i> <sup>o</sup>	to give <i>Jinshu</i> 晉書, <i>Shieh An</i> <i>juann</i> 謝安傳 <sup>65</sup>
3. 近	<sup>o</sup> <i>g'jən</i>	to be near <i>L, Chiulii</i> , comm., j.1.10b (645)	<i>g'jən</i> <sup>o</sup>	to approach C, Hwan 2, comm., j.5.9b (891)
4. 沈	<i>d'jəm</i>	to sink	<i>d'jəm</i> <sup>o</sup>	to drown, immerse C, Cherng 11, j.27.1b (1001) C, Shiang 18, j.33.6b (1040)
5. 買	<sup>o</sup> <i>mai</i>	to buy	賣 <i>mai</i> <sup>o</sup>	to sell
6. 借	<i>tsjäk</i>	to borrow <i>L, Wangjyh</i> , comm., j.4.10a (687)	<i>tsja</i> <sup>o</sup>	to lend <sup>66</sup> C, Juang 18, comm., j.9.8b (907)
7. 足	<i>tsjwok</i>	to be sufficient	<i>tsju</i> <sup>o</sup>	to complete, to form C, Shiang 11, comm., j.31.9a (1027)

8. 出	<i>ts'juət</i>	to emerge (see also H.10)	<i>ts'wi</i> <sup>o</sup>	to put out (alternative) C, Pref., j.1.13b (876)
9. 齊	<i>dz'iei</i>	to be level	<i>dz'iei</i> <sup>o</sup>	to put in equal proportions C, Jau 20, j.49.7b (1136) <i>L, Chiulii</i> , comm., j.1.27a (657)
10. 藉	<i>dz'jäk</i>	to borrow <i>L, Wangjyh</i> , j.4.10a (687)	<i>dz'ja</i> <sup>o</sup>	to lend
11. 識	<i>sjäk</i>	to know, recognize	幟 <i>si</i> <sup>o</sup>	(1) to show, mark <i>L, Tarngong</i> , j.3.4a (674) " (2) banner C, Shiuian 12, comm., j.23.3b (980)
12. 善	<sup>o</sup> <i>zjän</i>	to be good	繕 <i>zjän</i> <sup>o</sup>	to repair C, Yiin 1, j.2.11a (879)
13. 受	<sup>o</sup> <i>zjəu</i>	to receive	授 <i>zjəu</i> <sup>o</sup>	to give
14. 惡	<i>'äk</i>	to be evil	<i>'uo</i> <sup>o</sup>	to hate
15. 飲	<sup>o</sup> <i>jəm</i>	to drink	<i>jəm</i> <sup>o</sup>	to give to drink C, Hwan 16, j.7.12b (898)
16. 陰	<i>'jəm</i>	to be dark	廕, 蔭 <i>jəm</i> <sup>o</sup>	to give shelter C, Wen 7, j.19a.7a (958)
17. 好	<sup>o</sup> <i>χäu</i>	to be pretty	<i>χäu</i> <sup>o</sup>	to love
18. 享, 饗	<sup>o</sup> <i>χiang</i>	to enjoy <i>L, Chiulii</i> , comm., j.1.1b (638)	<i>χiang</i> <sup>o</sup>	to feast; to present C, Cherng 12, j.27.4a (1002) <i>L, Chiulii</i> , j.1.24b (655)
19. 學	<i>γäk</i>	to learn	教 <i>γäu</i> <sup>o</sup>	to teach <i>L, Tarngong</i> , j.3.21a (682)



20. 和	<i>yuá</i>	to be harmonious	<i>yuá°</i>	to harmonize: to rime C, Jau 12, j.45.17b (1115)
21. 永	<i>°jwɔŋ</i>	to be long, eternal	詠 <i>jwɔŋ°</i>	to lengthen (words); to sing <i>Shujing, Shuenndean 彙典</i> (SBBY ed.), j.3.15b (141)
22. 遠	<i>°jwɔn</i>	to be far, distant	<i>jwɔn°</i>	to keep at a distance C, Min 2, comm., j.11.6b (915)
23. 來	<i>lái</i>	to come	徠, 勸 <i>lái°</i>	to cause to come; to encourage C, Min 1, comm., j.11.1b (913)
24. 勞	<i>láu</i>	to toil; merit	<i>láu°</i>	to recompense C, Hwan 5, j.6.6b (893)
25. 任	<i>°nziəm</i>	to undertake, sustain	<i>nziəm°</i>	(1) to employ C, Yiin 3, comm., j.3.3b (881) <i>L, Tzy-i</i> , comm., j.17.12a (839)
			"	(2) job, official position

## Group D. Derived form 'effective'

1. 禁	<i>kjəm</i>	to overcome	<i>kjəm°</i>	to prohibit
2. 過	<i>kuá</i>	to pass	<i>kuá°</i>	to exceed, surpass C, Yiin 1, j.2.10a (879) <i>L, Tzengtzy Wenn</i> , j.6.5a (710) <i>L, Dahjuann</i> , j.10.10a (773)
3. 渴	<i>k'át</i>	to be thirsty	渴 <i>k'át°</i>	to long for C, Jau 1, j.41.10a (1085)
4. 仰	<i>°ngiang</i>	to face upwards	<i>ngiang°</i>	to look up to, hope for (Shyu Moh) C, Shiang 19, j.34.2a (1043)

5. 語	<i>°ngiwo</i>	to speak, to speak of	<i>ngiwo°</i>	to tell C, Yiin 1, j.2.12a (879)
6. 答	<i>táp</i>	to respond to (a greeting, etc.)	對 <i>tuái°</i>	to reply (a person)
7. 聽	<i>°t'ieŋ</i>	to listen to	<i>t'ieŋ°</i>	to obey C, Shi 24, j.15.9b (937)
8. 分	<i>°piuən</i>	to divide	<i>piuən°</i>	to distribute, give relief C, Shi 1, j.12.2b (916) C, Jau 14, j.47.2a (1122)
9. 奉	<i>°b'iwɔŋ</i>	to hold in the two hands	<i>b'iwɔŋ°</i>	to present C, Shi 33, j.17.8b (949)
10. 祝	<i>tsjʉk</i>	to pray, prayer master	<i>tsjʉu°</i>	to curse C, Cherg 17, j.28.11b (1011)
11. 刺	<i>ts'jäk</i>	to stab, prick	<i>ts'ie°</i>	(1) to kill C, Shi 28, j.16.7b (941)
	(see also A.35)		"	(2) to attack, satirize C, Juang 31, <i>Jing</i> comm., j.10.10b (912)
12. 將	<i>°tsjang</i>	to lead; to send off	<i>tsjang°</i>	(1) to lead, be in command of C, Shiuann 2, j.23.2b (980)
			"	(2) a general C, Juang 10, <i>Jing</i> , j.8.12b (903)
13. 取	<i>°ts'ju</i>	to take	娶 <i>ts'ju°</i>	to marry (a woman) <i>L, Chiulii</i> , j.1.9b (644)
14. 從	<i>°dz'iwɔŋ</i>	to follow	<i>dz'iwɔŋ°</i>	to be in attendance <i>L, Chiulii</i> , j.1.5b (641)
	(see also H.11)			



15. 使	° <i>si</i>	to use, cause <i>L, Chiulii</i> , j.1.20a (653)	<i>si</i> °	(1) to send on a mission <i>L, Chiulii</i> , j.1.26a (656) " (2) ambassador <i>C, Wen 10</i> , j.19a.13a (960)
16. 施	° <i>siɛ</i>	to put into practice <i>C, Shi 24</i> , j.15.11b (937)	<i>siɛ</i> °	to bestow alms <i>L, Jihyih</i> , j.14.14b (810)
17. 喜	° <i>xi</i>	to be glad	<i>xi</i> ° (Shyu Moh)	to like, enjoy <i>Jouyih</i> 周易, 蹇 hexagram (91)
18. 行 (see also A.63)	° <i>ɣvng</i>	to walk, proceed; to put into practice	<i>ɣvng</i> °	to patrol <i>C, Shiang 31</i> , comm., j.40.9a (1078) <i>C, Dinq 5</i> , j.55.1a (1169)
19. 回	° <i>yuai</i>	to return	<i>yuai</i> °	to go around, go by way of <i>C, Shiang 18</i> , j.33.8a (1042)
20. 遺	° <i>iwi</i>	to lose, abandon, leave behind <i>L, Jihyih</i> , j.14.15b (810)	<i>iwi</i> °	to leave to, give <i>C, Wen 6</i> , j.19a.5a (956)
21. 與	° <i>iwo</i>	to be with	<i>iwo</i> °	to take part in <i>C, Pref.</i> , j.1.10a (876) <i>C, Yiin 1, Jing</i> comm., j.2.7a(878)
22. 援	<i>jiwon</i>	to draw, pull	<i>jiwon</i> °	to help
23. 爲	<i>jiwɛ</i>	to do, make, be	<i>jiwɛ</i> °	to be for, on behalf of
24. 臨	° <i>liam</i>	to overlook, be on the brink of	<i>liam</i> °	(1) to mourn <i>C, Shiang 12</i> , j.31.13a (1029) " (2) mourning chamber <i>L, Chiulii</i> , j.1.15b (650)
25. 令	° <i>liang</i>	to cause <i>C, Pref.</i> , j.1.7a (875)	<i>liang</i> °	to command <i>C, Shi 9</i> , j.13.7a (922)

## Group E. Derived form with restricted meaning

1. 告	<i>kuok</i>	to tell (superiors) <i>L, Chiulii</i> , j.1.4a (640)	° <i>kau</i>	to announce (to inferiors) <i>L, Liiyunm</i> , j.7.3a, no note by Luh
2. 輕	° <i>k'iang</i>	to be light (in weight)	<i>k'iang</i> °	to be careless <i>C, Yiin 9</i> , j.4.8b (887) <i>C, Shiang 18</i> , j.33.7b (1041)
3. 陳	° <i>d'ien</i>	to line up, arrange	<i>d'ien</i> °	(1) to line up in battle order <i>C, Juang 11</i> , j.9.1a (903) <i>C, Wen 2</i> , j.18.6b (953) " (2) line of battle
4. 少	° <i>siäu</i>	to be few	<i>siäu</i> °	to be young
5. 憶	° <i>jak</i>	to remember	° <i>i</i>	(1) to think " (2) thought, idea
6. 呼	° <i>xuo</i>	to call, name	<i>xuo</i> °	to cry out <i>C, Yiin 11</i> , j.4.12b (888) <i>L, Chiulii</i> , j.1.5b (641)
7. 厭	° <i>iäm</i>	to be satisfied, replete	° <i>iäm</i>	to be oversatisfied, tired of <i>C, Jau 13</i> , j.46.5a (1119) <i>C, Min 1</i> , j.11.1b (913)
8. 橫	° <i>ɣwvng</i>	to be horizontal, cross-wise	<i>ɣwvng</i> °	to be cross-grained, hard to deal with <i>C, Jau 25</i> , comm., j.51.4a (1145)
9. 養	° <i>iang</i>	to bring up, nourish	<i>iang</i> °	to take care of <i>C, Wen 18</i> , j.20.7a (968)
10. 引	° <i>ien</i>	to draw, drag	<i>ien</i> °	(1) to pull coffin ropes



				<i>L, Tzengtzyy Wenn,</i> j.6.10a (711)
			”	(2) ropes for pulling hearse
11. 歛	° <i>ljäm</i>	to cover	<i>ljäm</i> °	<i>L, Tarnngong,</i> j.3.1b (673)
				<i>C, Yiin 1, Jing</i> comm., j.2.7b (878)
12. 如	° <i>hziwo</i>	to resemble, be like	<i>hziwo</i> °	to be as good as <i>C, Shi 4,</i> j.12.8a (918) <i>C, Ai 11,</i> j.58.11b (1192)

## Group F. Derived form passive or neuter

1. 覺	<i>käk</i>	to be conscious of, to make clear		<i>kau</i> °	to awake <i>C, Cherng 10,</i> j.26.15b (1001)
2. 去	° <i>k'jwo</i>	to get rid of	<i>k'jwo</i> °		to leave <i>L, Yuhtzao, comm.,</i> j.9.5b (750)
3. 知	° <i>tiē</i>	to know	智 <i>tiē</i> °		(1) to be wise <i>C, Wen 2,</i> j.18.8a (953)
			”		(2) knowledge
4. 張	° <i>tiang</i>	to stretch, draw	脹 <i>tiang</i> °		to be stretched, distended <i>C, Cherng 10,</i> j.26.15b (1001)
(see also A.13)					
5. 治	° <i>d'i</i>	to govern	<i>d'i</i> °		(1) to be well- governed <i>L, Dahshyue,</i> j.19.9b (858)
			”		(2) government
6. 動	° <i>d'ung</i>	to move	慟 <i>d'ung</i> °		to be moved emotionally <i>Luenyeu, Shianjinn</i> 子哭之慟

7. 聞	° <i>mjuän</i>	to hear; to smell	<i>mjuän</i> °		(1) to be heard; to be smelt <i>C, Hwan 6, comm.,</i> j.6.10b (894) <i>C, Wen 15,</i> j.19b.12b (965)
			”		(2) reputation <i>C, Shiuan 8, Jing</i> comm., j.22.4a (976)
8. 射	<i>dž'jäk</i>	to shoot at	<i>dž'ja</i> °		to practise archery <i>L, Chiulii,</i> j.1.20a (653)
					<i>C, Hwan 5,</i> j.6.6b (893) <i>C, Shiuan 10,</i> j.22.7b (977)
9. 散	° <i>sän</i>	to scatter, release	<i>sän</i> °		(1) to be loose <i>L, Tzengtzyy Wenn,</i> j.6.9b (711)
			”		(2) sinecure
10. 傷	° <i>šjang</i>	to wound, injure	<i>šjang</i> °		to mourn <i>L, Chiulii,</i> j.1.15a (649)
11. 勝	° <i>šjang</i>	to overcome	<i>šjang</i> °		to be victorious <i>L, Shawyi,</i> j.10.14b (764) <i>L, Yuehjih,</i> j.11.9b (776)
					<i>C, Shiang 6, comm.,</i> j.30.3b (1020) <i>C, Jau 12, comm.,</i> j.45.20b (1117)
12. 守	° <i>šjəu</i>	to guard, maintain	<i>šjəu</i> °		to be guarded, careful <i>C, Jau 27,</i> j.52.10b (1154)
(see also A.51, H.14)					
13. 登	° <i>žjäng</i>	to fill	<i>žjäng</i> °		to be full, abundant <i>L, Wangjyh, comm.,</i> j.4.3b (684)
					<i>C, Shiuan 11, comm.,</i> j.22.9a (978)
14. 離	° <i>ljie</i>	to separate	<i>ljie</i> °		(1) to leave <i>L, Tarnngong,</i> j.2.10a (665)
			”		(2) to be different from <i>L, Chiulii,</i> j.1.2b (639)
					<i>L, Shyuejih,</i> j.11.1b, no note by Luh



## Group G. Derived form as adverb

1. 更 <i>kəŋg</i>	to change	<i>kəŋg</i> <sup>o</sup>	again; even more
2. 並 <i>b'ieng</i>	to place side by side	<i>b'ieng</i> <sup>o</sup>	together, even, also
3. 復 <i>b'juk</i>	to return	<i>b'jəu</i> <sup>o</sup>	again
	<i>L, Yuehjih,</i>		<i>C, Yiin 1,</i>
	<i>j.11.22a (783)</i>		<i>j.2.9b (879)</i>
4. 三 <i>sām</i>	three	<i>sām</i> <sup>o</sup>	thrice
		(alternative reading)	<i>C, Juang 10,</i>
			<i>j.8.13a (903)</i>
5. 有 <i>jiəu</i>	to have, exist	又 <i>jiəu</i> <sup>o</sup>	moreover, also

## Group H. Derived form used in compounds

1. 巧 <i>k'ao</i>	to be clever, crafty	淫巧 <i>jəm k'ao</i> <sup>o</sup>	extravagant toys
			<i>L, Yuehling,</i>
			<i>j.5.8b (697)</i>
2. 遣 <i>k'jän</i>	to send	遣車 <i>k'jän ts'ja</i> <sup>o</sup>	carriage for carrying sacrifices to the grave
			<i>L, Tarngong,</i>
			<i>j.3.7a (675)</i>
		遣奠 <i>k'jän d'ien</i> <sup>o</sup>	sacrificial food
			<i>L, Liyyun, comm.,</i>
			<i>j.7.3a (718)</i>
3. 觀 <i>kuän</i>	to see, regard	觀臺 <i>kuän d'ai</i> <sup>o</sup>	observation tower
	(see also C.1, A.4)		<i>C, Shi 5,</i>
			<i>j.12.10a (919)</i>
4. 騎 <i>g'jiə</i>	to ride	騎賊 <i>g'jiə dz'ək</i> <sup>o</sup>	mounted bandits
	(see also A.9)		<i>C, Shiuan 12, comm.,</i>
			<i>j.23.3b (980)</i>
5. 迎 <i>ngipng</i>	to go to meet	親迎 <i>ts'jien ngipng</i> <sup>o</sup>	to meet a bride
	<i>L, Yuehling,</i>		<i>C, Juang 1, Jing</i>
	<i>j.5.2b, no note</i>		<i>comm.,</i>
	<i>by Luh</i>		<i>j.8.1b (900)</i>
			<i>L, Chiulii, comm.,</i>
			<i>j.1.30a (659)</i>
6. 中 <i>tiung</i>	middle	中分 <i>tiung pjuən</i> <sup>o</sup>	to divide in the middle
	(see also B.7)		<i>C, Shiang 14, comm.,</i>
			<i>j.32.5b (1031)</i>

			夜中 <i>ja tiung</i> <sup>o</sup>	in the middle of the night
			(alternative reading)	<i>C, Juang 7, Jing,</i>
				<i>j.8.8a (901)</i>
7. 濯 <i>d'äk</i>	to wash	濡濯 <i>nuän d'au</i> <sup>o</sup>	dirty water left from washing	
	<i>C, Shiang 21,</i>		<i>L, Sangdahjih,</i>	
	<i>j.34.7a (1045)</i>		<i>j.13.6a (798)</i>	
8. 執 <i>tsiap</i>	to grasp, catch	擊獸 <i>tsi s'jəu</i> <sup>o</sup>	hunting-beasts, fierce beasts	
	(see also A.32)		<i>L, Chiulii,</i>	
			<i>j.1.16a (650)</i>	
9. 親 <i>ts'jien</i>	to love	親家 <i>ts'jien ka</i> <sup>o</sup>	relatives by marriage	
			(in <i>Goangyun</i> )	
10. 出 <i>ts'juət</i>	to emerge	出日 <i>ts'wi nziət</i> <sup>o</sup>	the rising sun	
	(see also C.8)		<i>Shujing, Yaudean (135)</i>	
			(alternative reading)	
11. 從 <i>dz'iwong</i>	to follow	從母 <i>dz'iwong miəu</i> <sup>o</sup>	mother's sisters	
	(see also D.14)		<i>L, Tarngong,</i>	
			<i>j.2.16a (668)</i>	
		從弟 <i>dz'iwong d'iei</i> <sup>o</sup>	cousins	
			<i>C, Jau 29,</i>	
			<i>j.51.9b (1147)</i>	
12. 生 <i>šəng</i>	to give birth; to be born	雙生 <i>šəng šəng</i> <sup>o</sup>	twins	
			<i>C, Jau 11, comm.,</i>	
			<i>j.45.10b (1112)</i>	
			(alternative reading)	
13. 燒 <i>šjäu</i>	to burn	燒石 <i>šjäu zjäk</i> <sup>o</sup>	cooking-stones	
			<i>L, Liyyun,</i>	
			<i>j.7.3a (718)</i>	
14. 守 <i>šjəu</i>	to guard, maintain	守臣 <i>šjəu zjien</i> <sup>o</sup>	officer-in-charge	
	(see also A.51, F.12)		<i>C, Juang 14, comm.,</i>	
			<i>j.9.5a (905)</i>	
		守心 <i>šjəu šjəm</i> <sup>o</sup>	sense of tradition	
			<i>C, Shiuan 12, comm.,</i>	
			<i>j.23.13a (985)</i>	



			守犬 <i>šju</i> <sup>o</sup>	watch-dog
			<sup>o</sup> <i>k'iwən</i>	<i>L, Shawyi,</i> j.10.17b (766)
15. 畜	<i>xiuk</i>	to raise (animals)	畜牧 <i>xiu</i> <sup>o</sup> <i>məu</i> <sup>o</sup>	herding
(see also A.57)			(alternative	C, Jau 9, comm.,
			reading)	j.45.3b (1110)
牧	<i>muk</i>	to herd <sup>67</sup>		

## Notes

## 1 Abbreviations:

<i>BMFEA</i>	<i>Bulletin of the Museum of Far Eastern Antiquities, Stockholm.</i>
<i>CYYY</i>	<i>Bulletin of the Institute of History and Philology, Academia Sinica.</i>
<i>MSLP</i>	<i>Mémoires de la Société de Linguistique de Paris.</i>
<i>YCJ</i>	<i>Yenching Journal.</i>

- 2 B. Karlgren, 'Word families in Chinese', *BMFEA*, No. 5, 1933.  
 3 Other work in this field includes: H. Maspero, 'Préfixes et dérivation en chinois archaïque', *MSLP*, xxiii, 1935; Yu Miin 俞敏, 'Word derivation in Archaic Chinese through the annexing of the suffix 'd'', *YCJ*, No. 34, 1948, 29-48; B. Karlgren, 'Cognate words in the Chinese phonetic series', *BMFEA*, No. 28, 1956.  
 4 Karlgren, *The Chinese language*, New York, 1949, 96, 97. Maspero too came to this conclusion (op. cit., 327), and so, later, did Yu Miin. See *Shianmday hanyeu yeufaa* 現代漢語語法, pt. 1, Peking, 1954, p. 32, by Luh Tzongdar 陸宗達 and Yu Miin.  
 5 Unless otherwise stated, throughout this paper words are given in Karlgren's Ancient Chinese transcription, as found in his 'Grammata Serica recensa', *BMFEA*, No. 29, 1957. Tone is indicated by a small circle placed at the corner of the reconstructed form thus:

<i>shaang</i>	<i>chiuh</i>
	<sup>o</sup> X <sup>o</sup>
<i>pyng</i>	°

No sign is needed for *ruhsheng* words, which are always characterized by a final stop consonant.

- 6 Jou Tzuumu 周祖謨, 'Syhsheng byeyih shyhlih' 四聲別義釋例. Originally in *Fuwen Shyuejyh* 輔仁學誌, xiii, 1-2, 1945. I have seen only the reprint in his *Hanyeu inyunn luennwenjyi* 漢語音韻論文集, Shanghai, 1957. Jou Fahgau 周法高, 'Notes on Chinese grammar', *CYYY* (Taiwan), No. 24, 1953, 197-212.  
 7 Jou Fahgau (op. cit., 211), who treats the *ruh/chiuh* and *pyng, shaang/chiuh* contrasts separately, explains the appearance of *chiuhsheng* in both contrasts by assuming that in Archaic Chinese *chiuh* and *ruh* differed in final but were alike in tone, whereas *chiuh, pyng*, and *shaang* differed in tone but were alike in final; thus, *pyng, shaang*, and *ruh* all tended to 'interchange' with the *chiuhsheng*. This does not explain why *pyng* and *shaang* do not interchange in the same way.  
 8 Wang Lih 王力, *Hanyeu shygao* 漢語史稿, Peking, 1958, pp. 213 ff.

- 9 Maspero, op. cit., p. 327, n. 1.  
 10 A. Haudricourt, 'Comment reconstruire le chinois archaïque', *Word*, x, 2-3, 1954, 364.  
 11 e.g. Jou Tzuumu, op. cit., p. 54, under *yeu* 與; the *shaangsheng* member is taken as 'basic pronunciation' 本音, the *chiuh* as 'modified pronunciation' 轉音.  
 12 Not all his readings were used, only those in the *Lijih* 禮記 with Jenq Shyuan's 鄭懸 commentary, and in the *Chuenchiou* and *Tzuoojuann* 春秋左傳, with the commentary of Duh Yuh 杜預.  
 13 Examples may be seen conveniently in Wang Lih's lists (op. cit., pp. 213 ff.).  
 14 The marking of non-*chiuh* members as regular is probably connected with the fact that the *chiuh* readings generally were becoming obsolescent in Luh's time. See below, p. 148.  
 15 An exception, in another context, seems to be the occurrence of tones in final particles. See Kennedy, 'A re-examination of the Classical pronoun forms *ngu* and *ngo*', *CYYY*, xxviii, 1, 276, 277.  
 16 See *The Chinese language*, 96. A good example is to be found in Modern Japanese, where verbs ending in *-eru* are intransitive/passive when the simple verb is transitive (e.g. *miru-mieru, toru-toreru, yaku-yakeru, kiru-kireru*, etc.), and transitive/causative when the simple form is intransitive (e.g. *komu-komeru, tatu-tateru, aku-akeru, iru-ireru*, etc.); thus analogous to Groups C and F of *chiuhsheng* derivation. (See the lists on pp. 281-3 and 287-8.)  
 17 See Group H, and below, pp. 149-50.  
 18 op. cit., 364. Maspero, op. cit., 326, has suggested the influence of a prefix to account for the change in tone. This seems less likely.  
 19 See below, pp. 150-51.  
 20 This is especially likely in the last four examples on p. 151, which belong to the anomalous *chiuhsheng* rimes in the *Chiehyunn* 切韻. There is abundant evidence (from the poets' use of rimes) that the words of these rimes retained their final stop right down to the Six Dynasties. See Wang Lih, *Nanbeichaur shyren yonqyunn kao* 南北朝詩人用韻考, pp. 49-53, in his collection *Hanyeuishy yuenwen jyi* 漢語史論文集, Peking, 1958.  
 21 The last two, according to *shyesheng*, etc., had final stop consonant in Archaic Chinese. It is necessary to posit some difference from other syllables with final stop; one way is simply to project the tone back into Archaic Chinese. See also below, p. 148, n. 39.  
 22 For longer lists, showing examples from all tones, see Karlgren, 'Cognate words in the Chinese phonetic series', *BMFEA*, No. 28, 1956, 9.  
 23 For the relationships between these finals, see below, p. 147.  
 24 Compare the simple *chiuhsheng* derivative *piuan*<sup>o</sup> 'to give relief' (D.8, p. 165).  
 25 For references to Guh and Chyan see Jou Tzuumu, op. cit., 51, 52, and Jou Fahgau, op. cit., 197. Duann Yuhtsair's attitude is clear from his remarks in his *Shuowen jietzyh juh* 說文解字注 under the characters 好, 食, etc.  
 26 *Yanshyh jiaashynn* 顏氏家訓.  
 27 Introduction to the *Chiehyunn*.  
 28 Introduction to the *Shyyjih jenqyih* 史記正義.  
 29 e.g. C.2.  
 30 See Wang Lih, *Hanyeu shyliuhshyue* 漢語詩律學, Shanghai, 1958, pp. 133-42.  
 31 All examples may be found in Luh Jyhwoei 陸志偉, *Beeijinghuah dan'intysr tsyrhuae* 北京話單音詞詞彙, Peking, 1956.  
 32 Jou Tzuumu, op. cit., 52 ff.  
 33 Jou Tzuumu, on this evidence, concluded that the derivation process began in Hann times (op. cit., 52). Jou Fahgau (op. cit., 209) has already pointed out the *non sequitur* involved.



- 34 The Archaic and Ancient readings are taken from *Grammata Serica*. In the few cases where *Gram. Ser.* does not include the derived form, the *chiuhsheng* pronunciation may be seen in homonyms.
- 35 *Gram. Ser.*, No. 784, notes that several characters in this series are irregular in Ancient Chinese. Here the derived form is regular, the basic form is irregular.
- 36 There seems to be no comparable form from which to adduce the Archaic reading.
- 37 This reading, also found in the *Goangyunn* 廣韻, seems very aberrant in the *Chiehyunn* system.
- 38 Karlgren reconstructs an Archaic labial semivowel in the *chiuh* form of A.20 and D.6. This is also found in a few other similar pairs (not included because of the irregular initials):

泣 <i>k'ljap/k'jap</i>	to weep	泣 <i>ljwəd/ljwi</i>	tears
立 <i>gljap/ljap</i>	to stand	立 <i>gjwəd/jwi</i>	position

In all these cases it is possible to take the labial semivowel in the form ending in *-d* as the last trace of an original final labial stop, and thus not reconstruct the semivowel in the original form, i.e. *nəb > nwəd/nuəi*.

However, the labial semivowel does not survive as a trace of the original labial stop in all cases, as A.32 shows. Whether its occurrence is random or whether it can be determined from other data remains to be seen. (Note the occasional appearance in Mandarin of a *herkoou* 合口 vowel in a few words, as the only trace of an Ancient final labial consonant, e.g. 霽 *shyun*, 淋 *liun*, 入 *ruh*.)

- 39 The writer realizes that the ascription of *chiuhsheng* derivation to Archaic times raises the difficulty that in the cases listed above the contrast, according to Karlgren's reconstruction, is not between tones but between voiced and voiceless final stops. This would not affect the argument for a system of derivation, but would add to the complexity of the phonological description of it. However, the writer believes that even in Archaic times these words may be better explained as cases of tonal contrast, but reserves discussion of this problem to a later article.
- 40 See e.g. the lists in Karlgren, *The Chinese language*. Another indication of the relative lateness of *chiuhsheng* derivation is found in the use of the same character for both simple and derived forms, where other pairs of cognate words are usually written with different characters.
- 41 See above, p. 146.
- 42 The fullest lists may be found in the *Chyunjing inbiann* 群經音辨 by Jea Changchaur 賈昌朝 (finished by *Baoyuan* 2 寶元, A.D. 1039), really a collection of characters with two or more readings, taken from the *Jingdean shyhwen*. Other lists of these words, from the Song and Yuan periods, are to be found in the *Iayunn shyhyi* 押韻釋疑, compiled by Ouyang Derlong 歐陽德隆, revised by Gwo Jenqjii 郭正己 in *jeatzyy* year of *Jiingding* 景定 (A.D. 1264). See especially the Introduction. Also in the *Chueijiann luh* 吹劍錄 (全編), by Yuwen Baw 俞文豹, Peking, 1958, p. 75.
- 43 e.g. A.9, A.2, and A.51 (1).
- 44 e.g. A.10, A.15, A.42.
- 45 e.g. A.7, A.31, A.29, and A.50.
- 46 e.g. A.19, A.47, and A.64.
- 47 *C(huenchiou Tzuojuann)* Ai 1, comm., j.57.1b (1180).
- 48 C.2, C.5, C.6, C.10, and C.13.
- 49 cf. Latin *jaciō/factō, volō/volitō*, etc.
- 50 See above, p. 147.
- 51 i.e. those marked 'alternative reading' or 'Shyu Moh' in the lists.
- 52 e.g. 折解要 ~ 約斷.
- 53 或兼職焉 'They might combine their functions', *L, Neytzer*, comm., j.8.14a (735).

- 54 Jou Tzuumu, in another context, takes the *ruhsheng* reading (given by Shyu Moh) as an artificial reading to agree with a rime. In the *Chuenchiou* reference, however, there are no riming words involved, so the reading is probably legitimate. See his *Tarngbeen Maushy'in juannren kao* 唐本毛詩音撰人考 (p. 1 in his *Hannyeu inyunn luennwenjyi*).
- 55 C.22.
- 56 *Hwainantzyy*, j.11, p. 13b (SBBY edition).
- 57 E.1 and E.9. The *Chyunjing inbiann* (see above, p. 148, n. 42) has many more examples.
- 58 Japanese is an example.
- 59 e.g. *C*, Jau 27, j.52.10a (1154), (also commentary), where both words are used in their basic tone as 'handful'.
- 60 e.g. *C*, Jau 16, j.47.11b (1126), where it means 'several'. Here modern usage differs from Luh's.
- 61 Many of his readings are very puzzling. The character 樂, for example, is often given the reading *ngāk* when it would seem that the meaning is clearly 'joy', not 'music'.
- 62 The references are to be read as follows:

*L*—*Lijih Jenqjuh* 禮記鄭注 (SBBY edition), followed by name of the chapter, *jiuann* and page numbers.

*C*—*Chuenchiou Tzuojuann jienqyih* 春秋左傳正義 (SBBY ed.), followed by reigning duke and year, *jiuann* and page.

Comm.—in the commentary.

*Jing*—in the *Chuenchiou*, not the *Tzuojuann*.

The figure in brackets refers to the page number of the *Jingdean shyhwen* (TSJC ed.). Other references are given in full.

Where the usage seems regular, I have generally given only one reference. In more problematical cases, two or three references may be given. When both members of a pair lack references, it may be taken that the contrast is commonly found in all texts, i.e. it is part of general Chinese.

'Alternative' means that Luh gives both basic and derived form. 'Shyu Moh' indicates a reading of Shyu Moh's 徐邁 quoted by Luh.

The characters in each group are arranged in order of the traditional 36 *tzyhmuu* 字母.

- 63 See references in Jou Tzuumu, 'Syhsheng byeyih shyhlih', p. 52.

64 In the *Wuchaursheaushuo dahguan* 五朝小說大觀, Bk. 336 (Shanghai, 1926).

65 See Jou Tzuumu, op. cit., p. 65.

66 See also Koong Yiingdar's 孔穎達 comment on this passage (same reference).

67 *Grammata Serica* gives *mjuk* for this character, following the *Chiehyunn*. Luh Derming in the above reference says it is pronounced like 目, which seems to agree with the *Chiehyunn*. However, elsewhere (e.g. *L, Wangjyh*, j.4.3b (684)) he says it is pronounced like 木 *muk*. This would agree better with the derived word.



## TONES AND PROSODY IN MIDDLE CHINESE AND THE ORIGIN OF THE RISING TONE

*Mei Tsu-lin*

Source: *Harvard Journal of Asiatic Studies* 30, 1970, 86–110.

The purpose of this paper is to show that the rising tone<sup>1</sup> developed through the loss of a final glottal stop, and to discuss two related topics: the phonetic features of the four tones in Middle Chinese and the criterion for the Level-Oblique distinction. A brief review of the current theories seems a convenient point at which to begin.

One of the statements often made about the Chinese language is that tonal distinctions are intrinsic to its morphemes. But “the Chinese language” is too inclusive a term, and the question naturally arises as to whether at every stage of its long history Chinese had a tonal system similar to those exemplified in its modern dialects. From Middle Chinese on, the answer is quite clear. All modern dialects have tones composed of pitch and contour. From the fact that in the seventh and eighth centuries tonal difference was utilized to simulate the length contrast in Sanskrit, and the additional fact that a ninth-century Buddhist work describes the four tones in terms of pitch and contour and length (see below), we know that the tones of Middle Chinese were composed of these three features. Old Chinese, however, poses a more serious problem. It is known that in the *Book of Odes* rhyming words show a strong tendency to belong to the same tone-category.<sup>2</sup> But this only tells us that Old Chinese words fall into three or four categories and that these categories are intimately related to the four tones of Middle Chinese; it tells us very little about the phonetic basis of these categories in Old Chinese. (Hence the non-committal term “tone-category.”) If one makes the further assumption that tonal contrast is an intrinsic characteristic of the language, not derivable from any non-tonal contrast, one can of course conclude that tones are coeval with the Chinese language. Tung T’ung-ho, for example, has stated, “Ever since the beginning of the Chinese language, we not only distinguish tones, but [we find] a tonal system not much different from the four tones of Middle Chinese.”<sup>3</sup>

This prevalent view was challenged in 1954 by Haudricourt.<sup>4</sup> He proposed that, as in Vietnamese, the Chinese tonal system developed in historical times through the loss of certain final consonants. The departing tone of Middle Chinese corresponds to the *hoi* and *nga* tones of Vietnamese, which, as Maspero has shown, are reflexes of an earlier *-h* representing an original *-s*.<sup>5</sup> Moreover, some Chinese words in the departing tone were borrowed into Vietnamese as early as the Han dynasty, at a time when the *hoi* and *nga* tones were presumably still represented by an *-s*: 義 \**ngia/ngjie*, Viet. *nghia* (*nga*); 𪛗 \**mâg/muo*, Viet. *ma* (*hoi*).<sup>6</sup> Arguing from this fact and from analogy, Haudricourt then interprets morphological derivation in Old Chinese involving the departing tone as alternation between a final *-s* and its absence. For example, he posits *dâk* 𪛗 for the verbal form “to measure,” and *dâks* for the nominal form “a measure”; *âk* 𪛗 for the adjectival form “bad,” and *âks* for the transitive verbal form “to dislike.” (The second member of these pairs is in the departing tone.) This idea was taken up by Forrest, who equates the reconstructed *-s* of Old Chinese with the *-s* suffix of Classical Tibetan,<sup>7</sup> and Pulleyblank in 1963 provides further evidence in the form of foreign words ending in *-s* whose Chinese transcriptions, dated the third century A.D., are in the departing tone—in his theory, *-s* < *-ts*.<sup>8</sup>

In the same 1963 paper, Pulleyblank proposes antecedents for two other tones: *-fi* and *-δ* for later level tone, and *-ʔ* for later rising tone. In his view, Old Chinese has no open syllables. And having reconstructed *fi* and *δ* as initial phonemes, he reasons that by symmetry they are also likely to occur in final position. Thus a level tone syllable, open in Middle Chinese, has *-fi* or *-δ* in Old Chinese depending on whether it shows contact with a velar or dental final consonant. Pulleyblank’s reason for connecting *-ʔ* and later rising tone is mainly based upon analogy with Vietnamese. There is, he argues, a high degree of parallelism between the Vietnamese and Chinese tonal systems. The steady accumulation of evidence for the *-s* theory suggests that specific analogies may even be valid. Now, since the *sac* and *nanq* tones of Vietnamese developed through the loss of an earlier *-ʔ*, it is quite likely that the Chinese rising tone was similarly derived. Pulleyblank also cites transcriptions of foreign words as evidence, but they are few in number and not uniformly convincing.

Argument from analogy is at best suggestive, and without testimony from more direct sources, the theory will remain as one of the many possibilities. Fortunately, three kinds of evidence can now be presented: modern dialects, Buddhist sources bearing upon Middle Chinese, and old Sino-Vietnamese loans.

Several dialects of the southeastern coastal area preserve a glottal stop in the rising tone, and the Buddhist sources indicate that the rising tone of Middle Chinese is high, short, and level. Our thesis, then, is that the final glottal stop of Old Chinese is retained intact in the coastal dialects and developed into a high and short syllable in Middle Chinese. We know from acoustic studies that a syllable is high and short if it ends in a voiceless stop, low and long if it ends in a voiced stop, and medium in pitch and duration if it is open.<sup>9</sup> It is also reasonable to assume that when a final stop is lost, the tonal features are retained as reflexes. Therefore, if the final glottal stop (which is voiceless) indeed existed in Old Chinese, its descendant should have precisely the features we said the rising tone did have in Middle Chinese.



The dialects that have a final glottal stop in the rising tone are: Wen-chou 温州 of Chekiang, P'u-ch'eng 浦城 and Chien-yang 建陽 of Fukien, Ting-an 定安 and Wen-ch'ang 文昌 of Hainan Island.<sup>10</sup> In Ting-an, the glottalization is so pronounced that the final nasals in this tone sound as if they are followed by a homorganic stop. As to the pitch level of the rising tones, Chien-yang and Ting-an are low (both being 21), Wen-ch'ang has a high one (*yang-shang*) and a low one (*yin-shang*), but P'u-ch'eng is high, and Wen-chou is high in the sense that both of its rising tones are higher than the other tones in the same register, thus:

Wen-chou	L	R	D	E	P'u-ch'eng	L	R	D	E
<i>yin</i>	44	45	42	23	<i>yin</i>	35	55	12	43
<i>yang</i>	31	24	11	12	<i>yang</i>	24	54	11	

P'u-ch'eng is adjacent to Chien-yang, both situated at the northwest corner of Fukien. Wen-chou is at the extreme southeast of Chekiang, about two hundred miles away from P'u-ch'eng. Since Hainan Island is small, this gives us altogether two or three non-adjacent areas. Except for Wen-chou, which has been classified as Wu, the others are Min dialects, and the generally accepted view that Min branched off directly from Old Chinese makes it easy to understand why the final glottal stop turns up in these dialects but hardly anywhere else.

I should now explain how the features of the rising tone in Middle Chinese are ascertained. Contrast in length is a phonetic feature of Sanskrit, and several Buddhist works, written between the seventh and ninth centuries, recommended ways to represent this contrast. In I-ching's *Nan-hai chi-kuei nei-fa chuan* 義淨南海寄歸內法傳<sup>11</sup> the method suggested is as follows: "The twenty-five characters, 脚 etc., mentioned above and the eight characters following them—thirty-three characters altogether—are called the first group [*varga*]. They should all be read in the rising tone. Do not just look at the characters and pronounce them in the level, departing, and entering tones."<sup>12</sup> The fact that the thirty-three characters all represent Sanskrit short syllables (*ka*, *k'a*, *ga*, *g'a*, etc.) and that each of the four tones appears at least once in this set of characters makes I-ching's meaning clear: when representing Sanskrit short syllables, all characters are to be pronounced in the rising tone, irrespective of the tones they are originally in.

I-ching's statement is also corroborated by the transcriptional practice recorded half a century later but almost certainly used at the time of I-ching. Eight pairs of the Sanskrit basic syllabary—*a*, *ā*, *i*, *ī*, *u*, *ū*, *r*, *ṛ*, *l*, *ḷ*, *e*, *āi*, *o*, *āu*—show the most prominent contrast in length. But in several Buddhist texts, both members of a pair are represented by the same character, with the length contrast indicated by some other means. Of special interest to us are the texts which introduce subscripts to specify the desired tone. In all five texts that use this method, whenever the shortness of a Sanskrit syllable is simulated via a tone subscript, the subscript invariably consists of *shang* or *shang-sheng* "rising tone." The attached table,

listing the transcriptions of the first four pairs of Sanskrit basic syllabary, will illustrate what I mean.

This table is adapted from Lo Ch'ang-p'ei 羅常培, 梵文鄂音五母之 藏漢對音研究, *CYYY* 3(1931), after p. 276, which lists transcriptions in nineteen texts. Lo's table also appears in Chou Fa-kao, 中國語文 論叢, after p. 22. Several of these texts are discussed in Mabuchi Kazuo (see citation in note 14 below), I, p. 36ff. The first two items, not directly relevant to our discussion, are included for the sake of comparison. (Consult table on p. 180.)

The conclusion to be drawn is that the rising tone of Middle Chinese, because of its shortness, is thought to be the most appropriate equivalent for the Sanskrit short syllable. Later, we shall return to consider why the above interpretation is more plausible than the one proposed by Chou Fa-kao, that is, the Level tone is long and the Oblique tones are short.<sup>13</sup>

A second source of information on Middle Chinese tones is the *Hsi-t'an tsang* by the Japanese monk, Annen, written in the year 880 A.D.;<sup>14</sup> in fact it is the most valuable record now extant. Annen's work contains a description of the tones in four traditions successively brought back to Japan. The oldest of these, reflecting the pronunciation of the early eighth century, is most relevant for our purpose.

... Of the two readings that originally came to us in Japan, that of Piao was as follows: the level tone was level and low, with both the light and the heavy [allotones]; the rising tone was level and high, with only the light but not the heavy; the departing tone was slightly drawn out, with no [distinction between] the light and the heavy; the entering tone stops abruptly, having neither the inner nor the outer; the level tone [carried by syllables] with nasal or lateral initials was indistinguishable from the heavy [allotone]; and the heavy [allotone] of the rising tone was no different from the departing tone.

Let me defer a more complete exegesis to a later section and for the present concentrate on what Annen says about the rising tone. The key phrases are 平聲直低 . . . 上聲直昂, which I have translated as "the level tone is level and low . . . the rising tone is level and high." *Chih*, literally "straight," can refer to a level contour or a rising contour with a constant slope. But *p'ing-sheng* means "level tone." Hence *chih* in the first phrase means "level" and should mean the same in the second phrase. *Ti* means "low" and *ang*, its antonym in this context, means "high."

*Ti* and *ang* also occur as antithetical terms in lines 38–39: 入有 輕重, 重低輕昂. Later we shall see that *ch'ing* "light" means the allotone induced by voiceless initials, and *chung* "heavy," the allotone induced by voiced initials. In modern dialects such as Wu, the first is low and the second is high. The fact that *ti* and *ang* mean "low" and "high" in this context confirms the interpretation given in the last paragraph. On the other hand, even if *ang* means "rising" our theory still



	a	ā	i	ī	u	ū	ɿ	ʮ
1. 大般泥洹經 Taishō 376; A. D. 417	短 阿	長 阿	短 伊	長 伊	短 憂	長 憂	聲	聲
2. 文殊師利問經 Taishō 468; A. D. 502-556	阿	長 阿	伊	長 伊	憂	長 憂	聲	長 聲
3. 文殊問經(不空譯) Taishō 469; A. D. 746-774	阿 上	阿 引去	伊 上	伊 引去	鳩 上	汙 引去	唱	唱 引上
4. 瑜伽金剛頂經釋字母品 (不空譯) Taishō 880; A. D. 746-774	阿 上	阿 引去	伊 上	伊 引去	鳩	汙 引	哩	哩 引去
5. 智度論 Taishō 2132; A. D. 780-804	短 阿 上聲 短呼	長 阿 依聲 長呼	短 伊 上聲	長 伊 依聲 長呼	短 瓠 上聲	長 瓠 長呼	訖 里	訖 梨
6. 慧琳一切經音義 Taishō 2127; A. D. 788-810	穰	啊 去聲 兼引	賢 伊字 上聲	縵 去聲 兼引	鳩	汙	乙 上聲	乙 去聲 引
7. 空海悉曇字母釋義 Taishō 2701; A. D. 803-835	阿 上聲呼	阿 去聲 長引呼	伊 上聲	伊 去聲 長引呼	鳩	汙 長聲	哩 彈去呼	哩 彈古去聲 引呼

holds, since a rising contour can also be interpreted as the reflex of an earlier glottal stop.

Annen did not discuss the length of the rising tone in Piao's reading. But later when he went on to describe the pronunciation of Chin and Cheng (two traditions that came to Japan after Piao), he said something quite interesting. "The rising tone [in Cheng's pronunciation] has the light and heavy [allotones]; . . . the heavy is like the heavy [allotone] of Chin's rising tone, without, however, the abrupt

articulation (不突呼之)" (lines 30, 34, 35). The last phrase implies that the rising tone was short for Chin, but its heavy allotone did not have this feature for Cheng. In other words, Annen's account also tells us that the rising tone is short in a certain Chinese dialect, probably the Wu dialect corresponding to Go-on.

Our third source of information is the Japanese tradition of *bombai* 梵唄—Sanskrit psalmody transliterated into Chinese, and brought over in this form to Japan, probably during the T'ang dynasty. The tradition prescribes explicit rules for the pronunciation of the tones, although these rules are not always followed in actual recitation. Since the history of the transmission of *bombai* has not been traced as clearly as we might wish, this evidence needs to be handled with caution. On the other hand, the report on the rules of the Shingon sect, given in the *Hobogirin*, is the clearest and most complete description of a tonal system which may reflect the T'ang pronunciation.<sup>15</sup>

- (1) The level tone is level and relatively low; words having this tone are chanted in the 1st, 2nd, 3rd (or 4th) degree; (2) the rising tone is the highest and the shortest; it is chanted in the 5th or 6th degree; (3) the departing tone is characterized by a prolonged rise of the voice, either from the 4th to the 5th degree or from the 5th to the 6th degree, (4) as for the entering tone for words ending in a consonant, it is short and forced and chanted with a drop, either from the 6th to the 5th degree or from the 5th to the 4th degree.

Some remarks about the reliability of these sources and their interrelationship are now in order. As we shall soon see, Annen describes several developments that are well authenticated by modern dialect data and other philological sources. His reliability is beyond reasonable doubt; the problem lies mainly in understanding his terminology. The equivalence between shortness and the rising tone, deduced from I-ching's statement and the five Buddhist texts, also seems to be on firm ground. And now, what we learned from these sources is confirmed by the *Hobogirin* statement: "The rising tone is the highest and shortest; it is chanted in the 5th or 6th degree," which further implies a level contour. In addition, the *Hobogirin* describes the level tone the same way that Annen did, low and level. Such convergence of evidence not only enhances our confidence in the *bombai* tradition, but also increases the likelihood that Annen and I-ching were talking about similar dialects.

In using Buddhist sources to argue for our thesis, we of course had to assume that the features of the MC rising tone thus ascertained are relevant, but this assumption needs to be examined. Let us consider the question of date. If the hypothesized glottal stop was lost early and the date of our sources is late, the case is unfavorable. For in that event, there would be ample time for the features of the rising tone to change—from the immediate reflexes of the lost glottal stop to those of a much later date. I-ching's work is 690-692 A.D. and Piao's reading is probably early eighth century, both fairly late for the study of tones in their primordial state.



On the other hand, among the hypothesized final consonants, the glottal stop is the only one preserved in some modern dialects, and this fact seems to indicate that its disappearance from the other OC or MC dialects was of a relatively late date.

No matter how the problem of date may be eventually decided, it does not affect our argument based upon shortness. The fact that the length contrast is sub-phonemic in all modern dialects implies that this contrast tends to disappear in time; specifically, a long tone and a short tone, when left to themselves, would both gravitate towards a non-distinctive length. Hence, from the fact that the rising tone is short in the seventh century, we can infer that it has been short up to the presumed disappearance of the final glottal stop and beyond.

A third kind of evidence consists of old Sino-Vietnamese loans. In Sino-Vietnamese (Chinese words borrowed into Vietnamese during the T'ang dynasty), MC initials and tones uniquely determine the resultant Vietnamese tones in the following way.<sup>16</sup>

	level	rising	departing	entering
voiceless	bang	hoi	sac	sac
voiced	huyen	nang	nang	nang
nasals and laterals	bang	nga	nang	nang

This scheme, however, does not hold for the old Sino-Vietnamese loans (words borrowed into Vietnamese during the Han dynasty). Here the rising tone behaves as follows:

	rising
voiceless	sac
voiced	nang
nasals and laterals	sac

According to Haudricourt's theory, the *sac* and *nang* tones of Vietnamese originated from the loss of a final glottal stop. This is shown by the fact that the final glottal stop is still preserved in many dialects of the Palaung-Wa group.<sup>17</sup>

fish	<i>ka?</i> (Khmu, Riàng)	<i>ca</i> (VN, <i>sac</i> tone)
leaf	<i>hla?</i> (Khmu) <i>la?</i> (Riàng)	<i>la</i> (VN, <i>sac</i> tone)
dog	<i>so?</i> (Khmu, Riàng)	<i>cho</i> (VN, <i>sac</i> tone)
rice	<i>rənko?</i> (Khmu), <i>ko?</i> (Riàng)	<i>gao</i> (VN, <i>nang</i> tone)

He also points out that this could be deduced from internal evidence, since these two tones were the only ones noted for words which preserved the final stops *-c*, *-t*, *-p*.

Since the rising tone corresponds to the *sac* and *nang* tones in old Sino-Vietnamese loans and at the time of borrowing these two VN tones had a final glottal stop, it is reasonable to infer that the Chinese rising tone also had a final

glottal stop at that time. The following list, whose Chinese entries are all in the rising tone, will illustrate what has been said in the last few paragraphs.

	<b>S-V (<i>hoi</i>)</b>	<b>Old S-V (<i>sac</i>)</b>	<b>S-V (<i>hoi</i>)</b>	<b>Old S-V (<i>sac</i>)</b>
軟	tram	chem	點	diêm
圭	chu	chua	紙	chi
卷	quyên	cuôn	府	dê
感	cam	cam	種	chung
錦	câm	gâm		giông
	<b>S-V (<i>nang</i>)</b>	<b>Old S-V (<i>nang</i>)</b>	<b>S-V (<i>nga</i>)</b>	<b>Old S-V (<i>sac</i>)</b>
簫	bô	ba	舞	vu
市	thi	cho	藕	ngâu
舅	cyu (? ,nga)	câu	瓦	ngoa
			染	nhiêm
				nhuôm

A further point to be noted is that the development of a tone from a final glottal stop is not an altogether uncommon phenomenon. The case for Vietnamese has just been summarized above. The high tone of Modern Burmese, which corresponds to *-?* in Ching-p'ò (景頗, also called Kachin), is probably derived in a similar manner.<sup>18</sup> In the Lolo dialect of Lahu (a branch of Lolo-Burmese), according to Matisoff, the "high rising tone" developed through glottal dissimilation, that is, first *?*—*?* and then *?*—*?* with a "high rising tone."<sup>19</sup> Closer to home, we may cite the fact that in many Chinese dialects *-p*, *-t*, *-k* first collapsed into *-?*, and when *-?* disappeared, it left behind a pitch-and-contour tone.

So far the following evidence has been presented to support the thesis that the rising tone developed through the loss of a final glottal stop. First, in five dialects of the southeastern coastal area, the rising tone has a final glottal stop. Especially noteworthy is the dialect of Ting-an, in which rising tone syllables end in a nasal sound as if they were followed by a homorganic stop—a fact not easily explained by the contrary hypothesis that the glottal stop was a secondary development. Secondly, Buddhist sources indicate that the rising tone in Middle Chinese had the features short and high, where high means either a level high pitch or a rising contour. We know from acoustic studies that a syllable is high and short if it ends in a voiceless stop. Thus, if the final glottal stop indeed existed in Old Chinese, its reflex should have precisely the features short and high in Middle Chinese. Thirdly, in old Sino-Vietnamese loans, the rising tone corresponds to the *sac* and *nang* tones, which, according to Haudricourt's theory, were derived from a final glottal stop. Finally, it was pointed out that the development of a tone from a glottal stop had occurred in several Southeast Asian languages.

The evidence from Min dialects and from old Sino-Vietnamese loans both point to the Han dynasty as the time when the final glottal stop was still preserved. The situation is, however, much less clear for the pre-Han period. According to Chang Jih-sheng, whenever the rhyming words in the *Book of Odes* belong to both the rising and entering tone categories, the rhyme-categories involved invariably end



in a velar, specifically *-ək*, *-əg*, *-ok*, *-uk* in Karlgren's reconstruction (之入, 之陰, 宵入, 侯入; Karlgren's Category 19, 20, 25, 30).<sup>20</sup> By this, Chang means that (a) the *Book of Odes* has rhymes predominantly in the entering tone category (*-ək*, *-ok*, or *-uk*) which also include words in the rising tone category (respectively *-əg*, *-og*, or *-ug*), and rhymes predominantly in the rising tone category (*-əg*) which also include words in the entering tone category (*-ək*), and (b) these rhyme categories are the only ones in which the rising and entering tone categories co-occur. Since *-k* is phonetically similar to *-ʔ*, it is tempting to regard Chang's observation as indicating that the rising tone had *-ʔ* during the *Shih ching* period. However, complication sets in because there is no general agreement on the tone of a character in OC, nor on the rhyme scheme of a given poem. A close examination of Chang's examples yields only eight clear-cut cases—too few to support our thesis.

The existence of *-ʔ* is even more uncertain in the case of Sino-Tibetan. On the one hand, studies in acoustic phonetics and Southeast Asian languages both seem to indicate that tones are developed from segmental features. On the other hand, we are as yet unable to establish correspondences for tones in the Sino-Tibetan family, nor can we find any final consonants in the Tibetan cognates of Chinese rising tone words, for example, "five," OC 𠄎o 五, Written Tibetan 𑄎𑄣; "nine," OC *kiŋg* 九, WT *dgu*; "bitter," OC *k'o* 苦, WT *k'a*. Hence in the absence of further evidence, it seems best to regard the existence of *-ʔ* in the pre-Han period as probable but not proven. The ultimate origin of *-ʔ* must be left open; it could have developed from some other consonant(s) or from prosodic features.

The next item on our agenda is to consider Annen's statement. I shall present the text and a translation first. The exegetical notes follow immediately after.

(安然悉曇藏卷五(大正新修大藏卷八,頁四-四))

- 1 ...我日本國元傳二音:  
表則平聲直低,  
有輕有重,  
上聲直昂,  
5 有輕無重,  
去聲稍引,  
無重無輕,  
入聲徑止,  
無內無外,  
10 平中怒聲與重無別,  
上中重音與去不分。

... Of the two readings that originally came to us in Japan, that of Piao was as follows: the level tone was level and low, with both the light and the heavy [allotones]; the rising tone was level and high, with only the light [allotone] but not the heavy; the departing tone was slightly drawn out, with no [distinction between] the light and heavy [allotones]; the entering tone stopped abruptly, having neither the inner nor the outer; the level tone carried by syllables with nasal or lateral initials was indistinguishable from [one having] the heavy [allotone]; and the heavy [allotone] of the rising tone was no different from the departing tone.

- 金剛聲勢低昂  
與表不殊  
但以上聲之重  
稍似相合  
15 平聲輕重,  
始重終輕,  
呼之為異,  
唇舌之間,亦有差升。  
20 承和之末,  
正法師來,初習洛陽,  
中聽太原,  
終學長安,  
聲勢大奇。  
25 四聲之中,各有輕重,  
平有輕重,  
輕亦輕重,  
輕之重者,  
金怒聲也,  
30 上有輕重,  
輕似相合  
金聲平輕,上輕,  
始平終上呼之;  
重似金聲上重,  
35 不突呼之。  
去有輕重,  
重長輕短。  
入有輕重,  
重低輕昂。

The reading according to Chin did not differ from that of Piao with respect to pitch and contour. However, [Chin's] heavy [allotone] of the rising tone was somewhat like a combination of the light and heavy [allotones] of the level tone, beginning with the heavy and ending with the light. Enunciating them makes the difference. In the process of articulating [Chin's rising tone] there is also a differential rise.

At the end of the Ch'eng-ho era (847), the Reverend Cheng came, having first learned the Lo-yang dialect, then listened to the T'ai-yüan dialect, and finally studied the Ch'ang-an dialect. The pitch and contour have become quite strange. Each of the four tones has the light and heavy [allotones].

The level tone has the light and heavy [allotones]. The light is further [distinguished into] the heavy and the light. The heavy of the light corresponds to the tone carried by the syllables with nasals and lateral initials in Chin's reading. The rising tone has the light and heavy [allotones]; the light [allotone] is like combining the light [allotone] of the level tone and the light [allotone] of the rising tone in Chin's reading, beginning with the level tone and ending with the rising tone; the heavy [allotone] is like the heavy [allotone] of Chin's rising tone, without, however, the abrupt articulation. The departing tone has the light and heavy [allotones]; the heavy is long and the light is short. The entering tone has the light and heavy [allotones]; the heavy is low and the light is high.



- 40 元慶之初，  
 聽法師來，久住長安  
 委搜進士，  
 亦遊南北，  
 熟知風音  
 45 四聲皆有輕重著力  
 平入輕重  
 同正和上，  
 上聲之輕，  
 似正和上上聲之重
- 50 上聲之重  
 似正和上平輕之重；  
 平輕之重，  
 金怒聲也；  
 但呼著力為今別也，  
 55 去之輕重，  
 似自上重；  
 但以角引為去聲也，  
 音響之終，  
 妙有輕重；  
 60 直止為輕，  
 稍昂為重；  
 此中著力，亦怒聲也。

The four transmitters of Chinese readings were referred to by their abbreviated names. Their identity, insofar as can be determined, is as follows. 表 is probably a corruption of 袁, the surname of Yüan Chin-ch'ing 袁晉卿, a Chinese savant of phonology who went to Japan in 735 at the age of eighteen or nineteen; 金 is probably Kim Ye-sin 金禮信, a Korean and transmitter of Go-on; 正 is Issei 惟正, whose itinerary of travel and date of return coincide remarkably with Ennin's, and hence he probably belonged to the same mission; 聰 is Chisō 智聰.<sup>21</sup> The text as punctuated in the *Taishō* differs from ours at two places: a full stop after 合 in line 15 and also after 平輕 of line 32. I have followed Mabuchi and others in making the emendations.

Whenever a modern dialect has both the voiced-voiceless distinction in the initials and the *yin-yang* (high-low) distinction in one or more of its tones, the voiced initials in general co-occur with the *yang* tone, and the voiceless initials with the *yin* tone. The nasal and lateral initials belong to the *yang* group for the level, departing, and entering tones; this is a fact true for all Chinese dialects. The behavior of these initials in the rising tone, however, varies from dialect to dialect; in some dialects they belong to the *yin* group (such as Mandarin), and in others (such as Cantonese and Wu), they belong to the *yang* group. The noteworthy exception is Kan-on, in which the nasal and lateral initials of *both* the rising and entering tones belong to the *yin* group.

With these facts as background, we can now turn to an examination of lines 10-11, which I have translated: "the level tone carried by syllables with nasal and lateral initials (平中怒聲) was indistinguishable from [one having] the heavy [allotone]; and the heavy [allotone] of the rising tone was no different from the departing tone." The term *nu-sheng* was used by Annen in another place to refer to the two voiced series of Sanskrit: *g, j, d, ḍ, b* and *gh, jh, dh, ḍh, bh*. But in this context, as Arisaka has pointed out, it refers to the nasal and lateral initials of MC.<sup>22</sup> We know that Sanskrit voiced initials were transliterated by MC nasal initials. And since the dialect described here is Kan-on, Annen probably intended to call attention to the fact that whereas the nasal and lateral initials belong to the *yin* group for the rising and entering tones, these initials belong to the *yang* group for the level tone. Thus, his first statement describes the co-occurrence of voiced initials (including nasals and laterals) and the *yang* level tone. His second statement refers to the merger of the voiced rising tone with the departing tone—a fact we also know from the following sources: (1) in many modern dialects the same development has taken place, (2) words in these two tones sometimes rhyme in the poetry of Po Chü-i and Yüan Chen,<sup>23</sup> and (3) Li P'ei 李潛 complained at the end of the ninth century that the distinction between these two tones in the *Ch'ieh yüan* is based upon the peculiarities of the Wu dialects, the implication being that this distinction was no longer maintained in his standard Lo-yang dialect.<sup>24</sup>

Given a system in which the two contrasts voiced-voiceless and *yin-yang* (high-low) regularly co-occur, we can regard the first as the determining feature and the second as the determined feature. In other words, a tone is regarded as consisting of two allotones whose selective realization is conditioned by voicing. This explains why in the translation the word "allotone" is sometimes inserted after "light" or "heavy."

Annen's account is arranged according to the order of transmission of the four readings, which also seems to imply that the proliferation of tones follows a definite sequence: splitting occurs first in the level tone, then in the rising tone, and finally in all tones, thus yielding successively five tones for Piao, six for Chin, and eight for Cheng and Ts'ung. Upon closer analysis, this view is implausible, for once the voiced rising tone was merged with the departing tone (which Annen stated for the first reading, Piao's), the rising tone had no voiced initials and could no longer split into two allotones under the condition of voicing. A more plausible view is this: in the common ancestor of Piao's dialect and Chin's dialect, splitting took place in



Piao's but not in Chin's; and as Annen implied by his repeated comparisons, the six tones of Chin developed successively into the eight tones of Cheng and Ts'ung.

The five-tone system of Piao, with two allotones in the level tone, is typical of Mandarin dialects before the disappearance of the entering tone; so is the merger of the voiced rising tone and the departing tone. The relation of the other three dialects described by Annan to modern dialects is less certain. The six-tone system of Chin is rarely encountered nowadays. The eight-tone system of Cheng and Ts'ung bears some resemblance to Cantonese and Proto-Hakka, but no positive identification can be made on the basis of our present knowledge.

In a recent article, Chou Fa-kao pointed out that the three entering tones of Cantonese can be explained in terms of two pairs of oppositions: voiced versus voiceless and *nei-chuan* 內轉 versus *wai-chuan* 外轉, which oppose short vowel against long vowel.<sup>25</sup> The voiced initials give rise to *yang-ju* (lower entering tone). For the *yin-ju*, developed from voiceless initials, the tone is *hsia yin-ju* (the lower of the upper entering tone) if the final belongs to *wai-chuan*, and *shang yin-ju* (the upper of the entering tone) if the final belongs to *nei-chuan*. This theory throws some light upon lines 8-9: 入聲徑止, 無內無外. What these lines say is that in Piao's dialect, the entering tone is short and the distinction between *nei* (short vowel) and *wai* (long vowel) is neutralized.

There are several terms and passages which resist my exegetical efforts. I shall list them with brief comments. Line 19 says either that the vowel is affected by the tone or that the rising contour extends all the way to the (initial) segment successively articulated by the lip and the tongue, whatever that means. Lines 14-17 and lines 31-33: these are statements that describe a tone, X, as a combination of tone Y and Z. The most plausible explanation is that Annen was trying to approximate these tones (X) with rising contour by specifying their end points; it is less plausible that tone X begins with a level contour (tone Y) and then jumps to another level contour (tone Z). If so, lines 14-17 and 31-33 show that Annen has a standard phraseology for contoured tones. Since he did not use it for Piao's rising tone, that tone is probably high and level, as we have argued. Lines 45, 54, 62: the meaning of the term 著力 is unclear. Line 57: the term 角引 can be explained in two ways. One, *yin* means "prolong, draw out" and *chiao* is its modifier; and here *chiao* is either a corruption or refers to a note in the musical scale. Two, *chiao yin* as an established compound, is a technical term borrowed from musical terminology.<sup>26</sup> But in either case, the meaning cannot be determined with greater precision.

Let us now form a synthetic picture of the four tones, using Annen's account of Piao's reading as the primary source and the rest as supplementary evidence.

- (1) Level tone: long, level, and low, with a higher and a lower allotone. The first feature is inferred from the tradition associated with the monk I-ching.
- (2) Rising tone: short, level, and high, its lower allotone having merged with the departing tone.
- (3) Departing tone: slightly drawn out and hence longish. This feature is described both by Annen and the *Hobogirin*.
- (4) Entering tone: short.

The above summarizes what I think can be reasonably inferred from the evidence now available. It will be noted that I have not included the pitch and contour of either the departing tone or the entering tone, although the *Hobogirin* has something to say about both. The entering tone is high according to the *Hobogirin* and according to our theory that a voiceless final stop induces a high pitch. This is almost certainly true, reliable but until more evidence becomes available, it seems prudent to suspend our judgment. In the case of the departing tone, I should like to mention a plausible, if not conclusive, argument for believing that the *Hobogirin* is essentially right. If the rising tone and the departing tone are respectively 55 and 45 as the *Hobogirin* says, then under the assumption that a voiced initial lowers the pitch of the initial segment, say, from 5 to 4, the merger of the voiced rising tone into the departing tone immediately follows as a kind of phonetic corollary.

A word also needs to be said about the "drawn out" articulation of the departing tone. Four texts in the previously presented table—the earliest dated 746-774—have 引去, 去聲長引, 去聲兼引, "drawn out departing tone," "departing tone lengthily drawn out," "departing tone also drawn out" as subscripts for characters simulating Sanskrit long syllables. If the departing tone is intrinsically and unambiguously long, why is it necessary to add the redundant instruction "drawn out" or "lengthily drawn out"? The explanation we propose is that by mid or late eighth century, in some dialects and for some speakers, the departing tone had lost its longishness, and the subscripts are there to make sure that the departing tone is pronounced in the conservative fashion. There are other reasons for believing in this explanation: in Piao's pronunciation, the departing tone is described as "slightly drawn out" (Piao went to Japan in 735); the length contrast in Chinese tends to get neutralized; and if Old Chinese indeed has an -s, it may have left a long and contoured syllable as its reflex.

There are many other kinds of evidence that bear upon this problem, the most important being the data on modern dialects. But in the absence of a generally accepted theory that classifies and explains diachronic regularities of tone change, the comparative method cannot be applied, and consequently, the dialect data must be temporarily held in abeyance.<sup>27</sup> The second kind of evidence consists of the formulas in which scholars and monks from the T'ang dynasty on record their observed or inferred impressions of tones. The two earliest ones are of some value.<sup>28</sup>

平聲哀而安, 上聲厲而舉, 去聲清而遠, 入聲直而促。

平聲平道莫低昂, 上聲高呼猛烈強, 去聲分明哀遠道, 入聲短促急收 藏。

These two formulas confirm that the level tone is level, the rising tone is high, and the entering tone is short. The third kind of evidence sometimes used is the names of these four tones.<sup>29</sup> But clearly, these slippery terms can hardly lead us to any firm conclusions. It is also sometimes said that the Chinese phonetic terms tend to be their own exemplars, but that *shang* (rising tone, "up, high") is an exception. Hence the character should be read in the rising tone, and in this reading, it means



"to go up, to rise."<sup>30</sup> Here the explanation could be that *shang* was originally in the rising tone, but because of its voiced initial (MC *z-*), later shifted to the departing tone. The fourth kind of evidence consists of *Kan-on syōmyō* 漢音聲明, the Japanese tradition of reading the sutras in the Kan-on pronunciation (which is somewhat different from *bombai*, chanting Sanskrit psalmody). Rai Tsutomu, who made a detailed study of this tradition, came to the conclusion that (a) since the tones are intertwined with the musical setting, their phonetic values cannot always be extracted, and (b) but insofar as the values can be determined, they coincide with what Annen said in the *Hsi-t'an tsang*.<sup>31</sup>

I shall now discuss, as promised, Chou Fa-kao's thesis that the Level tone is long and the Oblique tones are short (see note 13 above). The evidence, according to him, consists of the following three kinds. (1) In Hsüan-ying's 玄應 *I ch'ieh ching yin-i* 一切經音義 (ca. A.D. 649), seven pairs from the Sanskrit syllabary (*a, ā, i, ī*, etc.) are represented thus: long always corresponds to Level and short to Oblique; among the latter, three characters are rising (衰, 塿, 理) and one is entering (聲). (2) In I-ching's work, thirty-three short syllables are represented by Oblique tone characters. (This we discussed earlier, pointing out that all thirty-three are to be pronounced in the rising tone.) In addition, six pairs (*ka, kā, ki, kī*, etc.) are represented thus: long always corresponds to Level, and short to Oblique; of the latter, two characters are rising (枳, 矩), two are departing (計, 告), and one is entering (脚). (3) When the length contrast affects the meaning of a pair of Sanskrit words, it is reflected in Chinese transliterations by means of tonal differences. Four pairs are cited.

Long	Short
a. <i>śāriputra</i> 奢利富多囉	<i>śarīra</i> 舍梨子
b. <i>śīla</i> 尸羅	<i>śīla</i> 試羅
c. <i>puruṣāḥ</i> 補嚕沙	<i>puruṣaḥ</i> 補嚕灑
d. <i>puruṣāḥ</i> 布路沙	<i>puruṣaḥ</i> 布路殺

The tones of the relevant characters are: level, 奢, 梨, 尸, 沙, all representing long syllables; rising, 灑, departing, 舍, 試, entering, 殺, are representing short syllables.

The issue is whether shortness is supposed to be represented by the rising tone only or by all Oblique tones. Thus an Oblique character not in the rising tone would count as a vote for Chou's thesis if it also represented a short syllable. I-ching's statement that "they should all be read in the rising tone. . . ." disqualifies in one fell swoop all thirty-three characters as votes for Chou's thesis. The rest of Hsüanying and I-ching combined only yields four syllables that fulfill the above qualification, two each in the departing tone and the entering tone. Of these, three in I-ching's list are suspect; since the character 脚 appears in both the thirty-three character set and the six pair set, I-ching's statement almost certainly is meant to apply to all the characters concerned. As for (3), the *Kuang yün* has another

reading for 舍 in the rising tone, and 灑 is in the rising tone anyway. This leaves only three votes for Chou's thesis.

While the evidence is insufficient, Chou's thesis may still be true, for in order to simulate the length contrast, the Oblique tones need not be short, but only shorter than the Level tone, and from the available evidence, this indeed seems to be the case. (Level is the longest; departing is the next longest; rising and entering are short.) Furthermore, the reason why the other Oblique tones are regarded as inappropriate simulators of the Sanskrit short syllable may be other than the fact that they are not short enough; the entering tone may have been disqualified by its final stop, and the departing tone by its dynamic contour. In other words, the only clear conclusion to be drawn from Chou's data is that the rising tone is short. The remaining issues will have to be left undecided for the present.

We are now drawn inexorably to a consideration of the Level-Oblique distinction in prosody. And my aim here is not so much to offer a solution but rather to delineate the issues and suggest some ways to approach them.

By the time of Shen Ch'üan-ch'i 沈佺期 (650-ca. 715) and Sung Chih-wen 宋之問 (656-712), the Level-Oblique distinction is firmly established in prosodic practice. Earlier, Shen Yüeh (441-513) and his friends had theorized about the use of four tones in poetry, but it has yet to be shown that any of the Six Dynasty poets consistently applied the Level-Oblique distinction in their poetry. The period between 500 and 650 might then be conveniently regarded as the focal point of our problem.

In order to find out why and how the four tones became classified into two prosodic categories, we need to consider three questions: (1) How were the four tones pronounced at that time? This we do not know exactly, but Piao's reading (early eighth century) seems to be the only firm base for extrapolation. (2) Which phonetic features did the poets pay attention to? This is an important point, but one often neglected in discussions on prosody. (For example, the length contrast is present in modern English, but except for a few experimental poets, never used in poetry.) It is perhaps significant that in the key texts on literary criticism of this period, there is clear mention of the high-low contrast, but never, as far as I know, of the long-short contrast.<sup>32</sup> (3) What tonal patterns can we find in Proto-Recent Style poetry, that is, poems written between 500 and 650? In what follows, I shall suggest some questions that we can put to that yet unexplored corpus.

The Level-Oblique distinction is based either on length or on pitch; these two features are the leading candidates by common consensus. Poets around Shen Yüeh's time apparently operated with four prosodic categories, that is, the four tones. Later there are only two. The process of change may have been gradual or sudden. Thus, we have altogether four models to consider.

- (1) Sudden change based upon long-short: The evidence against it are (a) the long-short contrast is not mentioned in literary criticism, and (b) the departing tone, by our extrapolation, must be fairly long around the sixth and seventh centuries.



- (2) Sudden change based upon high-low. The stumbling block is our ignorance concerning the precise pitch and contour of the departing and entering tone. The *Hobogirin* has something to say about both, and our phonetic theory predicts that the entering tone should be high. But these considerations are too conjectural as the basis for further inference.
- (3) Gradual change based upon long-short. There would be an intermediate stage where the level and departing tones are grouped together as long and the rising and entering tones as short. As the departing tone gradually loses its longishness, it migrates into the short (Oblique) category.
- (4) Gradual change based upon high-low. The intermediate stage would consist of a low category, the level tone; a high category, the rising and departing tones; and a category consisting of the entering tone by itself.<sup>33</sup> Then, by fiat or by convention, the entering tone is included in the high category. The fact that the voiced rising tone and the departing tone have merged no later than Piao's time points to their similarity in pitch and contour. Since the rising tone is high, so is the departing tone; this seems to be the main consideration in favor of this model.

One of the functions of prosody is to define how the various slots are to be filled by prosodic categories, and what a study of Proto-Recent Style poetry can tell us is whether its prosodic categories consist of (L) and (R, D, E) as in (1) and (2), or (L, D) and (R, E) as in (3), or (L), (R, D), and (E) as in (4). My favorite model is (4), but at present this view is based upon nothing more reputable than a hunch.

The conclusions of this paper are these: on the basis of Annen's account, the tonal system of Middle Chinese around the eighth century is found to be (1) level tone: long, level, and low; (2) rising tone: short, level, and high; (3) departing tone: longishness about to be lost and probably high in pitch and rising in contour; and (4) entering tone: short, with uncertain pitch and contour. Annen also allows us to infer that the proliferation of tones under the condition of voicing follows a definite sequence, whose intermediate stages may represent the ancestors of several modern dialects; also that the merger of the voiced rising tone with the departing tone has already been accomplished by the late eighth century.

Reasons have been stated for the thesis that the rising tone of Middle Chinese developed through the loss of a final glottal stop: -ʔ is a feature in several coastal dialects, the rising tone of MC is short and high, and in old Sino-Vietnamese loans, the rising tone corresponds to the *sac* and *nang* tones, at a time when these tones presumably had -ʔ. It also seems probable that one reason why the Six Dynasty poets were so fascinated by the four tones was that the loss of final consonants, according to our conjecture, was not completed until a fairly late date—late enough so that those poets were excited by its novelty. (They could have been aware of this novelty if they had also known some dialects that still preserved the final consonants.) As the tonal system evolved further, it made possible the emergence of the Level-Oblique distinction, and the remaining problem is to find out how exactly that happened.<sup>34</sup>

## Notes

- 1 As we shall see, the so-called rising tone is high and level in Middle Chinese. A more appropriate term might be the "high tone." But I bow to convention and continue to use this self-incriminating expression.
- 2 See 段玉裁, "古四聲說," 江有誥, 唐韻四聲正; 周祖謨, "古音有無上去二聲辨," 問學集 (Peking, 1966), pp. 32–80; George Kennedy, "Tone in Archaic Chinese," in T. Y. Li, ed., *Selected Works of George Kennedy* (New Haven, 1964), pp. 135–150; Chang Jih-sheng 張日昇, "試論上古四聲," in *The Journal of the Institute of Chinese Studies of the Chinese University of Hong Kong* 1(1968), 113–170. Chang computes, for each tone-category X, the ratio in the *Odes* between the occurrences of characters rhyming with characters also in X and the total occurrences of characters in X appearing as rhymes (the latter includes cases where characters in X rhyme with characters in non-X), thus: level 85%, rising 76%, departing 54%, entering 85%.
- 3 董同龢, *中國音韻史*, p. 183.
- 4 A. G. Haudricourt, "Comment reconstruire le chinois archaïque," *Word* 10(1954), 351–364, and "De l'origine des tons en Vietnamien," *JA* 242(1954), 68–82.
- 5 H. Maspero, "Etudes sur la phonétique historique de la langue annamite: les initiales," *BEFEO* 12(1916), 102.
- 6 Tone marks for Vietnamese are usually omitted; when necessary, VN tones are indicated by their names in parentheses.
- 7 R. A. D. Forrest, "Les occlusive finales en Chinois archaïque," *Bulletin de la Société de Linguistique de Paris* 55(1960), 228–239.
- 8 E. G. Pulleyblank, "The consonantal system of Old Chinese, Part II," *AM* 9(1962), 206–265.
- 9 These facts are well established for English. See House and Fairbanks, "The influence of consonant environment upon the secondary acoustic characteristics of the vowels," and Peterson and Lehiste, "Duration of syllable nuclei in English," both in Ilse Lehiste, ed., *Readings in Acoustic Phonetics* (M.I.T. Press, 1967). Peterson and Lehiste noted that the postvocalic consonant has the greatest influence upon the duration of the preceding vowel, and the determining feature is the voiced-voiceless contrast. Recent studies seem to show, although not conclusively, that the correlations are linguistic universals. See Burckhard Mohr, "Intrinsic fundamental frequency variation: π & π<sub>1</sub>," and Matthew Chen, "Vowel length variation as a function [± voice] of the following consonant," respectively in the June and July 1968 issues of the mimeographed *Monthly Internal Memorandum of the Phonology Laboratory of the University of California, Berkeley*.
- 10 Wen-chou is based upon 漢語方言調查 (Peking, 1964), p. 9, note 5; see also 鄭振尚芳, "溫州音系," *中國語文* 1(1964), 28–60; Wen-ch'ang on Hashimoto Mantarō 橋本萬太郎, "海南語の聲調體系," *東京支那學報* 7(1961), 35–52, and 梁敏剛, "海南方言中的喉塞音," *中國語文* 6(1964), 463–465; Ting-an on Yamaji Enji 山崎圓次 and Matsutani(?) Masa 松谷雅, *海南島語會話* (Tokyo, 1931), p. 5; P'u-cheng and Chien-yang on Jerry Norman's field notes collected on Taiwan, which will be presented as part of his doctoral dissertation at the University of California, Berkeley.
- 11 The key passage cited below does not appear in the standard version, I-ching's *Nan-hai* . . . (*Taishō*, No. 2125), but is quoted, with explicit mention of the title, by Annen in his *Hsi-t'an tsang* (*Taishō*, No. 2702, Vol. 84, p. 380a). I have followed Chou Fa-kao in assuming that the passage quoted by Annen was written by I-ching. For bibliographic details on Annen and Chou, see notes 13 and 14 below.
- 12 The text and its preceding context are as follows: 脚住伽囉機者棟社經嚕託訶茶? [Morohashi, No. 25043] 摩哆池陀但娜羅巨婆梵摩名五五二十五, 字名便攝 . . . 野 囉囉婆捨囉婆訶訶義 (末後二字不入其數) 右脚 等二十五字并下八字, 總有三十三字名初章, 皆須上聲讀之, 不可看其, 字而為平去入也。
- 13 周法高, "說平仄," *CYYY* 13(1948), 153–162, and "佛敎東傳對中國音韻學之影響," *中國語文論叢* (Taipei, 1963), pp. 21–50, esp. pp. 22–24. Chou's view seems to have been accepted by Tamaki



- Ogawa 小川環樹, 唐詩概論 [= Yoshikawa and Ogawa, eds., 中國詩人選集 17, Tokyo, 1958], p. 102, and by Pulleyblank, "The Chinese name for the Turks," *JAOS* 85(1965).122, note 5.
- 14 安然, 悉曇藏 (*Taishō*, No. 2702), p. 414b. Scholars who have studied this passage include Arisaka Hideyo 有坂秀世, "悉曇藏所傳の四聲について," 國語音韻史の研究 (2nd edition, Tokyo, 1957), pp. 591–599; Iida Toshiyuki 飯田 利行, 日本に残存せる中國近世音の研究 (Tokyo, 1955), pp. 69–76; Mabuchi Kazuo 馬淵利夫, 日本音韻史の研究 (Tokyo, 1962), p. 335ff., which lists other Japanese studies; Chou Tsu-mo 周祖謨, "關於近代方言中四聲讀法的一些資料," 問學集, 1 (Peking, 1966), pp. 494–500. The text, a translation and exegetical notes are presented in a later section of this article. It will be apparent that I have benefited much from the Japanese scholars.
- 15 S. Levi, J. Takakusu, and P. Demieville, eds., *Hobogirin*, fascicule 1–II (Tokyo, 1929–1930), p. 107.
- 16 H. Maspero, *op. cit.*, p. 95.
- 17 Haudricourt, "De l'origine des tons en Viêt-namien," *JA* 242(1954).80–81.
- 18 This was pointed out to me by Dr. La Raw Maran of M.I.T., a native speaker of Kachin.
- 19 James Matisoff, "Glottal dissimilation and the Lahu high-rising tone: a tonogenetic case-study," *JAOS* 90(1970). 13–44.
- 20 Chang Jih-sheng, the article cited in note 2.
- 21 Identification is based upon the works cited in note 14, especially Iida's study.
- 22 Arisaka, the article cited in note 14.
- 23 The example of Po Chū-i's "Ch'ang-hen ko" has been discussed in Chou Tsu-mo, *op. cit.*, p. 495 and in Wang Li 王力 漢語史稿, 1 (Peking, 1957), p. 21. Hsü Shihying recently raised the question, rather inconclusively I think, whether such cases represent linguistic change or prosodic laxity. See 許世瑛, "論長恨歌與琵琶行用韻," 淡江學報 4(1965).1–12; "論元稹蓮宮詞用韻," 台灣大學文史哲學報 15(1966).397–406.
- 24 李涪, 切韻刊誤, quoted in Chou Tsu-mo, *op. cit.*, p. 496.
- 25 周法高, "論切韻音," *The Journal of the Institute of Chinese Studies of the Chinese University of Hong Kong*, 1(1968).89–112.
- 26 Li Shan's commentary to the *Wen-hsüan* cites 洗約, 宋書 卷 90 [Morohashi, No. 12418] (vertical harp) 宮引第一, 商引等二, 徵引第三, 羽引等四, 古有六引, 其宮引本第二, 角引本第四也。並無歌有絃管存聲不足故闕二曲。(*Wen-hsüan*, ch. 28, commentary under 謝靈運, 會吟行。Here *chiao yin* is clearly the name of a melody or tune. Chou Fa-kao, who cited this passage for a different purpose, also showed that a number of phonological or prosodic terms (such as 平調 and 側調, later Level and Oblique) were first used in musical contexts (*CYYY* 13[1948].154–155).
- 27 Some promising work in developing feature analysis for tones and applying it to synchronic phonology has been done by William S. Y. Wang, "Phonological features of tones," *International Journal of American Linguistics* 33.2(1967).93–105, and by Cheng Chin-chüan 鄭錦全, 官話方言的聲調徵性跟連調變化, 大陸雜誌 33(1966).102–108.
- 28 The first is by Ch'u Chung 處忠 in 元和韻譜 (806–827), now lost, and the second by a monk of the Ming dynasty, Chen-k'ung 真空 in 玉鑰匙歌映, both cited, among other places, in Wang Li, *Chung-kuo yin-yün hsüeh*, p. 100.
- 29 B. Karlgren, "Tones in Archaic Chinese," *BMFEA* 32(1960).113–142.
- 30 The earliest instance is probably a *fan-ch'ieh* spelling in the 經典釋文 (583–589) where under 象曰翼上於天 (易經, 需卦), we find 上時掌反, 干雲云升也。The lower *fan-ch'ieh* character, 掌 is in the rising tone. The date for *Ching-tien shih-wen* is based upon Lin T'ao 林藻, 陸德明的經典釋文, 中國語文 113 (February, 1962).132–136.
- 31 顏惟勳 漢音の聲明とその聲調 言語研究 17–18(1951).1–46.
- 32 For high-low, I have in mind the famous statement in Shen Yüeh's 洗約, 謝靈運傳: 欲使宮羽相變, 低昂互節, 若前有浮聲, 則後須切聲 (*Sung shu* 67.43a). As Arisaka has suggested, *ch'ing* and *chung* in the following statement probably also mean the high and

low allotones: 欲廣文路, 自可清濁皆通, 若資知音, 即須, 輕重有異 (切韻序). What I have said about the absence of clear statements on long-short is of course subject to modification.

33 This hypothesis is in part motivated by the observation by Chou Fa-kao and others that the text of 維摩經講經文, discovered at Tun-huang, bears the notations 平, 側, 斷, which could mean "Level (low)," "Oblique (high)," and "Cut-off (entering)." See Chou, *CYYY* 13(1948).154.

34 This paper was begun during 1967–1968, when I was with the Chinese Linguistics Project of Princeton University. I am especially indebted to Jerry Norman, Mantaro Hashimoto, and Bruce Brooks for their suggestions and encouragement.



## SOME NEW HYPOTHESES CONCERNING WORD FAMILIES IN CHINESE\*

E. G. Pulleyblank

Source: *Journal of Chinese Linguistics* 1, 1, 1973, 111-25.

It has long been apparent that Old Chinese had sets of words which were related in meaning and similar, but not identical, in sound. B. Karlgren conjectured that such 'word families' represented the relics of morphological processes but concluded that it was impossible to reconstruct what these processes had been. Advances in the reconstruction of Old Chinese allow us to see the nature of at least some of these processes. The best established affix is (a) the suffix \*-s, which left its reflex in Middle Chinese as the departing tone. One may also recognize: (b) prefix *h-*, cognate to Tibetan *ha-čhung*, giving rise to alternations of voiced and voiceless obstruent initials, (c) prefix \*s-, (d) prefix \*r-. There were also (e) ablaut between close and open vocalic nucleus (ə/a), (f) alternation between accent on the first half or the second half of the syllable. More remote word family relationships, which cannot easily be accounted for by such morphological processes, may reflect a stage in which there were uniconsonantal root morphemes which could combine to form syllabic units. Comparisons are made to Northwest Caucasian and Indo-European.

The recognition of cognate relationships among the so-called 'isolating' morphemes of Chinese goes back a long time, but as with so many other aspects of Chinese language studies, the problem received a new definition from the work of Bernhard Karlgren and is still commonly thought of in terms which he used to describe it. In his seminal article 'Word Families in Chinese' (1934) Karlgren gathered together a large number of sets of apparently cognate words. He designated these words which seemed to be related both in sound and meaning by the term 'word families'. He classified the phonetic alternations, as they appeared in his 'Archaic Chinese' reconstruction under a number of headings but did not attempt to analyze the nature of the morphological processes involved. In *The Chinese Language* (1949) he isolated three of the commonest alternations, but, noting that the same alternation sometimes derived nouns from verbs and

sometimes derived verbs from nouns, he concluded that the situation as found at the earliest accessible period must already have been the result of a long evolution and held out little hope of being able to discover the original underlying morphological processes. A further contribution was made in the article 'Cognate words in the Chinese phonetic series' (1956).

While we are still far from being able to achieve the ultimate goal of analyzing the processes which have given rise to word families in a thoroughgoing way, some progress, has been made. Karlgren at first ignored the question of tone in this matter. It is, however, in that area that the first solid breakthrough has been achieved. A frequent alternation in word pairs is that between the 'departing tone' and some other tone, 'level', 'rising', or 'entering'. Several scholars have had the idea that this might involve a regular morphological process. The first thorough treatment, however, was no doubt that of Downer (1959), who collected a large body of examples of such tonally related word pairs from Lu De-ming's 陸德明 *Jing-dian shiwen* 經典釋文 (Collected Commentaries on the Classics, early 7th century) and classified them into eight categories according to the semantic alternations involved.

While the variety of these shifts—verb to noun, noun to verb, causative formation, passive or neuter formation, etc.—is somewhat disconcerting, Downer was able to show quite convincingly that in general the non-departing tone form must be regarded as basic and the departing tone form as derived. As far as the phonetic aspect of the matter was concerned, Downer was content to regard the process involved simply as a change of tone. It is probable that he had the 'change tones' (變音) of Cantonese in mind. This might be satisfactory for the change of level or rising tone to departing tone, as in 王 'king' (level tone), 'to be king (of)' (departing tone), or 好 'good' (rising tone), 'love' (departing tone), but is less convincing when the basic tone was the entering tone, as in 惡 'bad' (entering tone, ending in -k), 'hate' (departing tone, no consonantal final). Though words with final stop consonants are conventionally treated in Chinese as belonging to a distinct *ru-sheng* or departing tone, this is clearly something different from what is meant by 'tone' as a term in modern phonetic theory. In other words, the change from entering tone to departing tone necessarily involved a change in final segmental phoneme, not merely in pitch or contour. (This may have been true of other Middle Chinese 'tones' as well but is most obvious in the case of the *ru-sheng*.)

An alternative phonetic explanation had, in fact, already been suggested by Haudricourt (1954 (1) and (2)) who had shown that in Vietnamese the corresponding tone to Chinese departing tone could be derived from a final \*-h, going back to an earlier \*-s, on the basis of cognates in Mon-Khmer languages. Haudricourt further suggested that the same had been true of Chinese and furthermore that \*-s had been a derivative suffix in Chinese.<sup>1</sup>

Since that time evidence has accumulated from a variety of sources giving support to Haudricourt's conjecture. On the one hand one can compare the role of departing tone derivation in Chinese with that of the suffix -s of Classical Tibetan.<sup>2</sup> In Tibetan -s is a suffix which (1) sometimes characterizes the perfect of verbs, as in *byas*, perfect of *hyed-pa* 'to make', or *dbyugs*, perfect of



*dbyug-pa* 'to throw', (2) sometimes appears in the present, as in *hgebs-pa*, perf. *bkab*, 'to cover', (3) sometimes appears in nouns derived from verbs, as in *gos* 'clothing' from *hgo-ba* 'to wear'. There is even a parallel phonetic evolution in the fact that lost final *-s* has given rise to a sharply falling tone in the Lhasa dialect. From quite a different angle it has been shown (Pulleyblank 1961) that there is clear evidence of the survival of a final sibilant in certain rhymes in Chinese as late as the third or fourth century A.D. in transcriptions of non-Chinese place names and in the earliest strata of Buddhist translations. Examples of the former are: (1) 都賴 EMC<sup>3</sup> *to-laj* < \**ta-las*, for the name of the River Talas in Central Asia (*Han shu* 70.6b), (2) 彌 彌 EMC *kiāj*-*ppin* < \**kias-pin* for Kaśpīr\* = Kashmir, cf. Greek *Káspeira* (*Han shu* 96A.23a), (3) 對馬 EMC *toj-mar* < \**tos-* for Tsushima, earlier \**Tusima*, (*San-kuo chih, Wei-chih* 30.44a). Examples of the latter are: (1) 乞衛 EMC *ciar-wiej* < \**wias*, for Prakrit \**Ś(r)avas-* = Sanskrit *Śravasti*, (2) 迦羅 迦 EMC *pa-la-naj* < \**-nas*, for Prakrit \**vārānaz(i)* = Sanskrit *Vārānasī*, (3) 三味 EMC *sam-moj* < \**sammās* for Prakrit \**samād(i)* = Sanskrit *samādhi*. These Prakrit forms are taken from Bailey 1946 who, it is interesting to note, already conjectured a relation between the final glide of Chinese *-i* diphthongs and the representation of foreign sibilants or dental fricatives, without, however, noting that in all cases the syllables involved had the departing tone. Further examples of the same kind are given in Pulleyblank 1961-62. All these examples come from rhymes where Karlgren reconstructed *-d* in his Archaic system and wherever such words occur in transcriptions down to about A.D. 300 or a little later, one finds that the final sibilant is relevant to the interpretation (though, of course, there are cases in which the foreign original cannot be identified).

This convergence of evidence from a variety of quite independent directions makes it extremely probable that we are on the right track and that not only is the departing tone, as a tone, derived from a final sibilant in Chinese, as in Vietnamese, but also, as a morphological category, it represents an *\*-s* suffix cognate to the *-s* of Classical Tibetan. The identification of Chinese *\*-s* with Tibetan *-s* is extremely important, for it opens up for the first time a clear possibility of relating Chinese and Tibetan not merely by isolated lexical correspondences but by morphological paradigms in the manner of Indo-European. It also encourages us to look for other Chinese cognates among Tibetan affixes and to be more confident in using Tibetan as a typological model for reconstructing Old and proto-Chinese.

Another promising possibility of recognizing the cognate of a Tibetan affix in Chinese is in the rather common alternation in Chinese between voiced ('muddy') and voiceless initials. The frequency of such alternations has already been noted by Karlgren and others. As in the case of *qu-sheng* derivation, the alternation of voiced and voiceless initials is associated with a variety of semantic differences. One common type has a transitive verb with voiceless initial contrasting with an intransitive or stative verb with voiced initial, as in the following examples (readings are those of LMC as given in Pulleyblank 1970-71):

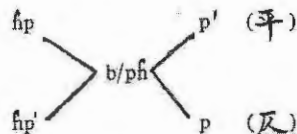
見	<i>kjian</i>	'to see',	<i>xhjian</i>	'to be seen, appear' (=現)	
敗	<i>pjaj</i>	'to defeat',	<i>phjaj</i>	'to be defeated, go to ruin'	
襪	<i>p'ij</i>	'to cover oneself with',	<i>phij</i>	'to be covered'	
壞	<i>kwaj</i>	'to destroy',	<i>xhwaj</i>	'to be destroyed, collapse'	
解	<i>kjaj</i>	'to release',	<i>xhjaj</i>	'to be released, relaxed'	
		<i>kjiaj</i>	'to bind',	<i>xhjiaj</i>	'to be bound'
屬	<i>tsryok</i> (< * <i>tj-</i> )	'to attach, instruct' (屬)			
		<i>srhyok</i> (< * <i>dj-</i> )	'to be attached, belong to'		
折	<i>tsriat</i> (< * <i>tj-</i> )	'to bend (tr.), to break'			
		<i>srhiat</i>	'to bend (intr.)'		
張	<i>trianj</i>	'to stretch',	<i>trhianj</i>	'long' (cf. 長 <i>trianj</i> 'to grow')	
增	<i>tsəŋ</i>	'to add, to double',	<i>tsɦəŋ</i>	'in two stories, double'	
擠	<i>kjap</i>	'to squeeze',	<i>xhjap</i>	'narrow'	
覆	<i>fuk</i> (< * <i>p'-</i> )	'to overturn, repeat'	<i>fhuk</i>	'to return'	
		<i>triak</i>	'to place',	<i>trhiak</i>	'to belong to a place'
		<i>kiam</i>	'to control, restrict',	<i>khiam</i>	'restricted, frugal'
		<i>kjaŋ</i>	'to send down',	<i>xhjaŋ</i>	'to submit'

We may compare this with the function of the Tibetan *ha-c' uŋ* or 'voiced *h*' prefix, which is particularly associated with the formation of intransitive verbs, e.g. *hgrib-ba* 'grow dim' from *grib* 'shadow', *figrogs-pa* 'be associated with' from *grogs* 'friend, associate'. Phonetically, it is very plausible to suppose that the so-called 'muddy' initials of Middle Chinese, that is the voiced stops and fricatives, could have arisen out of a voiced *h*- prefix in Old Chinese. The 'muddy' initials, which Karlgren reconstructed as voiced aspirates rather than simply voiced sounds, are phonetically voiceless stops and fricatives followed by voiced aspiration in the Wu dialects and are best analyzed in that way also in Late Middle Chinese. The evidence for Early Middle Chinese (pre-T'ang and 7th century) would favor, rather, fully voiced sounds but this may reflect a dialectal difference rather than an earlier stage of the same dialect.

This theory of the origin of the 'muddy' initials can, I believe, account for a peculiarity of the Min dialects which has led some scholars to postulate a four-way stop distinction for proto-Min (and by extension for proto-Chinese). In Mandarin the old 'muddy' stops are partly represented by voiceless aspirates, partly by voiceless nonaspirates, but there is a perfectly regular rule depending on tone. Other dialects which have lost the old 'muddy' initials do not necessarily agree with Mandarin as between aspirates and nonaspirates but, apart from Min, they are alike in having a regular rule to determine which is found. In Min, however, we find aspirate and non-aspirate reflexes, with no regard to tone.<sup>4</sup> This could be accounted for if we supposed that in Old (or proto-) Chinese there were only voiceless nonaspirates and aspirates, *p, p'*, etc., and that the *h*- prefix could occur before either. This would correspond to the situation in Tibetan where, although there are three types of stop initial - *b, p, p'*, etc. - the voiceless nonaspirates and aspirates are in complementary distribution with respect to their occurrence after prefixes, and the nonaspirates occurring as free



initials without prefixes, mostly in particles, onomatopoeic formations, loanwords, etc., appear to be of secondary origin. Hence Chinese *p* and *p'* would correspond to Tibetan *b* and *p'* and Chinese *hp*, *hp'* would correspond to Tibetan *hb*, *hp'*. In the type of Chinese which was ancestral to both Early and Late Middle Chinese (that is, the standard languages of the pre-T'ang and T'ang periods) and to the majority of modern dialects *hp* and *hp'* must be presumed to have merged as *b* or *ph*, giving rise to Mandarin *p'* (level tone) and *p* (oblique tones) when the clear-muddy distinction was replaced by one of tone register, thus:



In Min, on the other hand, there was no merger. The clear-muddy distinction was replaced by one of tonal register as in the other dialects but the original distinction between nonaspirate and aspirate was maintained, thus:



It may be possible to test this hypothesis for Min if we can find cases where the modern form agrees with the form we should expect from morphological considerations. Since only genuinely colloquial material is relevant for this purpose, examples are not too easy to find. One interesting case is, however the word 被 'to be covered' which appears in colloquial Min forms with initial *p'*. As we have seen above, this word appears to be a derivative with 'muddy' initial of a word with initial *p'* meaning 'to cover oneself'. This is the more significant in that words with original voiceless aspirate initials are considerably rarer than those with voiceless nonaspirate initials. Other words with Middle Chinese initial *ph* which appear in Min with *p'* and can plausibly be connected with cognates with original *p'* are 帆 'sail' (cf. 汎 'to float') and 浮 'to float' (cf. 浮 'raft'). Such cases, where the morphological pattern is less clear, are less probative, unfortunately, since there is evidence that, both in Chinese and Tibetan, alternation between aspirate and nonaspirate initials could also occur in derivational processes.

The *h*-prefix in Tibetan occurs in verbs related to nouns, such as in *hk'ur-ba* 'to carry', cf. *k'ur* 'burden, load', or *hbyug-pa* 'to smear, anoint', cf. *byug-pa* 'unguent, salve'. It can also occur with nouns, e.g. *hk'ar-ba* 'staff' (and many others), and in places where there would seem to be a free variation between prefixed and unprefixed forms, as in *t'al-ba* or *ht'al-ba* 'to pass by', *bol* or *hibol* 'cushion, mattress'. Sometimes it is retained throughout the verbal inflection, as in *hbraṅ-ba* 'to bear, bring forth', perf. *hbraṅs*, imper. *hbroṅ*. In other words, though it sometimes seems to have a clear function, in other cases whatever function it may have had has become obscured. This is also true of the Tibetan suffix *-s*. This may be compared with the versatility of both the *qu-sheng* derivation and the clear-muddy

alternation in Chinese, with which a number of patterns of semantic differentiation can be associated but to which one cannot assign a single definite meaning that will cover all cases. It seems probable that common Sino-Tibetan originally had various affixes with rather generalized semantic connotations which were specialized in various ways in the daughter languages.

Among other affixes that we should certainly look for in Chinese on the model of Tibetan is a prefix *s-* to match the suffix *-s*. Tibetan *s-* is one of the formatives with a rather clearly defined function, making causatives out of transitives and transitives out of intransitives. There have been various suggestions in the past about an *s-* prefix in Old Chinese, mostly simply from the phonetic point of view. Thus Yakhontov (1960) proposed that *s-* was responsible for devoicing nasals in such *xie-sheng* alternations as: 許 EMC *hiə* 'allow', 年 EMC *ŋə* 'cyclical sign'; 態 EMC *t'əj* 'attitude', 能 EMC *neŋ*, 'be capable of', also read *nəj*; 荒 EMC *hwaŋ* 'waste, desolate', 亡 EMC *muəŋ* 'disappear'. Unfortunately this conflicts with rather good evidence from early Tai loans that the cyclical sign 年 had initial *sy-* in Old Chinese (Li 1945), indicating that *s-* before nasals was simply dropped, without bringing about devoicing.

Earlier Tung T'ung-ho (1948) had suggested reconstructing voiceless nasals *ŋ*, *ɲ*, *ŋ* to account for the type of alternation noted by Yakhontov and in 1962 I proposed aspirates *mh-*, *nh-*, *ŋh-*, extending the same reconstruction to the liquids also to account for alternations like: 體 EMC *t'ej* 'body', 禮 EMC *lej* 'ceremony'; 脫 EMC *tw'at*, 說 EMC *dwaj*, 說 EMC *ɕwiet*, 悅 EMC *ɟwiet*. In the first of these examples I reconstructed *lh/l* and in the second *ɬ / θ*, but I recognized that Chinese *l* corresponded to Tibetan *r* and that the phoneme I reconstructed as *ɬ* corresponded to Tibetan *l*. I would now revise the Old Chinese reconstructions to *rh > t'(r)*, *r > l*, and *lh > t'/ɕ*, *l > d/j* (sometimes *z*). (The palatalization of *l* to *j* or *z* and *lh* to *ɕ* occurred under the same conditions that led to the palatalization of dental stops and *n* between Old and Middle Chinese.)

Classical Tibetan does not have voiceless or aspirated nasals but it does have *hr* and *lh*, as well as *sr*, *sl* and *zl*, and there are some very good cognates between Tibetan *lh* and Chinese *lh* as reconstructed by internal evidence. The following examples were already noted in Pulleyblank 1962 (pp. 116-7):

脫 EMC *t'wat* < \**lhwat* 'strip off, take away', Tibetan *lhod-pa* 'loose, relaxed', cf. also Burmese *hlwat* 'to free, release'. One may also compare the colloquial Cantonese *lāt* (with upper tone register) which preserves the liquid initial.

鐵 EMC *t'et* 'iron' < \**lhet* < \**lhək*, Tibetan *lčags* \**lhy-*, cf. Common Tai *l'ək*. (On the final palatal in Old Chinese see Pulleyblank 1971b.)

In Tibetan it would appear that the causative prefix *s-* could occur before both *l*, giving orthographic *zl*, and *lh*, giving orthographic *sl*. This is shown if we compare *zlog-pa* 'cause to return', derived from *ldog-pa*, perf. *log* 'return', with *slad-pa* from *lhad* 'mixture, alloy'. The root in *ldog-pa* clearly begins with *l*, as found



in the perfect, and *ld-* in the present is no doubt for *\*hl*. Compare *hđr* < *\*hr*, as proposed by F. K. Li (1959). It is true that we also have *slog-pa* 'turn' (trans.), but there are good indications that *l* and *lh* could alternate in word families, just as unaspirated and aspirated stops could sometimes alternate, in which case *slog-pa* could be derived from and unattested *\*lhod-pa*. Note that *lod-pa* and *glod-pa* are given as alternative forms of *lhod-pa* and in Chinese also the corresponding word family has words that imply *\*l* as well as *\*lh*: 賒, read *đwat* (= 奪 'snatch, rob') as well as 悅, 悅 *đwjet* 'pleased', 悅 *đwaj* < *\*lwats* 'glad', etc.

Though Yakhontov's theory of Old Chinese *s-* cannot be accepted, there are no doubt other places where one can look for traces of *s-* clusters in Old Chinese. In my 1962 article I suggested a number of possibilities of this kind (pp. 126ff.) where Middle Chinese sibilants appear in *xie-sheng* series of other categories. Specifically causative meaning does not show itself in many of these cases. The best example (not quoted in 1962) is perhaps: 𪛗 EMC *zi* 'feed; food', from 𪛗 EMC *ziək* 'eat'. On the correction of Karlgren's *dz'* to *z* see Pulleyblank 1962, p. 68. This initial sometimes seems to be an alternative to Middle Chinese *j* as the palatalized form of Old Chinese *l* but the conditions under which one or the other appears are not clear. Note that Middle Chinese *j* itself seems to have had the phonetic value of a palatal fricative in early Buddhist transcriptions and that in Middle Chinese double readings in *j* and *z* are quite common. The character 𪛗 itself has a reading *ji* in the sense of a proper name. We may tentatively reconstruct the Old Chinese forms as *\*lək* and *\*slək*s respectively. The derivative in its attested form has *-s* suffix as well as *s-* prefix. Possibly there were originally two forms, *\*slək* 'feed' and *\*slək*s 'food'.

In Chinese word formation there are also two very good examples of what appears to be an *-r-* infix associated with causative meaning: 𪛗 EMC *tri* 'cause to arrive', from 𪛗 EMC *tçi* < *\*t-* 'arrive'; 𪛗 EMC *tr'wit* 'expel' from 𪛗 EMC *tç'wit* 'go out'. This could well reflect an original *r* prefix which has left its trace as retroflexion of the following dental initial. In Tibetan *r* is a verbal prefix. From morphologically related sets like the following it would appear to have an active, intensifying meaning: *rlog-pa* 'overthrow, pervert', cf. *ldog-pa* 'change, turn away, return', etc.; *rlug(s)-pa* 'purge', cf. *lug-pa* 'give way, fall down'; *rbad-pa* 'incite', cf. *hbad-pa* 'endeavor, exert oneself'; *rdeb(s)-pa*, also *rdab-pa*, 'throw down to the ground', cf. *hdebs-pa* 'throw, strike'; *rgyong-ba* 'extend, stretch', cf. *yaŋs-pa* 'wide, broad, large', also *rkyong-ba* 'stretch, extent'. In Chinese there are certainly many other examples of *\*r* as an affix in word building besides the two cited above but I shall reserve a further discussion for another occasion.

Another morphological alternation found in Tibetan which can be paralleled in Chinese, as I have shown elsewhere, is close/open vowel alternation or ablaut.<sup>5</sup> If my interpretation is correct, the alternation between forms with close nuclear vowel *-ə-* and open nuclear vowel *-a-* was associated with a semantic alternation which can be called 'extrovert' vs. 'introvert' and which can be paralleled both phonologically and semantically in Northwest Caucasian languages such as Kabardian and in Indo-European 'qualitative ablaut'. A good example, in

Chinese, in addition to those discussed in my previous article, is the alternation found between 合, Early Middle Chinese *həp* < *\*hkəp*, 'join, shut' and 𪛗, Early Middle Chinese *kaj* < *\*kaps*, 'cover'. 𪛗 also has a reading *kəp* as a surname and occurs as a loan character for 𪛗, Early Middle Chinese *həp*. This word *həp* itself, also written 𪛗, occurs in pre-Han and Han texts meaning either 'leaf of a door' or 'to shut'. Thus there is no doubt that these words are all etymologically related. They are no doubt cognate to Tibetan *hgebs-pa*, perf. *bkab*, fut. *dgab*, imper. *k'ob* 'to cover', cf. also *gab-pa* 'to hide, conceal oneself', *k'eb*s 'covering', *hk'eb-pa*, perf. *k'eb*s, 'to cover, spread over', *sgab-pa*, 'secondary form of *hgebs-pa*'.

Yet another kind of alternation in the vocalism which Karlgren has drawn attention to is, in his terms, between words 'without and with an intercalary *i*'.<sup>6</sup> I have argued elsewhere that Karlgren's *i*, characteristic of Grade III of the rhyme tables according to his Middle Chinese reconstruction, was not a segmental phoneme in Old Chinese but arose secondarily between Old and Middle Chinese out of an earlier prosodic feature of some kind. In my new Middle Chinese reconstruction Grade III *yod* disappears altogether and is replaced by a vocalic *-i-* (*he-kou -iu-* = *-y-*) for Late Middle Chinese of the rhyme tables and by vocalic *-i-*, *-i-* or *-u-* in Early Middle Chinese of the *Qie yun*. Let us suppose that in Old Chinese syllables consisted of two morae with an accent either on the first or second mora, and that the accented mora was replaced by a close front, central or back vowel depending on the surrounding consonantism. We should then have (writing the two morae of each nucleus as repetitions of the same element):

Cəə- → Ciə-	Cəə́- → Cəi-	Cáa → Cia-	Caá → Cai-
C'əə → C'ia-	C'əə́ → C'ai-	C'áa → C'ia-	C'aá → C'ai-
Cʷəə- → Cʷuə-	Cʷəə́ → Cəu-	Cʷáa → Cʷua-	Cʷaá → Cau-

(where, phonetically, *-iə- -iə- -uə-* would be realized as [i] [i] [u], *-əi- -əi- -əu-* as [y] [e] [o], *-ia- -ia- -ua-* as [iə] [ie] [uə], and *-ai- -ai- -au-* as [a] [ɛ] [o]). A simpler notation which will be adopted hereafter is to indicate accent on the first mora by a grave accent *-à-*, accent on the second mora by an acute accent *-á-*. Such a schema would account for the way in which the *Shi jing* rhyme groups became split up in Middle Chinese. For example this will explain very readily how the character 𪛗 can have such divergent EMC readings as *tçiak* and *kew*. In the *Shi jing* words with this phonetic belong in the category which is reconstructed as *-ok*, *-og* by Karlgren and which I would revise to *-aq*, *-əβ* < *-aŋ* (i.e. an uvular fricative) (Pulleyblank 1971b). We may now reconstruct the two readings of the character as *kjəq* > *kjiaq* > *tçiak* and *\*kjáyq* > */kaiwʔ/* [k ɛ wʔ] > */kəiw/* [kəw]. Note that in the first case the medial *j* causes the palatalization of the initial while in the second case it causes the palatalization of the final. Cf. also 𪛗 EMC *kek* < *\*kjáq*, *kew* < *\*kjáqs*. A fuller discussion of the way in which this hypothesis accounts for the development of the Middle Chinese rhymes will be given elsewhere.

The kind of morphological alternation that is found in Chinese which involves the presence or absence of Karlgren's *yod* is also better accounted for by a



prosodic feature than by a segmental interpretation. This is particularly clear in the case of alternative forms of grammatical particles such as: 焉 EMC *ʔan* 'how, where', 焉 EMC *ʔian* 'how, where'; 于 EMC *uo* < \**hwa* 'to, in, at', 于 EMC *hɔ* < \**hwa* 'to, in, at'. These are indistinguishable in meaning and differ, if at all, in the particular collocations, probably determined by prosodic considerations, in which they occur. Slightly less synonymous are: 乃 EMC *nəj* < \**nəʔ* 'then, thereupon; your', 而 EMC *nji* < \**nə* 'then; your'. The latter seems to differ from the former chiefly in being an unstressed form. Note also such pairs as 某 EMC *mak* '(there is) no one', 無 EMC *muo* < \**mə* 'there is no . . .'; 孰 EMC *hɥək* '(there is) some one', 有 EMC *uɥ* < \**hwaʔ* 'there is . . .'. In other cases we have synonymous variants of the same lexical item: 織 EMC *pen* < \**pjan*, *pjien* < \**pjan* 'weave', 軒 EMC *kan*, *kian* 'rice gruel', 犴 EMC *hwan*, *huan* < \**hwàn* 'badger' (also *hwan*), 推 EMC *t'oj*, *tɕ'wi* 'push', 崖 EMC *ner* < \**nrāj*, *nje* < \**nrāj*, 'river bank' 樛 EMC *ləw*, *luo* 'hunchback', 匍 EMC *marw* < \**mrəw*, *miew* < \**mrəw* 'cat', 爬 EMC *bə-bək* \**bá-bək* or *buo-buwk* < \**bà-bək* 'crawl'. It is noteworthy that many of these words have an onomatopoeic or expressive flavour that would help to account for the variation in accentuation which we posit as the source of the phonetic differentiation.

There are, of course, also many cases where this type of phonetic alternation goes with a variation in meaning, e.g. 諾 EMC *nak* 'assent', 若 EMC *njiak* 'be like, thus, so', 傍 EMC *baŋ* 'side', 方 EMC *puan* 'direction, region'. Further study will no doubt reveal patterns of semantic contrast between such related forms.

Of relevance to the proposed phonetic interpretation is the fact that this kind of variation is one of the commonest distinctions between totally unrelated words written with the same character; e.g. 於 *ʔə* < \**ʔá* 'ah!', 於 *ʔə* < \**ʔà* 'in, at, to'.

This hypothesis can only be adumbrated briefly here. What correlate, if any, could be found in Tibetan is not yet clear.

The various morphological processes that have been discussed and other similar processes of affixation, etc., can certainly account for a great deal of the 'word family' phenomenon. There are, however, other cases of apparently cognate relationships that seem to require a quite different and more radical type of explanation. In collecting his word families Karlgren was quite strict in insisting that the items should all have finals of the same kind. Tōdō Akiyasu, whose etymological dictionary (1963) is an attempt to develop the 'word family' concept both more fully and more rigorously, is even stricter and insists that one should confine oneself to the same *Shi jing* rhyme category.

We have already discussed one kind of cognate relationship which goes beyond the rhyme categories, namely that involved in close/open ablaut. This is still within the limits of similar final consonants. There are, however, many other cases of apparent word family relationships that go quite outside even this restriction. One can easily find sets of words with the same initial consonant and closely similar meanings but quite different finals that are at least as plausible as the word families collected by Karlgren and Tōdō.

Thus, besides the ablaut pair 嗣 *zi* 'succeed, inherit', 續 *zi* 'succession, inheritance' (= 序, 叙 'arrange in order, succession'), we have 繼 *zuok* 'continue'.

Besides 譚 *dəm* 'talk about', 談 *dam* 'talk; conversation', we have 道 *daw* 'talk about' (*Laozi*, Mencius, *Xunzi*). Besides 合 *həp* 'join', 闔 *həp* 'shut', etc., we have 合 *hɥəj* < \**-as* 'join, meet', 和 *hɥə* < \**-al* 'harmony'. Besides 脫 *t'wat* < \**lhwət* 'take off', 說 *ɕwiet* < \**lhwət* 'explain', 悅 *ɟwiet* < \**lwət* 'pleased, etc.', we have 釋 *ɕiek* < \**lhək* 'release, explain', 悅 *ɟiek* < \**lək* 'pleased', 舍 *ɕiaʔ* 'release', 諭 *juo* 'understand, illustrate by an example', 愉 *juo* 'pleasant, enjoy', 偷 *t'əw* 'steal'. Here are some other examples of the same kind. (Above forms and those below are EMC).

- 苦 *k'ɔ* 'bitter, suffering', 困 *k'on* 'distress, trouble' 酷 *k'ɔk* 'cruel'  
 閑 *hiern* 'leisure', 暇 *hiəp* 'leisure'  
 下 *hiəp* 'descend', 降 *hɔŋ* 'submit', 降 *hɔŋ* 'descend'  
 回 *hioj* 'turn, return', 還 *hiun* 'revolve', 圓 *wien* 'circle', 丸 *hiwan* 'ball', 還 *hiwarn*, *zwien* 'return, turn round', 圍 *uj* 'surround', 衛 *wiəj* 'guard', 旬 *zwin* 'cycle of ten days', 營 *ɟwien* 'surround, encamp', etc. (This is only a selection among the words with the general notion of 'round, revolve' that begin with Middle Chinese *hw*, *zw*, *u*, etc., pointing to Old Chinese \**hw*.)  
 紆 *ʔuo* 'bent, crooked', 枉 *ʔuan* 'bent, crooked', 委 *ʔwie* < *-alʔ* 'bend, fall, hang down', 偻 *ʔuo* 'bent body, hunchback', 腕 *ʔwan* 'wrist', 苑 *ʔuan* 'supple', 隈 *ʔoj* 'a bend, nook', 蠕 *ʔwen*, *ʔwien* 'to crawl as a caterpillar, soft, bending', 蝮 *ʔwak* 'caterpillar', 縈 *ʔwien* 'wind, entwine'. This group may be related to the last in \**hw*.  
 柔 *njuw* 'soft', 弱 *njiak* 'weak', 懦 *njuo*, *nwà* 'weak, timid', 孺 *njuo* 'child', 軟 *njwien* 'supple', *nwan* 'weak', etc. - cf. also 餽 *njim* 'thoroughly cooked, overdone', 軟 *njim* 'soft'.  
 比 *pji* 'set side by side, compare', *pji*, *bji* 'alongside, go together with', 譬 *p'ie* < \**-ks* 'for example', 併 *pjiəŋ* 'combine', 並 *ben* 'side by side', 邊 *pen* 'side, edge', 遍 *pen* 'on all sides', 偏 *p'jien* 'one-sided', 方 *puan* 'direction, side, compare', 傍 *baŋ* 'side'.  
 縈 *lwij* 'bind, wrap round', 縈 *liəw*, *lew* 'bind round, wrap', 縈 *luw*, *kjiw* 'tie round, strangle', 縈 *lwini* 'woof, twist a cord, envelop'.  
 降 *lew* 'fat round the intestines', 降 *lwit* 'fat round the intestines'  
 憊 *loj*, *lwij* 'exhausted', 勞 *law* 'toil, weary'  
 厄 *nrij* 'near, close', 昵 *nrit* 'intimate, familiar; glue' (= 昵), 狃 *nruw* 'be familiar with, treat with contempt', 粘 *nriem* 'to glue, stick to'.  
 愧 *nrij* 'ashamed', 慚 *nruwk* 'ashamed', cf. also 羞 *suw* 'shame' and 恥 *tr'i* 'shame' with 耳 *nji* as phonetic.

It would be easy to multiply examples of this kind indefinitely. One may think, for example, of all the words beginning with *m* which have such meanings as 'cover, dark, blind, hidden, confused', or words beginning with *k'* that mean 'cut' or 'beat'. Especially in cases like this one is tempted to seek refuge in the rather vague concept of 'sound symbolism'. Yet we find this same sort of thing in the case of grammatical particles which are hardly likely to be affected by such



influences. Thus among the negatives beginning in *m*, which must surely all be related to one another, we find: 無 *muo*, 勿 *mut*, 亡 *muaj* 美 *mak*, 罔 *muaj*, 未 *mij* < \*-s, 微 *muj* < \*-l, 莫 *met*, 未 *mat*, 靡 *mie* < \*-al?. First personal pronouns beginning with *ŋ* include 吾 *ŋa* \**ŋá*, 我 *ŋá* < \**ŋál?*, 伊 *ŋaj*. Among other words meaning 'like, so' we have: 如 *njiə*, 而 *nji*, 乃 *naj*, 若 *njiak*, 爾 *njie*, 奈 *naj* < \*-as. Such sets of grammatical words have been studied to a certain extent. The tendency has been to try to account for them in terms of 'fusion', that is, as resulting from the combining of two morphemes in one syllable. That such fusions existed has long been recognized in such cases as 諸 *-之* or *-之於*. In other cases, where particles, though monosyllabic, are clearly bimorphemic in meaning, e.g. 焉 'in it', 然 'like it', the fusion explanation seems plausible even though it is impossible to identify the second of the two fusion elements as an independent form. Compare also the pronominal particles all ending in *-k* and all used to specify the subject: 孰 *ŋwək* 'some one', 莫 *mak* 'no one', 孰 *dzuwk* 'which one', perhaps, also 各 *kak* 'each'. It is tempting to isolate a morpheme *-k* and to say that these words have been formed by adding it to 有 *wv* 'there is', 無 *muo* 'there is not', 誰 *dzwij* 'who', 舉 *kiə* 'all' (cf. also 俱 *kuo* 'all', 皆 *kerj* 'all', etc.). But is this 'fusion' or is it a more intimate kind of word formation that would be better described as composition?

What is, at any rate clear is that there is no clear demarcation line between particles and 'full' words in this respect. For example, as Karlgren noted, the verb 諾 *nak* 'assent' is clearly cognate to 若 *njiak* 'like' included in the above list. Another similar case is 克 *k'ək* which means 'to conquer' but is also used in early texts as a verbal auxiliary 'to be capable of'. It must be cognate to 可 *k'á* (< \*-al?) 'is possible'. Other related words are no doubt 堪 *k'am* 'to be capable of, bear', and 肯 *k'əj* 'consent to'. Furthermore 克 *k'ək* is also used in the sense of 'to carry', a word which must surely be cognate to 荷 *ha* 'carry', which has 可 *k'á* as its phonetic.

The idea that we may have to look for meaningful elements below the level of the syllable will no doubt seem startling. There may however be parallels in other languages which will help to make the suggestion more plausible.

One of the fascinating features of the Northwest Caucasian languages, to which reference has already been made in connection with the close/open ablaut, is the extreme transparency of their word formation. In Kabardian as described by A. H. Kuipers (1960) the great majority of words are made up of unisegmental morphemes either singly or in combination. Segments in turn consist only of a single consonant or one of a limited variety of possible consonant combinations plus a following vowel, or better, feature of syllabicity. And since there are only two possibilities for the latter—close and open—and the alternation between them has a morphological function, defining the extrovert/introvert opposition, the morphemes are in effect defined by their consonantism. Kabardian has a very large number of distinct consonants but even so single consonants and their possible combinations only yield about 200 unisegmental morphemes (many of which, of course, have more than one meaning). From this limited stock longer words are built up by transparent processes of compounding. Many notions for which more familiar languages have simple,

unanalyzable, words are expressed in this way. Thus 'tear' is 'eye-water', 'finger' is 'hand-nose', 'joy' is 'heart-good', and so on.

In Indo-European too it looks very much as if there may once have been uniconsonantal roots. As reconstructed by comparative philologists, the 'roots' of Indo-European consist predominately of two consonants separated by a vowel which is mostly *e*. The vocalism of Indo-European seems to have been similar to that in the Northwest Caucasian languages, that is, for any syllable there were two possibilities in an ablaut relation to one another. These alternating vowels are usually reconstructed as *e* and *o* but were probably close vs. open, i.e. *ə* and *a*, rather than front vs. back. Because of the ablaut relationship of the two vowels (which, incidentally, can also be defined semantically as introvert/extrovert) the roots are defined by the consonants and have the form C-C. When one looks further into the question, however, one often finds that even many of these simple roots look as if they were related to one another. For example, S. Pokorny's etymological dictionary of Indo-European lists a large number of roots beginning with *u-*, all of which have the meaning 'to turn': (1) *uā-* (= *ueH-* according to the laryngeal theory), with extensions in *-g-* (Latin *vagor*), *-k-* (Latin *vacillo* 'vacillate'), *-r-* (Latin *vārus* and *varius* 'various'), *-t-*; (2) *uei-*, with extensions in *-b-*, *-d-*, *-g-*, *-ĝ(h)-*, *-k-*, *-l-* (Eng. *wily*), *-m-*, *-n-*, *-p-*, *-r-* (Eng. *wire*), *-s-*, *-t-* (Eng. *withy*); (3) *uek-*, *uenk-* (Latin *convexus*); (4) *uel-* (Latin *volvo*), with extensions in *-d-* (German *wälzen*), *-g-*, *-is-*, etc.; (5) *uendh-* (Eng. *wind*); (6) *ueng-* (Eng. *winch*); (7) *uengh-*; (8) *uer-*, with extensions in *-b-* (Eng. *warp*), *-d-*, *-(n)g-* (Eng. *wrench*), *-(n)ĝh-* (Eng. *wring*), *-(n)k-*, *-m-* (Eng. *worm*), *-p-*, *-t-* (Latin *vector*), and also *-i-* with various further extensions in *-n-*, *-zd-*, *-ĝ-*, *-k-*, *-p-* (Eng. *wreath*); (9) *ues-*. To these may be added certain roots in *su-*, since *s-* can be a prefix in Indo-European: (1) *suei-*, with extensions in *-b-*, *-d-*, *-g-*, *-k-* (Eng. *sway*), *-p-* (Eng. *swift* from Old English *swifan* 'turn'); (2) *sueng-* or *suenk-* (Eng. *swing*). It looks as if the basic meaning of 'turning' was expressed in the single consonant *u*, which was then extended by additional elements.

If we suppose that Sino-Tibetan too once had uniconsonantal roots which were then extended by additional elements which defined their meaning more precisely, we can see how the 'word family' situation would have arisen. In the course of time what had once been transparent compounds would have become fixed, unanalyzed expressions and phonetic changes would have gradually obscured the connections leaving only the tantalizing hints that we can discern today. I am not suggesting that we are yet in a position to unravel the tangled strands. Much more progress will have to be made in recovering the history of the individual Sino-Tibetan languages and in comparing them with one another before that becomes even thinkable, and perhaps we shall never reach that stage—so much of the evidence has been irretrievably lost. Nevertheless I think it may be interesting and worthwhile to try to imagine how things might have been and to set up, in tentative and speculative ways, heuristic models to guide our researches. It has become more respectable than it was a few years ago to ask fundamental questions about the nature and origins of language.



Meanwhile I hope that I have shown that progress in understanding Chinese historical phonology is already leading to new insights into the morphology of Old Chinese and that, conversely, study of the morphology will help in putting historical phonology on surer footing.

### Notes

- \* This is a revised version of a paper entitled 'Word Families in Chinese: A Reconsideration' which was presented at the 28th International Congress of Orientalists in Canberra, January 1971 and published in preprint form in *Unicorn* 9 (Jan. 1972) 1-19.
- 1 Zhou Fagao (1962), who discusses previous studies both on *qusheng* derivation and on 'clear/muddy' alternation at some length, dismisses Haudricourt's hypothesis as 'rather odd' (未见有确定性, p. 20 n. 1). This is typical of a fairly widespread attitude that cannot conceive of Chinese as ever having had features that are not found in modern dialects. But if one takes seriously the probability of a genetic relationship between Chinese and Tibetan, it is obvious that Chinese must once have had such features. The only question is how long ago and in what manner they were lost.
  - 2 Forrest (1960) noted the functional correspondence of Tibetan *-s* and the alternation between Chinese *-k, -t, -p* and *-g, -d, -b* (as reconstructed by Karlgren) and proposed, like Haudricourt, as *\*-s* suffix for Chinese. He did not, however, take into account the question of tone.
  - 3 Reconstructed forms in this article are given either as Early Middle Chinese EMC (Sui dynasty) or Late Middle Chinese LMC (Middle and Late Tang). For the latter see Pulleyblank 1970-71. The new reconstruction of Early Middle Chinese will be published shortly.
  - 4 Yuan 1960, pp. 259-60.
  - 5 Pulleyblank 1963, 1965 (1) and (2).
  - 6 Karlgren 1949, p. 92.

### References

- BAILEY, H. W. 1946. Gāndhārī. BSOAS 11.764-797.
- DOWNER, G. B. 1959. Derivation by tone change in Classical Chinese. BSOAS 22.258-290.
- FORREST, R. A. D. 1960. Les occlusives finales en chinois archaïque. BSK 55.228-239.
- HAN SHU 漢書, edition of the Ershiwushi, Kaiming shudian.
- HAUDRICOURT, A. G. 1954(1). L'origine des tons en vietnamien. JA 69-82.
- . 1954(2). Comment reconstruire le chinois archaïque. Word 10.351-364.
- KARLGREN, B. 1934. Word families in Chinese. BMFEA 5.9-120.
- . 1949. The Chinese Language. New York. Ronald Press.
- . 1956. Cognate words in Chinese phonetic series. BMFEA 28.1-18.
- KUIPERS, AERT H. 1960. Phoneme and morpheme in Kabardian, Janua Linguarum 8. The Hague. Mouton.
- LI, FANG-KUOI. 1945. Some old Chinese loanwords in the Tai languages. HJAS 8.333-342.
- . 1959. Tibetan Glo-ba 'dring, Studia Serica B. Karlgren dedicata, edited by S. Egerod and E. Glahn, Copenhagen. E. Munksgaard, 55-59.
- POKORNY, J. 1948. Indogermanisches etymologisches Wörterbuch, Bern and München. Francke.
- PULLEYBLANK, E. G. 1961-62. The consonantal system of Old Chinese. Asia Major 9.58-144 and 206-255.

- . 1963. An interpretation of the vowel systems of Old Chinese and Written Burmese. Asia Major 10.200-221.
- . 1965(1). Close/open ablaut in Sino-Tibetan, in Indo-Pacific Linguistic Studies (= Lingua 14), ed. by E. J. A. Henderson and G. A. Milner, Part I. 230-240.
- . 1965(2). The Indo-European vowel system and the qualitative ablaut. Word 21.86-101.
- . 1970-71. Late Middle Chinese. Asia Major 15.197-239 and 16.121-168.
- . 1971b. The *Shi jing* rhyme categories: a new hypothesis. Unpublished paper presented to the Third International Conference on Sino-Tibetan, Bloomington, Indiana.
- TÖDÖ, AKIYASU. 1965. Kanji gogen jiten. Tokyo. Gakutōsha.
- YAKHONTOV, S. E. 1960. Consonantal combinations in Archaic Chinese. Paper presented at the 25th International Congress of Orientalists, Moscow.
- YUAN, JIAHUA and others 1960. Zhong guo fang yan gai yao. Peking. Wenzhi gaige chubanshe.
- ZHOU, FAGAO. 1962. Zhong guo gu dai yufa, gouci pian. Academia Sinica. Taipei.



## SOME FURTHER EVIDENCE REGARDING OLD CHINESE -s AND ITS TIME OF DISAPPEARANCE

E. G. Pulleyblank

Source: *Bulletin of the School of Oriental and African Studies* 36, 2, 1973, 368-73.

In 1962 I published some evidence based on Han and early post-Han transcriptions to show that Chinese still had a sibilant final in certain departing tone rhymes at that period. I can now add some still later examples which bring the date down to the beginning of the sixth century, at least in the south. As will be shown below, the transcription evidence is also supported by contemporaneous rhyming practice, which still allowed contacts between Middle Chinese -j' < -s and -t.

The value of cross-linguistic evidence for historical reconstruction of pronunciation is well recognized in European studies. When, for example, we find the Greek letter  $\phi$  transcribed in Latin first by *p* or *ph* but later as *f*, there is little doubt that the change reflects a shift in Greek pronunciation and can help us date that shift. One cannot, of course, draw inferences like this in a mechanical way. Otherwise one might make the contradictory inference that because the Greeks from the beginning transcribed Latin *f* as  $\phi$ ,  $\phi$  was already a fricative at that time. We have, as in all types of historical investigation, to judge each piece of evidence in the light of all the other relevant evidence. In particular we have to take into account the over-all phonological systems of the languages concerned at the time in question. When we do this, it becomes clear that, since in the earlier stage Greek had no labial fricative the aspirated stop  $\phi$  [ph] was simply the closest sound available to transcribe *f* (Allen, 1968, 20).

The same principles have to be applied in the case of Chinese and have indeed been so applied, sometimes skilfully, sometimes not, by scholars in the past. Unfortunately, any use of transcription evidence seems to be in disrepute in some quarters. This is no doubt partly because the philological problems involved are unfamiliar territory for many linguists. It is also, however, due to exaggerated and sweeping doubts that have been expressed about the validity of this kind of material. In particular it is said that using Buddhist transcriptions is a risky business since these are likely to be based on Central Asian Prakritic forms rather than

Classical Sanskrit (Karlgren, 1954, 226). This is perfectly true. What is not true is that the fact that Prakrit rather than Sanskrit was the basis of many early Buddhist transcriptions prevents us from being able to control our material. A good deal is known about Prakrits and specifically about the north-west Indian Prakrit, called Gāndhārī by H. W. Bailey, which was spread into Central Asia by the expansion of the Kuṣāṇa empire and became the vehicle for Buddhist missionary activities in the Far East (Bailey, 1946; Brough, 1962).

It is ironical, for example, that Professor Karlgren was prepared to argue that the transcription of Sanskrit *dhyāna* by *ch'an* 禪 EMC *dzien* (Karlgren *zjān*) was a justification of his reconstruction of a stop initial  $\tilde{d}$ - in Archaic (Old) Chinese as the source for Ancient *z-*, while rejecting as irrelevant the massive evidence brought forward by Lo Ch'ang-p'ei (1931) showing that the Middle Chinese 'tongue up' (*she-shang*) initials were used to represent Indian retroflex stops. The Chinese transcription for *dhyāna* was undoubtedly based on a Prakrit form in which *dhy-* had been palatalized to *jh-* or *j-* (cf. Pali *jhāna*, Gāndhārī *jāna*, *jana*; Brough, 1962). On the other hand, not only is the dental/retroflex distinction well maintained in Prakrit, as in modern Indian languages, but the transcription practice which Lo discovered is consistently maintained up to T'ang times when Sanskrit had long since replaced Prakrit as the language of Buddhism in the Far East. Unfortunately Karlgren's rejection of Lo's hypothesis that the 'tongue up' initials were retroflex rather than palatal led to its being largely forgotten for many years. It has now been revived and is receiving a belated acceptance (Pulleyblank, 1962-3; see also Li, 1971). The evidence of Sino-Vietnamese, which, for example, has retroflex *tr-* for the first of the 'tongue up' initials (Karlgren's  $\tilde{t}$ ) as well as for the first of the retroflex affricates (Karlgren's *tš-*) but palatal *ch-* for the corresponding palatal affricate (Karlgren's *tš-*) was also ignored by Karlgren and other scholars.

It would not be fair to regard the delay in recognizing the correctness of Lo's hypothesis as entirely wilful and arbitrary. The revision of the palatal stops to retroflex stops has far-reaching implications for the whole system of Middle Chinese reconstruction and neither Karlgren nor any other scholar at the time was prepared to work out these implications (Pulleyblank, 1970-1). Nevertheless it is a pity that the awkward counter-evidence was merely swept under the carpet and a still greater pity that the rejection was turned into a blanket dismissal of transcription evidence of all kinds.

The use of transcription evidence is certainly fraught with difficulties; but so are all methods employed in historical reconstruction of pronunciation. One can only put together all the evidence, whether derived from internal reconstruction of the system underlying the rhyme tables and rhyme dictionaries, from rhymes in poetry, from comparisons of dialects and cognate languages, or from any other source and, using the best available linguistic theory, try to build the most coherent and consistent picture possible. We know at the outset that the evidence will never be sufficient to solve all our problems: All the more reason why we should not deliberately refuse to consider any category of material that may help.

The theory that the departing tone originated in a final -s in Chinese is a good example of one in which theoretical, comparative, and philological arguments



combine to give a happy solution to many otherwise unco-ordinated facts. First put forward by A. G. Haudricourt in 1954, it was based primarily on the analogy of the tonal system in Vietnamese, where the corresponding tone can be shown by comparisons with Mon-Khmer to come from a final *-h*, earlier *-s*. Haudricourt also noted that his hypothesis would allow one to explain cognate pairs like 好 EMC *haw* 'good', *haw* 'love', or 惡 EMC *ʔak* 'bad', *ʔo* 'hate' of which there are many in Chinese, as reflecting a suffix *-s* in the departing tone forms. He might also have noticed that there is a close parallel in Tibetan, which also has a *-s* suffix with various meanings (cf. Forrest, 1960). There is even a parallel in tonal development, since the *-s* of written Tibetan develops into a sharply falling tone in the Lhasa dialect.

Haudricourt further noted the fact that in Middle Chinese certain rhymes ending in *i*-diphthongs occurred only in the departing tone and conjectured that the disappearance of the final sibilant may have been not long before the time of the *Ch'ieh-yün*. He also drew attention to the Thai forms in *-t* of the duodenary sign 未 EMC *muj* (e.g. Ahom *mut*) (cf. Li, 1945; Egerod, 1957).

The date of the Thai borrowing of the duodenary cycle is unfortunately not known. There is, however, as I showed in 1962, abundant evidence from transcriptions for the persistence of *-s*, from Old Chinese *-ts*, at least until the third century A.D. The transcriptions involve various non-Chinese languages and extend over several centuries. The pattern is also very consistent. That is, whenever we find words from such rhymes used in transcriptions and it is possible to determine the underlying foreign word, we find that the foreign word has *s*, or some other appropriate phoneme, in the position corresponding to our hypothetical Chinese *-s*. There are, of course, a good many transcriptions, especially in the earlier centuries, for which the foreign original is unknown or is more or less conjectural. Among the more certain examples of *-s* from the Han period are: 黃霜 EMC *kuj* (< *kus*)-*ʂian* = Kušan, 鬪鬪 EMC *kiej* (< *kias*)-*pjin* = \*Kašpir(a), for Kashmir, EMC *to-laj* (< *ta-las*) = Talas. From the third century A.D. comes 對馬 EMC *toj* (< *tos*)-*mar* = Tusima, i.e. the island of Tsushima. Early Buddhist transcriptions of the second and third centuries A.D. provide many examples. Besides cases like 波羅奈 EMC *pa-la-naʃ* (< *nas*) = Prakrit \**Varanaz(ī)* for Sanskrit *Vārāṇasī*, in which Chinese *-s* corresponds to Sanskrit *s* (voiced [z] in intervocalic position in Prakrit), there are cases in which it stands for Sanskrit *-th-* or *-dh-*, both of which became a voiced fricative [ð] and eventually [z] in intervocalic position in Gāndhārī Prakrit (Bailey, 1946; Brough, 1962, 94). Hence 三昧 EMC *sam-moj* (< *mos*, or *mās*) = \**samādi* or \**samazi*, for Sanskrit *samādhi*.

A similar example, not previously discussed, is *chi* 偈 EMC *giej* (< *gias*) = \**gāḍa* or \**gaza*, for Sanskrit *gāthā* 'song', a word which was borrowed into Chinese in the sense of 'Buddhist hymn' and has remained part of the language.

By the beginning of the fourth century there is evidence of a shift from *-s* to *-j* in the north. Though the situation in Kumarajiva's transcriptions remains to be thoroughly investigated, a preliminary examination of his versions of the 'Lotus sūtra' (*T*, 262) and the *Mahāmāyūrī* (*T*, 988) shows clear evidence that the shift

must have occurred. Thus I find 齋 EMC *jiej* for *ye* in *kṣaye* and 嚙 EMC *dziej* for *jva* in *jvala*, among many other examples of departing tone words that would have had *-s* previously.

In the south, however, the sibilant final persisted much longer. This can be illustrated from *dhāraṇī* transcribed by Sanghabhara (or -varman?) who worked at Nanking in the period 506–20 under the Liang dynasty. By this time Sanskrit had replaced Prakrit as the language of Buddhist texts. A portion of his version of the *Mahāmāyūrī* (*T*, 984) was published by Sylvain Lévi (1915). In this we find the character 審 EMC *hāj* < *has* used for *-has-* in 毗里審波底 = *Bṛhaspati*. There is one other occurrence of the same character, this time for *-had-* in 毗梨審羅他 = *Bṛhadratha*. The equivalence is less exact in this case but at least *-s* is used for another dental consonant. There are no other words from the same rhyme in the material published by Lévi. In another *dhāraṇī* transcribed by Sanghabhara, however, I find 類 EMC *laj* < *las* used for *-ra(ś)-* in 毗富羅類沙彌 = *vipuraraśme*.

A few examples of this kind at such a late date would be too little in themselves to justify the conclusion that *-s* still survived at that period. As mentioned above, however, there is confirmatory evidence from rhyming practice. Occasional rhyming of Middle Chinese *-j* with *-t* in the 'Book of odes' was one of the principal reasons which led Karlgren to reconstruct his Archaic *-d* (which must now be emended to *-ts*, later *-s*). Such rhyming contacts do not, however, cease in the Chou period. They are still very common in Han (Lo and Chou, 1959) and continue through the southern dynasties. This was noted as long ago as 1936 by Wang Li. Wang went so far as to include the departing tone rhymes 泰 *-aj*, 廢 *-iaj*, 霽 *-ej*, 祭 *-iej*, etc., in the same over-all category as the corresponding entering tone rhymes in *-t*. Examples of this kind of rhyming are: 外脫類 EMC *ŋwaj* *t'wat laj* (K'ung Chih-kui 孔稚珪, 447–501); 節洩髻結雪 EMC *tset jiej* *kej* *ket swiet* (Hsü Ling 徐陵, 507–83); 謁曉沒 EMC *ʔiat ʔaj* *mot* (Emperor Wu of Liang 梁武帝, 464–549). Chou Tsu-mo, whose study of post-Han rhyming done in conjunction with Lo Ch'ang-p'ei remains unpublished, also noted this tendency for rhymes like *-aj* and *-at* to rhyme (Malmqvist, 1968, 37).

If *-s* survived in the south in some departing tone rhymes as late as the beginning of the sixth century, it obviously has a bearing on the question of what was meant by the 'departing tone' at the time it was given this name by Shen Yüeh 沈約 (441–513). Evidently the 'departing tone' had a sibilant final in some words in his day but not in others. How can we reconcile this with the fact that the whole category must have had a common feature to distinguish it from the other three 'tones'? The most likely explanation is that the other departing tone rhymes were still characterized by final *-h*: *-ah*, *-awh*, *-anh*, *-amh*, etc. This *-h* would not have manifested itself in transcriptions nor would it have rhymed with stop consonants in the way that *-s* could occasionally do with *-t*. It did, however, share with *-s* the feature + fricative, just as the 'entering tone' finals shared the feature + stop. If this surmise is correct, it helps to account for the choice of the terms 'entering' and 'departing', which obviously stand in opposition to one another while forming a related set in contrast to the other two tones, 'level' and 'rising'.



Chou Tsu-mo refers to the rhyming of departing and entering tones in relation to the statement in Lu Fa-yen's preface to the *Ch'ieh-yün* that in Ch'in and Lung, i.e. Shensi and Kansu, the 'departing tone' is the same as the 'entering tone'. This could possibly mean that even in 601 -s was still heard in those regions but, if taken literally, seems to indicate rather a dialectal merger of -s with -t. This is the most natural interpretation of the statement which he cites from Hsüan-ying's *I-ch'ieh-ching yin-i* 18, that in Kuan-chung the term 狡獪 *chiao-kuai* 'mischievous', EMC *karw-kwarj*, was rendered as 狡刮 *chiao-kuā*, EMC *karw-kwart*. Chou also cites two examples of barbarian rulers from that region whose personal names each had two variants, one in -j and one in -t. These provide less clear-cut evidence, since we do not know the foreign originals on which the Chinese forms were based.

There is still further evidence to support the view that there may have been a pre-T'ang shift of -s to -t in a north-western dialect region. Karlgren (1940, 258) notes that the *Chi-yün* has a reading *sjət* (*sic*, this should be corrected to *sjët*) = EMC *sit* for the number '4' EMC *sī*, and it calls this a Kuan-chung pronunciation. Karlgren supposed that this showed a persistence of Archaic *sjəd*, but it is more likely that it reflects the dialectal shift of *sis* to *sit* instead of standard EMC *sī*.

The same dialectal shift of -s to -t probably accounts for the modern forms of the word for 'nose' in northern dialects. In EMC this was *bji*, a form from which the current pronunciation in Cantonese and some other dialects is descended. In Mandarin generally, and to some extent elsewhere, however, the current forms imply Middle Chinese *bjit*. Early evidence for such a form is provided by a bilingual Chinese-Khotanese glossary from Tun-huang, where we find *pīra khuma*, evidently transcribing 鼻空 *bjit k'oŋ* (Bailey, 1954, p. 1, l. 11). Khotanese -r for Chinese -t is regular. The peculiar categorization of the word for 'nose' as '(lower) level tone from departing tone' in the *Chung-yüan yin-yün* also reflects such a Middle Chinese form, since lower level tone would be the normal reflex of entering tone for word with this type of initial but is quite anomalous for a Middle Chinese word with departing tone.

What seems to have happened is that the form *bjit* < *bjis* was borrowed from its north-western dialect source into the standard colloquial of T'ang, spreading to other parts of China and replacing *bji* < *bjis* except in outlying regions. This is more likely than the alternative view that *bjit* and *bji* were variants that had existed side by side in Chinese generally from early times. It is interesting to note that in Amoy the literary form is *pit*, while the colloquial form is *p'it*.

### Abbreviations

EMC = Early Middle Chinese, a new reconstruction of the *Ch'ieh-yün* system to be published shortly. N.B. a in these forms represents a low central vowel, not a front vowel.

T = Taishō *Tripitaka*.

### Bibliography

- Allen, W. S. 1968. *Vox Graeca: the pronunciation of Classical Greek*. Cambridge: University Press.
- Bailey, H. W. 1946. 'Gāndhārī', *BSOAS*, xi, 4, 764-97.
- Bailey, H. W. (ed.) 1954. *Indo-Scythian studies; being Khotanese texts, II*. Cambridge: University Press.
- Brough, J. (ed.) 1962. *The Gāndhārī Dharmapada*. (School of Oriental and African Studies, University of London. London Oriental Series, VII.) London: Oxford University Press.
- Chou Tsu-mo 周祖謨. 1966. 'Ch'ieh-yün ti hsing-chih yü t'a-ti yin-hsi chi-ch'u' 切韻的性質與牠的音系基礎, in *Wen-hsüeh chi* 問學集. Peking: Chung-hua Shu-chü 中華書局.
- Downer, G. B. 1959. 'Derivation by tone-change in Classical Chinese', *BSOAS*, xxii, 2, 258-90.
- Egerod, S. 1957. 'The eighth earthly branch in Archaic Chinese and Tai', *Oriens*, x, 2, 296-9.
- Forrest, R. A. D. 1960. 'Les occlusives finales en chinois archaïque', *BSL*, lv, 1, 228-39.
- Hanyu fangyan cihui* 漢語方言詞彙. 1964. [Ed. by Linguistics Seminar, Department of Chinese Language and Literature, Peking University.] Peking: Wenzhi Gaige Chubanshe 文字改革出版社.
- Hanyu fangyin zihui* 漢語方言字彙. 1962. [Ed. by Linguistics Seminar, Department of Chinese Language and Literature, Peking University.] Peking: Wenzhi Gaige Chubanshe.
- Haudricourt, A. G. 1954 [a]. 'Comment reconstruire le chinois archaïque', *Word*, x, 2-3, 350-64.
- Haudricourt, A. G. 1954 [b]. 'De l'origine des tons en vietnamien', *JA*, ccxlii, 1, 69-82.
- Hsüan-ying 玄應. *I-ch'ieh-ching yin-i* 一切經音義. [Edition of the *Ts'ung-shu Chi-ch'eng* 叢書集成.]
- Karlgren, B. 1940. 'Grammata Serica: script and phonetics in Chinese and Sino-Japanese', *BMFEA*, 12, 1-471.
- Karlgren, B. 1954. 'Compendium of phonetics in Ancient and Archaic Chinese', *BMFEA*, 22, 211-367.
- Lévi, S. 1915. 'Le catalogue géographique des yakṣa dans la Mahāmāyūrī', *JA*, xi<sup>e</sup> Sér., v, janvier-février, 19-138.
- Li, F. K. 1945. 'Some old Chinese loan words in the Tai languages', *HJAS*, viii, 3-4, 333-42.
- Li, F. K. 1971. 'Shang-ku yin yen-chiu' 上古音研究 'Studies on Archaic Chinese phonology', *Ch'ing-hua Hsüeh-pao* 清華學報, NS, ix, 1-61.
- Lo Ch'ang-p'ei 羅常培. 1931. 'Chih ch'e ch'eng niang yin-chih k'ao' 知徹澄娘音值考, *CYYY*, 3, 121-57. [Reprinted in *Lo Ch'ang-p'ei yü-yen hsüeh lun-wen hsüan-chi* 語言學論文選集. Peking: Chung-hua Shu-chü, 1963.]
- Lo Ch'ang-p'ei and Chou Tsu-mo. 1958. *Han Wei Chin Nan-pei-ch'ao yün-pu yen-pien yen-chiu* 漢魏晉南北朝韻部演變研究, I. Peking: K'o-hsüeh Ch'u-pan-she 科學出版社.
- Malmqvist, N. G. D. 1968. 'Chou Tsu-mo on the Ch'ieh-yün', *BMFEA*, 40, 33-78 [translation of Chou, 1966].
- Pulleyblank, E. G. 1962-3. 'The consonantal system of Old Chinese', *AM*, NS, ix, 1, 58-144; ix, 2, 206-65.
- Pulleyblank, E. G. 1970-1. 'Late Middle Chinese', *AM*, NS, xv, 2, 197-239; xvi, 1-2, 121-68.
- Wang Li 王力. 1936. 'Nan-pei ch'ao shih-jen yung-yün k'ao' 詩人用韻考, *Ch'ing-hua Hsüeh-pao*, xi. [Reprinted in *Han-yü shih lun-wen chi* 漢語史論文集. Peking: K'o-hsüeh Ch'u-pan-she, 1956.]



## FANGYAN GLEANINGS

W. South Coblin

Source: *Monumenta Serica* 37, 1986–1987, 113–43.

## I. Introduction

The *FY* occupies a unique position among early Chinese lexicographical works in that it specifically collects and annotates regional or dialectal words and expressions. The potential value of the text as a source of information on late WH Chinese dialects has long been recognized and has been exploited in various ways in a number of traditional and modern studies. The possibility that the *FY* may contain dialect cognates which could be compared and used to reconstruct earlier ancestral forms has been extensively explored by Serruys in a book (1959) and a number of articles.<sup>1</sup> The work of Serruys has been severely criticised by Miller (1975: 122–23), who has argued that the dialect forms compared by Serruys cannot be assumed to be historically cognate simply because they are associated in the *FY* text. Many may, he feels, be unrelated dialect synonyms.

In considering the different stances of Serruys and Miller we may begin by noting that the criteria underlying the selection of dialect words in *FY* are nowhere specified in the work itself. My own belief, based on close inspection of the text, is that many or most of the entries are of the 'bucket'/'pail' type and are not genetically related. If this is so then it would suggest that the *FY* compiler was primarily interested in assembling and determining the regional origins of what he felt to be "different" words for the same things. This assumption would seem to support Miller's indictment of Serruys' approach to the *FY* text and discourage further comparative phonological studies. But the matter is not so easily resolved, for there can in fact be little doubt that the *FY* does contain a number of true cognate sets of the type envisaged by Serruys. A well-known and generally accepted example is the pair of words in *FY* 11/12 meaning 'a fly' (see # 37 in section V below). Such cases, few though they may be, are worthy of our attention.

It is probable that everyone who has worked with *FY* has his own list of putative cognates. What is presented in section V below is my list. It is, I believe, fairly conservative; but at certain points I have made bold to include doubtful cases on the ground that in future it may be easier to exclude false cognate sets

than to retrieve lost ones. MC and WH reconstructions are given for all entries in section V, and in section VI some rudimentary comparisons are attempted. Nothing so ambitious as an actual reconstruction of proto-forms has been undertaken. It is hoped that the gleanings assembled here may, after pruning and emendation, in some way advance our understanding of Han dialectology.

II. Authorship and composition of *FY*

2.1 The *FY* is traditionally attributed to Yang Xiong 揚雄, whose authorship of the text has been convincingly established by Serruys (1955).<sup>2</sup> Yang Xiong (53 B.C.–18 A.D.; *HS* biography, *HS* 87A, B, C: 3513–3587) was a native of Chengdu 成都 in Shu 蜀. He was over forty when he left this area and went to Chang-an 長安 (*HS* 87C: 3583), where he spent the rest of his life. Yang must have spoken the dialect of his native place, and it is probable that he was also familiar with the language of the capital.

2.2 The nature and content of the *FY* text have been thoroughly discussed by Serruys (1955, Chap. 1).<sup>3</sup> Here we need only note that, in addition to those passages which specifically deal with dialect material, there are others which are "non-dialectal" in content. Most of these occur in chapters 12 and 13 of the text, but they occasionally appear in other sections as well.

The primary evidence regarding the way in which the *FY* was compiled comes from Yang Xiong's famous letter to Liu Xin 劉歆, appended to most current editions of the text.<sup>4</sup> The passage in question is translated by Knechtges (1977–8: 316–17) as follows:

... whenever Presenters of Annual Accounts and the "Filial and Incorrupt" from the various parts of the empire as well as the interior commandery military officers convened at the capital, I always took my three-inch soft brush, ["and" ? WSC] provided<sup>5</sup> myself with a four-foot piece of oiled white silk in order to ask them about unusual expressions. As soon as I returned home I used lead to make extracts<sup>6</sup> and arrange them on tablets. It has now been twenty-seven years that I have been doing this. Occasionally expressions and words were mixed up or contradicted each other, and then I repeatedly discussed them and mulled them over, and collected all I could in detail to settle any doubts.

From this account we may form a picture of how Yang Xiong carried on his dialect studies. First of all it is clear that he worked with "informants," and we can conclude that these people were for the most part educated upper-class speakers. How he proceeded in his inquiries about "unusual expressions" is uncertain. It is entirely possible that he simply asked "what character" an informant used for a certain thing and was shown in reply a particular graph, in some cases a familiar one and in others an "unusual" one, perhaps the informant's own invention or some locally current script form. It is equally possible that in many cases Yang received as his answer a spoken form, either because he had asked how his informant "said" a particular thing, or because the informant knew no graph for the word he was attempting to convey. The fact that in *FY* we find a considerable number of



common graphs used in senses which are elsewhere unattested strongly suggests that Yang's collecting of dialect words sometimes involved "transcription" of spoken forms, either on his own part or that of his informants. As an example we may cite *FY* 2/8 (# 81 below) where 私 (MC *si*), usual meaning: 'private', is glossed as 'small' and is probably a western dialect form of 細 (MC *siei-*) 'small, minute'.

A question of considerable interest is that of how Yang Xiong formulated the word lists which served as the basis for his "survey" of dialect forms. There is evidence that in many cases he took available lexicographical works, commentaries, etc. as his point of departure. For example, there are unmistakably close links between *FY* and *EY*. *FY* ¼ 烈, 耕, 餘也... is identical with *EY* 1B/103, with the exception that, after the basic word equation is given, *FY* adds dialect notes on 烈 and 耕. An example of a more extensive correspondence, involving several *FY* and *EY* entries, is the following:

<i>FY</i>	<i>EY</i>
1/12 敦, 豐, 厯, 奈, 懶, 般, 蝦, 奕, 戎, 京, 葵, 將, 大也...	1A/3 ...厯...蝦...奈...戎... 京...壯...將...大也
	(The original <i>EY</i> passage is quite long, containing thirty-nine glossed words.)
1/13 假, 徂, 懷, 摧, 詹, 辰, 變, 至也...	1A/5 迄, 臻, 極, 到, 赴, 來, 弔, 纓, 樵, 辰, 懷, 摧, 詹, 至也
1/14 嫁, 逝, 徂, 適, 往也...	1A/6 如, 適, 之, 嫁, 徂, 逝, 往也

Examples of this type suggest that Yang Xiong's concern with dialect words may have been intimately connected with his interest in lists of glossed words such as those found in *EY*. He may, at the outset, have suspected that these contained many dialect synonyms. It is possible that he began his work on *FY* by investigating passages such as *EY* 1A/3. Having identified all dialect material in the list, he may then have supplemented his findings with further dialect synonyms which were not part of the original *EY* passage. Close correspondences of the type exemplified here can also be found between *FY* and the Mao commentary on *Shijing* 詩經. It is highly probable that a detailed investigation of the relationships between *FY* and other texts of WH or earlier times would yield much of interest regarding the way in which the *FY* text was compiled. Such a study unfortunately lies beyond the scope of the present paper.

### III. Phonological reconstructions

MC reconstructions used in this paper follow Karlgren (1954 and *GSR*) as emended by Li (1971: 4-7), with the following further revisions:

- 1 - will be written as ʔ-.
2.  $\hat{q}$  and  $\check{x}$  will be written as  $\partial$ .

3.  $\check{e}$  will be written as  $e$ .
4. Medial  $-u-$  will be written as  $-w-$ .

WJ reconstructions follow Coblin (1974-5) for the initials and Ting (1975) for the finals, with the exception that all labialized (i.e. *hekou* 合口) syllables will be written with  $*-w-$ . OC forms are reconstructed according to Li (1971 and 1976).

MC reconstructions are given for all dialect forms listed in section V. However, it is clear that what is needed for a cogent discussion of phonological questions in the data is a Han-time reconstruction. This raises the question of what sort of sound system underlies the "transcriptions" used in *FY*. If, as we have hypothesized, Yang Xiong may sometimes have "transcribed" in characters the spoken forms elicited from his "informants," then what did he adopt as the "basic readings" of these characters? Did he take the sound system of his own dialect as basis? Or did he rely on some sort of WH standard with which all educated individuals in the capital area might be expected to be familiar? These are questions which we cannot now answer and which may never be resolved. But, such uncertainties notwithstanding, it still seems worthwhile to utilize a Han reconstruction in dealing with the data in section V. The reconstruction to be used here is one developed for the dialect of Yang Xiong himself. This system, along with certain departures which will be made from it, will now be briefly outlined.

Materials from the works of Yang Xiong have been used, along with data from many other sources, to make a provisional reconstruction of the initials of the WH period (Coblin 1982). The following system of initials can be reconstructed for Yang's dialect:

Labials	p	ph	b	m	hm		
Dentals	t	th	d	n			l
Sibilants	ts	tsh	dz		s	sh	z
Gutturals	k	kh	g	ng	h	ʔ	

Due to the paucity of data on the WH initials this system is necessarily sketchy. Several comments on it seem necessary here. MC *ji-* interchanges with sibilants in the Yang Xiong materials and in certain other late WH sources. I restore it for these dialects as WH  $*z-$ , followed directly by vowels or by medial  $*-w-$ . Where  $*z-$  is followed by medial  $*-j-$  it yields MC  $z-$ . In other WH materials MC *ji-* interchanges primarily with dental stops, and I reconstruct it there as  $*r-$ , modelled on Li's OC  $**r-$ , a dental flapped consonant. I think it possible that Yang adhered to his own "sibilant reading" for this initial in compiling *FY*. MC  $\check{s}$ - interchanges with sibilants in the Yang Xiong data. It was probably a voiceless fricative of some sort and must have differed from WH  $*s-$  ( $>$  MC  $s-$ ). My guess is that it was an aspirated  $s-$  (transcribed here as  $*sh-$ ) of the sort found in contrast with plain  $s-$  in various Southeast Asian languages and in certain types of Amdo Tibetan. In other WH materials, MC  $\check{s}$ - interchanges with dental stops; and



I have consequently restored it there as \*hrj- (< Li's OC \*\*hrj-). Whether Yang preferred the "sibilant reading" or the "stop reading" in his dialect work seems uncertain and is a question which must be considered in dealing with the *FY* data.

A cluster, \*sm- (> MC s-), can be reconstructed for Yang's language. In other WH dialects one can also posit \*gl- (> MC l-), but there is no evidence for this cluster in the Yang Xiong data. There is support for the reconstruction of \*gl- in a number of EH dialects (Coblin 1977-8; 1978); and I believe it may have been present in Yang Xiong's language, in spite of the lack of direct evidence for it. Words for which this cluster might be reconstructed in other dialects will be written with \*(g)l- here. Where the MC palatals, ts-, etc., interchange with velars in the WH data I reconstruct the former as \*k(r)j-, etc. There are no such interchanges in the Yang Xiong data. It seems uncertain whether such earlier velars had merged with the WH dentals in Yang's language or were still distinct and are simply not reflected in the data.

A general reconstruction for the finals of the WH period, based on the rime data of Luo and Zhou (1958), has been proposed by Ting (1975). Rime, loan-graph, and paronomastic data have been used to reconstruct the finals of Yang Xiong's language (Coblin, 1984). The following is a summary of the final consonants, vowels, and medials reconstructed for Yang's dialect:

#### A. Consonants

Velars	k	h	ng
Labiovelars	kw	hw	ngw
Dental	t		

#### B. Vowels

Oral	Nasalized
I	u
ə	ẽ
A	ã

#### C. Medials

-j-	-w-	-r-
-----	-----	-----

Final \* -p and \* -m are absent from this system. Where MC has -p and -m, Yang's language may have had \* -k and \* -ng. This was a peculiarity of the Shu 蜀 dialect which seems to have distinguished this language from other WH dialects including, presumably, the WH standard language. All words reconstructed in section V with the finals in question are also given alternate \* -p and \* -m reconstructions based on Ting's WH system. Open nasalized finals are reconstructed

here for syllables having MC -n. Preliminary studies of several other WH dialects indicate that these probably had final -n in the syllables in question. Whether we should read \* -v̄ or \* -vn for the *FY* examples seems uncertain.

The MC tone categories will be represented as follows in the MC, WJ, and Han reconstructions:

Ping 平	Shang 上	Qu 去	Ru 入
no symbol	:	-	no symbol

#### IV. The WH dialects

*FY* is an invaluable source of information on late WH dialects. By analyzing the geographical terminology in the text it is possible to ascertain with surprising precision what the dialect areas of the early first century were. Then, on the basis of shared vocabulary items, one can determine which areas represented subdialects within the major dialect groupings. Luo and Zhou (1958: 72) have briefly discussed the *FY* terminology, but the definitive treatment of it is that of Serruys (1959: 77-100). We shall now summarize and slightly modify his proposal (pp. 98-9) for a six-group division of *FY* dialect areas:<sup>7</sup>

1. Western Dialects: Guanxi 關西<sup>8</sup>—Qin 秦, Jin 晉,<sup>9</sup> Liang-Yi 梁益, Shu-Han 蜀漢
2. Central Dialects: Guandong 關東 in general
  - (a) Western Group: Zhou 周, Zheng 鄭, Luo 洛, Han 韓, Wei 魏,<sup>10</sup> Zhao 趙<sup>11</sup>
  - (b) Eastern Group: Song-Weih 宋衛, Lu 魯, Qi 齊
3. Northern Dialects: Yan 燕, Dai 代, Bei Yan 北燕
4. Eastern Dialects: Dong Qi 東齊, Haidai 海岱, Huai 淮, (Xu 徐)<sup>12</sup>
5. Southeastern Dialects: Wu 吳, Yang 揚, Yue 越
6. Southern Dialects:
  - (a) Northern Type: Chen 陳, north part of Chu 楚
  - (b) Eastern Type: Jiang-Huai 江淮
  - (c) Southern Type: southern part of Chu, Nan Chu 南楚

The geographical locations of the *FY* dialect areas can be seen in Map 1, which is a much simplified and slightly modified version of Serruys (1959: Endpaper). Map 2 shows the approximate boundaries of the six major dialect groups.

In addition to the regional names discussed above, the following terms also appear in the examples cited in section V:

- Bin 邠: A place located approximately 115 kilometers north-west of Chang-an, in the Qin area.
- Chaoxian 朝鮮: An area corresponding approximately to the northern part of modern Korea.



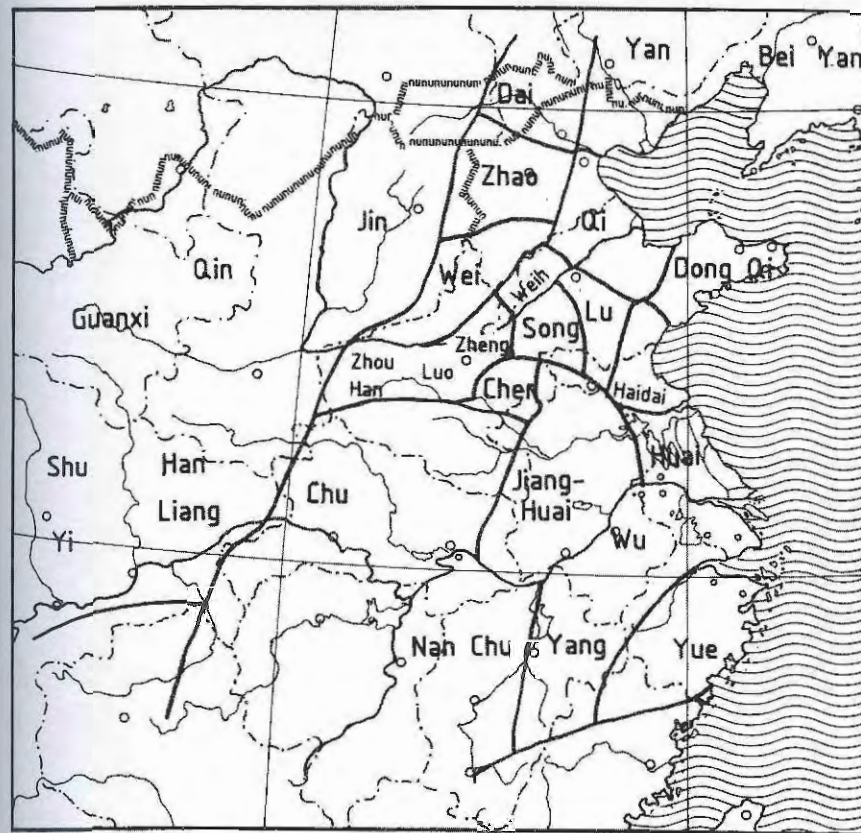
- Daye 大野: A swampy region in the west-central part of the Song area.  
 Former Capitals of Qin and Jin: The areas around Fufeng 扶風, Shaanxi and Taiyuan 太原, Shanxi respectively.  
 He Ji 河濟: The area between the Yellow and Ji rivers; a strip of territory stretching from Weih through Qi to the Bohai.  
 Heng 衡: The area around Mt. Heng, approximately 100 kilometers south of modern Changsha.  
 Ji 冀: An area roughly encompassing Zhao and Wei.  
 Jiang Mian 江河: The area between the Yangtze and Mian rivers; the latter is a western tributary of the Han River and flows roughly parallel to the Yangtze through the southern part of Shaanxi.  
 Jiang Xiang 江湖: The area between the Yangtze and Xiang rivers.  
 Jing 荆: A poorly defined area in Chu, stretching both north and south of the Yangtze river. See Serruys (1959: 93-4).  
 Jiuyi 九嶷: The area around the Jiuyi Mts., approximately 250 kilometers south of Changsha.  
 Lieshui 冽水: A river in Chaoxian. Exact location disputed. See Serruys (1959: 83).  
 Ru 汝: The Ru River and its watershed; northern part of the Chu area.  
 Ruying 潁潁: The region between the Ru and Ying rivers; northern part of the Chu area.  
 Tang 唐: A place near modern Taiyuan, Shanxi.  
 Xi Long 西隴: Western Long, an area in the eastern part of modern Gansu.  
 Yan 兗: An area encompassing Weih, Song, and perhaps also Chen.  
 Yuan Xiang 沅湘: The area between the Yuan and Xiang rivers; central part of Hunan.

### V. The data

The examples in this section have been selected because they may throw light on characteristics which distinguished the various WH dialects. For this reason, with one exception, only sets containing words from *different* dialects are cited. There are in *FY* a number of sets which consist exclusively of two or more synonyms from the *same* dialect area. These are worthy of study in their own right but lie beyond the scope of the present paper.<sup>13</sup>

As a working hypothesis it has been assumed that the glossing words in the various *FY* entries are themselves representative of a "dialect," which may have been the WH standard language. In a number of cases there is direct evidence for this in the *FY* text. The following two occur in our data: #s 41 and 73. In nine cases (i.e. #s 5, 6, 14, 58, 64, 69, 74, 81, 88) words not mentioned in the *FY* passage but known to be current in WH texts are suggested as possible "standard" cognates.

Entries in the data are arranged alphabetically by English gloss and numbered consecutively. Each English gloss is followed by the chapter and section number



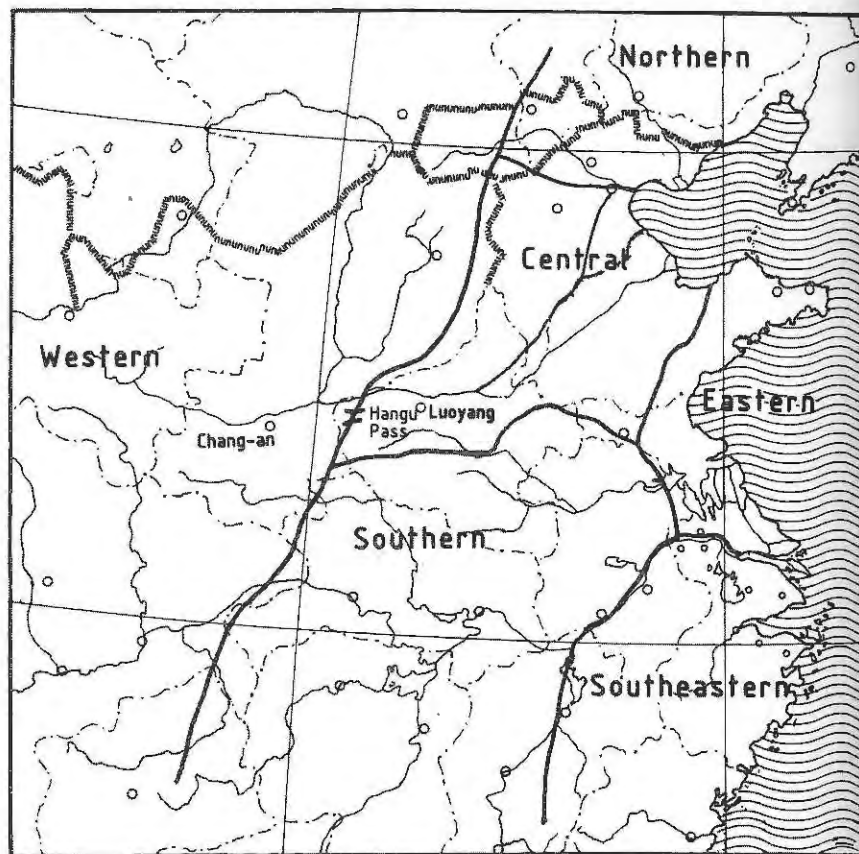
Map 1 Early EH dialect areas according to *FY*

(Based on Serruys 1959: Endpaper)

in which the passage occurs in Zhou (1951). Notes to the data follow each entry. The following abbreviations and conventional spellings are used in the data:

- |       |   |
|-------|---|
| alt.  | Alternate form. These forms are introduced by the phrases <i>huo yue</i> 或曰 "some say . . .," <i>huo wei zhi</i> 或謂之 "some call it . . .," etc. |
| ChChu | Chen Chu 陳楚   |
| DgQi  | Dong Qi 東齊  |
| G     | Gloss word. Word used to gloss other words in a <i>FY</i> entry.  |
| Gndng | Guandong 關東, <i>zi guan er dong</i> 自關而東, etc.  |
| Gnxi  | Guanxi 關西, <i>zi guan er xi</i> 自關而西, etc.  |



Map 2 Major EH dialect groups according to *FY*

Guo	Guo Pu 郭璞 (276–324), author of the earliest extant <i>FY</i> commentary.
HD	Haidai 海岱
NChu	Nan Chu 南楚
QJin	Qin Jin 秦晉
SgLu	Song Lu 宋魯
SgWeih	Song Weih 宋衛
St.	Standard language form. These forms are referred to as <i>tong yu</i> 通語, <i>tong ming</i> 通名, etc. in the text.

1. 'abundant, luxuriant' 2/2
  - A. G: 豐 phjung < \*phjangw
  - B. Gnxi, QJin: (1) 騰 mung, mung: < \*muang, muang::; (2) (alt.) 騰 mǎng < \*mruang
2. 'to aid' 6/7
  - A. Wu Yue: 齊 sjwo < \*sjah
  - B. Bei Yan: 由 jiəw < \*zəhw
3. 'angry' 2/20
  - A. Chu: 齷 yǎi- < \*griat-
  - B. Chen: 苛 yâ < \*gai
4. 'to arrive' 1/13
  - A. Bin Tang Ji Yanh: (1) 假 ka: < \*krah::; (2) (alt.) 洛 kək < \*krak
  - B. Qi and Chu (intermediate area): (alt.) 懷 ywāi < \*grwōi
  - C. Song: 纒 kǎi- < \*krət-
5. 'basket' 13/142
  - A. NChu, Jiang Mian: 筲 bəng < \*brang
  - B. possible St. cognate: 籠 lung, lung: < \*(g)luang, (g)luang:
6. 'basket for silkworms' 13/141
  - A. G: 籠 kjwo: < \*kjah:
  - B. Jiang Mian: 箕 jiwo<sup>1</sup> < \*zah
  - C. Zhao Dai: 簪 thāu < \*thahw
  - D. NChu: 簾 lau:, lju: < \*luah:, ljuah:
  - E. possible St. cognate: 簾 kjwo: < \*k(l)jah:
  - 1) Guo reads WJ \*zjo (> MC jiwo), and this reading is also given in *JY*.
7. 'beautiful (sc. physical appearance)' 2/4
  - A. SgWeih: 傑 jiäp < \*zak/WH St. zap
  - B. ChChu, Ruying: 奕 jiäk < \*zak
8. 'bed' 5/36
  - A. Qi Lu: 簾 tsek < \*tsriak
  - B. ChChu: (alt.) 第 tsi:, tsi: < \*tsrjəh:, tsrjiəi:
9. 'beverage, liquid' 3/7
  - A. G, Gnxi: 汁 tsjəp < \*tjək/WH St. tjəp (< \*(r)j-?)
  - B. Gndng: 協 yiep < \*giak/WH St. giap
  - C. Bei Yan, Chaoxian, Lieshui: 斟 tsjəm < \*tjəng/WH St. tjəm (< \*(r)j-?)



10. 'big' 1/21  
 A. St.: 于 ju < \*gjuwəh  
 B. Qi Song: 巨 gjwo: < \*gjah:  
 C. Central Qi, Western Chu: 舒 xju < \*hjwah
11. 'big (sc. human frame)' 1/12  
 A. QJin: (1) 樊 dzāng: < \*dzang:; (2) (alt.) 𡗗 tsjang- < \*tsrjang-  
 B. Yan (northern part), Qi and Chu (intermediate areas): 𡗗 tsjang, tsjang- < \*tsjang, tsjang-
12. 'big, long (sc. human head)' 2/2  
 A. Yan: 杼 djwo:, dźjwo:, dźjwo- < \*drjah:, djah:, djak-  
 B. Chu: 仔 jiwo<sup>1</sup> < \*zah  
 1) Guo reads WJ \*zjo: (> MC zjwo:) for which we would posit WH \*zjah:.
13. 'big, to boast (< make big)' 1/21  
 A. Gnxi, QJin: 夏 ya: < \*grah:  
 B. Zhou Zheng: 𡗗 ka: < \*krah:
14. 'broken, smashed (sc. a vessel)' 6/34  
 A. DgQi: 破 phje, phje- < \*phjiai, phjiai-  
 B. NChu: 𡗗 phi, bi < \*phjiəi, bjiəi  
 C. possible St. cognate: 破 phwâ- < \*phai-
15. 'cheerful, pleased' 3/13  
 A. Gndng: (alt.) 𡗗 xieu: < \*hiahw:  
 B. Song Zheng Zhou Luo Han Wei: 𡗗 khwo: < \*khah:  
 C. DgQi, HD: 𡗗 yau- < \*grakw-
16. 'a chess-like game' 5/41  
 A. G, QJin: 𡗗 pāk < \*pak  
 B. Wu Chu: (alt.) 𡗗 pjäi- < \*pjaiat-
17. 'chicken' 8/4  
 A. G: 𡗗 kiek < \*kia  
 B. ChChu, Song Wei: 𡗗 bieki gie < \*biak gjiai
18. 'cicada' 11/2  
 A. G: 𡗗 zjān: < \*djā:  
 B. SgWei: 𡗗 dāng dieu < \*dang diəhw  
 C. Chen Zheng: 𡗗 lāng dieu < \*lang diəhw

19. 'clever' 1/2  
 A. G: 慧 yiwei- < \*giwət-  
 B. Gndng, Zhao Wei: (1) 𡗗 yāt < \*griat; (2) (alt.) 𡗗 kjwei: < \*kjwəi:
20. 'to cover up' 6/43  
 A. Jing Chu: 𡗗 ʔəm: < \*ʔəng:/WH St. ʔəm:  
 B. Wu Yang: 𡗗 ʔjäm: < \*ʔjiang:/WH St. ʔjiam:
21. 'crupper' 9/17  
 A. Gndng, Zhou Luo Han Zheng, Ruying: (alt.) 𡗗 khjwok dāu < khjuak dəhw  
 B. Gnxi: 𡗗 djəu: < \*drjəhw:
22. 'cuckoo' (1) 8/6  
 A. G, Gnxi: 布穀 pwo- kuk < \*pak- kuak  
 B. Zhou Wei: 𡗗 kiek kuk < \*kiak kuak  
 C. Gndng, Liang Chu: 𡗗 kiet kâu- < \*kiət kakw-
23. 'cuckoo' (2) 8/9  
 A. Gndng: 戴鷓 tēi- nǎzjəm < \*tək- njəng/WH St. njəm  
 B. DgQi, HD: 戴南 tēi- nəm < \*tək- nəng/WH St. nəm  
 C. DgQi, Wu Yang: 鷓 nǎzjəm < \*njəng/WH St. njəm
24. 'difficulty; to worry about (< consider difficult)' 6/6  
 A. area east and west of the Taihang 太行 Mts., Jing Wu: 𡗗 tjān: < \*trjā:  
 B. QJin: 𡗗 dān- < \*dā-  
 C. Qi Lu: 𡗗 tsjān:, tshjān: < \*tjā:, thjā:
25. 'dove, pigeon' 8/8  
 A. G: 𡗗 kjəu < \*kjəhw  
 B. Gndng, outskirts of Zhou and Zheng, capitals of Han and Wei: 𡗗 lāng kâu < \*lang kəhw  
 C. Gnxi, area between Qin and the Han 漢 River: 𡗗 kjuk-gjuk kjəu < \*kjək-w-gjək-w kjəhw
26. 'to draw out, extend' 6/35  
 A. Qin: 𡗗 mjen < \*mjiə  
 B. Zhao: 𡗗 mjian < \*mjiā
27. 'to end, come to an end' 6/47  
 A. G, QJin (alt.): 𡗗 kjəng: < \*kjiang:  
 B. QJin: 𡗗 kəng < \*kəng



28. 'to exaggerate, brag' 1/21  
 A. Gnxi, QJin: (alt.) 僉 tshjam < \*tshjang/WH St. tshjam (< \*\*skh(1)jam?)  
 B. DgQi: 劍 kjəm- < \*kjang-/WH St. kjam- (< \*\*kljamh)  
 C. Qi: 槩 thjəm < \*thrjəng/WH St. thrjəm (< \*\*hljəm)
29. 'to expose' 7/15  
 A. G: 暴 buk < \*buak  
 B. DgQi, Qin (western border areas), Yan (outer environs), Chaoxian, Lieshui: 膊 phāk < \*phak
30. 'far, distant' 7/24  
 A. Yan (northern outskirts): 劍 kieu, tsjäu < \*kiahw, tjahw (< \*k(r)j-?)  
 B. DgQi: 超 thjäu < \*thrjahw
31. 'to feed, raise' 1/5  
 A. Jin Weih Yan Wei: 台 ji' < \*zəh:  
 B. Qin (alt.): 陶 dāu < \*dəhw  
 C. Ruying, Liang Song: 胎 thəi < \*thəh  
 1) Reading after Guo: WJ \*zjəi > ji.
32. 'fierce' (1) 2/23  
 A. G: 猛 məng: < \*mrang:  
 B. Qi Jin: 爽 sjang: < \*smrjang:
33. 'fierce' (2) 2/23  
 A. Jin Wei: 擗 ʔan: < \*grā:  
 B. Han Zhao: 梗 kəng: < \*krang:
34. 'fire' 10/6  
 A. G: 火 xwâ: < \*hmai:  
 B. Chu: 燥 xwəi:, kwân- < \*hwəi:, kwā-  
 C. Qi: 媯 xjwei: < \*hmjəi:
35. 'firm, solid' 2/28  
 A. Gnxi, QJin: 蹇 khāi: < \*khrəi:  
 B. Wu Yang, Jiang Huai: 蹇 khiei: < \*khiəi:
36. 'flail' 5/29  
 A. Gnxi: (alt.) 拂 pjwət < \*pjət  
 B. Qi Chu, Jiang Huai: (alt.) 桴 bwət < \*bət
37. 'a fly' 11/12  
 A. DgQi: 羊 jiang < \*zang  
 B. Gnxi, QJin, ChChu: 蠅 jəng < \*zəng

38. 'frame for silkworms' 5/31  
 Song Wei, ChChu, Jiang Huai: (1) 曲 khjwok < \*khjuak; (2) (alt.) 𦉳<sup>1</sup> khjuk < \*khjəkw  
 1) Guo identifies this word as the Chu dialect form in his day. It is thus possible that it should be compared with form (1).
39. 'to frighten, startle' 2/13  
 A. Gnxi, QJin: 遑 thāk < \*thrakw  
 B. SgWeih, NChu: (1) 𦉳<sup>1</sup> sjak < \*shjak; (2) (alt.) 𦉳<sup>1</sup> sjuk < \*shjəkw (also read thəu- < \*thuak- (?), sense of 'to jump')
40. 'to go' 1/14  
 A. QJin: 逝 zjāi- < \*djat-  
 B. SgLu: 適 sjäk < \*shjiak
41. 'good, nice' (1) 1/3  
 A. G, St.: 好 xāu: < \*həhw:  
 B. Gndng, He Ji: (alt.) 姦 kau: < \*krəhw:
42. 'good, nice' (2) 1/3  
 A. QJin: 娥 ngā < \*ngai  
 B. Gnxi, former capitals of Qin and Jin: 妍 ngien < \*ngiā
43. 'gossip, slander' 10/9  
 A. St., DgQi, Zhou and Jin (intermediate area): 𦉳<sup>1</sup> lān lāu < \*(g)lā ləhw  
 B. NChu: (alt.) 𦉳<sup>1</sup> lān ləu~ləu: < \*ljā luah~luah:
44. 'grass, weeds' 3/8  
 A. Gnxi: (alt.) 芥 kāi- < \*kriat-  
 B. south of the Yuan and Xiang rivers: 葍 yāt < \*griat
45. 'greedy, covetous' (1) 1/16  
 A. G: 𦉳<sup>1</sup> ləm < \*(g)ləng/WH St. \*(g)ləm  
 B. Chu: 貪 thəm < \*thəng (< hləng?)/WH St. thəm (< hləm?)  
 C. NChu, Jiang Xiang: 𦉳<sup>2</sup> khəm: < \*khəng/WH St. khəm:  
 1) Current *FY* versions write 𦉳<sup>1</sup>; here emended after *FYSZ*. Cf. *SW* (*SWGL* 4739b) which states that north of Henei 河內 one said 𦉳<sup>1</sup> for 貪.  
 2) Current *FY* versions write 𦉳<sup>2</sup>; here emended after *FYSZ*.
46. 'greedy, covetous' (2) 10/10  
 A. G: 貪 thəm < \*thəng (< hləng?)/WH St. thəm (< hləm?)  
 B. Jing Ru, Jiang Xiang: (alt.) 悻 ljen- < \*ljiā-



47. 'heavy' 6/9  
 A. DgQi: 鎮 tien: < \*tið:  
 B. SgLu: 鍾 djwe, djwe- < \*drjwai, drjwai-
48. 'hook' 5/26  
 A. G, Gnxi: 鈎 kəu < \*kuah  
 B. Song Chu Chen Wei: (1) 鹿絡 luk kək < \*luak Krak; (2) (alt.) 鈎格 kəu kək < \*kuah Krak
49. 'to hurt; pain' 2/21  
 A. Gnxi, QJin: 儻 tshək < \*tshriak:  
 B. possible St. cognate: 刺 'to prick' tsje-, tshjäk < \*tshjiai-, tshjiak (Cf. 'to prick, stick' below.)
50. 'to jump' 1/27  
 A. G, Gnxi, QJin: (1) 跳 dieu < \*diəhw; (2) (alt.) 踏 tək < \*tək/WH St. tək  
 B. Chen Zheng: 躡 jiäu < \*zahw  
 C. Chu: (1) 躡 tsjäk < \*tjiak; (2) 躡 thjäi- < \*thriat-
51. 'kerchief' 4/42  
 A. Gnxi, QJin: 絡頭 lək dəu < \*(g)lak duah  
 B. NChu, Jiang Xiang: 帛頭 mək dəu < \*mrak duah
52. 'knee covers' 4/5  
 A. Jiang Huai: (alt.) 袂 pjwət < \*pjət  
 B. east and west of the Hangu Pass: 蔽鄰 pjiäi- sjet < \*pjiat- sjiət
53. 'licentious, lewd' 10/11  
 A. Jiuyi, Jing area: 遙 jiäu < \*zahw  
 B. Yuan Xiang: 窳 dieu: < \*diahw:
54. 'locust' 11/7  
 A. Song Wei: 蟻 dək,<sup>1</sup> thəi-<sup>2</sup> < \*dək, thək-  
 B. area beyond NChu: (alt.) 蠶 dəng < \*dəng  
 1) This reading is attested only in *JY*.  
 2) Guo reads WJ \*thəi- (> MC thəi-). This reading is also found in *JY*.
55. 'long' 1/19  
 A. Gnxi, QJin, Liang Yi, HD, Daye: 尋 zjəm < \*zjəng/WH St. zjəm  
 B. SgWeih, Jing Wu: 融 jiung < \*zəngw
56. 'to look at, peek' 10/45  
 A. north of the Yangtze River, NChu (alt.): 謁 thjǟm < \*thrijang-/WH St. thrijam-  
 B. NChu: (alt.) 占 tsjǟm < \*tjang/WH St. tjam

57. 'to love, pity' 1/6  
 A. Han Zheng: 憐 mjwo:, xwo < \*mjah:, hmah  
 B. SgLu: 牟 mjəu < \*mjəhw
58. 'many, exaggerate (< make many)' 1/21  
 A. Qi Song border area: 夥 ywâ:<sup>1</sup> < \*gwai:  
 B. Gnxi, QJin: 夥<sup>2</sup> ywâ: < \*gwai:  
 C. possible St. cognate: 過 kwâ- < \*kwai-  
 1) *GY* also reads MC ywâi:. The reading may reflect a MC dialect which had preserved WH \*-wai in this word.  
 2) *GY* identifies this as a northwest dialect word for guo 過 'to pass, exceed, exaggerate'.
59. 'mat (bamboo)' 5/35  
 A. G, Gnxi: 符簾 yāng dāng < \*gang dang  
 B. Gndng, Zhou Luo Chu Wei: 符簾 yje: jiang < \*ʔjai: zang  
 C. beyond NChu: 簾 dāng < \*dang
60. 'to meet, encounter' 1/29  
 A. Gndng: 逆 ngjək < \*ngjiak  
 B. Gnxi: (alt.) 迎 ngjəng, ngjəng- < \*ngjiang, ngjiang-
61. 'mound' 13/154  
 A. QJin: (alt.) 墟 jiu < zuah  
 B. Gndng: 墟 ləu: < luah:
62. 'odd, uneven' 2/12  
 A. G: 奇 gje < \*gjai  
 B. Gnxi, QJin: 倚 ʔje: < \*ʔjai:  
 C. Liang Chu: 畸 khje < \*khjai
63. 'old' 1/18  
 A. G: 老 lāu: < \*(g)ləhw:  
 B. QJin, Chen Yanh: 考齡 kəu: thəi < \*kuah: thəh 10/40  
 C. NChu, Jiang Xiang: (1) 考 kəu: < kuah:; (2) 華 kək < \*krək; (3) 穢 kǎi-  
 -kjək səi < \*krək--kjək səh
64. 'one, single' 12/111  
 A. NChu: 蜀 zjwok < \*djuak  
 B. possible St. cognate: 獨 duk < \*dük
65. 'to open' 6/50  
 A. G: 開 khəi < khəi  
 B. Chu: 闢 khəi, khəi:, khəi- < \*khəi, khəi:, khət-



66. 'pained, anxious, sad' 1/9  
 A. Ru: 怒 niek < \*niək  
 B. Qin: 悼 dāu- < \*dakw-
67. 'pig' (1) 8/5  
 A. G: 豬 tjo < \*trjah  
 B. Gndng: (alt.) 麩 djäi- < \*drjat-
68. 'pig' (2) 8/5  
 A. Gndng: (alt.) 豕 šje: < \*shjiai: (< \*hrj-?)  
 B. NChu: 豨 xjei, xjei: < \*hjəi, hjəi:
69. 'to pity' 1/7  
 A. Qi Lu: 矜 gjen, kjəŋ < \*gjiš, kjəŋ  
 B. Zhao Wei Yan Dai: 憐 ljəŋ < \*ljəŋ  
 C. possible St. cognate: 憐 ljen < \*ljiš
70. 'pole for suspending a silkworm frame' (1) 5/33  
 A. G, Gnxi: 榷 djwe- < \*drjwai-  
 B. Song Wei, ChChu, Jiang Huai: 植 zjək, đī- < \*djək, drjək-
71. 'pole for suspending a silkworm frame (horizontal type)' (2) 5/33  
 A. Song Wei, ChChu, Jiang Huai: 榷 tāt- < \*tat-  
 B. Qi: 特 tək < \*trək
72. 'to prick, stick' 3/11  
 A. G, Gnxi: 刺 tshje-, tshjäk < \*tshjiai-, tshjiak  
 B. Bei Yan, Chaoxian: 刺 tshək<sup>1</sup> < \*tshriak (Cf. 'to hurt, pain' above.)  
 1) Karlgren (*GS* and *GSR* 868e) reads MC *tshje-*, which he attributes to *QY*. I have been unable to locate this reading in the *QY* versions and fragments.
73. 'to reach' 7/13  
 A. G, St.: 逮 dāi- < \*dət-  
 B. Bei Yan: 噬 zjāi- < \*djat-
74. 'to receive, hold, contain' 6/10  
 A. Qi Chu: 含 yəm < \*gəŋ/WH St. gəm  
 B. Yang Yue: 含 khəm < \*khəŋ/WH St. khəm  
 C. possible St. cognate: 函 yəm < \*gəŋ/WH St. gəm 'to envelop, contain'
75. 'ripe, well-cooked' 7/17  
 A. Gnxi, QJin: 膾 nízi < \*njəh:  
 B. Xu Yang: 饪 níziəm: < \*njəŋ:/WH St. njəm:

76. 'roof covering of a carriage' (1) 9/11  
 A. Song Wei, ChChu: 簷 gjuwong~khjwong lung~lung: < \*gjuang~khjuang (g)luang~(g)luang:  
 B. Gnxi, QJin: 枸簷 kju: ləu~lju: < \*kjuah: (g)luah:~(g)ljuah:  
 C. NChu: (alt.) 隆屈 ljuŋ khjwət < \*(g)ljangw khjwət
77. 'roof covering of a carriage' (2) 9/11  
 A. Xi Long: 檐 bjwən: < \*bjā:  
 B. NChu: 簷 bung < \*buang
78. 'to separate, divide' 6/33  
 A. QJin: 離 lje < \*ljiai  
 B. Chu: 離 lje, liei:<sup>1</sup> < \*ljiai, liai:  
 1) Guo reads WJ \*liei- (> MC *liei-*), which we would reconstruct as WH \*liai-.
79. 'sickle' 5/30  
 A. G, Gnxi: 鉤 kəu < \*kuah  
 B. Jiang Huai, Eastern Chu: 鋤 kwā:, kwā- < \*kwai:, kwai-
80. 'skirt, lower garment' 4/4  
 A. Chen Wei: 裳 phje, phje- < \*phjiai, phjiai-  
 B. Gndng: (alt.) 襪 phje, phje- < \*phjiai, phjiai-
81. 'small' 2/8  
 A. Gnxi, QJin, Liang Yi: 私 si < \*sjəi  
 B. possible St. cognate: 細 siei- < \*siəi-
82. 'son' 10/4  
 A. G: 子 tsī < \*tsjəh:  
 B. confluence of the Xiang and Yuan rivers: 崽 sāi<sup>1</sup> < \*srəh  
 1) Guo reads WJ \*sjəi (> MC *sī:*), which I reconstruct as WH \*sjəh:.
83. 'spider' 11/16  
 A. G, Gnxi, QJin: 蠶 tju mjəu < \*trjuah mjəhw  
 B. Gndng, Zhao Wei: (1) 蠶 tje tju < \*trjiai trjuah; (2) (alt.) 蠶 tšjwok jiu~dzju < \*tjuak zuah  
 C. Bei Yan, Chaoxian, Lieshui: 蠶 duok jiwo < \*dəkw zah
84. 'stupid, confused' 10/31  
 A. G: 愚 xwən < \*hmə  
 B. Chu Yang: 愚 kwən, kwən: < \*kwə, kwə:  
 C. Jiang Xiang: 頓愚 twən- mjwən: < \*twə- mjiš:



85. 'surplus, remainder' 1/4  
 A. Jin Weih: 烈 ljät < \*ljat  
 B. QJin: 孃 ji- < \*ziət-
86. 'to take' (1) 1/30  
 A. Weih Lu, Yang Xu, Jing Heng: 擲 zjəm, dzəm < \*zjəng, dzəng/WH St. zjəm, dzəm  
 B. Gnxi, QJin: 擲 dzjwän- < \*dzrjwä-  
 C. Chu: (alt.) 擲 sjän < \*shjä
87. 'to take' (2) 10/47  
 A. G: 取 tshju: < \*tshjuah:  
 B. NChu: 擲 tsja:, dzja, zja: < \*tsjiah:, dzjiah, zjiah:
88. 'to tremble, shudder' 6/8  
 A. Jing Wu: 震 gjuwong kjwong:~yung < \*gjuang kjuang:~guang  
 B. possible St. cognate: 恐 khjwong: < \*khjuang:
89. 'true, believe' 1/20  
 A. G: 信 sjen- < \*sjiã-  
 B. Qi Lu: 允 jiwen: < \*zwã:  
 C. SgWeih, Ruying: 悔 sjwen < \*sjwã
90. 'true, sincere' 7/11  
 A. DgQi, HD: 展 tjän: < \*trjä:  
 B. Yan: 悖 twən, tsjwen < \*twã, tjwã
91. 'twins' (1) 3/1  
 A. G: 雙生 šäng şəng < \*sruang srang  
 B. Gndng, Zhao Wei: 孿生 şwan--sjwän- şəng < \*srwã~srjwã srang
92. 'twins' (2) 3/1  
 A. ChChu: 孿孿 ljī dzi- < \*ljəh dzjək-  
 B. QJin: 孿孿 ljän: tsi: < \*ljã: tsjəh:
93. 'to want' 6/1  
 A. Jing Wu: 聳 sjwong: < \*sjuang:  
 B. Jin Zhao: 校 (= 獎) tsjang: < \*tsjang:
94. 'wildcat' 8/2  
 A. G: 狸 bi < \*bjiai  
 B. ChChu, Jiang Huai: 狸 lei < \*(g)ləh  
 C. Bei Yan, Chaoxian: 貉 phji < \*phjiəh  
 D. Gnxi: 狸 ljī < \*(g)ljəh

95. 'wily, deceitful' 2/37

- A. G, QJin: 狡 kwai-, kwai- < \*kwat-, krwat-  
 B. Chu Zheng: 狡 jwe: < \*gjwai:

## VI. Some preliminary comparisons

6.1 The data presented in this paper have been assembled with the hope that they may throw light on phonological features which distinguished the WH dialects. It is possible, even probable, that individual examples in the corpus contain evidence of this type. However, it is only when we find groups of two or more examples that we can begin to identify dialect features with any degree of confidence. Isolated examples, interesting though they may be, are of minimal value until some sort of corroboration for them can be found. It is with these points in mind that some preliminary comparisons are attempted in the present section.

6.2 In examining the *FY* text it becomes immediately apparent that the western dialects play a dominant role there. In gloss after gloss, where words from hither and yon are brought together, there is more often than not a western form given for comparison. Now, as we have seen in section IV (note 8), the western dialects seem to have formed a uniform and closely related group; and it is possible that comparisons between them and other dialects further east naturally suggested themselves to people of Yang Xiong's time. On the other hand, there can be little doubt that the presence in the west of the city of Chang-an, capital of China for over two centuries and cultural center for almost as long, had a great deal to do with the prominence given to western dialects in Yang Xiong's work. Indeed, it seems highly probable that the standard language of late WH times was in fact based on a dialect of the Qin Jin area.

In section V the possibility has been raised that the *FY* glossing words may in many cases represent the standard language of WH times. If this is so then many of these words may reflect current western usage as well. There are in fact a number of cases where this can be shown to be true (cf., for example, #s 9, 27, 48, 50, 59, 70, 72, 79, 83, and 95 in the data). In such instances the gloss words in question could, for the sake of argument, be taken as "pseudo-western" forms and compared with words from non-western areas. On the other hand, there are clearly cases where gloss words are different from the current western forms.<sup>14</sup> Here one could consider them to be non-western words and compare them with the corresponding western forms. Both of these procedures will be used below. In all cases the gloss words will of course be identified as such.

Examples will be identified by number and English gloss and will be cited in a somewhat reduced form. MC forms are not given and WH forms are unstarred.



## 6.3 Initial Correspondences.

Western and "Gloss-Standard" voiceless consonants frequently correspond to voiced consonants in corresponding non-Western forms:

	Western		Central and Southern
9. beverage	汁 tjək/tjəp (< *k(r)j-?)		協 giak/giap
36. flail	柳 pjət		杼 bət
44. grass	芥 kriat-		藜 griat
92. twins (2)	子 (ljā) tsjəh:		孪 (ljəh) dzjək-
95. wily	獮 kwat-, krwat-		齋 gjwai:
	Western		Northern
83. spider	龜 trjuah (mjəhw)		鱗 dəkw (zah)
	Western		Gloss
63. old	老 kuah (thəh)		老 (g)ləhw:
	Gloss		Central and Southern
17. chicken	雞 kiai		𪊑 (biak) gjiai
67. pig (1)	豬 trjah		豕 drjat-
89. true	信 sjiā-		允 zwā

Western \*z- corresponds to Central and Eastern \*/- in two examples:

	Western		Central and Eastern
61. mound	塚 zuah		塚 luah:
85. surplus	肄 ziat-		烈 ljat

On the other hand, Central \*z- corresponds to "peripheral" (i.e. Southern, Western, and Northern) dental stops:

	Central		Peripheral
			North Central and Northern
6. basket	篋 zah		篋 thahw
			Southern
31. feed	台 zəh		胎 thəh
			Western
			陶 dəhw
			Western
50. jump	踰 zahw		跳 diəhw
			Southern
59. mat	蓆 (ʔjai:) zang		蓆 dang
			Western
			蓆 (gang) dang

Gloss-Standard \*hm- corresponds to Southern velar + \*-w- initial configurations in the following examples:

	Gloss		Southern
34. fire	火 hmai:		燂 hwəi:
84. stupid	懵 hmō		悞 kwō, kwō:

Western and Gloss-Standard \*k- sometimes corresponds to \*(g)l- or \*/- of other areas:

	Western		Central and Southern
48. hook	鉤 kuah		鹿 luak (krak)
	Western		Gloss
63. old	老 kuah: (thəh)		老 (g)ləhw
	Gloss		Southern
6. basket	篋 kjah; cf. also possible Standard cognate: 篋 k(l)jah:		篋 luah:, ljuah:

On the other hand, Western and Standard \*(g)l- sometimes corresponds to non-Western labial stops:

	Western		Gloss
94. wildcat	狸 (g)ljəh		獾 bjəi
			Northern
			貉 phjiəh
	Possible Standard Cognate		Southern
5. basket	篋 (g)luang		篋 brang

## 6.4 Medial Correspondences.

Western \*-r- corresponds to non-Western -ø- in a number of examples:

	Western		Central, Southern, and Northern
9. beverage	汁 tjək/tjəp (< *k(r)j-?)		協 giak/giap
11. big	壯 tsrjang-		將 tsjang, tsjang-
21. crupper	紉 djəhw:		綯 (khjuah) dəhw
35. firm	錯 khrəi:		錯 khəi:
39. frighten	速 thrakw		透 thuak- ('to jump')
68. pig (2)	豕 shjiai: (< *hrj-?)		豕 hjəi, hjəi:
83. spider	龜 trjuah (mjəhw)		鱗 dəkw (zah), 蠚 tjuak (zuah)
	Western		Possible Standard Cognate
49. hurt	儼 tshriak		刺 tshjai-, tshjiak 'prick'



In recent studies Mei (1979: 128; 1980) and Bodman (1980: 178) have suggested that the modern Min dialects can be suspected of having lost OC **\*\*-r-** at a very early period. The examples cited above may indicate that **\*\* -r-** losing" dialects already existed in eastern China during the late WH period.

Western **\*-j-** corresponds to non-Western **\*-ø-** in the following cases:

	Western	Central and Southern
21. crupper	封 drjəhw:	緇 (khjuak) dəhw
25. dove	鳩 kjəhw	鶻 (lang) kəhw
36. flail	拂 pjət	梓 bət
78. separate	離 ljiai	離 liai <sup>-15</sup>
	Western	Other
		Possible Standard Cognate
81. small	私 sjiai	細 siəi-
		Northern
83. spider	龜 trjuah (mjəhw)	鱒 dəkw (zah)

Here we may note Bodman's observation (1980: 178) that Proto-Min lost earlier **\*-j-** in some cases.

### 6.5 Vowel Correspondences.

Western and Standard **\*ə** corresponds to non-Western **\*a** in a number of cases:

	Western	Other
		Central
26. draw out	緝 mjiā	緝 mjiā
50. jump	跳 diəhw	跳 zahw
55. long	尋 zjəng/zjəm	融 zangw
85. surplus	隸 ziət-	烈 ljat
		Guandong
9. beverage	汁 tjək/tjəp (< *k(r)j-?)	協 giak/giap
		Gloss
27. end	緝 kəng	竟 kjiang
37. fly	蠅 zəng	羊 zang
		Southern
50. jump	踏 tək/təp	蹠 tjiak
	Standard	Northern
73. reach	逮 dət-	噬 djat-

On the other hand, Western **\*a** sometimes corresponds to non-Western **\*ə**:

	Western	Other
		Southern and Central
28. exaggerate	僉 tshjang/tshjam (< **skh(l)-?)	緇 thrjəng/thrjəm (< **hljəm)
52. knee covers	蔽 pjiat- (sjiet)	袂 pjət
63. old	耄 kuah (thəh)	革 krək; cf. also Gloss: 老 (g)ləhw:
66. pained	悼 dakw-	怒 niək w
92. twins	健 ljā: (tsjəh:)	簾 ljəh (dzjək-)
		Northern
83. spider	龜 trjuah (mjəhw)	鱒 dəkw (zah)
	Possible Standard Cognate	Southern
14. broken	破 phai-	敗 pjiai, bjiəi

Several of the Western forms in this list have the diphthong **\*ua** rather than simple **\*a**. Examining Western **\*-ua-** in the data, we find that words with this diphthong have a number of correspondences with non-Western syllables having WH **\*ə** or **\*a** followed by final labio-velar consonants:

	Western	Other
		Central
22. cuckoo (1)	穀 (pak-) kuak	踏 (kiət) kakw-
		Northern
83. spider	龜 trjuah (mjəhw)	鱒 dəkw (zah)
	Western	Gloss
1. abundant	豐 muang; 麗 mruang	豐 phjangw
63. old	耄 kuah: (thəh)	老 (g)ləhw

Southern **\*-ua-** vowel words can also be seen to have correspondences with non-Southern syllables having **\*a** and **\*ə**:

	Southern	Other
		Central and Standard
43. gossip	讒 (ljā) luah--luah:	睥 (lā) ləhw
93. want	贊 sjuang	獎 tsjang:
		Western
77. roof (2)	簷 buang	樑 bjā
		Gloss
6. basket	篾 luah:, ljuah:	簾 kjah:; cf. possible standard cognate: 筥 k(l)jah:
63. old	耄 kuah:	老 (g)ləhw:



On the other hand, there may be a tendency for Southern \**a*-vowel syllables to correspond to Western and Standard words having \**ua*:

	<b>Southern</b>	<b>Western</b>
79. sickle	鋤 kwai:, kwai-	鉤 kuah
	<b>Southern</b>	<b>Gloss</b>
87. take	担 tsjiah:, dzjiah, zjiah:	取 tshjuah:
	<b>Southern</b>	<b>Possible Standard Cognate</b>
5. basket	筲 brang	籠 (g)luang, (g)luang:

Here we may also mention the word *dang* 黨 (*tāng*: < \**tang*:) which is identified in *FY* 1/1 as a Chu dialect word meaning 'to know, understand'. This may be cognate to the modern dialect form *dong* 懂 'to understand'. *Dong* does not occur in early texts, but hypothetical earlier reconstructions for it would be: MC *tung*: < WH \**tuang*: < OC \*\**tungx*. Examples such as this bring to mind certain Min dialects where words with the MC final -*ung* (< \* -*uang* < \*\* -*ung*) regularly have unrounded vowels derived from Proto-Min \**a*, e.g.<sup>16</sup>

	<b>MC</b>	<b>Proto-Min</b>
蟻	mung:	*məŋ-b
銅	dung	*-dəŋ
公	kung	*kəŋ

#### 6.6 Final Consonant Correspondences.

Western \* -*h* corresponds to Central and Southern \* -*k* in the following examples:

	<b>Western</b>	<b>Central and Southern</b>
48. hook	鉤 kuah	鹿 luak (krak)
63. old	考 kuah: (thəh)	革 krək ~ 鞞 krək-(səh)
83. spider	龜 trjuah (mjəhw)	蠍 tjuak (zuah); cf. also Northern 蠍 dəkw (zah)
92. twins	子 (ljā:): tsjəh:	孿 (ljəh) dzjək-

In several cases Western final consonants correspond to non-Western \* -*i*:

#### Western Final -*t*

	<b>Western</b>	<b>Southern</b>
95. wily	獮 kwat-, krwat-	蕪 gjwai:
	<b>Gloss</b>	<b>Central</b>
19. clever	慧 giwət-	鬼 kjwəi:

#### Western Final Velars

	<b>Western</b>	<b>Southern</b>
79. sickle	鉤 kuah:	鋤 kwai:, kwai-
	<b>Western</b>	<b>Gloss</b>
94. wildcat	狸 (g)ljəh	獾 bjəi
	<b>Western</b>	<b>Possible Standard Cognate</b>
49. hurt	懷 tshriak	刺 tshjiai-; (n.b. also read tshjiak)

In three examples Western oral consonants correspond to non-Western nasals:

	<b>Western</b>	<b>Other</b>
		Northern
9. beverage	汁 tjək/tjəp (< *k(r)j-?)	斟 tjəŋg/tjəm (< *k(r)j-?)
		Eastern
75. ripe	脯 njəh	甞 njəŋg:/njəm:
		Central/Southern
76. roof (1)	枸簍 kjuah: (g)luah:	筲 籠 khjuang (g)luang

In the following cases Western open, nasalized finals correspond to non-Western finals ending in \* -*ng*:

	<b>Western</b>	<b>Southern and Central</b>
77. roof (2)	樞 bjā	蓬 buang
86. take	搨 dzrjwā-	搏 zjəŋg, dzəŋg/zjəm, dzəm
	<b>Western and Northwest</b>	<b>Mid Central</b>
	<b>Central</b>	
33. fierce	攔 grā:	梗 krang:
	<b>Gloss</b>	<b>Central</b>
18. cicada	蟬 djā:	蟾 dang (diəhw)
	<b>Possible Standard</b>	<b>Central</b>
	<b>Cognate</b>	
69. pity	憐 ljīā	憐 ljəŋg

#### 6.7 Tone Correspondences.



The following tendencies appear among tone correspondences in the data:

6.7.1 Western and Gloss Standard *ping* : Non-Western *shang*

	Western		Southern and Eastern
75. ripe	肺 njəh		任 njəŋ:/njəm:
79. sickle	鉤 kuah		鑷 kwai:, (kwai-)
	Western		Gloss
27. end	緝 kəŋ		竟 kjiang:
	Gloss		Southern
65. open	開 khəi		開 khəi:, (khəi, khət-)
84. stupid	憎 hmə		棍 kwə:, (kwə)

Cf. also,

	Central (Western Part)	Central (Eastern Part)
57. true	恂 sjwə	允 zwə:

6.7.2 Western and Gloss-Standard *shang* : Non-Western *ping*

	Western		Southern and Central
21. crupper	紂 drjəhw:		綯 (khjuak) dəhw
62. odd	倚 ʔjai:		踦 khjai
	Gloss		Southern and Central
18. cicada	蟬 djā:		蟬 dang (diəhw)
82. son	子 tsjəh:		崽 srəh
87. take	取 tshjuah:		祖 dzjiah, (tsjiah:, zjiah:)

Compare also,

	Central (Western Part)	Central (Eastern Part)
57. love	撫 mjah:, (hmah)	牟 mjəhw

6.7.3 Western and Gloss Standard *ping* : Non-Western *qu*

	Western		Southern
78. separate	離 ljiai		離 liai- <sup>17</sup>
	Western		Gloss
81. small	私 sjəi		細 siəi-
	Gloss		Central and Eastern
67. pig	豬 trjah		豕 drjat-

6.7.4 Western and Gloss-Standard *qu* : Non-Western *shang*

	Western		Southern and Central
24. worry about	憚 dā-		憚 tjā:, thjā:
95. wily	獮 kwat-, krwat-		蕪 gjwai:
	Gloss		Central
19. clever	慧 giwət-		鬼 kjwəi:
89. true	信 sjjə-		允 zwə:

6.7.5 Western and Gloss-Standard *qu* : Non-Western *ru*

	Western		Southern
44. grass	芥 kriat-		藎 griat
52. knee covers	蔽 pjiat- (sjjət)		被 pjət
66. pained, sad	悼 dakw-		愨 niəkw
	Western		Central
85. surplus	隸 zjət-		烈 ljat
	Gloss		Central
19. clever	慧 giwət-		黠 griat

## VII. Concluding remarks

In this paper a number of suspected *FY* cognates have been brought together in what is hopefully a convenient format. The comparisons in section VI are offered as indications of the sorts of studies which might be carried out on the *FY* data. Whether or not such comparisons can ultimately lead to phonological reconstructions seems uncertain. We must not forget that (1) the WH reconstructions arrived at for the various *FY* examples are already projections of projections (i.e. projections of the reconstructed MC system) and not "real" dialect forms, and (2) we are unable to say with certainty how the compilation of *FY* was done or what sort of phonological criteria Yang Xiong used in collecting and committing to writing the various dialect synonyms in the text. On the positive side, however, we may take heart in the fact that certain words in the data appear several times in the various tables in section VI, providing comparisons of more than one of the elements in the syllables in question and suggesting that real rather than imagined or fortuitous dialect correspondences are involved. The identification of such correspondences, while not necessarily leading to the reconstruction of proto-forms, may ultimately give rise to a comparative *Lautlehre* for Han and perhaps even earlier dialects. Tools of this type have enabled scholars in other areas, such as Indic and Germanic studies, to identify with considerable precision the temporal and regional origins of their texts. It is to be hoped that a better understanding of ancient dialectology



will eventually bring to sinology a similar level of philological control over early Chinese sources.<sup>18</sup>

### Notes

- 1) A list of these studies will be found in the bibliography of the present paper.
- 2) The problem has also been reviewed by Knechtges (1977–8).
- 3) This discussion does not appear in Serruys (1959) and has unfortunately never been published.
- 4) Considerable controversy surrounds the authenticity of the “appended letters.” Serruys (1955) and Knechtges (1977–8) argue convincingly that they are genuine.
- 5) For *ji* 齏 Knechtges (op. cit., note 44) translates “provided myself” from the word’s basic sense, ‘to furnish’. I prefer to take it in the sense ‘to hold, take along with’ which is attested in various Han texts. It is of course possible that the latter sense is derived etymologically from the former one.
- 6) The syllables *qian* 鋏 and *zhe* 摘 here may be identifiable with the term *qianzhe* which occurs in Six Dynasties texts meaning ‘to correct with lead’. Lead was used as a correcting and erasing medium in Han times. On the use of *zhe* in the sense ‘to correct, put in order (< to pluck, prune?)’ see *SW* (*SWGL* 5430a-b).
- 7) The following conventional spellings are adopted for the names of two dialect areas: 衛 Weih, 兗 Yanh.
- 8) Serruys (1959: 80–81) remarks that the western dialects designated by the general term Guanxi, “West of the (Hangu 函谷) Pass,” form a fairly uniform block. On the other hand, the term Guandong, “East of the (Hangu) Pass” does not imply a unity of this sort, for it can refer either to the non-western dialects as a group or to smaller units limited by other eastern areas.
- 9) Serruys (1959: 86–87) notes that the position of Jin in the classification is somewhat ambiguous. Though it had been almost completely absorbed by the Qin dialect, occasional contacts reveal affinities with the northern and the northeastern dialects. For this reason he places it in both the western and northern groups. Luo and Zhou assign it exclusively to the western group, and I follow them.
- 10) Serruys (1959: 88) remarks that Wei has close affinities with the Zhou Zheng Luo Han group of central dialects.
- 11) Zhao seems to have been a pivotal area. Serruys groups it with the northeast dialects, while Luo and Zhou place it with Wei. In Serruys’ tabulation (1959: 87) it has eighteen contacts with Wei and the central dialects and thirteen with the northern and northeastern group. For this reason I tentatively place it with Wei among the central dialects. The point is problematical.
- 12) Huai and Xu seem to have occupied very much the same area. See Serruys (1959: 206, Map 4; and Endpaper).
- 13) One example of this type, #38, is cited in the data on the grounds that it may be possible to distinguish areally the forms cited in it.
- 14) This need not be viewed as contradictory. It would in fact be odd if the WH standard envisaged here contained no non-western elements at all, particularly in view of the cultural and political importance of eastern China in late Zhou times.
- 15) Guo Pu’s reading.
- 16) I am grateful to Professor Jerry Norman for supplying these Proto-Min forms.
- 17) Guo Pu’s reading.
- 18) As examples of the application of such methods to the study of early Chinese texts, see Luo and Zhou’s discussion of the authorship of the *Yilin* 易林 (1958: 89–97) and Long Hui’s study of previously unknown texts from Mawangdui (Long 1975: 28–31).

### Signs and abbreviations

- \* Reconstructed Han and WJ forms
- \*\* Reconstructed OC forms
- EH Eastern Han (A.D. 25–220)
- EY *Erya* 爾雅 (cited according to Harvard-Yenching Institute Sinological Index Series, Supplement No. 8, *Index to Erh Ya*. Reprint, Taipei, 1966)
- FY *Fangyan* 方言 (cited according to Zhou 1951)
- FYSZ *Fangyan shuzheng* 方言疏證 of Dai Zhen 戴震 (edition: *SBBY*)
- GS *Grammata Serica* (Karlgren, 1940)
- GSR *Grammata Serica Recensa* (Karlgren, 1964)
- GY *Guangyun* 廣韻
- HS *Hanshu* 漢書 (edition: *Zhonghua shuju*, Peking, 1965)
- JY *Jiyun* 集韻
- KGXB *Kaogu xuebao* 考古學報
- MC Middle Chinese or Ancient Chinese
- QHXB *Qinghua xuebao* 清華學報
- QY *Qieyun* 切韻
- SBBY *Sibu beiyao* 四部備要
- SW *Shuowen jiezi* 說文解字
- SWGL *Shuowen jiezi gulin* 說文解字詁林 (Ding 1928)
- WH Western Han (206 B.C.–A.D. 24)
- WJ Wei-Jin 魏晉 (264–419 A.D.)

### Bibliography

- Bodman, Nicholas C. 1980. “Proto-Chinese and Sino-Tibetan: data towards establishing the nature of the relationship,” *Contributions to Historical Linguistics: Issues and Materials*. Frans Van Coetsem and Linda Waugh, eds. Leiden. Pp. 34–199.
- Coblin, W. South. 1974–5. “The Initials of the Wei-Chin Period as Revealed in the Phonological Glosses of Kuo P’u and Others,” *MS* 31: 288–318.
- . 1977–8. “The Initials of the Eastern Han Period as Reflected in Phonological Glosses,” *MS* 33: 207–247.
- . 1978. “The Initials of Xu Shen’s Language as Reflected in the *Shuowen Duruo* Glosses,” *JCL* 6: 27–75.
- . 1982. “Notes on the Western Han Initials,” *QHXB* 14: 111–133.
- . 1984. “The Finals of Yang Xiong’s Language,” *JCL* 12: 1–52.
- Ding Fubao 丁福保. 1928. *Shuowen jiezi gulin* 說文解字詁林. Shanghai.
- Karlgren, Bernhard. 1940. *Grammata Serica*. *BMFEA* 12: 1–471.
- . 1954. “Compendium of Phonetics in Ancient and Archaic Chinese,” *BMFEA* 26: 211–367.
- . 1964. *Grammata Serica Recensa*. Stockholm.
- Knechtges, D. R. 1977–8. “The Liu Hsin/Yang Hsiung Correspondence on the *Fang Yen*,” *MS* 33: 309–325.
- Li Fang-kuei 李方桂. 1971. “Shangguyin yanjiu” 上古音研究, *QHXB* 9: 1–60.



- . 1976. "Jige shanggu shengmu wenti" 幾個上古聲母問題, *Jianggong shishi zhounian jinian lunwenji* 蔣公逝世週年紀念論文集. Taipei. Pp. 1143–1150.
- Long Hui 龍晦. 1975. "Mawangdui chutu 'Laozi' yibenqian guyishu tanyuan" 馬王堆出土《老子》乙本前古佚書探原, *KGXB* 1975.2: 23–31.
- Luo Changpei 羅常培 and Zhou Zumo 周祖謨. 1958. *Han-Wei-Jin Nanbeichao yunbu yanbian yanjiu* 漢魏晉南北朝韻部演變研究. Peking.
- Mei, T. L. 1979. "Sino-Tibetan 'Year', 'Month', and 'Vulva'," *QHXB* 12: 117–133.
- . 1980. "A Common Etymon for 之 *chih* and 其 *ch'i* and Related Problems in Old Chinese Phonology." Paper presented at the International Conference on Sinology, Academia Sinica, 1980.
- Miller, Roy A. 1975. "The Far East," *Current Trends in Linguistics*, vol. 13, pp. 1213–1264.
- Serruys, Paul L.-M. 1952. "The Names of the Lizard in the Old Chinese Dialects," *Orbis* 1: 489–499.
- . 1953. "The Name for the Wildcat in Fang Yen," *Oriens* 6: 354–371.
- . 1955. "Prolegomena to the Study of the Chinese Dialects of Han Time According to Fang Yen." Unpublished Doctoral Dissertation, University of California, Berkeley.
- . 1958. "The Word for 'Salt' in Shuo Wen," *Oriens* 11: 203–223.
- . 1959. *The Chinese Dialects of Han Time According to Fang Yen*. Berkeley.
- . 1960, 1962, 1967. "Five Word Studies on Fang Yen." Part I: *MS* 19: 114–208; Part II: *MS* 21: 222–319; Part III: *MS* 26: 255–285.
- Ting, Pang-hsin. 1975. *Chinese Phonology of the Wei-Chin Period: Reconstruction of the Finals as Reflected in Poetry*. Institute of History and Philology, Academia Sinica, Special Publication, no. 65. Taipei.
- Zhou Zumo 周祖謨. 1951. *Fangyan jiaojian ji tongjian* 方言校箋及通檢 [Index du Fang-yen (Texte établi par Tcheou Tsou-mo)]. Université de Paris, Centre d'études sinologiques de Pékin.

## A NEW APPROACH TO CHINESE HISTORICAL LINGUISTICS

*Jerry L. Norman and W. South Coblin*

Source: *Journal of the American Oriental Society* 115, 4, 1995, 576–84.

The received model of Chinese linguistic history, and its associated historical linguistic methodologies, are found wanting in various respects. In particular, the latter field has become divorced from the study of actual spoken forms of Chinese of various places and periods and has instead focused almost exclusively on the exegesis of abstract sets or "systems" of philological data. A call is therefore issued for a new approach which refocuses the field on its appropriate object—the comparative and historical study of human speech in China.

### Introduction

A STRIKING FEATURE OF SPOKEN Chinese is the large number of diverse forms in which it manifests itself. The historical record indicates that these divergent entities, called *fangyan* 方言 in China and usually referred to as "dialects" in the West, have been present since at least the first millennium B.C. They have been the warp and woof of Chinese linguistic history for over three thousand years. Indeed, a history of spoken language in China would by definition be an accounting of the development of the phonology, grammar, and lexicon of the Chinese dialects, from their earliest recoverable stages to the present.

The story of the dialects is intimately connected with the political and social history of the Chinese people. In particular, the complex process through which the Chinese have moved out of their original base areas in north China to settle in other regions has left an indelible stamp on linguistic history. In order to study dialect history it is necessary to develop and refine a historical model for language movement and change in China.

### The traditional model of Chinese linguistic history

The first full-blown model for Chinese linguistic history was propounded by Bernhard Karlgren. This scheme has been enormously influential among Sinologists



during the last seventy years, and it is therefore worthwhile to examine carefully both its explicit propositions and its implied assumptions. It reached its final and most mature form in Karlgren's *Compendium of Phonetics in Ancient and Archaic Chinese* (1954), and it is to this source that we shall now turn.

The centerpiece of Karlgren's model is his "Ancient Chinese." On this topic he says (p. 212):

By "Ancient Chinese" we designate the language around 600 A.D. codified in the dictionary *Ts'ie yün*, essentially the dialect of Ch'ang-an in Shensi; during the lapse of the T'ang era it became a kind of Koine, the language spoken by the educated circles of the leading cities and centres all over the country, except the coastal province of Fukien.

In a footnote this is elaborated as follows:

It stands to reason that the lowest strata of the population in various provinces to a large extent preserved their vulgar dialects and that traces of these "pre-T'ang" dialects are still discernible in various t'u-hua vernaculars. But the Koine was sufficiently widespread and accepted by a sufficiently large proportion of the population, from the highest officials down to the lower middle class, to have become the ancestor of nearly all the present dialects (except the Min dialects in Fukien and adjacent regions). The remarkably close correspondence between the sound categories in the *Ts'ie yün* and those in each modern dialect conclusively shows that the *Ts'ie yün* depicts a real living and homogeneous language and was not an artificial product, a compromise and *mixtum compositum*, made up of heterogeneous elements from various dialects, as stated by many recent writers.

Moving backward, we have at an earlier stage "Archaic Chinese," about which Karlgren remarks (*loc. cit.*):

Archaic Chinese, . . . means the language of the Honan region during the first Chou centuries (from 1028 B.C.). It is revealed partly by the rimes in the Book of Odes (*Shi king*) and other early texts, partly by the *sheng* characters . . .

And further we find (p. 271):

In going back to Archaic Chinese in order to attempt to reconstruct its sound system, we naturally have to base ourselves on the Ancient Chinese just reconstructed. The modern dialects do not on the whole reveal anything which is prior to the *Ts'ie yün* in the Sui dynasty (the Min dialects alone sometimes point further backwards).

To begin, we note Karlgren's deep concern with phonology. Though he views his Archaic Chinese and Ancient Chinese as real, spoken dialects, for him it is *phonological systems* that define these dialects and give them their real identity in his work. What Karlgren thought about the grammars and lexicons of these particular dialects we do not know, because he seldom mentioned such questions. In any case, practically speaking, Ancient Chinese and Archaic Chinese were for Karlgren phonological systems in the abstract rather than "languages" in the concrete sense of the word.

Karlgren clearly states that his Ancient Chinese is the dialect of the city of Chang'an 長安 in southern Shaanxi in ca. 600 A.D. Archaic Chinese, on the other hand, is the language of the Hernan area in ca. 1000 B.C. The former is treated as directly descended from the latter. Or, more literally, the *sound system* of the medieval Chang'an dialect is "naturally" to be taken as the basis for reconstructing the *sound system* of the Jou-time Hernan dialect. Thus, the two are viewed by Karlgren as if they were different stages in the history of the same dialect.

Karlgren held that contemporaneous with Ancient Chinese there were outside of Chang'an "vulgar dialects" in other areas, but the pre-T'ang history of these dialects does not form part of his historical model. He flatly states that the Chang'an dialect became a koine during the T'ang period. It is important to note here that this supposition does not seem to be based on historical accounts concerning such a koine, contemporary or later references to it in early sources, etc. On the contrary, its existence is inferred from correspondences between the reading pronunciations of characters in the modern dialects and the sound categories of the *Chieh-yün* 切韻. And again it is worth noting that, practically speaking, this koine seems to be viewed by Karlgren as a sound system rather than a full language. The grammar of the koine is never mentioned, and its lexicon is apparently indistinguishable from the large corpus of characters in the *Chieh-yün* dictionary.

Karlgren's discussion of the T'ang koine involves a number of sociological and sociolinguistic assumptions that deserve notice here. For example, he explicitly states that Chinese society of T'ang times possessed an upper class, consisting of "the highest officials," and a "lower middle class." Between these he presumably also assumed at least a middle and/or an upper-middle class, and below the lower-middle class there were, at the least, the "lowest strata of the population." And there is in his treatment of these matters an implicit assumption that these social classes possessed unique speech habits. The picture he envisages is therefore not unlike what one might encounter in a northern European country in the late nineteenth century. How well it corresponds to historical and sociological reality in T'ang China remains problematical.

Karlgren states that the T'ang koine was adopted by everyone down to the lower-middle class, while the lowest strata "to a large extent preserved their vulgar dialects." Eventually, however, the koine would seem to have somehow overcome and supplanted the "vulgar dialects" so that now only "traces of these 'pre-T'ang' dialects are still discernible in various t'u-hua vernaculars."



“Discernible,” it would seem, because they are irregular, i.e., they do not agree with the sound classes of the *Chiehyunn* system. What is “regular” is what agrees with the *Chiehyunn* system. This regular material is derived from the koine; and the existence of the koine is itself predicated on the existence of the regular material.

In summary, then, Karlgren’s historical model posits Archaic Chinese as the dialect of Hernan in 1000 B.C. This language is viewed as the direct origin of the Charng’an dialect of 600 A.D., called Ancient Chinese. Ancient Chinese became the Tarng koine, which then supplanted most other current vernaculars, first in the lower-middle and higher classes and later more generally. The study of Chinese historical phonology is then the study of the development of Archaic Chinese to Ancient Chinese and of Ancient Chinese to the “non-vulgar” elements of the modern dialects.

### Modifications and reformulations of the traditional model

Karlgren’s model has undergone certain modifications during the four decades after it reached its final form. First, the view of Archaic Chinese, now more often called “Old Chinese,” has been broadened from its originally rather narrow base. For example, F. K. Li suggested that it was the language of the north China plain in Jou times (Li 1983), which would presumably allow it to be ancestral to a fairly large number of subsequent speech forms used in this broader geographical area. More recently, Baxter (1992: 24) defines Old Chinese as “any variety of the Chinese of early and mid Zhōu” and remarks that “we can speak of dialects and stages of Old Chinese.” This view of Archaic/Old Chinese is, of course, much broader than that of Karlgren. But in the same passage Baxter speaks of “the reconstruction of Old Chinese” as a task specifically and exclusively concerned with phonological studies, indicating that Karlgren’s primary concern with phonology still holds sway in current models of Chinese linguistic history.

Karlgren’s concept of Ancient Chinese has been directly challenged by later authorities. First of all, it is now universally accepted that the *Chiehyunn* cannot reflect the Charng’an dialect of 600 A.D. On the contrary, it seems to be associated with the dialects of several different cultural centers of east central China, namely Luohyang 洛陽, Yeh 郢, and Jinling 金陵 (modern Nanking). A small minority of scholars believes that the Luohyang dialect is the specific basis for the system. Most others view it as a maximally differentiated compromise between the reading traditions of all three areas, further complicated by the inclusion of distinctions attested in various earlier rime dictionaries. As they stand, these views seriously contradict the flow of the Karlgrenian model, because, if the Tarng koine is presumed to derive from Charng’an, then the *Chiehyunn* system cannot be the basis for the Tarng koine.

This point in turn leads us to a more detailed consideration of Karlgren’s position and involves the famous rime tables of Song times. Karlgren was

primarily interested in only one of these, about which he has the following to say (p. 215):

... a brilliant Sung scholar, the famous Sī-ma Kuang, has given a fine survey of the sound system in his own language in the form of a series of Sound tables, called Ts’ie yün chī ch’eng [sic] t’u (A.D. 1069). The language which these tables reveal is far advanced, in the evolution, from that of the Ts’ie yün; above all, a great simplification has taken place, so that e.g. two or several Ts’ie yün finals (well distinguished both by rimes and by fan-ts’ie) have coincided in Sī-ma’s language. But the tables are very valuable indeed, for when the same distinctions in categories are observable in them as in the Ts’ie yün, we may reasonably expect that the phonetic ground for these distinctions is the same for both.

Karlgren’s ascription of the *Chiehyunn Jyyjaangtwu* 切韻指掌圖 to Symaa Guang 司馬光 is not accepted today, but this is really beside the point here. What is important is his general view of rime tables. First, he considered a rime table to be a “survey of the sound system” of the author’s *own language*, rather than an analysis of the *Chiehyunn* system per se. Secondly, however, he felt that, where the same distinctions are found in a rime table as in the *Chiehyunn*, “the phonetic ground for these distinctions is *the same for both*” (emphasis added). That the phonological systems revealed in the rime tables should be directly descended from the *Chiehyunn* system is a reasonable assumption from Karlgren’s standpoint, because later dialects are held by him to derive from the Tarng koine, which in turn comes from Ancient Chinese. But why the same phonetic grounds should necessarily be assumed for parallel distinctions in different periods remains unclear. Nevertheless, this was Karlgren’s position, and he held to it in his reconstructive work.

Subsequent generations of Chinese historical phonologists have replaced the *Chiehyunn Jyyjaangtwu* with the *Yunnjing* 韻鏡. The earliest known editions of this work date from the late twelfth century, or nearly 600 years after the *Chiehyunn*. The authorship, age, and place of origin of the *Yunnjing* are unknown. In general, the text has been used by subsequent workers in Ancient (now usually called “Middle”) Chinese studies in much the same way that Karlgren prescribed for the *Chiehyunn Jyyjaangtwu*. Karlgren’s idea that the sound tables were, in reality, based on their authors’ own languages rather than on the “*Chiehyunn* language” tends to be passed over in virtual silence in favor of a tacit position that the *Yunnjing* may serve as a sort of guide to the *Chiehyunn* system. But this does no harm to the general Karlgrenian approach because Karlgren himself had said that distinctions common to both sources should represent the same phonetic realities. Thus, those who utilize the *Yunnjing* as a sort of latticework through which to view the *Chiehyunn* have tended to forge ahead with little or no comment on the actual historical relationship between the two systems. An exception to this, however, is E. G. Pulleyblank, who has attempted a reformulation of the



Karlgrenian position (1984). With just about everyone else today, Pulleyblank rejects the notion that the *Chiehyunn* system reflects the Charng'an dialect of any period. But he accepts Karlgren's hypothesis that there was in fact a Tarng koine and that it derived from Charng'an. And he further holds that the *Yunnjing* is based on this Tarng koine and thus on the Charng'an dialect. Indeed, he fully adopts Karlgren's original stance that the rime tables are a "phonetic analysis" of this dialect (p. 68). And finally, he believes that, although the *Chiehyunn* system, which he calls "Early Middle Chinese," and the *Yunnjing* system, which he calls "Late Middle Chinese," had different dialect bases and different lines of historical development, they can nonetheless be treated as if the latter had evolved directly from the former (p. 130). Thus, Karlgren's original link between the *Chiehyunn* and the rime tables is maintained and the rime tables in turn are enlisted to provide the crucial connection to the Tarng koine. To this is then added an endorsement of the role of the koine as ancestor of all modern dialects save Miin (p. 63). Thus, in Pulleyblank's work the basic structure of the Karlgrenian model is rescued from its historical and geographical inaccuracies, buttressed with some of Pulleyblank's own theories, and in the end preserved in all its essentials. In its new reformulation it can justifiably be called the neo-Karlgrenian or even the Karlgren/Pulleyblank model.

#### Problems in the neo-Karlgrenian model and its associated methodology

The neo-Karlgrenian Model can be broken down into a number of discrete claims (A through D, below) concerning the nature of the *Chiehyunn* system and the origin of the Chinese dialects.

**A. *There was in early medieval China a real, living language (Ancient Chinese or Early Middle Chinese), which was essentially identical to that codified by Luh Faayan 陸法言 in the Chiehyunn dictionary.***

What did Luh Faayan actually codify in the *Chiehyunn*? The *Chiehyunn*, as is abundantly clear from its preface, was chiefly based on earlier dictionaries. These dictionaries were in turn based on the glossing tradition of the post-Hann period. Although all the rime books mentioned in Luh Faayan's preface are now lost, they were undoubtedly, for the most part, practical handlists of character readings employed by teachers and students of the time. In working over this material, Luh Faayan probably took into account the elegant reading pronunciations employed in the north and the south. The result was naturally a composite phonological inventory containing elements from earlier periods as well as elements from different regions of China.

It is interesting to note that such a view has prevailed in China for a long time, as the following citations illustrate.

Luo Charngeir 羅常培, in his 1933 work *Tarng wuuday shibeei fangin* 唐五代西北方音, expresses himself in this way:

Moreover, by nature the *Chiehyunn* was originally a phonological inventory that lumped together elements from north and south and earlier and contemporary sources. Although it was comprehensive as regarded contemporary dialects there was no single dialect with which it agreed completely.

(Luo 1933: 1)

Luh Jyhwei 陸志韋, in his book *Guuin shuoliueh* 古音說略 (1947), said the following:

Karlgren has a third defect. He resolutely maintains that the *Chiehyunn* represents a koine [guanhuah] of Luh Faayan's time, and that moreover it was the dialect of Charng'an. It is abundantly clear from the *Chiehyunn* preface that this book is a composite of north and south and of ancient and contemporary elements and that it was not based on Luh Faayan's individual views. The *faanchieh* were copied from rime books of the Six Dynasties period.

(p. 2)

A few pages later he adds,

The *Chiehyunn* represents a summa of Nanbeeichaur Chinese and does not represent any single dialect.

(p. 3)

The next citation is from Chen Ynkeh's 陳寅恪 1949 article "Tsorng shyysyhyr lunn Chiehyunn" 從史實論切韻:

Luh Faayan himself relates that his book was written using the record of his discussions with Liou Jen and seven other people as a criterion for selecting among the rimes of various authors and determining the merits of older and more recent dictionaries. For this reason, the phonological system of this book [*Chiehyunn*] was certainly not a dialect in current use at one particular time and place.

(1949 [1974]: 574)

Later, Kun Chang and Betty Shefts, speaking from the same intellectual tradition, observe:

The *Ch'ieh-yiin* does not represent the Ch'ang-an dialect, nor did its author intend that it should. They aimed not at representing one coherent, natural system but rather at synthesizing a number of systems set forth



earlier in such varied dictionaries as those of Lü Ching, Hsia-hou Yung, Li Chi-chieh, and Tu T'ai-ch'ing.

(1972: 2)

Finally, let us quote Wang Lih 王力 in his last published work, *Hannyeu yeuin-shyy* 漢語語音史:

The *Chiehyunn* does not represent at all the phonological system of a single place and time. Luh Faayan himself said, "the rimes accepted in Jiangdong and Herbee are different; so we discussed the merits of north and south and what was permissible formerly and at the present time; we wished to select what was refined and precise and to eliminate what was coarse and imprecise. Most decisions were made by Yan [Jytuei] and Shiao [Gai]." Very clearly the *Chiehyunn* is by nature a book concerned with preserving ancient elements.

(1985: 5)

Later in the same work he says,

Formerly some said that the *Chiehyunn* phonological system was the system of the Swei-Tarng period. In fact, the *Chiehyunn* does not represent the system of a single place and time.

(p. 165)

From these quotes it is evident that, for more than fifty years, a strong current of thought in China has viewed the *Chiehyunn*, not as the record of a dialect of a particular place and time, but as a kind of composite phonological inventory based on earlier works and different regional usage.

It would appear then that the *Chiehyunn* represents the culmination of a tradition, the phonological glossing tradition of the northern and southern dynasties. It was a canonization of tradition and not a new departure. It was, in fact, a profoundly conservative work. It may well be, as Jou Tzuumo 周祖謨 has suggested, that the late Nanbeeichaur reading pronunciation taught in Jinling was a particularly influential factor in the compilation of the *Chiehyunn*, but this does not rule out the strong likelihood that it depended extensively on earlier rime books. In fact there may well be something to the view espoused by Chen Ynkeh and later by Shaw Rongfen 邵樂芬 that in some sense the *Chiehyunn* represents the dialect of Luohyang. After all, the scholars of sixth-century Jinling, it is generally agreed, were descendants of the officials and scholars who fled from Luohyang at the end of the Western Jinn. Luohyang, the old capital, as W. J. F. Jenner has pointed out, "conjured up images of splendor and high civilization" long after it had ceased to be a capital and had become no more than a country town. "Like Jerusalem or Rome, Loyang was as much a symbol as a real place" (1981: 45). Thus, when Yan Jytuei 顏之推 in the "Intsyrt" 音辭 chapter

of his *Yanshyh jiashiunn* 顏氏家訓 referred to Luohyang and Jinling as the two standards of refined usage, it was not the real Luohyang of his day but this symbolic Luohyang which lived on as a norm of cultural judgement and ideal of refined usage long after its destruction in 311. The Jinling dialect he referred to was not the common everyday language of the man on the street but a learned book pronunciation taught in schools.

It seems clear that the *Chiehyunn* does not represent a record of any spoken dialect of a certain place or time; it is rather an inventory of a tradition of phonological glossing. As such, the *Chiehyunn* system is not really a language in any common sense of the term. Not only does it not provide us with a consistent phonological system that can be pinpointed in time or space, it is not the lexicon of any particular dialect. It includes together, indiscriminately, words from texts of all periods without any indication of which of them were actually current in any living form of speech. Furthermore, there are no texts in anything that we could call "Ancient Chinese," if by this we mean texts that reflect even in a remotely complete way the form of any contemporary language. In the absence of such texts, "Ancient Chinese" has no linguistic structure.

The conclusion must be that Ancient Chinese (or Early Middle Chinese, which is only another name for the same thing) has no proper phonology of its own, no lexicon and no grammar. It is not a language.

**B. A later, redefined Ancient Chinese (Late Middle Chinese), was the dialect of the Tarng capital Charng'an and was codified in the Yunnjinq sound tables.**

There seems to be no historical basis for this claim at all. The temporal and regional origins of the *Yunnjinq* are obscure in the extreme. We have no "Yunnjinq Preface" to tell us who wrote the text or why. No contemporary or later Chinese source has ever associated the *Yunnjinq* with either Charng'an or the early northwest dialects in general. The dialectal foundation of this text, if indeed such a thing can ever be determined, is a topic for future research rather than an established fact on which assumptions about the dialect of the Tarng capital can be based.

**C. The Tarng Charng'an dialect in the course of the dynasty became a koine which spread to all parts of the empire and, by and large, replaced the pre-Tarng dialects.**

As shown above, the *Chiehyunn* system was not based on the dialect of Charng'an. Pulleyblank, who agrees with this position, nonetheless still contends that all modern Chinese dialects with the exception of Miin derive from a Tarng koine based on the dialect of Charng'an, but that this dialect is reflected not in the *Chiehyunn* but in later sources, chiefly the rime tables. In his view, the present dialectalization of China can be traced back to a Charng'an-based koine of the eighth and ninth centuries.



Curiously no one ever adduces any historical evidence for either of these views. In Chinese historical linguistics there has been a strong tendency to assume that the administrative lingua franca (called *guanhuah* beginning in the Ming dynasty) was necessarily based on the dialect of the current capital. But, as an interesting case in point, recent work by Luu Gwoyau (1985) and Paul Yang (1989) has shown that the Ming and Ching *guanhuah* was actually not based on the local dialect of the capital, Beeijing, but was a variety of Southern (Jiang-Hwai 江淮) Mandarin. In fact, the common administrative languages of the past are what we might call "floating norms" that derive their cohesiveness only from the practical requirement that they allow officials from various parts of the country to communicate with one another. Furthermore, even if the Chang'an dialect of Tang times enjoyed considerable prestige, being the dialect of the capital city, this by no means shows that it replaced all the other regional dialects of the time. Chang'an was capital of China for a period of 326 years in the Swei-Tang period. Beeijing was capital for 490 uninterrupted years in the Ming and Ching dynasties, yet despite a policy of strong centralization in both the Ming and Ching periods, the dialect of Beeijing seems to have had very little influence on local dialects. Now, compared to the Ming or Ching, the Tang was probably not really all that strong a dynasty for a significant portion of its history. After the An Luhsat rebellion it was in fact somewhat sickly (Twitchett 1979: chap. 8). The question of how greatly the Chang'an dialect influenced local vernaculars in the Swei-Tang period is in need of serious re-evaluation.

And at this point one might well ask how apt Karlgren's koine analogy is in the first place. In his *Etudes sur la phonologie chinoise* (1915-26: 693, note 2) he says:

Chinese thus offers an interesting parallel to Greek, almost all of whose modern dialects derive from the Hellenistic koine, while virtually all the dialects of the classical period had disappeared.

Subsequently Karlgren uses this analogy in several of his writings. But is the Greek koine really an appropriate model for Chinese linguistic history? We believe it fails on several accounts. The Greek koine was formed in the fourth century B.C. and spread by the armies of Alexander the Great in the same century. In the cities, dialectal Greek disappeared in the two centuries before the Christian era. In Greece proper (but not in the diaspora), and particularly in remote areas of the Peloponnese, dialect speech, or a form of koine heavily colored by dialectal features, persisted for several centuries (Browning 1983). Karlgren posits a Chinese koine based on the dialect of Chang'an, spreading through China in the seventh century A.D.; Pulleyblank's model dates the koine's spread even later—after the eighth century. In both these models modern Chinese dialectal diversity develops in a time frame of eleven or twelve centuries, while in the much better documented Greek case, modern dialect diversity has come about in a time frame of more than twenty centuries. Moreover, modern Greek dialects are said to be by and large mutually intelligible (Browning 1983: 2). On the other hand, modern

Chinese dialects, even when Miin dialects are excluded from consideration, are highly diverse and by no means all mutually intelligible. Could all this diversity really have developed in the short time span allowed by Karlgren and Pulleyblank? One wonders, in the light of these considerations, how valid and pertinent the koine analogy really is.

Another aspect of this problem has, to our knowledge, never been discussed seriously. It may be true that the phonological categories of the vast majority of non-Miin dialects can be organically derived from the *Chieh-yunn* categories, as Karlgren claimed. It may also be true that they can be derived from what Pulleyblank calls Late Middle Chinese, which he has reconstituted on the basis of the rime tables. Thus, the crux of Pulleyblank's criticism of Karlgren's model would seem to be the observation that the phonological categories of most modern dialects can in actuality be derived from a system simpler and presumably later than that codified in the *Chieh-yunn*. But why stop with the phonological inventory deduced from the rime tables? The modern dialects can in fact be derived from a still simpler inventory, something very similar to Y. R. Chao's "General Chinese," a system constructed by a working back from the dialectal categories themselves (Chao 1983). To be sure, Chao probably never intended his General Chinese to be viewed as the reconstructed ancestor of the mainline Chinese dialects, but in the end it turns out to be a better candidate for this role than either Karlgren's Ancient Chinese or Pulleyblank's Late Middle Chinese. The real question then is, if most Chinese dialects derive from a relatively simple phonological system, simpler than either Karlgren's Ancient Chinese or Pulleyblank's Late Middle Chinese, when did this simplified system first come into being? Written sources like the *Chieh-yunn* and the rime tables are not very helpful here because of their archaizing tendencies. They will always cause us to date many important phonological shifts later than the time when they actually occurred.

**D. The modern Chinese dialects, with the exception of the Miin dialects, are the organic descendants of "Ancient Chinese" (or some later, simplified version of it).**

It will by now be clear that we reject this claim. Modern spoken forms of Chinese come from an earlier spoken popular form of Chinese, but, as we have seen, the *Chieh-yunn* inventory does not in any way represent a spoken dialect of a particular time or locality; moreover, there are no documents contemporary with the *Chieh-yunn* that give a reliable picture of a current living form of speech.

The fact that the phonological categories of a very large number of Chinese dialects can be shown to have a definite and, by and large, regular relationship to the *Chieh-yunn* system, does not mean that it is the origin of the modern Chinese dialects. The Romance languages show a similar relationship to Classical Literary Latin, yet there is universal agreement that the Romance languages descend not from this classical literary language but from a form of spoken or "vulgar" Latin. The same is true of Chinese: the modern vernacular forms of Chinese come



not from the codified phonological inventory of the *Chiehyunn* but from a living, spoken form of early Chinese. Since there is no written record of this language, it will have to be reconstructed inductively from modern dialect forms.

### The new historical model and its methodological implications

The new historical model required for a balanced and realistic study of Chinese dialect history is a dynamic one. Its major themes are evolution and growth in northern base areas, accompanied by movement out of these areas into new ones, primarily to the south. The ultimate origin of Chinese, as interesting as this question is, is not of immediate concern to us here. For the study of historical dialectology we require a model for the development of Chinese after the inception of its history. In early periods Chinese of various types was spoken in an area stretching from the north China plain westward into the more rugged areas covered by modern Shanshi and Shaanshi. And we are by no means ignorant of the dialectal divisions in this base area, at least as they existed around the beginning of our era. Areas to the south are thought to have originally been inhabited by speakers of non-Chinese languages, but from very early times the Chinese, bringing with them their dense and intensive settlement and land-use patterns, were pressing towards these southern areas. And, after the great Chyn-Hann imperial unification there began the first of what would be many large-scale migrations from north to south. We may assume that the earliest such penetrations implanted Chinese from the north in areas where the language had not been spoken before. But each subsequent movement into the same area would have brought later forms of more northerly dialects into contact with now well-established earlier importations. And the process would have continued century by century, as the frontiers were pushed further and further into new areas. Developments in each area would have been unique, but the ultimate effect of this process of accretion would have been the development of multiple vocabulary layers reflecting waves of influence from different regions and periods.

Let us now consider the methodological implications of this model. To begin, it seems clear that we must at the outset develop a detailed, finely etched picture of northern dialect history. Every effort must be made to identify and trace linguistic developments in the north, with processes of internal migration, mutual influence, and convergence given special attention. If the north was the springboard for the Chinese movement into the south, then it is essential that we clarify wherever possible the detailed linguistic make-up of this springboard in successive periods. Throughout history, the north, with its succession of capitals and cultural centers, has produced written materials that may in one way or another reflect linguistic history. But, at the same time, strong literary traditions have had a tendency to collapse linguistic features of different periods and areas into chronologically and geographically anomalous "standard" entities which, by their very nature, have tended to efface the true lines of dialectal development. In our work, we must seek a carefully balanced blending of the classical comparative method with the judicious use of written materials.

Wherever we can identify temporally and geographically reliable pre-modern dialect materials, we should use these sources to the fullest. But we must also ruthlessly exclude anything whose periodization and areal origins are suspect.

Moving from the north to the southern dialects will be a complex and difficult step. Here, written materials are few and late, and we must rely heavily on the comparative method, combined with the study of migration patterns and settlement history. And the work will be severely burdened and complicated by the presence of the large-scale vocabulary layering mentioned above. But in dealing with these problems we will have at hand a powerful tool in our newly gained understanding of northern dialect history. For the picture we will have developed for the north will give us firm standards by which to evaluate what we find in the complex layers of the southern dialect lexicons. Our task will be similar to that of establishing stratigraphy in archaeological excavations or of using dendrochronology to identify and periodize climatic changes.

Further methodological considerations concern the nature and goals of our selection and analysis of dialect data. In this connection there has for some time now been a feeling of frustration among many who work in the area of Chinese historical linguistics. What purport to be studies of Chinese linguistic history are generally no more than mechanistic statements of correspondences between alleged stages of Chinese as codified in traditional dictionaries and rime tables. While such studies do tell us a number of important things about the overall drift of linguistic evolution in Chinese, one has the feeling that they are too far removed from real linguistic and philological data and that a great deal of the vast richness and complexity of Chinese linguistic history is simply being ignored or swept under the carpet. The Karlgrenian and neo-Karlgrenian approaches, if pursued further, will lead only to endless hashing and rehashing of the same old ingredients, with few if any new insights into the real development of Chinese.

A particularly unfortunate effect of the Karlgrenian approach has been the trivialization of Chinese dialect studies. Since the *Chiehyunn* system (or some later version of it) is supposed to account for everything in the dialects, once one has reconstructed the *Chiehyunn* system, dialects tend to become uninteresting. If they are to be studied at all, it is merely to see how they derive in a more or less mechanistic fashion from the *Chiehyunn* system. Since the *Chiehyunn* essentially consists of a set of graphs, this is done by collecting a predetermined list of graphs from the dialect in question. Little attention is paid to the actual popular lexicon of the dialect and almost none is given to its grammatical structure. It seems curious that the Karlgrenian approach has also impeded a more serious consideration of philological sources, especially various types of transcriptional data. The view that such material can play only an ancillary role in Chinese linguistic history is still widely held. But once one frees himself from the view that the *Chiehyunn* system represents a real stage in the development of Chinese, such materials as the Tibetan transcriptions studied by Luo Changpeir, Csongor, Takata and others begin to bristle with interest, not because they can be used to justify or refute



some elements of a *Chiehyunn* or rime-table reconstruction, but because they can at last be seen as real, independent witnesses of an actual stage of the language, all the more valuable because they allow us to stand outside the rime-book tradition and look at an earlier stage of the language afresh. The same can be said of the immense corpus of Buddhist transcriptions dating back to the Eastern Han. It is largely because of Karlgren's attitude toward such material that it has never been fully exploited, and we are all the poorer for it.

There is an immense amount of work to be done in Chinese comparative dialectology. First of all we need a better classification of the dialects. This is important because a classification based on rigorous principles is in fact a theory about the origin of the things being classified. Armed with a better classification, we can begin to develop a better understanding of the major groups. In Karlgren's model of linguistic development, only vertical comparisons of dialect data with Ancient Chinese were envisioned. This neglected almost completely horizontal comparisons, that is, the comparison of dialects with sister dialects of the same group. In the past the few people who attempted such comparisons were criticized as "dogmatic comparativists" and lectured for not seeing that the only valid comparisons were those that traced dialectal categories back to some alleged ancestral form found in philological sources. But surely the comparison of dialects with other closely related forms will allow us to make interesting generalizations about whole groups of dialects rather than treating them all in isolation. In this way we will eventually come to realize that such dialect groupings as Wu, Gann, Kehjia, and Miin are very old. As we work our way backward inductively from modern dialect data, we will slowly develop a richer, more realistic, and more exciting picture of China's linguistic past.

### References

- Baxter, William H. 1992 *A Handbook of Old Chinese*. Berlin and New York: Mouton de Gruyter.
- Browning, Robert. 1983. *Medieval and Modern Greek*. Cambridge: Cambridge Univ. Press.
- Chang, Kun, and Betty Shefts. 1972. *The Proto-Chinese Final System and the Ch'ieh-yün*. IHP Monographs, series A, no. 26, Taipei: Academia Sinica.
- Chao, Yuen Ren. 1983. *A Project for General Chinese (Tongtzyh fang'ann 通字方案)*. Beijing: Shangwuh Yinnshugoan.
- Chen Ynkeh 陳寅恪. 1949. "Tsorng shyyshyr lunn Chiehyunn 從史實論切韻. *Liingnan shyuebaw* 嶺南學報 2.1-18. Reprinted in *Chen Ynkeh Shiansheng lunnjyi* 陳寅恪先生 論集 Taipei: San Ren Shyng Chubaansheh, 1974.
- Jenner, W. J. F. 1981. *Memories of Loyang*. Oxford: Clarendon Press.
- Jou Tzuomo 周祖讓. 1966. "Chiehyunn de shinqjyr her tade inshih jichuu" 切韻的性質和它的音系基礎. In *Wennshyue jyyi*, vol. II. Beijing. Pp. 434-73.
- Karlgren, Bernhard. 1915-26. *Etudes sur la phonologie chinoise*. Leiden: E. J. Brill.
- Uppsala, K. W. Appelberg.
- . 1954. *Compendium of Phonetics in Archaic and Ancient Chinese*. Stockholm: Museum of Far Eastern Antiquities.

- Li, F. K. 1983. "Archaic Chinese." In *Origins of Chinese Civilization*, ed. David N. Keightley. Berkeley and Los Angeles: Univ. of California Press. Pp. 393-408.
- Luu Gwoyau 魯國堯. 1985. "Mingday guanhuah jyi chyi jichuu fangyan wenntyi 明代官話及其基礎方言. *Nanjing Dahshyue shyuebaw* 南京大學學報 4.47-52.
- Luh Jhywei 陸志韋. 1947. *Guuin shuolueh* 古音說略. *Yanjing shyuebaw* 燕京學報, monograph no. 20.
- Luo Charngpeir 羅常培. 1933. *Tarng wuuday shibeei fangin* 唐五代西北方音. Shanqhae: Academia Sinica.
- Pulleyblank, E. G. 1984. *Middle Chinese*. Vancouver: Univ. of British Columbia Press.
- Shaw Rongfen 邵榮芬. 1982. *Chiehyunn yanjiow* 切韻研究. Beeijing.
- Twitchett, Denis, ed., 1979. *The Cambridge History of China*, vol. 3: *Sui and T'ang China*, 589-906, part I. Cambridge: Cambridge Univ. Press.
- Wang Lih 王力. 1985. *Hannyeu yeuin shyy* 漢語語音史. Beeijing.
- Yang, Paul Fu-mien. 1989. "The Portuguese-English Dictionary of Matteo Ricci: A Historical and Linguistic Introduction." In *Proceedings of the Second International Conference on Sinology, Section on Linguistics and Paleography*. Taipei: Academia Sinica. Vol. I, pp. 191-241.



## A CASE OF RADICAL AMBIGUITY IN OLD CHINESE

### Some notes toward a discourse-based grammar

Derek D. Herforth

Source: *Suzugamine Joshi Tanki Daigaku Bulletin of Humanities and Social Science Research* 34, 1987, 31-40.

#### Introduction

This discussion starts from an unarguable premise: the accurate interpretation of Old Chinese (OC) text requires close attention to various kinds of contextual cues to sentence meaning. The aim here will be to isolate and describe one such cue and then to explore some implications of discourse-based analysis for the unified description of OC syntax. The examples to be discussed here may strike competent readers of OC as unproblematic, even trivial. However, I am less interested in the fact that such sentences are, *in context*, unlikely to be misinterpreted than in the mechanism of correct interpretation.

In the written form in which it has survived, OC is widely and accurately reputed to be non-redundant (i.e. context-dependent) to a degree unknown among familiar western languages, classical or modern. It is easy to compile a list of grammatical categories which, though deeply familiar to us from our knowledge of English, etc., generally lack overt marking in OC: tense (nonexistent), number in nouns (very rare), definiteness (as marked by articles, for instance: rare), argument-verb coindexing (nonexistent), the distinction between finite and nonfinite verb forms (non-existent) and, occasionally, the distinction between the subordination and coordination of clauses. These distinctions, marked obligatorily in English, are often simply implicit in the contexts created by the organization of OC prose. It is thus an intriguing fact that competent translators of OC into English never haggle about which article to place in front of the translation of a given OC noun, or about whether to render a sequence of two unmarked clauses as coordinate ("C1 and [then] C2", where C=clause) or subordinate-main ("If/When C1, C2"). OC text functions effectively as a medium of communication without a great deal of

the (ultimately redundant) morphological paraphernalia which characterize European languages. I would claim that the competent reader of OC prose can be described as having acquired an acute, internalized sensitivity to a wide variety of contextual cues embedded in the structure of the discourse he is interpreting.

What is the nature of these cues to the correct interpretation of OC text? Is the same type of sentence-ambiguity invariably disambiguated by the same sort of cue? Just how are OC texts organized so that the language accomplishes its communicative functions? The answers to questions of this sort lie by definition beyond the scope of a single-sentence-based description of the language, the only sort of OC grammar we have had to date. It is, on the other hand, precisely these questions which a discourse-based inquiry must address. The idea motivating this exploratory essay is simply that, by looking beyond the boundaries of the single sentence, important generalizations can be made about the basic syntactic patterns of OC and their functions in discourse. Proposing explicit answers to a language-specific conundrum, "How is it that OC gets by on so little?", affords an excellent opportunity 1) to probe more general questions of the structure of natural-language discourse and 2) to form hypotheses about the general organization of "discourse-oriented languages" for testing on other examples of the type.<sup>1</sup> It bears adding that the approach I explore here cannot supplant but will, I believe, supplement the understanding of OC grammar that has already been gained through single-sentence descriptions. Though discourse analysis goes beyond the single sentence, a cogent account of discourse-level phenomena can only be based on a sound grasp of sentence-grammar.

1. *A local problem*: The example to be examined at some length below exhibits three kinds of ambiguity: 1) in terms of the referentiality of its subject noun, 2) in terms of the temporal discreteness of the activities referred to by the verbs and 3) in terms of the relationship between the two assertions the sentence contains. I will attempt to show that all three of these ambiguities are related to a basic distinction between the narrative and evaluative use of declarative statement. Triple ambiguity of this kind within a single sentence is impossible to reproduce in English; hence the rubric "radical ambiguity".

(1) 王 田 不 取 羆。

king hunt NE take pack<sup>2</sup>

- A) [The] king hunted [and/but] did not take [a] pack (=did not bag an entire pack of game animals).
- B) [When a] king hunts, [he] does not take [a] pack.
- C) [When the] king hunts, [he] does not take [a] pack.

GY:8

The above OC sentence contains: 1) no articles or other markers of definiteness, 2) no morphemes signalling tense-aspect distinctions, and 3) no connective morphemes. Thus, there is no way to determine prima facie 1) the referentiality of 王, 2) the temporal orientation of 田 and 取 within the universe of discourse, or 3) the relationship between the two assertions "king hunt" and "not take pack". In



isolation from context, (1) is accordingly open to the interpretations rendered in English above as (A), (B) and (C).

English distinguishes between (A) and (B) by means of overt markers in the following way. (A) has a definite subject with which the speaker refers to a specific king in the (possibly fictional) universe of discourse. "The king" refers to a king who can, if necessary, be identified uniquely by the speaker. The choice of verb tense signals that the two activities in which the king is involved, hunting and not-taking, occurred from start to finish once at a point anterior to the speaker's present. Thus, like the subject noun, the verb forms in (A) can be said to be "definite" in the sense that they are used to refer to specific acts identifiable through their unique occurrence and temporal orientation within the universe of discourse. Already we have uncovered some redundancy in the threefold marking of both the subject and the two verbs for definiteness. "Pack", the object of "not-take", is non-referential in all three readings. It lies within the scope of the negative verb "not take" and thus does not refer to any identifiable entity within or without the universe of discourse.

I will refer to the kind of discourse made up declarative sentences like (A) as *basic narrative*. English-language text-counts have shown that the subjects of basic narrative sentences are overwhelmingly definite (Givon 1979:52), so that a narrative context alone might be expected to imply definiteness of the subject in languages like OC where this category typically goes unmarked. Consider for a moment the unlikelihood of a sentence like ?*A king hunted but did not take a pack*, where an indefinite subject is coupled with a pair of narrative clauses.

(B) contrasts with (A) in the marking of both the subject noun and the two verbs. "A king" refers to no specific king in the world; nor do "hunts" and "does not take" refer to specific instances of hunting and not-taking. The statement is generic and tenseless. Although we refer to the form *hunts*, etc. as "in the present tense", in its gnomic use here, the form clearly does not label an activity in progress in, or directly relevant to, the speaker's here-and-now (Lyons 1977:194). Again, we find markers of a single grammatical category, in this case indefiniteness, appearing three times in the same sentence: "a king", "hunts" and "does not take".<sup>3</sup> As an assertion, (B) lacks the uniquely identifiable subject argument and the discrete, temporally-defined activity which characterize basic narrative. (B) is a more abstract, general statement, less grounded in a moment-by-moment account of phenomena. The sort of discourse which expresses this generalizing grasp of the world, I will refer to as *evaluative*.

(C) is a cross between (A) and (B) as it contains features of both discourse types. In (C) a definite subject, likely to have been evoked in the context, is coupled with assertions of non-discrete activity. The result is a statement about a specific individual's recurrent pattern of behavior. The sentence is evaluative in that it asserts non-discrete, temporally undetermined activity of an individual.<sup>4</sup>

All natural languages can be expected to maintain strategies for distinguishing narrative from evaluative discourse. Some of the strategies OC employs for this purpose will be examined below and it will become clear that, though serving the same function as the use of articles and tenses in English, the OC devices are

formally quite different. In (1), however, all such devices happen to be lacking. But surely, (1) *in context* means (A) or (B) or (C), and not all three. Leaving aside (C) for the moment, it is virtually impossible to imagine a context which would not in some way or other favor reading (A) over (B), or vice versa. What then determines the contextually appropriate (=correct) interpretation?

2. *Its local solution*. Here, then, is the context to (1).

- (2) 恭王 遶 於 涇 上； 密 康 公 從 有 三 女 奔  
 PN king ramble LO PN above; PN PN elder attend; exist three woman dash  
 之。 其  
 3P. 3P.PS  
 母 曰： 「必 致 之 於 王。 夫 獸 三 爲 羣； 人，  
 mother declare: must bring 3P LO king TP beast, three make pack; person,  
 三  
 three  
 爲 衆； 女， 三 爲 羣。 王 田， 不 取 羣。 公 行，  
 make crowd; woman three make bevy. king hunt, NE take pack. elder go  
 下 衆；  
 beneath crowd;  
 王 御， 不 參 一 族。 ...」 GY:8<sup>5</sup>  
 king concubine NE triplicate one clan

"King Gong took his pleasure on the upper reaches of the Jing [River]; Elder Kang of Mi was in attendance; there was [an occasion when] three women dashed up to [=threw themselves at] him. His mother commented, "[You] must take them to [the] king. [Let me tell you something about] beast[s]: three make [a] pack; [as for] human being[s], three make [a] crowd; [when it comes to] women, three make [a] bevy. [When a/the] king hunts, [he] does not take [a] pack; [When] elder[s] (=those of high rank) move, [they] beneath (=behind) the crowd (=they yield the way to crowds of commoners). [As for the] king[']s concubine[s], he never triplicates one clan (=never has three concubines from the same clan, i.e. social tolerance of sororal polygamy is limited). . . ."

The above passage is *prima facie* narrative. The subjects of the first two sentences are proper nouns, which, of course, refer to definite individuals. The third sentence contains a presentative construction, 有 x, which introduces new characters to the developing scenario. Needless to say, these new characters cannot *on first mention* accommodate the definite article. (? "There was an occasion when the three women . . ." "What three women?")

Note that the entire cast of characters (king, elder, three women and mother) as well as the single physical property mentioned in this episode (the Jing River) are all what John Lyons refers to as "first-order entities". He describes this category of entity as consisting of "individual persons, animals and more or less discrete



physical objects”, in other words, the animate and inanimate furniture of the material world. Lyons continues: “under normal conditions, [first-order entities] are relatively constant as to their perceptual properties, . . . are located, at any point in time, in what is, psychologically at least, a three-dimensional space, and . . . are publicly observable” (1977: 442–3).<sup>6</sup> On Lyons’ analysis, basic narrative could well be renamed “first-order discourse”.

The narrative in (2) continues with a transcript of exactly what Matron Kang had to say about the goings-on on the upper reaches of the river. However, embedded within the scope of the narrative verb 曰, ‘declare’, are a number of clearly non-narrative statements. The first sentence in the woman’s admonition is a deontic modal statement which does not belong to either of the (non-modal) discourse-types I have distinguished above. With the use of the particle 夫, however, we cross over into the evaluative mode of discourse in which generalities are asserted of non-first-order entities.<sup>7</sup>

English has no close equivalent for the topic-marker 夫 (Graham 1972) and it requires a fair amount of epexegetis to make explicit the particle’s discourse function. [夫 x] means something like “I’m going to tell you something about (my interpretation of) the nature of x”. In this first sentence, marked by 夫 as an evaluative statement, note that the NP which bears the relation of subject to the verb 爲, ‘make, constitute’, is not 獸, ‘beast’ but 三, ‘three [of them]’. The function of 獸 is rather different from that of subject. 獸 specifies the frame of reference or “range of things about which it makes sense to assert” 三爲羣. Informally stated, the nature of beasts is what this sentence is about (Barry 1975:3, Chafe 1976:50, Reinhart 1981). In using this sentence, the speaker ascribes the attribute “three-make-a-pack” to beasts in general. This example plainly demonstrates that OC sentences with topics can also have subjects, as is the case in other well-known “topic-prominent” languages (Li and Thompson 1976).<sup>8</sup>

The next two sentences in the text are perfectly parallel in both structure and meaning to 獸, 三爲羣 and have the cumulative effect of accustoming the reader to a regular cadence of evaluative assertion: topic-comment, topic-comment, topic-comment (T:C). The next trio of sentences sets up another cadence, but without a signal to counteract the inertia of 夫 T:C; T:C; T:C;, we simply continue interpreting in the evaluative mode, in spite of the lack of any overt marking of the discourse as evaluative. So we read 不取羣 as an assertion about the general nature of a king’s (or perhaps, *the* king’s) hunting practice, namely that it does not involve the bagging of entire packs of game.

On this evaluative reading of 不取羣, the marking of the English equivalent of 王田 as a subordinate clause by means of a subordinating conjunction such as “when (ever),” or “if” is obligatory. This obligatory subordination, however, is simply a language-specific fact about the structure of English; it certainly does not convert 王田 into a “subordinate clause” in OC. It is more important to recognize that in terms of what it accomplishes in the ongoing discourse, 王田 is very close in function to the topic nouns (夫獸, 人, and 女 of the three preceding sentences. In evaluative discourse, a topic, whether NP or clause, names an entity or

state-of-affairs the *nature* of which is commented on in the rest of the sentence; the comment makes an assertion about the *general nature* of the phenomenon referred to by the topic.<sup>9</sup>

The fact that both NPs and bare clauses can function as topics is clearly illustrated in the second series of parallel sentences we are now considering. 王田 {NP+VP} is surely a clause, as is 公行, ‘[whenever] elders go’. The third sentence in the series, however, has an NP topic, 王御, ‘[the] king[’s] concubine[s]’. As in the examples just examined, the topic names a domain about which the comment, [王] 不參一族, is asserted. Once again, in the ungainly epexegetis which makes explicit the discourse function of the topic constituent, “[Now here’s some information about the nature of the] king’s concubines (or perhaps, “concubinage as practiced by the king”, the distinction is trivial in this context): he never takes three women from the same clan”.

One of the typologically significant features of OC syntax is that, unlike the situation in languages such as English, a bare clause may function as the topic of an evaluative sentence. The notorious “parataxis” (from the standpoint of English) of OC evaluative discourse is simply topic-comment articulation. Such topic clauses are sometimes nominalized (by 之-insertion, 其 or 者-affixation; numerous examples cited in Harbsmeier 1985:96–112, where, however, the topic status of such constituents goes unrecognized). The important point, however, is that topics *need not* be marked as NPs by such devices. To claim that both NPs and clauses may function as topics in OC is, of course, not to claim that the internal structure of any topic is fuzzy or indeterminate. The presence of a predication within the topic distinguishes *prima facie* clausal from nominal tokens of the category. That the rules of OC syntax generalize over such distinctions of internal form in favor of the discourse function shared by all topics in evaluative discourse (the function of setting the domain for a general assertion) is a significant typological fact about the language.<sup>10</sup>

Returning to the analysis of passage (2), note that Matron Kang’s speech continues to the end in the evaluative mode.

- (3) A. 『...夫羣, 美之物也。大衆以美物歸女, 而何德以堪之? 王猶不堪; 況爾小醜乎! 小醜備物, 終必亡。』  
 B. 康公不獸。一年, 王滅密。
- A. “. . . [This] bevy (=these three women) are beautiful creatures. [If the] multitude [were to] entrust you with beautiful creatures [like these], what virtue [would make] you worthy of them? [The] king himself [would] not be worthy, let alone [the] lowly likes of you! [When] lowly types keep [fine] creatures [to themselves], [the] end [of the story] is certain destruction.”  
 B. Lord Kang [did] not present [the women to the king]. One year [later], [the] king destroyed Mi.

Detailed analysis is omitted for reasons of space (and readers’ patience). After the matron’s moralizing lecture, we are abruptly reintroduced to the narrative



mode by a sentence in which one of the main characters in the episode functions as third-person subject. Here the chronicler regains the floor which a few lines back he had yielded to the censorious Matron Kang. The chronicler's discourse in the *Guoyu* is invariably basic narrative.<sup>11</sup> Let us test an evaluative reading of the two curt sentences which conclude this episode: ?“[Now I'll tell you something about the nature of] Elder Kang: [he] never offers [women to the king]. [And here's some information about the nature of] one year later: the king destroyed Mi.” A disconcerting, counter-intuitive reading, to say the least.<sup>12</sup>

3. *Some implications.* On the basis of the above analysis of (2) and the shorter consideration of (3), I have formed the following working hypotheses for testing on other OC texts and their English translation.

- 3) A. Sentences in narrative discourse are prototypically subject-verb in structure. Most narrative sentences have subjects, i.e. arguments which exhibit selectional restrictions with the verb (Li and Thompson 1976:463) and thus assume one of a limited number of semantic roles: agent (of a verb like 遊, ‘ramble’), experiencer (of a verb like 畏, ‘feel in awe of’) or beneficiary (of a verb like 受, ‘receive’).
- B. The initial immediate constituent of a sentence in evaluative discourse is typically a topic.<sup>13</sup> A topic is generally set off from its comment by a pause in reading, as reflected in the punctuation of (2). Topics do not bear a selectional restriction with the verb in the comment. The comment will often include its own subject and have the form {S V (O)}, as in 人, 三爲樂. The *semantic* role of a topic in an evaluative sentence is difficult to pinpoint; it is often noted that the relation binding a topic to its comment is that of (speaker-perceived) relevance.<sup>14</sup> A bare clause may function as the topic of an evaluative sentence in OC. Depending on the structure of the comment, such topic clauses will tend to be realized in English translation as either 1) nominalized subject clauses or 2) subordinate adverbial clauses.<sup>15</sup>
- C. The normal sequence of discourse within a single episode in an OC historical text (*Zuozhuan*, *Guoyu*) is narrative → evaluative (→ narrative → . . .). Virtually all of the evaluative discourse will be contained in the speeches made by the characters in the narrative (exceptions discussed in note 11). This discourse-structure reflects the strong moralistic preoccupations of the OC historical corpus, constituting a ground cadence of narrative reportage alternating with evaluative comment.<sup>16</sup>
- D. English and other familiar languages encode the narrative/evaluative distinction in every declarative sentence by means of definiteness markers (e.g. articles, verb tense). Virtually all declarative sentences in such languages are {S V (O/C)} in structure so that topic-comment articulation is regarded as a somewhat marginal phenomenon involving a “fronted” argument or special topic-introducing phrases (“As for t. . .”, “About t. . .”, “Speaking of t. . .”). All simple evaluative sentences in English

have the form {S V O/C} due to the existence of a few lexical verbs of extremely general “linking” function like copular *be*, *involve* (“Hunting involves a number of skills.”), and *mean* (“Carelessness just means you’ll have to do it all over again,” = “If you’re careless, . . .”). Such verbs do not exist in OC.

3. *The tentative nature of these observations.* The claims advanced in (3) above clearly require further testing, not only on historical texts but on more “philosophical” material as well. We can expect to find a greater preponderance of evaluative discourse in texts like *Mengzi* and *Xunzi*, with perhaps the balance between narrative and evaluation partially redressed in such anecdotal compilations as *Hanfeizi* and *Lyushi chunqiu*. In any case, not inconsiderable space has been spent here in order to make (painfully) explicit many things all competent readers of OC know intuitively about textual interpretation. I believe that such explicitness about mental processes can be instructive and hope I have demonstrated that there remain many things to be said about how OC functions as a communicative system. That many of the hypotheses I have proposed here could not have been formulated on the basis of a sentence-based treatment of OC should be self-evident.

### Notes

- 1 The distinction between “discourse-oriented” and “sentence-oriented” languages is drawn by Tsao who also points out the limitations of single-sentence grammar in the description of discourse-oriented languages (1977: 89–98).
- 2 Abbreviations used in this paper: C=clause, GY=*Guoyu* 國語, LO=locative particle, NE=negative particle, NP=noun phrase, O=object, O/C=object or complement, OC=Old Chinese, P=person, PN=proper noun, PS=possessive, T:C=topic:comment, TP=topic particle, VP=verb phrase, ZZ=*Zuozhuan* 左傳.
- 3 The “redundancy count” could be increased to four by changing the unmarked ‘when’ to ‘whenever’, the latter marked for indefiniteness. Alternatively, indefiniteness could be encoded a fourth time by use of the categorial, generic negative ‘never’ to translate 不. (It is interesting to note that OC has no morpheme equivalent for ‘never’.) Note further that by using ‘whenever’ together with ‘never’ in the same sentence we finally achieve an unacceptable degree of redundancy in English: ?Whenever a king hunts, he never takes a pack.
- 4 It is clear that we are dealing with a continuum of features along which sentences can be contrasted and described as more or less narrative or evaluative, such that a place can be found for phenomena which fall between the two poles. This fact, however, does not invalidate the use of the basic distinction, narrative/evaluative, as a metric in discussing the discourse function of individual sentences and passages of text.
- 5 Punctuation has been augmented to reflect the pauses in contemporary native reading practice.
- 6 The influence of P.F. Strawson’s “descriptive metaphysics” (Strawson 1959) on this characterization of first-order entity is acknowledged by Lyons.
- 7 Lyons characterizes second-order entities as “events, processes, states-of-affairs, etc. which are located in time and which, in English, are said to occur or take place, rather than to exist”. (Compare, however, the use of OC 有, ‘exist’ in a sentence we have already observed: 有三女奔之, literally, ‘exist three-woman-dash-[at-]him’, where



existence is predicated of an event.) The third order includes "such abstract entities as propositions, which are outside space and time" (1977:443). Although Lyons does not discuss the entity-status of the generic use of first-order nominals such as (夫) 獸, it seems plain that when a first-order noun like 獸, 'beast', is used generically, the entity it refers to is no longer of the first order. Since statements about "beasts in general" lie "outside space and time", as already suggested in our discussion of (1B), we may tentatively conclude that such generics refer perhaps to third-order entities in Lyons' scheme. (For the correlation between order of entity and order of nominal, see 1977:445-7). There is an interesting parallel between Lyons' ordering of entities/nominals and the distinction drawn in Van Oosten's recent dissertation between basic-level and superordinate topics (1986:Chapter 2). (Van Oosten's conceptualization was inspired by psychologist Eleanor Rosch's well-known work on natural categorization, conveniently summarized in Lakoff 1982:144-8). Van Oosten's basic-level topics ("individual participants or elements inside the scene", 1986:23) are essentially equivalent to Lyons' first-order entities. Her "superordinate topics", characterized as "cognitive schemata, actualized scenes, generalizations and evaluations", correspond, by and large, to Lyons' second- and third-order entities and to many of the entity-referring expressions, both nominal and clausal, which serve as topics in OC evaluative discourse.

- 8 Compare the impossible, "mixed" reading of 夫獸, 三為羣 which respects the fact that 夫 is used to introduce a generalized topic for evaluation, but then interprets the comment as a narrative statement: ?"[Now about the nature of] beasts, three of them *made* a pack."
- 9 The correlation between generic (=evaluative) statements and the use of the topic particle *wa* in Japanese has long been observed (Kuno 1972:270, among many others). Compare, for example, the following two sentences, the first generic and the other narrative-descriptive: *Syooboosya WA mina akai*, 'All fire engines are red' and *A, nishi no sora GA makka da!* 'Hm? The western sky is bright red!' The distinction between *wa* and *ga* as used in discourse is, of course, much more complex than these two examples can suggest, but part of that distinction involves the difference between the evaluative and narrative use of sentences.
- 10 In their work on the topic-particle *wa* Japanese linguists have long recognized its function of establishing a *domain* for the assertion made in the rest of the sentence: 「は (係助詞) 題目を提示し、叙述の範囲を設定する。」 (Kokken 1951:180).
- 11 The situation is somewhat different in the *Zuozhuan* since that text is at least in part a commentary on the *Chunqiu*. Evaluative sentences are still quite rare in the *unquoted* material in the *Zuozhuan* and are restricted in their occurrence to direct explication of events recorded in the *Chunqiu* (e.g. 難伯如萬, 逆也. 'Shenbo[']s go[ing to] Ju (as recorded in the *Chunqiu*) [was to] welcome [someone back to Lu]. ZZ 226:Cheng 8.3.) or for purposes of quick identification of characters in the *Zuozhuan* narrative (e.g. 祁奚請者, 晉侯問焉, 稱解狐, 其辭也. 'Qi Xi requested [permission to] retire. The Marquis of Jin asked him [about a] successor. [Qi Xi] spoke highly of Jie Hu [who was] his rival.' ZZ 255:Xiang 3ii.)
- 12 It bears remarking that the evaluative reading of 一年, 王滅密 seems less odd than the same interpretation of 康公不獻. This fact, of course, correlates with the frequent marking in narrative of the temporal setting as topic (e.g. 晉者, ... 是歲也, ... 鄭驪公子以傷公之死也, ...). Topicalization occurs in narrative discourse in two and only two functions: that of referring to a temporal setting (as just illustrated) and that of contrastive exposure of an argument from within a narrative clause.
- 13 Shen Xiaolong, in an original and largely persuasive typology of topic-comment sentences in the *Zuozhuan*, remarks in passing on the "deliberative and explanatory" function of T:C articulation (1986:130). His extremely useful study, however, deals primarily with the structure of T:C sentences, rather than with their discourse functions.

- 14 Reinhart 1981 contains important discussion which aims at a formalized account of this notion of relevance or "aboutness", as she calls it. What makes formalization of this notion so difficult is that the relevance asserted between a topic and its comment is often speaker-perceived and fails to respect culturally-acknowledged (=common-sense) category-boundaries. The use of copular syntax to make metaphorical statements is one obvious example of this sort of speaker-determined "aboutness".
- 15 There is a clearly observable tendency across a wide variety of languages to mark initial adverbial clauses as sentence topics. The Mandarin data have been discussed by Chao (1968:113-20) and Henne et al. (1977:94-96). Similar "cross-category" marking of topic NPs and initial adverbial clauses is exemplified briefly in Thompson and Longacre (1985:229-32). The tendency is particularly clear when the adverbial clause functions as a protasis (Haiman 1978, 1985:26-70). In OC, the following initial particles clearly mark both clausal and nominal topics: 若 (+C='If', +NP='As for NP'), 雖 (+C='Although', +NP='Even'), 夫 (+C='Now, in the general case that . . .', +NP='NP, in general') and 凡 (+C='Whenever', +NP='In all cases of NP'). Furthermore, the resumptive proform 則, 'then, in that case' is used in both contrastive T:C articulation and in conditional sentences. These formal parallels between topic NPs and adverbial clauses are, of course, underpinned by the isofunction of such clauses as domains within/about which a second (comment) clause is asserted.
- 16 Compare the relation between an "objective" news story and the analytical commentary on the story contained in an editorial. The news item will be predominantly narrative, i.e. concern the activities of first-order entities. The editorial, on the other hand, will make considerable use of abstract nominalizations, conditionals, etc.—all hallmarks of evaluative discourse whose subject matter is largely second- and third-order entities.

## References

### Primary sources

- GY「國語」上海師範大學古籍整理組校點。(底本:《四庫全書》排印清代士禮居翻刻明道本)。上海:古籍書店,1978。  
ZZ「左傳」Harvard-Yenching concordance.

### Other sources

- BARRY, Roberta. 1975. Topic in Chinese: an overlap of meaning, grammar and discourse function. Papers from the parasession on functionalism, 1-9. Chicago: Chicago Linguistic Society.  
CHAFE, W. L. 1976. Givenness, contrastiveness, definiteness, subjects, topics and point of view. In Li 25-55.  
CHAO Yuan Ren. 1968. A grammar of spoken Chinese. Berkeley and Los Angeles: University of California Press.  
DU BOIS, John W. 1980. Beyond definiteness: the trace of identity in discourse. The pear stories: cognitive, cultural and linguistic aspects of narrative production, ed. by Wallace L. Chafe, (Advances in discourse processes, v.3), 203-74. Norwood, N.J.: Ablex.  
GIVON, Talmy. 1979. On understanding grammar. New York: Academic Press.  
GRAHAM, A. C. 1972. The classical Chinese topic-marker *fu* 夫. BSOAS 35: 1.85-110.  
HAIMAN, John. 1978. Conditionals are topics. Language 64. 564-589.  
———. 1985. Natural syntax: iconicity and erosion. Cambridge: University Press.  
HARBSMEIER, Christoph. 1985. Where do classical Chinese nouns come from? Early China 9-10 (1983-85): 77-126, 146-63.



- HENNE Henry et al. 1977. A handbook on Chinese language structure. Oslo: Universitetsforlaget.
- KOKKEN. 1951. 国立国語研究所. 現代語の助詞・助動詞 一用法と実例一 (報告3). 東京: 秀英出版 (9 版, 1984).
- KUNO Susumu. 1972. Functional sentence perspective: a case study from Japanese and English. *Linguistic Inquiry* 3: 3269-320.
- LAKOFF, George. 1982. Categories: an essay in cognitive linguistics. *Linguistics in the morning calm*, ed. by Linguistic Society of Korea, 139-93. Seoul: Hanshin.
- LI, Charles N. (ed.) 1976. Subject and topic. New York: Academic Press.
- LI, Charles N. and Sandra Thompson. 1976. Subject and topic: a new typology of language. In Li, 457-89.
- LYONS, John. 1977. *Semantics I, II*. Cambridge: University Press.
- REINHART, Tanya. 1981. Pragmatics and linguistics: an analysis of sentence topics. *Philosophica* 27: 1.53-93.
- SHEN Xiaolong. 1986. 申小龍. 《左傳》主題句研究. 中國語文 2.130-42.
- STRAWSON, P. F. 1959. *Individuals*. London: Methuen.
- THOMPSON, Sandra A. and Robert E. Longacre. 1985. Adverbial clauses. *Language typology and linguistic description, 2: Complex constructions*, ed. by Timothy Shopen, 171-234. Cambridge: University Press.
- TSAO Feng-fu. 1979. A functional study of topic in Chinese: the first step towards discourse analysis. Taipei: Student Book Company.
- VAN OOSTEN, Jeanne. 1984. The nature of subjects, topics and agents: a cognitive explanation. University of California, Berkeley, dissertation. [Issued in a revised version by Indiana University Linguistics Club, 1986.]

## THE ADPOSITION *yi* 以 AND WORD ORDER IN CLASSICAL CHINESE<sup>1</sup>

*Chaofen Sun*

Source: *Journal of Chinese Linguistics* 19, 2, 1991, 202-18.

### Abstract

Linguists seem to have a different opinion on the syntactic properties of the PP's in Classical Chinese. While many assume that Classical Chinese had predominantly postverbal prepositions, many others believe otherwise. This study finds that the latter view is perhaps correct and that the PP's in Classical Chinese could be either postverbal or preverbal. On text-count level, PP's of the two types are about equally divided. Furthermore, this paper shows that the adposition *yi* 以 can be used as a preverbal preposition, a postverbal preposition, or a preverbal postposition in Classical Chinese. Evidence will be given to contend that the variation between the preverbal and postverbal uses of *yi* seems to be motivated by discourse factors. The nominals following the preverbal *yi* seem to be much closer to their antecedents than those after the postverbal *yi*. In addition, the high degree of variability of *yi* may follow from an earlier grammatical change, i.e. changing from postpositional to prepositional. Thus, it is hypothesized that the postpositional use of *yi* perhaps was simply a vestige of earlier Sino-Tibetan syntax.

### 1. Introduction

This paper attempts to show that the adposition *yi* 以 can be used as a preverbal preposition, a postverbal preposition, or a preverbal postposition in Classical Chinese. Moreover, it is hypothesized that the postpositions could be a vestige of earlier Sino-Tibetan syntax.

However, in the last ten years or so, many linguists (Li & Thompson 1974, Travis 1984) have assumed that Classical Chinese had predominantly postverbal prepositions. On the other hand, many others believe (Liu 1958, Chou 1962, Y-C Li 1980) that the PP's in Classical Chinese could be either postverbal or preverbal. In the following, I will first of all present data demonstrating that the postverbal



hypothesis is incorrect. Furthermore, analysis of the PP's in classical texts reveals that it is equally incorrect to treat the classical PP's simply as preverbal because of the large number of postverbal PP's. Finally, I will discuss the peculiar syntactic distribution of the most frequently occurring adposition, *yi*.

Linguists working within different theoretical frameworks all agree that in modern Chinese there is a set of elements which behave more or less like prepositions in other languages. Yet these prepositions still retain some properties of verbs from which they derive historically. Therefore, they are also known as coverbs (Chao 1968, Y-C Li 1980, Li & Thompson 1981), although some argue (Li & Thompson 1974) that theoretically they are better treated as prepositions. However, such theoretical concern is beyond the scope of the current study. For the sake of convenience, I label them as prepositions. Given the existence of postpositions, the term **adposition** is used for Classical Chinese.

## 2. Adpositional phrases in Classical Chinese

Li & Thompson observe (1974) that between the 11th and 4th centuries BC the PP's of Classical Chinese were all postverbal, thus S+V+PP, even though in modern Mandarin the PP's are mostly preverbal, S+PP+V. For example, in (1) the PP *yu you gu* 'from dark valley' follows the verb *chu* 'emerge' (The example is from Li & Thompson 1974, p.201).

- (1) 出於幽谷 (Mencius, late 4th century BC)  
 chu yu you gu  
 emerge from dark valley  
 '(Someone) emerged from a dark valley.'

Li & Thompson further claim (1976 p.486):

'... the classical literature up to the twelfth century A.D. leaves little doubt that the predominant sentential position of the prepositional phrase is postverbal rather than preverbal. . . . It was not until the fifteenth or sixteenth century A.D. that the new prepositions with preverbal prepositional phrases became prevalent.'

However, this thesis is contradicted by the observation of many others. He Leshi observe (1984, 1985) that an overwhelming majority of the adpositions in *Zuozhuan* 左傳 and *Shiji* 史記 occurred in preverbal position. His findings (1985) concerning the distribution of the PP's in Classical Chinese are presented in (2).

(2) The distribution of PP's in Classical Chinese:

	optional	postverbal	preverbal	total
<i>Zuozhuan</i> (500 BC)	5 22%	3 14%	14 64%	22 100%
	以於自在及	於諸乎	從與焉由	
<i>Shiji</i> (100 BC)	7 14%	3 6%	39 80%	49 100%
	以於自在及由低	於諸乎	從與焉由	

In both texts, there are adpositions which can occur optionally in either preverbal or postverbal positions. Although in terms of the total number of adpositions the percentage of obligatory preverbal PP's in *Shiji* is 80%, 16% higher than its counterpart in *Zuozhuan*, significantly in both texts the absolute majority of the adpositions occurred obligatorily in preverbal positions. Therefore, if He's analysis is valid, her findings then strongly falsify the postverbal hypothesis for the adpositions in Classical Chinese.

While the emphasis of He's analysis is on the types, i.e. the numbers of possible adpositions, Sun (1987) emphasizes the frequency of occurrences of the adpositions. The PP's in two passages of Classical Chinese texts have been counted; one is *Liang Huiwang Shang* 梁惠王上 of *Mengzi* 孟子 (300 BC), and the other is *Yingong* 隱公 of *Zuozhuan* 左傳 (500 BC). The findings are presented in (3) and (4). In support of He's observation, the PP's in Classical Chinese did not occur exclusively at the postverbal position. As a matter of fact the preverbal uses in actual texts outnumber the postverbal.

(3) The frequency of occurrences of PP's in different positions in *Zuozhuan* (500 BC):

	preverbal	postverbal	total
對 <i>dui</i>	3		3
從 <i>cong</i>	2		2
焉 <i>wei</i>	1		1
及 <i>ji</i>	2		2
在 <i>zai</i>		1	1
自 <i>zi</i>	1		1
與 <i>yu</i>	3		3
于 <i>yu</i>		20	20
於 <i>yu</i>		21	21
以 <i>yi</i>	33	4	37
total	46 50%	46 50%	92 100%

(4) The frequency of occurrences of PP's at different positions in *Mengzi* (300 BC):

	preverbal	postverbal	total
對 <i>dui</i>	3		3
在 <i>zai</i>		1	1
于 <i>yu</i>		3	3
於 <i>yu</i>	1	36	37
焉 <i>wei</i>	1		1
與 <i>yu</i>	3		3
以 <i>yi</i>	46	7	53
total	54 55%	47 45%	101 100%

At first glance, the frequency count between preverbal and postverbal PP's is about half and half in both texts. Moreover, given the fact that most adpositions



occurred at least once in preverbal position and only half occurred in postverbal position, it is highly implausible to take postverbal position as the dominant position for PP's. Furthermore, given that 50% (for *Zuozhuan*) and 45% (for *Mengzi*) of the PP's occur postverbally, it is then equally incorrect to assume preverbal position as dominant. It would seem as if there were no dominant position for PP's as a whole in Classical Chinese. In order to explore further the question of dominant word order position, I will now discuss the syntactic distribution of the most frequently used adposition, *yi* 以, in Classical Chinese.

### 3. The adposition *yi*

The adposition *yi* 以 is the most frequently occurring example in (3) and (4) making up 47% (90 out of 193) of the total frequency count. Furthermore, it can occur in both preverbal and postverbal positions, although only 12% of them (11 out of 90) occur in postverbal position. In example (5) there is a postverbal use of *yi*, while in (6) there is a preverbal use of the same form. If we ignore the context, the two clauses which contain *yi* phrases almost constitute a minimal pair. In both cases, the meaning of the *yi* is close to the preposition 'with' in English translation.

- (5) 吾非愛其財而易之以羊也 (Mengzi Liang Huiwang Shang)  
 Wu fei ai qi cai er  
 I Neg love its fortune CONJ  
 Yi zhi yi yang ye  
 trade it PP sheep EXCL

'I did not grudge the expense of it and changed it with a sheep.'

- (6) 若無罪而就死地，故以羊易之 (ibidem)  
 ruo wu zui er jiu si di,  
 as if Neg crime CONJ go dead place,  
 gu yi yang yi zhi  
 thus with sheep trade it

'As if (it were an) innocent person going to the place of death, therefore, (I) changed it with a sheep.'

Furthermore, the object of the preverbal *yi* is commonly absent as in (7).

- (7) 王謂暴以好樂，暴未有以對 (Mengzi Liang Huiwang Xia)  
 wang yu bao yi hao yue,  
 king tell NAME PP fond music,  
 bao wei you yi dui  
 NAME Neg. have PP respond

'His Majesty told Bao (me) with (his) fondness of music, (yet) Bao (I) have nothing ready to answer with.'

Typically the antecedents of the absent objects of such preverbal *yi* PP's exist in the immediately preceding context. For instance, in (7) there are two PP's with the same form *yi*. The logical object of the second *yi*, which is preverbal, is the same as the object of the first *yi*, which is postverbal, namely *hao yue* 'the fondness of music'. The second *yi*, which occurs in preverbal position, has a zero anaphora as its object. In both cases the *yi*'s indicate an associative meaning. Sun observes (1987) that the objects (including zero anaphora) of preverbal *yi*'s on average are 2.81 clauses away from their antecedents while the objects of postverbal *yi*'s on average are 17.64 clauses away from their antecedents (for methodology please refer to Givón 1983). The examples in (8) is a piece of continuous discourse. In the first line of (8), the underlined *xiao ti zhong xin*, 'piety, fraternity, sincerity, truthfulness' actually should be analyzed as the object of the adposition *yi*'s in the immediately following (8a & 8b). However, in (8a & 8b) they do not exist in surface. Yet the antecedents of the absent objects of the *yi*'s exist in the immediately preceding discourse, thus constituting no problem in information recovery.

- (8) 壯者以暇日修其孝悌忠信 (Mengzi Liang Huiwang Shang)  
 zhuang zhe yi xia ri xiu qi  
 strong Nom. PP leisure day cultivate POS.  
 xiao ti zhong xin  
 piety fraternity sincerity truthfulness

'The strong people, during their days of leisure, shall cultivate their filial piety, fraternal respectfulness, sincerity, and truthfulness.'

- a. 人以事其父兄  
 ru yi shi qi fu xiong  
 enter PP practise POS. father brother  
 'At home, serve their fathers and elder brothers with (it).'
- b. 出以事其長上  
 chu yi shi qi zhang shang  
 exit PP practise POS. elder superior  
 'Outside, serve their elders and superiors with (it).'

Therefore, discourse pragmatics may be an important contributing factor in the selection of a particular position of a *yi* phrase. Preverbal *yi*'s, including those with a zero anaphora, are more likely to be used if the coreferential entity exists in the immediately preceding contexts.

But there are also other factors which may affect the word order. They should include factors like sentence type and the highlighting of certain information. The example in (9) is a WH-question, and the WH word *he* goes before *yi* in the original text. The example in (10) has a proform *shi*<sup>2</sup> before the adposition *yi*.



- (9) 何以利吾國 (Liang Huiwang Shang)

he yi li wu guo  
 what PP profit my kingdom  
 'From what my Kingdom can be profited'

- (10) 是以不往見也 (Liang Huiwang Xia)

shi yi bu wang jian ye  
 Pron. PP Neg. toward see Part.  
 'For this (I) do not go to see (him).'

Moreover, in preverbal position *yi* is frequently used as a postposition. While the *yi*'s in (5) and (11) are a postverbal preposition, and the *yi* in (6) is a preverbal preposition, the *yi*'s in (12) are preverbal postpositions. Semantically all the *yi*'s in (12) indicate an instrumental case. Interestingly, there is no postpositional use of *yi* in postverbal position.

- (11) 召虞人以弓 (Zuozhuan, Shaogong 20)

Zhao yuren yi gong  
 call officer with bow  
 'Call an officer with a bow.'

- (12) a. 旃以召大夫 (ibidem)
- <sup>3</sup>

zhan yi zhao dafu  
 flag with call senior official  
 'call a senior with a flag.'

- b. 弓以召士

gong yi zhao shi  
 bow with call junior official  
 'call a junior with a bow.'

- c. 皮冠以召虞人

pi-guan yi zhao yuren  
 leather-hat with call officer  
 'call an officer with a leather-hat.'

Other than the postpositional phrases which are made up of NP+P like (12a-c), there are postpositional phrases made up of Pronoun+P (13) and postpositional phrases occurring in serial verb constructions (13). The *yi*'s in (13) and (14) both indicate an instrumental meaning. The proform *shi* when used with the adposition *yi* appeared to allow postpositional use only.

- (13) 是以政平 (Zuozhuan Shaogong 20)

shi yi zheng ping  
 this with politics peace  
 'With this the political state should be at peace.'

- (14) 而城州來以挑吳 (Zuozhuan Shaogong 19)

er cheng zhoulai yi tiao wu  
 then citify NAME with provoke NAME

'(You) then citified Zhoulai (by building up the walls) to provoke the State of WU.'

The table in (15) characterizes the distribution of the *yi*'s in two passages of classical texts, *Zuozhuan* (Shaogong 19-20) and *Mengzi* (Liang Huiwang Shang & Xia). The findings presented in (15) show that in preverbal position *yi* is frequently used either as a preposition (19%) or as a postposition (18%) in *Zuozhuan*; in *Mengzi* postposition accounts for 14% of its uses, and preposition for 25%. However, the form which has the highest frequency count in both texts is the preverbal *yi* which takes a zero anaphora as its object, 30% for *Zuozhuan* and 39% for *Mengzi*. In addition, *Yi* also occurs in a serial verb construction in a fairly common fashion, 22% for *Zuozhuan* and 8% for *Mengzi*. Typically in the serial verb construction the noun of the V N sequence immediately preceding *yi* can be analyzed as the object of the *yi*; thus the *yi* is also postpositional. This is exemplified by (14) where the underlined *zhoulai* functions as the object of the preceding verb *cheng* as well as the logical object of the following adposition *yi*.

- (15) The distribution of the adposition
- yi*
- in Classical Chinese
- <sup>4</sup>

	<i>Zuozhuan</i>		<i>Mengzi</i>	
	<i>N</i>	%	<i>N</i>	%
Preverbal:				
postposition ( <i>N yi V</i> )	16	19	15	14
preposition ( <i>yi N V</i> )	16	19	26	25
zero anaphora ( <i>yi V</i> )	25	30	41	39
Serial verb:				
postposition ( <i>V N yi V</i> )	19	22	9	8
Postverbal:				
preposition ( <i>V yi N</i> )	8	10	15	14
Total:	84	100	106	100

#### 4. The issue of word order

The existence of postpositions poses a question for us, i.e. where did they come from and what kind of function did they serve in Classical Chinese? Yu first hypothesizes (1987) that the existence of postpositions was a vestige of Sino-Tibetan syntax. It is interesting to note that Delancey observes (1987) that 'with the exception of Karen, all of the Tibeto-Burman languages are postpositional SOV languages . . .' Therefore, it follows to assume that the proto-Sino-Tibetan was postpositional SOV as well. While Classical Chinese is predominantly



prepositional SVO, it does have vestiges of postpositional SOV word order. For example, in (16a), in a positive statement the object pronoun *zhi* occurs postverbally; but in a negative statement, it has to occur preverbally as in (16b). It is very difficult to attribute the word order variation in (16a-b) to any discourse factor. The most plausible solution is to treat the preverbal *zhi* in negation as a kind of residue from earlier SOV order.

- (16)
- a. 將以愚之 (Laozi 65)  
 jiang yi yu zhi  
 intend with stupid PRON  
 '(They) intended to use (it) to keep them stupid.'
- b. 非聖人其之能為 (Xunzi 8/10)  
 fei shengren mo zhi neng wei  
 Neg. sage Neg. PRON can do  
 'Only a sage can do this.'

Finally the examples in (17) demonstrate that *yi* is not the only possible postposition in Classical Chinese. The three instances of *yu* 於 as a postposition were first observed by Yu (1987). All the *yu*'s in (17) are used as a kind of locative marker. However, unlike *yi*, which is commonly used as a postposition, *yu* is rarely used as a postposition. Recall that from the tables in (3) and (4) *yu* is a very common adposition, second only to *yi*. *yu* is not only a preposition but also a predominantly postverbal preposition. Out of 58 *yu*'s only one is preverbal. Therefore, *yu* PP's are postverbal, and their postpositional use is extremely rare.

- (17)
- a. 焉所謂室於怒市於色 (Zuozhuan Shaogong 19)  
 yan suo wei shi yu nu shi yu se  
 saying as say room at angry market at color  
 'As the saying goes: one becomes angry at home and shows his angry look in public.'
- b. 私族於謀 (ibidem)  
 si zu yu mou  
 privately clan at consult  
 'Privately consulted (members) of the clan.'

But the situation for *yi* is more complicated as demonstrated by tables (3) and (4). While the majority of its uses are preverbal, it also commonly occurs in postverbal position. Consequently, *yu* and *yi* are two different classes of adpositions. *yu* is a preposition with a relatively rigid postverbal position. In preverbal position it is rarely used as a postposition. But as a preposition *yi* can be preverbal or postverbal depending on discourse pragmatics. Furthermore, in preverbal position it is also commonly used as a postposition.

It has been observed (Karlgren 1927, Yang 1955, Pulleyblank 1986) that both *yu* and *yi* were originally full-fledged verbs. Given the different syntactic properties of the two, it is possible that they belonged to two different types. The grammaticalization of *yu* into a preposition is more mature than the grammaticalization of *yi*. This hypothesis is supported by the fact that the syntactic distribution of *yu* is more rigid than *yi*. Moreover, in Middle Chinese the more mature postverbal *yu* was replaced by the preverbal *yi* and other preverbal prepositions (Peyraube 1986, Ye 1988). Consequently in Modern Mandarin there are not many postverbal PP's. Nevertheless, the postpositional use of *yi* became impossible in Middle Chinese but the prepositional use of *yi* remained strong until it was partially replaced by other preverbal PP's such as the *ba* / *jiang* 把/將 constructions (Mei 1990) in Middle Chinese.

In summary, this study finds that the syntactic distribution of the commonly used preposition *yu* is relatively stable; thus, it was probably a grammaticalized, mature postverbal preposition in Classical Chinese. For its part, the syntactic distribution of the adposition *yi* was rather variable. It is commonly used as a preverbal preposition, a postverbal preposition, and a preverbal postposition. The alternation between preverbal prepositional and postpositional uses does not seem to be semantically or pragmatically motivated. Rather the postpositional use of *yi* perhaps was simply a vestige of Sino-Tibetan syntax. The high degree of variability of *yi* suggests that the grammatical status of *yi* in Classical Chinese was still undergoing a change, a change from postpositional to prepositional. Furthermore, the grammaticalization of *yi* and other preverbal preposition continued to gain momentum in Middle Chinese and eventually replaced all the postverbal prepositions. This explains why in Modern Mandarin it is the preverbal PP's that are predominant.

## Appendix

### *The postpositional use of yi in Mengzi*<sup>5</sup>

1. 何以利吾國
2. 何以利吾家
3. 何以利吾身
4. 斧斤以時入山林
5. 是以後世無傳焉
6. 何以能鼓樂也
7. 何以能田獵也
8. 吾可以休
9. 吾可以助
10. 吾可以識其不才而舍之



11. 則何以異於教玉人雕琢玉哉
12. 簞食壺漿以迎王師
13. 何以待之
14. 簞食壺漿以迎王師
15. 是以不往見也

*The postpositional use of yi in Zuozhuan  
Shaogong 19-20*

1. 是以君子加穀焉爾
2. 鄙以待之
3. 兄何以不玄
4. 是以鬼神用饗
5. 則慮以求媚
6. 是以鬼神不饗其國以禍之
7. 旃以召大夫
8. 弓以召士
9. 皮冠以召虞人
10. 是以政平而不平
11. 水火醯醢鹽梅以烹魚肉
12. 清濁小大短長疾徐哀樂剛柔遲速高出入周疏以相濟也
13. 猛以濟寬
14. 寬以濟猛
15. 政是以和

Notes

- 1 An earlier version of this paper was presented at the 1987 LSA Conference in San Francisco and appeared in the *Working Papers in Languages & Linguistics* No.1 (1990) of the City Polytechnic of Hong Kong. I would like to express my gratitude to the anonymous referee of JCL for his valuable comments and suggestions.
- 2 Even though in both cases, *he* and *shi* are not regular nouns, grammatically they function as the object of the adposition *yi* in forming a PP.
- 3 The referee of the Journal suggests that the *yi* here may be a conjunction, meaning 'in order to'. However, I still believe that this *yi* should be probably treated as an adposition. First, if it is a conjunction, we may have to analyze the nouns before *yi* in (12 a,b,c) as verbs. But they are really nouns in the original text. Second, if the *yi*'s in (12 a,b,c) are conjunction, in what way the *yi* in (11), where the PP *yi* phrase is postverbal and almost in complementary distribution with the *yi* phrase in (12b), should be treated as a conjunction? If we cannot, the *yi*'s in (12) are probably adpositions rather than conjunctions.
- 4 At the request of the referee of the JCL all the examples of the postpositional use of *yi*'s in the two texts concerned are given in the appendix.
- 5 Among the 15 cases, No. 12 and 14 (the same sentence appeared twice in the original text) listed above may allow a different analysis. If *dan* 'basket' and *hu* 'bottle' are analyzed as verbs, instead of nouns, *yi* should then be treated as an adposition occurring in a serial verb construction without a surface object.

References

- CHAO, Y.R. 1968. *A Grammar of Spoken Chinese*. Berkeley: University of California Press.
- CHOU, Fagao. 1962. *Zhongguo Gudai Yufa*, (A Grammar of Ancient Chinese). Taipei: Academia Sinica, special Publication No. 39 of the Institute of History and Languages.
- DELANCEY, Scott. 1987. 'The Sino-Tibetan Languages', in *The World Major Languages*. Edited by Bernard Comrie. London & Sidney: Croom Helm.
- GIVON, T. 1983. 'Topic continuity in discourse: an introduction' in T. Givón, ed., *Topic Continuity in Discourse: A Quantitative Cross-Language Study*. Amsterdam/Philadelphia: John Benjamins Publishing Company.
- HARBSMEIER, Christoph. 1981. *Aspect of Classical Chinese Syntax*. Scandinavian Institute of Asian Studies Monograph series No.45. London and Malmö: Curzon Press Ltd.
- HE, Leshi. 1984. '“Zuozhuan”, “Shiji” Jieci Duanyu Weizhi de Bijiao' (A Comparison of the positions for the prepositions in 'Zuozhuan' and 'Shiji'). *Yuyan Yanjiu* 8.
- . 1985. '“Shiji” Yufa Tedian Yanjiu (A study of the grammar in 'Shiji')'. In *Liang-han Yufa Yanjiu* (Studies of the grammar of the time of the two Han dynasties), edited by Cheng Xianqing. Jinan (PRC): Shangdong Education Press.
- HUANG, Baixiang. 1964. *Zuochuan Duben* (Selected readings of Zuochuan). Taipei: Xuanfeng Press.
- KARLGREN, Bernhard. 1926. *Philology and Ancient China*. Philadelphia: Porcupine Press.
- LEGGE, James. 1872. *The Chinese Classics*. Hong Kong: Lane, Crawford & Co.
- . 1966. *The Four Books*. An unaltered and unabridged reprint of the Shanghai 1923 Edition. New York: Paragon Book Reprint Corp.
- LI, Audrey Y-H. 1985. 'Abstract case in Chinese'. USC PhD dissertation.
- LI, Charles and Sandra A. Thompson. 1974. 'Co-verbs in Mandarin Chinese: Verb or Prepositions?' *Journal of Chinese Linguistics* 2:3, 257-278
- . 1976. 'Development of the Causative in Mandarin Chinese: Interaction of Diachronic Processes in Syntax'. In *Syntax and Semantics, The Grammar of Causative Constructions* 6. Edited by Masayoshi Shibatani. New York: Academic Press. 477-491
- . 1981. *Mandarin Chinese: A Functional Reference Grammar*. Berkeley: University of California Press
- LI, Y.C. 1980. 'The Historical Development of the Coverb and the Coverbial Phrase in Chinese'. *Journal of Chinese Linguistics* 8, 273-293.
- MEI, Tsu-Lin. 1990. 'Tang Song Chuzhi Shi de Laiyuan (The Origin of the Disposal Construction in the Tang and Song Dynasties)'. *Zhongguo Yuwen*, Volume 216:3, 191-206.
- PEYRAUBE, Alain. 1986. 'The Historical Developments of Double Object Constructions from Han Dynasty to Tang Dynasty.' *Zhongguo Yuwen*. Vol 3, 204-216.
- PULLEYBLANK, E.G. 1986. 'The locative particles Yü 於, Yü 于, and Hu 乎', *Journal of the American Oriental Society*. 106:1. 1-12
- SUN, Chaofen. 1987. 'The Syntactic Behaviours of the Classical Chinese Prepositions', paper presented to the 20th Sino-Tibetan Conference at University of British Columbia. (ms)
- . 1986. 'A Historical Study of the Evolution of the Chinese 'BA', a Case of Analogy', Cornell University (ms).
- TRAVIS, Lisa. 1984. 'Parameters and Effects of Word Order Variation', MIT PhD dissertation.
- YANG, Shuda. 1955. *Ciquan* (A Dictionary). Beijing: China Publishing House.
- YE, Youwen. 1988. 'An Analysis of the Internal Correlation of the Disposal Constructions at the Times of Sui and Tang Dynasties.' *Journal of Chinese Linguistics* Vol.1.
- YU, Ming. 1987. *Notes on the Interpretation of the Classics*. Hunan (PRC): Education Press



Part 2

MODERN VARIETIES



## A SYSTEM OF TONE "LETTERS"

*Yuen-Ren Chao*Source: *Le Maître Phonétique* 45, 1930, 24-7.

## ə sistim əv "toun-letəz"

wið ə vju: tə kəmbain ækjursi, eligəns, ənd kənvi:njəns fə printɪŋ, ai əv divaizd ðə folouɪŋ sistim əv "toun-letəz" fə ðə kənsidəreɪʃn əv felou founitiʃnz.

i:tʃ toun-letə kənsists əv ə və:tɪkl refrəns lain, əv ðə hait əv ən n, tə mi:tʃ ə simplifaid taim-pitʃ kə:v əv ðə toun reprizentid iz ətætʃt, fə touni:mz tə ðə left əv ðə lain, ənd fə toun-vælʒuz tu its raɪt. ðə θɪknɪs əv ðə lainz iz tə bi ðə seim əz ðə hærizəntl (θin) elimənts əv ə roumən kærɪktə.

ðə toutl reindʒ iz divaidid intu fə:r i:kwəl pɑ:ts, ðəs meikiŋ faiv pɔɪnts, nʌmbəd 1, 2, 3, 4, 5, kærɪspəndɪŋ tə lou, hɑ:f-lou, mi:dʒəm, hɑ:f-hai, hai, rɪspektɪvli. in ɔ:də nɒt tə meik distɪŋkʃnz, tu: faɪn, pɔɪnts 2 ən 4 ə ju:zd aɪðər əloun ɔ: wið i:tʃ lðə, bʌt nɒt in kəmbineɪʃn wið 1, 3, ɔ: 5. wið ðis rɪstrɪkʃn, ðə toutl nʌmbər əv toun-letəz mi:tʃ ai prəpouz iz əz fəlouz:

streit tounz.		sə:kəmfleks tounz.		ʃɔ:t tounz.	
toun-letə.	neim.	toun-letə.	neim.	toun-letə.	neim.
┘	11:	↗	131:	┘	1:
┘	13:	↗	153:	┘	2:
↗	15:	↗	242:	┘	3:
┘	22:	↗	313:	┘	4:
┘	24:	↗	315:	┘	5:
↘	31:	↖	351:		
┘	33:	↖	353:		
┘	35:	↖	424:		
↘	42:	↖	513:		
┘	44:	↖	535:		
↘	51:				
┘	53:				
┘	55:				



ði:z ə də touni:m sainz. ðə seim "kə:vz" wið ðə və:tikl̩ lain pleist ən ðə rait said wil giv ðə sainz fə toun-vælju:z.

æz ði intəvɜz əv spi:tʃ-tounz əv ounli relətiv intəvɜz, ðə reindz 1—5 iz teikən tə reprizent ounli ɔ:dinəri reindz əv spi:tʃ intounɛifn̩, tu inklu:d keisiz əv mɔdərit vɛəriɛifn̩ fə lɔdʒikl̩ ikspreʃn̩, bət nɔt tu inklu:d keisiz əv ikstri:m imouʃən̩l̩ ikspreʃn̩. fə pə:pəsiz əv toun drilz, i:tʃ step mei bi teikən tə bi: ə houl toun, ðəs meikɪŋ ðə toutl̩ reindz i:kwəl tu ən ɔ:ɡmentid fɪfθ. ðis wəd meik ðə sɔksesiv prənənsiɛifn̩ əv ə nambər əv tounz saund rɑ:ðər ʌnmju:zɪk̩l̩, ʌɪtʃ hauevə iz rɑ:ðər ən ədvɑ:ntidz fə fənetik pə:pəsiz.

it wil bi noutid ðæt nou dʌbl̩ səkəmfleks tounz ə givn̩ in ðə list. mən sɑtʃ ə toun iz spred ɔuvə mɔ: ðən wʌn siləbl̩, it kən bi sepəreitid intu kəmpounənts ʌɪtʃ 'ɑ:r in ðə list. mɛə sɑtʃ ə toun əpləiz tə wʌn siləbl̩, ðə sain mei bi meid ʌp əz əkeiznz əraiz; ðəs Palmer 'z θə:d toun fər \*ɪŋɡlɪʃ mei bi givn̩ əz ʌ (3513).

igzɑ:mpɪz əv ju:s:

- :42    jɛsʰ    (ɔ:dinəri əfəmeifn̩.)
- :51    jɛsʰ    (əv kɔ:s.)
- :24    jɛsʰ    (gou ən, aim æŋkʃəs tə hiə ðə rest əv it.)
- :13    jɛsʰ    (aim lisɪŋ.)
- :15    jɛsʰ    (bət, —.)
- :11    fɪjɛsL    (ai ʌndəstænd əv kɔ:s.)
- :44    jɛ'sʰ    (its ɔ:l rait, ɔ:lðou ju: meid ə mes əv it.)
- :55    jɛ'sʰ    (ai hə:d ɔ:l əbaut ðæt sɔ:t əv θɪŋ.)
- :351    jɛsʰ    (ai fəd bi moust dilaitid.)
- :3513    jɛsʰ    (sou fa:r əz ðæt s kənsə:nd, ounli —.)
- mɛəɳ    dɛzʰ    i:ʰ    livʰ    (ɔ:dinəri interəgeifn̩.)
- mɛəL    dɛzʰ    i:ʰ    livɳ    (mɛə didʒu sei hi: livd?)
- mɛəL    dɛzʰ    i:ʰ    livʰ    (nou mætə mɛər i: i:ts.)
- mɛəʰ    dɛzʰ    i:L    livʰ    (ai didnt a:sk . . . , ai a:skt hau hi: livd.)
- mɛəL    dɛzʰ    i:ɳ    livʰ    (dountʃu nou mɛər i: livz?)

\*kəntəni:z:

ŋɔʌ i:ʌkɑɳɳ wɑɳ peiʌ neiʌ teiʌ, kəkʌ jamʌ keʌ ɛənʌmɛŋɳ tɛhiʌhɑʌ tɛɛŋʌ kəkʌ jamʌ keʌ kɑ:uʌmɛŋɳ, θuŋɳmɑ:i:ʌ tɛhiʌtɛɛyʌ, kɔŋʌ peiʌ neiʌ θɛŋʌ. kɑʌ lukʌ kɔʌ jamʌ tɛauʌ haiʌ niʌɳ lukʌkɔʌ teiʌ keʌ jamʌ.

fanʌ fanʌ fanʌ fanʌ fanʌ fanʌ.

\*tibetn̩ (\*lasa daiəlekt):

(1) trænʒlitəreifn̩. (ə vɔisli:s iniʃl̩ gouz wið ðə hai toun ʌ ənd ə vɔist iniʃl̩ gouz wið ðə lou toun ʌ, ʌnles mɑ:kt tə ðə kɔntrəri.)

ɪŋ la kɑʌwe tɛhɑmʌpɑ  
 ɛənʌtɛiʌ tɪnʌmɑɳ ɪŋʌ sɔŋ  
 khoknɛ sɛmpɛ tɛɔŋ khɪʌ  
 lɪpθ ɛɑ jɑŋ kɑmʌ sɔŋ  
 ɲɪŋʌθup kɪʌ ɪɑ ɛɔɪ sɔŋ  
 mɔtɛhɑ tsɪpɪʌ ɪɛn sɔŋ  
 pɦuʌmɔ θuŋʌsɛmʌtɛnma  
 miʌlɑm ɪɑ khɔɪ sɔŋ.

(2) ðə seim æz æktʃuəli prənaunst:

ɪŋɳ ɪɑL kɑʌwɛʰ tɛhɑmLbɑʰ  
 ɛənʰdʒɪʰ tɪmLmɛɳʰ ɪŋɳ sɔŋL  
 khɔʰnɛʰ sɛmʌbɛɳʰ tɛɔŋʰ khɪL  
 ɪʌʰbθʰ ɛɑʰ jɑŋʰ kɑmʰ sɔŋL  
 ɲɪŋʰtupʰ kɪʰ ɪɑʰ ɛɔɪʰ sɔŋL  
 mθʰtɛθʰ tsɪʰbɪʌʰ ɪɛnʰ sɔŋL  
 pɦuʰmθʰ θuŋʌsɪmʌtɛmʌmʌ  
 miʰlɑmʰ ɪɑʰ khɔɪʰ sɔŋL.<sup>2</sup>

ðə prækʌtikl̩ vɛɪlu əv eni sistim əv nouɛiʃn̩ dipendz ən ðə pɔsɪbiliti əv its wɔ:kɪŋ bouθ weiz. æz ə test fə ðis rikwəimənt, ai ju:zd ðə sistim in rikɔ:diŋ siksti-tu: \*tibetn̩ fouk-sɔŋz spoukən (nɔt sɑŋ) tu ə diktəfoun, frəm ʌɪtʃ ðə trənskript̩ wəz meid. ðen, a:ftə li:viŋ ðə θɪŋ əloun fə sevrəl deiz, ai pikt ʌp mai mænʒskript̩ əgen ən red ðə houl trənskript̩, toun ənd ɔ:l, bæk intə diktəfoun rekɔ:dz. ən pleiɪŋ ði əridʒɪnɪl̩ ənd mai feik \*tibetn̩ prənənsiɛifn̩ ən tu: məʃi:nz, ən kəmpɛəriŋ ðəm sentəns bai sentəns in klous səkseʃn̩, ðə rizembləns bitwi:n ðə tu: wəz biʒənd mai ɛkspekʌiʃn̩. ðis kliəli ʃouz ðət it iz pɔsəbl̩ tə treɪn wʌnsɛlf in sɑtʃ ə sistim sou əz tə meik it wɔ:k bækwədz əz wɛl əz fɔ:wədz.

Notes

- 1 si: Daniel Jones and Kwing Tong Woo, *A Cantonese Phonetic Reader*, p. 17.
- 2 *Sixty-two Tibetan Folk-songs of Tshan-dbyans-rgya-tsho*, translated [intə \*tʃaini:z] by Yu Dawchuyuan and transcribed by Jaw Yuanrenn, tə bi pʌblɪʃt̩ su:n bai The Institute of History and Philology of Academia Sinica.



## THE NON-UNIQUENESS OF PHONEMIC SOLUTIONS OF PHONETIC SYSTEMS

*Yuen-Ren Chao*

Source: *Bulletin of the Institute of History and Philology, Academia Sinica* IV, 4, 1934, 363-97.

In reading current discussions on the transcription\* of sounds by phonemes, one gets the impression of a tacit assumption that given the sounds of one language, there will be one and only one way of reducing them to a system of phonemes which represent the soundsystem correctly. Since different writers do not in fact agree in the phonemic treatment of the same language, there arise then frequent controversies over the 'correctness' or 'incorrectness' in the use of phonemes.

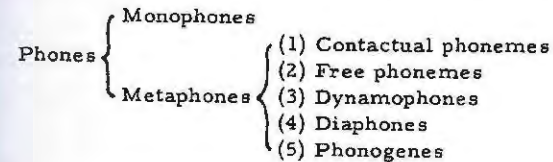
The main purpose of the present paper is to show that given the sounds of a language, there are usually more than one possible way of reducing them to a system of phonemes, and that these different systems or solutions are not simply correct or incorrect, but may be regarded only as being good or bad for various purposes.

### I. Definitions of a phoneme

The most comprehensive discussion of the phoneme and related ideas seems to be that by H. E. Palmer,<sup>1</sup> of which we shall now give a brief summary. Palmer begins by quoting at length Jimbo's writing on 'The Concrete and Abstract Nature of Sounds:' 'One concrete sound has one definite quality, one definite pitch, one definite loudness, one definite length,' in other words, it corresponds to one particular oscillograph curve or stretch of the groove of a faithful phonograph record, which is therefore not the usual object of study for phonetics. By collecting examples of actual utterances of what is considered the same word with the same meaning by speakers of the same language of concrete sounds, one arrives at 'an abstract sound of the first degree', such as the first sound in the word army. By comparing

different words such as army, archer, art, argue, one concludes, after due examination, that the first sound in these words are 'the same', which is then 'an abstract sound of the second degree'.

Taking Palmer's own system, we note that he finds it more convenient to replace the term abstract speech-sound by the term phone. His system of phones is then as follows:



A Monophone is 'any phone of the first or second degree of abstraction of which the concrete members are so similar in point of production and of acoustic effect even when observed by a competent observer, that it may be regarded as a minimal unit of pronunciation (i.e. practically unsusceptible of subdivision).' (We may add: 'or of further differentiation'.) 'Contrasted with monophones we have metaphones, which we may define as two or more phones which serve jointly as units of meaning within the limits of a given linguistic community.'

(1) Palmer goes on to identify Jones's definition of a phoneme with his idea of a contactual phoneme: 'A phoneme is a group of sounds consisting of an important sound of the language (i.e. the most frequently used member of that group) together with others which take its place in particular sound-groups. . . . The use of subsidiary members of phonemes is, in most languages, determined by simple principles which can be stated once for all, and which can be taken for granted in reading phonetic texts.'

(2) A free phoneme is like a contactual phoneme except that it is impossible to say in what phonetic circumstances one or another of its members will be actually used. We can give the apparently random<sup>2</sup> use of the tip or back of the tongue in the nasal ending of words like \* [lin ~ liŋ], \* [min ~ miŋ] in Nanking as an example of free phonemes. This is the same as Jones's variphone.

(3) A dynamophone is a metaphone which contains two or more phones differing not only in quality, but also in regard to the intensity or force of the articulation that produces them. Palmer cites the first phone in the word as as an example which shades from the first phone of act to the obscure sound of the first phone of about, and even to zero value.

It would seem convenient also to include under this heading those metaphones whose members differ according to conditions of length and intonation (in which case a term wider than dynamophone will have to be used). Thus, the vowel in French bette and bête is a metaphone whose members differ slightly in quality according to the conditions of length.



Those who transcribe eat, it as [i:t], [it] are also considering the vowel in these words as forming one metaphone whose members differ in quality according to conditions of length. Again, the vowel in the Foochow words 𪛗 [kɔ'55:] and 𪛗 [kɔ'12:] is a metaphone whose members differ in quality according as the intonation belongs to one or the other of two sets of tones.

Before taking up the next two terms, it will be well to examine a later definition of a phoneme given by Jones: 'Definition of a phoneme: a family of sounds in a given language which are related in character and are such that no one of them ever occurs in the same surroundings as any other in words.' (The term 'language' here means the pronunciation of one individual speaking in a definite style. 'In the same surroundings' means surrounded by the same sounds and in the same condition as regards length, stress and intonation.)<sup>3</sup> This definition differs from the earlier one quoted above in that it no longer mentions a 'principal member', but specifies that the different members should be 'related in character' and that no two of them should occur 'in the same surroundings as regards length, stress and intonation'. It seems therefore that Jones's conception of a phoneme includes not only Palmer's contactual phonemes, but also some at least of his dynamophones.

(4) The term diaphone is used by Palmer following the usage of Jones: 'The diaphone is a family of sounds heard when we compare the speech of one person with that of another.' Jones cites [o:], [ou], [əu], [Au] as members of the diaphone occurring in words like coat, road, home. Similarly, we can cite [au], [ou], [əu], [ɛ], [u], [ɔy], [ei], [i] as members of the diaphone occurring in words like 𪛗 'Europe', 𪛗 'dog', 𪛗 'after'.

(5) The phonogene, a term also proposed by Jones, is 'a given phone together with its ancestral forms,' thus the vowel [ou] in stone, together with [o], [ɔ], [a] form a phonogene. Similarly, [ə], [əɪ], [ɪ], [i], [zi], [ɲzi], [ni], [ni] form one phonogene in words like 𪛗 'child' 𪛗, 'ear' 二, 'two'.

Bloomfield gives no formal definition of a phoneme. He begins by distinguishing the 'gross acoustic features' of language (Jimbo's 'concrete sounds' or sounds of low degrees of abstraction) and 'distinctive' or 'significant features'. By comparing the partial identities and differences between words like pin, tin, tan, tack, he succeeds in analyzing the distinctive features of words like pin into indivisible units which cannot be analyzed any further (from the standpoint of the language under investigation): each of these units is 'a minimum unit of distinctive sound-feature, a phoneme,'<sup>4</sup> which phrase is the nearest Bloomfield comes to a formal definition of a phoneme.

Differences of quality conditioned by length are grouped by Bloomfield under the same phoneme, as German Beet [be:t], Bett [bet]. He also writes hate [hate], where the stress on the first syllable indicates sufficiently the weakened and obscure value of the second vowel. Bloomfield's phoneme therefore also includes Palmer's dynamophones.

Bloomfield makes no explicit mention of free phonemes or variphones. In cases like the apparently random use of final [n] and [ŋ] in some Chinese dialects for the same word in the same phonetic surroundings, he would probably consider simple nasality as being the distinctive feature and the place of articulation as among the gross acoustic features. In other words, variphones are also phonemes, except that the choice of the exact shade of the sound used is determined by psychological and physiological factors other than those of phonetic environment. Since, however, whether variation of sounds determined by non-phonetic conditions are wide enough to be called two or more 'different' sounds or simply inevitable small 'accidental' variations depends upon the degree of narrowness of the phonetician's scale of division, Bloomfield is within his rights in neglecting the existence of variphones.<sup>5</sup>

From the preceding, it may seem that Bloomfield has a different conception of the phoneme from that of Jones and Palmer. For Jones and Palmer, a phoneme is a group of sounds, while for Bloomfield it is a sound-feature. If, however, we examine the two ideas more closely, we shall find that they amount to the same thing. Take for example the English phoneme [h]. From one point of view, we may say that it is a group of different sounds [h<sub>1</sub>], [h<sub>2</sub>], [h<sub>3</sub>], [h<sub>4</sub>], etc., where the subscripts are an indication of the tongue and lip positions during the pronunciation of the consonant. But from the other point of view we may just as well say that the phoneme [h] is simply the feature of voiceless glottal friction and leave the other non-significant features unspecified. There is therefore no real difference in the use of the term phoneme by those writers, so far as this point is concerned.

For the present discussion, we shall group together Palmer's contactual phoneme, free phoneme, and dynamophone, all under the term phoneme, to be defined as follows:

A phoneme is one of an exhaustive list of classes of sounds in a language,<sup>6</sup> such that every word in the language can be given as an ordered series of one or more of these classes and such that two different words which are not considered as having the same pronunciation differ in the order or in the constituency of the classes which make up the word.

Observations:

- (1) This definition presupposes that it is possible to enumerate exhaustively the total number of phonemes for any given language.
- (2) It does not exclude the possibility of the same sound belonging to more than one class (Cf. II 2 (f), (g) below).
- (3) It is non-committal as to whether given a language, there is one unique way for grouping its sounds into phonemes or there are other possible ways.
- (4) It leaves unspecified the scope of the word 'sound' as regards size and kind, i.e. the degree of analysis into successive elements and the degree of differentiation into kinds.



- (5) It includes both the cases where, given the phonemes in a word and its phonetic environment, it is possible to determine the actual pronunciation of the word by a set of 'rules of pronunciation' (i.e. to know which member-sounds of sound-classes will actually be used) and those cases where a given word in a given phonetic environment may still contain a phoneme of which one or another member may be used. The former will be a contactual phoneme or a dynamophone and the latter a free phoneme. (This remark, however, would be superfluous if we repudiate the validity of descriptive phonetics, with its narrow transcriptions.)
- (6) The clause that every word consists of a series of 'classes' may sound a little strange. But if, as is convenient in the study of languages, we speak of recognizable words consisting of recognizable phonemes, then such phonemes are usually classes of sounds, which a trained ear would distinguish as different sounds. The statement sounds no more strange than that 1, 2, 3, 4 are a series of classes, which is what mathematicians define numbers as.
- (7) If each phoneme is written with one definite symbol, then every word will have a definite form of transcription. Homophones, or different words having the same pronunciation, will be transcribed alike. It should be noted, however, that the boundary between a homophone and a word with variations in meaning is often hard to determine.
- (8) A phonemic transcription is pronounceable without reference to grammatical or lexical consideration. Thus, the Chinese National Phonetic Script and the National Romanization are phonemic transcriptions in a sense in which English or even German orthography is not.

## II. Factors which influence the phonemic solutions of phonetic systems

As the grouping of sounds in a language into phonemes as defined above does not necessarily lead to one unique solution, we shall now consider the various factors which influence the form of the solutions.

### 1. Size of unit in time

#### (a) Under-analysis

In the early days of phonetic transcription, the slogan was 'one sound, one symbol'. In these days of phonemic transcription, this has been changed to 'one phoneme, one symbol', so that it is now permissible to represent more than one sound by one symbol.

But there are two aspects to the idea of 'one sound'. From the point of view of differentiation of quality, 'one sound' is one kind of sound, which is what one usually has in mind when using the phrase in discussions about phonemes.

But from the point of view of analysis in time, 'one sound' is one piece of sound, such that its quality is homogeneous throughout its duration. Discussions about phonemes do not seem to have been very explicit about the change of quality in time which may be included within the scope of one phoneme. We recall that Palmer defines a monophone 'as a minimal unit of pronunciation (i.e. practically insusceptible of further subdivision)'. All the preceding discussions in the passage quoted have to do with the question of differentiation, but as the words 'minimal' and 'subdivision' can also be taken in the temporal sense, it would seem that a monophone should be both one kind of sound and one piece of sound.

Now if it is convenient to group into classes and call phonemes different kinds of sounds in a language which go together in a certain way, it would also be convenient to join into compounds successive pieces of sounds which act as units in a language. This is by no means new practice. Our point here is only to make it explicit and put it on a par with the differential aspect of phonemes.

All kinetic speech-sounds, diphthongs, affricates, aspirates, and other sounds with their usual glides are compounds which act as units and can be treated as phonemes. Thus, Bloomfield considers the English affricates [č] and [j] as independent phonemes. The English plosives [p], [t], [k] are treated by all writers as single phonemes, although in initial stressed positions they have a slight aspiration and have a larger size than in unstressed positions or after [s] (in [sp-], [st-], [sk-]). In the former case, the inclusion of [č] and [j] is optional, for these could be resolved into the phonemes [tʃ] and [dʒ] respectively. In cases like he cheats [hi: 'tʃi:ts], heat sheets [hi:t 'ʃi:ts]; What can each add? [. . . i:tʃ 'æd], What can eat shad? [. . . i:t 'ʃæd], the distinction may either be made by considering [č] and [tʃ] as different phonemes, as with Bloomfield, or simply by the difference in the position of the minimum point, as with most other writers; that is to say, since the [č] in each add and the [tʃ] in eat shad never occur under the same conditions as regards stress, [č] need not be considered as a separate phoneme. In many Chinese dialects, the initial [k] always occurs before low front vowels or central or back vowels, and initials of the [tɕ] type always occur before high front vowels. The two may therefore be taken as the same phoneme, although the latter is an affricate. Similarly, the [t] in [ta] ㄊ, the [tɕ] in [tɕei] ㄊ and the [ts] in [tsu] ㄊ in Japanese may be taken as belonging to one phoneme.

Kinetic sounds of the diphthong type need special consideration. While affricates, aspirates and sounds with characteristic glides can usually be analyzed, if desired, into two or three recognizable elements, kinetic vowels and quasi-vowels are sounds with even more gradual change in quality. The usual method of representing these sounds is simply to indicate the two end-positions of the whole movement, as [ei], or to indicate the open position and the extreme close position even though never actually reached, as [ai] for what is actually never wider than [ae]. In the case of movement not by the most direct line, the turning point is indicated by inserting an additional symbol, as [uei], but not [aou], as [au] means [aou] or [aou].



Now by our definition of a phoneme, there is nothing to prevent us from regarding characteristic kinetic open sounds in a language as independent phonemes, which is in fact the practice of the designers of the Chinese National Phonetic Script, who represent [ai], [ei], [au], [ou] by the single symbols ㄞ, ㄟ, ㄞㄨ, and even [an], [ən], [aŋ], [əŋ] by ㄢㄣ, ㄢㄣㄥ. It may seem unorthodox to take the National Phonetic Script as serious phonemic transcription, but we should be less sure of ourselves when we come to cases of narrow-range kinetic sounds. There is a real difference in practice, if not of opinion, between Bloomfield's use of [ij] and [uw] for English and other writers' use of [i:] and [u:], as contrasted with [i] and [u]; or of [i] and [u] (with implied relative length) as contrasted with [ɪ] and [ʊ]. Again, in many American dialects, it is a toss-up whether to write *bet*, *bait* as [bet], [beit] or as [bet], [be:t], or [bet], [bet] (with implied length). The most interesting case of the size-of-unit question is that of the Foochow dialect, where a whole series of vowels in the same words are static or kinetic according to the tone in which each is pronounced. Thus, 氣 [k'ei 12:] 'air', 竹 [tɔyk 23:] 'bamboo', 護 [hou 242:] 'protect', take on the following sounds when they are pronounced in the following combinations of tonal environment: 氣壓 [k'i 53: ak 23:] 'air pressure', 竹節 [ty 5: ʒaik 23:] 'bamboo section', and 護兵 [hu 55: viŋ 55:] 'guards' (protecting soldiers), respectively. We have therefore on our hands the question of choice between (1) admitting phonemes of which some members are static and other members kinetic vowels, or diphthongs, and (2) regarding the static members as forming one phoneme and the corresponding kinetic vowels as two phonemes in succession, thus allowing the same word to have two forms. The presence and absence of the aspiration in English [p], [t], [k] mentioned above is also a similar case, though not so striking.

Another very peculiar case is that of a vowel in a concave circumflex tone in a number of Chinese dialects, such as the yangshaang tone of Hwangyan, Chekiang, where the valley is so low or simply so narrow that the voice is lost into a glottal stop in the middle of the syllable, so that [ɔ313:] actually becomes [ɔ31:ʔɔ3:]. Phonetically, it sounds like three sounds forming two syllables. But phonemically, it is much more natural to consider it as a form of [ɔ] in a certain tone.

On the whole, the usual practice allows a great deal of latitude in taking kinetic consonants as single phonemes, but is not so free in giving single symbols for kinetic vowels. Bloomfield gives a list of eight diphthongs and one triphthong for English, and calls them 'compound primary phonemes', all their elements occurring also as single primary phonemes. [1955 note: The word 'primary' does not affect this discussion; it was simply Bloomfield's word for our 'segmental' phonemes – the vowels and consonants.]

The chief point we wish to emphasize here is that it is not always advisable or convenient to take the smallest static unit of sound analyzable by the trained ear as the unit of phonemic members ('one piece sound, one symbol'), and that according as we take a smaller or a larger unit for our phonemic members, we sometimes arrive at different forms of phonemic pattern for the same language, which are equally valid, though they may not be equally suitable for this or that purpose.

(b) *Over-analysis*

The principle of 'one piece sound, one symbol' has yet to allow a class of exceptions in the opposite direction, namely, one piece sound, two or three piece symbols. Jones and Camilli give the following cases where combinations of letters are permitted to represent single phonemes:<sup>7</sup>

- a) The affricates [pf], [bv], [ts], [dz], [tʃ], [dʒ], [tɕ], etc.
- b) The aspirates [ph], [th], [kh], [tʰ], [tʰh], etc., and weak aspirates [pʰ], [tʰ], etc.
- c) The aspirated [s] or [sh].
- d) [t], [d] with lateral explosions: [tl], [dl].
- e) The voiceless nasals, [hm], [hn], [hɲ], [hŋ], when these are distinct phonemes.
- f) Retroflex vowels, as American [ɔɻ], or Peiping [ɻ]. [Chao quoted Jones's '[uɻ]'.]
- g) Labiovelar consonants: [kp], [gb].

Of these cases, a) and b) are recognizably compound sounds, which we should consider as two or three piece sounds, for which the use of [tʃ], [dʒ], [ph], [th], etc. would be considered as normal and the use of [č], [ʝ], (or [c], [ɟ]), [p], [t], etc. would be considered as cases of under-analysis. c) and d) may be regarded as borderline cases. e), f), and g) are clear cases of over-analysis, that is, cases of one homogeneous sound represented by two or three piece symbols, each of which represents some aspect or aspects of the sound.<sup>8</sup> Thus, [hm] is a [m]-sound which is breathed (i.e. [h]-ized) or a [h]-sound with labio-nasal articulation (i.e. [m]-ized). It is meaningless to ask which is the substantive and which the adjective, as they are all constituting attributes which together form the sound in question and could be represented by Jespersen's over-analytical alphabetic symbols. Similarly, American [ɔɻ] is a single vowel formed by the middle of the tongue in the [ə] position with the apex curled back (sometimes transcribed as [ə̠]). The representation of voiceless [w] or [ʌ] by [hw] is another case, which is mentioned by Jones and Camilli under an earlier section in the same pamphlet quoted.<sup>9</sup>

Among the uses of diacritical marks, Jones and Camilli<sup>10</sup> mention 'the saving of a series of new letters,' such as adding ~ to [ɑ], [ɔ], [œ], [ɛ], to form [ã], [õ], [œ̃], [ɛ̃] in transcribing French. The reader will recall the great furore which was aroused by Passy's proposal to use [ɑŋ], [ɔŋ], [œŋ], [ɛŋ] for these French vowels in the first post-war issues of *Le maître phonétique*. He modestly called it orthographic transcription; but if [əɻ] can represent [ə̠], there is no reason why [ɑŋ] cannot represent [ã]. To object that other French dialects or German actually has [ɑŋ] as two successive sounds is beside the point, as we are talking about phonemic transcriptions and our universe of discourse is limited to one dialect or one language, otherwise we should have to go back to narrow phonetic transcriptions. Not that [ɑŋ] is the only right way or even a good way of representing French [ã], but there seems to be nothing wrong, so far as usage in other cases goes, with representing one piece sound by two piece symbols.



Jones and Camilli do another thing along the same line. Without mentioning the saving of a series of modified letters under any of the principles, they also use the device of representing one piece sound by two piece symbols in transcribing the Russian palatalized consonants, where the explanatory note says, 'j is used as the sign of palatalization, that is, tj = t<sub>j</sub>, nj = n<sub>j</sub>, lj = l<sub>j</sub>, snj = sn<sub>j</sub>, tnj = tn<sub>j</sub>, lnj = ln<sub>j</sub>, etc.'<sup>11</sup> This [j] is therefore a significant feature, but it does not necessarily occupy any time of its own.

Another important case is that of the 'voiced h', which plays a very important part in the Wu-dialects in China. These dialects usually have an ordinary [h], which has different values according to the vowel following and may therefore be taken as one phoneme, just as in the case of English or German, so that instead of having 2n symbols for h<sub>1</sub>a<sub>1</sub>, h<sub>2</sub>a<sub>2</sub>, . . . h<sub>n</sub>a<sub>n</sub> (where a<sub>1</sub>, a<sub>2</sub>, . . . a<sub>n</sub> are the vowels which may follow the h in the language), we need only n + 1 symbols for ha<sub>1</sub>, ha<sub>2</sub>, . . . ha<sub>n</sub>. But in the case of the voiced h, not only the vowel quality (or the vowel articulation) begins at the very beginning of the breathing, but the breathiness also lasts till the very last moment of the vowel, so as to form one homogeneous breathy vowel, and there is neither question of order of succession nor question of substantive and adjective. If we must have one piece symbol for one piece sound, we should have to have either a series of different voiced h symbols for different vowels, or an extra series of breathy vowels have to be recognized. The only practical thing to do here is to consider voiced h as one phoneme and write the vowel symbols after it as [hɑ], [hɛ], [hɔ], etc., although we know that these digraphs represent perfectly homogeneous sounds.

There are also borderline cases where it is open to question whether certain sound-elements are simultaneous or successive. According to ordinary transcriptions, the English word sway is transcribed as [swei] while the Chinese word 歲 'year' is transcribed as [suei], from which it would seem that the first two elements in Chinese 歲 would be separated more clearly than in English sway. As a matter of fact, the contrary is the case. While the [s] in English sway is not at all labialized for most of its duration, the [s] in Chinese 歲 is completely labialized. Moreover, the diphthong [ei] starts almost as soon as the tongue leaves the [s]-position without leaving any appreciable duration for the [u] or [w] to stand alone, so that a narrow transcription might give 歲 as [sei] or, as the velar element is rather weak in this type of word, as [sɛi]. But in similar syllables in other tones or with other initial consonants, there is more independence in the [u]-element. It would be contrary to the spirit of phonemic transcription to write 歲 as [sɛi] and 對 as [tuei]. Consequently, we must allow as a possible phonemic 'solution' the over-analysis of [σ] into two phonemes [su] or [sw], and so long as our universe of discourse is Chinese (Mandarin) phonemes, we should not be disturbed by the fact that [sw] in English is a succession of two sounds in which [s] is little or not at all [w]-ized.

From the consideration of these cases of under-analysis and over-analysis, we see the great advantage of Bloomfield's speaking of sound-features instead of sounds. If we consider a sound as made of a number of features, then a phoneme is a combination of certain (simultaneous and/or successive) features, leaving other features unspecified. The English [t]-phoneme, for instance, consists of the features of voicelessness, apico-alveolar articulation of a certain range (eight, tea,

tray), and complete stop of breath, while the exact position of articulation, the force of stopping, the nature of on-glides (heat, hoot) and off-glides (tar, star, tea, two, little, button, but) are left unspecified. The Chinese [u]-phoneme consists of the features of lip-narrowing, a slight velar action, and voice, and as the position of the tip of the tongue is left unspecified, it is perfectly free to form the [s]-articulation while the [u]-articulation is being held, so that we can entertain the idea of two phonemes [s] and [u] being telescoped into one single sound [σ] without necessarily considering the sound [σ] as one new phoneme or as one member of a new phoneme. Similarly, the [h]-phoneme in the Wu-dialects consists of the feature of emitting more air than usual in producing voice, and as it does not specify anything about the oral or nasal features of articulation, the speaker is free to do all kinds of articulatory tricks at the same time with [h],<sup>12</sup> so that there is an [ɑ] type of [h], an [ɛ] type of [h], etc., and even an [m] type of [h], as [hɪm] 'have not', as contrasted with [m] in [m-mɑ] 'mother', and yet all this does not prevent us from considering the [h] and [ɑ] in [hɑ] as two theoretically separate phonemes.

(c) *Zero symbols.*<sup>13</sup>

As limiting cases of the variation in size of unit, we have the possibility of using zero symbol for sounds or sound-features and of counting absence of sound as a phoneme or as one member of a phoneme.

Where there are several degrees of significant stress, significant length, or kinds of significant intonation, it is the usual practice to represent one of them by zero symbol. Thus, unmarked syllables in polysyllabic English words are understood to have the low degrees of stress. Vowels without length marks are understood to be short. In most systems of tone-marking, the first tone in Chinese is 'marked' by not marking it.

In the Chinese syllables [tʂʊ], [tʂʊ̃], [ʂʊ], [zʊ], [tsɿ], [tsɿ̃], [sɿ],<sup>14</sup> there is a vowel which is a vocalized prolongation of the preceding consonant, and it is understood to be present when these syllables are written in the standard way, that is with the consonantal symbols standing alone: 出, 只, 尸, 冢, 尸, 志, ㄤ, in the National Phonetic Script. This is therefore a way of representing actual sounds by zero symbol.

In German stressed syllables beginning orthographically with a vowel, there is normally a glottal stop. Some writers give the symbol [ʔ] for this sound, but others omit the symbol, and in internal positions, as in Verein, a stress mark suffices to indicate the presence of the [ʔ], as [fer'ain]. It would be perfectly possible, though hardly conventional, for us to favor some other phoneme with the saving of a symbol, say [h], and transcribe Hauch as [aux] and auch as [ʔaux].

Readers of Bloomfield's Language who are used to ordinary types of transcriptions of English must have been impressed by forms like these on pages 111, 112, 121, 122:

gentleman	[ 'jɛntlɪmɪn ]
atom	[ 'ɛtɪm ]
maintenance	[ 'meɪntɪnəns ]



maintain	[mən'tejn]
stirring	['stɪrɪŋ] vs. string [striŋ]
pattern	['pætɪn] vs. patron ['peɪtrən]
erring	['rɪŋ] vs. ring [rɪŋ]
error	['erɹ]
butter	['bʊtɹ] on a par with bottle ['batl]
bottom	['batɪ] on a par with button ['bʊtɪ]
anatomy	[e'netmɪj] vs. met me [met mij]

Now Bloomfield systematically avoids the use of the obscure vowel letter [ə], and plays his game admirably well. The e in French le he considers as a short variety of [œ] (p. 106), which agrees more or less with the idea of the French themselves. For German, he lets the difference in stress take care of the difference between [e] and [ə]. For American English, he uses the strong forms where there is no following consonant or where the following consonant is not usually considered to be a syllable-carrier in English, but leaves out the symbol entirely in other cases. Now from the point of view of actual sound, weakened orthographically written vowels either become [ə] or disappear entirely. If we take ordinary deliberate conversation as the style of 'language' to consider, we can say, according to the writer's own observation of Middle Western American speech, that the presence or absence of a vocalized [ə] is about as follows:

[ə] compulsory or preferred	[ə] optional	Absence of [ə] compulsory or preferred
arbor [-bər] vs. club rate	happen [-p(ə)n]	able [-b]
upper [-pər] vs. upright	often [-f(ə)n]	simple [-p]
gentleman [-mən] vs. autumnal	even [-v(ə)n]	dismal [-m]
humor [-mər] vs. am ready	bacon [-k(ə)n]	careful [-fl]
kingdom [-dəm] vs. bed-mate	Winkum [-k(ə)m]	devil [-v]
London [-ndən] vs. kindness	Beauchamp [-č(ə)m]	sudden [-dn]
under [-dər] vs. shad roe	Gresham [-š(ə)m]	middle [-dl]
atom [-təm] vs. met me	patron [-tr(ə)n]	colonel [-nl]
pattern [-tɔrn] vs. outright	Durham [-r(ə)m]	wiggle [-gl]
maintenance [-nəns] vs. main news	coral [-r(ə)l]	engine [-jŋ]
Barnum [-nəm] vs. on me	handsome [-s(ə)m]	cordial [-j]
corner [-nər] vs. Henry	bosom [-z(ə)m]	luncheon [-čn]
Helen [-lən] vs. hell no	Bentham [θ(ə)m]	celestial [-čl]
alum [-ləm] vs. elm (but also [eləm])	fathom [-ð(ə)m]	nation [-šn]

Keller [-ləɹ] vs. all right	lengthen [-θ(ə)n]	special [-šl]
finger [-gɹɹ] vs. big row	heathen [-ð(ə)n]	vision [-ʒn]
teacher [-čɹ] vs. teach right		listen [-sn]
pleasure [-žɹ] vs. rouge-red		tassel [-sl]
error [-rɹɹ] vs. her right		dozen [-zn]
tracer [-sɹ] vs. viceroy		hazel [-zl]
Caesar [-zɹ] vs. phase-rule		Ethel [-θl]
ether [-θɹ] vs. Ruth ran		brothel [-ðl]
father [-ðɹ] vs. with rum		

Opinions may differ as to the placing of particular cases under each heading, but there seems to be no doubt as to the presence of [ə] in gentleman [-mən] or its absence in able [-b]. Historically, as the orthography indicates, many of these words had clear vowels. Now some of them have an obscure vowel even in deliberate speech, which does not however entirely disappear in some cases. Since the presence, option, or absence of the [ə]-sound are more or less determined by the nature of the sounds preceding and following, and sometimes by conditions of syllabication, we can regard this as one phoneme of which one member is the obscure vowel [ə], a second member is a variphone (or dynamophone) consisting of [ə] and zero, and a third member is zero. Bloomfield has therefore as much right to represent this phoneme by zero symbol as one has to represent German [ʔ] by zero symbol. Apparent ambiguities as in the case of string and stirring may be avoided by marking the syllabication: ['strɪŋ], which will remind us to explode the [t] before the [r], as it is a case of the first member of the phoneme.

It should be noted that our discussion here is to find a methodological justification for Bloomfield's used of zero symbol for an actual sound. There are other considerations from which this avoidance of the symbol [ə] seems rather inconvenient. Thus, when there is no final consonant like [l], [n], etc., to act as a syllable carrier, as in America, suppose, jealous, he is obliged to use exclusively strong forms like [e'merike] or [e'merika], [so'powz], [ʒelos], which are rarely heard even in deliberate speech (understanding of course that [o] is the 'short u'). The definite article the will have to be either [ðij] or [ð], with no middle ground. Those who favor Bloomfield's system for English will find that he is simply carrying the omission of [ə] to its logical conclusion. Those who do not will consider forms like ['strɪŋ], ['meɪntɪns], [e'merika] a reductio ad absurdum.

Under cases of under-analysis, we considered the representation of affricates, aspirates, and narrow-range diphthongs by single symbols. Now if the symbol used is obviously one of the elements in the compound, as [p] for [pʰ], [c] (instead of [č]) for [cɛ], [ɟ] (instead of [j]) for [ɟz], or [o] for [ou], then we can regard that element which is understood but not represented as having zero



symbol. For instance, in the Soochow dialect, labials go with [u], velars and dentals go with [əu], and alveolars go with an apical vowel with protruding lips, for which the writer has proposed the symbol [ʷ],<sup>15</sup> as 布 [pʷ], 故 [kəʷ], 詰 [tʃʷ]. All these can be considered as members of one phoneme [u], in which case the [ə] in [əu] would be a sound with zero symbol. Again, in the Foochow vowels [u] ~ [ou], [i] ~ [ei], [y] ~ [øɣ] according to tone, as cited above, it is common practice to consider the first tone, which goes with [i], [u], [y], as basic, so that it is convenient to write these phonemes as [i], [u], [y], in which case a tone mark would suffice to remind one of the addition of [e-], [o-], [ø-] (by no means weak and parasitic), though these elements still have no symbol to themselves except as implied by the tone.

(d) Zero sound

In the cases of over-analysis, as in [fiɑ], we had two features representing separate phonemes which together make one single sound. But if we take the series [u], [əu], [ʷ] in Soochow and consider them as varieties of [əu], of which the [ə] is absent after labials and alveolars, then under the latter conditions the phoneme [ə] will have zero as a member. Similarly, if we write in the symbol [ə] for maintenance [-nəns], happen [-pən], button [-tən], all alike, then the [ə] will be a symbol for a phoneme, of which one member (in words of the type in the third column in the preceding table) has the value zero. Again, Bloomfield's use of [ij] and [ow] in unstressed positions may be regarded as cases of [j] and [w] with zero sound. In Passy's 'orthographic' notation referred to above, he spelt out the 'mute e' as [ə] in all cases, letting the 'rule of three consonants' take care of the presence or absence of the actual sound. From our point of view, [ə] would then be a phoneme with zero as a possible member. In the system of Ancient Chinese initials, there are two called ying (影) and yuh (喻) which have been reconstructed by Karlgren as [ʔ] and smooth vowel respectively. Those are of course only the names of the initials. But Jang Tayyan (章太炎) has devised an alphabet with a symbol for each of the 36 initials, so that his symbol for yuh would be a symbol with zero value, very much like the ' symbol for the smooth ingress of vowels in Greek.

In the theory of shéh (攝) or 'rim-emes' in traditional Chinese phonology, the use of a symbol for zero is extremely useful. Taking again the National Phonetic Script, which is constructed very much in the spirit of traditional phonology, we have the rimemes ㄨ, ㄨㄛ, ㄨㄛㄨ, ㄨㄛㄨㄛ which, like the other rimemes, may be preceded by the medials ㄨ, ㄨㄛ, or ㄨㄛㄨ so as to form the following complete finals (i. e. syllables minus initial consonant, if any) which actually occur in words:

- without medial : ㄨ ㄨㄛ ㄨㄛㄨ ㄨㄛㄨㄛ
- with medial ㄨ : ㄨㄨ ㄨㄨㄛ ㄨㄨㄛㄨ ㄨㄨㄛㄨㄛ
- with medial ㄨㄛ : ㄨㄛㄨ ㄨㄛㄨㄛ ㄨㄛㄨㄛㄨ ㄨㄛㄨㄛㄨㄛ
- with medial ㄨㄛㄨ : ㄨㄛㄨㄨ ㄨㄛㄨㄨㄛ ㄨㄛㄨㄨㄛㄨ ㄨㄛㄨㄨㄛㄨㄛ

A simple phonemic transcription in the IPA would be

- əi əu ən əŋ
- iəu iən iəŋ
- uəi    uən uəŋ
- yən yəŋ

In these twelve finals, the [ə] in [iən], [iəŋ], and [yəŋ] always has zero value (in [yəŋ], the [y] is broken up into an intermediate value between [iu] and [yu]), just like the [ə] in [ba:dən] for German baden.<sup>15a</sup> In the case of [uəi] and [iəu], the [ə] has zero sound in the first and second tones and has some sound in the third and fourth tones, except that in [uəi] not preceded by an initial consonant, [ə] does not entirely disappear in any tone. In [uən] the [ə] has zero sound in the first and second tones when there is an initial consonant, is fully sounded when there is no initial, and is very weak in other cases. With [uəŋ], the [ə] is sounded only when there is no initial consonant. With [yəŋ], the [ə] is sounded (with the value [ɨ]) when there is a palatal initial or no initial, but has zero sound with other initials. With such a complicated group of facts, where each case is a law unto itself, we should still fail to attain perfect phonetic accuracy by writing something like:

- ei ou ən ʌŋ
- iu in iŋ
- uei    un uŋ
- yn iuŋ,

although this may be a useful form of transcription for certain purposes. The paradoxical appearance of a symbol with widely different values, including zero, would disappear if we stuck to the National Phonetic Script or used some non-committal symbol such as 'ø' for the phoneme in question, thus:

- øi øu ən øŋ
- iøu iøn iøŋ
- uøi    uøn uøŋ
- yøn yøŋ.

This is of course not the only or even the best phonemic treatment of these finals, but by allowing the possibility of zero members of phonemes, we do gain a number of advantages.<sup>16</sup>



(e) *Phonemic treatment of conditional end-consonants*

In ordinary transcription of French, cases of liaison and elision are spelt as they sound. The word *pas* then has two forms [pa] and [paz], *le* has [lə] and [l], and by the 'rule of three consonants' the word *demander* has the two forms (vous) [dmãde] and (pour) [dãmãde]. Similarly, Southern English *sore* has the two forms [sɔ:]<sup>17</sup> (throat) and [sɔ:r] (eyes). The presence or absence of the sound in question is not distinctive, so that it and zero may be considered as members of the same phoneme. But the difference between *saw* [sɔ:] and *sore* [sɔ:] is distinctive, and for the phoneme with the conditional [r], the symbol '·' has been used in dictionaries, though the writer has never seen it used in texts, probably because ordinary transcriptions are not phonemic. From arguments with unsophisticated Frenchmen, who insisted that *point* did not have the same pronunciation as *poing*, the writer would think that a special phonemic symbol for these optional sounds would be welcomed by the French, say something like [paz], [pwẽt], so as to avoid the pitfalls of the 'patakes' business.<sup>18</sup> Better symbols than these may be devised. Our interest here is in the obvious phonemic nature of these groups [z] ~ zero, [t] ~ zero, etc. It may not be necessary to outlaw the writing of two alternate forms for one word. But it would be an advantage not to have to do so.<sup>19</sup>

In this connection, we may mention the so-called 'aspirated h' in French as a consonant phoneme which always has zero sound, but has a very definite 'feature' of its own, and may be conveniently symbolized as [ḥ]. The great advantage in regarding this as a consonant phoneme lies in that it greatly simplifies the description of the behavior of other phonemes. We can then say that [-ṭ] (liaison t) has the sound [t] before vowels, and zero sound before consonants or in end-position. If we refuse existential status to [ḥ], we have to say that [-ṭ] has the sound [t] before vowels, except before the following exhaustive list of words: [aza:r], [z:z], etc., which is no way of stating the 'rule of pronunciation' for phonemes.

In many Chinese dialects, final consonants like [-n], [-k], [-ʔ] are pronounced very clearly at the end of phrases, but become weakened or disappear entirely when followed immediately by another word. The [ʔ] in Foochow or the Wu-dialects is a phoneme which has zero value before another word. Thus, Soochow 八 [poʔ] 'eight', 八百 [popaʔ] 'eight hundred', 八百八 [popapoʔ] 'eight hundred eight(y)'. The vowel is not even lengthened (as it is in Soochow under certain conditions) to make up for the time of the original [ʔ]. If we write phonemically, we can represent this phoneme with [ʔ] and zero sound as its two members either by (1) zero symbol (and let the symbol for the entering tone, with which it is always associated in these dialects, indicate its presence), or (2) the symbol [-ʔ] or [-ʔ̣] in all cases, whether the glottal stop is articulated or not.

It is not our purpose here to propose purely for the pleasure of perversity either to under-analyze two or more piece sounds and treat them as single phonemes or to over-analyze one piece sounds and treat them as successions of phonemes, nor purposely to write something where there is nothing to write, or to write nothing where there is something to write. We wish only to indicate that all such tricks

are actually being done in current transcriptions, and that according to the way in which we treat the time unit of phonemes in a language we may arrive at one or another of various possible solutions for that language.

2. *The Grouping of Sounds into Phonemes*

So long as we confine ourselves to the consideration of stock examples like *keep*, *call*, *cool*, our construction of phonemic systems is smooth-sailing. We need only to disregard slight variations of what is generally regarded as 'the same sound' and call it a phoneme. But on many questions of the identification of sounds in a language, we are not favored with such general consensus of opinion. Is the second element of the English 'long i' to be identified with the first element in *yes* (Bloomfield's [aj]), or with the first element in *it* ([ar] by many writers), or with the final element in *very* (Palmer's [aɪ]), or with the undistinguished [i] in *it* [it], *eat* [i:t], *very* ['veri] ([ai] by many writers), or with the first element in *eight* ([æ] in certain 'narrow' transcriptions)? Is the palatal series [tɛ], [tɛ'], [ɛ] in words like 茶, 芽, 下 (occurring only before high front vowels) to be identified with the velar series [k], [k'], [x] or with the retroflex series [tʂ], [tʂ'], [ʂ] (none of either series ever occurring before high front vowels)? According as we emphasize this or that motive, we should arrive at a different system of organization of elements into phonemes. We may desire to have (a) phonetic accuracy, or smallness of range of phonemes, (b) simplicity or symmetry of phonetic pattern for the whole language, (c) parsimony in the total number of phonemes, (d) regard for the feeling of the native speaker, (e) regard for etymology, (f) mutual exclusiveness between phonemes, (g) symbolic reversibility, and these motives are often conflicting.

(a) A minimum degree of phonetic accuracy is provided for by the 'similar in character' clause contained in Jones's later definition. By our purely logical definition, we should have the possibility of regarding English [h] and [ɲ] as members of one phoneme, which never occur in the same phonetic environment, and we could write forms like [hæt], [bi'hɛiv], [sɔh], ['sihɔ\*] for *hat*, *behave*, *song*, *singer*, and learn very quickly when to say [h] and when to say [ɲ]. Such practice, however, would not be favored by either the phonetician or the philologist. Now the automaticity of variation within a phoneme has two senses. (1) The variation of [h] of the shades [h<sub>c</sub>], [h<sub>a</sub>], [h<sub>ɔ</sub>], [h<sub>ɔ</sub>],<sup>20</sup> etc., according to the following vowel is automatic practically in all languages which have these sounds. So is the variation of the [t] in [ts] and [tʃ] in all languages which have these affricates, that is, if we take affricates as successions of two phonemes. But such cases are much rarer than we are inclined to think. (2) In most cases, the automaticity of variation holds only for the particular language in question, although familiarity with the language may give one the impression of its universality. Thus, speakers of one language, e. g. Japanese, would find the change of [h] into [ç] before [i] so natural as to be something inherent in the nature of speech sounds, while in



another language, e.g. German, [h] can be followed by [i] without becoming [ç], which belongs to another phoneme. The variation of Foochow [a] and [ɛ] 𪛗, 'to be able to', according to tonal environment, is so natural to the native speaker that he refuses to admit that he is not pronouncing it always in one and the same way, while in many languages these are widely different phonemes. Since, therefore, the automaticity of variation is mostly of conditional nature, we shall have to allow a good deal of latitude in the interpretation of the 'similar in character' clause. For the sake of phonetic accuracy, it would be an advantage to construct our phonemes with as narrow ranges of variation as possible (though it is never desirable to limit ourselves to universally automatic groups of the type (1) mentioned above), but this one desideratum may have to be sacrificed to some extent for other motives.

(b) Simplicity or symmetry of phonetic pattern is a factor which greatly influences our organization of phonemes. Bloomfield wishes to say that there are no long vowels in English, a statement which, from our standpoint, is neither true nor false, but may be estimated as methodologically desirable or not desirable. He has eight vowels:

i	u
e	o
ɛ	ɔ
a	ɑ

and eight diphthongs or triphthongs:

aj	ɔj <sup>21</sup>	ej	ij	juw
aw	ow		uw	

It would seem that he could gain phonetic accuracy by writing [ai], [ɔi], [ou], even without the addition of special symbols like [ɪ] and [ʊ], but then he could not very well go on and write [ii], [uu], and if he indicated the diphthongal character of these vowels by [ij], [uw], the system would look much less symmetrical. The table would also look less symmetrical if he wrote [i:], [u:], with the American narrow-range [e:] and [o:] lurking around for recognition, while [aj], [aw], and [ɔj] must still remain as diphthongs. The use of the nonce phoneme 'ø' for Chinese (see I (d) above) with zero as a possible member of the phoneme, gives great symmetry to the system. Again, the series 𪛗, 𪛗, 𪛗, 𪛗 may be symmetrically rendered as [an], [ian], [uan], [yan] instead of the usual [an], [iɛn],<sup>22</sup> [uan], [yan], which is phonetically more accurate but by no means necessary. When symmetry runs parallel to structural or etymological considerations, so that the phonemes also agree with diaphones or phonogenes, its claim for consideration will of course be greatly increased.

(c) Parsimony of entities in the spirit of 'Occam's razor' is of course the hobby of symbolologists. We have already noted the admission of digraphs for single sounds

for the saving of a whole series of new letters. The use of [ij] and [uw] or introduction of length saves the use of the letters [ɪ], [u], and [ʊ] for English. Palmer deplors this 'exaggerated compliance with the principle of symbol economy,'<sup>23</sup> because, among other reasons, the symbol for length, e.g. in although [ɔ:l'dəu] does not necessarily indicate length. The writer can recognize the usefulness of the letters [ɪ], [ʊ], and [ʊ] from motives of phonetic accuracy, but the objection to the length mark does not seem to be fatal, for the symbol [ɔ:] may also be taken phonemically in such a way that it is long in stressed positions, less long before voiceless consonants, and short (without change of quality) in unstressed positions, while [ɔ] can still be considered a separate phoneme. Bloomfield's avoidance of [ə] and his identification of the vowel in son with the first vowel in own (instead of writing the former [ʌ] or [ɜ]) also effects a saving of 'queer symbols'.

The extent to which one could go in the parsimony of symbols can best be illustrated by Liu Fu's numerical code for the Peiping syllables.<sup>24</sup> He used only six symbols in six positions (or 'plus' six positions, if we count positions as part of the set of symbols) as shown by the table below. Thus 𪛗 [kuɑŋ] would be 312241, where 31 stands for [k], 224 is [uɑŋ] and the last figure '1' means the first tone. 000042 would be the nasal interjection meaning 'What did you say?' This system is extremely symmetrical in structure, economical in the number of kinds of symbols used, and very illuminating as to the phonetic pattern of the language, but it can hardly be used as a system of transcription and was never intended to be. It may be noted here that his 'Abdomen No. 1' includes [ɜ], [ʌ], [ɛ], [ɔ], [ɪ], [ə], and zero as members, and corresponds to our 'ø'. In the body of the table, he gave also a somewhat narrow transcription of all the syllables.

Position	I. HEAD	II. FACE	III. NECK	IV. ABDOMEN	V. TAIL	VI. EXPRESSION
Figure	Place of articulation	Manner of articulation	'Medial' vowel	Principal vowel	Final vowel or consonant	Tone
0		zero	zero	zero	zero	—
1	labial	unaspirated	i	ə	i	1st
2	dental	aspirated	u	ɑ	u	2nd
3	velar or palatal	nasal	y		n	3rd
4	retroflex	voiceless continuant			ŋ	4th
5	dental advanced	voiced continuant				

(d) The feeling of the native speaker is a factor which is greatly emphasized by Sapir. Where the feeling comes from obvious misconceptions, arising often from orthographic considerations, such as the idea that principal and principle have different pronunciations,<sup>25</sup> or that ng = n + g,<sup>26</sup> we need not take it very seriously. But when there is no question of misconception, but one of preference of choice



between alternate manners of organization of phonemes, then the feeling of the native should be given due consideration, though it need not be taken as the deciding factor. Thus, while the phonetician would write Chinese ㄉ, ㄉㄛ, ㄉㄛ, ㄉㄛ as [an], [ien], [uan], [yan], the speaker of the dialect of Peiping feels that they all belong to the same rimeme with different medials. This is further supported by the fact that when the [-n] is dropped when the syllable is amalgamated with a following retroflex vowel, [ien] does not become [ier], but [iar], as in—點兒 [i tien ər] > [itiar] 'a little'. Most speakers of the Foochow dialect feel that among the vowels in the following words,

- 音 in55: 諫 ein242:
- 簾 ein55: 限 ain242:
- 溫 un55: 問 ouŋ242:
- 恩 ouŋ55: 筭 ouŋ242:

those in the same row are tonal variations of the same vowel, while refusing to recognize that the vowels in 諫 [ein242:] and 簾 [ein55:] or those in 問 [ouŋ242:] and 恩 [ouŋ55:] are the same. As there are very definite rules for the diphthongization of single vowels (or opening of close vowels, as [ɛ] ~ [a]), it is quite possible to arrange the Foochow vowel phonemes according to the native conception as an alternate and for some reasons a better way of grouping the phonemes. On the ambiguity of the phonemic membership of Peiping ㄐ, ㄑ, ㄒ, the native speaker will also have something to say. The distribution or patterning of these sounds and related sounds is as follows:

- 1 ㄐ ㄑ ㄒ tɕ tɕ' ɕ always before [i] or [y]
- 2 ㄎ ㄎ' ㄒ k k' x
- 3 ㄒ ㄒ' ㄒ ts ts' s
- 4 ㄒ ㄒ' ㄒ tʂ tʂ' ʂ } never before [i] or [y]

It is therefore possible to identify the series '1' phonemically with any one of the other three series. Wade identifies it partially with '4': he writes ch, ch', hs for '1', and ch, ch', sh for '4'. The National Romanization identifies '1' with '4' completely by writing j, ch, sh for both. The French system of romanization for Chinese has '2' or '3' according to etymology, which was what '1' came from, and overzealous adopters of the French system identify '1' with '3' completely, and write forms like Sien Sien for 嚴縣, although both belonged to series '2'. Now as to the feeling of the native, the favored series is '2'. For he feels [kə, tɕi, ku, tɕy] or [xə, ɕi, xu, ɕy] to be alliterative series with only different vowels. Moreover, in the system of a secret language which breaks every syllable with initial-final I+F into Iai + kF, (e.g. 北 [pei]>[pai-kei]),<sup>27</sup> the [k] becomes [tɕ] when the final begins with a high front vowel, as \* [mi]>[mei-tɕi].

(e) Regard for etymology is properly not within the scope of our present study, which is concerned only with the descriptive study of one language of one period.

But in the very frequent case of possibility of alternate phonemic treatment, we should certainly be allowed to steal a squint towards extrinsic factors. As a matter of fact, consideration of etymology does have a great weight with many writers. The identification of [tɕ], [tɕ'], [ɕ] with [k], [k'], [x] is etymologically preferable, if only partially, to identifying them with [tʂ], [tʂ'], [ʂ]. It would, however, cease to be strictly phonemic transcription of the Peiping dialect if we split [tɕ], [tɕ'], [ɕ] into a velar and a dental series according to derivation, as [xi] for 希 and [si] for 西, for then no rule of phonemic membership short of lexical enumeration could tell us when it is [xi] and when it is [si].

It is also of etymological interest to try to secure identity of words by giving them constant phonemic forms. Thus, we can write [sɜ:ʔ] or [sɜ:r] for sir and let the phonetic environment decide when it is to be pronounced [sɜ:r], [sɜ:], [sər], or [sə]. Again, by writing [ɛ:trə] for être, instead of [ɛ:tr] before vowels, [ɛ:trə] before consonants, and [ɛ:tr̥] at the end of phrases, Passy gives the word a constant form, the value of the phoneme [ə], which may be written in italics if desired, to be determined by the 'rule of three consonants', etc. The Foochow word 𪗇 'to be able to' may be given the constant form [a], or a compromise form [æ], and the choice of values between [ɛ] and [a] may be determined by a very simple tonal rule. The identity-of-word interest, however, must not go so far as to cover grammatical considerations, where the rule of pronunciation would have to contain other than purely phonetic conditions. Thus, while we can write French en as [an], understanding that it is to be pronounced [ã] before consonants (s'en va) and [an] before vowels (s'en aller), we cannot write fin as [fin] in order to provide for the pronunciation of the feminine form [fin]. In such cases, we shall have to consider fin [fɛ̃] (or [fɛn]) and fine [fin] as two separate words, as much as files and fille.<sup>28</sup>

(f) Mutual exclusiveness between phonemes is another desideratum we wish to consider; that is, the list of phonemes shall not only be exhaustive for the language, but, other things being equal, we should try to make the membership of the classes mutually exclusive. Other things, however, are never equal, and we have in fact already allowed the possibility of over-lapping of membership between phonemes in cases like the Foochow:

one phoneme	[i]	[ei]
another phoneme	[ei]	[ai]
one phoneme	[u]	[ou]
another phoneme	[ou]	[əu],

and in cases of different phonemes each of which contain zero as a member. The treatment of affricates as independent phonemes where their occlusive and fricative element can easily be identified with other phonemes in the same language, such as Bloomfield's [j] and [č] for what many other writers give as [dʒ] and [tʃ], may also be considered as a case of overlapping of membership. Palmer calls this 'multiple identity',<sup>29</sup> under which he cites a number of examples from Japanese and English. We should note, however, that the 'same sound' which belongs to



two or more phonemes may be taken in two senses. In a conditional sense, 'the same sound' never occurs under the same conditions as to contiguous sounds or as to conditions of stress, length, and tone. The [ei] in the Foochow [i] ~ [ei] phoneme occurs always in the tones [12:], [242:], [23:], while the [ei] in the [ei] ~ [ai] phoneme occurs always in the tones [55:], [53:], [22:], [5:].<sup>30</sup> The English [ɛ] and [ɪ] also occur under different conditions of stress from combinations like heat sheets and and Jeanne. In an absolute sense, on the other hand, Palmer's 'multiple identity' implies that two phonemes will have in common one member identical in all respects. Thus, there is absolutely no difference between the initial in \* [ei] and the initial in ㄝ [ei], discussed above under (e). We could, if we like, put both into the [x] phoneme or both under the [s] phoneme, but if we write \* [xi] and ㄝ [si], then the identical [e] would belong to two phonemes under the same conditions. This treatment brings up the question of

(g) Symbolic Reversibility. The use of symbols has two aspects, the aspect of reading, or the determination of the object from the given symbol, and the aspect of writing, or the determination of the symbol from the object. The reading aspect of phonemic symbols is always determinate with respect to the language in question. Given a phonemic symbol, the range of sounds is determined, and the choice within the range is usually further determined by phonetic conditions. It would also be a desirable thing to make this reversible, so as to include the aspect of writing; that is, given any sound in the language, its phonemic symbol is also determined. If phonemes do not overlap, this is obvious. If they overlap, and the common members occur under different phonetic conditions, the reversibility still obtains. For instance, although 電報 is normally pronounced [tiəmpau], so that the m sounds exactly like the m in 門 [mən], yet we can tell that it is only a member of the phoneme n, as the phoneme m never occurs in this position in standard Chinese. Again, in the dialect of Foochow, if we had the symbol A for the [i] ~ [ei] phoneme and the symbol B for the [ei] ~ [ai] phoneme, we could still tell whether a given case of the sound [ei] is to be written A or B from the tone.<sup>31</sup> But if the identity of a common member between phonemes is unconditional, as the distinction of \* [xi] and ㄝ [si] for the Peiping dialect, then it would be impossible to go from the sound to the symbol even for the native speaker. Strictly, a non-reversible symbolization of sounds based on etymological or other considerations becomes an orthography and ceases to be a transcription, and the French system of romanization of Chinese, which distinguishes 基, 欺, \*ki, k'i, hi from 璣, 妻, ㄝ tsi, ts'i, si (also favored by Bernhard Karlgren) is a case of this kind. In other words, homonyms should not have different transcriptions. There is, however, a class of intermediate cases, where the common member between two phonemes occurs sometimes under exactly the same phonetic conditions, but at other times becomes differentiated in some way under other sets of identical conditions. Thus, the same [ə] which occurs in mica ['maikə] and in poker ['poukə] before consonants becomes differentiated, for some speakers of English, into [ə] and [əɾ] respectively before vowels. If we write the former as [ə] and the latter as [ə\*] or as [əɾ], then it will be possible to go from sound to symbol only when the sound in question is followed by a vowel, but not

when followed by a consonant. The reversibility is therefore only partial. Usage is by no means uniform in such cases. Sometimes, symbolic reversibility is secured at the expense of word identity, the same word poker appearing in two forms ['poukə] and ['poukəɾ], considered as different sets of phonemes. At other times, identity of word form is secured at the expense of reversibility, the same word Fr. espèce always appearing as [espəs], where the final [s] is pronounced [z] when followed by a voiced consonant, so that given the final sound [z], one cannot tell whether it is a member of the [s]-phoneme or a member of the [z]-phoneme.

### 3. Choice of symbols

It is one problem to group the sounds of a language into such and such phonemes and another thing to assign such and such symbols or letters to these phonemes. As a phonemic transcription has reference to one language, there is a great degree of freedom in our use of symbols. The freedom, however, is not so unlimited as in the case of mathematics, where the same symbol changes value not only from problem to problem, but also within the same problem. From purely logical considerations, it would seem that once the phonemes themselves are agreed upon, it is only a 'matter of form' as to the symbols used for them, 'What's in a letter?' Who ever heard of one mathematician writing l, m, n and another insisting that the same items shall be written as p, q, r? In phonetic symbols, however, there is tradition, or rather, what is more unfortunate, a number of conflicting traditions in the use of symbols. Consequently, there arise frequent controversies with as much vehemence as about the use of words. We shall feel the importance of the use of symbols when we realize that it often has an influence on our actual organization of phonemes. Some of the factors which influence our choice of symbols run parallel to those which influence the organization of phonemes. Thus, symmetry and simplicity of phonetic pattern corresponds to a certain degree of symmetry and simplicity in the symbols. Parsimony in the number of phonemes implies also parsimony in the number of symbols. The feeling of the native as to sound will also apply to the choice of the symbol if the language already has an alphabet, although this is often less dependable than his feeling for the pattern in the abstract. In addition to these, we have following questions especially concerned with the choice of symbols.

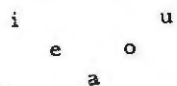
(a) The desire to keep within the limits of the ordinary 26 letters of the roman alphabet is such a powerful one that transcribers yield to it at great cost to other considerations. Thus, if a language has [ɑ], [ɔ], or [ɛ] but no [a], [o], or [e], then the latter symbols will be used as a rule.<sup>32</sup> If a language has only [ʀ], but no [r], then [r] would be used, although phonetically it would be taking as much liberty as writing [t] for [κ]. Bloomfield's use of [o] in the phoneme [o] and the diphthong [ow] avowedly comes from the desire to avoid 'queer symbols'. So far as parsimony of number of phonemes and symbols is concerned, [ɻ] would do just as well as [o], but would be even more appropriate, as it is more natural to say that the [ɻ]-phoneme is rounded in the diphthong [ɻw], on account of the labial [w],



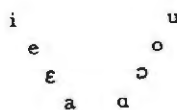
than to say that the vowel [o] in American English is an unrounded vowel except in the diphthong [ow]. This avoidance of queer letters means that while theoretical phonetics tells us that there are such and such sounds, or at least advises us to recognize conveniently such and such distinguishable sounds in the main, yet we feel inclined to identify the phonemes of a language with those sounds which happen to be favored with 'lower case' letters.

(b) Of those symbols which are not the ordinary letters of the alphabet some are considered less "queer" than others, either on account of old standing or on account of the importance of their position in the scheme of general phonetics. Thus, [ŋ], [ʃ], [ð], [ø], [ɔ] are usually considered much less queer, and less effort is usually made to avoid them than in the case of symbols like [ʒ], [β], [w], [ɣ]. Again, in the abstract scheme of cardinal vowels, a special symbol for the part between [ɛ] and [a] would be of less importance than the eight main positions. And since it is possible to group all the [e]-[ɛ]-region sounds in English under the phoneme [ɛ], the symbol [ɛ] is left free for indicating the phoneme between cardinal [ɛ] and [a], which is what Bloomfield does: using the less queer symbol [ɛ] instead of the symbol [æ], which is 'queer' in that it occupies a less strategic position.

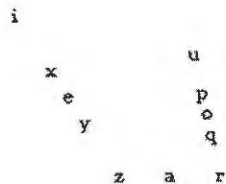
(c) The scale of division into which a variable range of sounds is supposed to be divided will have a great influence on the choice of the symbols. Thus, the traditional triangular scale



and the cardinal scale



differ in the number of intervals into which the vowels are divided. The difference would be less confusing if we had non-conflicting symbols in the new scale, something like:



As a matter of fact, one does find a partiality for using [ɛ] for [e] and [o] for [ɔ] (Cf. (a) above), and, less frequently, [a] for [ɑ], which shows the influence of the

prestige of the i-e-a-o-u system. 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.<sup>33</sup>

In Karlgren's scheme of vowels, using Lundell's dialect alphabet, the 3-point 2-interval high vowel scale of [i(y)—i(u)—u(u)] of the IPA is given as a 2-point 1-interval scale of i(y)—u(u). (More accurately speaking, u is placed in Karlgren a little to the front of u.)<sup>34</sup> The Russian и, which on the 3-point scale is nearest to [i], is therefore given as [i] in the IPA,<sup>35</sup> but as и by Karlgren, as it is nearer to the back vowel than to the front i on his 2-point scale.

(d) The avoidance of diacritical marks, which are now reserved for modifiers, also influences our choice of letters. We have already noted that rather than writing [s] for the single sound in Chinese ㄝ, we allowed the modifier to be written separately, thus: [suei]. Again, if a language has only two series of voiceless plosives, one unaspirated and one aspirated, but no voiced plosives, then either [p, t, k; ph, th, kh] or [b, d, g; p, t, k] would be preferable to [p; t, k; p', t', k'] or [b, d, g; p, t, k].

(e) Consistency with phonemic transcriptions of other languages is a thing that one may keep in mind, but which one must not go out of one's way to obtain. Where our phonemes are of narrow ranges and the symbols given them are the nearest phonetic letter we happen to have, the resulting transcription is not likely to conflict seriously with other transcriptions. But if for one reason or another our phonemes vary within very wide ranges, and if, further, we wish to secure certain symbolic advantages by departing somewhat from the usual range of values of the letters, then the chance of conflict with other transcriptions will be greater.

### III. Phonetic and phonemic transcriptions

It is the usual practice to distinguish between phonetic, or narrow, transcriptions and phonemic, or broad, transcriptions. The former express the actual sounds [ʃat], [tʃai], ['veri], [ɛit], [ge't], [ðeə], [æt], while the latter only indicate the distinctive classes of sounds [rait], [trai], ['veri], [eit], [get], [ðeə], [æt] (or [ɛt]). From the previous discussions, however, we have seen that there is no such thing as the correct phonemic transcription for any given language. According as we emphasize one or another factor in the size of the unit, method of phonemic grouping, and choice of symbols, we arrive at one or another form of phonemic solution. There is nothing in our definition of a phoneme or any other of the definitions quoted that can decide for us, for example, whether the Chinese [ɛ] shall be a member of [x] or [ʒ] or [s], or how the [t] in [at], the [j] in [ij], the [r] in [rt], and the [j] in [jes] should be grouped into phonemic classes. The definition permits us to devise ways and means of grouping together distinguishable sounds that are not distinctive with respect to the particular system of phonemic grouping. It also implies that certain sounds in a language are never distinctive in that language by any reasonable manner of symbolic juggling, e.g. the difference between the [k]'s in keep, call, coo, etc., or the [h]'s in heap, hall, who, etc., can never be considered as being distinctive, unless we should do the very unnatural thing of considering all



the vowels [i:], [ɔ:], [u:], etc. as non-distinctive members of one vowel phoneme X, the value to be determined by the nature of the preceding consonant  $k_1, k_2, k_3$ , etc.,  $h_1, h_2, h_3$ , etc., or zero<sub>1</sub>, zero<sub>2</sub>, zero<sub>3</sub>, etc. (i.e. in words like eat, all, ooze). But many sounds in a language are neither distinctive nor non-distinctive per se, but depend upon our particular manner of phonemic treatment. Thus, by writing up, owe, oil as [op], [ow], [ɔj], Bloomfield considers the difference between the first elements in up and owe as non-distinctive and the difference between elements in owe and oil as distinctive. But precisely the reverse thing will have to be said if we treat the same sounds as [o], [ɔw], [ɔj], a modification which would do no damage to Bloomfield's system as a whole either by way of compromising the parsimony of letters, or by way of introducing queer symbols. Again, in most of the Wu-dialects, in words of the type [tɛ'a], [ɛ'a], [ɲ'a], etc., as against [ka], [xa], [ŋa], the ['] is so short that it can be considered as a glide of the preceding consonant and can be left out of the transcription, in which case the difference between [k], [x], [ŋ] and [tɛ], [ɛ], [ɲ] would be considered distinctive. On the other hand, if we write the ['] on the line then we could consider the [tɛ]-series as members of the [k]-series phonemes: [ki], [xi], [ŋi], and it is now the difference between [a] and [ia] that is distinctive. In practice, no phonetic transcription is so narrow and concrete as to distinguish between the [h]'s in [he], [hɛ], [hə] in any language, and no phonemic transcription is so broad and so purely abstract as to group English [h] and [ŋ] under the same phoneme [h]. Between these extremes, there are all intermediate proportions of phoneticity and phonemicity. On the whole, we may say that a phonetic transcription is one which makes use of all the usual distinctions which the majority of phoneticians are expected to be familiar with, irrespective of their distinctiveness in the language, and that a phonemic transcription is one which, given a particular set of directions of approach, makes only such distinctions as are necessary in distinguishing words from that particular set of directions.

The reader will notice the unsatisfactory nature of the phrase 'the usual distinctions which the majority of phoneticians are expected to be familiar with.' This comes from the unsatisfactory nature of the actual state of affairs. In the field of descriptive phonetics, there is nothing like the near unanimity of opinion which exists among physicists, either as to the organization of facts or as to the use of symbols for referring to them. Thus, Bloomfield says, 'The phonetician's equipment is personal and accidental; he hears those acoustic features which are discriminated in the languages he has observed . . . He should remember that his hearing of non-distinctive features depends upon the accident of his personal equipment, and that the most elaborate account cannot remotely approach the value of a mechanical record.'<sup>36</sup> This is all true to a great extent, but in the opinion of the writer, Bloomfield is going too far in saying further: 'Only two kinds of linguistic records are scientifically relevant. One is a mechanical record of the gross acoustic features, such as is produced in the phonetic laboratory. The other is a record in terms of phonemes, ignoring all features that are not distinctive in the language. Until our knowledge of acoustics has progressed far beyond its present state, only the latter kind of record can be used for any study that takes into consideration the meaning

of what is spoken.' We need not, however, be worried if we cannot read or copy the grooves of a phonograph record. The phonograph record is at best an icon, or a picture, not a symbol in the usual sense of something that we can 'read' and 'write'. Nor need we be worried that the number of sounds in human speech is infinite. The number of distinguishable sounds in human speech is relatively small, limited by the condition of oral-auditory transmission of phonemic distinctions from one generation to the next. When the average actual difference falls below a certain finite limen, the distinction becomes unstable, and the two phonemes soon coalesce into one later phonogenic member. We cannot say, as Bloomfield seems to imply, that phonetic transcriptions are mostly subjective and that phonemic transcriptions are mostly objective. We have already seen how phonemic transcriptions are not unique and to that extent subjective. On the other hand, there is also a certain degree of practical agreement as to the non-phonemic use of symbols in general phonetics. For purpose of (1) citation of forms where a feature which is non-distinctive in the language cited is relevant to the point under discussion, (2) giving forms of words or sounds in comparative dialectology, (3) noting incipient or vestigial traces of sound-change, (4) impartial consideration of the gross features of a language before a good phonemic system has been worked out for it, and (5) as a less worthy purpose, for pedagogical use—for all these a narrow phonetic transcription is sometimes very useful and sometimes quite indispensable. One should not do the worst of narrow transcriptions all the time, but one should be prepared for the worst at any time. The dialect alphabet of Lundell, used by Karlgren in his *Phonologie Chinoise*, both in his main discussions and in the appended dialect dictionary, is a very narrow and non-phonemic transcription. The writer has nevertheless found the system thoroughly usable and understandable, and although for typographical reasons he has changed it into the IPA form in the Chinese translation,<sup>37</sup> he has been able to equate the symbols of the systems with relatively few additions and few doubtful points of classification arising from the number-of-scale-steps problem. In the writer's own experience in the recording of Chinese dialects, he found that besides the matching and comparison of words with related sounds, a very important procedure is to give a reasonably narrow phonetic transcription at the start, so that we have materials to base our decisions upon when we come to questions of choice among alternate treatments.

Bloomfield observes rightly that phonetic transcriptions are often inconsistent as to what features to include and what features to neglect. This difficulty can be met in two ways. In the first place, we can lay down as a principle of symbolology that the position of a symbol in its context may be considered to be one constituent of the symbol. Thus, there is no inconsistency in the figure 1 meaning  $1 \times 10$  and 7 meaning  $7 \times 1$  in the form '17', as the symbol 1 is not just '1', but '1 in the second position'. Similarly, there is no inconsistency in the symbol '>' meaning 'greater than' in  $19 > 17$  and meaning 'changes into' in  $p > f$ , or even between the two uses of '>' in  $\underline{a} > \underline{o}$  according as the formula occurs in an article on phonetics or in one on mathematics.<sup>38</sup> So in discussions on diphthongs, we may need to mention forms like [čaj], [čæe], [čæε], etc., while in discussions on affricates, we may refer



to [tʃai], [tʃai], [tʃai], [tʃai], etc., just as Bolling finds it perfectly in order to write Enroughity is coming: The Enroughities are coming, so long as the discussion is about the forms of the plural.<sup>39</sup> But if our discussion should turn on the forms of the indefinite article, it would then be necessary to write [ɛn 'eg], but [ej 'da:bi] (the correct pronunciation of the name Enroughity according to Bolling), as it would not bring out the point at all if we wrote an egg but a Enroughity.

For avoiding too much inconsistency in the citation of forms, both Karlgren and users of the IPA have resorted to the distinction between broad and narrow transcriptions apart from considerations of significant distinction. Karlgren's practice, as carried out in his *Phonologie* (pp. 260 ff.), is very consistent. He has a set of bold-faced letters for a broad transcription, under each of which he puts a number of the Lundell letters, which are always in italics. Thus, what corresponds to the [ɛ] and [æ] in the IPA are grouped under ä, what corresponds to [ʃ], [e], [j] in the IPA are grouped under š, and so on. There are a few cases of overlapping groups, but on the whole the groups are mutually exclusive. The relation between the two sets is therefore very much like that between phonemes and members except that no reference is made to word distinction. A similar tendency is noticeable among users of the IPA, but no systematic division has ever been made between a narrow and a broad transcription. Nevertheless, there are certain unsystematic traditions among phoneticians which are based, on the whole, on the identity of the letters in the roman alphabet. Thus, r is somehow recognized as a broad form covering [r] and [ʀ], whereas [t] and [k] are not covered by any broad form. Similarly [e] and [ɛ] are felt as members of a group of the e-type in a way that [i] and [e] do not seem to be. All this points to a conception which no one consciously recognizes, but which seems to be assumed by many, that there are such things as phonemes in general, apart from reference to any particular language, and that all we need to do either for the study of one language or for comparative work is to use one consistent phonemic transcription for all languages. This would of course be recognized by anyone as an impossible illusion as soon as the situation is thus made explicit, as we may be called upon at any time to make phonemic distinctions between shades of sounds whose differentiation we never anticipated in either our narrow or broad system of phonetic symbols. The existence of the tradition of usage, however, is real. It is true that the existence of only one common letter r for [r] and [ʀ] but two common letters t and k for [t] and [k] (or [k]) is a matter of historical accident. But we shall see the significance of this accident when we note that as a matter of fact most of the languages which phoneticians, or at least European phoneticians, have studied, do take [t] and [k] as separate phonemes, while [r] and [ʀ] rarely, if ever, occur as separate phonemes. The idea of general phonemes, which we have just proposed and condemned in the same breath, is therefore not entirely baseless. Without entertaining the idea of general phonemes as such, the writer wishes to propose the term typical phoneme, to be defined as those groups of sounds which very often go together to form phonemes in many of the major languages studied by phoneticians. This definition of course makes the idea of a typical phoneme depend again on historical accident, the fact that most contemporary phoneticians are speakers of the Germanic and Romance languages. Thus, for a broad transcription using

typical phonemes, a European would group [p] and [p'] under one typical phoneme, as against [b],<sup>40</sup> while an unsophisticated Chinese phonetician would most likely group [p] and [b] under one typical phoneme as against [p'].

The troublesome part of the transcription problem comes from the inconsistency in using the same symbol sometimes in a general and sometimes in a particular sense. In the citations in this article, the writer has found it hard to do better, and has tried to manipulate the context (taken as part of the symbolic system) in such a way as to eliminate ambiguity. But there is always the danger of slips. When we refer to the English [i], one may not know whether it is narrow [i] or [ɪ] that is meant.<sup>41</sup> This is very similar to the old practice of referring to the ancient Chinese initials 照, 穿, 牀, 審 in this way:

General names:	照穿牀審	
For the apical series:	莊初牀山	[tʃ][tʃ'][dz'] [ʃ]
For the dorsal series:	照穿牀審	[tɕ][tɕ'] [dz'] [ɕ]

so that when 照 is mentioned, one is at a loss as to whether it is the 照 in general (including both [tʃ] and [tɕ]) that is meant, or only 照 [tɕ] as against 莊 [tʃ]. He has therefore proposed the following names for the differentiated series, reserving the traditional names for the general sense, incidentally also using an inclusive broad transcription for the general series, thus:

General names:	照穿牀審	[č] [č'] [j'] [š]
For the apical series:	莊初牀山	[tʃ][tʃ'] [dz'] [ʃ]
For the dorsal series:	穿初牀審	[tɕ][tɕ'] [dz'] [ɕ]

Karlgren's use of a special series of boldfaced types is based on the same principle. Symbols may be as general and inclusive as we may have use for, but must not be vague and ambiguous. An approach to this method of having both general and particular use of symbols is made in connection with the usage of a few symbols in the IPA. Thus, the symbol [ə] is usually understood to be a general form for [ɜ] (half-close) and [ɝ] (half-open). [j] and [ɜ] may be used either for [ʃ] and [z] or for [e] and [z] respectively. This latter, however, is less satisfactory, as in the dialect of Lintzy (臨沂), Shandong, [ʃ], [j], [e], all three exist as separate phonemes, in which the [j] series is intermediate between apical and dorsal articulations of the tongue and is identical with English [j] except that there is no protrusion of the lips. [š] and [ž] would be better general symbols, though they are not properly IPA letters.

### Summary

We have proposed a new definition of a phoneme and have endeavored to show that given a language, there is not necessarily one unique solution for the problem of reducing its sounds into elements. We have considered what factors can



influence, and have influenced, the phonemic treatment of languages: the variability of the size of the phonemic unit, including the admission of zero symbols and zero sounds, the grouping of phonemic membership, and the choice of actual symbols. Because phonemic solutions are not unique, it is necessary, before arriving at solutions, to have recourse to considerations of descriptive phonetics and the use of phonetic transcriptions. These are also necessary for other purposes, such as the comparative study of dialects. We have also noted that there is a tendency among phoneticians to group together sounds under broad symbols, which form phonemes in a number of languages, and we have called them 'typical phonemes', although there is no consistency in the use of symbols for these. It is hoped that a more consistent system of symbols be devised for indicating both narrow shades of sounds and typical phonemes for the purpose of phonetic and phonemic transcriptions, but for the time being, we have to let the context serve as part of the symbol to inform us as to shade (if particular) or scope (if general). It is not necessary to take serious exception to anyone's transcription so long as it is self-consistent and its interpretation is clear to the extent it is meant for, and so long as it does not claim unique correctness to the exclusion of other possible treatments. Usage may in time become unified, but problems will always vary. Our motto must be: Write, and let write!

### Notes

\* Since this was written at a time when the differences between transcription and phonemization and between phonemes and morphophonemes were not as clear as they are today, the article would have to be reworded in many places if these differences were to be taken into account. In this reprint no attempt was made to make such changes, except to correct minor errors of fact.—Y. R. C.

- 1 H. E. Palmer, *The Principles of Romanization*, 1931, Tokyo, pp. 52 ff.
- 2 That is, determined by psychological or physiological conditions other than those which usually are considered to be phonetic.
- 3 Proceedings of the International Congress of Phonetic Sciences, 1932, Amsterdam, p. 23.
- 4 Leonard Bloomfield, *Language*, 1933, New York, p. 79.
- 5 See however III below on the finiteness of the number of distinguishable speech sounds.
- 6 Taken in the sense of the pronunciation of a homogeneous speech community, such that members of the same community will find absolutely no 'accent' in one another's speech.
- 7 Fondamenti di Grafia Fonetica, by Daniel Jones and Amerindo Camilli, 1933, Aube and London, 11–12.
- 8 G. M. Bolling must have overlooked such cases when he said, 'At least I can recall no example of . . . a digraph for a non-compound phoneme,' in an editorial note on R. G. Kent's review of Bloomfield's *Language* in the journal *Language*, X, 1, 1934, pp. 51–52.
- 9 Fondamenti, p. 11, section 15.
- 10 Fondamenti, p. 4, section 3.
- 11 Fondamenti, p. 17.
- 12 There is a trick recitation in one of the dialects near Nanking in the form of a story consisting mostly of phrases like 鴨對鵝 [ŋə tʰuei ŋə ?] 'goose versus duck', in which

- a flapped click is made with the front of the tongue each time [ŋ] is pronounced. The effect is that of beating a pair of clapping boards as an independent rhythmic accompaniment to the recitation. In other words, the [ŋ]-phoneme consists of the features of voice, nasality, and articulation with the back of the tongue. The front of the tongue can do as it pleases.
- 13 Under this heading, we are not including cases like ancient Hebrew, in which the vowels were not written. For in this system of writing, the vowels cannot be deduced from the phonetic environment alone by any set of phonetic rules. The writing is therefore an orthography and not a transcription.
  - 14 The symbols ʌ and ɹ are Karlgren's.
  - 15 A combination of Karlgren's [ʌ] and [ɹ].
  - 15a Bloomfield, *Language*, p. 113.
  - 16 In this article, we are limiting ourselves to the discussion of phonemes of single languages. If we extend our universe of discourse to diaphones, say about 100 miles south of Peiping, the advantage of the above form will be enormously increased.
  - 17 One type of Southern British English.
  - 18 'Puisque ce n'est pat à moi et n'est points à vous, je ne sais pat à qu'est-ce.' From Passy's *Chrestomathie*.
  - 19 The case of English *a:* an is somewhat doubtful. If English never had a system of writing, or if its orthography had come to writing for uncle: fo mother, just like an uncle: a mother, we might then be inclined to treat the indefinite article as one word (as it was) and provide a special phoneme [-n] as its second element, a phoneme which occurs only in one word. Cf. II(e) below on word identity.
  - 20 Not to include cases of high vowels, which involve other questions.
  - 21 Regard for 'similarity in character' probably prompted him to identify the first element of oi with the first element of or, rather than the first element of up. He would gain still greater symmetry if he wrote [oj], [ow], or still better [ɔj], [ɔw], as the first element in own is much nearer the first element in or [ɔr] than the first element in up [op] in American English.
  - 22 Considering ɱ as the nasal ending counterpart of ɪ [iɛ].
  - 23 H. E. Palmer, *Principles of Romanization*, pp. 68–69.
  - 24 'A Table of the Analytical Numbers of the Beeipynŋ Dialect,' *The Kwoshyue Jihkan*, III, 3, 1932, pp. 533 ff.
  - 25 Except when the former is pronounced [prinsi'pæl], which is merely an abbreviated way of saying, 'the word which ends in -p-a-l.'
  - 26 Even this is open to question, if we take a broader linguistic (as contrasted with phonetic or phonemic) point of view. Cf. Sapir's discussion on this point in 'Sound patterns in language,' *Lang.* 1.49 (1925) ((25)).
  - 27 Y. R. Chao, 'Eight varieties of Secret Language Based on the Principle of Faanchieh,' *Bulletin of the Institute of History and Philology, Academia Sinica*, II, No. 3, 1931, pp. 320 ff.
  - 28 Cf. Bloomfield's distinction between phonetic alternation and formal alternation, 'A set of postulates for the science of language,' *Lang.* 3.160 (1926) ((29)).
  - 29 *The Principles of Romanization*, p. 151.
  - 30 A pure phonetician would therefore prefer to take [ei] as one phoneme (or succession of two phonemes) in seven tones, although this would be against the 'feeling of the native'.
  - 31 This is not as complicated as the description looks on paper. The native speaker is not even aware of the vocalic identity or similarity of the [ei] in the two sets of tones.
  - 32 Jones and Camilli, *Fondamenti*, p. 3.
  - 33 The writer once heard a piece of music and interpreted it as being here in major and there in minor and its notes as being do, re, mi, etc., only slightly 'off', but



subsequently learned to his surprise that it was a scale of seven equal steps in the octave. The illusion persisted even after he was told. He had forced his own intervals into the new scale, just as we all tend to force the 4-step i-e-a-o-u scale into the 7-step cardinal scale.

- 34 Bernhard Karlgren, *Études sur la phonologie chinoise*, p. 316.  
 35 As for instance by Daniel Jones.  
 36 Bloomfield, *Language*, pp. 84–85.  
 37 *中國音韻學研究*, 趙元任 羅整璜 俞樾 編 Changsha, 1940.  
 38 In discussions like the present, where there may be a call for 'narrow symbols', one could use '→' for 'changes into' and '>' for 'greater than', thus making peace among mathematics, phonetics, and chemistry.  
 39 From an editorial note on R. G. Kent's review of Bloomfield's *Language*, *Lang.* 10.50 (1934).  
 40 Except speakers of certain German dialects.  
 41 On the principle of non-uniqueness of phonemic transcriptions, we cannot prohibit the writing of the vowels in *eat*, *it* as [i], [ɪ], and insist on the writing of [i:], [i] or of [ij], [i].

PEIPING PHONOLOGY<sup>1</sup>

*Charles F. Hockett*

Source: *Journal of the American Oriental Society* 67, 4, 1947, 253–67.

The phonetics and phonology of Peiping Chinese have been extensively studied.<sup>2</sup> The justification for yet another discussion is the approach, which is in some respects new. A detailed presentation of this approach would be out of place here, but brief mention of its major points will render the body of the paper more readily intelligible.<sup>3</sup>

- (1) Any articulatory event which occurs in a certain position in some utterances of a language, but not in all, is *distinctive*. Any feature which characterizes all the utterances of the language is non-distinctive. Likewise, a feature which does not regularly occur at least in all repetitions of one particular utterance, is non-distinctive. This is a somewhat wider definition of "distinctive" than has been customary. For example, in English the difference between the aspirated *t* of *till* and the unaspirated *t* of *still* has usually been termed non-distinctive (or "non-phonemic"); we cannot so classify it, since whenever one says *still* the aspiration is absent, and whenever one says *till* the aspiration is present. Any such feature must be accounted for in our phonological description. It is true, as Bloomfield points out,<sup>4</sup> that in our examination of a language we may miss some such features, because of the accidents of our training; such difficulties are encountered in many branches of science; we do the best we can.
- (2) Within the total mass of distinctive material in a language, we find a relatively small set of *determining features*, characterized as follows: (a) if two articulatory events (or what might be described in purely phonetic terms as two articulatory events), **a** and **b**, are so distributed that **a** occurs only and always in conjunction with **b**, they constitute a single determining feature; (b) two articulatory events, **a** and **b**, so distributed that **a** occurs only when **b** occurs, but that **b** occurs also without **a**, are two determining features; (c) if **a** occurs both with and without **b**, and vice versa, **a** and **b** are two determining features. But an articulatory event **a** is not a determining feature at all, nor part of one, if its occurrence is predictable in terms of the occurrence and arrangement of



those events which are determining features; for example, if **a** is found with **b**, with **c**, and with **d**, but nowhere else, and neither **b**, **c**, nor **d** is found without **a**, then **a** is not a determining feature. Distinctive features which are not determining are *determined features*. Often one may divide the total stock of distinctive material into determining and determined, and itemize the determining features, in more than one way; such differences of statement are stylistic, in no way reflecting facts about the language being described.<sup>5</sup>

- (3) In the examination of the raw data, we avoid the (usually unstated) linearity-assumption to which our tradition of linear orthography renders us susceptible. Two features, that is, may occur successively (dental closure and labial closure in *hatpin*), or simultaneously (labial and velar closure in some African languages), or in various overlapping sequences. Bundles of simultaneous or immediately adjacent features are given no priority, save precisely for the purpose of deriving an essentially linear notation; this purpose is phonologically irrelevant, though such a notation is useful, if not unavoidable, in making phonological statements.
- (4) We ignore all considerations of grammatical structure, including such matters as morpheme or word borders. The purpose of this is to avoid circularity: if phonology is dependent on grammatical analysis, then phonology is just so much the less useful as a tool in grammatical analysis. Suppose, for example, that following the procedure here recommended we find in a particular language a type of open juncture, and then, when grammatical examination has been carried to the point of identification of words (= minimum free forms), discover that word-boundary coincides always, or usually, with this type of open juncture. Such a correlation is of importance; in some languages it does not exist. But if we had merely assumed that word-boundaries are phonologically relevant, the discovery of the juncture, and thus of the correlation between open juncture and word-boundary, would have been impossible.
- (5) Phonological description thus consists of: (a) a list of the determining features (with alternative statements if alternatives exist); (b) a statement of the arrangements in which determining features occur in utterances; (c) a statement of the circumstances under which each determined feature occurs. This itemization is logical; the actual arrangement of one's statements will of course depend on the specific problem.

The body of this paper will serve as an example in extenso of the principles just listed.

We describe a dialect with a maximum number of phonemic distinctions.<sup>6</sup> Simpler patterns, perhaps more common in Peiping, are more easily dealt with in terms of the complex type than vice versa.

### 1. Segmentation

A Chinese utterance has two simultaneous components: a *register-contour*, and a sequence of one or more *macrosegments*.<sup>7</sup>

A macrosegment is bounded by *macrojunctures*, and has two simultaneous components: an *intonation* and a sequence of one or more *mesosegments*.

A mesosegment is bounded by *mesojunctures*, and has two simultaneous components: a *stress-contour* and a sequence of one or more *microsegments*.

A microsegment is bounded by *microjunctures*, and has as its simultaneous components a *stress*, a *tone*, and a *residual structure* (of vowels and consonants).<sup>8</sup>

### 2. Junctures

All the junctures to which names are assigned above are open. We find no need to postulate also a close juncture; in terms of the present system, close juncture is the absence of all open junctures.

Microjuncture is a zero-point of sonority,<sup>8a</sup> a clear and unambiguous point of syllable division; symbol // (space).

Mesojuncture is a slight pause. It occurs only in combination with microjuncture, and the combination is symbolized /./.

Macrojuncture is a pause, often no longer than mesojuncture, but sometimes long enough for a breath to be taken. The constant distinction is that macrojuncture falls at the juxtaposition of two intonations, whereas mesojuncture without macrojuncture falls within a single intonation. Macrojuncture occurs only in combination with the two less open types; symbol for the combination of the three /;/; except that at the end of an utterance we write /./ or /?/ (the choice dependent on intonation) instead of /;/.

### 3. Register-contours and intonations

The analysis of these features is as yet incomplete; we try to supply categories enough to take care of the maximum number of distinctive features of the kind that may be discovered.

By "register" is meant the range of pitch at any particular place in an utterance, within which the ups and downs of pitch which constitute intonations and tones take place. The most typical, and best identified, of the register-contours is found in utterances of at least four or five macrosegments' length: wide at first, narrower and with a lower average pitch in the interior, and wider again, but still somewhat lower than at the beginning, in the terminal macrosegment.<sup>9</sup>

However, this and other register-contours may be, not independent features, but rather automatic resultants of the sequence of intonations on successive macrosegments, and of the number of macrosegments in the utterance.

The clearest thing about intonations is their scope: there is usually little doubt as to where a particular intonation begins and ends. The exact nature and number of the intonations is less clear. For the last macrosegment of an utterance, we indicate by terminal /./ a lowering of pitch from the nuclear stress (§ 4) to the end, and by /?/ the absence of such a fall in pitch; thus, in short utterances: /'tuei<sup>4</sup> me?/ 'Is that right?': /'tuei<sup>4</sup> le./ 'That's right.' Under /?/ we are probably lumping together several phonemically distinct types; possibly also several are covered by /./.



A third clearly recognizable intonation, for which no symbol is here provided, consists of a squeezing of the pitch-range into a narrow band at median level, with only slight variations of stress (probably no nuclear stress) and relatively rapid articulation. This occurs, for example, in short introductory phrases before a direct quotation: /tha' 'srue'; 'hau<sup>3</sup>./ 'He said "OK."'

#### 4. Stress-contours and stresses

The stress-contour of a mesosegment consists of varying degrees of prominence (produced largely by volume, but partly by length and speed) of its constituent microsegments. The position within the mesosegment of the microsegment of greatest prominence is not predictable, nor, given the position of this, are the degrees of prominence of the remaining microsegments. Therefore the degree of stress of each component microsegment has to be recognized as phonemically primary, and the stress-contour of the mesosegment is an automatic resultant thereof.

The most prominent microsegment in a mesosegment bears *loud stress* (<sup>1</sup>/ before the microsegment). The remaining microsegments bear *quiet stress* (<sup>1</sup>/), or no stress at all (unmarked; "zero stress" if that terminology is preferred).

In addition, in macrosegments bearing certain intonations (e. g., /./), it is necessary to specify one of the loud stresses in the macrosegment as the nuclear stress, the stressed element at which the intonation turns. The nuclear stress is often, but not always, the last loud stress in the macrosegment. Since its location is not predictable, nuclear stress must be recognized as phonemically distinct from loud stress. No separate symbol is here provided, however, because none of the forms cited require distinctive marking of the nuclear stress in contrast to high stresses.

Finally, in some cases one finds an extra-loud *contrastive stress* (<sup>1</sup>'/) instead of a loud stress; further intonational analysis may eliminate this as a separate stress-level.

#### 5. Tones

The tones are contrasting contours of pitch, volume, glottalization, and length. There are six tones; we number five of them, indicating them by superscript numerals after the microsegment; the sixth is indicated by the absence of such marking, and a microsegment bearing it is referred to in the discussion as "toneless."<sup>10</sup>

Toneless microsegments are staccato; microsegments with a tone are legato. Staccato microsegments have an observable pitch ("high," "low," etc.), but only legato microsegments have a discernible pitch-contour ("level," "rising," "falling").

*Pitch:* <sup>1</sup>/ and <sup>2</sup>/ are usually level, and have contrasting pitches as their distinguishing features: <sup>1</sup>/ is high, <sup>2</sup>/ low. <sup>2</sup>/, <sup>4</sup>/, and <sup>5</sup>/ have contrasting pitch-contours as their distinguishing features: <sup>2</sup>/ and <sup>5</sup>/ are rising, <sup>4</sup>/ falling. The rise for <sup>2</sup>/ begins and ends somewhat higher than that for <sup>5</sup>/.

*Volume:* With loud stress (or nuclear or contrastive stress), <sup>1</sup>/ and <sup>2</sup>/ are crescendo, <sup>2</sup>/, <sup>4</sup>/, and <sup>5</sup>/ diminuendo. With quiet stress this contrast is sometimes audible; with no stress, never.

*Glottalization:* With loud stress, <sup>2</sup>/ and <sup>5</sup>/ often have glottal friction during the lowest-pitched phase of the contour.

*Length:* With loud stress, <sup>2</sup>/ is longest, <sup>4</sup>/ half-long, and the other three relatively short.

<sup>1</sup>/ and <sup>2</sup>/, though usually level, are on occasion not level. When <sup>1</sup>/ is accompanied by loud stress and followed by /:/ (possibly by /./), there is sometimes a slight fall in pitch at the end; this variant is in some circles considered "elegant."<sup>11</sup> When <sup>2</sup>/ is accompanied by contrastive stress, it starts relatively high, but immediately dips to extra low; when <sup>2</sup>/ bears any loud stress and is followed by /:/, there is usually a terminal rise. The combination of these occasional features on a single microsegment with third tone cited in isolation is the source of the customary description of the third tone as "dipping."

With quiet stress or no stress, certain tonal distinctions are lost or facultatively lost. <sup>5</sup>/ is often not distinguishable in these circumstances from <sup>2</sup>/.

In posttonic position in the mesosegment, with no stress, <sup>1</sup>/ and <sup>2</sup>/ are in free alternation. In the transcription we maintain the distinctions despite their optional loss (morphophonemically, on the basis of lexical identifications).

The pitch-range within which the contour constituting a tone is placed depends, of course, on the position of the microsegment relative to intonations and register-contours. It is also affected by the stress-level: with higher stresses the range is wider, with lower stresses narrower. The dynamic range for the crescendo or diminuendo contour of a tone is similarly affected by stress-level: greater range with higher stress, less with lower (none with no stress). For unstressed microsegments, with or without tone, the pitch-range is also conditioned by the terminal pitch of a preceding stressed microsegment in the same mesosegment, if any, and the initial pitch of a following stressed microsegment within the mesosegment, if any.

This last factor operates as follows: initially in a mesosegment, an unstressed microsegment tends towards mid or lower mid pitch. Finally in a mesosegment, such a microsegment has lower mid pitch if <sup>1</sup>/, <sup>2</sup>/, or <sup>5</sup>/ precedes, higher mid pitch after <sup>2</sup>/, and low pitch after <sup>4</sup>. Flanked on both sides by stressed microsegments, within a single mesosegment, the pitch of the unstressed microsegment is a compromise between the terminal pitch of the preceding and the initial pitch of the following.

The phonemic status of the contrast between the first four tones can be demonstrated abundantly by lexical citation of free forms one microsegment in length, e.g.: /chru<sup>1</sup>/ 'to exit': /chru<sup>2</sup>/ 'divided into'; /pau<sup>2</sup>/ 'thin': /pau<sup>3</sup>/ 'to go bail for'; /ciu<sup>3</sup>/ 'nine, wine': /ciu<sup>4</sup>/ 'thereupon.' The fifth tone does not appear on such elements, but can be demonstrated in free forms of two microsegments' length; our examples contrast it with the second and third tones, which are most similar: /ta<sup>5</sup> pan<sup>4</sup>/ 'make-up,' /ma<sup>5</sup> fan<sup>4</sup>/ 'annoying': /sr<sup>2</sup> heu<sup>4</sup>/ 'time,' /i<sup>2</sup> khuai<sup>4</sup>/ 'one



(dollar)’: /‘mai<sup>3</sup> mai<sup>4</sup>/ ‘business,’ /‘u<sup>3</sup> khuai<sup>4</sup>/ ‘five (dollars).’<sup>12</sup> In all these examples, the second microsegments are facultatively toneless (see below).

Toneless microsegments cannot be demonstrated by direct lexical citation at all. There is a distinction, however, between the utterances /‘hau<sup>3</sup>/ ‘OK’ in answer to a question, and /‘hau./ ‘Yes, go on’ said quietly over the telephone as an indication to the other party that one is following what is being said; the latter utterance has the intonation indicated by /./, but no tone. In longer utterances, toneless microsegments are common. Certain forms, such as the particle /te/ (mark of attribution), /le/ (completive aspect), /cre/ (continuative aspect), /me, ne/ (question), are always toneless, even when stressed: /‘ue<sup>3</sup> ‘te, ‘pheng<sup>2</sup> ieu<sup>3</sup>/ ‘I said “my friend” using the attributive particle, not without the particle.’ For some of these particles there are formal citation forms, /ti<sup>4</sup>/ for /te/, /liau<sup>3</sup>/ for /le/, with differing phonemic structures, based, as it happens, on the shape of morphemically distinct elements that are written with the same characters; this does not affect the present discussion. Many elements other than the particles listed above, for example, the second microsegments in the two-microsegment free forms cited in the last paragraph above, are regularly without stress, and optionally retain or lose their tones.

## 6. Residual structure: determining features

Under constant conditions of register, intonation, stress, tone, and placement in utterance, macrosegment, and mesosegment, microsegments contrast on the basis of the occurrence or non-occurrence, and the arrangement, of the following fifteen determining features:<sup>13</sup>

- p bilabial position
- t apico-alveolar position
- k dorso-velar position
- c tongue-front position with sibilance or with affricate release
- f labiodental position
- q glottal position (for which g is always substitutable, though not vice versa)
- S unaspirated complete closure without nasalization
- F fricative spirant contact
- N nasalization, with stop closure or approximation thereto
- l lateral frictionless continuant
- i high-front tongue position
- u lip rounding
- r tongue retroflexion
- e mid tongue height
- a low tongue height.

The total stock of determining features in the language, therefore, consists of the register contours(?), intonations, junctures, stresses, tones, and the fifteen features

just enumerated. Every linguistically relevant event in the speaking of Chinese is either one of these features arranged in a particular way relative to others, or a mechanically determined and predictable product of a particular arrangement of these features.

## 7. Residual structure: notation and terminology

Some of the features listed above occur only in simultaneous bundles. Since it is inconvenient to transcribe other than linearly, we derive the symbols for inclosure between solidi from the symbols defined above in such a way as to eliminate the need for non-linear notation:

$$\begin{aligned} /p t k c/ &= \mathbf{p t k c}, \\ &\quad \mathbf{S S S S} \\ /f s h/ &= \mathbf{f c q}, \\ &\quad \mathbf{F F F} \\ /m n ng/ &= \mathbf{p t k}; \\ &\quad \mathbf{N N N} \end{aligned}$$

and, for the others, simply

$$/l i u r e a/ = \mathbf{l i u r e a}.$$

The digraph “ng” saves a type-face, and leads to no ambiguity since “g” is not otherwise used.

“#” is used, when needed, for zero.

The following cover terms are used: /a e/ are *vowels*; /i u r/ are *semivowels*; /c s/ are *semiconsonants*; /p t k f h m n ng l/ are *full consonants*. Both the semiconsonants, and all but one of the full consonants, are simultaneous clusters; it is convenient to classify the successive cluster /ch/ also as a semiconsonant, and the successive clusters /ph th kh/ also as full consonants.

## 8. Residual structure: arrangements

The above definitions of the symbols for use between solidi are statements of phonemic structure: the definition of /p/, for example, at the same time states that the simultaneous bundle of p and S occurs as one arrangement of distinctive features in utterances.

Statements of arrangement still to be made are made in terms of the elements and simultaneous bundles described above, on the convenient assumption that all the remaining arrangements are linear successions of these elements or simultaneous bundles; later on we indicate at what points this assumption is false.



8.1. Types of microsegments

Microsegments are *monosyllabic*, containing a single peak of sonority, or *disyllabic*, containing two peaks, the first much more prominent than the second. The latter type is much the rarer, and (probably) does not occur toneless.

8.2. Monosyllabic microsegments

For the description of these we recognize four successive position for elements, symbolized as [1], [2], etc. Elements in position [1] are *initials*; the remainder is a *final*.<sup>14</sup>

8.2.1. Initials

These fall into the following classes: /#/; /c ch s/; /n l/; /t th/; /p ph m/; /f/; /k kh h/; /ng/; /cr chr sr/; /r/.<sup>15</sup>

8.2.2. Finals

In position [2] occur /# u i iu/ in [3], /# e a/; in [4], /# i n ng u m r ir ngr ur/. The finals are listed in the Table.

Table of finals

<b>Group 1.</b>									
#									
e	ei	en	eng	eu	em	er	eir	enr	eur
a	ai	an	ang	au	am	ar	air	anr	aur
<b>Group 2.</b>									
u			ung			ur		unr	
ue	uei	uen	ueng		uem	uer	ueir	(uengr)	
ua	uai	uan	uang			uar	uair	uangr	
<b>Group 3.</b>									
i		in	ing		im				
ie				ieu		ier	ieir	iengr	ieur
ia	iai	ian	iang	iau		iar	iair	iangr	iaur
<b>Group 4.</b>									
iu		iun	iung			iur		(iungr)	
iue						(iuer)			
		iuan							iuair

In the top row of each group, [3] is /#/; in the middle row, /e/; in the bottom row, /a/. The finals of a single group have the same element in [2]; those in a single column have the same element in [4]. The three parenthesized finals are morphologically to be expected but are not attested.

The following points, though implicit in the Table, are not obvious:

- (1) /u/ does not occur in both [2] and [4] of a final. The same is true of /i/ in those finals which do not contain /r/, save for /iai/, which is rare and perhaps only literary.<sup>16</sup>
- (2) [4] elements other than /#/ occur only with positions [2] and [3] not both empty.
- (3) /r/ as [4] does not occur with /#/ as [3] and /i/ as [2].

8.2.3. Combinations of initial and final

For combinations of an initial and a final which does not contain /r/, we say that the combination *occurs* if (1) there exists a morpheme consisting of such a shape (plus a tone), or part of which consists thereof (e. g., if the first microsegment of a two-microsegment morpheme has the required shape), or if, there being no such morpheme, (2) there is clear evidence that the shape in question, with some tone, is pronounceable as a nonsense-element. Such a combination is termed *literary* if the required pronunciation is assigned to a character in character-dictionaries, but the element does not occur in ordinary colloquial speech (and thus not at all in the speech of many individuals). For combinations of an initial and a final which does contain /r/, we say that the combination occurs if (1) there exists a morpheme or group of morphemes of the required shape, or if (2) the existence of such is morphologically to be expected, even if it has not been heard.<sup>17</sup>

Finals with /m/ as [4] are ignored until (12) below.

- (1) Final /#/ occurs only with initials /c ch s, cr chr sr, r/.
- (2) Initial /#/ occurs with all finals except /ung ungr/. /ung<sup>1</sup>/ has been heard as an alternative pronunciation of the surname usually pronounced /ueng<sup>1</sup>/, but this is probably a non-Peiping or even non-Mandarin feature.<sup>18</sup>
- (3) Finals /ueng uengr/ occur only with initial /#/; /ueng/ and /ung/, likewise /uengr/ and /ungr/, may thus be in complementary distribution. /iai/ seems to occur only with the initials /# ch/; both are literary.
- (4) Initials /c ch s/ do not occur with finals /ua uai uang uar uangr/; nor do the combinations /chei, chen, sen, seng, sengr/ occur.
- (5) Initials /n l/ do not occur with finals /uei ua uai uar uangr iun iung iungr iuer iuair/. The only case of /len/ is in a recently given personal name, where the use of a "non-occurrent" micro-segment was premeditated;<sup>19</sup> but the name is pronounced without difficulty by native speakers. /niue, liue, liuan/ occur only in literary context; /ne/ occurs only toneless; /nuang/ is questionable; /nen, neu, nuen, luang, nia, niuan/ are not attested.

Finals of group 4 do not occur with any of the initials yet to be discussed, save for a peculiar occurrence of /iu/ (and possibly /iur/) after /k/: /chiue<sup>3</sup> 'kiu<sup>4</sup>/ is the form assumed in a variety of "Pig-Latin" by ordinary /'chiu<sup>4</sup>/ 'to go.'<sup>20</sup>



(6) Initials /t th/ do not occur with finals /ua uai uang uar uangr/ in ia iang iar iangr/. There are no cases of /thei, thieu;/ /thuen/ is literary. Dictionaries based on characters give no pronunciations involving /ten, then/, but these occur at least in /ten<sup>4</sup>/ 'to pull on with sudden tugs' and /'tung<sup>4</sup> then/ 'to be not at rest.'

(7) Initials /p ph m/ do not occur with finals /ieu ieur ia iang iar iangr/, and probably not with final /er/, nor with any of the finals of group 2 except /u ur ue uer/. There are no cases of /phe, peu;/ /pheu/ is literary; /pe, me/ occur only toneless.

Finals of group 3 do not occur with any of the initials yet to be discussed.

(8) Initial /f/ does not occur with the finals /e er ai au aur/, nor with any of the finals of group 2 except /u ur ue uer/.

(9) Initials /k kh h cr chr sr/ occur with all finals not excluded by statements in the foregoing, except that there are no cases of /chrei, srung;/ /chrua/ is literary.

(10) Initial /r/ does not occur with finals /ei a ai ar ua uai uang uar uangr/.

(11) Initial /ng/ occurs only with final /e/, toneless (§ 10).

(12) Finals with /m/ in position [4] are rare, and apparently confined to relatively fast speech (§ 8. 3). /em/ occurs with initials /sr cr c/; /am/ with /t th c/; /uem/ with /#/; /im/ with /n/. The following examples are exhaustive or almost so: /srem<sup>2</sup>, cem<sup>3</sup>, nem<sup>4</sup> ~ /sreme<sup>2</sup>, ceme<sup>3</sup>, neme<sup>4</sup>/ 'what, how, thus'; /crem<sup>4</sup>, cem<sup>4</sup> ~ /creme<sup>4</sup>, ceme<sup>4</sup>/ 'thus'; /'tam<sup>4</sup> cr<sup>3</sup> ~ /'ta<sup>4</sup> me cr<sup>3</sup>/ 'thumb'; /tham<sup>1</sup>, cam<sup>2</sup> ~ /'tha<sup>1</sup> men, 'can<sup>2</sup> men/ 'they, we'; /uem<sup>3</sup> ~ /'ue<sup>3</sup> men/ 'we'; /nim<sup>3</sup> ~ /'ni<sup>3</sup> men/ 'you (pl).'

Since more finals containing /r/ are recognized in this analysis than is customary, examples are given here of all except the three parenthesized in the Table: /er<sup>4</sup> ~ /air<sup>4</sup>/ 'two'; / ai<sup>1</sup> 'meir<sup>2</sup>/ 'go from door to door'; /hengr<sup>2</sup>/ 'horizontal stroke' (in writing characters); / pi<sup>3</sup> 'theur<sup>2</sup>/ 'pen point'; /par<sup>3</sup>/ 'handful, bunch'; /, siau<sup>3</sup> 'hair<sup>2</sup> 'child'; /pangr<sup>1</sup>/ 'group'; /phaur<sup>4</sup>/ 'bulb'; /, siau<sup>3</sup> 'srur<sup>1</sup>/ 'small book'; /khungr<sup>4</sup>/ 'free time'; /, siau<sup>3</sup> 'srur<sup>1</sup>/ 'novel'; /khueir<sup>3</sup>/ 'spool'; /, siau<sup>3</sup> 'srur<sup>1</sup>/ 'small brush'; /uair<sup>2</sup>/ 'to amuse oneself with'; /khuangr<sup>1</sup>/ 'basket'; /ier<sup>4</sup>/ 'leaf'; /tieur<sup>3</sup>/ 'bottom' (as of a cup); /piengr<sup>3</sup>/ 'cake'; /chieur<sup>2</sup>/ 'ball'; /iar<sup>2</sup> ~ iangr<sup>1</sup>/ 'sprout, seedling'; / iair<sup>4</sup>/ 'swallow' (bird); /tiaur<sup>4</sup>/ 'melody'; /, siau<sup>5</sup> 'iur<sup>3</sup>/ 'shower, light fall of rain'; /, hua<sup>1</sup> 'iuair<sup>2</sup>/ 'flower garden.'

### 8.3. Disyllabic microsegments

In these there are five positions for elements: [1], [2], and [3] as for monosyllabic microsegments, save that [2] and [3] are not both empty; [4'] one of the set /p t k c m n ng f s h l/ (not all of these have been observed, but the nature of the alternation between two-microsegment sequence and single disyllabic microsegment [see below] is such as to suggest that the list is correct); [5] /e i u r/. The limitations of sequence in the first three positions are as for monosyllabic microsegments; if [5] is /i u r/, the same limitations apply to positions [4']-[5] as to [1]-[2] in all microsegments.

Most disyllabic microsegments occur only in fast speech, being replaced at slower speeds by sequences of two monosyllabic microsegments, the first of which is stressed and has the tone of the disyllabic alternant, the second of which

is unstressed and toneless or optionally toneless: /pusr<sup>2</sup>~/ 'pu<sup>2</sup> sr<sup>4</sup>/ 'isn't'; /siesi<sup>4</sup>~/ 'sie<sup>4</sup> sie/ 'thanks'; possibly /tulu<sup>1</sup>~/ 'tu<sup>1</sup> lu/ 'cluster' (as of grapes).<sup>21</sup>

A few disyllabic microsegments occur in either rapid speech or normal-speed speech, but in the latter case are paralleled by groups of two monosyllabic microsegments. All the cases citable have, also, in fast speech only, still shorter alternants consisting of a single monosyllabic microsegment: /crem<sup>4</sup>, cem<sup>4</sup>~/ 'creme<sup>4</sup>, ceme<sup>4</sup>~/ 'cre<sup>4</sup> me/ 'thus, this way'; /nem<sup>4</sup>~/ 'neme<sup>4</sup>, name<sup>4</sup>~/ 'na<sup>4</sup> me/ 'thus, that way.'

There are two disyllabic microsegments which have the shorter alternant just mentioned, in rapid speech, but no two-microsegment replacement except as a highly artificial reading-pronunciation: /srem<sup>2</sup>/ ~ /sreme<sup>2</sup>/ ~ (reading-pronunciations) /'sren<sup>2</sup> ma<sup>4</sup>, 'sren<sup>2</sup> mue<sup>4</sup>, 'sr<sup>2</sup> ma<sup>4</sup>, 'sr<sup>2</sup> mue<sup>4</sup>/ 'what'; /cem<sup>3</sup>~/ 'ceme<sup>3</sup>~/ (reading-pronunciations) /'cen<sup>3</sup> ma<sup>4</sup>, 'cen<sup>3</sup> mue<sup>4</sup>/ 'how.'

## 9. Residual structure: determined features

The statements of arrangement just made were based on the assumption that features or bundles of features represented in the transcription by single letters (or the digraph "ng") occur only in linear sequence (§ 8, beginning). As we proceed with the presentation of determined features, we also indicate at what points that assumption was false.

### 9.1. Features dependent on placement

#### 9.1.1. Release and onset

Consonants initial in a microsegment have distinctive release; final in a microsegment, distinctive onset; medial in a disyllabic microsegment (position [4']), both.

→/l/ is now completely described. Examples: /lau<sup>3</sup>/ 'always,' /tulu/ (?) 'cluster.'<sup>22</sup>

→/m/ is completely described on the addition of the following: the simultaneous occurrence of determining features p and N involves, as a determined feature, complete closure, the alternant possibility covered by the definition of N (approximation) being eliminated. Examples: /ma<sup>3</sup>/ 'horse,' /tham<sup>1</sup>/ 'they,' /sreme<sup>2</sup>/ 'what.'

#### 9.1.2. Voicing and voicelessness

Microsegments are voiced throughout unless they begin with /p t k c ph th kh ch/ s h a/. Microsegments beginning with one of these are voiced except for an initial voiceless phase (the phase indicated by the symbols listed), except as follows: Initial /p t k c/ are usually voiced in an unstressed microsegment, rarely elsewhere. /a/ in initial position often has a glottal stop onset (constituting an initial voiceless phase); this is rarer in unstressed microsegments.

→/p t k ph th kh f h/ are now completely described. Examples: /pau<sup>4</sup>/ 'newspaper,' /'la<sup>3</sup> pa/ 'trumpet'; /ta<sup>4</sup>/ 'large,' /'ue<sup>3</sup> te/ 'my'; /kau<sup>1</sup>/ 'high,' /'i<sup>2</sup> ke/ 'one'; /phau<sup>3</sup>/ 'run'; /than<sup>2</sup>/ 'converse'; /khai<sup>1</sup>/ 'open'; /fan<sup>4</sup>/ 'food'; /he<sup>1</sup>/ 'drink.'



9.1.3. *Peaks of sonority*

By definition, one peak of sonority occurs in each monosyllabic microsegment, two in each disyllabic microsegment.

If a monosyllabic microsegment contains a vowel, there is a peak of sonority simultaneous with the vowel. If it contains no vowel, but contains a semivowel /i u/ or the cluster /iu/ in position [2], there is a peak of sonority simultaneous with the /i/ or /u/ or with the second phase of the cluster /iu/. If it contains no vowel and no semivowel /i u/, the peak of sonority is simultaneous with the last phase of the microsegment, whatever it may be (e. g., with the /r/ of /sr<sup>4</sup>/ 'is,' with the terminal vocalic phase [§ 9.2] of /s<sup>4</sup>/ 'four').

The major peak of sonority in a disyllabic microsegment is simultaneous with a vowel or semivowel in position [3] or [2], as the case may be. The minor peak is simultaneous with the element /e i u r/ in position [5].

9.2. *The semiconsonants*

/c/ or /s/ as the only residual constituent of a microsegment has two successive phases. Phase one is, in each case, consonantal (simultaneous bundle of c and S, or of c and F), with the added determined feature of lowering of the central part of the tongue, raising of the dorsal part, and often some tension of the throat muscles. The second phase is vocalic, identical for /c/ and /s/, and composed entirely of determined features: an unrounded high back vowel, with tongue as for the consonantal phase and the throat muscles still tense. Examples: /c<sup>4</sup>/ 'word,' /s<sup>4</sup>/ 'four.'

When the only residual constituent of a microsegment is /ch/, /c/ has the two phases just described, but the /h/ falls between them, after the consonantal phase of /c/ and before the vocalic phase; the determined features of tongue-position and throat tension are maintained during the /h/: /ch<sup>4</sup>/ 'time, occurrence.'

In all other circumstances, /c, s/ have only a single phase. When this phase is not simultaneous with palatalization or retroflexion (§ 9.3), the tongue position is as described above.

→/c ch s/ are now completely described.

9.3. */i u r/ not in position [4].*

We take up separately /i u iu/ in position [2] and /r/ in position [1] or in the [1]-clusters /cr chr sr/.

9.3.1. */i/.*

In the arrangement symbolized /CiV/ ("C"=consonant, "V"=vowel), our assumption of linearity is false. The /i/ begins at the beginning of the microsegment, as palatalization of the consonant, and continues after the consonant as a

high-front-unrounded glide. The palatalization of the consonant is clearest in the case of /c ch s/; these consonants with palatalization are articulated with the tip of the tongue behind the lower teeth, the frontal surface of the tongue in contact with the upper teeth and the alveolar ridge to produce the closure or friction. samples: /siang<sup>3</sup>/ 'think,' /chiau<sup>2</sup>/ 'bridge,' /bian<sup>1</sup>/ 'side.'

In the arrangement /Ci/ (no vowel), /i/ begins with the consonant as palatalization (as above), continues after the consonant optionally as high-front-unrounded glide, then in all cases as high-front-unrounded vowel simultaneous with the peak of sonority. If /n/ follows, the glide phase is usually present, and the vocalic phase is lower than otherwise. Examples: /si<sup>1</sup>/ 'west,' /sing<sup>1</sup>/ 'star,' /sin<sup>1</sup>/ 'new,' /phin<sup>1</sup>/ 'to spell out.'

In the arrangement /iV/ (no initial consonant), /i/ is a high-front-unrounded glide (and our assumption of linearity is correct): /iang<sup>2</sup>/ 'ocean,' /ian<sup>1</sup>/ 'smoke.'

In the arrangement /i/ (no initial consonant and no vowel), /i/ begins as a high-front-unrounded glide and continues as a high-front unrounded vowel simultaneous with the peak of sonority. The vowel is slightly lower if /n/ follows than otherwise. /i<sup>1</sup>/ 'one,' /in<sup>1</sup>/ 'sound,' /ing<sup>1</sup>/ 'should.'

9.3.2. */u/.*

All cases of /u/, save when /i/ overlaps (§ 9.33), add high-back tongue position as a determined feature.

In the arrangements /(C)uV/, /u/ is a high-back-rounded glide: /uan<sup>3</sup>/ 'bowl' / kuan<sup>1</sup>/ 'officer.'

In the arrangement /Cu/, /u/ is a high-back-rounded vowel: /phu<sup>4</sup>/ 'store,' /tung<sup>1</sup>/ 'east.'

In the arrangement /u/, /u/ begins as a high-back-rounded glide and continues as a high-back-rounded vowel: /u<sup>3</sup>/ 'five,' /ur<sup>1</sup>/ '(small) room.'

9.3.3. */iu/.*

(1) When /ng/ follows immediately, /i/ has the varieties described in § 9.32 for the arrangements /CiV/ and /iV/, and the /u/ is a high-back-rounded vowel: /siung<sup>1</sup>/ 'fierce,' /iung<sup>4</sup>/ 'use.'

(2) When /ng/ does not follow immediately, four cases must be distinguished as for /i/ alone:

In the arrangement /CiuV/, /i/ begins with the consonant as palatalization thereof, /u/ begins after the consonant, the /i/ continuing, the two together constituting a high-front-rounded glide: /chiuan<sup>2</sup>/ 'together.'

In the arrangement /Ciu/, /i/ begins with the consonant as palatalization; /u/ begins after the consonant, the /i/ continuing, the combination constituting (a) if /n/ follows, a high-front-rounded glide followed by a slightly lower high-front-rounded vowel; (b) otherwise, just a high-front-rounded vowel: /ciun<sup>1</sup>/ 'army,' /chiu<sup>4</sup>/ 'to go.'



In the arrangement /iuV/, /i/ begins first, as high-front-unrounded glide; then the /u/ begins, the /i/ continuing, the combination forming a high-front-rounded glide: /iuan<sup>4</sup>/ 'court,' /iue<sup>4</sup>/ 'month.'

In the arrangement /iu/, /i/ begins first, as high-front-unrounded glide; then the /u/ begins as the /i/ continues, the combination constituting (a) if /n/ follows, a high-front-rounded glide followed by a slightly lower high-front-rounded vowel; (b) otherwise, just a high-front-rounded vowel: /iun<sup>4</sup>/ 'to ship,' /iu<sup>3</sup>/ 'rain.'

#### 9.3.4 /r/.

In the arrangements /CrV/ and /Cru/, /r/ begins and ends with the consonant, as retroflexion thereof. The consonants /c ch s/ with simultaneous /r/ have as position of articulation, therefore, the tongue retracted and lifted to the roof of the mouth, so that the tip is behind the alveolar ridge, the contact being between an area of the tongue including tip and blade and the roof of the mouth behind the alveolar ridge. Examples: /chru<sup>1</sup>/ 'exit,' /srau<sup>3</sup>/ 'few.'

In the arrangement /Cr/ (with no vowel nor following /u/), /r/ begins with the consonant as retroflexion thereof (as above), and continues after the consonant as retroflex vowel simultaneous with the peak of sonority. The tongue position for the vowel is identical with the position described above for /c ch s/ with simultaneous /r/. Examples: /cr<sup>3</sup>/ 'point,' /chr<sup>1</sup>/ 'eat,' /sr<sup>4</sup>/ 'is.'

In the arrangements /rV/ and /ru/, /r/ is a retroflex glide, often with some friction: /re<sup>4</sup>/ 'hot,' /ru<sup>4</sup>/ 'enter.'

In the arrangement /r/ (no consonant and nothing following), /r/ begins as a fricative retroflex glide and continues as retroflex vowel simultaneous with the peak of sonority: /r<sup>4</sup>/ 'day, sun' (bound form).

#### 9.4. Position [4].

/m/ has already been covered in this position and elsewhere (§ 9. 11). The remaining elements in position [4] are discussed in the order /i u n ng r ir ngr ur/.

/i/ is a glide towards (not necessarily to) the high front tongue position: /hai<sup>3</sup>/ 'sea,' /kei<sup>3</sup>/ 'give.'

/u/ is a glide towards (not necessarily to) the high back tongue position with concomitant increasing lip rounding: /hau<sup>3</sup>/ 'OK,' /keu<sup>3</sup>/ 'dog.'

/n/ is motion of the tongue to or towards the apico-alveolar position, with concomitant nasalization. If the following microsegment in the same mesosegment begins with /i/, the apico-dental closure is often not completed; in this case the nasalization begins with the peak of sonority or even immediately after an initial consonant, if any: thus in /'man<sup>4</sup> i ,tian/ 'a little shower.' If the following microsegment in the same mesosegment begins with /p ph m/, the closure of the lips for that consonant is often made simultaneously with the final /n/ of the preceding microsegment; similarly for the dorso-velar closure for an initial /k kh h/ of a following microsegment. Because the features constituting /n/ are still present, this

is not a morphophonemic replacement of /n/ by /m/ and /ng/. Thus: /,chian<sup>1</sup> 'pi<sup>3</sup>/ 'pencil,' /'nuan<sup>3</sup> he/ 'warm.'<sup>22a</sup>

/ng/ in this position involves no determined features: /,pang<sup>1</sup> 'mang<sup>2</sup>/ 'to give help.'

/r/ is a glide to the retroflex position, frictionless, the tongue approaching the roof of the mouth less closely than for /r/ in other positions: /far<sup>2</sup>/ 'method,' /ier<sup>4</sup>/ 'leaf,' /her<sup>2</sup>/ 'small box,' /uer<sup>1</sup>/ 'nest.'

/ir/: the /i/ and /r/ are simultaneous, constituting a glide to palatalized retroflex position: the front and central portions of the tongue are raised, and the tip slightly curled: /tiar<sup>3</sup>/ 'a little,' /tieir<sup>3</sup>/ 'bottom.'

/ngr/: the nasalization begins with the peak of sonority, or even immediately after an initial consonant, if any. After the peak of sonority there are, simultaneously, a glide of the front part of the tongue to the retroflex position (as with /r/ alone in [4]), and motion of the dorsal part of the tongue towards, but not to, contact with the velum; the nasalization increases throughout. Examples: /hengr<sup>2</sup>/ 'horizontal stroke,' /piengr<sup>3</sup>/ 'cake.'

/ur/ is a combination of /u/ and /r/, each as described above for position [4]; the two glides come in any arrangement relative to each other—/u/ first, /r/ first, simultaneous, or overlapping with either starting first: /phaur<sup>4</sup>/ 'bulb'<sup>23</sup>

→/i u r/ are now completely described;<sup>24</sup> /n ng/ are completely described once we add that, save as specified above, /n, ng/ involve closure, not approximation. There remain to be treated only the vowels, /e a/.

#### 9.5. Vowels

Microsegments with otherwise identical residual structure (as here analyzed) often occur in triads, in which a prominent feature of the contrasts between them is the height of the tongue at the peak of sonority. Thus: /i<sup>1</sup>: ie<sup>1</sup>: ia<sup>1</sup>/ 'one: coconut: to press down,' /u<sup>3</sup>: ue<sup>3</sup>: ua<sup>3</sup>/ 'five: I: tile,' /c<sup>3</sup>: ce<sup>2</sup>: ca<sup>2</sup>/ 'purple: duty: variegated.' Sometimes there are only two terms: /in<sup>1</sup>: ia<sup>1</sup>/ 'sound: smoke' /tuen<sup>4</sup>: tuan<sup>4</sup>/ 'ton: segment.' And sometimes there is only one: /iung<sup>4</sup>/ 'use.'

Vowel-sounds at the peaks of sonority of such microsegments differ in more than tongue-height: that of /ie<sup>1</sup>/ is front, that of /ue<sup>3</sup>/ is back and rounded. The vowel-sound at a peak of sonority in some cases has several simultaneous components. For high vowel-sounds, the only components are parts of determining features written with symbols other than /e a/; thus in /i<sup>1</sup>/ 'one,' /u<sup>3</sup>/ 'five,' /chr<sup>1</sup>/ 'eat,' /c<sup>4</sup>/ 'word,' /iu<sup>3</sup>/ 'rain,' and the like (§ 9. 2-3). In other cases, such components are often present, but there is in addition the component of mid or low tongue-height, symbolized by /e a/. For example, the mid-front-unrounded vowel-sound of /ie<sup>1</sup>/ has two components: the front position is part of /i/, the mid tongue-height is the /e/; the mid-back-rounded vowel-sound of /ue<sup>3</sup>/ has three components: the roundness is part of /u/, the mid tongue-height is the /e/, and the back position is a determined feature occurrent whenever this concatenation of determining features is found.



In what follows statements of the kind just made are greatly abbreviated: when nothing is said to the contrary, /e/ (plus whatever other simultaneous components may be involved) is to be taken as having its "normal" value, mid-back-unrounded; /a/, similarly, its "normal" value low-central-unrounded.

### 9.5.1. Triads

Three-way contrasts occur in the following frames ("C" = consonant, #, or a cluster /cr chr sr/; "V" = /# e a/): /CV#, CuV#, CuVr, CuVng, CuVngr, CiV#/.

/CV#/ : /e/ has its normal value or, optionally, is a glide downwards and forwards from a fairly high back position, the peak of sonority near the beginning of the glide. /cre<sup>1</sup>: cra<sup>1</sup>/ 'to cover up: to jab.'

/CuV#, CuVr/ : /e/ is rounded (otherwise "normal"), often with a glide after the peak of sonority towards mid-central-unrounded. /a/ is sometimes slightly retracted and rounded. /ue<sup>1</sup>: ua<sup>1</sup>/ 'nest: to vomit,' /,siau<sup>3</sup> 'uer<sup>1</sup>, /,siau<sup>3</sup> 'uar<sup>4</sup>/ 'small nest: small stockings.'

/CuVng, CuVngr/ : /a/ is often a bit retracted and rounded: /ueng<sup>1</sup>: uang<sup>2</sup>/ (surnames), /khuangr<sup>1</sup>/ 'basket.'

/CiV#/ : /e/ is mid-front-unrounded, often with a centering glide after the peak of sonority; /a/ is sometimes slightly fronted: /ie<sup>1</sup>: ia<sup>1</sup>/ 'coconut: duck.'

### 9.5.2. Pairs

Two-way contrasts occur as follows:

#### 9.5.2.1 /e/ versus /a/, in frames /CVr, CVi, CVir, CVn, CVng, CVngr, CVur, CVm, CuVi, CuVir, CuVn, CiVngr, CiVu, CiVir, CiVr, CiVir/.

/CVr/ : as in frame /CV#/ : /chrar<sup>1</sup>: ,siau<sup>3</sup> 'chrer<sup>1</sup>/ 'X-mark: small cart.'

/CVi/ : /e/ is mid-front-unrounded; /a/ slightly fronted and raised: /kei<sup>3</sup>: kai<sup>3</sup>/ 'to give: to alter.'

/CVir, CVn/ : /e/ higher-mid-central-unrounded, even more fronted in the specific frames /rVn, rVir/; /a/ is slightly fronted and raised: /keir<sup>1</sup>: kair<sup>1</sup>/ 'root: dried stuff,' /cren<sup>4</sup>: cran<sup>4</sup>/ 'to give relief: to stand,' /ren<sup>2</sup>/ 'people.'

/CVng, CVngr/ : /a/ is often a bit retracted. /reng<sup>1</sup>: rang<sup>3</sup>/ 'to throw: to call out,' /fengr<sup>1</sup>: fangr<sup>2</sup>/ 'small envelope: small house.'

/CVu, CVur/ : both /e/ and /a/ are optionally rounded, /e/ usually so; /a/ is optionally a bit retracted: /keu<sup>3</sup>: kau<sup>3</sup>/ 'dog: pick (tool),' /teur<sup>1</sup>: taur<sup>1</sup>/ 'pocket: small knife.'

/CVm/ : /e/ is slightly fronted: /srem<sup>2</sup>: tham<sup>1</sup>/ 'what: they.'

/CuVi/ : with /k kh h cr chr sr r #/ in position [1], /e/ is higher-mid-central-unrounded; with anything else in [1], higher-mid-back-rounded: /kuei<sup>1</sup>: 'kuai<sup>1</sup> ta/ 'to pertain to: to pat with a flat instrument,' /tuei<sup>4</sup>/ 'correct.'

/CuVir/ : both /e/ and /a/ are fronted and raised: /tueir<sup>1</sup>: tuair<sup>4</sup>/ 'pile, heap: segment.'

/CuVn/ : with # as [1], /e/ is slightly fronted; otherwise, /e/ is raised, almost to a (lax) high-back position, and rounded. /a/ is slightly fronted and raised. /tuen<sup>4</sup>: tuan<sup>4</sup>/ 'pause: segment.'

/CiVngr/ : /e/ is higher-mid-central-unrounded: /piengr<sup>3</sup>: iangr<sup>4</sup>/ 'cake: manner.'

/CiVu, CiVir/ : with tones /<sup>12</sup>/, /e/ is raised and optionally rounded; with tones /<sup>345</sup>/, not raised but optionally rounded; toneless, between these two. /a/, with tone /<sup>12</sup>/ and with /c ch s/ in position [1], is markedly raised and retracted, usually with rounding. Examples: /ieu<sup>1</sup>: iau<sup>1</sup>/ 'to swing: waist,' /siau<sup>1</sup>/ 'flute,' /chieur<sup>2</sup>: chiaur<sup>2</sup>/ 'ball: bridge.'

/CiVr/ : as in frame /CiV#/ : /ier<sup>4</sup>: iar<sup>2</sup>/ 'leaf: seedling.'

/CiVir/ : both /e/ and /a/ are fronted and raised: /tueir<sup>3</sup>: tiair<sup>3</sup>/ 'bottom: a little.'

#### 9.5.2.2 /#/ versus /e/, in frames /CiuV#, CiuVr/ : as in frames /CiV#/ or /CiVr/:

/ciue<sup>2</sup>/ 'to dig,' /,siau<sup>5</sup> 'siuer<sup>3</sup>/ (?) 'light fall of snow.'

#### 9.5.2.3 /#/ versus /a/, in frames /CiVn, CiVng, CiuVn/.

/CiVn/ : /a/ is raised and fronted radically, almost a lower-mid-front-unrounded vowel-sound: /tian<sup>3</sup>/ 'a bit.'

/CiVng/ : /siang<sup>4</sup>/ 'towards.'

/CiuVn/ : /a/ varies between its normal value, and low-front-unrounded: /iuan<sup>3</sup>/ 'far away.'

### 9.5.3. Unpaired items

In the following frames there are no contrasts: with /#/ : /CiVm, CiuVng, CiuVngr/; with /e/ : /CuVm/; with /a/ : /CiuVir/.

/CuVm/ : /e/ is rounded: /uem<sup>3</sup>/ 'we.'

/CiuVir/ : /a/ is slightly fronted and raised: /,hua<sup>1</sup> 'iuair<sup>2</sup>/ 'flower garden.'

### 9.5.4. Unstressed and disyllabic microsegments

Unstressed monosyllabic microsegments are in general the same in their residual characteristics as those bearing stress. However, final /e/ in an unstressed monosyllabic microsegment, and /e/ in position [5] of disyllabic microsegments, are centered and lowered, and alternate freely with a slightly raised variety of /a/. In unstressed monosyllabic microsegments, though not in position [5] of disyllabic microsegments, there is a morphophonemically distinct /a/ (slightly raised) which does not alternate with /e/. The transcription is on this score morphophonemic: /'ceme<sup>3</sup> ne?/ 'What?!'; but /'kuai<sup>1</sup> ta/ 'to pat with a flat instrument.'



In position [3] of a disyllabic microsegment, /e/ has the same quality that it has with the same elements in position [1] and [2], and /n/ in position [4], in a monosyllabic microsegment: /srem<sup>2</sup>: ceme<sup>3</sup>/ 'what, how.'

→/a, e/ are now completely described.

#### 9.5.5. *Alternative treatments*

Our analysis above selects in a few cases one rather than the other of two apparently equally acceptable choices, the reasons for our choice being irrelevant to the phonological facts:

In the frame /CiVn/, the vowel quality interpreted as /a/ has higher tongue-position than any other vowel quality so interpreted; there is no contrasting /e/ in this frame, and the vowel quality in question could also be interpreted as /e/, e.g., /tien<sup>3</sup>/ 'a little,' instead of /tian<sup>3</sup>/. This alternative choice is reflected in the Wade Romanization.

In the frames /CuVi, CuVir, CiVu, CiVur/, and in frame /CuVn/ when C is not zero, only /e/ and /a/ occur. The vowel qualities interpreted as /e/ are quite high, and could also be interpreted as zero; thus /kui<sup>4</sup>/ for our /kuei<sup>4</sup>/ 'expensive,' /khui<sup>3</sup>/ for /khuei<sup>3</sup>/ 'spool,' /iu<sup>2</sup>/ for /ieu<sup>2</sup>/ 'oil,' /chiur<sup>2</sup>/ for /chieur<sup>2</sup>/ 'ball,' and /tun<sup>4</sup>/ for /tuen<sup>4</sup>/ 'pause,' /uen<sup>4</sup>/ 'to ask' would not be altered, for in this case the vowel quality is clearly in the mid tongue-height range. Since the symbolism /iu/ would thus become ambiguous for our present /iu/ (as in /iu<sup>3</sup>/ 'rain') and /ieu/, another orthographic convention would have to be introduced: simultaneous or overlapping /i/ (**i**) and /u/ (**u**) would have to be written with a single symbol, say /y/, giving /iu<sup>3</sup>/ 'to have,' /y<sup>3</sup>/ 'rain.'<sup>25</sup>

Had the alternative choices been made in these cases, the arrangement of our descriptive statements would have been modified slightly; neither this nor the necessity of introducing /y/ militates against this treatment.

### 10. Limitations on sequence of microsegments

A microsegment with initial /ng/ occurs only in macrosegment-final, preceded in the same mesosegment by a microsegment ending in /ng/: /lau<sup>3</sup> 'uang<sup>2</sup> nge<sup>2</sup>/ 'O friend Wang!'

Within a macrosegment: the third tone does not occur on two successive microsegments; neither does the fifth tone; the fifth tone does not fall on the terminal microsegment; a mesosegment with an initial pretonic toneless and stressless microsegment does not occur initially.

### 11. Comparison with Hartman's analysis

The formulation just completed above of Peiping phonology is based on and supported by the writer's own observations; but both observations and formulation were guided by the work of predecessors. In the late thirties George L. Trager,

working with George A. Kennedy, developed the theories of: three basic vowels (high, mid, low); the biphonemic status (/iu/ in our notation) of high-front-rounded vowels or glides; and the analysis of retroflex initials /sr cr chr/ into non-retroflex initials /s c ch/ and a retroflex semivowel /r/. The results were not published by either Trager or Kennedy; Hartman later took up the investigation, carried it further, and published.<sup>26</sup> The present analysis is also, so to speak, in the same "tradition"; but there are differences, and these differences are worth discussion.

(1) Hartman posits three vowels, /a e/ and high /i/; he writes the semivowels as /j w r/. To each syllable one of these three vowels is assigned.<sup>27</sup> Monosyllabic microsegments which here are taken as having no vowel at all are by Hartman taken to contain the high vowel. Thus he writes /njwi/ for our /niu/, and so on.

It turns out, upon inspection, that if Hartman's high vowel is omitted, the remaining set of symbols with which such a microsegment is written, together with the fact that they constitute a single microsegment, defines unambiguously both the location of the peak of sonority and the vowel-quality which occurs there. It is therefore redundant to indicate, with a separate symbol, the location and high-vowel nature of the peak of sonority in such microsegments.

Of paramount importance in the statement just made are the words "together with the fact that they constitute a single microsegment." Hartman assumes this fact, not discussing (save in one footnote) phenomena in sequences larger than a single monosyllabic microsegment. Until such phenomena have been observed, however, we cannot know for sure whether Hartman's "syllable," the structure of which is his topic, is a unit defined phonologically by the fact that it has a peak of sonority, or by the fact that a phonemically relevant syllable-juncture occurs between each two successive syllables. If the former should turn out to be the case, then the presence of a peak of sonority is necessarily a primary factor (a determining feature, in our terminology); but if the latter is the case, then at least so long as we confine our attention to *monosyllabic* microsegments (as Hartman did), the presence of a peak of sonority is not a primary factor, but a resultant of the arrangement of other factors. Furthermore, if the former is the case, we cannot legitimately discuss segmental structure in terms of "syllables," but must instead take as our larger units, within which certain arrangements of features occur, whatever unit happens to be marked off by successive occurrences of the closest phonemic variety of open juncture—perhaps, for example, whole phrases.

Within Hartman's range of discussion, therefore, with arrangement of material within what we here call monosyllabic microsegments as the topic, the high vowel, the "syllabicity" vowel with no other distinguishing characteristic of its own, is clearly a resultant rather than a determining feature in its own right. In the present discussion we have explicitly introduced the determining feature (microjuncture) which enables us to discuss arrangement of material within microsegments, and are led a fortiori to exclude the high vowel as a separate entity. However, we also see that there are disyllabic microsegments, not discussed by Hartman, the structure of which must also be accounted for in our complete analysis. It might have



turned out, quite easily, that in this special and rare type of microsegment the high vowel would be necessary; and, if that had been the case, it would of course have had to be used throughout. Since disyllabic microsegments are hard to observe, further familiarity with allegro speech may still necessitate a return from the two-vowel system to Hartman's, but at the present writing this does not seem likely.

(2) Hartman reports a smaller variety of finals containing /r/ than are recognized herein. Thus he recognizes the contrast here transcribed as /eir/ versus /er/, providing the microsegment bears first or second tone, but not with any of the other tones, and no comparable distinction between /air/ and /ar/. This, of course, may well be the situation for some speakers.

Hartman's analysis of /eir/ and /er/ takes the first as /er/, the second as /eer/, with the mid vowel doubled; this is based on a reputed difference in length of the vocalic phase of the final, which he takes, instead of the qualitative difference, as primary. This could be extended to the cases he does not distinguish: /eer, er; aer, ar/, respectively, with all tones, instead of my /er, eir; ar, air/. There is perhaps little basis for choice; I hear distinct palatalization in the second of each pair, and have interpreted accordingly.

(3) Hartman, § 7, says "there is . . . nothing in the distribution to suggest that the aspirates [ph th ch kh] are anything but unit consonants." Here our phonemic working assumptions differ; Hartman is analyzing occurrent material into phonemes, I analyze into determining (and determined) features; Hartman uses distributional facts as the basis for phonemic conclusions, I find the determining features and then state the distributions. The aspiration of /ph th ch kh/ *sounds* like the independent aspiration /h/; so I take it to be the same thing.

(4) Hartman does not, in his paper, recognize tone /<sup>5</sup>/ ("raised third") as phonemically distinct; but it was Hartman who, after publication of his paper, discovered cases of minimal contrast which establish /<sup>5</sup>/ as different from both /<sup>2</sup>/ and /<sup>3</sup>/.

### Addenda

Since this report was submitted several facts have come to light (mainly through the courtesy of Yuenren Chao) which bear on the discussion.

- (1) (To § 8.23) The following monosyllabic microsegments, excluded in the text, are attested: /sen, seng, sengr, liun, nen, neu, tiang, tiangr, thei, pia, phia, chrei, rua/. /len/ occurs elsewhere than in the name referred to (§ 8.23, (5)). Many of the above additions are from onomatopoeic forms.
- (2) (To §§ 9.31, 9.33) In the sequence /Ci. . ./, if /C/ is /t th n l/ the consonant is not palatalized; rather, the /i/ is a rather low high-front glide or vowel, not overlapping the consonant.
- (3) There are a number of interjections having vocalic structure not subsumable under the system here set up. In addition, there is a minimum contrast between /,ieu<sup>2</sup> 'cing<sup>3</sup>/ 'oil wells' and what we would

here transcribe identically in the meaning 'there are wells,' where the first syllable of the latter might also bear tone /<sup>5</sup>/. /ieu<sup>2</sup>/ in the first of this pair has a relatively high back rounded vowel; in the second of the pair, a considerably lower vowel (identical with that of /ieu<sup>3</sup>/ or /ieu<sup>4</sup>/). In the light of this phenomenon there is serious doubt as to whether the two-vowel system, or its three-vowel predecessor, can be maintained. Perhaps it can, if we accept the modification suggested in § 9.55, writing /ieu<sup>1</sup> ieu<sup>2</sup> 'swing, oil,' and /ieu<sup>2</sup> ieu<sup>3</sup> ieu<sup>3</sup>, ieu<sup>4</sup>/ for 'there is [three forms], again.'

### Notes

- 1 Study of Chinese was begun in connection with the preparation of teaching materials for members of the Armed Forces, as part of the Program of the Language Section, Education Branch, Information and Education Division, ASF. The present paper was drafted during the tenure of a Grant-in-Aid from the Intensive Language Program, ACLS, Spring-Summer 1946. Of the dozen or more Chinese with whom the writer has worked, special mention is due Mr. Chaoying Fang, his collaborator, transcribing informant, and (save in the technical phases of phonology) co-analyst for several years. A number of colleagues read an earlier version of this paper, and many constructive criticisms were received (not always acted on), especially from Yuenren Chao, Robert A. Hall, Jr., Zellig S. Harris, George L. Trager, and W. Freeman Twaddell. To all the individuals and agencies just mentioned, and to numerous others, the writer is deeply indebted.
- 2 Each of the alphabeticizations of Chinese (Wade, Wade-Giles, Latinxua, Chinese National Romanization, Yale, and the usual Cyrillization) reflects a more or less sophisticated phonological analysis. The following is a partial list of discussions not ancillary to the devising of an alphabetization (those the writer was not able to consult in preparing this report are in brackets):

[Y. R. Chao, *Singing in Chinese*, *Le Maître Phonétique*, 3.39.9-10 (1924).]

Lawton M. Hartman 3rd, *The segmental phonemes of the Peiping dialect*, *Language* 20.28-42 (1944).

[Daniel Jones, *Chinese tones*, *Le Maître Phonétique* 28.95-6 (1913).]

B. Karlgren, *A Mandarin phonetic reader in the Pekinese dialect*, *Arch. d'Études Orientales* 13.23; *Upsala*, 1917.

Jos. Mullie, *The structural principles of the Chinese language*, *Anthropos Linguistische Bibliothek* vols. 5, 6; *Peiping* 1932, 37.

Morris Swadesh, *A condensed account of Mandarin phonetics*, *TCLP* 8.213-6 (1939).

[L. T. Wang, *Recherches expérimentales sur les tons du Pekinois*, *Arch. Néer. Phon. Exp.* 13.1-40 (1937), 14.1-48 (1938).]

[. . . , *Whispering in Chinese*, *Le Maître Phonétique*, 3.40.4 (1935).]

- 3 See also the writer's earlier discussion, *A system of descriptive phonology*, *Language* 18.3-21 (1942) (except §§ 6-7, now superseded).
- 4 Leonard Bloomfield, *Language* (New York, 1933), 84 and elsewhere.
- 5 An analogy may be helpful. In stating the law of gravitation, one says that the force of attraction between two bodies varies, among other things, inversely as the *square* of the distance between them. It would be just as accurate to say, "inversely as the 1.99997 power of the distance between them," or "inversely as the 2.0003 power of the distance between them;" our techniques of measurement do not allow of sufficient



- precision to judge between these alternatives. In such a case we choose, for simplicity's sake, the nearest "round number," keeping clearly before us the degree of relative accuracy thereby attained. The analogy breaks down, however, in that, as yet, we do not know how to decide which of two phonological descriptions is the "rounder." Apparently the only legitimate use of the criterion of economy in science is in matters of this kind: where applicable, it gives us neater statements, but not necessarily more accurate ones.
- 6 Essentially that of Chaoying Fang (b. Tientsin, educated Peiping) and Victor Ch'üan (b. Paris, educated Peiping); where these differ, the more complex type is chosen.
  - 7 This systematic, though somewhat unwieldy, terminology is introduced here primarily because it seems inadvisable to extend the meaning of the term *syllable* so as to cover segments which, in the traditional meaning, may be "disyllabic" (i. e., have two peaks of sonority); see § 8.1.
  - 8 *Residual structure* is what has heretofore been called *linear* or *segmental* structure. The latter terms are unsatisfactory because the structure referred to (in Chinese, at least) is *not* linear. "Residual" is also not too fortunate, but it will serve until a better expression has been found.
  - 8a Paul Benedict (private conversation).
  - 9 George A. Kennedy (private conversation).
  - 10 The numbering /<sup>1</sup>/ through /<sup>4</sup>/ is as in Wade-Giles Romanization; /<sup>5</sup>/ is the so-called "raised-third" tone (usually not considered phonemically distinct from the second tone).
  - 11 Yuenren Chao (private correspondence).
  - 12 /ma<sup>5</sup> fan<sup>4</sup>/ is written with a sequence of two characters, read individually as /ma<sup>2</sup>/ and /fan<sup>2</sup>/; this has afforded the basis of a protest against the present treatment. If the writer's hearing has not been at fault, then either (a) the morphemic identification reflected by the orthographic convention is incorrect, or (b) the morphophonemics of tone must be considered more complex than has been customary. More probably (a) is the case: Chinese characters serve about as well as an indication of morphemic identities as the letters in English orthography serve as an indication of phonemic identities.
  - 13 There are probably a number of alternative possibilities here; we may mention one. Instead of writing /c/, we could write /ts/; given a slightly different definition of t, we would define /s/ as simultaneous t and F, and make the necessary minor modifications of wording in ensuing sections. This would eliminate c as a separate determining feature. The difference seems trivial.
  - 14 Almost all earlier treatments of Chinese syllables (= our monosyllabic microsegments) make use of this initial-final division. The convenience of the device, however, seems not to reflect anything of a fundamental nature about the structure of the language (to the contrary: Bloomfield, *Language*, 182).
  - 15 An alternative is to eliminate the initial classes /cr chr sr/ and /r/, and to add two further groups of finals, one with /ru/ and one with /r/ in position [2].
  - 16 /i tuan<sup>4</sup> 'iai<sup>2</sup>/ 'precipice' has an alternative form with /ia<sup>2</sup>/; /chiai<sup>3</sup>/ (Hartman, loc. cit., 39) has the alternative pronunciation /khai<sup>3</sup>/.
  - 17 Most elements with a retroflex final are bimorphemic, consisting of a first constituent without retroflexion in its final and a second constituent of retroflexion added according to a fairly complex pattern. The first constituents fall into certain grammatical classes; if an element of such a class exists having a certain phonemic shape, one may legitimately expect the existence of the corresponding bimorphemic form with retroflexion, whether one has heard it or not.
  - 18 Hartman, loc. cit., fn. 18, reports this presumably from a Peiping speaker.
  - 19 Information from Chaoying Fang.
  - 20 Victor Ch'üan (see fn. 6 above) speaks this jargon; Yuenren Chao, *Eight varieties of secret language [in Chinese]*, Bull. of Inst. of Hist. and Philol. of Academia Sinica, 2.3.312-53 (1931).

- 21 Yuenren Chao discussed such fast-speech forms in a talk to the Yale Linguistics Club c. 1943.
- 22 Beginning here, we mark with an arrow each paragraph which concludes the discussion of one or more vowels or consonants.
- 22a Perhaps rigor would require that we say, rather, that in such cases one has simultaneously /n/ and /m/, or /n/ and /ng/—that is if simultaneous p and N constitute /m/, and simultaneous t and N constitute /n/, perhaps simultaneous p, t, and N must be interpreted as simultaneous /n/ and /m/. But the p or k in such cases is a long component, stretching back across microjuncture from the following microsegment.
- 23 Hartman, loc. cit., fn. 14, suggests a possible contrast of terminal /ru/ and /ur/ postvocally, but I have not heard any.
- 24 Except for phrases simultaneous with /e/ or /a/, discussed in § 9.5.
- 25 This alternative was suggested by Morris Swadesh (private conversation).
- 26 Loc. cit. (see fn. 2 above).
- 27 Hartman's "syllable" = our "monosyllabic microsegment"; Hartman, like his predecessors, does not discover disyllabic microsegments, and does not examine too closely the problem of establishing syllables as phonologically relevant units to start with.



THE ZERO INITIAL AND  
THE ZERO SYLLABIC

Fang-Kuei Li

Source: *Language* 42, 2, 1966, 300-2.

In 1948, Y. R. Chao suggested that the voiced velar fricative of Mandarin might be regarded as an initial; but since he found that there was little chance of minimal contrasts, we might, for practical purposes, leave this phoneme unmarked.<sup>1</sup> In the present paper I intend to list additional examples of contrast involving this initial, and to comment on its patterning with other initials.

The velar fricative occurs before the low vowel /a/ and before the mid vowel /e/ in both stressed and unstressed syllables. Most speakers use it, though some have variants. The fricative quality is not strong; as Chao suggested (*op.cit.*), it may be considered a semivocalic constriction. Two types of the weak velar fricative can be recognized: a bright-colored [ɣ] before /e/ and a dark-colored [ɣ̄] before /a/.

No examples need be given of monosyllables. In dissyllables, the semivocalic constriction prevents the second syllable from joining smoothly to the final element of the first, and often causes a preceding final nasal to be incompletely closed. Examples:<sup>2</sup>

## 1. Both syllables stressed:

*p'ing ān* 'peaceful' [pʰi~ ɣan] or [pʰiŋ ŋan]  
*chiāo ào* 'proud' [tɕiɑu̯ ɣau]  
*ēn ài* 'to love fondly' [ɣə~ ɣai̯]  
*mǎ ān dzu* 'saddle' [ma ɣan dz]  
*ái è* 'to suffer hunger' [ɣai̯ ɣə]  
*pào ēn* 'to return a favor' [pau̯ ɣən]  
*lién ōu* 'lotus stem' [liɛ~ ɣou̯]

## 2. Second syllable unstressed:

*ān an* (a baby's name) [ɣa~ ɣan]  
*áo ao* 'just simmer' [ɣau̯ ɣau̯]

*ái ai* 'just suffer' [ɣai̯ ɣai̯]  
*è e* 'just fast' [ɣə ɣə]  
*èn en* 'just press down' [ɣə~ ɣən]  
*òu ou* 'just let it rot/ferment' [ɣou̯ ɣou̯]

The unstressed type here is to be sharply distinguished from the final particle, which has no initial. Examples:

3. With high-pitched *a* (marked by a raised dot):

*pān a* 'move away!' [pana.]  
*máng a* 'I'm busy!' [maŋa.]  
*shéi a* 'who is it?' [ʃeja.]  
*tsǒu a* 'go!' [tsoua.]

4. With low-pitched *a* (marked by a full-stop):

*mǎi a* 'going to buy it?' [maja.]  
*máng a* 'busy?' [maŋa.]  
*fān a* 'is it rice?' [fana.]  
*p'ǎu a* 'going to run?' [phaua.]  
*mǎ a* 'is it a horse?' [ma. ] or [maja.]

There is no difficulty in isolating a morpheme [a], which alternates freely with [e] and conditionally with [ia], but which has no initial. This feature distinguishes it from the cases in sections 1 and 2 above, where the second syllable is generally assumed to have a zero initial. For this zero initial, Martin<sup>3</sup> follows Chao in introducing the phoneme /ɣ/; but he extends its range to include two allophones [j] and [w], predictable from the following vowel—thus /ɣi/ [ji] 'one', /ɣü/ [wu] 'five'. Hockett<sup>4</sup> recognizes a zero position for all syllables beginning with the vowels /e a i u ü/, but seems not to recognize a vowel with NO initial. He treats the final particle as a syllable with consonant initial, its nature determined by the last element of the preceding syllable. Thereby he cuts the intervocalic nasals and semivowels (as in section 3 above) into two parts: the first as the final of the preceding syllable, the second as the initial of the particle.<sup>5</sup> This practice can be defended if one insists that every syllable in Mandarin must have an initial, even though it may be zero (Martin's [ɣ]).

While Martin and Hockett provide us with a number of vowels—especially Martin, who adds several marginal vowel phonemes and a syllabic /z/—Hartman<sup>6</sup> assumes the semivowels or nonsyllabics /j w jw r/, thus making the syllabics /i u ü z r/ completely dependent on the preceding semivowel or consonant. For these syllabics he assumes a single high vowel /i/. It has been suggested that a better name for it would be 'zero syllabic', since all its features are predictable from the preceding segment. Hockett regards syllabic [r] and [z] as zero syllabics after /r s ts/, etc., but he recognizes /i u ü/ in the same positions. If we follow Hartman's lead and assume not only /j w jw r/ but also Chao and Martin's /ɣ/, we may wish to set up two varieties /ɣ/ and /ɣ̄/. At this point we are fast approaching a stage where



no vowel distinctions need to be made. In such a system we have the nonsyllabic initials /t k p l m n f h/, the semivowels or syllabics /s r j w ɣ ʎ/, and the finals /m n ŋ j w r/. The system differs very little from Martin's (though he also uses vowels), except in the treatment of /ɣ/ and the addition of /ʎ/. It is admittedly awkward, but I can imagine that an orthography with no vowels might readily adopt such an analysis.

These various systems of phonemicizing seem to indicate that there is simply no distinction in Mandarin between semivowels and vowels. The systems are different statements arising from the nature of the language, a continuum of segments blurred together, with the distinctive features overlapping. The various attempts to systematize the data are important, perhaps necessary, for the purpose of probing the structure of the language; but the adoption of one system over another is often influenced by factors that are not necessarily structural.

### Notes

- 1 Y. R. Chao, 'The voiced velar fricative as an initial in Mandarin', *Le maître phonétique* no. 89 (1948).
- 2 In the phonetic transcriptions, tone marks have been omitted for typographical reasons. They are in every case the same as in the immediately preceding italic notation.
- 3 Samuel E. Martin, 'Problems of hierarchy and indeterminacy in Mandarin phonology', *BIHP* 29.209-29 (1957).
- 4 Charles F. Hockett, 'Peiping phonology', *JAOS* 67.253-67 (1947).
- 5 Hockett, 'Peiping morphophonemics', *Lg.* 26.63-85 (1950).
- 6 Lawton M. Hartman III, 'The segmental phonemes of the Peiping dialect', *Lg.* 20.28-42 (1944).

## A SYSTEMIC INTERPRETATION OF PEKING SYLLABLE FINALS

M. A. K. Halliday

Source: P. Tench (ed.), *Studies in Systemic Phonology* (London and New York: Pinter, 1992), pp. 98-121.

This study presents one part of a systemic interpretation of the syllable in modern standard Chinese, as represented by the Peking variety of Mandarin. It is based on my own observations, made very many years ago, (i) of Peking speech in general and (ii) of one particular speaker in detail. I shall always be deeply indebted to Mr Lien Shihmin for his thoughtful collaboration in this research. Recently I have had the opportunity of partially checking these observations: I think they were largely valid, though I would now interpret them differently, in certain respects, from the way I did in a summary presentation at the time (1959).

The study covers the syllable as a whole; but it is too long to be presented here in full. Here I propose to treat only the finals; and to shorten the treatment still further by leaving out what would otherwise be a long account of investigating vowel variation and showing why such variation provides the key to Mandarin phonology. Instead I shall simply present the observed phonetic variation in tabular form, using a moderately narrow transcription. My aim is to suggest what I understand by a systemic approach to phonology. It is perhaps appropriate to add, in view of the rather one-sided picture of twentieth-century linguistics that is generally prevalent today, that the theoretical foundations for this study derive from two sources; traditional Chinese phonology, as interpreted by Luo Changpei and Wang Li, and prosodic phonology as developed by J. R. Firth and his colleagues in London. These two approaches are entirely compatible and share a highly abstract view of phonology based on paradigms of (nonsegmental) features (Wang 1936, 1981; Firth 1948; Hill 1966).

Chart 1 shows the total syllabary of modern Pekingese; almost exactly 400 syllables, with less than half a dozen fringe syllables which are admitted by some speakers and not others (like *den* in *denqi* 'knock straight', *rua* in *ruale* 'gone soft'). They are written in Pinyin, the authorized roman transcription; but since I am not here dealing with tone, tonal diacritics are omitted. The format is designed to make it easy to refer to in the discussion; again, of course, it is the result of lengthy phonological analysis, not something that is 'given' in advance. For a



prosodic analysis of a complete syllabary of a language, compare Henderson's (1966) investigation of Vietnamese.

Let us begin by noting all those syllables which contain the vowel symbol *a* in their spelling:

- (1) those where it is the only vowel symbol and ends the syllable (row 2);
- (2) those where it is the only vowel symbol but is followed by *-n* or *-ng* (rows 8 and 10);
- (3) those where it is followed by another vowel symbol (rows 4 and 6);
- (4) those where it is preceded by another vowel symbol (rows 13 and 22);
- (5) those where it is both preceded and followed by another vowel symbol (rows 15 and 24);
- (6) those where it is preceded by another vowel symbol and followed by *-n* or *-ng* (rows 17, 19, 26, 28 and 32).

The phonetic quality of the vowel represented as *a* in the spelling varies in two respects. First, it varies from one syllable type to another; if we consider just the environments in (1) and (3) above, it is most open when final, fronted before *-i* and backed before *-o*. [The spellings *-ai*, *-ao* are anomalous; for consistency they should be either *-ai*, *-au* or else *-ae*, *-ao*.] Second, for any given syllable the quality of the *a* vowel varies both among different speakers and within the speech of the individual speaker.

There is nothing surprising in this; variation of both these kinds is familiar in all languages and will be found in Mandarin occurring throughout the syllabary. But whereas the former, allophonic variation is assumed to be fundamental to the phonological analysis, and the only question is how best to take account of it (the phonemic interpretation embodied in the Pinyin transcription may or may not turn out to be effective in theory), we usually treat the latter, lectal type of variation as something to be attended to after the phonological system has been established. I would argue, however, not only that the lectal variation is an inherent feature of the system but also that, in the case of the Pekingese syllable, it is a major source of insight into the way the system works (cf. Lock, 1989).

I shall not attempt here to describe all the phonetic variation that is heard to occur in Peking speech. What I have done is to take the syllables listed in two columns in Chart 1, columns 12 and 15, and present in a systematized form the variants that are typically associated with each one. There are 34 syllables in all, and these are set out as Chart 2. In Chart 2, however, I have used a different order to make them easier to refer to in the subsequent discussion; from now on, row numbers cited will be those of Chart 2 unless otherwise announced. These 34 syllables can be taken to stand for the full range of 'finals' (roughly, the rhyming part of the syllable) in the Mandarin phonological system. The pattern of realization, including the variability, is more or less constant across the whole of each of the rows in Chart 1 (with some exceptions in column 22, Block VII, which will be brought in at the end).

It will be clear from Chart 2 that, if we postulate an /a/ phoneme where there is *a* in the spelling, there are regular patterns of allophonic variation that could be

constructed from what comes before and after it: the /a/ nucleus is rather strongly affected by the periphery. If we consider just the vowel environments, leaving out final *-n*, *-ng* for the moment, the phonetic value of *a* depends on whether it is preceded, and whether it is followed, by (i) no other vowel symbol, (ii) *i*, or

Chart 1 Mandarin Chinese syllabary [in Pinyin spelling]

	I				II				III			
	1	2	3	4	5	6	7	8	9	10	11	
i	1	bu	pu	mu	fu							
	2	ba	pa	ma	fa	da	ta	na	la	ga	ka	ha
	3	bo	po	mo	fo	de	te	(ne)	le	ge	ke	he
	4	bai	pai	mai		dai	tai	nai	lai	gai	kai	hai
	5	bei	pei	mei	fei	dei		nei	lei	gei		hei
	6	bao	pao	mao		dao	tao	nao	lao	gao	kao	hao
	7		pou	mou	fou	dou	tou	nou	lou	gou	kou	hou
	8	ban	pan	man	fan	dan	tan	nan	lan	gan	kan	han
	9	ben	pen	men	fen	(den)		nen		gen	ken	hen
	10	bang	pang	mang	fang	dang	tang	nang	lang	gang	kang	hang
	11	beng	peng	meng	feng	deng	teng	neng	leng	geng	keng	heng
ii	12	bi	pi	mi		di	ti	ni	li			
	13									lia		
	14	bie	pie	mie		die	tie	nie	lie			
	15	biao	piao	miao		diao	tiao	niao	liao			
	16			miu		diu		niu	liu			
	17	bian	pian	mian		dian	tian	nian	lian			
	18	bin	pin	min				nin	lin			
	19							niang	liang			
	20	bing	ping	ming		ding	ting	ning	ling			
iii	21					du	tu	nu	lu	gu	ku	hu
	22									gua	kua	hua
	23					duo	tuo	nuo	luo	guo	kuo	huo
	24									guai	kuai	huai
	25					dui	tui			gui	kui	hui
	26					duan	tuan	nuan	luan	guan	kuan	huan
	27					dun	tun	nun	lun	gun	kun	hun
	28									guang	kuang	huang
	29					dong	tong	nong	long	gong	kong	hong
iv	30							nü	lǔ			
	31							nüe	lǜe			
	32								(lüan)			
	33											
	34											

(Continued)



Chart 1 (continued)

IV			V				VI			VII	
12	13	14	15	16	17	18	19	20	21	22	
			zhi	chi	shi	ri	zi	ci	si	er	1
			zha	cha	sha		za	ca	sa	a	2
			zhe	che	she	re	ze	ce	se	e	3
			zhai	chai	shai		zai	cai	sai	ai	4
			zhei		shei		zei			(ei)	5
			zhao	chao	shao	rao	zao	cao	sao	ao	6 i
			zhou	chou	shou	rou	zou	cou	sou	ou	7
			zhan	chan	shan	ran	zan	can	san	an	8
			zhen	chen	shen	ren	zen	cen	sen	en	9
			zhang	chang	shang	rang	zang	cang	sang	ang	10
			zheng	cheng	sheng	reng	zeng	ceng	seng	(eng)	11
ji	qi	xi								yi	12
jia	qia	xia								ya	13
jie	qie	xie								ye	14
jiao	qiao	xiao								yao	15
jiu	qiu	xiu								you	16 ii
jian	qian	xian								yan	17
jin	qin	xin								yin	18
jiang	qiang	xiang								yang	19
jing	qing	xing								ying	20
			zhu	chu	shu	ru	zu	cu	su	wu	21
			zhua	chua	shua	(rua)				wa	22
			zhuo	chuo	shuo	ruo	zuo	cuo	suo	wo	23
			zhuai	chuai	shuai					wai	24
			zhui	chui	shui	rui	zui	cui	sui	wei	25 iii
			zhuan	chuan	shuan	ruan	zuan	cuan	suan	wan	26
			zhun	chun	shun	run	zun	cun	sun	wen	27
			zhuang	chuang	shuang					wang	28
			zhong	chong		rong	zong	cong	song	weng	29
ju	qu	xu								yu	30
jue	que	xue								yue	31
juan	quan	xuan								yuan	32 iv
jun	qun	xun								yun	33
jiong	qiong	xiong								yong	34

(iii) *o/u*. Moreover the effect of the following environment seems rather stronger than that of the preceding: contrast zhai, zha, zhao (rows 11, 12, 14) with jia zha zhua (rows 2, 12, 23). [This is contrary to what I wrote in my earlier summary, where I had not taken into account the full range of systematic variation.]

Chart 2 Phonetic realization of syllables with palatoalveolar (j-) and retroflex (zh-) initials, showing variation in rendering of the finals.

1	jian	dz'ɛn	dz'ɛ̃n	dz'ɛ̄	
2	jia	dz'a	dz'ã		
3	jiang	dz'aŋ	dz'ãŋ	dz'ā	dz'ã̄
4	jiao	dz'ao	dz'ao	dz'ao	
5	jin	dz'ɿn	dz'ɿ̃n	dz'ɿ̄	
6	jie	dz'e	dz'ẽ		
7	jing	dz'ĩŋ	dz'ĩ̄ŋ	dz'ī	
8	jiu	dz'ɿu	dz'ɿ̃u		
9	ji	dzai			
10	zhan	dzæ̃n	dzæ̃̄n	dzǣ	dzǣ̄
11	zhai	dzæ̃ɛ	dzæ̃̄ɛ		
12	zha	dzæ			
13	zhang	dzɤ̃ŋ	dzɤ̃̄ŋ	dzɤ̄	dzɤ̄̄
14	zhao	dzɤ̃o	dzɤ̃̄o		
15	zhen	dzɛ̃n	dzɛ̃̄n	dzɛ̄	
16	zhei	dzɛ̃ɪ	dzɛ̃̄ɪ		
17	zhe	dzɛ̃			
18	zheng	dzɛ̃ŋ	dzɛ̃̄ŋ	dzɛ̄	
19	zhou	dzɛ̃u	dzɛ̃̄u		
20	zhi	dzɿ̃			
21	zhuan	dz'ɛ̃̄n	dz'ɛ̃̄̄n	dz'ɛ̃̄̄̄	dz'ɛ̃̄̄̄̄
22	zhuai	dz'ɛ̃̄̄	dz'ɛ̃̄̄̄	dz'ɛ̃̄̄̄̄	
23	zhua	dz'ã̄	dz'ã̄̄		
24	zhang	dz'ɿ̃̄ŋ	dz'ɿ̃̄̄ŋ	dz'ɿ̃̄̄̄	
25	zhun	dz'ũ̄n	dz'ũ̄̄n	dz'ũ̄̄̄	dz'ũ̄̄̄̄
26	zhui	dz'ɿ̃̄̄̄	dz'ɿ̃̄̄̄̄		
27	zhuo	dz'ȭ	dz'ȭ̄		
28	zhong	dz'ũ̄ŋ	dz'ũ̄̄ŋ	dz'ũ̄̄̄	
29	zhu	dz'ũ̄			
30	juan	dz'æ̃̄̄̄n	dz'æ̃̄̄̄̄n	dz'æ̃̄̄̄̄̄	dz'æ̃̄̄̄̄̄̄
31	jun	dz'ɿ̃̄̄̄n	dz'ɿ̃̄̄̄̄n	dz'ɿ̃̄̄̄̄̄	dz'ɿ̃̄̄̄̄̄̄
32	jue	dz'ẽ̄̄̄	dz'ẽ̄̄̄̄		
33	jiong	dz'ɿ̃̄̄̄ŋ	dz'ɿ̃̄̄̄̄ŋ	dz'ɿ̃̄̄̄̄̄	dz'ɿ̃̄̄̄̄̄̄
34	ju	dz'ɿ̃̄̄̄			

Note: (1) On-line phonetic symbols are those of the IPA, except that ɶ has been used here instead of ɛ̄ for the open front rounded vowel, ǣ instead of ā for the open front spread, with a used for maximally open position.

(2) Raised phonetic symbols represent generalized postures towards which, through which or away from which the vowel moves in its glide.

(3) Diacritics show 'nasalized', 'lowered', 'raised', 'fronted' and 'backed' variants of the vowel in question.

If we then consider the syllables zhan, zhang (rows 10 and 13), we find that the final nasal has the same effect on the /a/ as the final vowel: zhan pairs with zhai and zhang pairs with zhao. This can best be explained in prosodic terms: -n and -i are both 'y-prosodic' (yotizing), -ng and -o are both 'w-prosodic' (labiovelarizing)



(cf. Firth, 1937; Scott, 1956). I shall refer to this as the system of POSTURE. We can now predict what kind of vowel variation we shall find with *-iang* and *-uan*: see *jiang* and *zhuān* (rows 3 and 21), where *zhuān* behaves like *zhuai* and *jiang* behaves like *jiao*. In both these pairs, there is movement between a *y* posture and a *w* posture.

With the nasals, however, another environment is opened up because we also find *-ian* and *-uang*: see *jian*, *zhuang* (rows 1 and 24). Here the effect on the vowel nucleus is more pronounced, since in each case the preceding and the following margins are exerting the same force: both are *y*-prosodic (*i-* and *-n*), or else both are *w*-prosodic (*u-* and *-ng*). The vowel nucleus is further from the open position, and it does not vary significantly in the degree of openness attained. Here there are no corresponding syllables with non-nasal final: there are no forms *jiāi* or *zhuaō*.

The syllables in row 30–34 present special problems which I shall return to later in the study; but in respect of the system of posture they are the same. Once we have recognized that *-n* is *y*-prosodic, like *-i*, and *-ng* is *w*-prosodic, like *-o*, we shall expect the nasal finals to exert the same force on the nuclear vowel as the oral finals do. The generalization that the phonetic quality of the nucleus of the syllable – that is, the range within which it can vary – is determined by the posture at the peripheries applies throughout the phonological system, and not only with the vowel written *a*. It makes no difference whether the final is nasal or oral: because of their *y*-/*w*- prosody, *-V* (final vowel) and *-N* (final nasal) are identical in their effect on the preceding syllabic nucleus.

In terms of posture, therefore, we find nine distinct environments. These are shown in Table 1, where the symbols are in phonemic notation. In the next step, we will represent this in prosodic notation; but first we need to note the other significant dimension of variation that occurs just with the nasal finals, namely variation in the way the nasality itself is manifested. In syllables written with final nasal consonant (rows 1, 3, 10, 13, 21, 24 in Chart 2), the onset of nasality may take place at any time following release of the initial consonant; and there may or may not be tongue contact. The variant without tongue contact is relatively more frequent with the alveolar nasal than with the velar; but both forms occur both with and without contact, so that the only constant feature is the opposition between nasality and orality. Thus nasal/oral constitute another prosodic system; we will refer to it as the system of RESONANCE (cf. Catford, 1982: 138).

We can now see the difference in what is implied by a prosodic and a segmental interpretation. Consider the syllable *zhan*, in contrast (i) with *zhai* and (ii) with

Table 1 The nine possible environments of /a/ [in phonemic notation]

	preceding		following	
open	#		#	
front	i	a	i, n	
back	u		u, ŋ	

*zhang*. The pair *zhan/zhai* may have identical vowel quality, differing only in that one is nasal, the other oral. On the other hand, the pair *zhan/zhang* may have identical nasal resonance (no tongue contact, hence no segmental realization of alveolar/velar), differing only in that one has a fronted vowel, the other a backed vowel. Likewise, *zhao/zhang* have the same posture with different resonance; *zhao/zhai* the same resonance with different posture. It is difficult to explain this in segmental terms, with a segment /a/ followed by the four distinct segments /i/, /o/, /n/, /ng/. But it becomes predictable if we explain these four as the product of two intersecting two-term prosodic systems: posture (*y*-prosody or *w*-prosody) and resonance (nasal or oral).

Returning to Chart 2, however, we have also to accommodate the syllables ending in *a*, namely *jia zha zhua* (rows 2, 12, 23). Here the vowel written *a* attains its most open quality; and there is very little variation, either within the syllable or even across all three. What variation there is, however, turns out to be similar to that found throughout the set of examples – as a function, not of the final posture but of the posture associated with the vowel onset. Again, we have found this represented in alphabetic writing as a segment: *i* in *jia*, *u* in *zhua* and neither of these in *zhā*. (For the alternation *jlzh* see below.) We therefore need to modify the prosodic system of posture in two respects. In the first place, we need to add a third term representing the open posture, neither *y*-prosody nor *w*-prosody: let us call this ‘*a*-prosody’. These give us the three basic postures out of which our human speech has evolved and which can be observed in young children’s protolanguage: tongue lowered, lips open (*a*-prosodic); front of tongue raised to front, lips spread (*y*-prosodic); back of tongue raised to back, lips rounded (*w*-prosodic). In the second place, we need to recast this in terms of movement through the syllable, so that instead of one choice of posture we need two, one for the beginning of the syllable and another for the end.

This means that we now have eighteen possible syllable types, defined by the prosodic systems encountered so far: three initial postures by three final postures by two resonances. Table 2 shows these 18 prosodic patterns. It also indicates that, of these 18 possibilities, 13 actually occur. Table 3 shows these 13 syllable types in Pinyin spelling, using the initial consonants from Chart 2. The five syllable types that are excluded are:

- (i) nasal resonance with open (*a*-prosodic) posture (three types);
- (ii) oral resonance with stable front (*y*-*y*) or back (*w*-*w*) posture (two types).

Table 2 The eighteen possible syllable types with vowel *a*, showing the thirteen which actually occur [in prosodic notation]

	y/		a/			w/			
Oral		y – a	y – w	a – y	a – a	a – w	w – y	w – a	
Nasal	y – y		y – w	a – y		a – w	w – y		w – w



Table 3 The thirteen syllable types with vowel *a* (open aperture) [in Pinyin spelling]

□	y/			a/			w/		
	y-y	y-a	y-w	a-y	a-a	a-w	w-y	w-a	w-w
Oral		jia jiao		zhai zha zhao			zhuai zhua		
Nasal	jian		jiang	zhan		zhang	zhuan		zhuang

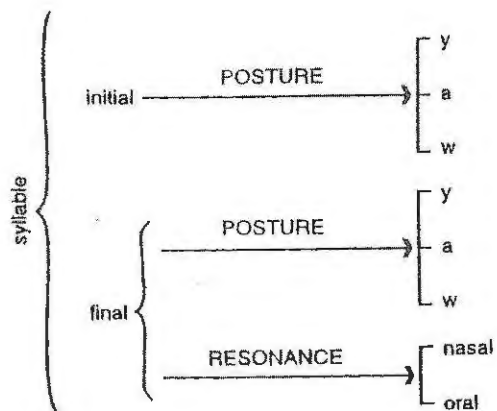


Figure 1 Network specifying eighteen theoretically possible syllable types with vowel *a*

The prosodic profile of each of the thirteen syllable types that do occur describes the phonetic space-time co-ordinates within which it is found to vary.

Figure 1 gives a simple network for generating this paradigm, using as entry conditions elements corresponding to initial and final in the Chinese phonological analysis. However, it generates all the eighteen syllables envisaged as possible in Table 2, whereas as we have seen only thirteen of these occur. We therefore rewrite Figure 1 in the form of Figure 2, which specifies just the required thirteen. These are all the possible syllable types that have an *a* in the spelling, but without taking account of initial consonants – that is, corresponding to one column (or two half-columns) in Chart 2. In terms of Chart 2, they are the first four in Block i, the *ji*-block; the first five in Block ii, the *zh*-block; and the first four in Block iii, the *zhu*-block.

But although Figure 2 gets the right answer, it is somewhat arbitrary; there seems no pattern in its constraints. We can therefore replace it, in turn, with Figure 3. By introducing the system 'stable/shifting' this shows the gaps to be systematic: you can choose between nasal and oral resonance only if you shift, either from non-*y* (*a* or *w*) posture to *y*, or from non-*w* (*a* or *y*) posture to *w*. Otherwise,

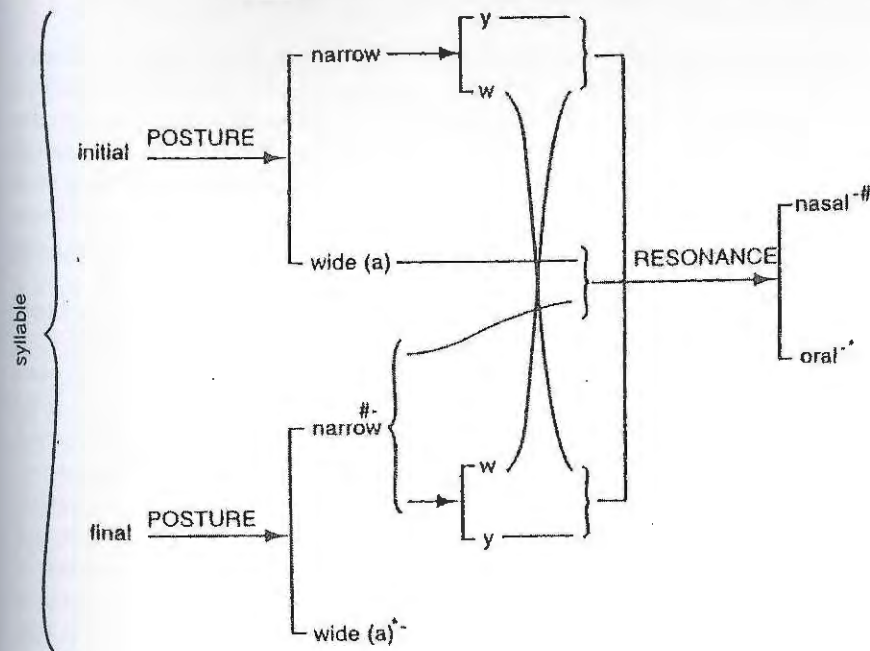


Figure 2 Network specifying thirteen actually occurring syllable types with vowel *a*

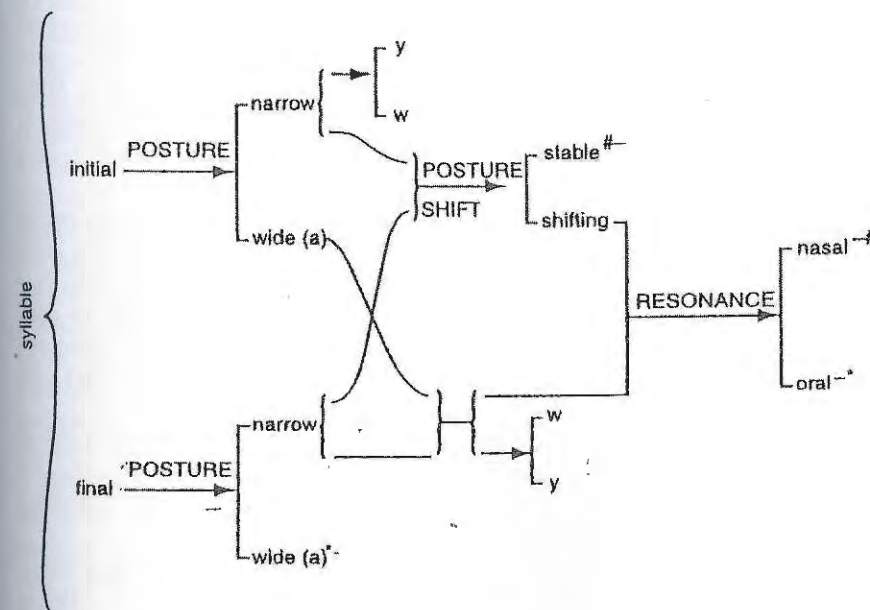


Figure 3 Revised version of Figure 2 showing system of 'posture shift'



you have either oral only or nasal only: oral if ending with open posture (there is no a-prosodic final nasal), nasal if the posture is stable at y – y or w – w (that is, if you maintain the posture you must change the resonance; note in this connection that the initial nasals *n-*, *m-* operate in a different system, not one of resonance). [It is natural to ask whether in those dialects which have preserved the three nasal finals *-n*, *-ng*, *-m* the *-m* carries the a-prosodic ‘open’ posture. But as far as I know none of these dialects shares this Mandarin pattern by which nasal and oral finals are posturally matched.]

The network combines four principles of analysis. One is the Chinese phonological principle whereby all syllables are structured simply as initial plus final. The second is the Firthian prosodic principle whereby features such as posture (y/a/w) and resonance (nasal/oral) are treated non-segmentally. The third is the paradigmatic principle whereby features are interpreted as terms in systems, each system having a specified condition of entry. [Note that in Firthian system-structure theory the entry condition is specified syntagmatically, whereas in a system network it is specified paradigmatically: entry to one system depends on selecting a certain term in (at least one) other.] The fourth is the dynamic principle whereby the syllable is envisaged as a wave, a periodic pattern of movement characterized by a kind of ‘flow-and-return’. What this last means is that the syllable is construed as a movement from an initial state to a final state, each of these states is specified as a ‘selection expression’ (a cluster of features from different prosodic systems); and there is variation both temporally, in the extent to which a particular feature persists across the syllable, and spatially, in the route that is traversed from the initial to the final state. The evidence so far, on the basis of the vowel written as *a*, suggests that the final state exerts the greater force: the shape of the syllable at its peak tends to anticipate where it is going. This is of course implied by saying that all syllables have CV structure, and it will turn out to be true of the Pekingese syllable as a whole. [It is not true, however, of all Chinese dialects; in Cantonese, for example, the features selected at syllable final have little effect on the quality of the vowel.]

So far, however, I have considered only those syllables whose trajectory passes through an open, *a*-like intermediate position. We must now explore the other finals in the Pekingese syllabary, those that have no *a* in their spelling in the Pinyin transcription. These syllables display a variety of different spellings: see rows 5–9, 15–20 and 25–29 in Chart 2. But if we apply the same principles of analysis, we shall find that all except those in the last row of each block (*ji*, *zhi*, *zhu*) have one and the same vowel nucleus.

The phonetic value for each syllable type is shown as before in Chart 2, together with the observed range of variation. For quicker reference, a typical value for each of the different syllable finals is shown in Table 4, with Pinyin spelling above the line and phonetic representation below.

The phonetic range covered by these syllables is considerable; they range over most of the upper half of the traditionally recognized vocalic space. This is reflected in the Pinyin spellings, which use *e*, *i*, *o* and *u*, both singly and in digraph

Table 4 Typical phonetic values for the thirteen finals with half-close aperture [Pinyin spelling above the line, IPA below]

-e	-ie	-uo	-ei	-en	-uo	-eng	-in	-iu	-ing	-ui	-un	-ong
ɛ	e	o	eɪ	ɛn	uo	ɛŋ	in	iʊ	iŋ	ʊɪ	ʊn	ʊŋ

combinations. Some other transcriptions also use trigraphs such as *uei* and *iou*. But we can interpret all this variety in terms of the same prosodic systems as we used to explain the values of the *a* vowel, recognizing one and the same vowel nucleus in different prosodic environments.

There are three syllable types which end as a monophthong at a height which we can call half close (Catford 1982: 176): front spread [e], back rounded [o] and back spread [ɤ]. These show no tendency to move towards a ‘close’ position; in this they are parallel to final *-a*, having neither y-prosodic nor w-prosodic posture at syllable final. The distinction among the three is determined by initial posture alone, which has a much greater effect here than with the open vowel: the y-prosodic initial gives [e], as in *jie*; the a-prosodic initial gives [ɤ], as in *zhe*; the w-prosodic initial gives [o], as in *zhuo*. This simply reflects the greater possible variety of tongue and lip configurations available at this degree of vowel closure (cf. the shape of the ‘vowel triangle / quadrilateral’); there is more space in which to move.

Four syllables, those spelt *-ei*, *-en*, *-ou*, *-eng*, have a half-close vowel as the nucleus. The spelling suggests that two of them form closing diphthongs while the other two are monophthongs followed by nasal consonant. In fact, however, the nasal syllables closely parallel those with the *a* vowel: the nasality may begin at any point, and there may or may not be consonantal closure (obstruence) at the end – again, it is more common with *-ng* than with *-n*. The vowel of the nasal syllables is more central than those of the oral syllables; but it is clearly fronted before *-n*, often with a glide towards close front, and backed before *-ng*, sometimes with a (slighter) glide towards close back. Thus the nasals have exactly the same prosodic values as those of the *a* syllables; the final part of the syllable does not consist of two segments, vowel plus nasal, but is a combination of two final prosodies, nasal resonance with y or w posture. The oral finals tend to begin less centrally, but they show considerable variation towards the centre: *-ou*, in particular, is often heard as [əʊ], curiously like its British English analogue. Thus *zhei*, *zhen*, *zhou*, *zheng* are prosodically identical with *zhai*, *zhan*, *zhao*, *zhang*, but with half-close vowel instead of open: they begin with open posture (a-prosody) and end with y or w, oral or nasal.

This leaves the six finals *-in*, *-iu*, *-ing*; *-ui*, *-un*, *-ong*. Of these, the oral pair *-iu* and *-ui* are the half-close analogues of the open oral pair *-iao* and *-uai*. Both pairs move prosodically from y to w, or from w to y – that is, they shift to the opposite posture; but while *-iao* and *-uai* follow a trajectory via the ‘open’ region of vocalic space, *-iu* and *-ui* make the same postural shift but with the trajectory through the ‘half-close’ region. There is obviously a broad band through which such a traverse



Table 5 Typical pattern of tonally-correlated variation in the phonetic realization of y – w and w – y finals with half-close aperture [Pinyin and variant spelling on the left, IPA on the right]

tone 1	-iu	-iu	iu	ui
tone 2	↕	↕	i <sup>2</sup> u	u <sup>2</sup> i
tone 3	↕	↕	ioɤ	ueɪ
tone 4	-iou	-uei	iso	use

can be made; interestingly, the route taken tends to depend on the tone, and -iu and -ui are in fact the only syllable types in Mandarin that display tonally regulated variation, as shown in Table 5. [The spellings -iou and -uei are not used in Pinyin, but this systematic tonal variation is recognized in some other transcriptions.]

The nasal finals form two sharply distinct pairs. Two of them, -in and -ong (in jin, zhong), show almost no movement and no variation in vowel quality; they are somewhat opened-up versions of the two close cardinal vowels. The only variation they display is in the nasality: when it sets in, and whether or not there is obstruction; in other words the pattern is the same as we have found with nasality throughout. There is perhaps slightly greater tendency for final tongue contact here than with the -an, -ang nasals, but it is still by no means categorical. The other two nasal finals, -ing and -un, are very different. Here there is both movement and variation. There is the same variation in the nasality as elsewhere; but there is also variation in the transition to the final posture. The vowel in -un is opened (lowered) and then fronted, in varying degrees, so that it sounds more like the vowel in English *jewel*, or even *ruin*, than like that in *full* or *rune*. Likewise the vowel in -ing is opened (lowered) and then backed, like English *young* but with the diphthong falling instead of rising (Catford 1982: 216).

It is not difficult to see what is happening here, once we interpret in terms of the prosodic system of posture. As always, final ‘-n’ is y-prosodic nasality, and final ‘-ng’ is w-prosodic nasality. In zhen, zheng the postural transition is a – y, a – w. In the four syllables jin, zhong, jing, zhun, on the other hand, the initial posture is either y or w; hence with nasality there is the possibility of either stabilizing the posture (y – y, as in jin; w – w, as in zhong) or shifting (y – w, as in jing; w – y, as in zhun). When the posture is stable, the transition is simple, with little movement or variation. When it is shifting, the transition is complex; there is considerable movement, and hence great latitude for variation in the trajectory adopted. But the initial and final states are what constitute the essence of the syllable. Thus, whereas in English the peak of resonance in the syllable – the vowel nucleus – is also the most ‘fixed’ part, so that in a set like seen, soon, sing, soong, the vowel posture is projected outwards on to the initial and final consonants, in the Mandarin syllable it is the other way round: the vowel ‘nucleus’ is simply a degree of aperture, and the initial and final postures of the syllable are projected inwards to create a movement within this broad band of phonetic space.

We have thus recognized a multiple proportionality,

- (1) within the half-close vowel:
  - ui : iu :: un : ing :: [both w – y : y – w]
  - ei : ou :: en : eng [both a – y : a – w];
- (2) and between all of these and those with open vowel:
  - uai : iao :: uan : uang :: [both w – y : y – w]
  - ai : ao :: an : ang [both a – y : a – w].

What is striking is that this same proportionality extends right throughout the system; the half-close vowel series show the same five finals remaining unpaired in respect of nasal/oral resonance:

- (3) oral only:
  - ie : e : uo :: [y – a : a – a : w-a]
  - ia : a : ua [y – a : a – a : w-a]
- (4) nasal only :
  - in : ong :: [y – y : w – w]
  - ian : uang [y – y : w – w]

Thus out of the 18 finals that are theoretically possible as combinations of initial posture, final posture and resonance, exactly the same 13 occur with half-close vowel as with open vowel; moreover the realization of the several terms in both these prosodic systems is entirely analogous throughout. If we represent the two vowel spaces, the open and the half-close, as a third prosodic system of APERTURE, using ∇ for open and ∃ for half close, then for all the 13, prosodic profiles of initial posture, final posture and resonance there would be a constant proportionality such that

$$\nabla_1 : \exists_1 :: \nabla_2 : \exists_2 :: \nabla_3 : \exists_3 :: \dots$$

Table 6 shows the syllable finals with ‘half-close’ aperture together with their prosodic values for resonance and posture; note the identity between this and Table 3. It is not difficult to accommodate the half-close series within the same system network. All we need to do is to modify Figure 3 as Figure 4.

We have now accounted for the finals in all rows in Chart 14.2 except the last one in each block, namely ji, zhi, zhu (rows 9, 20, 29). There is almost no variation in the pronunciation of these syllables (at least among people brought up in Peking – there is a great deal of variation among non-Pekingese speakers in their rendering of the ‘vowel’ in zhi!). Here there are three entirely distinct vowel qualities: [i] in ji, [u] in zhu, both very close; and [ɿ] in zhi. It is the last of these, in fact, that provides the clue to their phonological status (see Table 7).



Table 6 The thirteen syllable types with half-close aperture [in Pinyin spelling]

[ɛ]	y/			a/			w/		
	y-y	y-a	y-w	a-y	a-a	a-w	w-y	w-a	w-w
Oral		jie	jiu	zhei	zhe	zhou	zhui	zhuo	
Nasal	Jin		jing	zhen		zheng	zhun		zhong

Table 7 Typical phonetic values for the three finals with close aperture [Pinyin spelling above the line, IPA below]

-i [in zhi chi shi ri]	-i [in ji qi xi]	-u [in zhu chu shu ru]
i	i	u

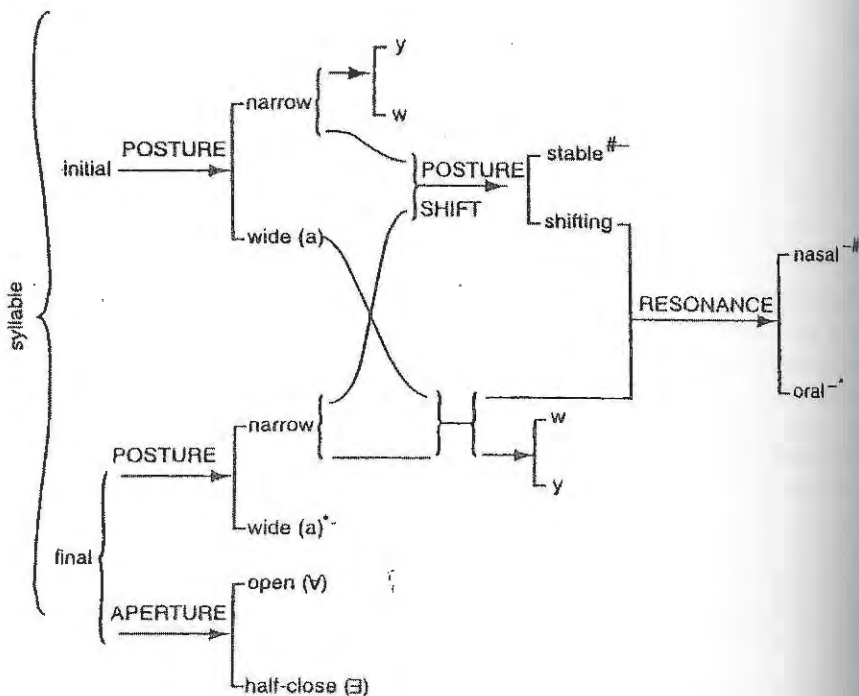


Figure 4 Network specifying the 26 syllable types with open and with half-close aperture

It will be seen that, in Chart 1, there are two series of syllables in row I written with the letter *i*: zhi chi shi ri, and zi ci si. The vowel in all of these is an apical vowel: the tip of the tongue remains in the position of the initial consonant and is relaxed just enough to allow vocalic release. The lips take up a neutral posture at

the start of the syllable and remain unchanged throughout. Since zhi chi shi ri are retroflex, while zi ci si are dental, the acoustic effect of this vowel in the two series is very different; but its prosodic profile is the same in both.

If we now consider the vowel in ji qi xi (row 12 in Chart 1), we can describe it by exactly the same formula. These consonants are palatoalveolar, so the vowel cannot be called apical; but it is entirely analogous to an apical vowel, since it is the vowel that is produced by minimally relaxing the tongue away from the initial consonantal position. When this vowel follows the other initials in that row, in bi, di, ni etc., there is of course movement away from the place of obstruction; but the vocalic posture of tongue and lips is established at the beginning of the syllable. In other words, all syllables with [i] (that is, those written with *-i* in Pinyin except the retroflexes and dentals zhi chi shi ri, zi ci si) are *y*-prosodic from the start.

Likewise in all *-u* syllables (row 21 in Chart 1), the *w*-prosodic posture, with back of the tongue raised and lips rounded, is established at the beginning of the syllable. The articulatory organs simply remain in place to produce the close back vowel.

We can now account for the remaining three finals of Chart 2, namely *-i* as in ji, *-i* as in zhi, and *-u*, in terms of our prosodic systems. In syllables with these finals, there is no prosodic movement: the initial posture is maintained throughout. So instead of nine possibilities there are only three, *a*, *y* and *w* (ie *a-a*, *y-y*, *w-w*). Moreover there is no prosodic system of resonance; such syllables are oral only. The vowel represents a third term in the system of aperture, namely 'close', which we can write as 'I'. One could interpret these syllables as having no vowel in their structure; but, apart from destroying the powerful generalization that all syllables have identical structure CV (initial + final), this would lead us to predict that such syllables would be toneless, whereas in fact they display the same system of tone as all the other syllables.

More interestingly, we could treat the finals of ji and zhu as the missing *y-w* and *w-w* terms in the half-close system, with the idea of eliminating the need for a close vowel altogether. But it would not in fact do that because we could not account for zhi in this way as there is already an *a-a* final in both the half-close and the open series (zhe, zha). It would also distort the analogy between the half-close and the open series (Tables 3 and 6) because (as we have seen) there are no comparable *y-y* or *w-w* oral syllables in the latter; and it would make the wrong predictions phonetically – the one kind of variation that is found in the I-series is a slight increase or decrease in the amount of friction generated; here *-i* (palatoalveolar, in ji) and *-u* clearly belong with apical *-i*, in that they can have considerable friction (especially in the syllables yi and wu), whereas friction is never found elsewhere in the [ɛ] series.

So the finals of ji, zhi, zhu constitute a third subsystem, having close vowel but no further prosodic paradigm beyond their initial selection of posture *y*, *a* or *w* (Table 8). The system is now as shown in Figure 14.5. Note that syllables with close finals (the I-series) select only in the *initial* posture system; they can enter no other system in the network – but they pick up the feature 'oral' in the resonance



Table 8 The three syllable types with close aperture [in Pinyin spelling]

I	y-	a-	w-
Oral	ji	zhi	zhu

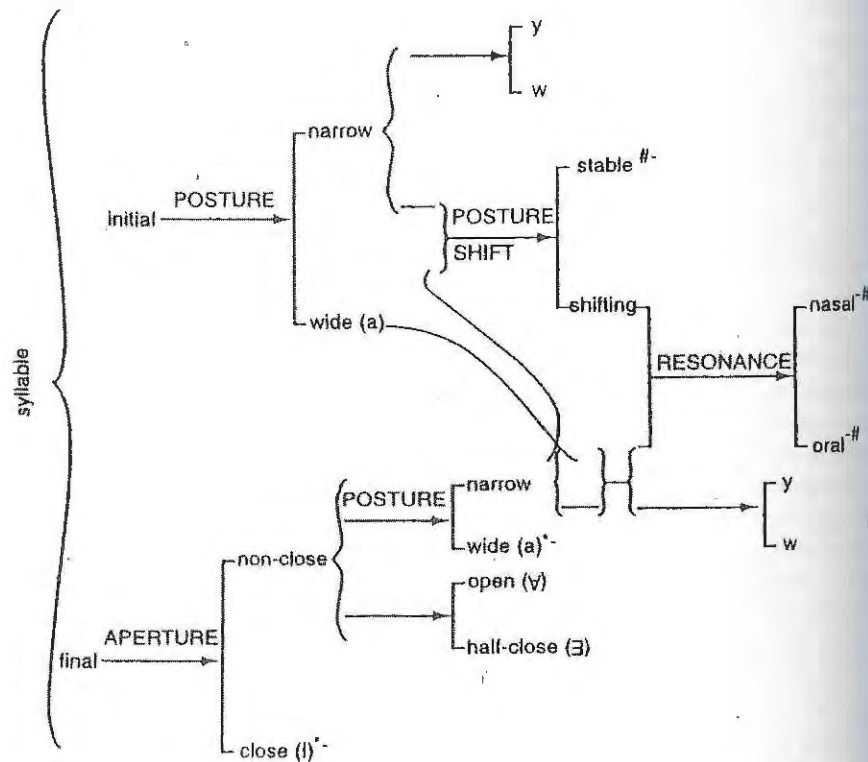


Figure 5 Revised version of Figure 4, including syllables with close aperture

system by default. This network generates the 29 finals we have been considering: with reference to Chart 1, all those except Block iv. More importantly, it does so in a way which naturally predicts not only the form of the phonetic output but also the kind of variation that is associated with it. Two points should be stressed here. One is that the network so far specifies only the finals; although it states the prosodic posture (y/a/w) of the initials, it does not yet incorporate the system of initial consonants. Second, it specifies the finals entirely as complexes of features in prosodic systems, without the need for any phonematic units. The question arises whether the initials can be treated the same way, as a network of prosodic systems: but that will have to be explored in another study.

Let us turn now to Block iv, rows 30-4 in Chart 1. As can be seen, these form a very limited series. Phonetically they begin with a front rounded posture; close, not open (ie clearly not a-prosodic), but combining the tongue position of y-prosody with the lip position of w-prosody. We could provisionally consider them as a fourth term in the posture system, labelled  $\eta$ . But in order to handle these we shall need to take one or two steps towards a theory of the initial consonants. So far we have concentrated on three sets of initials (Blocks IV, V and VI in Chart 1):

y-prosodic	a-prosodic	w-prosodic
j(i) q(i) x(i)	z c s	zu cu su
	zh ch sh r	zhu chu shu ru

These are obviously not symmetrical, at least on the basis of the spelling: and this does reflect the phonetic facts, in that the dentals (z, etc.) and the retroflexes (zh, etc.) remain constant in their place of articulation whether a-prosodic (open posture) or w-prosodic (labiovelar posture), whereas the palatoalveolars (j, etc) constitute in this respect a distinct set.

This suggests a solution for Box IV/iv in Chart 1: that ju qu xu are labialized (w-prosodic) versions of ji qi xi. Which, indeed, they are; there is a proportionality such that jun: jin :: zun: zen. If we now turn to rows 30-4 in Chart 2 we shall find that all the variants predicted by this interpretation come out right. Note for example that juan rhymes with zuan, not with jian; and it is the zuan vowel that would be predicted if juan has initial w-prosody. [That is to say, juan is [dʒʷæn] etc. not [dʒʷɛn]. I have never heard the second form from a Pekingese speaker; interestingly, however, it is sometimes heard in the Mandarin of speakers of other dialects, and is reported by Lock (this volume, Chapter 7) from Singapore.] The yu group, Box VII/iv in Chart 1, follows exactly the same pattern. This analysis would give us, for the series of affricate/fricative initials, the pattern shown in Table 9 (cf. Ladefoged & Wu 1984).

The question arises, however, of how to interpret the j- q- x- y- series of palatoalveolar initials in prosodic terms. Assuming that they carry a y-prosody, is this inherent in their consonantal make-up, or are they to be interpreted as a variant of one of the other consonantal series in a syllable with y initial posture? Historically, they are a mixed group, partly related to the retroflex (affricate/fricative)

Table 9 Affricate and fricative initials: place of articulation by initial posture [in Pinyin spelling]

PLACE	POSTURE	non-labialized	labialized
non-palatal (Blocks V, VI)		zh- z-	zhu- zu-
palatal (Blocks IV)		ji-	ju-



series and partly to the velar plosives (Blocks V and III in Chart 1). That, at least, is the recent history of the morphemes which now have palatoalveolar initial; but this is simply the latest cycle in a process that has repeated itself at least three times in the known (i.e. reconstructable) history of Chinese phonology. This is far outside the scope of this chapter; but we need to establish some principle for determining their present status.

We saw earlier (cf. Tables 3 and 6) that Cy (y-prosodic initial) excludes the finals *-ai*, *-ei*, and Cw (w-prosodic initial) excludes *-ao*, *-ou*. If *ju-* embodies some combination of y and w postures, it should exclude all four; and it does. But this suggests that, rather than seeing it as a fourth type of syllable (with a distinct  $\eta$  posture, as formulated above), we should treat it as a combination of y and w postures; so let us rewrite C $\eta$  as Cyw. Now, since Cy and Cw each occurs with nine finals, but excluding a different two, that should leave seven for Cyw. In fact, however, there are only five, because in the  $\forall$  group (open aperture) neither *-a* nor *-w* is found: there are no syllables *jua*, *qua*, *xua*, *yua*; and no syllables *juang*, *quang* or *yuang*. On the other hand, both *-a* and *-w* occur in the  $\exists$  group (half close). Thus for the *ju-* series (including *yu-*, column 22 in Chart 1) the syllabary is as in Table 10, having only *juan*, *jue*, *jun*, *jiong* and *ju*. Note that all these syllables are lip-rounded throughout; this includes that spelt *jiong* (also *qiong*, *xiong*, *yong*), which is typically realized as [dz<sup>h</sup>uŋ] – although there is a variant which begins unrounded, [dz<sup>h</sup>uŋ] dissimilating the two w postures.

In some way or other, therefore, syllables of the *ju-* series have to be analysed as Cyw: that is, as having a combination of y and w postures. But there are two possible ways of interpreting this: (1) they could be generated as four initial prosodies each combining a term from two distinct systems; (2) alternatively, the entire *j-*, *q-*, *x-*, *y-* series of syllables (Blocks IV.ii, IV.iv, VII.ii and VII.iv in Chart 1) could be treated as having an initial consonant which is inherently palatal (and hence y-prosodic), and which then can have associated with it either a-prosody (in *ji*, *qi*, *xi*, *yi*) or w-prosody (in *ju*, *qu*, *xu*, *yu*). This is a substantive issue, reflecting a complex history of sound change, as mentioned above: there has always been a skewness between palatalizing and labializing, such that in some way or other palatalization has to be accommodated in the system twice over – in prosodic terms, both as a feature of the initial consonant and as a prosody of the initial element of the syllable – even though the morphemes involved in modern Mandarin are quite different from those in respect of which this pattern is first known to have appeared (Karlgren 1940; Wang 1980).

The situation becomes complex at this point; once we start to bring in the initials we face a cluster of intersecting features which can be interpreted prosodically in more than one way, offering different explanations of the patterns involved. I shall not try to present the alternatives here because this would require a detailed treatment of all the initial consonant systems. Here I am taking account just of the problems that are raised by the finals; and when we include those that

need to be explained by postulating a complex initial prosody Cyw we have to bear in mind two factors:

- (1) Finals occurring with Cyw include only those which would be permitted *both* by Cy *and* by Cw [*juai* is excluded because (like *jiai*) it would be O/y-y; *juao* is excluded because (like *zhao*) it would be O/w-w].
- (2) Finals occurring with Cyw are always realized phonetically as *either one or the other* (that is, like those with Cy or those with Cw), not in some distinct phonetic shape of their own. [But not always the same one: the type with  $\forall$  aperture is Cw-like (*juan* is like *zhuan*, N/w-y); whereas the type with  $\exists$  aperture is Cy-like (*jue* is like *jie*, O/y-a), although there is a Cw-like variant *juo* (like *zhuo*, O/w-a) used by some speakers with some morphemes only – i.e. the variation has a dialectal basis.]

It seems therefore that we should prefer a three-term system of posture both at C (initial) and at V (final), rather than adding a fourth term for initial position only. Furthermore, since the *ju-* *qu-* *xu-* *yu-* series exclude Vw marginally more strongly than they exclude Vy (*juan*, *quan*, *xuan*, *yuan* occur, while *juang*, *quang*, *xuang*, *yuang* do not), it would seem better to treat them as having Cw (initial w-prosody) mapped on to an inherently y-prosodic consonant rather than the other way round. [This is in fact borne out by the detailed investigation of the initials, which also allows *n-* and *l-* to be accounted for in the same way (note the occurrence of Cyw with *n* and *l* in Chart 1, Block II.iv).]

A network for generating the entire syllabary is shown as Figure 6. This takes account of all the points raised in the present study. But it should be made clear that it is not the network I would offer as the optimum systemic solution, because it does not take account of all the problems raised by the initials in their own right, and it leaves unexplained some gaps in initial + final (including tonal) combinations which can be shown to be systematic. There are of course some random gaps in the syllabary; I know of no way to explain the absence of syllables at *shong* or *tiu*, and I would not want to exclude them from the network. But it is clear that there is a suspicious similarity among some of the 'defective' boxes in Chart 1 (especially I.ii, II.ii, II.iii and VI.iii), and patterns of this kind seem to call for some explanation.

Firth once remarked that if modern phonology had developed out of the tradition in China, we should never have heard of the phoneme – with the implication that the world would have been a better place. I think there is an important place for the phoneme, as a potential member of a phonological rank scale; and the fact that speakers of certain languages chose to write them with an alphabet suggests that they also felt the same. But the Chinese did not; they developed a character system instead; and the phonology of their language, while it has very clearly defined syllables with remarkably little indeterminacy, shows no real trace of phonemic structure. It should be said that this last is less true of some of the southern dialects – most notably Cantonese, where there is far less distance between a



prosodic and a phonemic interpretation than there is with Mandarin. In Mandarin the two approaches give very different pictures; here, instead of taking the minimum articulatory segment as prototypical and reducing everything to that, we can take tone as our prototype and explain the entire system as a network of tone-like features. This is, in essence, what the prosodic analysis does: and it is what the Chinese phonologists were doing starting about two thousand years ago – even though it was another five centuries before they took account of tone itself as a distinct feature of the syllable (cf. Halliday 1981).

The system network that has been being built up in the course of this study, up to and including Figure 5, generates the total set of finals for the syllabary of modern Pekingese, other than the tonal variants. That in Figure 6 incorporates the remaining features of the syllabic system but in a sketchy and provisional form. Let me try to summarize the theoretical principles on which this systemic interpretation is based.

- (1) In accordance with Chinese phonological theory, the syllable consists of two loci, initial and final. As these (English) names imply, the two are lineally ordered; but they are not segmental. Rather, the syllable has an initial state, characterized by a syndrome of features; and a final state, characterized by another such syndrome – the movement from one state to the other is continuous throughout. [The Chinese terms do not embody the notion of linear ordering. The word for ‘final’ is ‘rhyme’. The word for the initial is usually regarded as opaque; it meant ‘twist’ (like the twist in a cord to make a Chinese button), but also ‘handle’ for lifting with – perhaps a metaphor either of lift-off or of configuration.]
- (2) There is considerable variation in the enactment of the syllable, both among different speakers and within one and the same individual speaker. This variation is explained as a spatiotemporal dynamic: (i) initial, opening features may be more, or less, prolonged; (ii) final, closing features may start earlier or later; and (iii) there may be more than one route from the one to the other.
- (3) The initial prosodic systems have been presented only in outline, without explanation, to enable the network to be completed. The systems are:
  - (a) ALIGNMENT (PLACE): pointed : labial / velar / alveolar // flattened : dental / cerebral (‘retroflex’) / palatal;
  - (b) MANNER: obstruent /// continuant : fricative // approximate : nasal / lateral;
  - (c) VOICE ONSET: early (‘unaspirated’) / late (‘aspirated’);
  - (d) POSTURE: y-prosodic / a-prosodic / w-prosodic;
- (4) The final prosodic systems are:
  - (w) APERTURE: close [I] / half close [∅] / open [∇];
  - (x) POSTURE: y-prosodic / a-prosodic / w-prosodic;
  - (y) RESONANCE: nasal [N] / oral [O];
  - (z) TONE: high level [1] / mid rising [2] / low rising [3] / falling [4].

- (5) The system of POSTURE figures both at initial and at final; hence a syllable may either retain the same posture throughout or shift from one posture to another. It turns out that this option, in the context of the opposed postures y and w, is best interpreted as itself forming a prosodic system: (v) POSTURE SHIFT: stable / shifting.
- (6) Not all features are equally variable, in the ways described in (2) above. But it is not misleading to represent even the apparently segmental features of the initial consonants in these prosodic terms. For example, it is often noted that in Mandarin the aspirated syllables ‘may be very heavily aspirated’ which means there is variation in the timing of the onset of voice. And the evolution of the apical vowel seems to suggest a tendency to prolong the tongue contact at the place of articulation.
- (7) It is not suggested that in every language the syllable would be best interpreted in entirely ‘prosodic’ (non-segmental) terms. In English, for example, there seems no convincing argument for saying that all syllables have the same structure or for trying to specify all consonant and vowel features as syllabic prosodies. Matthiessen (1987) presents a systemic interpretation of Akan phonology which includes separate networks for the syllable and the phoneme, with the latter further subdivided into consonant and vowel. It is to be expected that for some languages there would be networks at both syllable and phoneme rank.

In Chinese, however (at least in Mandarin), all syllables have the same generalized structure, and there is no value in setting up the phoneme as a separate unit. The one syllable I have not discussed is the maverick syllable *er*, phonetically [ʒɿ], which appears as vowel plus consonant, the ‘consonant’ being a (very) retroflex frictionless continuant. At one stage in its history this was a palatoalveolar nasal with close aperture, systemically where *ni* is today; now, however, it has no trace of either nasality or palatality and might be interpreted systemically in one of two ways: either as the ‘close’ member of the a-prosodic series with initial semivowel (going with *yi*, *wu* and *yu*; this is how it is located in Chart 1) or as the occupant of the empty *ra* slot. In fact in typical Pekingese speech its vowel tends to be open, rather than close or even half close, which suggests that it is felt more akin to the latter. It is actually quite like *ra* pronounced backwards – a variant which is presumably within the limits of what we should expect, if the syllable is interpreted as having no linear segmentation.

One major variable among phonological systems that is foregrounded in a prosodic and systemic perspective is where they make contact with the grammar (cf. Hill 1966). The phonological rank scale may include tonal and/or rhythmic units which may be mapped more or less consistently on to clauses or phrases; and in many languages the word is the point of origin for certain phonological systems, either with or without being fully integrated into the overall phonological structure (Matthiessen, 1987; Prakasam 1987; and cf. the phonological hierarchy of tagmemic theory). In Chinese the word has hardly any phonological



Notes to Figure 6 The initials as represented in Pinyin spelling are specified by the systems in the network as follows (roman numerals refer to blocks in Chart 6):

		obstruent		continuant								
				fricative		approximant		postures				
		early	late	early	late	nasal	lateral	i	ii	iii	iv	
flattened	dental VI	z	c		s					a	w	
	cerebral V	zh	ch	r	sh					a	w	
	palatal IV, II	j	q	y	x	n	l			a	w	
pointed	labial I	b	p	w	VII	f	m			a	y	
	velar III	g	k	o		h					a	w
	alveolar II	d	t				n	l			a	y w

Initials n. 1 are interpreted as alveolar in Blocks i and iii, palatal in Blocks ii and iv. (Hence ni-, li- are palatal with a-posture, not alveolar with y-posture; and nü-, lü- are palatal with w-posture.)

Block VII are interpreted as voiced fricatives. With those in VII/ii-iv there can be considerable friction, especially with close aperture. Those in VII/i typically have voiced glottalic initiation, the variant with velar nasal, which I observed frequently in my original investigation, seems to be much less common today.

Notes regarding unmarked (default) options:

\* All 'voiced' (early voice onset) continuants are fricative unless palatal, labial or alveolar, which may be fricative or approximant.

<sup>1-1</sup> All 'flattened' initials, and also the velars, if selecting 'narrow' posture can take only w-prosody, not y [either they are palatal already, or they cannot be palatalized].

<sup>2-2</sup> Labial initials, if selecting 'narrow' posture can take only y-prosody, not w (they are labial already). Thus, from <sup>1-1</sup> and <sup>2-2</sup> together, only alveolar initials can select either y- or w-prosody.

\*-# All syllables which retain the same narrow posture throughout (y-y or w-w) must have nasal resonance.

\*-\* All syllables with close aperture, and all non-close with final a-prosody, must have oral resonance. Thus, from #-# and \*-# together, only those syllables which shift into y- or w-prosody from somewhere else can select either nasal or oral resonance.

Table 10 The five syllable types with yw posture [in Pinyin spelling]

		yw/		
		yw - y	yw - a	yw - w
V,	Oral			
V,	Nasal	juan		
ɜ,	Oral		jue	
ɜ,	Nasal	jun		jjong
l,	Oral		ju	

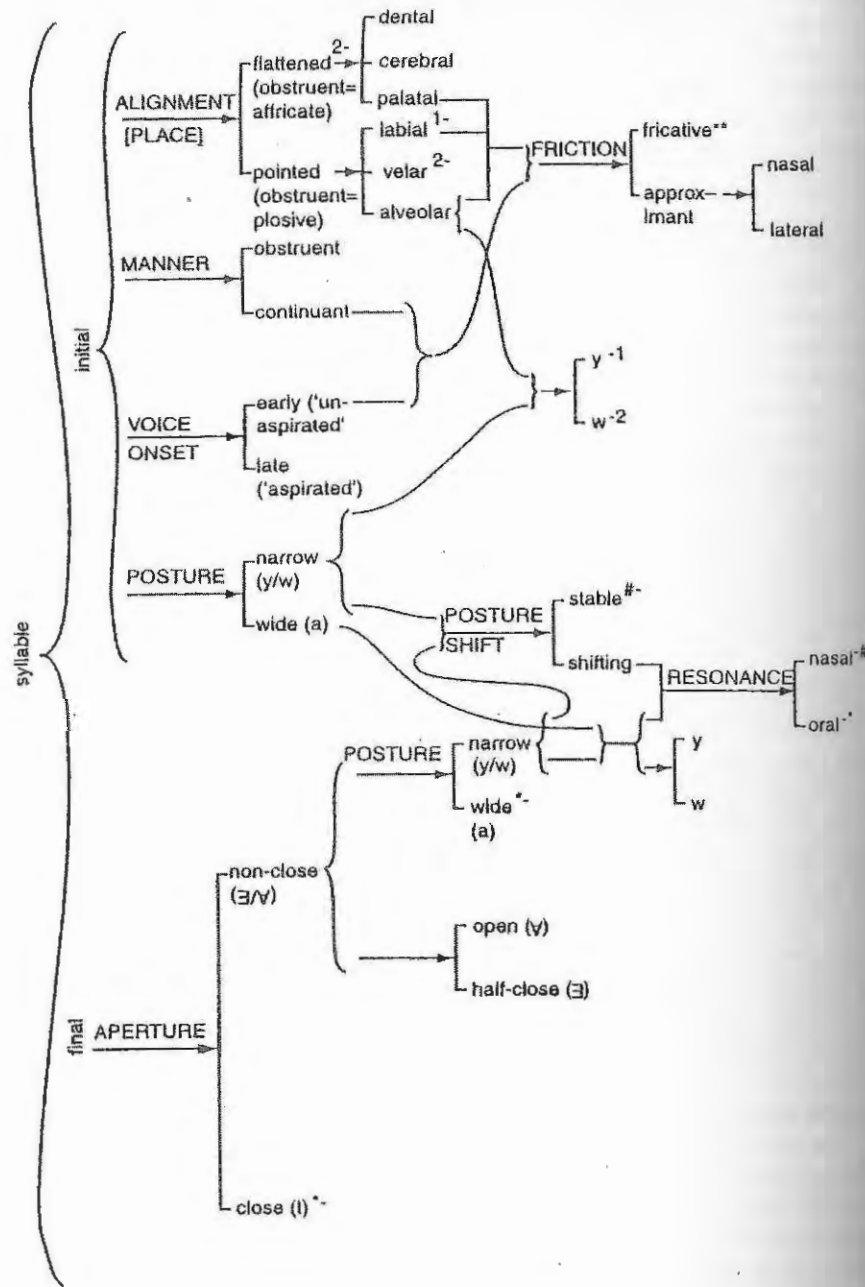


Figure 6 Network specifying total Mandarin (Pekingese) syllabary



significance: none at all in many dialects, a little in Mandarin because it defines an environment within which the tonal system may be neutralized. But throughout the known history of the language there has always been an overwhelming association of the syllable with the morpheme, and this gives an added significance to the syllabary as the basis of the phonological system. It should be possible to synthesize the Mandarin syllabary from a systemic-prosodic description, with the prosodic features as the parameters and provision for varying their duration and the traversal between one setting and another. It would be interesting to compare these results with those obtained by synthesizing in phonemic and allophonic terms.

### References

- Bazell, C. E., Catford, J. C., Halliday, M. A. K. and Robins, R. H. (eds) (1966), *In Memory of J. R. Firth*, London, Longman.
- Catford, J. C. (1977/82), *Fundamental Problems in Phonetics*, Bloomington, Indiana University Press/Midland Books.
- Firth, J. R. (1937/53), [with B. B. Rogers], 'The structure of the Chinese monosyllable in a Hunanese dialect (Changsha)', *Bulletin of the School of Oriental & African Studies*, 8, reprinted in Firth, 1957.
- (1948/57), 'Sounds and prosodies', *Transactions of the Philological Society*, reprinted in Firth, 1957.
- (1957), *Papers in Linguistics 1934–1951*, London, Oxford University Press.
- Halliday, M. A. K. (1959/70), 'Phonological (prosodic) analysis of the New Chinese syllable (Modern Pekingese)', Appendix to *The Language of the Chinese 'Secret History of the Mongols'*, Oxford, Blackwell (Publications of the Philological Society, 17), reprinted in Palmer, 1970.
- (1981), 'The origin and early development of Chinese phonological theory', in R. E. Asher and Eugénie Henderson (eds), *Towards a History of Phonetics*, Edinburgh, Edinburgh University Press.
- Henderson, E. J. A. (1966), 'Towards a Prosodic Statement of Vietnamese Syllable Structure', in Bazell, C. E. *et al.* (1966).
- Hill, T. (1966), 'The technique of prosodic analysis', in C. E. Bazell *et al.* (1966) 6.
- Karlgren, B. (1940), *Grammata Serica*, Bulletin of the Museum of Far Eastern Antiquities (Stockholm), 12.
- Ladefoged, P. & Wu, Z. (1984), 'Places of articulation: an investigation of Pekingese fricatives and affricates', *Journal of Phonetics*, 12.
- Lock, G. (1989), 'Aspects of variation and change in the Mandarin Chinese spoken in Singapore' *Australian Journal of Linguistics*, 9, No. 2.
- Lock, G. 1992. Non-segmental phonology and variable rules, investigating variation in Singapore Mandarin nasal finals, in P. Tench, ed., *Studies in Systemic Phonology* (London/New York: Pinter Publishers), 122–34.
- Matthiessen, C. M. I. M. (1987), 'Notes on Akan phonology: a systemic interpretation', (mimeo).
- Palmer, F. R. (ed.) (1970), *Prosodic Analysis*, London, Oxford University Press.
- Prakasam, V. (1987), 'Aspects of word phonology', in M. A. K. Halliday and R. P. Fawcett (eds), *New Developments in Systemic Linguistics*, Vol. 1, London, Frances Pinter.

- Scott, N. C. (1956/70), 'A phonological analysis of the Szechuanese monosyllable', *Bulletin of the School of Oriental & African Studies*, 18, reprinted in Palmer (1970).
- Wang Li (1936), *Zhongguo Yinyunxue* (Chinese phonological theory), Shanghai, Commercial Press.
- (1980), *Hanyu Shigao* (Outline history of the Chinese language), 3 vols., (Vol. 1: Phonology), Beijing, Zhonghua Publishers.
- (1981), *Zhongguo Yuyanxue Shi* (History of Chinese Linguistics), Taiyuan, Shanxi People's Publishing House.



TONAL DEVELOPMENT IN MIN

*Jerry Norman*

Source: *Journal of Chinese Linguistics* 1, 2, 1973, 222-38.

The reconstructed Qieyun language has long been used as the basis for Chinese dialectal comparison. The present study demonstrates that the Qieyun language is an inadequate historical reference for the comparison of the Min dialects.

1. Introduction

Chinese shares with certain other languages of Southeast Asia a remarkably similar tonal history.<sup>1</sup> In Tai, Miao-Yao and Vietnamese, much as in Chinese, a basic four term system is found which in most (if not all) modern dialects have been elaborated into more complex systems. This has come about because of splits in the original four-way tonal distinction which have been conditioned by various features of the initials; these include voicing, glottality, aspiration and prenasalization. A. G. Haudricourt (1961) and G. B. Downer (1963) have described this type of tonal development in some detail.

1.1. Initial types

Although the number of distinct initial types necessary to explain the tonal development of Tai and Miao-Yao is quite large, for Chinese a three-way distinction is sufficient for the great majority of dialects. In traditional terminology the three types were called *qing* (清), *quanzhuo* (全濁), and *cizhuo* (次濁), literally 'clear', 'fully muddy' and 'partially muddy'. Many interpret these terms to mean voiceless, voiced obstruent, and voiced sonorant respectively. Cantonese illustrates this sort of scheme very well:

Qieyun tone class		ping	shang	qu	ru
initial	qing	53	35	33	55, 33
	cizhuo	21	13	22	22
class	quanzhuo	21	22	22	22

Cantonese has a handful of rising tone words which had voiced stop initials in the Qieyun language which are lower rising (13) in Cantonese; these words all have 'irregular' aspirated initials. The split in the upper entering tone is conditioned by vowel length.

Hitherto in a number of analyses of the Min dialects it has been assumed that Min tones can all be explained on the basis of the same Qieyun (hereafter QY) initial distinctions. Indeed, Southern Min on the whole can be accounted for quite neatly using such a scheme. But with the northern and western dialects matters are quite different.

The thesis I hope to prove in this paper is that the QY language is an inadequate basis for explaining the tonal evolution of a part of the Min dialects; additional initial features must be assumed. I further hope to demonstrate that, although it has appeared possible in earlier analyses to account for Southern Min using the QY distinctions, it is nevertheless now necessary to attribute to Southern Min some of the additional distinctions needed to explain Min tonal behavior as a whole.

I assume that Proto-Min had a four term tonal system which later underwent splitting conditioned by features of the initial consonants. In this, the Min dialects are not different from other Chinese dialects. The difference between Min and the other dialect groups is found in the number of the features affecting tone which have to be postulated for initial consonants. Whereas the tonal evolution of other dialects is influenced by only a three-way division of the initials, I propose to demonstrate that a six-way division must be postulated to explain the tones of the Min dialects.

1.2. Illustration using six Min dialects

I have used six Min dialects to illustrate my thesis. These dialects along with the sources used are listed below; the abbreviations following each name in parentheses will be used hereafter:

- Foochow (Fc) 福州 Maclay and Baldwin (1871), Maclay and Baldwin revised (1929), Peking University (1962), Chen and Norman (1965)
- Amoy (Am) 廈門 Douglas (1899), Campbell (1913), Bodman (1955, 1958), Peking University (1962)
- Chaochow (Cc) 潮州 Huiji yacong shiwuyin (1916), Li (1959), Peking University (1962)
- Kienyang (ky) 建陽 Gospel of St. Matthew (1900), Norman (1969)
- Kienow (Ko) 建寧 Séng-iō cūng-sū (1922), Huang (1957), Norman (1969)
- Shaowu (Sw) 邵武 Norman (1969)

The transcription used for dialect forms is mostly broad phonetic. Tones are indicated by numerals to the right of the syllables in question. The numerals correlate with the traditional tonal categories in the following manner:



	ping	shang	qu	ru
yin	1	3	5	7
yang	2	4	6	8

The ninth tone of Kienyang does not correspond exactly to any of the traditional categories. The table below shows the phonetic values of the tones of the dialects cited in this paper:

	Fc	Am	Cc	Ky	Ko	Sw
1	55	44	33	53	54	11
2	52	24	55	33	-	33
3	22	52	53	<u>21</u>	<u>21</u>	55
4	-	-	35	-	<u>42</u>	-
5	13	11	213	32	22	24
6	242	33	11	43	44	35
7	<u>24</u>	<u>21</u>	<u>22</u>	35	35	51
8	<u>55</u>	<u>44</u>	<u>55</u>	<u>43</u>	-	-
9	-	-	-	31	-	-

Ky tones two, five and six are considerably longer in duration than the other tones. All underlined tones are short, ending either in *-p*, *-t*, *-k* or *-ʔ*. For Fc, I have written those words which in Maclay's dictionary have final *-h* as open syllables, and those words which have final *-k* I have written with *-ʔ*: in fact both types end in glottal stop phonetically when pronounced in isolation, but they are kept distinct morphophonemically (Yuan 1960: 298).

2.1. Voiced stops in Proto-Min

When one examines the Min correspondences to the QY voiced stops, it is evident that they cannot be considered descendants of the QY forms. The following comparisons to words with QY *b*-illustrate this:<sup>2</sup>

	QY	Fc	Am	Ky	Sw	
爬	ba	pa <sup>2</sup>	pe <sup>2</sup>	pa <sup>2</sup>	p'a <sup>2</sup>	'climb'
病	bi 'eng-	paŋ <sup>6</sup>	pɿ <sup>6</sup>	paŋ <sup>6</sup>	p'ian <sup>6</sup>	'ill'
白	b 'ek	pa <sup>8</sup>	peʔ <sup>8</sup>	pa <sup>8</sup>	p'a <sup>6</sup>	'white'
皮	bji	p'ui <sup>2</sup>	p'e <sup>2</sup>	p'ui <sup>2</sup>	p'ei <sup>7</sup>	'skin'
被	bji:	p'ui <sup>6</sup>	p'e <sup>6</sup>	p'ui <sup>6</sup>	p'ei <sup>3</sup>	'coverlet'
鼻	bi-	p'ei <sup>5</sup>	p'i <sup>6</sup>	p'oi <sup>6</sup>	p'i <sup>5</sup>	'nose'
雹	bâk	p'oi <sup>8</sup>	p'au <sup>ʔ8</sup>	p'o <sup>8</sup>	p'au <sup>7</sup>	'hail'

	QY	Fc	Am	Ky	Sw	
瓶	bieng	piŋ <sup>2</sup>	pan <sup>2</sup>	vaiŋ <sup>9</sup>	p'en <sup>2</sup>	'vase'
步	buo-	puo <sup>6</sup>	po <sup>6</sup>	vo <sup>6</sup>	p'u <sup>6</sup>	'step'
薄	bâk	po <sup>8</sup>	po <sup>ʔ8</sup>	vo <sup>8</sup>	p'o <sup>6</sup>	'thin'

A thorough examination of this situation has failed to turn up any conditioning factor in the QY language itself to account for this one-to-three correspondence between the QY voiced stops and those of the Min dialects. I propose, therefore, that Proto-Min (PM hereafter) had three distinct sets of voiced stops; I will symbolize them as follows:

b	d	g
bh	dh	gh
-b	-d	-d

It would be premature to speculate about the real phonetic properties of these three series; what I am more interested in here is identifying the number and interrelations of the initial features which influence tonal development. At this stage, then, I will remain content to project those features prevalent in the modern dialects back to the proto-language. These three series are assumed to have been voiced in some sense on general typological grounds: complicated tonal systems like those found in the Min dialects have developed out of a simpler system as a result of the loss of a major initial feature such as voicing; furthermore, the neighboring Wu dialects spoken just to the north of the Min speaking area still retain voiced initials in those words for which I posit voiced initials in PM. The first series (*\*b*, *\*d*, *\*g*) become voiceless unaspirated stops in the modern dialects; provisionally, they can be described as voiced unaspirated stops. In like manner, the second series (*\*bh*, *\*dh*, *\*gh*) can be designated voiced aspirates since they become voiceless aspirated stops in the dialects. The third series (*\*-b*, *\*-d*, *\*-g*) is kept separate from the first only in the northwestern dialects of Kienyang and Kienow; in Kienyang their reflexes are voiced sonorants or zero. This third set arose, I suspect, from the influence of some type of voiced prefix; the root consonant following the prefix underwent a process of lenition which led to the present situation in Kienyang. From this process, the third series can be described as softened stops. The table below shows the correspondences of these proto-phonemes in the modern dialects.

PM	Fc	Am	Cc	Ky	Ko	Sw
*b	p	p	p	p	p	p'
*d	t	t	t	t	t	t'
*g	k	k	k	k	k	k'/h
*bh	p'	p'	p'	p'	p'	p'



PM	Fc	Am	Cc	Ky	Ko	Sw
*dh	t'	t'	t'	h	t'	t'
*gh	k'	k'	k'	k'	k'	k'
*-b	p	p	p	v	p	p'
*-d	t	t	t	l	t	t'
*-g	k	k	k	k/∅	k	k'/h/f

The reflex of \*-g in Ky is either *k* or ∅ (zero), or both in free variation. The rule appears to be that Ky has ∅ in forms lacking a palatal medial; words having a palatal medial usually show *k* and ∅ in free variation. PM \*g, \*gh, and \*-g all become Sw *k'* when they occur before a palatal medial; otherwise they become Sw *h* (in Sw, *h* regularly becomes *f* before *u*; if the *u* was a medial it is lost: Sw *fai* < \*huai, Sw *fu* < \*hu).

### 2.2. Tonal development in words with voiced initials

Tonal development in words which had voiced initials has been conditioned by the three different manners of articulation reconstructed for PM. In the following tables the bilabials \*p, \*ph, \*bh, \*-b etc. are used as cover symbols for the whole set of sounds having the same manner of articulation; thus \*p stands for \*p, \*t, and \*k. The four tones of PM will be designated by the four numerals \*1, \*2, \*3, \*4. These four numerically marked tones correspond respectively to the classical tonal categories ping, shang, qu and ru. The development of these tones in words which had voiced initials is shown in the following table:

#### PM tone \*1

	Fc	Am	Cc	Ky	Ko	Sw
*b	2	2	2	2	5	2
*bh	2	2	2	2	5	7
*-b	2	2	2	9	3	2

#### PM tone \*2

	Fc	Am	Cc	Ky	Ko	Sw
*b	6	6	4	5	6	3
*bh	6	6	4	5	6	3
*-b	6	6	4	5	4	3

#### PM tone \*3

	Fc	Am	Cc	Ky	Ko	Sw
*b	6	6	6	6	6	6
*bh	5	6	6	6	6	5
*-b	6	6	6	6	6	6

#### PM tone \*4

	Fc	Am	Cc	Ky	Ko	Sw
*b	8	8	8	8	6	6
*bh	8	8	8	8	6	7
*-b	8	8	8	8	4	6

### 2.3. Examples of stops in lower register words

#### PM \*b

climb 爬: Fc pa<sup>2</sup>; Am pe<sup>2</sup>; Cc pe<sup>2</sup>; Ky pa<sup>2</sup>; Ko pa<sup>5</sup>; Sw p'a<sup>2</sup>  
 harrow 耙: Fc pa<sup>6</sup>; Am pe<sup>6</sup>; Ky pa<sup>6</sup>; Sw p'a<sup>6</sup>  
 fat 肥: Fc pui<sup>2</sup>; Am pui<sup>2</sup>; Cc pui<sup>2</sup>; Ky py<sup>2</sup>; Ko py<sup>5</sup>; Sw p'i<sup>2</sup>  
 dish 盘: Fc puan<sup>2</sup>; Am puā<sup>2</sup>; Cc puā<sup>2</sup>; Ky poiŋ<sup>2</sup>; Ko puen<sup>5</sup>; Sw p'on<sup>2</sup>  
 rice 饭: Fc puoŋ<sup>6</sup>; Am puŋ<sup>6</sup>; Cc puŋ<sup>6</sup>; Ky puŋ<sup>6</sup>; Ko pyeŋ<sup>6</sup>; Sw p'an<sup>6</sup>  
 white 白: Fc pa<sup>8</sup>; Am pe<sup>8</sup>; Cc pe<sup>8</sup>; Ky pa<sup>8</sup>; Ko pa<sup>6</sup>; Sw p'a<sup>6</sup>  
 level 平: Fc paŋ<sup>2</sup>; Am pi<sup>2</sup>; Cc pē<sup>2</sup>; Ky pian<sup>2</sup>; Ko pian<sup>5</sup>; Sw p'ian<sup>2</sup>  
 sick 病: Fc paŋ<sup>6</sup>; Am pi<sup>6</sup>; Cc pē<sup>6</sup>; Ky paŋ<sup>6</sup>; Ko paŋ<sup>6</sup>; Sw p'ian<sup>6</sup>

#### PM \*bh

tare 蓐: Fc p'a<sup>5</sup>; Am p'ue<sup>6</sup>; Cc p'oi<sup>6</sup>; Ky p'ai<sup>6</sup>; Ko p'ai<sup>6</sup>  
 skin 皮: Fc p'ui<sup>2</sup>; Am p'e<sup>2</sup>; Cc p'ue<sup>2</sup>; Ky p'ui<sup>2</sup>; Ko p'ye<sup>5</sup>; Sw p'ei<sup>7</sup>  
 cover 被: Fc p'ui<sup>6</sup>; Am p'e<sup>6</sup>; Cc p'ue<sup>4</sup>; Ky p'ui<sup>5</sup>; Ko p'ye<sup>6</sup>; Sw p'ei<sup>3</sup>  
 nose 鼻: Fc p'ei<sup>2</sup>; Am p'i<sup>6</sup>; Cc p'i<sup>6</sup>; Ky p'oi<sup>6</sup>; Ko p'i<sup>6</sup>; Sw p'i<sup>5</sup>  
 duckweed 菜: Fc p'iu<sup>2</sup>; Am p'io<sup>2</sup>; Cc p'ieu<sup>2</sup>; Ky p'io<sup>2</sup>; Sw p'iau<sup>7</sup>  
 escort 伴: Fc p'uaŋ<sup>6</sup>; Am p'uā<sup>6</sup>; Cc p'uā<sup>4</sup>; Ky p'oiŋ<sup>5</sup>; Ko p'uen<sup>6</sup>; Sw p'on<sup>6</sup>  
 hail 雹: Fc p'∅i<sup>8</sup>; Am p'au<sup>8</sup>; Cc p'ak<sup>8</sup>; Ky p'o<sup>8</sup>; Ko p'au<sup>6</sup>; Sw p'au<sup>7</sup>  
 shine 光: Fc p'uo<sup>8</sup>; Am p'ak<sup>8</sup>; Cc p'ak<sup>6</sup>; Ko p'u<sup>6</sup>; Sw p'u<sup>7</sup>

#### PM \*-b

raft 筏: Fc pe<sup>2</sup>; Am pai<sup>2</sup>; Cc pai<sup>2</sup>; Ky vai<sup>9</sup>; Sw p'ie<sup>2</sup>  
 bark 皮: Fc pui<sup>6</sup>; Am pui<sup>6</sup>; Cc pui<sup>6</sup>; Ky y<sup>6</sup>; Ko py<sup>6</sup>; Sw p'ei<sup>6</sup>  
 pull 拉: Fc pei<sup>8</sup>; Am pui<sup>8</sup>; Ky vai<sup>8</sup>; Sw p'ai<sup>6</sup>



thin 薄: Fc pɔ<sup>8</sup>; Am pɔ<sup>7</sup>; Cc pɔ<sup>8</sup>; Ky vɔ<sup>8</sup>; Ko pɔ<sup>6</sup>; Sw p'ɔ<sup>6</sup>  
 vase 瓶: Fc piŋ<sup>2</sup>; Am pan<sup>2</sup>; Cc paŋ<sup>2</sup>; Ky vaiŋ<sup>9</sup>; Ko paiŋ<sup>3</sup>; Sw p'en<sup>2</sup>  
 In Ky v < PM \*-b and \*-p disappears before y and ioŋ; see bark above and maple and fly below.

## PM \*d

tea 茶: Fc ta<sup>2</sup>; Am te<sup>2</sup>; Cc te<sup>2</sup>; Ky ta<sup>2</sup>; Ko ta<sup>5</sup>; Sw t'a<sup>2</sup>  
 bean 豆: Fc tau<sup>6</sup>; Am tau<sup>6</sup>; Cc tau<sup>6</sup>; Ky teu<sup>6</sup>; Ko te<sup>6</sup>; Sw t'au<sup>6</sup>  
 step on 踏: Fc ta<sup>7</sup>; Am ta<sup>7</sup>; Cc ta<sup>7</sup>; Ky ta<sup>8</sup>; Ko ta<sup>6</sup>  
 straight 直: Fc ti<sup>7</sup>; Am tit<sup>8</sup>; Cc tik<sup>8</sup>; Ky te<sup>8</sup>; Ko te<sup>6</sup>; Sw t'ə<sup>6</sup>  
 heavy 重: Fc toŋ<sup>6</sup>; Am taŋ<sup>6</sup>; Cc taŋ<sup>4</sup>; Ky toŋ<sup>5</sup>; Ko toŋ<sup>6</sup>; Sw t'uŋ<sup>3</sup>

## PM \*dh

pillar 柱: Fc t'iu<sup>6</sup>; Am t'iau<sup>6</sup>; Cc t'ieu<sup>4</sup>; Ky hiu<sup>5</sup>; Ko t'iu<sup>6</sup>  
 hammer 槌: Fc t'ui<sup>2</sup>; Am t'ui<sup>2</sup>; Cc t'ui<sup>2</sup>; Ky hy<sup>2</sup>; Ko t'y<sup>5</sup>; Sw t'ei<sup>7</sup>  
 weep 哭: Fc t'ie<sup>2</sup>; Am t'i<sup>2</sup>; Cc t'i<sup>2</sup>; Ky hie<sup>2</sup>; Ko t'i<sup>5</sup>; Sw t'i<sup>7</sup>  
 peach 桃: Fc t'o<sup>2</sup>; Am t'o<sup>2</sup>; Cc t'o<sup>2</sup>; Ky hau<sup>2</sup>; Ko t'au<sup>5</sup>; Sw t'au<sup>7</sup>  
 head 頭: Fc t'au<sup>2</sup>; Am t'au<sup>2</sup>; Cc t'au<sup>2</sup>; Ky heu<sup>2</sup>; Ko t'e<sup>5</sup>; Sw t'ə u<sup>7</sup>  
 staff 杖: Fc t'ioŋ<sup>6</sup>; Am t'ŋ<sup>6</sup>; Ky hioŋ<sup>5</sup>; Ko t'ioŋ<sup>6</sup>  
 bug 蟲: Fc t'Øiŋ<sup>2</sup>; Am t'aŋ<sup>2</sup>; Cc t'aŋ<sup>2</sup>; Ky hoŋ<sup>2</sup>; Ko t'oŋ<sup>5</sup>; Sw t'uŋ<sup>7</sup>

## PM \*-d

rudder 舵: Fc tuai<sup>6</sup>; Am tua<sup>6</sup>; Cc tua<sup>4</sup>; Ko tue<sup>4</sup>  
 long 長: Fc touŋ<sup>2</sup>; Am tŋ<sup>2</sup>; Cc tŋ<sup>2</sup>; Ky ləŋ<sup>9</sup>; Ko toŋ<sup>3</sup>; Sw t'oŋ<sup>2</sup>  
 worth 值: Fc ti<sup>7</sup>; Am tat<sup>8</sup>; Cc tak<sup>8</sup>; Ky loi<sup>8</sup>; Sw t'w<sup>6</sup>  
 bronze 銅: Fc t'Øiŋ<sup>2</sup>; Am taŋ<sup>2</sup>; Cc taŋ<sup>2</sup>; Ky loŋ<sup>2</sup>; Sw t'uŋ<sup>2</sup>  
 move 動: Fc toŋ<sup>6</sup>; Am taŋ<sup>6</sup>; Ky loŋ<sup>5</sup>; Ko toŋ<sup>4</sup>; Sw t'uŋ<sup>6</sup>

## PM \*g

eggplant 茄: Fc kio<sup>2</sup>; Am kio<sup>2</sup>; Cc kie<sup>2</sup>; Ky kio<sup>2</sup>; Ko kio<sup>5</sup>; Sw k'io<sup>2</sup>  
 kneel 跪: Fc kui<sup>6</sup>; Am kui<sup>6</sup>; Cc kūi<sup>4</sup>; Ky ky<sup>6</sup>; Ko ky<sup>6</sup>; Sw k'uei<sup>3</sup>  
 bridge 橋: Fc kio<sup>2</sup>; Am kio<sup>2</sup>; Cc kie<sup>2</sup>; Ky kio<sup>2</sup>; Ko kia<sup>5</sup>; Sw k'iau<sup>2</sup>  
 old 老: Fc kou<sup>6</sup>; Am ku<sup>6</sup>; Cc ku<sup>6</sup>; Ky kiu<sup>6</sup>; Ko kiu<sup>6</sup>; Sw k'y<sup>6</sup>  
 aunt 姑: Fc keiŋ<sup>6</sup>; Am kim<sup>6</sup>; Cc kim<sup>4</sup>; Ky kiŋ<sup>5</sup>; Ko keŋ<sup>6</sup>; Sw k'ə n<sup>3</sup>  
 sweat 汗: Fc kaŋ<sup>6</sup>; Am kuā<sup>6</sup>; Cc kuā<sup>6</sup>; Ky kueŋ<sup>6</sup>; Ko kueŋ<sup>6</sup>; Sw hon<sup>6</sup>

## PM \*gh

persimmon 柿: Fc k'ei<sup>6</sup>; Am k'i<sup>6</sup>; Ky k'i<sup>5</sup>; Ko k'i<sup>6</sup>  
 mortar 臼: Fc k'ou<sup>6</sup>; Am k'u<sup>6</sup>; Cc k'u<sup>4</sup>; Ky k'iu<sup>5</sup>; Ko k'iu<sup>6</sup>; Sw k'y<sup>3</sup>

ride 騎: Fc k'ie<sup>2</sup>; Am k'ia<sup>2</sup>; Cc k'ia<sup>2</sup>; Ky i<sup>9</sup>; Sw k'i<sup>2</sup>  
 stand 站: Fc k'ie<sup>6</sup>; Am k'ia<sup>6</sup>; Cc k'ia<sup>4</sup>; Ky kye<sup>5</sup>; Ko kye<sup>4</sup>; Sw k'i<sup>3</sup>  
 Note that for the last two examples, the eastern dialects (Fc, Am, Cc) imply an aspirated initial, while the western dialects (Ky, Ko, Sw) imply \*-g.

## PM \*-g

bite 咬: Fc ka<sup>6</sup>; Am ka<sup>6</sup>; Cc ka<sup>4</sup>; Ky au<sup>5</sup>; Ko kau<sup>4</sup>  
 monkey 猴: Fc kau<sup>2</sup>; Am kau<sup>2</sup>; Cc kau<sup>2</sup>; Ky eu<sup>9</sup>; Ko ke<sup>3</sup>; Sw hæ u<sup>2</sup>  
 thick 厚: Fc kau<sup>6</sup>; Am kau<sup>6</sup>; Cc kau<sup>4</sup>; Ky eu<sup>5</sup>; Ko ke<sup>4</sup>; Sw hæ u<sup>6</sup>  
 ball 球: Fc kiu<sup>2</sup>; Am kiu<sup>2</sup>; Cc kiu<sup>2</sup>; Ky kiu<sup>9</sup>~iu<sup>9</sup>; Ko kiu<sup>3</sup>; Sw k'ou<sup>2</sup>  
 slippery 滑: Fc kou<sup>7</sup>; Am kut<sup>8</sup>; Cc kuk<sup>8</sup>; Ky kui<sup>8</sup>; Ko ko<sup>4</sup>; Sw fə i<sup>6</sup>  
 hsien 縣: Fc kaiŋ<sup>6</sup>; Am kuāi<sup>6</sup>; Cc kūi<sup>6</sup>; Ky kyeŋ<sup>6</sup>~yeŋ<sup>6</sup>; Ko kyeŋ<sup>6</sup>; Sw yen<sup>6</sup>

## 3.1. Voiceless stops

The voiceless stops show the same three-way contrast as the voiced stops. I will symbolize them similarly:

unaspirated	p	t	k
aspirated	ph	th	kh
softened	-p	-t	-k

The modern reflexes of these stops are shown in the following table:

	Fc	Am	Cc	Ky	Ko	Sw
*p	p	p	p	p	p	p
*ph	p'	p'	p'	p'	p'	p'
*-p	p	p	p	v/φ	p	p'
*t	t	t	t	t	t	t
*th	t'	t'	t'	h	t'	t'
*-t	t	t	t	l	t	t'
*k	k	k	k	k/x	k/x	k
*kh	k'	k'	k'	k'	k'	k'
*-k	k	k	k	k/Ø	Ø	?

PM \*k normally becomes k both in Ky and Ko, but in a small number of common words it becomes x:

liver 肝: Fc kaŋ<sup>1</sup>; Ky xueŋ<sup>1</sup>; Ko xueŋ<sup>1</sup>  
 marry 嫁: Fc ka<sup>5</sup>; Ky -; Ko xa<sup>5</sup>  
 type of leek 韭: Fc kiu<sup>3</sup>; Ky xiu<sup>3</sup>; Ko xiu<sup>3</sup>



tangerine 橘: Fc kei<sup>7</sup>; Ky xi<sup>7</sup>; Ko xi<sup>7</sup>  
 save 救: Fc kiu<sup>5</sup>; Ky -; Ko xiau<sup>5</sup>  
 teach 教: Fc ka<sup>5</sup>; Ky xau<sup>1</sup>; Ko xau<sup>1</sup>

The origin of this split is unclear. PM \*-k becomes either Ky *k* or *q* (in free variation) in the word for *dog*, but disappears in the word for *jug*.

3.2. Aspirated and unaspirated voiceless initials

Tonal behavior of words with aspirated and unaspirated voiceless initials is the same everywhere. The softened initials, however, have given rise to quite a different behavior in western dialects:

PM tone \*1

	Fc	Am	Cc	Ky	Ko	Sw
*p, ph	1	1	1	1	1	1
*-p	1	1	1	9	3	3

PM tone \*2

*p, ph, -p	3	3	3	3	3	3
------------	---	---	---	---	---	---

PM tone \*3

*p, ph	5	5	5	5	5	5
*-p	5	5	5	9	3	?

PM tone \*4

*p, ph	7	7	7	7	7	7
*-p	7	7	7	3	?	3

Although I have deliberately avoided discussing affricates in this paper, it seems relevant to point out here that the lenition process also applies to voiceless affricates. The evidence for these is as follows: \*-ts becomes *l* in Ky and *t'* in Sw; tonal behavior is the same as for the other softened voiceless stops:

drunk 醉: Fc tsui<sup>5</sup>; Am tsui<sup>5</sup>; Cc tsui<sup>5</sup>; Ky ly<sup>9</sup>; Ko tsy<sup>3</sup>  
 early 早: Fc tsa<sup>3</sup>; Am tsa<sup>3</sup>; Cc tsa<sup>3</sup>; Ky lau<sup>3</sup>; Ko tsau<sup>3</sup>; Sw t'au<sup>3</sup>

3.3. Examples of stops in upper register tones

PM \*p

share 分: Fc puoŋ<sup>1</sup>; Am pun<sup>1</sup>; Cc puŋ<sup>1</sup>; Ky puŋ<sup>1</sup>; Ko pyeŋ<sup>1</sup>; Sw pə n<sup>1</sup>  
 board 板: Fc peiŋ<sup>3</sup>; Am pan<sup>3</sup>; Cc paŋ<sup>3</sup>; Ky paiŋ<sup>3</sup>; Ko paiŋ<sup>3</sup>; Sw pan<sup>3</sup>  
 half 半: Fc puaŋ<sup>5</sup>; Am puã<sup>5</sup>; Cc puã<sup>5</sup>; Ky poiŋ<sup>5</sup>; Ko pueŋ<sup>5</sup>; Sw pon<sup>5</sup>  
 eight 八: Fc pai<sup>7</sup>; Am pue<sup>7</sup>; Cc poi<sup>7</sup>; Ky pai<sup>7</sup>; Ko pai<sup>7</sup>; Sw pie<sup>7</sup>

PM \*ph

break 破: Fc p'uai<sup>5</sup>; Am p'ua<sup>5</sup>; Cc p'ua<sup>5</sup>; Ky p'oi<sup>5</sup>; Ko p'ue<sup>5</sup>; Sw p'ai<sup>5</sup>  
 register 册: Fc p'uo<sup>3</sup>; Am p'ɔ<sup>3</sup>; Cc p'ou<sup>3</sup>; Ky p'o<sup>3</sup>; Sw p'u<sup>3</sup>  
 hit 拍: Fc p'a<sup>7</sup>; Am p'a<sup>7</sup>; Cc p'a<sup>7</sup>; Ky p'ɔ<sup>7</sup>; Sw p'a<sup>7</sup>  
 bee 蜂: Fc p'uŋ<sup>1</sup>; Am p'aŋ<sup>1</sup>; Cc p'aŋ<sup>1</sup>; Ky p'oŋ<sup>1</sup>; Ko p'oŋ<sup>1</sup>; Sw p'iuŋ<sup>1</sup>

PM \*-p

fly 飞: Fc pui<sup>1</sup>; Am pe<sup>1</sup>; Cc pue<sup>1</sup>; Ky ye<sup>9</sup>; Ko ye<sup>3</sup>; Sw p'ei<sup>3</sup>  
 reverse 反: Fc peiŋ<sup>3</sup>; Am pan<sup>3</sup>; Ky vaiŋ<sup>3</sup>  
 emit 发: Fc puo<sup>7</sup>; Am pu<sup>7</sup>; Ky voi<sup>3</sup>; Sw p'ə i<sup>3</sup>  
 maple 枫: Am pŋ<sup>1</sup>; Cc puŋ<sup>1</sup>; Ky ioŋ<sup>9</sup>; Sw p'iuŋ<sup>3</sup>

PM \*t

belt 带: Fc tai<sup>5</sup>; Am tua<sup>5</sup>; Cc tua<sup>5</sup>; Ky tue<sup>5</sup>; Ko tue<sup>5</sup>; Sw tai<sup>5</sup>  
 list 录: Fc taŋ<sup>1</sup>; Am tuã<sup>1</sup>; Cc tuã<sup>1</sup>; Ky tueŋ<sup>1</sup>; Ko tueŋ<sup>1</sup>; Sw tan<sup>1</sup>  
 short 短: Fc tɕi<sup>3</sup>; Am te<sup>3</sup>; Cc to<sup>3</sup>; Ky tui<sup>3</sup>; Ko to<sup>3</sup>; Sw ton<sup>3</sup>  
 table 桌: Fc to<sup>7</sup>; Am to<sup>7</sup>; Cc to<sup>7</sup>; Ky to<sup>7</sup>; Ko to<sup>7</sup>

PM \*th

leg 腿: Fc t'ɕi<sup>3</sup>; Am t'ui<sup>3</sup>; Cc t'ui<sup>3</sup>; Ky hui<sup>3</sup>; Ko t'o<sup>3</sup>; Sw t'ei<sup>3</sup>  
 sky 天: Fc t'ien<sup>1</sup>; Am t'i<sup>1</sup>; Cc t'i<sup>1</sup>; Ky hien<sup>1</sup>; Ko t'ien<sup>1</sup>; Sw t'ien<sup>1</sup>  
 iron 铁: Fc t'ie<sup>7</sup>; Am t'i<sup>7</sup>; Cc t'i<sup>7</sup>; Ky hie<sup>7</sup>; Ko t'ie<sup>7</sup>; Sw t'ie<sup>1</sup>  
 charcoal 炭: Fc t'aŋ<sup>5</sup>; Am t'ua<sup>5</sup>; Cc t'ua<sup>5</sup>; Ky huen<sup>5</sup>; Ko t'uen<sup>5</sup>; Sw t'an<sup>5</sup>

PM \*-t

turn 转: Fc tion<sup>3</sup>; Am tŋ<sup>3</sup>; Cc tŋ<sup>3</sup>; Ky lyen<sup>3</sup>; Ko tyen<sup>3</sup>; Sw t'ien<sup>3</sup>

PM \*k

melon 瓜: Fc kua<sup>1</sup>; Am kue<sup>1</sup>; Cc kue<sup>1</sup>; Ky kua<sup>1</sup>; Ko kua<sup>1</sup>; Sw kua<sup>1</sup>  
 remember 记: Fc kei<sup>5</sup>; Am ki<sup>5</sup>; Cc ki<sup>5</sup>; Ky ki<sup>5</sup>; Ko ki<sup>5</sup>; Sw kw<sup>5</sup>



cocoon 繭: Fc keiŋ<sup>3</sup>; Am kiŋ<sup>3</sup>; Cc kōi<sup>3</sup>; Ky kaiŋ<sup>3</sup>; Sw kan<sup>3</sup>  
 horn 角: Fc koi<sup>7</sup>?; Am kak<sup>7</sup>; Cc kak<sup>7</sup>; Ky ko<sup>7</sup>; Ko ku<sup>7</sup>; Sw ko<sup>7</sup>

PM \*kh

bitter 苦: Fc k'u<sup>3</sup>; Am k'ɔ<sup>3</sup>; Cc k'ou<sup>3</sup>; Ky k'o<sup>3</sup>; Ko k'u<sup>3</sup>; Sw k'u<sup>3</sup>  
 foot 脚: Fc k'a<sup>1</sup>; Am k'a<sup>1</sup>; Cc k'a<sup>1</sup>; Ky k'au<sup>1</sup>; Ko k'au<sup>1</sup>; Sw k'au<sup>1</sup>  
 advise 劝: Fc k'uon<sup>5</sup>; Am k'ŋ<sup>5</sup>; Cc k'ŋ<sup>5</sup>; Ky k'yeŋ<sup>5</sup>; Ko k'yeŋ<sup>5</sup>; Sw k'yeŋ<sup>5</sup>  
 guest 客: Fc k'a<sup>7</sup>; Am k'e<sup>7</sup>?; Cc k'e<sup>7</sup>?; Ky k'a<sup>7</sup>; Ko k'a<sup>7</sup>; Sw k'a<sup>7</sup>

PM \*-k

dog 狗: Am kau<sup>3</sup>; Cc kau<sup>3</sup>; Ky eu<sup>3</sup>; Ko e<sup>3</sup>; Sw kə u<sup>3</sup>  
 jar 缸: Fc kouŋ<sup>1</sup>; Am kŋ<sup>1</sup>; Cc kŋ<sup>1</sup>; Ky ɔŋ<sup>3</sup>; Ko koŋ<sup>3</sup>  
 cut 切: Fc ka<sup>7</sup>?; Am kua<sup>7</sup>?; Cc kua<sup>7</sup>?; Ky ua<sup>3</sup>

4.1. Sonorant initials

Every Chinese dialect has a small number of words with sonorant initials which are found in the upper register of one of the tonal categories. These words for the most part are either onomatopoeic, etymologically obscure, or expressive; although various explanations have been offered for the tones of such words, to my knowledge, no one has ever made a convincing case for a two-way distinction of sonorants in earlier stages of Chinese. I believe, nonetheless, that there is incontrovertible evidence in the Min dialects for just such a distinction at the stage of the proto-language. Since the tonal development of one of the series exactly parallels that of the voiced aspirated stops, I will symbolize the distinction thus:

voiced	m	m	ń	ŋ	l
voiceless	mh	nh		ŋh	lh

4.2. Laterals

Because the case of the laterals is clearer than that of the other sonorants, I will describe it first; in the process, the tonal development triggered by the two different series will be made clear.

The initial correspondences for \*l and \*lh in the modern dialects are shown in the following chart:

PM	Fc	Am	Cc	Ky	Ko	Sw
*l	l	l/n	l/n	l	l	l
*lh	l	l/n	l/n	s	s	s

In the eastern dialects the evolution of \*l and \*lh is the same. In Am and Cc \*l and \*lh have become n before those PM finals that have become nasalized vowels in these two dialects and l before other finals. (In Am n and l are in complementary distribution: l occurs only before oral finals and n only before nasalized vowels. In Cc they contrast in a limited number of environments: naŋ<sup>2</sup> 'person' and laŋ<sup>2</sup> 'deaf', but a tendency similar to that found in Am can be observed.) In the western dialects the reflexes of \*l and \*lh are quite distinct, and the two types of sonorants have left their traces in the tones of the modern dialects, especially in Sw, but also to a lesser degree in Fc. The tonal reflexes (as seen in words with \*l and \*lh) are shown in the tables below; reflexes of \*dh are given to illustrate the parallel development of the aspirated voiced stops and the voiceless sonorants:

PM tone \*1

	Fc	Am	Cc	Ky	Ko	Sw
*l	2	2	2	2	5	2
*lh	2	2	2	2	5	7
*dh	2	2	2	2	5	7

PM tone \*2

	Fc	Am	Cc	Ky	Ko	Sw
*l	6	6	4	5	4	3
*lh	6	6	4	5	6	3
*dh	6	6	4	5	6	3

Judging from the reflexes of words with initial \*l and \*lh, no particular tonal behavior is associated with voiceless sonorants in this tone except in the case of Ko. There is in fact considerable irregularity associated with words having initial sonorants in tone \*2. A significant number of words are found with upper register tones in all dialects; others are found with the upper register in the east but with a lower register tone in the west:

l, me 𪛗: Fc ŋuai<sup>3</sup>; Am gua<sup>3</sup>; Cc ua<sup>3</sup>; Ky ŋue<sup>3</sup>; Ko ue<sup>4</sup>  
 horse 𪛘: Fc ma<sup>3</sup>; Am be<sup>3</sup>; Cc be<sup>3</sup>; Ky ma<sup>3</sup>; Ko ma<sup>3</sup>; Sw ma<sup>3</sup>  
 incite 𪛙: Fc nia<sup>3</sup>; Am dzia<sup>3</sup>; Cc dzia<sup>3</sup>; Ky nia<sup>3</sup>; Ko nia<sup>3</sup>  
 buy 𪛚: Fc me<sup>3</sup>; Am bue<sup>3</sup>; Cc boi<sup>3</sup>; Ky mai<sup>3</sup>; Ko mai<sup>3</sup>; Sw mie<sup>3</sup>  
 rice 𪛛: Fc mi<sup>3</sup>; Am bi<sup>3</sup>; Cc bi<sup>3</sup>; Ky moi<sup>3</sup>; Ko mi<sup>4</sup>; Sw mi<sup>3</sup>  
 tail 𪛜: Fc mui<sup>3</sup>; Am be<sup>3</sup>; Cc bue<sup>3</sup>; Ky mui<sup>3</sup>; Ko mye<sup>3</sup>; Sw mei<sup>3</sup>  
 dye 𪛝: Fc nieŋ<sup>3</sup>; Am dziam<sup>3</sup>; Cc dziam<sup>3</sup>; Ky nieŋ<sup>3</sup>; Ko nieŋ<sup>3</sup>  
 saliva 𪛞: Fc laŋ<sup>3</sup>; Am nuā<sup>6</sup>; Cc nuā<sup>4</sup>; Ky lueŋ<sup>3</sup>; Ko lueŋ<sup>4</sup>  
 collar 𪛟: Fc lian<sup>3</sup>; Am niā<sup>3</sup>; Cc nuā<sup>3</sup>; Ky lian<sup>3</sup>; Ko lian<sup>4</sup>; Sw lian<sup>3</sup>



Are we to consider these upper register reflexes as evidence for voiceless initials? There are two reasons to think that this is not so: (1) It is well known that in many Chinese dialects the sonorant initials (*cìzhúo* 次濁) of QY, unlike the voiced obstruents, went to the upper rising tone; some of the Min words cited above may be influenced by such dialects. (2) In the other tones the tonal behavior of words with voiceless sonorant initials is the same as that of words with initial voiced aspirated stops; this is not the case with any of the above examples.

PM tone \*3

	Fc	Am	Cc	Ky	Ko	Sw
*1	6	6	6	6	6	6
*lh	5	6	6	6	6	(5)
*dh	5	6	6	6	6	(5)

There are no examples of this tone in Sw for words with initial \*lh or \*dh, but we know the expected reflex from words sharing the same manners of articulation.

PM tone \*4

	Fc	Am	Cc	Ky	Ko	Sw
*1	8	8	8	8	4	6
*lh	8	8	8	8	6	7
*dh	8	8	8	8	6	7

Sw has a different tonal reflex for words with initial voiceless sonorants except in PM tone \*2. Ko ostensibly has a different tonal reflex for such words both in tones \*2 and \*4; this is clearly true for words which had \*lh, but I have not found any examples of similar behavior for words with the other sonorant initials. (This perhaps reflects different origins for the two sets. I suspect that \*lh comes from an earlier cluster consisting of a voiceless stop plus \*l, and that the voiceless nasals are the reflexes of a voiceless fricative plus a nasal.) This means that except for \*lh, there is now no clear tonal evidence for voiceless sonorants in PM tone \*2.

4.3. Examples of \*L and \*LH

PM \*1

come 來: Fc li<sup>2</sup>; Am lai<sup>2</sup>; Cc lai<sup>2</sup>; Ky le<sup>2</sup>; Ko le<sup>5</sup>; Sw li<sup>2</sup>  
 plow 犁: Fc le<sup>2</sup>; Am lue<sup>2</sup>; Cc loi<sup>2</sup>; Ky lai<sup>2</sup>; Ko lai<sup>5</sup>; Sw lie<sup>2</sup>  
 flow 流: Fc lau<sup>2</sup>; Am lau<sup>2</sup>; Cc lau<sup>2</sup>; Ky lau<sup>2</sup>; Ko lau<sup>5</sup>; Sw lou<sup>2</sup>  
 wax 臘: Fc la<sup>2</sup>; Am la<sup>2</sup>; Cc la<sup>2</sup>; Ky la<sup>8</sup>; Ko la<sup>4</sup>; Sw lan<sup>6</sup>  
 pungent 辣: Fc la<sup>2</sup>; Am lua<sup>2</sup>; Cc lua<sup>2</sup>; Ky lue<sup>8</sup>; Ko lue<sup>4</sup>; Sw lai<sup>6</sup>  
 cage 籠: Fc lɔi<sup>2</sup>; Am laŋ<sup>2</sup>; Cc laŋ<sup>2</sup>; Ky loŋ<sup>2</sup>; Ko loŋ<sup>3</sup>; Sw luŋ<sup>2</sup>

PM \*1h

basket 簍: Fc lai<sup>2</sup>; Am lua<sup>2</sup>; Cc lua<sup>2</sup>; Ky sue<sup>2</sup>  
 snail 螺: Fc lɔi<sup>2</sup>; Am le<sup>2</sup>; Cc lo<sup>2</sup>; Ky sui<sup>2</sup>; Ko so<sup>5</sup>; Sw soi<sup>7</sup>  
 reed 葦: Ky so<sup>2</sup>; Ko su<sup>5</sup>  
 dew 露: Fc lou<sup>5</sup>; Am lo<sup>6</sup>; Cc lou<sup>6</sup>; Ky so<sup>6</sup>; Ko su<sup>6</sup>  
 thunder 雷: Fc lai<sup>2</sup>; Am lui<sup>2</sup>; Cc lui<sup>2</sup>; Ky sui<sup>2</sup>; Ko so<sup>5</sup>  
 sharp 利: Fc lei<sup>5</sup>; Am lai<sup>6</sup>; Cc li<sup>6</sup>  
 wildcat 狸: Fc li<sup>2</sup>; Am li<sup>2</sup>; Cc li<sup>2</sup>; Ky se<sup>2</sup>; Ko se<sup>5</sup>  
 plum 李: Fc li<sup>3</sup>; Am li<sup>3</sup>; Cc li<sup>3</sup>; Ky se<sup>5</sup>; Ko se<sup>6</sup>; Sw sə<sup>3</sup>  
 old 老: Fc lau<sup>6</sup>; Am lau<sup>6</sup>; Cc lau<sup>4</sup>; Ky seu<sup>5</sup>; Ko se<sup>6</sup>  
 a surname 姓: Fc lau<sup>2</sup>; Am lau<sup>2</sup>; Cc lau<sup>2</sup>; Ky seu<sup>2</sup>  
 remain 留: Fc lau<sup>2</sup>; Am lau<sup>2</sup>; Cc lau<sup>2</sup>; Ky seu<sup>2</sup>  
 basket 籃: Fc laŋ<sup>2</sup>; Am nã<sup>2</sup>; Cc nã<sup>2</sup>; Ky saŋ<sup>2</sup>; Ko saŋ<sup>5</sup>; Sw san<sup>7</sup>  
 rain-hat 笠: Fc li<sup>2</sup>; Am lue<sup>2</sup>; Cc loi<sup>2</sup>; Ky se<sup>8</sup>; Ko se<sup>6</sup>  
 egg 卵: Fc lauŋ<sup>6</sup>; Am nŋ<sup>6</sup>; Cc nŋ<sup>4</sup>; Ky suŋ<sup>5</sup>; Ko soŋ<sup>6</sup>; Sw son<sup>3</sup>  
 scale 鱗: Fc liŋ<sup>2</sup>; Am lan<sup>2</sup>; Cc laŋ<sup>2</sup>; Ky saiŋ<sup>2</sup>; Ko saiŋ<sup>5</sup>  
 young man 郎: Fc louŋ<sup>2</sup>; Am nŋ<sup>2</sup>; Cc nŋ<sup>2</sup>; Ky soŋ<sup>2</sup>; Ko soŋ<sup>5</sup>  
 two 兩: Fc laŋ<sup>6</sup>; Am nŋ<sup>6</sup>; Cc nŋ<sup>4</sup>; Ky soŋ<sup>5</sup>  
 deaf 聾: Fc lɔi<sup>2</sup>; Am laŋ<sup>2</sup>; Cc laŋ<sup>2</sup>; Ky soŋ<sup>2</sup>; Ko soŋ<sup>5</sup>; Sw suŋ<sup>7</sup>  
 six 六: Fc lɔi<sup>2</sup>; Am lak<sup>8</sup>; Cc lak<sup>8</sup>; Ky so<sup>8</sup>; Sw su<sup>7</sup>

4.4. The modern reflexes of \*M and \*MH

PM	Fc	Am	Cc	Ky	Ko	Sw
*m	m	m/b	m/b	m	m	m
*mh	m	m	m	m	m	m

The conditions for the split of PM \*m in the southern dialects is the same, ceteris paribus, as for PM \*1. There is a very definite tendency for words for which I have reconstructed \*mh on the basis of Sw and Fc tones to retain nasal initials in the southern Min dialects even where the PM final would regularly evolve to an oral final in these dialects. Examples of PM \*m and \*mh:

PM \*m

grind 磨: Fc muai<sup>2</sup>; Am bua<sup>2</sup>; Cc bua<sup>2</sup>; Ky moi<sup>2</sup>; Ko mue<sup>6</sup>; Sw mai<sup>2</sup>  
 sell 賣: Fc ma<sup>6</sup>; Am bue<sup>6</sup>; Cc boi<sup>6</sup>; Ky mai<sup>6</sup>; Ko mai<sup>6</sup>; Sw mie<sup>6</sup>  
 coal 煤: Fc mui<sup>2</sup>; Am bue<sup>2</sup>; Cc bue<sup>2</sup>; Ky mui<sup>2</sup>; Ko mo<sup>5</sup>; Sw mei<sup>2</sup>  
 plum 梅: Fc mui<sup>2</sup>; Am bue<sup>2</sup>; Cc bue<sup>2</sup>; Ky mui<sup>2</sup>; Ko mo<sup>5</sup>; Sw mei<sup>2</sup>  
 slow 慢: Fc maiŋ<sup>6</sup>; Am ban<sup>6</sup>; Cc maŋ<sup>6</sup>; Ky maiŋ<sup>8</sup>; Ko maiŋ<sup>6</sup>; Sw man<sup>6</sup>  
 honey 蜜: Fc mi<sup>2</sup>; Am bit<sup>8</sup>; Cc bik<sup>8</sup>; Ky moi<sup>8</sup>; Ko mi<sup>7</sup>; Sw mi<sup>6</sup>  
 door 門: Fc muoŋ<sup>2</sup>; Am mŋ<sup>2</sup>; Cc muŋ<sup>2</sup>; Ky muŋ<sup>2</sup>; Ko moŋ<sup>5</sup>; Sw mə n<sup>2</sup>  
 blind 盲: Fc maŋ<sup>2</sup>; Am mī<sup>2</sup>; Cc mē<sup>2</sup>; Ky maŋ<sup>2</sup>; Ko maŋ<sup>5</sup>



wheat 麥: Fc ma<sup>8</sup>; Am be<sup>7</sup>; Cc be<sup>7</sup>; Ky ma<sup>8</sup>; Ko ma<sup>4</sup>; Sw ma<sup>6</sup>  
 life 命: Fc mian<sup>6</sup>; Am miã<sup>6</sup>; Cc miã<sup>6</sup>; Ky mian<sup>6</sup>; Ko mian<sup>6</sup>

## PM \*mh

hemp 麻: Fc muai<sup>2</sup>; Am muã<sup>2</sup>; Cc muã<sup>2</sup>; Ky moi<sup>2</sup>; Ko mue<sup>5</sup>; Sw mai<sup>7</sup>  
 scold 罵: Fc ma<sup>5</sup>; Am mē<sup>6</sup>; Cc mē<sup>6</sup>; Ky ma<sup>6</sup>; Ko ma<sup>6</sup>; Sw ma<sup>5</sup>  
 sister 妹: Fc mui<sup>6</sup>; Am müi<sup>6</sup>; Cc müe<sup>6</sup>; Ky mui<sup>6</sup>; Ko mye<sup>6</sup>; Sw mei<sup>5</sup>  
 cat 貓: Fc ma<sup>2</sup>; Am mã<sup>2</sup>; Ky mau<sup>2</sup>; Ko mau<sup>5</sup>; Sw mau<sup>7</sup>  
 face 面: Fc meij<sup>5</sup>; Am bin<sup>6</sup>; Cc miŋ<sup>6</sup>; Ky miŋ<sup>6</sup>; Ko miŋ<sup>6</sup>; Sw min<sup>5</sup>  
 mosquito 蚊: Fc muoŋ<sup>2</sup>; Sw mən<sup>7</sup>  
 ask 問: Fc muoŋ<sup>5</sup>; Am mŋ<sup>6</sup>; Cc muŋ<sup>6</sup>; Ky muŋ<sup>6</sup>; Ko moŋ<sup>6</sup>; Sw mə n<sup>5</sup>  
 name 名: Fc mian<sup>2</sup>; Am miã<sup>2</sup>; Cc miã<sup>2</sup>; Ky mian<sup>2</sup>; Ko mian<sup>5</sup>; Sw mian<sup>7</sup>  
 dream 夢: Fc moij<sup>5</sup>; Am baŋ<sup>6</sup>; Cc maŋ<sup>6</sup>; Ky moŋ<sup>6</sup>; Ko moŋ<sup>6</sup>; Sw muŋ<sup>5</sup>  
 eye 目: Fc mphi<sup>7</sup>; Am bak<sup>8</sup>; Cc māk<sup>8</sup>; Ky mo<sup>8</sup>; Ko mu<sup>4</sup>; Sw mu<sup>7</sup>

## 4.5. Reflexes of PM \*N and \*NH in modern dialects

PM	Fc	Am	Cc	Ky	Ko	Sw
*n	n	n/l	n/l	n	n	n
*nh	n	n/h	n/h	n	n	n

The paucity of forms for which we can confidently reconstruct voiceless sonorant initials (especially \*nh and \*nh) makes it extremely difficult to say what the regular development of these phonemes has been in the Southern Min dialects. The process of denasalization that has affected the nasal sonorants of Southern Min is very irregular: it would seem that as the distinction between voiced and voiceless sonorants broke down, the Southern Min dialects entered a period of great instability with respect to these sounds. We can only hope that as more data become available the process will become somewhat clearer. In the case of \*nh, there is a clear tendency for it to become h when it occurs before a high front vowel. Both Am and Cc have n in the word for 'year', but it is interesting to note that in at least one expression Cc preserves this word with an initial h: 年根 hi<sup>2</sup> ke<sup>5</sup> 'the first three days of the New Year'. The initial n of the word for 'meat' in Cc can be explained by assuming that the word originally had a high front vowel and that the voiceless nasal persisted until after the vowel was lowered. Examples of \*n and \*nh:

## PM \*n

south 南: Fc nan<sup>2</sup>; Am lam<sup>2</sup>; Cc lam<sup>2</sup>; Ky nan<sup>2</sup>; Ko nan<sup>5</sup>; Sw nan<sup>2</sup>  
 read 唸: Fc nain<sup>6</sup>; Am liam<sup>6</sup>; Cc liam<sup>6</sup>; Ky nan<sup>6</sup>; Ko nan<sup>6</sup>; Sw nien<sup>6</sup>

## PM \*nh

year 年: Fc nieŋ<sup>2</sup>; Am nī<sup>2</sup>; Cc nī<sup>2</sup>-hī<sup>2</sup>; Ky nieŋ<sup>2</sup>; Ko nieŋ<sup>5</sup>; Sw nin<sup>7</sup>  
 leaf 葉: Fc nio<sup>8</sup>; Am hio<sup>7</sup>; Cc hie<sup>7</sup>; Ky nio<sup>8</sup>; Ko nio<sup>4</sup>; Sw nio<sup>7</sup>  
 pus 膿: Fc nphiŋ<sup>2</sup>; Am lan<sup>2</sup>; Cc lan<sup>2</sup>; Ky neŋ<sup>2</sup>; Sw nuŋ<sup>7</sup>  
 meat 肉: Fc ny<sup>7</sup>; Cc nēk<sup>8</sup>; Ky ny<sup>8</sup>; Ko ny<sup>4</sup>; Sw ny<sup>7</sup>

## 4.6. Reflexes of \*ŋ in modern dialects

PM	Fc	Am	Cc	Ky	Ko	Sw
*ŋ	n	dz	dz	n	n	n

Only one rather doubtful case of \*ŋh was found: 蚌 'bait' Fc nei<sup>5</sup>, Am dzi<sup>6</sup>. It is perhaps significant that the word for 'meat' can be reconstructed with initial \*nh, even though it has a palatal initial in QY; this may mean that original \*ŋh merged with \*nh before the period of common Min. Examples of PM \*ŋ:

## PM \*ŋ

two 二: Fc nei<sup>6</sup>; Am dzi<sup>6</sup>; Cc dzi<sup>6</sup>; Ky noi<sup>6</sup>; Ko ni<sup>6</sup>; Sw ni<sup>6</sup>  
 recognize 認: Fc neiŋ<sup>6</sup>; Am dzin<sup>6</sup>; Cc dziŋ<sup>6</sup>; Ky noiŋ<sup>6</sup>; Ko neŋ<sup>6</sup>; Sw nin<sup>6</sup>  
 day 日: Fc ni<sup>7</sup>; Am dzit<sup>8</sup>; Cc dzik<sup>8</sup>; Ky noi<sup>8</sup>; Ko ni<sup>4</sup>; Sw ni<sup>6</sup>  
 intercalary 閏: Fc nouŋ<sup>6</sup>; Am dzun<sup>6</sup>; Cc dzuŋ<sup>6</sup>; Ko noiŋ<sup>6</sup>

## 4.7. Reflexes of \*ŋ and \*ŋh in modern dialects

PM	Fc	Am	Cc	Ky	Ko	Sw
*ŋ	ŋ	ŋ/g/h	ŋ/g/h	ŋ	ŋ	ŋ/n
*ŋh	ŋ	h	h	ŋ	ŋ	ŋ/n

The denasalization of these sounds in southern Min, although in general outline like that for the other nasal initials, is exceedingly difficult to understand. With so few forms it is impossible to see much of a pattern. In Sw \*ŋ and \*ŋh become n before high front vowels. In a few words, all containing rounded medials, initial \*ŋ drops in some dialects but is preserved in others; e.g. 'I, me', 'outside' and 'tile'. Examples of \*ŋ and \*ŋh:

## PM \*ŋ

goose 鵞: Fc ŋie<sup>2</sup>; Am gia<sup>2</sup>; Cc go<sup>2</sup>; Ky ŋye<sup>2</sup>; Ko ŋye<sup>5</sup>; Sw ŋo<sup>2</sup>  
 fish 魚: Fc ŋy<sup>2</sup>; Am hi<sup>2</sup>; Cc hw<sup>2</sup>; Ky ŋy<sup>2</sup>; Ko ŋy<sup>5</sup>; Sw ŋ<sup>2</sup>  
 outside 外: Fc ŋie<sup>6</sup>; Am gua<sup>6</sup>; Cc gua<sup>6</sup>; Ky ŋye<sup>6</sup>; Ko ŋye<sup>6</sup>; Sw uai<sup>6</sup>  
 five 五: Fc ŋou<sup>6</sup>; Am gɔ<sup>6</sup>; Cc ŋou<sup>4</sup>; Ky ŋo<sup>5</sup>; Ko ŋu<sup>4</sup>; Sw ŋ<sup>3</sup>



silver 銀: Fc ɲyŋ<sup>2</sup>; Am gun<sup>2</sup>; Cc ɲɿŋ<sup>2</sup>; Dy ɲeŋ<sup>2</sup>; Ko ɲoiŋ<sup>5</sup>; Sw nin<sup>2</sup>  
 moon 月: Fc ɲuoŋ<sup>8</sup>; Am geŋ<sup>8</sup>; Cc gueŋ<sup>8</sup>; Ky ɲye<sup>8</sup>; Ko ɲye<sup>4</sup>; Sw ye<sup>6</sup>  
 jade 玉: Fc ɲuo<sup>8</sup>; Am gik<sup>8</sup>; Cc gek<sup>8</sup>; Ky ɲy<sup>8</sup>; Ko ɲy<sup>4</sup>; Sw ny<sup>6</sup>

## PM \*ɲh

moxa 𪗇: Fc ɲie<sup>5</sup>; Am hiã<sup>6</sup>; Cc hiã<sup>6</sup>; Ky ɲye<sup>6</sup>  
 ink-stone 𪗇: Fc ɲieŋ<sup>5</sup>; Am hi<sup>6</sup>; Cc hi<sup>4</sup>; Ky ɲaiŋ<sup>6</sup>; Ko ɲaiŋ<sup>6</sup>  
 forehead 𪗇: Fc ɲie<sup>8</sup>; Am hia<sup>8</sup>; Cc hia<sup>8</sup>; Ky nia<sup>8</sup>; Sw nia<sup>7</sup>

## 5.2. Conclusion

In this paper I have demonstrated that the initial system which must be postulated to explain Min tonal development is more complex than that of QY. Min tonal evolution is determined in part by a five-way division of the initials as shown in the following scheme:

(1) voiceless stops	p	p'
(2) softened voiceless stops	-p	
(3) aspirated voiced sounds	bh	mh
(4) plain voiced stops	b	
(5) plain nasals	m	
(6) softened voiced stops	-b	

The initials thus reconstructed represent an eight-way manner distinction at each point of articulation. It seems unlikely that a language could bear such a large number of distinctions simply as differences of manner. I have suggested that what I have called here softened stops may in fact be the reflexes of some kind of lost voiced prefix; it also seems likely that some of the other distinctions originated from the reduction of initial clusters of some type. It is not difficult to imagine possible systems, but with the available data it is impossible to substantiate any particular scheme. For that reason, I have not proposed anything of the sort and have rather chosen to symbolize the various distinctions in ways which I think are suggestive of the values in the modern dialects; in the one case of the voiceless or aspirated sonorants I symbolize the distinction so as to focus on its parallelism to one of the other sets.

The Shaowu dialect, while exhibiting traits ordinarily associated with the Kan-Hakka dialects (particularly the evolution of voiced stops to aspirates in all tones) is seen to be fundamentally a Min dialect, since the Min initial system is reflected in its tonal evolution, and indeed, the Shaowu tones can only be understood in light of PM phonology. But since Shaowu deviates from the typical Min dialects in so many other respects, perhaps it should be called a quasi-Min dialect. This dialect is an excellent example of how the conventional division of the Chinese

dialects into five or six groups fails to account for real historical connections in all cases. It also points up the usefulness of doing comparative work on individual dialect groups.

## Notes

- 1 Work for this paper was supported by the U.S. Office of Education, contract number OEC-0-9-097734-4516(041) and by the Chinese Linguistics Project at Princeton University.
- 2 Qieyun forms are cited in Karlgren's (1954) transcription except that the aspiration mark has been omitted after the voiced stops.

## References

- BODMAN, NICHOLAS C. 1955. Spoken Amoy Hokkien, vol. I. Kuala Lumpur: Government Federation of Malaya.  
 ———. 1958. Spoken Amoy Hokkien, vol. III Kuala Lumpur: Government Federation of Malaya.  
 CAMPBELL, W. 1913. A dictionary of the Amoy vernacular. Tainan: Ho Tai Hong Printing Factory.  
 CHEN, LEO and NORMAN, JERRY. 1965. An introduction to the Foochow dialect. San Francisco: San Francisco State College (mimeographed).  
 DOUGLAS, CARSTAIRS. 1899. Chinese-English dictionary of the vernacular or spoken language of Amoy. London: Presbyterian Church of England.  
 DOWNER, G. B. 1963. Chinese, Thai, and Miao-Yao. Linguistic Comparison in Southeast Asia and the Pacific, ed. by H. L. Shorto. London.  
 GOSPEL OF ST. MATTHEW, KIENYANG COLLOQUIAL. 1900. Foochow: Methodist Episcopal Mission Press.  
 HAUDRICOURT, A. G. 1961. Bipartition et tripartition des systèmes de tons dans quelque langues d'extrême orient. Bulletin de la société linguistique de Paris. 163-180.  
 HUANG, DIANCHENG. 1957. Jiànōu fāngyán chūtàn (Preliminary study of the Kienow dialect.) Xiàmén dàxué xuébào. 255-279.  
 HUIJI YASUTONG SHIWUYIN QUANBEN. 1916. Shanghai: Cuiying Shuju.  
 KARLGREN, BERNHARD. 1954. Compendium of phonetics in ancient and archaic Chinese. BMFEA 211-367.  
 LI, YONGMING. 1959. Cháozhōu fāngyán (the Chaochow dialect.) Peking: Zhonghua Shuju.  
 MACLAY, R. S. and BALDWIN, C. C. 1870. An alphabetic dictionary of the Chinese language in the Foochow dialect. Foochow: Methodist Episcopal Press.  
 NORMAN, JERRY. 1969. The Kienyang dialect of Fukien. Ph.D. dissertation, the University of California at Berkeley.  
 PEKING UNIVERSITY. 1962. Hànyǔ fāngyīn zìhuì (Phonetic dictionary of Chinese dialects.) Peking.  
 SÈNG-IŌ CŪING-SŪ (NEW TESTAMENT IN KIENOW DIALECT). 1922. Shanghai: Sheng-shu gong-hui chu-ban-she.  
 SHORTO, H. L. (ed.). 1963. Linguistic comparison in Southeast Asia and the Pacific. London: University of London, SOAS.  
 YUAN, JIAHUA. 1960. Hànyǔ fāngyán gàiyào (Sketch of Chinese dialects.) Peking.



## HAKKA IN WELLENTHEORIE PERSPECTIVE

Mantaro J. Hashimoto\*

Source: *Journal of Chinese Linguistics* 20, 1, 1992, 1-48.

### 1. Introduction

Among the five major dialect-groups of modern Chinese:

1. Northern Mandarin, e.g. Pekinese;
2. Wu, e.g. the Suzhou dialect and, more recently, Shanghainese;
3. Hakka, e.g. the Moiyan (Meixian) dialect;
4. Min, e.g. the Fuzhou and Amoy dialect;
5. Yue, e.g. Cantonese;

the Hakka dialects usually draw the least attention of modern linguists. Thus, studies on the Hakka are often only added toward the very end of a list of papers at conferences or in collected essays on Chinese dialects, apparently in order to complete the coverage of the major dialect-groups of Chinese.

Yet, the Hakka dialects offer copious, highly valuable data of the utmost interest to modern linguists, because of the unique formation of these dialects and their speakers' exceptionally long migration and firm ethnic unity. In particular, phonological data these dialects offer have some unusual, direct relevance to the study of Ancient and Archaic Chinese, because:

- a) since the time of Bernhard Karlgren, these old Chinese sound systems have not been reconstructed merely through the comparison of modern dialects, but by filling out the slots of sound categories (established by examining the construction of Chinese characters coined in the north, or found and determined in the old rime dictionaries and rime tables, compiled mainly the north) with the sound values corresponding to these categories in modern dialects, and:
- b) these Hakka speakers are believed to be the direct descendants of northerners who migrated to the south from the so-called Central Plains. This relevance is all the more valued, when one takes into consideration the systematic departure of Min

sound categories from the *Qieyun* / *Guangyun* system and the curious non-Chinese aspects of Yue dialect sound values (despite the beautiful correspondences of sound categories between the *Qieyun* system and, for instance, Cantonese).

In the past, Hakka phonological information has not been systematically utilized in reconstructing Ancient and Archaic Chinese, mainly because data from these dialects were not readily available in a well sorted-out form.

There have been quite a few developments in Hakka dialect studies since an extensive critical survey by the present author in the early 1970s.<sup>1</sup> Publications of book or monograph length include:

1. a classified lexicon of three major Hakka dialects, Moiyan (Meixian), Shiyen (Sixian) and Hoiliuk (Hailu) (1972)<sup>2</sup> with a multilingual index (1973);<sup>3</sup>
2. the first comprehensive phonological description of a Hakka dialect spoken in the New Territory of Hong Kong (1982);<sup>4</sup>
3. a traditional description of Shiyen (Sixian) Hakka grammar (1984);<sup>5</sup> and
4. a phonetic description of a related Gan dialect, the Fengxin dialect (1975).<sup>6</sup>

Comprehensive descriptions of either representative speech forms or individual dialects of Hakka are yet so meager that photo offset reprints of such dated works as Donald MacIver and M. C. MacKenzie's *Moiyan* (Meixian) dictionary of the early years of this century,<sup>7</sup> and Jian Xiangrong's *Shiyen* (Sixian) grammar of the prewar period<sup>8</sup> are still commercially feasible in Taiwan. Information on southern coastal Hakka is so scarce that an English translation of Simon H. Schaank's *Het Loeh-foeng Dialect* of 1897<sup>9</sup> is still useful.

Instead of offering a critical evaluation of these recent publications,<sup>10</sup> this paper endeavors to point out some of the interesting aspects of Hakka dialect studies as well as the current, most urgent tasks which have not been noted before and thus need immediate attention by modern linguists for the further development of Chinese linguistics.

### 2. Hakka as a major dialect group

The label "Hakka people" as used here refers to a limited group of southern Chinese residents who, after the initial move from the north, migrated toward the south into Guangdong Province from Jiangxi Province beyond the Five Ridges and then to various other parts of South China including Sichuan and Taiwan Provinces.

One of the most conspicuous features of the Hakka dialect is this label itself. Among the five major dialect-groups of Chinese, it is only Hakka, or *kejia* [*ke* meaning 'guest' and *jia* 'a people'], that does not adopt an areal term as the group's label.<sup>11</sup> One naturally suspects that this is not a regional dialect, yet not strictly a social one either. In any event, no systematic reexamination on the scientific nature of the Hakka dialect as a major dialect-group of Chinese has so far been explicitly attempted.

Being newcomers among the 'natives' in the Lingnan (South of the Five Ridges) area, Hakka speakers have endured much discrimination and group fights which often ended in a large-scale rebellion or local uprising, as typified by the



Taiping Rebellion. Even in China proper, a complaint against treating the Hakka as a national minority had been raised as late as 1958.<sup>12</sup> Discrimination such as this has kept the Hakka speakers' self identity unusually clear and their ethnic ties extraordinarily firm and lasting among the Han Chinese. A report, as recent as this year, on the Hakka dialect of Jiangxi mentions this feeling of ethnic awareness on the part of the Hakka speakers there.<sup>13</sup>

The Hakka dialect exhibits conspicuous phonetic features, such as the often mentioned fact that in Hakka all the Ancient *quanzhuo* ("completely muddy" = voiced obstruent) initials are pronounced as voiceless aspirated consonants. During the early period of modern Chinese history, when detailed information on the dialectal situation in China was not yet available, this fact was enough to set up a single dialect group for Hakka, comparable to the other major groups of modern Chinese dialects. However, with increased knowledge of modern Chinese dialects, particularly after the data and results of the 1957-1958 general survey of dialects in China were gradually published and became available to general public in various forms, it is now generally accepted that this phonetic feature, aspiration of all Ancient *quanzhuo* initials, is not unique to Hakka dialects. For instance, this feature is also found in a group of dialects spoken in northern Jiangsu, a relatively small group of dialects spoken in the border area of Hubei and Hunan,<sup>14</sup> several typical Hunan dialects,<sup>15</sup> and the so-called "Hakka subgroup" of dialects of Fujian<sup>16</sup>—to say nothing of the major dialects of Jiangxi.<sup>17</sup> Yet, the more we learn about the entire linguistic structure of the Shaowu dialect, one of the "Hakka subgroup", the clearer it becomes that this so-called "Hakka feature" is a very superficial one in Shaowu, and the dialect itself should definitely belong to the Min group.<sup>18</sup>

The clear division of Hakka from Gan, the dialects of Jiangxi, has always been disputed and some linguists simply put these two together to form a single group Gan-Hakka. It is thus that a single phonological feature of the historical origin of a tone category (namely, some of the Ancient *shang* ('rising') tones carried by the syllables whose initial consonant happened to be a nasal, liquid or glide merged with the Ancient *ping* ('level') tones carried by the syllables having a voiceless initial consonant) uniquely determines the Hakka dialects. This single feature characterization of the Hakka dialect presented more than a decade ago<sup>19</sup> had remained unchallenged until very recently.

This piece of Hakka linguistic history is quite unique with respect to the other dialect groups of Chinese, but the merger itself is nothing extraordinary in its phonetic-phonological nature. Contemporary tones corresponding to the Ancient *shang* ('rising') tones in some Jiangxi dialects maintain phonetic values of relatively higher falling tones (e.g. Nancheng and Wannian) or higher level tones (e.g. Lichuan and Qianshan) (even though these tones are carried by syllables having a nasal or liquid initial), while those corresponding to the Ancient *ping* ('level') tones maintain phonetic values of lower falling tones (e.g. Nancheng and Wannian) or lower level tones (e.g. Lichuan and Qianshan) respectively (even though these tones are all carried by syllables having a voiceless initial consonant).<sup>20</sup> In such a situation, a merger could easily take place between these tones. Small wonder that the present author himself recently—in fact much belatedly—realized that Yuen Ren Chao had already reported the presence of such a merger in the literary layer of the two Wu

dialects, Yixing and Wuxi, over half a century ago.<sup>21</sup> In addition, Prof. Kun Chang kindly drew the present author's attention to a recent report on an Anhui dialect, i.e. Taiping (Xianyuan), in which the Ancient *shang* ('rising') tones carried by syllables having a nasal, liquid, or glide initial, merged with those *ping* ('level') tones carried by syllables having a voiceless initial consonant, unless the present Taiping (Xianyuan) initial happens to be a palatalized [d].<sup>22</sup> The uniqueness of the Hakka change under consideration can now be questioned, though it is more than a coincidence that these similar changes mentioned above have so far been found only in the dialects spoken in those areas through which, or at least near which, the Hakka speakers passed in order to migrate further beyond the Five Ridges toward to south.

Another phonetic feature, namely that some Hakka labial and dental stops correspond to the other major dialect groups' labiodental fricatives and dental/retroflex affricates respectively, is often pointed out as one of the characteristics of the Hakka dialect. But these phenomena are too well known for Min and some Gan dialects, which are, in fact, more thorough and systematic in these dialects. Thus, this can hardly be defined as a genuine Hakka feature. If there is anything quite characteristic of Hakka, it would have to be some unique lexical elements, such as [*k'ioi'*] 'tired', etc. which can be found throughout Hakka dialects but not in dialects of any other major groups. But such lexical items are too fragmentary to uniquely define a major dialect group. The linguistic validity for isolating the Hakka group as one comparable to the major groups is yet to be scientifically established.

### 3. Hakka as a dialect wave

The Hakka people are widely believed to have migrated to South China "from the north"—from the Central Plains of China continent in particular. Numerous family records have been utilized to "prove" this legend or ethnic saga. But very clearly this is to a large extent nothing more than a popular belief. The orthodoxy of being former residents in the Central Plains—the main stage for the major political and cultural events in the entire history of ancient China—was indispensable and desideratum in order for the Hakka people to fight against the local southerners' prejudice.

#### 3.1. Hakka homeland in the north

Very few studies have ever questioned this legend—to say nothing of publicly challenging this popular belief. Quite to the contrary some linguists were obsessed by this belief, and were determined to find linguistic evidence to support the theory of the northern origins of Hakka.

For instance, Ting Pang-hsin in his article on Northern Chinese dialects, contributed to *Languages and Dialects of China*, searches for the homeland of Hakka in the north, asking himself why not a single modern Mandarin dialect maintains aspirates for all the voiced stop and affricate initials of Ancient Chinese, if indeed the Hakka people migrated from Shaanxi, Shanxi, and Henan. He was therefore very excited, when Gong Hwang-chen discovered that voiced stop and affricate initials of a twelfth century Northwestern Chinese dialect were utilized, regardless



of the tone of syllables these initials belong to, in order to transcribe aspirated voiceless initial consonants of the Tangut language described in Gule Maocai's pocket Tangut-Chinese dictionary, *Fan-Hanyu Heshi Zhangzhongzhu* ['Barbarian-Chinese Simultaneous Pearl in the Palm'].<sup>23</sup>

Although more fragmentary and sporadic, a similar phenomenon can be found in the Tibetan transcription of the same northwestern Chinese dialect from the eighth to ninth centuries, and Ting himself notices it. Yet, he does not seem to be bothered by the fact that less than a few decades later in the same Northwestern Chinese dialect, unaspirated initials correspond, again regardless of the tones of syllables these initials belong to, to Ancient voiced stop and affricate initials.<sup>24</sup> Ting mentions the presence of aspirated initials, throughout the four tones of Ancient Chinese, in modern dialects of Anhui and Jiangsu, pointed out by Kun Chang more than a decade ago,<sup>25</sup> which, ironically enough, include Ting's own dialect of Rugao.

Yet, he appears not to be aware that these modern dialects constitute a beautiful wave ring in the periphery of the Central Plains, a fact to which we will return.

### 3.2. Resemblances to the Jin dialect

The present author has also pointed out a "striking resemblance" of the Hakka tonal system to that of some Shanxi (Jin) dialects, the Central Shanxi (Jinzhong) dialects in particular, in this connection.<sup>26</sup> The tones of the Fenyang dialect from the Jinzhong subgroup are hardly distinguishable from those of the Ng-yan subgroup of Hakka. The resemblance includes the number, the historical origin, and the actual tone values (pitch contours) of these corresponding tones. The similarity of the tonal system even involves the sharing of the same set of morphemes carrying exceptional *rusheng* ('entering-tone') correspondents between Moiyian (Meixian) and Taiyuan, a representative of Shanxi dialects:

Toneme	Ng-yan (Hakka)	Fenyang (Shanxi)
1	[+legato -high -low -falling]	[+legato -high -low -falling]
2	[+legato -high +low -falling]	[+legato -high +low -falling]
3	[+legato +falling]	[+legato +falling]
4=5=6	[+legato +high -falling]	[+legato +high -falling]

Toneme	Ng-yan (Hakka)	Fenyang (Shanxi)
7	[-legato -high]	[-legato -high]
8	[-legato +high]	[-legato +high]

In other words, Hakka shows a striking similarity of the upper/lower (*yin-/yang*) split of entering-tone to the Taiyuan dialect even with respect to some exceptional words—a kind of correspondence which can not be dismissed as fortuitous.

The chart below shows the nineteen commonly used morphemes which constitute exceptional correspondences (a plus indicates the item is shared, and minus not shared):

	5 <i>lat</i> 'pungent'	5 <i>diat</i> 'to stumble'	5 <i>mat</i> 'to rub'
Moiyan	+	+	+
Taiyuan	+	+	+
Suzhou	-	+	-
Wenzhou	-	+	-
Linchuan	-	+	-
Canton	-	+	+
Chaozhou	-	+	+
Amoy	-	-	-
Fuzhou	-	-	+
	5 <i>lot</i> 'inferior'	5 <i>mat</i> 'socks'	5 <i>ngit</i> 'the sun'
Moiyan	+	+	+
Taiyuan	+	+	+
Suzhou	-	-	-
Wenzhou	-	-	-
Linchuan	+	-	-
Canton	+	-	-
Chaozhou	+	-	-
Amoy	-	-	-
Fuzhou	-	-	-
	5 <i>ngiok</i> 'harsh'	5 <i>cet</i> 'dwelling'	5 <i>ngiak</i> 'forehead'
Moiyan	+	+	+
Taiyuan	+	-	+
Suzhou	-	-	-
Wenzhou	-	-	-
Linchuan	+	+	-
Canton	-	-	-
Chaozhou	-	-	-
Amoy	-	-	-
Fuzhou	-	+	-



	5 <i>it</i> 'also'	5 <i>muk</i> 'wood'	5 <i>tut</i> 'sudden'
Moiyan	+	+	+
Taiyuan	+	+	+
Suzhou	-	-	-
Wenzhou	-	-	-
Linchuan	+	+	-
Canton	-	-	+
Chaozhou	-	-	-
Amoy	-	-	-
Fuzhou	-	-	-
	5 <i>muk</i> 'to tend cattle'	5 <i>liuk</i> 'six'	5 <i>liuk</i> 'dry land'
Moiyan	+	+	+
Taiyuan	+	+	+
Suzhou	-	-	-
Wenzhou	-	-	-
Linchuan	+	-	-
Canton	-	-	-
Chaozhou	-	-	-
Amoy	-	-	-
Fuzhou	-	-	-
	5 <i>iuk</i> 'to bear children'	5 <i>liuk</i> 'green'	5 <i>liuk</i> 'to record'
Moiyan	+	+	+
Taiyuan	+	+	+
Suzhou	-	+	-
Wenzhou	-	-	-
Linchuan	+	+	+
Canton	-	-	-
Chaozhou	-	-	-
Amoy	-	-	-
Fuzhou	-	-	-
	5 <i>muk</i> 'the eye'		
Moiyan	+		
Taiyuan	+		
Suzhou	-		
Wenzhou	-		
Linchuan	+		
Canton	-		
Chaozhou	-		
Amoy	-		
Fuzhou	-		

Out of these nineteen items, eighteen (seventeen, if we interpret that *tut* 'sudden' is not from Ancient \**duet* but from Ancient \**t'uet*) are shared with Taiyuan; even the Linchuan dialect of Gan (which as noted above some linguists regard as constituting

a single dialect-group with Hakka) shared only eleven [or ten], and the shared exceptions in other dialects are limited to four [or three] with Cantonese of the Yue group, two [or one] with Suzhou of the Wu group, and zero with Amoy of the Min group.

3.3. Distribution in a wave form

In pointing out the unquestionable similarities or resemblances between Hakka and Taiyuan mentioned in the preceding section, it was never taken into consideration until very recently<sup>29</sup> that all of this might be due to the simple fact that Hakka and Shanxi constitute the southern and northern portions respectively of the same dialect wave or waves which spread toward the peripheral regions of China, with the Central Plains as the center of all of these waves.

3.3.1. Nonaspirates in a wave form distribution

As was already reported by Yuen Ren Chao and his colleagues in the late 1940s,<sup>30</sup> in some Chinese dialects spoken in a narrow, southern peripheral zone of the great North China plains, i.e. the mountainous, southeastern corner of Hubei Province in the southern side of the Yangzi River [see Map 1], Ancient Chinese voiced stop and affricate initials went, regardless of the tones of the syllables these initials belong to:

- entirely to voiceless aspirates (thus merging with the descendants of Ancient voiceless aspirates, as for instance in the dialect spoken in the eastern half of Yangxin Prefecture of Hubei), as shown below:

Ancient Chinese				Yangxin			
<i>ping</i>	<i>shang</i>	<i>qu</i>	<i>ru</i>	<i>ping</i>	<i>shang</i>	<i>qu</i>	<i>ru</i>
p	p	p	p	p	p	p	p
b	b	b	b	p'	p'	p'	p'
p'	p'	p'	p'	p'	p'	p'	p'

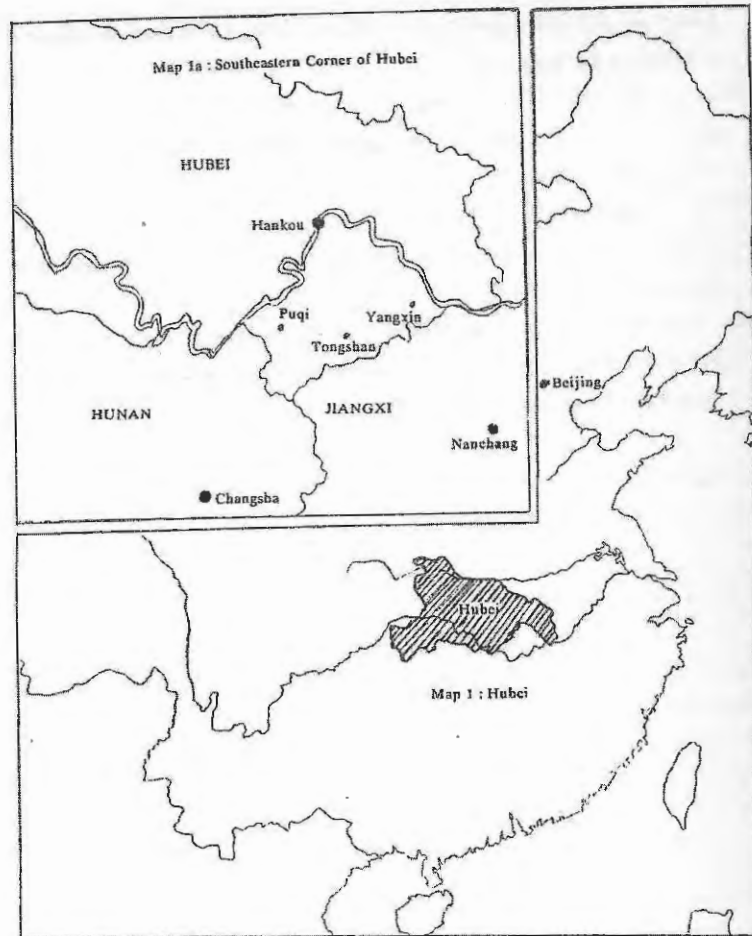
or:

- entirely to voiced aspirates (with which, curiously enough, the descendants of Ancient voiceless aspirates completely merged, perhaps after having become voiced, as for instance in the Puqi dialect, as shown below:

Ancient Chinese				Puqi			
<i>ping</i>	<i>shang</i>	<i>qu</i>	<i>ru</i>	<i>ping</i>	<i>shang</i>	<i>qu</i>	<i>ru</i>
p	p	p	p	p	p	p	p
b	b	b	b	b'	b'	b'	b'
p'	p'	p'	p'	b'	b'	b'	b'

- in a dialect spoken right next to those having voiceless or voiced aspirates, the same initials went entirely to voiceless nonaspirates (thus merging with





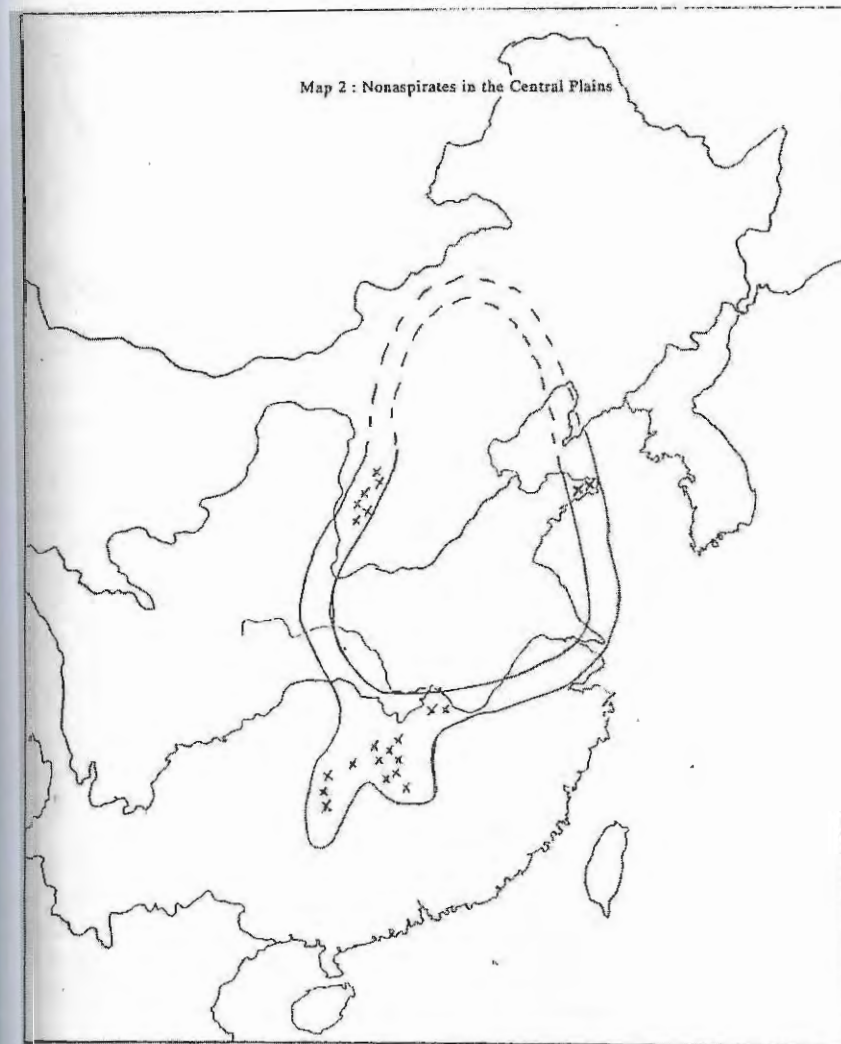
Map 1 Southeastern corner of Hubei

the descendants of Ancient voiceless non-aspirates, as for instance in the Tongshan dialect), as shown below:

Ancient Chinese				Tongshan			
<i>ping</i>	<i>shang</i>	<i>qu</i>	<i>ru</i>	<i>ping</i>	<i>shang</i>	<i>qu</i>	<i>ru</i>
p	p	p	p	p	p	p	p
b	b	b	b	p	p	p	p
p'	p'	p'	p'	p'	p'	p'	p'

This kind of drastic contrast of sound changes puzzled linguists for quite some time. As reported elsewhere,<sup>31</sup> during his field survey undertaken specifically to solve this puzzle, the present author realized that (see Map 2):

- 1) as reported by Yang Shi-feng of Academia Sinica,<sup>32</sup> dialects having voiceless nonaspirates throughout the tones as in Tongshan are spoken in the basins of three major rivers of Hunan, i.e. Xiang, Zi and Ruan, in the thirteen prefectures or cities of Hunan, i.e. Changsha, Ningxiang, Yueyang, Nanxian, Ruanjiang, Xiangyin, Xiangtan, Xiangxiang, Anhua, Qianyin, Huitong, Tongdao,



Map 2 Nonaspirates in the Central Plains



and, perhaps a dialect island, Anren (despite its appearance, Rucheng does not belong here);

- 2) Tongshan and the western half of Yangxin perhaps constitutes an isolated dialect island, separated by later waves of newer dialects from the above group located just beyond the southeastern edge of the Central Plains;<sup>33</sup>
- 3) the same type of changes are found, this time in the northwestern corner of the Central Plains, in the colloquial layer of a group of Shanxi dialects distributed in the seven prefectures around the central part of Shanxi Province, i.e. Taiyuan, Qingxu, Yuci, Wenshui, Pingyao, and Jiexiu;<sup>34</sup>
- 4) in the northeastern end of the Central Plains the same type of initials can be found in the two dialects spoken at the very tip of Shandong Peninsula, i.e. Rongcheng and Wendeng. The case of Rongcheng is very interesting; the same change can be found only in the dialect spoken in the surrounding suburban area, not in the city itself [the situation in the latter is already much influenced by standard Mandarin and these unaspirated initials all went to aspirates when carried by syllables having the *ping* ('level') tone.<sup>35</sup>

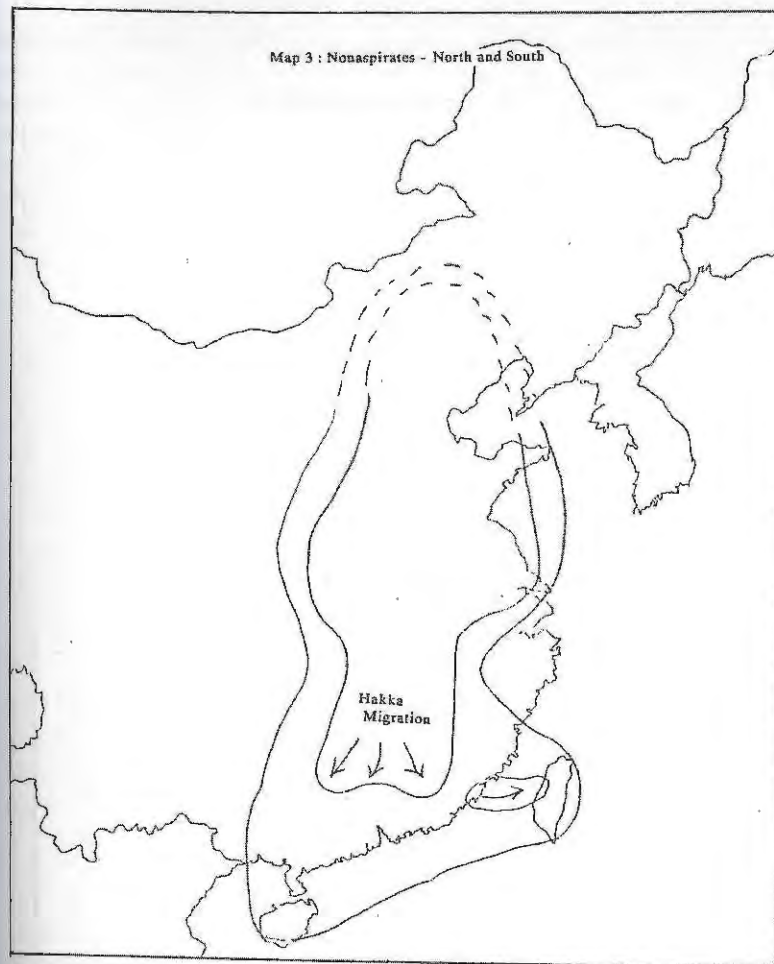
This clearly shows that the change in question is under constant assimilation to standard Mandarin in the Central Plains.

The distribution in the north of the Yangzi River only in the peripheral zones of the Central Plains clearly shows that the said change reflects a wave prevalent in the north before the standard Mandarin type (in which those Ancient voiced stops and affricates went to voiceless aspirates in case these initials belonged to syllables having the *ping* ('level') tone but, otherwise, to voiceless non-aspirates) spread all over the Central Plains. It is well known that the same type of non-aspirate initials with the *ping* ('level') tone occurs in Min<sup>36</sup> and some Yue dialects.<sup>37</sup> Thus there is the possibility that these dialects listed above constitute a larger wave as shown in Map 3.

### 3.3.2. Aspirates in a wave form distribution

What has been neglected is the fact that Northern Chinese dialects having aspirates for all Ancient voiced stops and affricates are also distributed in a belt surrounding the Central Plains [see Map 4]. We now recall and realize that:

- 1) During his survey of Shanxi dialects, the present author noticed some sporadic occurrence of aspirates in words having non-*ping* ('level') tones—in the colloquial layer in particular—for which the other dialects, including standard Mandarin, have nonaspirates, as for example, [*tɕ'in*<sup>4</sup>], instead of \**[tɕin*<sup>4</sup>], in the Anyi dialect in the northwestern corner of the Central Plains—though a little bit closer to the center of the Plains;<sup>38</sup>
- 2) Yang Shi-feng and Eugene Ching reports the same type of sporadic occurrence in the Lingbao dialect in the northwestern corner of Henan Province;<sup>39</sup>



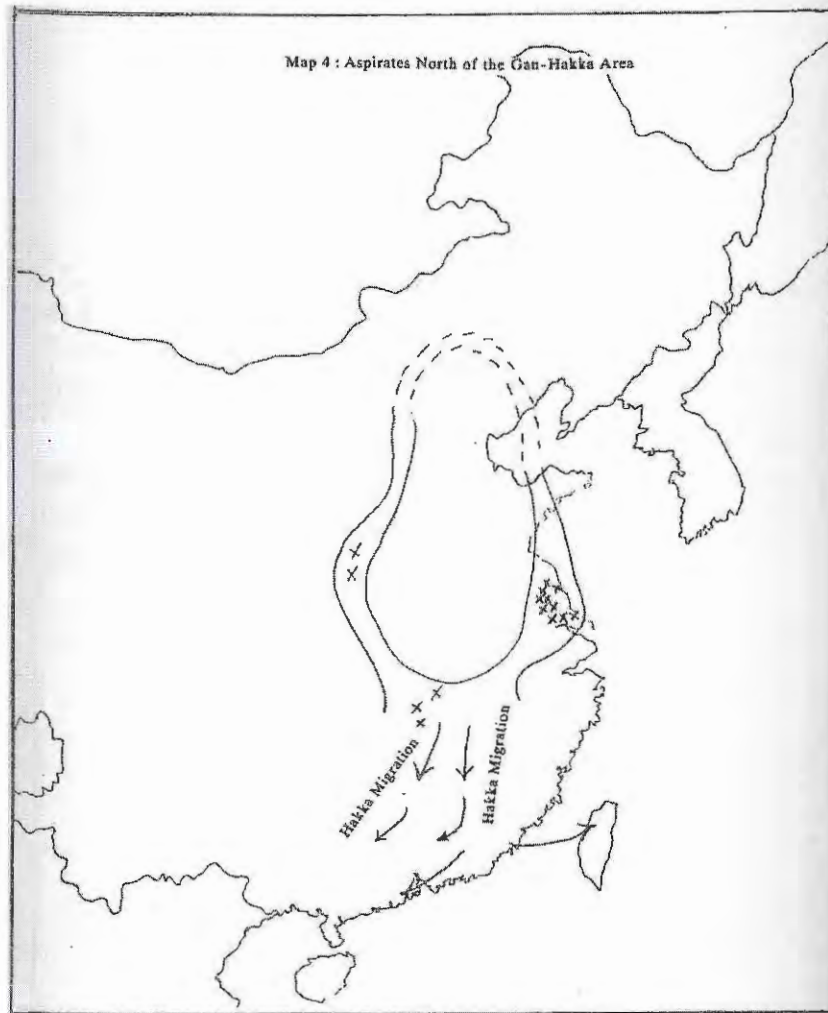
Map 3 Nonaspirates – North and South

- 3) Ting Pang-hsin reports that his dialect, Rugao of Jiangsu, has such aspirates only in the colloquial words; in Wang Jun's dialect, Nantong, aspirates in both literary and colloquial layers;<sup>40</sup>
- 4) The 1957-58 general survey of dialects in Jiangsu made clear that toward the very southeastern corner of Northern China north of the Yangzi River, dialects of the five coastal prefectures, i.e. Nantong, Rudong, Rugao, Taixing, and Xinghua, and one city, i.e. Nantong, most modern initials corresponding to Ancient voiced stops and affricates turn out to be aspirates, even though they belong to syllables having tones other than *ping* ('level'); in five other coastal prefectures, i.e. Taizhou, Haian, Dongtai, Dafeng, and Yangcheng, part, though not all, of the same type of initials turn out to be aspirates.<sup>41</sup>



See Map 4.

If all of these dialects really belonged to the same wave or waves surrounding the Central Plains, there may be some validity in the idea of a northern Chinese origin for the Hakka speakers, since after all, both Hakka and Shanxi dialects belong to the same wave from the Central Plains. However, this fact does not necessarily mean that the Hakka people literally migrated from where the Shanxi people nowadays reside. All one can theoretically conclude from this is that both of them should have a common origin somewhere in North China where they constituted the southern and the northern portions of the same wave or waves.



Map 4 Aspirates North of the Gan-Hakka area

The time has come for Chinese dialectologists to carry out extensive, unbiased reexamination on the geographical distribution of various dialectal phonological, morphological and syntactic features, beyond the conventional boundaries of the so-called major dialect-groups. Only on the basis of such observations can one understand the nature of certain historical data on Northern Chinese in a new perspective. For instance, the occurrences of nonaspirates regardless of tones in the phonetic annotations for the *Kaimeng Yaoxun* ['Important Instructions for Beginners'] of AD 929 in the extreme northwest of China (Dunhuang), which must have puzzled the late Luo Chang-pei very much,<sup>42</sup> can now be understood as belonging to the earlier wave, a portion of which still survives in the central dialects of Shanxi Province, while the occurrence of aspirates throughout four Ancient tones in the Tangut-Chinese sound equations found in Gule Mao'ai's *Fan Hanyu Zhangzhongzhu* of two centuries later, AD 1190, in the central part of northwest China (Xingqing, the present-day Yinchuan) should be affiliated with the later wave, a very small portion of which still survives in the colloquial words of the Lingbao dialect of Henan and of the Anyu dialect of Shanxi. Only with this perspective can we correctly understand the mutually conflicting phonological information these two historical documents provide us with.

#### 4. Contacts with other groups

While the sound system of Hakka dialects remains fairly homogeneous so that sound correspondences among Hakka dialects are relatively easily established,<sup>43</sup> those spoken in the peripheral parts of the Hakka speaking area underwent certain drastic changes.

##### 4.1. With northwestern Mandarin

Practically all Hakka dialects maintain the phonological distinction between *-m*, *-n*, *-ng* (and their corresponding homorganic stops, *-p*, *-t*, *-k*). Students of Chinese linguistics all know that a very clear parallelism between the loss of nasal and homorganic stop endings is observed with respect to practically all modern Chinese dialects (except perhaps for Mandarin).<sup>44</sup> Thus, when Ancient *\*-ng* went to *-n* in Mo'yan (Meixian), in case, it occurred with a high-front syllabic vowel, *-k* also went to *-t*; when Fuzhou lost the distinction between Ancient *-m*, *-n*, and *-ng* altogether and all the nasal endings went to *-ng*, the homorganic stop counterparts also all coalesced with each other and yielded *-?*). Among numerous Hakka dialects, the only exception is the Huayang dialect of Sichuan, which is spoken toward the northwestern end of the Hakka speaking area; this dialect underwent a complete change of the ending consonants, as reported by Dong Tonghe in the 1940s.<sup>45</sup> Huayang maintains the distinction between *-n* (from *-m* and *-n*) and *-ng*, even though the stop counterparts merged completely and ended up as *-?*, a distinctly Mandarin merger of ending segments.



Exactly how Huayang Hakka, to adopt the conventional way of speaking, 'underwent change', has never been seriously explored. These Sichuan Hakkas have been among Northern Chinese, more specifically Southwestern Mandarin, speakers for several centuries; thus, the Mandarin 'influence' behind these changes is undisputable. Yet, how that 'influence' actually took effect on the formation or transformation of Sichuan Hakka dialects has never been explicitly and systematically studied. Was it the case that the surrounding Mandarin speakers, at least those who came under the direct though perhaps a really limited Hakka domination within a speech community, accepted Hakka lexicon, morphology and syntax, even though they maintained their own phonology and, to some extent, phonotactics? Or did Hakka speakers simply imitate Southwestern Mandarin phonology and phonotactics, while they maintained their own lexicon, morphology and syntax?

Any inquiry into the actual mechanism of this structural transition will inevitably lead to theories of language change or transmission. The first explanation looks more reasonable for understanding what happened in the sound system of Sichuan Hakka, and yet seems highly unlikely, while the second explanation seems to be less reasonable yet very likely.

During the course of this kind of academic inquiry, one encounters certain highly intriguing questions. Why did Sichuan Hakka totally surrender to Southwestern Mandarin as far as its segmental phonemes are concerned, yet maintain its tonal system practically untouched? Does human language really evolve in three overlapping phases from gestures to suprasegmentals to segmentals, as William S-Y. Wang argues,<sup>46</sup> since suprasegmentals persist to this day in every known language, most prominently in the form of intonation systems? We ask these questions, because answers to these questions will shed much light on the disputes for the formation of Mandarin Chinese. Mandarin Chinese segmentals look clearly determined by those of Manchu, while it seems to maintain the typical 'Chinese' tones. For instance, only Mandarin Chinese constitutes an exception to the clear parallelism between the loss of nasal and homorganic stop endings mentioned above: Mandarin Chinese lost all stops and *-m*, yet maintains *-n* and *-ng*. Is this imbalance because the only possible ending consonants in Manchu are *-n* and *-ng*?

A fresh view will be required to solve all these puzzles.

#### 4.2. With Cantonese

Toward the southern end of the Hakka speaking area, Wuhua Hakka exhibits an unusual complication in tonal correspondences.<sup>47</sup> In order to avoid unnecessary complication in presentation, let us for the time being exclude from our discussion the tones carried by Hakka syllables having Ancient nasal, liquid, or semivowel initials.

We start with the situation in Ancient Chinese before it underwent a tonal split, as shown in Table 1.

Shortly after this period, it is believed that these tones split into two, in Late Ancient Chinese, conditioned by the voicing in the initials whose syllables these

Table 1

Ancient initial	1	2	
	<i>rising-tone</i>	<i>departing-tone</i>	
p, t, k, etc.	rising	departing	A
b, d, g, etc.			B

Table 2

Ancient Chinese	1	2	
	<i>rising-tone</i>	<i>departing-tone</i>	
p, t, k, etc.	u. rising	u. departing	A
b, d, g, etc. (> p, t, k, etc.)	l. rising	l. departing	B

tones were carried by, and a situation was brought about as shown in Table 2, in which both rising and departing tones underwent a bifurcation; thus the original two columns, 1 and 2, are now each subdivided into two:

- 1) intersections of Column 1 and Row A (upper rising) and of Column 1 and Row B (lower rising) for the shang ('rising') tone; and
- 2) intersections of Column 2 and Row A (upper departing) and of Column 2 and Row B (lower departing) for the qu ('departing') tone.

In the majority of Hakka dialects, the rising-tone syllables having Ancient voiced initials (hereafter 'voiced rising-tone' for short), namely, the intersection of Column 1 and Row B, all merged with the voiced departing tone, intersection of Column 2 and Row B, as shown in Table 3. We believe that Column 2 also once underwent a bifurcation and split into two portions, the intersections of Column 2 and Row A, and of Column 2 and Row B, but in the majority of Hakka dialects they later coalesced to form a single column, the same as the original Column 2, as shown in Table 4.

In Wuhua, half of the voiced rising tone syllables, the upper half of the intersection of Column 1 and Row B, namely the intersection of Column 1 and Row B, remained in the voiced rising-tone (and eventually merged with the rising-tone syllables having Ancient voiceless initials [hereafter, 'voiceless rising-tone' for short]). However, the other half, the intersection of Column 1 and Row B, merged with the departing-tone as in any other Hakka dialect. In addition, while the voiceless departing-tone syllables, the intersection of Column 2 and Row A, remained in the departing-tone, the voiced departing-tone, the intersection of Column 2 and Row B, all merged with the rising-tone, as shown in Table 5. Thus the lower half



Table 3

Ancient initial	<u>1</u>	<u>2</u>	
	<i>rising-tone</i>	<i>departing-tone</i>	
p,t,k, etc.	u. rising	u. departing	A
b,d,g, etc. (> p',t',k', etc.)	l. departing	l. departing	B

Table 4

Ancient initial	<u>1</u>	<u>2</u>	
	<i>rising-tone</i>	<i>departing-tone</i>	
p,t,k, etc.	rising		A
b,d,g, etc. (> p',t',k', etc.)	departing	departing	B

Table 5

Ancient initial	<u>1</u>	<u>2</u>	
	<i>rising-tone</i>	<i>departing-tone</i>	
p,t,k, etc.	rising	departing	1
b,d,g, etc.	(rising)	(rising)	B
(> p',t',k', etc.)	departing		2

Table 6

Ancient initial	<u>1</u>	<u>2</u>	
	<i>rising-tone</i>	<i>departing-tone</i>	
p,t,k, etc.	u. rising	u. departing	A
b,d,g, etc. (> p',t',k', etc.)	l. rising	l. rising	B

Table 7

Ancient initial	<u>1</u>	<u>2</u>	
	<i>rising-tone</i>	<i>departing-tone</i>	
p,t,k, etc.	rising	departing	A
b,d,g, etc. (> p',t',k', etc.)	rising	rising	B

of the intersection of Column 1 and Row B, i.e. the intersection of Column 1 and Row B, merged with the departing-tone, while the intersection of Column 2 and Row B merged with the rising tone.

Through the bifurcation of the voiced rising-tone syllables in Wuhua, one can clearly see that Wuhua has two distinct layers for morphemes having a voiced rising-tone—namely:

- 1) the Mandarin-type layer, in which the voiced departing-tone merged with the voiced rising-tone, i.e. the merger of the intersections of Column 2, Row B, with Column 1, Row B, as shown in Table 6, with difference: in Mandarin, the intersection of Column 1 and Row B merged with Column 2 and Row B. Subsequently, a change took place so that the distinction between upper and lower tones was lost, as shown in Table 7.
- 2) the Cantonese-type layer, in which no merger took place between the voiced rising-tone and the voiced departing-tone as shown in Table 8; but when the whole system underwent the loss of the upper vs. lower distinction, the voiced rising-tone, lower rising-tone, was paired with the voiceless departing-tone, upper departing-tone, and the voiced departing-tone was paired with the upper rising-tone, as shown in Table 9. This case of cross-pairing may sound quite unusual, but André-George Haudricourt reports abundant cases of such pairing, e.g. Man-Yao of North Vietnam (in which Upper Tone B merged with Lower Tone C, while Upper Tone C merged with Lower Tone B) or the Tai dialect of Lianshan, Yunnan (in which Upper Tone A merged with Lower Tone C, but Upper Tone C merged with Lower Tone B!).<sup>48</sup> Even in the Baoding dialect of Mandarin, spoken less than one hundred miles to the south of Peking, the lower rising-tone merges with the lower departing-tone in the nonfinal syllable of phonemic phrases, while it merges with the upper rising-tone in the final syllables.<sup>49</sup>

Table 8

Ancient initial	<u>1</u>	<u>2</u>	
	<i>rising-tone</i>	<i>departing-tone</i>	
p,t,k, etc.	u. rising	u. departing	A
b,d,g, etc. (> p',t',k', etc.)	l. rising	l. departing	B

Table 9

Ancient initial	<u>1</u>	<u>2</u>	
	<i>rising-tone</i>	<i>departing-tone</i>	
p,t,k, etc.	rising	departing	A
b,d,g, etc. (> p',t',k', etc.)	departing	rising	B



Table 10

Ancient initial	1	2	
	<i>rising-tone</i>	<i>departing-tone</i>	
p,t,k, etc.	rising	departing	A
b,d,g, etc.	rising		1
		rising	B
(> p',t',k', etc.)	departing		2

If we put these two types together to construct a diasystem, the result will be what is shown in Table 10—namely, half of voiced rising-tone, the intersection of Column 1 and Row B, turns out to be rising, just as in present-day Cantonese, though Cantonese still maintains the upper vs. lower distinction, and the other half, the intersection of Column 1 and Row B, turns out to be departing, just as in present-day Mandarin. This is what we saw in Table 1. We will return to the linguistic-geographical implication of this merger between the rising and departing tones.

### 5. The northern connection

Can we then define Wuhua as a variant of Hakka whose tonal characteristics were derived basically through contact with the Yue dialects, notably Cantonese? This is not entirely satisfactory.

Although basically a Hakka dialect, Wuhua Hakka maintains a clear connection with some of the northern Chinese dialects, the Wu dialects in particular, which can be seen in the intricate tonal sandhi system of the Suzhou dialect whose implication became known only very recently.<sup>50</sup>

#### 5.1. Developments of Hakka tones

The tonal correspondences of three major Hakka dialects, Moiyán (Meixian), Dabu, and Wuhua, with Ancient Chinese, as summarized in Yuan et al 1960,<sup>51</sup> include three sets of unusual cases of correspondence for the departing-tone:

- those merged with the upper level-tone, and
- those merged with the upper rising-tone, and
- those merged with the lower level-tone.

The first two correspond to the upper departing-tone (the 'voiceless' departing tone) and the last to the lower departing-tone (the 'voiced' departing-tone).

In fact, the similar type of 'unusual' merger with the level-tone can be observed with respect to the Hakka rising-tone. Furthermore, the merger is quite consistent throughout these three (and actually most other) Hakka

Table 11

Ancient initial	<i>rising</i>	<i>departing</i>
p,t,k, etc.	rising	upper level
b,d,g, etc.		departing
(> p',t',k', etc.)	(also rising in Wuhua)	(also rising in Wuhua) lower level

dialects. (In order to avoid unnecessary complication in the presentation in this paper, these mergers with the level-tone on the part of both rising and departing tones were intentionally excluded from the tonal correspondence tables in the preceding section).

It is not feasible in a discussion of this scope to examine the precise reasons underlying the historical fact that the rising-tone merger with the level-tone (though very regular and utterly consistent in most known dialects of Hakka) is limited to those syllables having Ancient nasal, liquid, or semivowel initials. Again, these mergers will be excluded from our discussion below in order to avoid unnecessary complication. The tonal correspondences we are going to discuss can be charted in Table 11.

What we witness here is a clear case of merger, at least in one layer of Moiyán, Dabu and Wuhua, between:

- the upper level and (upper) departing tones,
- the lower level and (lower) departing tones, and
- the (upper) rising and (upper) departing tones,<sup>52</sup>

in addition to the wide-spread merger of the voiced rising-tone with the voiced departing-tone which can be observed in almost any dialect of modern Chinese.

The above-mentioned unusual but consistent merger between the level and departing tones, and between the rising and departing tones has been regarded as one of the unique features of Hakka.<sup>53</sup> Recently, however, it was discovered that the same type of merger between the level and departing tones and between the rising and departing tones were behind the Shanghai-type dominance of initial syllable tones within polysyllabic words and phrases.<sup>54</sup> The phenomenon is most evident in the tone sandhi of the disyllabic words in the Suzhou dialect, as the latter constitutes a step before the Shanghai-type initial syllable dominance takes place.

#### 5.2. Tone alternations in Suzhou

According to Wang Ping's data and analysis,<sup>55</sup> on the surface the Suzhou dialect has the following seven tones (Tone 6 represents the merger of Tones 4 and 6):



tone category	tonal value	numerical notation
1 upper level	- high-level	[44]
2 lower level	- low-rising	[13]
3 (upper) rising	- low-falling	[41]
5 upper departing	- falling-rising	[523]
6 lower departing	- rising-falling	[231]
7 upper entering	- (glottal) falling	[43?]
8 lower entering	- (glottal) rising	[23?]

Since Tones 7 and 8 constitute a unique group of their own in the sandhi phenomena, we will exclude them from our discussion below.

Now, the way in which traditional Chinese linguistics analyzes and describes tonal sandhi phenomena (Wang's report being no exception) is to assume that these five tones appear in real phrases and sentences in the following "changed"-form:

tone category	original tone	"changed" tone
1 upper level	- [44]	[44]
2 lower level	- [13]	[13]
3 (upper) rising	- [41]	[41]
5 upper departing	- [523]	[52]
6 lower departing	- [231]	[23]

It is obvious that what is described as "changed tones" above are in fact the tones we encounter most in ordinary sentences and that what is described as "original tones" are those found only in the final syllables of phrases and sentences or in isolation. These "changed" tones may be regarded as the underlying forms of these tonemes and the "original" tones as derived forms which function to mark the end of a phrase or sentence.<sup>56</sup> The real difference in pitch contours between the so-called "changed" and "original" tones consists in the slight rising contour toward the end of a syllable having Tone 5 and the falling coda of Tone 6, both of which can be analyzed as parasitic codas to end an intonation with a neutral pitch.<sup>57</sup>

Now, in disyllabic words in Suzhou, the tone of the initial syllable has to be one of these five; the tone of the second syllable is always predictable in the following way, if it constitutes part of a compound word:

Rule 1

$$X \rightarrow \left\{ \begin{array}{l} [\text{high}(-\text{level})] / \text{Tones 2 and 5} \\ [\text{low}(-\text{level})] / \text{Otherwise} \end{array} \right\}$$

In other words, Suzhou disyllabic words maintain the five tones in their initial syllables, but overall show only five basic patterns in tone sandhi groups:

toneme combination	tone value	numerical notation
1. Tone 1 + Tone n	— high-level + low-level	[44]-[11]
2. Tone 2 + Tone n	— low-rising + high-level	[13]-[44]
3. Tone 3 + Tone n	— low-falling + low-level	[41]-[11]
4. Tone 5 + Tone n	— high-falling + high-level	[52]-[44]
5. Tone 6 + Tone n	— low-rising + low-level	[23]-[11]

Thus the tone sandhi phenomena in Suzhou look very simple and straightforward.

But this is only on the surface. If one examines the actual morphemes which are subsumed by the various types of toneme combinations listed above, Suzhou tone sandhi turns out to be both very interesting and highly puzzling. Upon close examination, one realizes that the five types of combination listed above in fact contain additional tone combinations, as follows:

- Surface Tone 1 + Tone n [44]-[11] in fact includes not only:  
Tone 1 + Tone n ex. fu<sup>1</sup>-ts<sup>1</sup>i<sup>1</sup> 'husband and wife'  
but also:  
Tone 5 + Tone n ex. kue<sup>5</sup>-hua<sup>1</sup> 'a fragrant olive'
- Surface Tone 2 + Tone n [11]-[44] in fact includes both:  
Tone 2 + Tone n ex. di<sup>2</sup>-ci<sup>1</sup> 'field chicken (frog)'  
and:  
Tone 6 + Tone n ex. lae<sup>6</sup>-ciaN<sup>1</sup> '(old) ginger'
- Surface Tone 3 + Tone n [41]-[11] in fact includes both:  
Tone 3 + Tone n ex. ci<sup>3</sup>-tsaN<sup>1</sup> 'how-many sheets?'  
and:  
Tone 5 + Tone n ex. pe<sup>5</sup>-cin<sup>3</sup> 'background scene'
- Surface Tone 5 + Tone n [52]-[44] in fact includes both:  
Tone 3 + Tone n ex. doe<sup>3</sup>-se<sup>1</sup> 'short cloth'  
and:  
Tone 5 + Tone n ex. poe<sup>5</sup>-cin<sup>1</sup> 'half a pound'
- Surface Tone 6 + Tone n [23]-[11] in fact includes both:  
Tone 2 + Tone n ex. min<sup>2</sup>-cia<sup>1</sup> 'famous home'  
and:  
Tone 6 + Tone n ex. ng<sup>6</sup>-tsaN<sup>1</sup> 'five sheets'

Note that on the surface Tone 5, for instance, merges sometimes with Tone 1 (the underlying *kue<sup>5</sup> hua<sup>1</sup>* (52)-(44) 'a fragrant olive' goes to *kue<sup>1</sup>-hua<sup>1</sup>* (44)-(11) on the surface), and sometimes with Tone 3 (the underlying *pe<sup>5</sup>-cin<sup>3</sup>* (52)-(41) 'background' goes to *pe<sup>3</sup>-cin<sup>1</sup>* (41)-(11) on the surface). But this does not mean that what is labeled Tone 5 can, and in fact should, be subdivided into two, Tones



5a and 5b for instance, since different mergers take place with respect to one and the same morpheme depending upon the environment in ways which are not phonologically definable. For instance, with respect to the same morpheme {pe<sup>5</sup>} 'the back', Tone 5 of this morpheme merges with Tone 1 when it occurs in *pe<sup>1</sup>-hy<sup>6</sup>* (44)-(11) 'back rear (=behind)' but with Tone 3 when it occurs in *pe<sup>1</sup>-cin<sup>3</sup>* (41)-(11) 'back scene (=background)'.

Since this has been clarified elsewhere,<sup>58</sup> it is not necessary to discuss in detail here how and why Suzhou shows this kind of extensive merger among its tonemes on the surface and what the implications of these mergers are. We will simply illustrate these mergers with Table 12, in which the tonemes linked by arrows undergo a synchronic merger in the direction of the arrow.

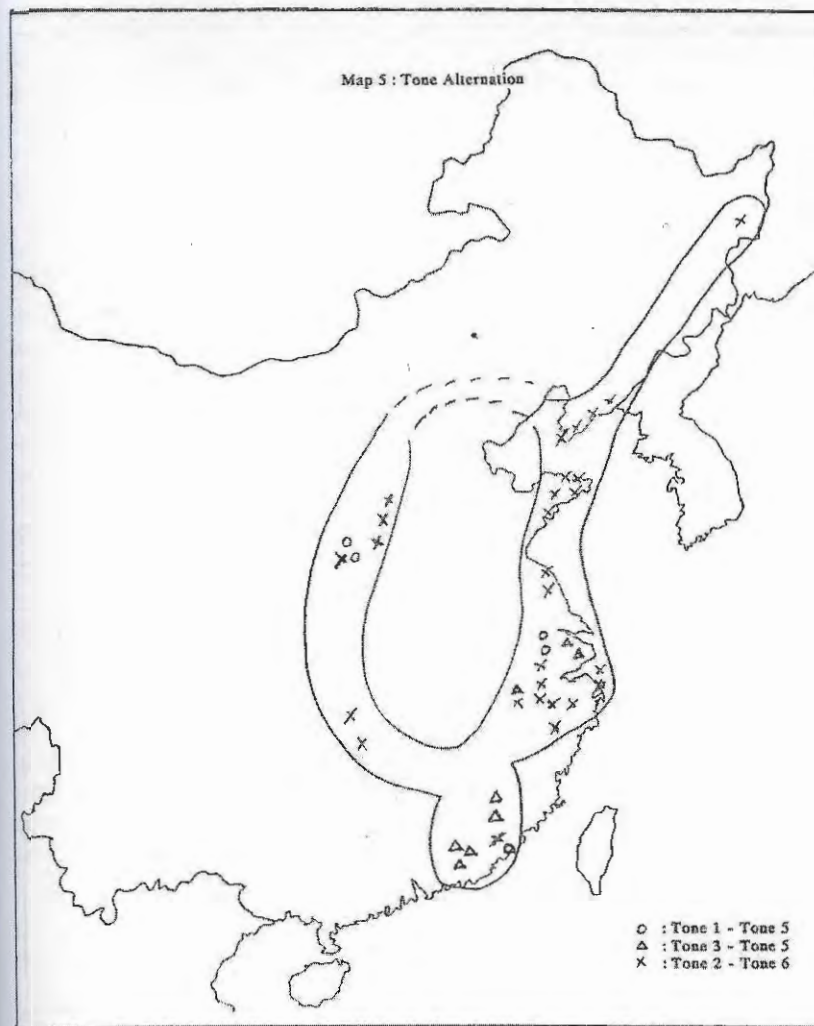
Table 12

ping	shang	qu
1	3	5
2		6

These mergers are in fact what we have seen in the three Hakka dialects discussed above, though in these Hakka dialects the mergers are not synchronic but historical.

Thus, what has been regarded as a unique tonal correspondence in Hakka now turns out to be what unites Hakka with the Wu dialects. What is of paramount interest is this: these mergers, synchronic and diachronic, should constitute part of a single dialect wave which surrounds the Central Plains, namely the same type of tone merger takes place in Chinese dialects spoken in the peripheral parts of the Central Plains, as shown in Map 5—just as in the case of the geographical distribution of those aspirates which correspond to Ancient voiced stops and affricates throughout the four tones and nonaspirates which correspond to Ancient voiced stops and affricates only when they carry the *ping* ('level') tone. This time the wave is not as round as in the case of those aspirates and nonaspirates mentioned above, but we know the reason:

- 1) the northeastern horn, the Hulin dialect of Heilongjiang is spoken by fairly recent immigrants from Liaoning; one should recall here that the Chinese were not allowed to migrate into Manchuria until the middle of the Qing dynasty.
- 2) the southern bulge is obviously caused by the southern migration of Hakkas.



Map 5 Tone alternation

Without these migrations, this wave would have been at least as round as the waves for aspirates and nonaspirates. See Map 5.

### 6. Concluding remarks

As was pointed out almost half a century ago by Willem A. Grootaers,<sup>59</sup> studies of the Chinese dialects in this century have been on the whole focused on the phonetic laws which relate all these dialects to Ancient Chinese. Chinese linguistics



has thus been concentrated on establishing hierarchical relationships among dialects in the field of dialect studies, and areal classification of dialects was one of the major concerns in relating these dialectal data with historical information. It is obvious that behind all of this is some bias from the Stammbaumthese on dialects and cognate languages. Linguists felt their primary task lay in identifying the unique feature or those feature combinations which define each dialectal group and which could point to the origin of the given dialect or dialect group.

During the earlier days of Chinese dialect studies, this was inevitable, as our knowledge on the contemporary situation of dialects in China was limited. With the increased knowledge obtained in the past few decades, we are now in a position to examine the dialectal situation in China primarily from the viewpoint of Wellentheorie. Even in the field of Indo-European studies, this kind of view or understanding on the principles for the development of languages came much later in the West European tradition of linguistic sciences—in fact only after linguists concerned themselves with the reality of linguistic developments in the Romance languages. The implication is that the case for Indo-European developments before the Christian era was special, with the well-known large-scale migration, for example, of the Germanic people or the far-reaching travels of Indo Aryans, etc. etc. When languages develop in a relatively stable environment, we need a different model for studying their developments. With the increased knowledge obtained in the past few decades, we are now in a position to examine the dialectal situation in China primarily from the viewpoint of Wellentheorie. We believe this is one of the most urgent tasks of modern Chinese linguistics. A very good example of new light to be shed through examining regional transitions in linguistic structure in Chinese was recently presented by Zhu Dexi,<sup>60</sup> who demonstrated that this research can be applied not only to phonology but also to syntax. He thus opened an entirely new field of syntactic studies, and increased our vistas for the future of Chinese linguistics.

### Notes

\* The paper was presented at the Conference on the Languages and Dialects of China, Oakland, California, in January 1986 (see *JCL* Monograph 3). The preparation of the present version is the work of Patrick Chew. [WSYW]

The original version of this paper was read at the Conference on Chinese Language and Dialects, organized by William S-Y. Wang with the support of the Wang Institute of Graduate Studies Chinese Studies Program, with the title "Current tasks of Hakka studies". Thanks are due to those who gave the author this chance, and to those who offered constructive comments and criticisms. Kun Chang, Hsin-I Hsieh, and William Labov were quick in recognizing the importance and "grandeur" of Hakka dialectal waves and offered particularly encouraging comments; Tsai-fa Cheng's speculation, offered in a written form, was thought-provoking. The author also much benefited from talking to Ting Pang-hsin and Wang Jun, whose information on the sound of their own dialects enabled the present author to rewrite the original paper. William L. Ballard, Shooji Hirata and Michael L. Sherard went through the original version and offered numerous comments and improvements, most if not all of which are with much appreciation

incorporated into the present version, together with all the additional comments from Ballard who read the rewritten version also. Chinese examples in this paper are given pseudo-phonetic/phonemic notation. Tones are marked with raised Arabic numerals given to the end of each morpheme. The ending segments of the so-called entering-tone syllables were originally given in their phonemic transcription, as entering-tones are marked as such throughout this paper. As anxiety was repeatedly expressed at the Conference, we followed the contemporary Chinese practice of marking both tones and stop endings for such syllables, even though we know that this is a typical case of overdifferentiation of sounds. [MJH]

- 1 Hashimoto 1973a, 15-34, together with the bibliography, 565-580.
- 2 Hashimoto 1972b.
- 3 Hashimoto 1973b.
- 4 Sagart 1982.
- 5 Luo 1984.
- 6 Yu 1975.
- 7 MacIver 1905.
- 8 Jian 1933.
- 9 Schaank 1979.
- 10 For Luo 1984, see Lamarre 1985.
- 11 Tsai-fa Cheng suggested the etymology of "Xia (summer, an ancient name for China)", "Hua (magnificent, a name for China)", and "Ya (elegant)" for Hak (Ke) of Hakka (Kejia), reconstructing the ancient pronunciations of these characters as \*gragx, \*gwarag, \*ngragx, and \*krak respectively and seeing "a striking resemblance in the phonetic shape[s]". He will have to establish a sound law with which the loss of the voicing can be reasonably explained, as the morpheme Hak (ke) occurs with the upper tone throughout modern Hakka dialects; the aspiration of the initial consonant for Hak (ke) ought to be reasonably introduced. However, even with a perfect sound law, etymologies like this are very difficult to prove. On the contrary, some syntactic evidence defeats this etymology. For instance, Hakka words for 'Hakka people' and 'guest' are [hak-nyin] and [nyin-hak] respectively, among which the word for 'guest' maintains the older word order of "head noun + attributive word", but not the word for 'Hakka people'.
- 12 Yin 1958.
- 13 Jiangsusheng 1960, map 2.
- 14 Chao et al 1948 and the present author's own survey in the autumn of 1984.
- 15 Yang 1974.
- 16 Pan et al 1963, Fujiansheng 1963, 155-206.
- 17 Yan 1986.
- 18 Norman 1974.
- 19 Hashimoto 1973a, 439-441.
- 20 Yan 1986, 37-38.
- 21 Chao 1928, 76.
- 22 Zhang 1983, 97-98.
- 23 Gong 1981.
- 24 Luo 1933, 75-94.
- 25 Chang 1975.
- 26 Hashimoto 1973a, 434-436.
- 27 Hashimoto 1973a, 431.
- 28 Hashimoto 1973a, 435.
- 29 Hashimoto 1983 and 1984, though waves in these studies are all for suprasegmentals.
- 30 Chao 1928, 76.
- 31 Chao et al 1948.
- 32 Yang 1974.



- 33 Presence of the nonaspirates corresponding to Ancient voiced stops and affricates with the ping ('level') tone in the western half of the dialects spoken in Yangxin Prefecture was discovered during the present author's survey in the autumn of 1984.
- 34 Chen-Li 1984, Hashimoto 1976-1977, Hou 1982 and 1985, Hu 1984, Jin 1983, Qiao 1983, Shen 1983, Wen 1983 and 1985, Yang 1983, Yang-Wang 1984, and Zhao 1984.
- 35 Qian 1981.
- 36 Li 1937, 123 and Li 1973, 4; Yue 1976a, 4, Yue 1976b, 5, and Yue 1985, 32-44.
- 37 Yue 1976a, 4 and Yue 1976b, 6-7.
- 38 The present author's survey of Mr. Qu Xue-li's An'yi dialect of Shanxi in the autumn of 1956.
- 39 Yang-Ching 1971.
- 40 Personal communication, January 1986.
- 41 Jiangsusheng 1960, map 2.
- 42 Luo 1933, 94.
- 43 Hashimoto 1973a, 439-441 and O'Connor 1976.
- 44 Hashimoto 1976.
- 45 Dong 1945.
- 46 Wang 1976.
- 47 Yuan et al 1960 (1983), 164.
- 48 Haudricourt 1961, 171 and 172; Haudricourt 1972, 72 and 73.
- 49 Hashimoto 1981, 153-154; Hashimoto 1985, 88-89.
- 50 Hashimoto to appear.
- 51 Yuan et al 1960 (1983), 164.
- 52 The definition "upper" here has to be put in parentheses, as most Hakka dialects, with the exception of some Hoiliuk (Hailu) dialects, underwent the merger of upper and lower *qu* ('departing') tones.
- 53 Yuan et al 1960 (1983), 164.
- 54 Ballard 1980 and Sherard 1979.
- 55 Wang 1983.
- 56 Hashimoto 1982.
- 57 Hashimoto 1981, 153 and 1985, 88.
- 58 Hashimoto to appear.
- 59 Grootaers 1943-1945.
- 60 Zhu 1985.

## References

- BALLARD, William L. 1980. On some aspects of Wu tone sandhi. *Journal of Asian and African Studies* 19, 83-163.
- CHANG Kun 1975. Tonal developments among Chinese dialects. *Zhongyan Yanjiuyuan Lishi Yuyan Yanjiusuo Jikan* [Bulletin of the Institute of History and Philology], Academia Sinica 46: 4, 636-709.
- CHAO Yuen Ren 1928. *Xiandai Wuyu de Yanjiu* [Studies in the Modern Wu dialects]. Qinghua Xuexiao Yanjiuyuan Congshu Di 4 Zhong [Tsing Hua College Research Institute Monograph No. 4]. Peking: Tsing Hua College. Reprinted together with the same author's *Xiandai Wuyu Diaocha Biaoge* [Survey Tables for Modern Wu Dialects] and published without the author's name from Peking: Kexue Chubanshe in 1956.
- CHAO Yuen Ren, Ding Shengshu, Yang Shifeng, Wu Zongji and Dong Tonghe 1948. *Hubei Fangyan Diaocha Baogao* [Report on a Survey of the Dialects of Hupeh]. Guoli Zhongyang Yanjiuyuan Lishi Yuyan Yanjiusuo Zhuankan [Monograph of the Research Institute of History and Philology, Academia Sinica]. Shanghai: commercial Press.

- CHEN Run-lan and Li Wei-shi 1984. Xiangyuan Fangyanzhi [A Description of the Xiangyuan Dialect]. *Yuwen Yanjiu Zengkan* 7. Taiyuan: Shanxisheng Shehui Kexueyuan Yuyan Yanjiushi.
- DONG Tong-he 1945. Huayang Liangshuijing kejiachua jiyin [A description of the phonetics of the Liangshuijing Hakka dialect of Huayang]. *Lishi Yuyan Yanjiusuo Jikan* [Bulletin of the Research Institute of History and Philology, Academia Sinica] 19, 81-210. Reprinted in Peking as a monograph from Kexue Chubanshe 1956.
- Fujiansheng Hanyu Fangyan Diaocha Zhidaozu and Fujiansheng Hanyu Fangyan Gaikuang Bianxiezu 1962. *Fujiansheng Hanyu Fangyan Gaikuang, shang* [An Outline of Fukien Dialects, I].
- Fujiansheng Hanyu Fangyan Diaocha Zhidaozu and Fujiansheng Hanyu Fangyan Gaikuang Bianxiezu 1963. *Fujiansheng Hanyu Fangyan Gaikuang, xia* [An Outline of Fukien Dialects, II].
- GONG Hwang-cherng 1981. Shi'er shijimo hanyu de xibei fangyan [A Chinese dialect of the end of the twelfth century]. *Zhongyang Yanjiuyuan Lishi Yuyan Yanjiusuo Jikan* [Bulletin of the Institute of History and Philology, Academia Sinica] 52:1, 37-38.
- GROOTAERS, Willem A. 1943-1945. La géographie linguistique en Chine - Nécessité d'une nouvelle méthode pour l'étude linguistique du chinois. *Monumenta Serica* 8, 103-166 and 10, 389-436.
- HASHIMOTO, Mantaro J. 1972a. The linguistic mechanism of flip flop. *Unicorn* (Chin) 10, 1-19.
- 1972b. *Hakkago Kiso Goishuu* [A Classified Lexicon of Three Hakka Dialects]. Tokyo: National Inter-University Research Institute of Asian and African Languages and Cultures.
- 1973a. *The Hakka Dialect: A Linguistics Study of Its Phonology, Syntax and Lexicon*. London and New York: Cambridge University Press.
- 1973b. *Hakkago Kiso Goishuu Sakuin* [A Multilingual Index to a Classified Lexicon of Three Hakka Dialects]. Tokyo: National Inter-University Research Institute of Asian and African Languages and Cultures.
- 1976. Language diffusion on the Asian continent: Problems of typological diversity in Sino-Tibetan. *Computational Analyses of Asian and African Languages* 3, 49-65.
- 1976-1977. Shingo shohoogen no hikaku kenkyuu, I, II, and III [A comparative study of the Jin dialects. Parts 1-3]. *Ajia Afurika Gengo Bunka Kenkyuu* [Journal of Asian and African Studies] 12 (1976), 11-58, 13 (1977), 77-127, and 14 (1977), 72-132.
- 1981. *A phonological characterization of syllabic intonations in the so-called tone languages*. Linguistics Across Continents: Studies in Honor of Richard S. Pittman. Linguistic Society of the Philippines Monograph Series Number II. Manila: Summer Institute of Linguistics (Philippines) and the Linguistic Society of the Philippines. 147-155.
- 1982. The so-called 'original' and 'changed' tones in Fukiense. *Bulletin of the Research Institute of History and Philology, Academia Sinica Memorial Volume for Yuen Ren Chao*. 645-659.
- 1983. Linguistic diffusion of Chinese tones. *Journal of Chinese Linguistics* 11:2, 247-300.
- 1984. Linguistic diffusion of Chinese tones: Observations on the latitudinal and longitudinal developments of Chinese syllabic intonations. *Journal of Asian and African Studies* 27, 1-51.
- 1985. 'Shengdiao yuyan' zhong yinjie yudiaode yinwei tezheng fenxi [A phonological feature analysis on the syllabic intonations of tone languages]. *Journal of Asian and African Studies* 29, 82-90.



- to appear. The historical background of Suzhou tone sandhi. Paper read at the Second Wu Dialect Study Conference, Tokyo, November 8, 1985.
- HAUDRICOURT, André-George 1961. Bipartition et tripartition des systèmes de tons dans quelques langues d'Extrême-Orient. *Bulletin de la Société de Linguistique de Paris* 56:1, 163-182.
- 1972. Two-way and three-way splitting of tonal systems in some Far-Eastern languages. *Tai Phonetics and Phonology*, Ed. by Jimmy G. Harris and Richard B. Noss. Bangkok: Central Institute of English Language, Mahidol University. 58-86.
- HOU Jing-yi 1982. *Pingyao Fangyan Jianzhi [A Description of the Pingyao Dialect]*. Taiyuan: Shanxisheng Shehui Kexueyuan Yuyan Yanjiushi.
- 1985. *Changzhi Fangyanzhi [A Description of the Changzhi Dialect]*. Shanxisheng Fangyanzhi Congshu. Beijing: Yuwen Chubanshe.
- HU Shuang-bao 1984. Wenshui Fangyanzhi [A Description of the Wenshui Dialect]. *Yuwen Yanjiu Zengkan* 10. Taiyuan: Shanxisheng Shehui Kexueyuan Yuyan Yanjiushi.
- JIAN Xiang-rong 1933. *Hyoojun Kanton Goten [A Standard Grammar of Cantonese]* (sic = Hakka). Reprinted in Taipei: Guting Shuwu 1974.
- Jiangsusheng he Shanghai Shi Fangyan Diaocha Zhidaozu 1960. *Jiangsusheng he Shanghai Shi Fangyan Gaikuang*. Nanjing: Jiangsu Renmin Chubanshe.
- JIN Meng-yin 1983. Lingchuan Fangyanzhi [A Description of the Lingchuan Dialect]. *Yuwen Yanjiu Zengkan* 5. Taiyuan: Shanxisheng Shehui Kexueyuan Yuyan Yanjiushi.
- LAMARRE, Christine 1985. Compte rendu, Luo Zhaojin: Keyu Yufa [Grammaire de hakka]. *Cahier Linguistique de l'Asie Orientale* 14:2, 279-282.
- LI Fang-kuei 1937. Languages and dialects. *The China Year Book*. Shanghai: Commercial Press. 121-128.
- 1973. Languages and dialects of China. *Journal of Chinese Linguistics* 1:1, 1-13.
- LUO Chang-pei 1933. *Tang-Wudai Xibei Fangyan [The Northwestern Dialects of Tang and Five Dynasties]*. Guoli Zhongyang Yanjiuyuan Lishi Yuyan Yanjiusuo Dankan Jiazhong zhi 12 [The National Research Institute of History and Philology, Academia Sinica Monograph Series A No. 12]. Shanghai: Commercial Press.
- LUO Zhao-jin 1984. *Keyu Yufa [A Hakka Grammar]*. Taipei: Taiwan Xuesheng Shuju.
- MacIVER, Donald 1905. *An English-Chinese Dictionary in the Vernacular of the Hakka People in the Canton Province*. Shanghai: American Presbyterian Mission Press.
- NORMAN, Jerry L. 1974. The Shaowu dialect. *Orbis: Bulletin International de Documentation Linguistique* 23:2, 328-334.
- O'CONNOR, Kevin A. 1976. Proto-Hakka. *Journal of Asian and African Studies* 11, 1-64.
- PAN Mao-ding, Li Rulong, Liang Yuzhang, Zhang Shengyu and Chen Zhanqai 1963. Fujian hanyu fangyan fenqu lüeshuo [A simplified account of the classification of Fukien dialects]. *Zhongguo Yuwen [Chinese Language and Writing]* 127, 475-495
- QIAN Zengyi 1981. Wendeng, Rongcheng fangyan zhong zhongguo quanzhuo pingshengzi de duyin [Reading pronunciation of the characters with Ancient Chinese voiced level-tone in the dialects of Wendeng and Rongcheng]. *Zhongguo Yuwen [Chinese Language and Writing]* 4 (1981), 294-296.
- QIAO Yusheng 1983. Hongtong Fangyanzhi [A Description of the Hongtong Dialect]. *Yuwen Yanjiu Zengkan* 6. Taiyuan: Shanxisheng Shehui Kexueyuan Yuyan Yanjiushi.
- SAGART, Laurent 1982. *Phonologie de Dialecte Hakka de Sung Him Tong*. Hong Kong: Chiu Ming Publishing Co., Ltd.

- SCHAANK, Simon H. 1979. The Lu-feng Dialect of Hakka. *Writing and Language Reference Materials* 5. Tokyo: National Inter-University Research Institute of Asian and African Languages and Cultures.
- SHEN Hui-yun. 1983. Jincheng Fangyanzhi [A Description of the Jincheng Dialect]. *Yuwen Yanjiu Zengkan* 4. Taiyuan: Shanxisheng Shehui Kexueyuan Yuyan Yanjiushi.
- SHERARD, Michael L. 1979. Syntactic constraints on tone sandhi in Shanghai. *Computational Analyses of Asian and African Languages* 10, 23-37.
- TING Pang-hsin 1986. Lun guanhua fangyan yanjiu zhong de jige wenti [Several problems in the study of Mandarin dialects]. *Languages and Dialects of China, Journal of Chinese Linguistics, Monograph No. 3*, 1991.
- WANG, William S-Y. 1967. Phonological features of tone. *International Journal of American Linguistics* 33:2, 93-105.
- 1976. Language change. *Annals of the New York Academy of Sciences* 280, 61-72.
- WANG Ping 1983. Suzhou fangyan liangzizu de liandiao geshi [Connected tone patterns of disyllabic words in Suzhou]. *Fangyan [Dialect]* 4, 286-296.
- WEN Duan-zheng 1983. Huairen Fangyanzhi [A Description of the Huairen Dialect]. *Yuwen Yanjiu Zengkan* 2. Taiyuan: Shanxisheng Shehui Kexueyuan Yuyan Yanjiushi.
- 1985. Xinzhou Fangyanzhi [A Description of the Xinzhou Dialect]. *Shanxisheng Fangyanzhi Congshu*. Beijing: Yuwen Chubanshe.
- YAN Sen 1986. Jiangxi fangyan de fenqu (gao) [An attempt at areal classification of Jiangxi dialects]. *Fangyan [Dialect]* 1 (1986), 19-38.
- YANG Shi-feng 1974. Hunan Fangyan Diaocha Baogao [Report on the Survey of Hunan Dialects]. Zhongyang Yanjiuyuan Lishi Yuyan Yanjiusuo Zhuankan zhi 66 [Institute of History and Philology, Academia Sinica, Special Publication No. 66]. Taipei: Institute of History and Philology.
- YANG Shi-feng and Eugene Ching 1971. Lingbao fangyan [The Lingbao dialect]. *Qinghua Xuebao [Tsing Hua Journal of Chinese Studies]* 14: 1-2, 106-147.
- YANG Shuzu 1983. Taigu Fangyanzhi [A Description of the Taigu Dialect]. *Yuwen Yanjiu Zengkan* 3. Taiyuan: Shanxisheng Shehui Kexueyuan Yuyan Yanjiushi.
- YANG Shuzu and Wang Ailu 1984. Qixian Fangyanzhi [A Description of the Qixian Dialect]. *Yuwen Yanjiu Zengkan* 8. Taiyuan: Shanxisheng Shehui Kexueyuan Yuyan Yanjiushi.
- YIN Meng 1958. Wei shemme ba kejiagua dangzuo shaoshu minzu yuyan [Why regard the Hakka dialect as a national minority language?]. *Zhongguo Yuwen (Chinese Language and Writing)* 74, 400.
- YU Zhifu 1975. *Fengxin Yinxi [The Sound System of the Fengxin Dialect]*. Taipei: Yee Wen Publishing Co., Ltd.
- YUAN Jiahua et al 1960. *Hanyu Fangyan Gaiyao [An Outline of Chinese Dialects]*. Peking: Wenzhi Gaige Chubanshe. 2nd ed. 1983.
- YUE Anne 1976a. Kodai chuugokugo gotoo shion no on'tairitsu [Phonological oppositions among Old Chinese initial consonants]. *Chuugoku Gogaku [Bulletin of the Chinese Linguistic Society of Japan]* 223, 2-5.
- 1976b. Substratum in Southern Chinese - the Tai connection. *Computational Analyses of Asian and African Languages* 6, 1-9.



- 1985. *The Suixi Dialect of Leizhou: A Study of Its Phonological, Lexical and Syntactic Structure*. Hong Kong: The Ng Tortai Chinese Language Research Centre, Institute of Chinese Studies, The Chinese University of Hong Kong.
- ZHANG Shengyu 1983. Taiping (Xian'yuan) fangyan de shengyundiao [Initials, rimes and tones of the Taiping (Xian'yuan) dialect]. *Fangyan [Dialects]* 2 (1983), 92-98.
- ZHAO Bingxuan 1984. Shouyang Fangyanzhi [A Description of the Shouyang Dialect]. *Yuwen Yanjiu Zengkan* 9. Taiyuan: Shanxisheng Shehui Kexueyuan Yuyan Yanjiushi.
- ZHU Dexi 1985. Hanyu fangyan li de liangzhong fanfu wenju [Two kinds of disjunctive question sentences in Chinese dialects]. *Zhongguo Yuwen (Chinese Language and Writing)* 184, 1-20.

## THE LEXICON IN SYNTACTIC CHANGE

### Lexical diffusion in Chinese syntax<sup>1</sup>

Anne Yue-Hashimoto

Source: *Journal of Chinese Linguistics* 21, 2, 1993, 213-53.

#### Abstract

Both documented and ongoing evidence in Pekinese, the Southern Min dialects and the Yue dialects of Chinese were presented as examples for language contact as a major actuation factor of syntactic change and for lexical diffusion as a major type of syntactic change. The emergence of the V-neg-V(P) question form in these dialects since as early as the mid 16th century (S. Min), late 19th century (Yue) or early 20th century (Pekinese) follows the route of first appearing with high-frequency verbs such as the copula, and/or the existential/possessive verb, then gradually spreading to the optative verbs, and finally to other types of verbs. While the exit of the old form may follow different routes, a revised two-dimensional view of 'competing change' can easily account for the differences.

#### 1. Background

It has often been claimed that the process of syntactic change in the Chinese language is mainly the process of grammaticalization. In traditional linguistic terms, many "full words" have become "empty words" or function words, creating new syntactic structures with "co-verbs" or "prepositions". The cases of the passive *bei* 被 and the disposal *ba* 把 construction are two famous examples.<sup>2</sup>

Although linguistic diffusion as a result of language contact has been discussed in the context of Chinese in the past decade,<sup>3</sup> there has been no conclusive evidence in the realm of syntax that linguistic diffusion is a major contributing factor of the change. The controversies centering around the issues of word order change as well as the emergence of the *bei* passive and the *ba* construction are notable examples of how the same syntactic change may be argued either as an internal process of grammaticalization or an externally motivated process of linguistic borrowing.<sup>4</sup> Unlike our predecessors who argued exclusively for one process over another, we



believe that both processes are important forces in shaping the development of the Chinese language. More important, however, is the understanding of how grammaticalization and linguistic diffusion work as forces of syntactic change.

In this paper, linguistic diffusion through the lexicon, or lexical diffusion, is explored as a major factor of syntactic change.

In the past century-and-a-half, linguists have been probing into the rules or "laws" of phonetic and phonological change, resulting in the famous neo-grammarians' law that "sound change takes place without exception." It was not until two decades ago that this view was challenged, and it was challenged in a most significant way for Chinese linguistics. For it was through research in Chinese dialects that the challenge was first launched.<sup>5</sup> This is the theory of lexical diffusion proposed by W. S-Y. Wang for phonological change that sound change, though phonetically abrupt, occurs gradually and spreads from one lexical item to another, contrary to the neogrammarian claim that sound change occurs abruptly and applies at once without exception. Since then, many examples have been drawn from various languages supporting this new theory.<sup>6</sup> However, they all relate to phonology;<sup>7</sup> as yet there is sparse conclusive evidence presented from syntax to support the theory, although it was as early as 1980 that the theory of lexical diffusion was first applied to historical syntax.<sup>8</sup> It was not until the past three years that there appeared a renewed interest in applying the lexical diffusion theory to syntax.<sup>9</sup>

Bennet 1981 attempted to find syntactic parallels to the lexical gradualness of a sound change. He defined a change as gradual "if logically possible intermediate stages between its end-points are attested;" and a syntactic change as gradual if stages 'between' (quotes are his) the old and new forms are attested. His conclusion is that evidence for an S-curve type of change in syntax is meager and that "it remains to be shown whether syntactic change has analogues of competing changes and residue."<sup>10</sup> Kroch 1989, taking mainly the rise of the periphrastic auxiliary *do* in late Middle English as example, argued that syntactic change seems to proceed at the same rate in all contexts. Tottie 1991, using the development of negation in English as his main example, supports the view that syntactic change proceeds gradually across the lexicon and argues that the high frequency of a lexical item or construction is a factor for linguistic conservatism. In other words, high frequency lexical items or constructions will undergo syntactic changes last.

In this paper, I want to present four separate examples of both documented evidence and ongoing evidence from Pekinese, the Southern Min dialects and the Yue dialects – especially Cantonese, for language contact as a major actuation factor of syntactic change and for lexical diffusion as a major type of syntactic change. In addition, our evidence supports the thesis of the gradualness of syntactic change as well as for the differential rate of syntactic change depending on grammatical categories, lexical classification or frequency of usage.

## 2. Recent developments in theory and dialectology

The Chinese mainland has seen the conglomeration of peoples for thousands of years. The Chinese language, manifested in its various dialectal forms, has

exhibited features that reflect the results of both external and internal contacts – contacts with non-Sinitic languages and contacts among Sinitic languages or dialects. In this paper, I shall limit my discussion to internal contacts and their effect on syntactic change.

In his epoch-making article of 1985, Zhu Dexi explored the syntactic typology of the A-not-A or neutral question forms<sup>11</sup> among the Chinese dialects and found two major patterns mutually exclusive in distribution in contemporary dialects: the V-not-V form<sup>12</sup> which occurs in Northern Mandarin, most dialects of Southwestern Mandarin, Yue, Min and most Wu dialects and the F-VP form which occurs in certain Southwestern Mandarin, Southeastern Mandarin and certain Wu dialects. However, counter evidence was soon presented, pointing out that there are dialects in which both types of question forms coexist.<sup>13</sup> Lien Chinfa aptly captured the situation as one in which "Zhu's observation is obviously based on an assumption that linguistic systems are homogeneous. His insight makes sense only if it refers to a stage in the past when the two types of dialects bearing the two said types of neutral question forms respectively had not come into contact."<sup>14</sup> The actual reality is of course a picture of constant linguistic interaction among the dialects. As a result, more often than not, we witness the coexistence of various systems within a single dialect. I have tried to explain this phenomenon in a wider perspective through the concept of syntactic stratification<sup>15</sup> and view the complexities in the interweaving of subsystems as merger from different linguistic strata formed along a temporal and spatial scale through linguistic contacts. In short, to explain the coexistence of different systems, one has to assume language contact as the cause and linguistic stratification as the result. What I had not observed at that time is the mechanism of linguistic change that relates the cause to the result.

Wang & Lien recently proposed a bidirectional diffusion among the coexisting systems in a language as an extension of the theory of lexical diffusion. They argue that "there is no conflict of lexical diffusion and a multi-layered linguistic system. This interactive model of sound change integrates internal change and contact-induced change. Contact-induced change involves a two-step process: (1) coexistence between native and borrowed elements and (2) interaction between these two strata."<sup>16</sup> Their new insight provides just the right model for describing a major type of syntactic change that relates language contact to the stratification of syntactic structure mentioned above.

In the following section, I shall present evidence in syntax that demonstrates how, under the impetus of language contact, a new syntactic pattern is introduced, spread and absorbed into a language through the lexicon.

## 3. Neutral question forms

Zhu 1985 advocates two major types of neutral question forms while elsewhere I argue for three major types, considering VP-neg as a major type on a par with V-not-V and F-VP or what I call ADV-VP<sup>17</sup> and not subsumed under V-not-V.



The present paper will follow this latter typological classification. V-not-V may have variants such as V-neg-V, VP-neg-VP, VP-neg-V or V-neg-VP. We may call VP-neg-VP the full form, in which the two VP's are identical; for example: *chi fan bu chi fan* 吃飯不吃飯? 'eat rice not eat rice = are you eating rice or not?' or *xiang qu bu xiang qu* 想去不想去? 'want go not want go = do you want to go or not?' VP-neg-V is what Zhu 1990 calls VO-neg-V. Since it includes questions of the type *chi fan bu chi* 吃飯不吃? 'eat rice not eat = are you eating rice or not?' and of the type *xiang qu bu xiang* 想去不想? 'want go not want = do you want to go or not?', it is perhaps more appropriate to call it VP-neg-V. Similarly, our V-neg-VP corresponds to Zhu's V-neg-VO and it includes both the type *chi bu chi fan* 吃不吃飯? 'eat not eat rice = are you eating rice or not?' and the type *xiang bu xiang qu* 想不想去? 'want not want go = do you want to go or not?'.

### 3.1 VP-neg-V versus V-neg-VP

Contrary to common belief that the patterns VP-neg-V and V-neg-VP are free variants for the V-not-V question form, a recent study by Zhu Dexi<sup>18</sup> established that these two patterns are of typological significance: the former type occurs largely in Northern Mandarin (except Shandong and Northeastern Mandarin) and the latter in Southwestern Mandarin, Hakka, Yue and Min. Before proceeding to discussion of these two patterns, a few words about the full form is in order. The full form seems to be on the road to extinction. We do not find any dialect that uses the full form exclusively. According to Zhang 1990, Old Pekinese and the Lanzhou 蘭州 dialect use both the full form and the VP-neg-V form but with higher frequency for the former; while the Huojia 獲嘉 dialect of Henan uses the full form and the VP-neg-V form with equal frequency.<sup>19</sup> There must have been a time when the full form was the exclusive form in some dialects in Northern Mandarin but was later replaced by the VP-neg-V form. The full form occurring in a handful of dialects is residue. The fact that this residual form occurs only in dialects that also employ the VP-neg-V form suggests that the latter may be an abbreviated form of the full form.

To return to the VP-neg-V and the V-neg-VP forms, there are many cases where both patterns co-occur within the same dialect – for example, Pekinese, Lanzhou 蘭州, Taiyuan 太原, Wuhan 武漢, Liancheng 連城 (Hakka).<sup>20</sup> This phenomenon can be explained as a result of syntactic borrowing via lexical diffusion. I shall first cite the example of Pekinese and illustrate the process of lexical diffusion.

#### 3.1.1 The Pekinese case

According to research carried out by Zhang Min through interviewing speakers of Pekinese and examining earlier as well as contemporary texts,<sup>21</sup> at the beginning of this century, only the VP-neg-V form is used in what he called Old Pekinese. Gradually, the V-neg-VP form from Southern Mandarin<sup>22</sup> crept in and by now the new generation aged under 35 speaking what he called New Pekinese has completely

incorporated the latter form into their syntax. How did this change come about? Did it happen overnight? What is the significance of this transformation?

Zhang 1990 cited some textual samples of the V-not-V question forms in Old Pekinese spoken around the beginning of this century, as exemplified in the conversations of the novel *Chun-A-shi* 春阿氏 published in 1914. Although the full form VP-neg-VP has the highest frequency of occurrence in the text, he also found many examples of VP-neg-V:<sup>23</sup>

1. 你的公公，婆婆，疼你不疼? (82)  
*ni-de gonggong, popo, teng ni bu teng?*  
your dad-in-law, mom-in-law, love you not love  
'do your father-in-law and mother-in-law love you?'
2. 究竟是親戚不是? (123)  
*jiujing shi qinqi bu shi?*  
after-all be relative not be  
'after all, is (he) a relative?'

As pointed out in Zhang 1990, of particular significance are the following two examples with disyllabic verbs:

3. 你曉得不曉? (115)  
*ni xiaode bu xiao-?*  
you know not kn- = 'do you know or not?'
4. 可以告訴我們不可? (119)  
*keyi gaosu women bu ke-?*  
may tell us not m- = 'can you tell us?'

showing the strong tendency of a VP-neg-V pattern which even splits disyllabic verbs in exactly the same way it dissects a VO structure.<sup>24</sup> In the entire text, only two examples bear the form V-neg-VP and both have the copula verb *shi* 是:

5. 你想是不是這個道理? (80)  
*ni xiang shi bu shi zhe ge daoli?*  
you think be not be this CL(assifier) reason  
'do you think it is this reason?'
6. 春英之死是不是范氏所害? (115)  
*Chunying zhi si shi bu shi Fanshi suo hai?*  
Chunying's death be not be Fan REL-PRO persecute  
'is Chunying's death due to Fan's persecution?'

We can safely conclude that at the beginning of this century, the most popular V-not-V question form in Pekinese is the full form but the VP-neg-V form has



also established itself. Moreover, one can observe the beginning of a new pattern V-neg-VP creeping into the language in questions with the copula verb.

As pointed out in Zhu 1990, the V-neg-VP form is native to the South. The invasion of this form into Old Pekinese is clearly due to language contact. With Beijing as the capitol of the nation, there are at all times people from all over the country. Southern influence is nothing new or surprising.<sup>25</sup>

Thus, the syntactic change in question is actuated by language contact. It started in questions with one of the most frequently used verbs, the copula, contrary to Tottie's claim that a high frequency lexical item may be deterrent to change.

How did this change proceed? Zhang 1990 examined 6 dramas written by Lao She 老舍 (totalling 350,000 characters) during the 'fifties and found 45 examples of V-not-V questions with nominal objects. Thirty-eight of these are in the form of VP-neg-V and only 7 are V-neg-VP. In addition, 6 out of these 7 contain either the copula or the verb *you* 有. For example:

7. 孟先生知道這回事不知道?  
*Meng xiansheng zhidao zhe hui shi bu zhidao*  
 Meng Mr. know this CL matter not know  
 'does Mr. Meng know about this matter?'
8. 有娃娃戴的小老虎帽兒沒有?  
*you wawa dai de xiao-laohu maor meiyou?*  
 have baby wear REL-MKR small-tiger hat not-have  
 (REL-MKR = relative clause marker)  
 'do you have a small-tiger hat for baby?'
9. 誰要擣女人呀? 是不是白二叔?  
*shei yao zou nüren ya? shi bu shi Bai er-shu?*  
 who want hit woman F.P. be not be Bai second-uncle?  
 (F.P. = final particle)  
 'who wants to beat women? Is it second uncle Bai?'
10. 學院裡現在還有沒有認識他的人?  
*xueyuan-li xianzai hai you meiyou renshi ta de ren?*  
 school-in now still have not-have know he REL-MKR person  
 'is there still someone at school who knows him?'

There are 19 examples with verbal objects in the form of V-neg-VP, among which 12 contain the copula and 7 contain optative verbs. For example:

11. 是不是欠了誰的債?  
*shi bu shi qian-le shei de zhai?*  
 be not be owe-PERF-ASP someone REL-MKR debt  
 (PERF-ASP = perfective aspect)  
 'is it the case of owing debts to someone?'

12. 能不能給我做一對拐子?  
*neng bu neng gei wo zuo yi dui guaizi?*  
 can not can for I make one pair crutches  
 'can you make a pair of crutches for me?'
13. 要不要投標呢?  
*yao bu yao tou-biao ne?*  
 want not want enter-a-bid F.P.  
 'do (we) want to enter a bid?'

There is only one example of V-neg-VP with a verb that does not belong to the three categories already mentioned:

14. 你信不信我的話呀?  
*ni xin bu xin wo-de hua ya?*  
 you trust not trust my words F.P.  
 'do you trust my words?'

Within a span of 40 years, the syntactic change in question gradually spread from questions with the copula to those with the existential/possessive verb and optative verbs, all high frequency daily vocabulary items. Its next step was creeping into other lexical items, as illustrated by the one example with the verb *xin* 信 above.

What is the current situation with respect to this change? Zhang 1990 examined 3 contemporary novels and dramas (totalling 610,000 characters) written in modern Pekinese, which contain 169 examples of V-not-V questions with object NP. Among these examples, only 9 are in the form of VP-neg-V; moreover, 8 out of these 9 examples have either the copula *shi* 是 or the existential/possessive verb *you* 有, which means that there is only one example with other kinds of verb.<sup>26</sup> In less than 40 years, the V-neg-VP pattern is completely absorbed and has won the battle over the VP-neg-V pattern. One important point to note here is the fact that: although *shi* 是 and *you* 有 are the first verbs to occur in the new pattern, they are also the last ones to survive in the old pattern.

Zhang 1990 also conducted a small-scale survey with 24 native speakers of Pekinese, 16 of whom were under 35 years old and 8 were above.<sup>27</sup> Ten sample V-not-V question forms were used, with 4 VP-neg-V forms (1a. *ni he shui bu he* 你喝水不喝? 'you drink water not drink = do you want to drink water?' 2a. *ni xin wo-de hua bu xin* 你信我的話不信? 'you trust my words not trust = do you trust my words?' 3a. *ni yuanyi qu bu yuanyi* 你願意去不願意? 'you be-willing go not be-willing = are you willing to go?' 4a. *ni xiang kan dianying bu xiang* 你想看電影不想? 'you want see movie not want = do you want to go to the movies?'), 4 V-neg-VP forms without aspects (1b. *ni he bu he shui* 你喝不喝水? 'you drink not drink water = do you want to drink water?' 2b. *ni xin bu xin wo-de hua* 你信不信我的話? 'you trust not trust my words = do you trust my words?' 3b. *ni yuanyi bu yuanyi qu* 你願意不願意去? 'you be-willing not be-willing go = are you willing to go?' 4b. *ni xiang bu xiang kan dianying*



你不想看電影? 'you want not want see movies = do you want to go to the movies?'), 1 V-neg-VP form where V is disyllabic (c. *ni yuan- bu yuanyi* 你願不願意? 'you willing not be-willing = are you willing?') and 1 with aspect (d. *ni chi mei chi bao* 你吃沒吃飽 'you eat NEG-PERF eat full = have you eaten to your fill?'). The results of his investigation are charted below:

	1a-3a	4a	1b-4b	c	d
New	65% (-)	70% (+)	95% (+)	80% (=)	70% (=, -)
Old	1a-2a 100% (+)	3a-4a (+, -)	1b-4b 80% (+)	c 25% (=)	d 12.5% (=)

(- = infrequent use; + = frequent use; = = acceptable)

Although the sample sentences are scanty and one may dispute the results, combined with the textual count of contemporary works mentioned earlier, it is obvious that in New Pekinese the V-neg-VP form is preferred over the VP-neg-V form and the tolerance threshold for VP-neg-V is very low. In Old Pekinese too, the V-neg-VP form is gaining ground while the VP-neg-V form has a strong foothold only in questions with less complicated verb phrases. If we combine New and Old Pekinese, 87% of the speakers frequently use the V-neg-VP form without aspect and where the disyllabic verb is not split.

The Pekinese example provides us with important explanation of the mechanism of syntactic change. We suggested earlier that the syntactic change in question is actuated by language contact whereas Zhang 1990 suggests that there is also internal motivation of simplicity and convenience for selecting the V-neg-VP form. However, it is difficult to understand why V-neg-VP is necessarily simpler or more convenient to use. For example, *chi fan bu chi* 吃飯不吃 or *xiang qu bu xiang* 想去不想 and *chi bu chi fan* 吃不吃飯 or *xiang bu xiang qu* 想不想去 employ exactly the same number of words; it is hard to claim that one form is simpler or more convenient to use than the other. In any case, even if there is internal motivation, the impetus clearly comes from outside. If the internal conditions for a change have been there all along, why is the change activated only at this very point? Therefore, we find it more convincing to attribute the cause of the change to external factor. Although we are NOT claiming that ALL syntactic changes are due to external factors, all four cases discussed in this paper are the results of language contact.

It is important to note that the syntactic change in question did not occur overnight in its entirety. The new form first appeared in the interrogative form in question with the copula *shi* 是 and the existential/possessive *you* 有 as main verb, followed by those with optative (or "auxiliary") verbs, and finally it spread to the said interrogative form with other types of verbs that take objects. Coexistence of both the new and the old forms is evident at each stage, with the new form encroaching upon an ever wider territory across the lexicon – from a few high-frequency verbs to the entire array of verbs. At present, both forms may be said to be free variants, but the battle has not seen its end yet. The process of change

clearly follows the path of lexical diffusion: it occurs gradually and spreads from one type of grammatical category to another until all types are covered.<sup>28</sup> Moreover, the change began with patterns with the most familiar and frequently used words, such as the copular sentence marked with *shi* 是 and the existential sentence marked with *you* 有.

### 3.1.2 A two-dimensional view of 'competing change'

Another important point already mentioned in the last section is that the very same high-frequency verbs are also the ones to linger in the old pattern, which is exactly what Tottie 1991 claims. Yet, our Pekinese case both contradicts and supports his claim. It may seem contradictory to have the very same forms both at the forefront and at the rear of one and the same syntactic change, if we view syntactic change or change in general as one form or one pattern replacing another form or another pattern.

The notion of 'competing change'<sup>29</sup> may help us solve the problem if some revision is incorporated. Within the current theory, 'competing change' implies the coexistence and competition of at least two choices. This coexisting and competing stage continues until the change is complete when one choice replaces the other. However, not all changes complete their course and there may be residues. So far we have only seen examples where residues are those forms that have never accepted the new change. So far our view is limited to the possibility that a change must necessarily imply replacement. In other words, our notion of 'competing change' is limited to one dimension.

With the Pekinese case, we want to argue for a different, two-dimensional view of 'competing change' where a new form or a new pattern enters the language and runs its own course of gradual victory and at the same time the old form or the old pattern independently runs its own course of gradual disappearance. Given the lexicon of a language, the new form or the new pattern will first attack a certain portion, which is mostly likely the most familiar and high-frequency items<sup>30</sup> as exemplified in the Pekinese case, competing with the old form or old pattern at all times along the way and gradually widening its scope of application over the rest of the lexicon. At the same time, the old form or the old pattern meets the challenge and tries to wage a battle of resistance, competing all along with the newcomer and trying to hold on to its old territory in the lexicon. There is evidently a long period of coexistence of both the old and the new over the same lexical items; so that forms like *shi xuesheng bu shi* 是學生不是 'be student not be = be a student or not', *you qian mei you* 有錢沒有 'have money not have = have money or not', *chi fan bu chi* 吃飯不吃 'eat rice not eat = eat rice or not' and *shi bu shi xuesheng* 是不是學生 'be not be student = be a student or not', *you mei you qian* 有沒有錢 'have not have money = have money or not', *chi bu chi fan* 吃不吃飯 'eat not eat rice = eat rice or not' are all acceptable, though each pair maybe at different times.

Now, when the old form or old pattern is losing ground, it may recede first from the familiar, high-frequency items or from the unfamiliar, low-frequency items. The



former is seen in the Yilan 宜蘭 dialect of Taiwan which will be discussed in section 3.2.1 and the latter is probably the case of Pekinese where we find 8/9 of the last examples of the old VP-neg-V pattern in contemporary texts to contain the high-frequency verbs *shi* 是 and *you* 有. This latter process of loss with the high-frequency items holding on to the very last seems to be in agreement with aphasic loss, in which high-frequency items and the items first acquired in a language are the last retained.

In conclusion, we view 'competing change' as consisting of two dimensions: the dimension of the incoming, winning new pattern following its own route across the lexicon and the dimension of the outgoing, losing old pattern also following its own route across the lexicon. These two routes may merge and we have step-by-step replacement in the process of change. However, they may be different and we have two processes happening independently with overlap sometimes. They may be illustrated in the following diagrams – (1) for the former type and (2) for the latter:

(N = new pattern, O = old pattern; X, Y, Z = different portions of the lexicon; a, b, c, . . . = different periods of time for completion of the process; + = occurring, - = non-occurring)

	X	Y	Z
a	N+ O-	N- O+	N- O+
b	N+ O-	N+ O-	N- O+
c	N+ O-	N+ O-	N+ O-

Diagram 1 Replacement

	X	Y	Z
a	N+ O+	N- O+	N- O+
b	N+ O+	N+ O+	N- O+
c	N+ O+	N+ O+	N+ O-
d	N+ O+	N+ O-	N+ O-
e	N+ O-	N+ O-	N+ O-

Diagram 2 Independent development

Diagram 2 represents only one of many possibilities that independent development may take. The main difference between the two diagrams is that for Diagram 1, each change is a replacement but for Diagram 2, it is not necessarily so.

With this new, two-dimensional view of 'competing change,' both the type of change described in Tottie 1991 and the type described in this section can easily be accommodated and accounted for.

### 3.2 VP-neg versus V-not-V

#### 3.2.1 Southern Min

The V-not-V form, which is characteristic of Northern Chinese, is gaining ground in the Southern dialects where the predominant neutral question form is VP-neg. I shall now turn to the Southern Min dialects. In general, the modern Southern Min dialects use the ADV-VP form or the VP-neg form for neutral questions. For example, in the Yilan dialect of Taiwan,<sup>31</sup> we may have:<sup>32</sup>

15a. *li be k'i bo?*      你卜去無?  
you want go NEG = 'are you going?'

or:

15b. *li kam be k'i?*      你(kam)卜去?  
you ADV want go = 'are you going?'

However, the V-neg-VP form is permitted in some dialects, especially when the verb is the copula, as for example in Yilan:<sup>33</sup>

16. *i si m si gilay nan?*      伊是(是)宜蘭人?  
he be not be Yilan person = 'is he from Yilan?'

Evidently the V-neg-VP form is working its way into the neutral questions in Southern Min. Is the process of syntactic change similar to the Pekinese case?

There is evidence that by the middle of the 16th century, the V-not-V form had already started to infiltrate Southern Min. The earliest extant colloquial document for the Southern Min dialects are the four versions of the *Litchi Mirror Tale* 荔枝鏡, <sup>34</sup> In these early documents, there are a total of 226 neutral questions, all but three have the structure of VP-neg. The three exceptions have the form of VP-neg-V and two of them contain the verb *you* 有 while one has the copula. These three examples are from the Jiajing 嘉靖 edition (1566), also the earliest extant edition.<sup>35</sup>

17a. (外) 有文書沒有 (page 1B, line 8)  
(Elder Brother) have official-document not have  
'is there an official document?'



- 17b. (外) 有啱沒有 (page 102B, line 7)  
(Elder Brother) have PARTICLE not have = 'did you?'
18. (末) 是實情不是 (page 78B, line 15)  
(Judge) be truth not be = 'is it the truth?'

These are clearly borrowed syntactic forms. Sentences (17a) and (17b) are loan forms on one more count: the lexical item 沒有 is not a native Min form (the corresponding native form should be 無). The borrowing is probably from some standard dialect of the time and it occurred in the same type of sentences with the same type of high frequency words most susceptible to change already noted above in the modern Pekinese case.

Since the introduction of the V-not-V question form into Southern Min some 400 years ago, subsequent editions of the *Litchi Mirror Tale* in 1581 (Wanli 萬曆 edition), 1651 (Shunzhi 順治 edition) and 1884 (Guangxu 光緒 edition) as well as other colloquial texts such as the *Golden Flower Girl* 金花女 (1583-1619?), *Su Liuniang* 蘇六娘 and the *Schoolmate and Zither Book* 同窗琴書記 (1782), do not show any occurrence of the new pattern. This could reflect a very slow progress at the initial stage of change after the new pattern was introduced or dialectal variation.

What is the current situation with regard to this change? It seems to vary among dialects. Neither the Taizhong 台中<sup>36</sup> nor the Shantou 汕頭 dialect<sup>37</sup> uses the V-not-V form at all and they represent the type of Southern Min dialects that are as yet unaffected by the appearance of the new syntactic form in question.

In the Zhangzhou 漳州 dialect,<sup>38</sup> the dominant neutral question form is ADV-VP, while the VP-neg form appears in questions with aspects or as alternants in questions not containing the copula, the existential/possessive or the optative verbs. Among the 59 examples investigated, there are only 3 in the V-not-V form, among which only one is in the V-neg-VP form. The sole V-neg-VP form has the copula verb. In the Yilan dialect, as we noted earlier, neutral questions are mostly rendered in the VP-neg form, although the ADV-VP form may sometimes be used.<sup>39</sup> Among some 80 examples of neutral questions, the V-neg-VP form occurs exclusively in copula sentences of which there are 6 examples and in emphatic sentences using the copula of which there are 4. An example of the latter type is:

19. *li si m si be lai?*      你是<sup>[e<sup>11</sup>]</sup>是<sup>[be<sup>33</sup>]</sup>來?  
'you be not be want come = ARE you coming?'

In these two types of sentences, the V-neg-VP form has replaced all other forms, although sometimes the ADV-VP form may be used for the emphatic type. There is no sign of V-neg-VP occurring in questions with the existential/possessive verb or with optative verbs. Thus, both Zhangzhou and Yilan represent the very beginning stage of the syntactic change in question.

An important point to note here is that while we found the VP-neg-V form in the early colloquial documents of the 16th century; in the modern dialects, we

found the V-neg-VP form. This indicates that the donor dialect in the 16th century is from Northern Mandarin while that in modern time is from Southern Mandarin. Another possibility is that the V-neg-VP form is of a late origin and did not exist in the 16th century. More documentary evidence is needed before conclusions can be made one way or another. However, the latter may seem more plausible for two reasons: the colloquial texts were supposed to be written in the style of the Chaozhou 潮州 and the Quanzhou 泉州 dialect, which are geographically far from the standard dialect of the capitol (present-day Beijing) of the time. If there had been a distinction of VP-neg-V versus V-neg-VP correlating with the North versus the South, the Southern form, due to geographical proximity, should have been of greater influence. Another reason is that we found a similar situation in Cantonese at the beginning of this century – no V-neg-VP form but VP-neg-V form –, as we shall see in section 3.2.2.

The last example of Southern Min to be discussed is Jieyang 揭陽.<sup>40</sup> In this dialect, the predominant neutral question form is VP-neg. However, among some 80 examples investigated, there were not a few V-not-V forms. All 6 examples with the copula were in the V-neg-VP form, just like in Yilan; and 9 out of 14 examples with optative verbs were also in the V-neg-VP form. There were even examples with other classes of verbs: half of the 14 examples with V-O were in the V-neg-VP form; 5 of the 12 examples with action verbs were in the V-neg-V form while 2 of the 14 examples with adjectives were also in the V-neg-V form. However, none of the 10 examples with the existential/possessive verb appeared with the V-not-V form. Thus, while the Jieyang case confirms the stages of lexical diffusion of the said syntactic change at la Pekinese as far as the copula and the optative verbs are concerned, there is a major departure with regard to the existential/possessive verb, which seems to be resistant to change in all of the Min dialects observed so far. As to why the existential/possessive verb, also a high-frequency lexical item in Southern Min, constitutes an exception needs further investigation.

### 3.2.2 Yue

Unlike the Southern Min dialects which have dramas and stories written in the colloquial language as early as the 16th century, no such documents are known to exist in the Yue dialects. The earliest extant colloquial materials are all textbooks compiled by missionaries learning the dialects. Most of these textbooks are written for standard Cantonese.<sup>41</sup>

Although the native neutral question form for the Yue dialects is VP-neg<sup>42</sup>, many modern dialects, particularly those around the delta area<sup>43</sup>, favor the V-neg-V and V-neg-VP patterns of the North except where aspects are employed. I shall take standard Cantonese as an example and trace the syntactic change from the last quarter of the last century<sup>44</sup> through various textbooks compiled for learners of Cantonese, such as *Forty Chapters of Random Prose* 駢語四十年 of 1877,<sup>45</sup> Ball's *Readings in Cantonese Colloquia of 1894 and Cantonese Made Easy* of 1924,<sup>46</sup>



Wisner's *Beginning Cantonese* 教話指南 of 1906,<sup>47</sup> Jones & Woo's *A Cantonese Phonetic Reader* of 1912 and O'Melia's *First Year Cantonese* 第一年粵語法 of 1938. The results are charted below:

	1877	1894	1906
VP-neg	18 VP[m]呢(12)/呀(1) VP未呢(5)	5 VP[m]呢(3) VP嗎(1)/麼(1)	26 VP[m]呢(11) VP[m]曾呢(11) VP嗎(4)
V-not-V			
VP-neg-V	12 有NP有(2)/呀(1) 有NP有呢(2) 有VP有(1)/呢(3) AuxVP[m]Aux呀(1) VO[m]V呢(1) 曉得[m]曉呢(1)	6 係NP[m]係(呢)(2) 係NP[m]係(1) 有NP有呢(2) AuxV[m]Aux呢(1)	29 係NP[m]係呢(7) AuxV[m]Aux呢(7) VO[m]V呢(4) 有VP有呢(8) 有NP有呢(2)
V-neg-V	9 S,好[m]好呢(2) V[m]V(1)/呢(4) 有有呢(2)	2 V[m]V呢(1) S,係[m]係呢(1)	19 V[m]V(呢)(12) S,好[m]好呢(5) S,係[m]係呢(2)
V-neg-VP	0	0	0
VP-neg-VP	0	VP[m]VP呢(1)	0

[m] = general negative marker; S = sentence; Aux = optative verbs; numerals indicate number of occurrences in the text)

	1883-1924	1912	1938
VP-neg	13 VP[m]曾呀/呢(8) VP未呀/呢(3) VP未曾呀/呢(2)	3 VP未呀(3)	26 VP未(呢/呀)(19) VP[m]呢(6) VP[m]曾(1)
V-not-V			
VP-neg-V	50 有NP有呢(15)/呀(9) 有VP有呀(5)/呢(5) VO[m]V呀(5)/呢(2) 係NP[m]係(呀)(6) AuxV[m]Aux呀2/呢	8 VO[m]V呀(4) AuxV[m]V呀(1) 有NP有呢(1) 有VP有呀(1) 知道[m]知呢(1)	25 有NP有(1)/呢(7) 係NP[m]係呢(7) 有VP有(1)/呀(4) 有VP有呢(1) VO[m]V呢(4)
V-neg-V	10 V[m]V呀(2)/呢(1) 係[m]係呢(2)/呀(1) 好[m]好呀(2) 有有(呢)(2)	11 V[m]V呀(5) V[m]V呢(1) 有有呀(3) 有有(2)	33 S,係[m]係呢(14) S,係[m]係(5) V[m]V呢(13) 有有呢(1)

	1883-1924	1912	1938
V-neg-VP	0	2 係[m]係NP(2)	13 係[m]係NP呢(5) V[m]VO(呢)(4) 係[m]係S呢(2) 有有NP呢(2)
VP-neg-VP	0	0	4 VP[m]VP呢(4)

The 1877 textbook distinguishes itself from the rest by having almost half of the neutral questions – 18 out of a total of 39 – in the VP-neg form. In addition, two-thirds of the VP-neg forms have the pattern <sup>VP+嗎</sup> +呢, a pattern native to the Yue dialects but gradually declining as time progressed. An example is:<sup>48</sup>

20. 嗰個人你中意佢唔呢? (5)  
that CL person you like him not F.P.  
'do you like that person?'

The V-not-V form had already established itself with the patterns of VP-neg-V and V-neg-V. With the VP-neg-V pattern, three-fourths of the examples involve the possessive/existential/ aspectual verb, for example:

21. 嗰張床有蚊帳冇呢? (8)  
that CL bed have mosquito-net not-have F.P.  
'does that bed have a mosquito-net?'

22. 你有點燈冇? (9)  
you have light light not-have  
'did you light the light?'

There is one example with an optative verb and one with a disyllabic verb treated like a VO structure, just as the cases in Pekinese discussed in 3.1.1:

23. 佢嘅說話你曉得唔曉呢? (26)  
his words you understand not under- F.P.  
'do you understand what he said?'

Example (23) shows that the VP-neg-V pattern not only entered the language but had firmly established itself. The only anomaly is that no example with the copula verb is found in the neutral question forms, which may be accidental, since the textbook does not seem to be compiled in a graded manner for beginners.

Examples from Ball 1894 are scanty. However, the pattern seems to be akin to Wisner 1906. By this time, already more than half of the neutral questions – nearly



two-third in Wisner – were in the V-not-V form, which means that by this time, the Northern pattern was already getting an upper hand.

Ball 1894 does not have examples with aspect markers. The VP-neg form has two major patterns: one where *neg* consists of the general negative marker [m] plus the question particle [ni] and the other where *neg* consists of a composite form of the merger of the general negative marker [m] plus the question particle [a] or [é], yielding [ma] or [mé] respectively.<sup>49</sup> For example:<sup>50</sup>

24. *nei ying tak ch'ut m ni?* 你認得出唔呢? (123)  
you recognize can out not F.P.  
'can you recognize?'
25. 想來我處賣餸嗎? (163)  
*söng loi ngo shü mai-ts'iu ma?*  
want come my place show-off-beauty F.P.  
'do you wish to come to woo me?'

Among the 26 VP-neg forms in Wisner 1906, almost half involve the aspect marker 曾 and half contain other kinds of verbs. Some examples are:

26. 你食飯唔飽呢? (lesson 15, p.11, henceforth 15.11)  
*nei shik faan m ts'ang ni*  
you eat rice not yet F.P. = 'have you eaten yet?'
27. 你話咁多夠唔呢? (34.23)  
*nei wa kom toh kau m ni*  
you say this much enough not F.P.  
'do you think this much is enough?'

Among the V-not-V forms, the 11 examples that contain the verb functioning either as the possessive verb or as the past tense marker:

28. 佢有書冇呢? (2.2)  
*k'ui yau shue mo ni*  
he have book not-have F.P. = 'does he have books?'
29. 你有去佢處冇呢? (3.3)  
*nei yau hui k'ui shue mo ni*  
you have go his place not-have F.P.  
'did you go to his place?'

may be interpreted as of the VP-neg form if we take 有 as parallel to 唔曾; on the other hand, 冇 is also a composite form of *neg* plus the existential/possessive verb 有 and so the pattern fits in with V-neg-V. In this paper, we shall take the second

interpretation, and treat 冇 as a verb. Among the VP-neg-V form, 7 have the copula 係, 7 contain optative verbs and only 4 involve other kinds of verbs. For example:

30. 佢係外國人唔係呢? (20.14)  
*k'ui hai ngoikwokyan m hai ni*  
he be foreigner not be F.P. = 'is he a foreigner?'
31. 使講價唔使呢? (9.6)  
*shai kong ka m shai ni*  
need talk price not need F.P. = 'do you need to bargain?'
32. 師奶喺處唔係呢? (18.13)  
*sznaai hai shue m hai ni*  
lady-of-the-house locate place not locate F.P.  
'is the lady of the house in?'

The 19 V-neg-V forms contain some 7 instances of tags such as 係唔係 (=是不是) 'yes or not', 好唔好 'okay or not'.

It is evident that by this time, the V-not-V form has entered Cantonese in the parts of the lexicon that contain high-frequency items such as the copula, the optative verbs, the possessive verb/past-tense marker as well as other parts of the vocabulary too.

Since Ball 1924 is a revised and enlarged edition of his original book of 1883, it is expected to include examples of both the late 19th and the early 20th century. However, it lacks the VP + [m] + Final-Particle type of VP-neg question form (that is, the VP-neg form containing no aspect marker, such as VP [m] found in Ball 1894 and Wisner 1906 and lacks an important new form (V-neg-VP) displayed in Jones & Woo 1912; therefore, it is best placed in a time span between Wisner 1906 and Jones & Woo 1912. In this textbook, some four-fifth of the examples of neutral questions are of the V-not-V form, and no example of the imperfective VP-neg form is found, which means that by that time, Cantonese was already very much like Mandarin, using the V-not-V form for neutral questions and the VP-neg form only for questions in the perfective. In other respects, the types of neutral question forms found in the textbook in question are very similar to those found in Wisner. Up to this point, of special notice is the fact that the V-neg-VP form has not appeared at all.

It was in Jones & Woo's *A Cantonese Phonetic Reader* of 1912 that we found 2 examples of the V-neg-VP form among a total of 24 neutral questions occurring in the text. Both contain the copula:

33. 係唔係中國算至大嘅城呀? (IV.20)  
*hai m hai tsɿkwək syn tsi ta:i ta:i kees seŋ a*  
be not be China count most big REL-MKR city F.P.  
'is it considered the biggest city in China?'



34. 隻船, 係唔係, 今晚開身去天津呀? (VII.1)  
*tse syn hai m hai kamma:n h isan həy t'intsæn a*  
 CL boat be not be tonight set-sail go Tianjin F.P.  
 'is the boat going to Tianjin tonight?'

This agrees completely with what Zhang Min found in the novel *Chun-A-shi* published about the same time in Old Pekinese. This is by no means coincidental, but confirms our observation that the syntactic change of V-neg-VP was actuated by language contact and started from questions with one of the high frequency item in the lexicon, the copula. In other respects, this text shows that the VP-neg form is on the decline. There are only 3 VP-neg forms with the negative aspect marker 未. It also shows that the VP-neg-V form has found its way into the entire lexicon. There are 6 examples with 有 as the main verb, 5 of which have the question ending with a tag-like 有:

35. 還有第二啲有冇? (V.20)  
*tsuŋ jau taijiti jau mou*  
 still have other have not-have = 'is there some other?'

and 6 other examples with all kinds of verbs. The remaining 6 examples are of the V-neg-V form and contain different kinds of verbs. In short, by this time, the V-not-V form was winning over the VP-neg form, with V(P)-neg-V as the predominant form, but with V-neg-VP entering the scene through the familiar lexical diffusion route.

By 1938, the V-neg-VP form has begun to cover questions with the possessive verb 有 as well as other types of lexical items than the copula verb. However, O'Melia made this note concerning the VP-neg-V versus V-neg-VP form with respect to 有: "It is a matter of indifference, or rather, of euphony, whether you say 你有錢有呢 or 你富有錢呢, i.e. whether you give the object before repeating the verb or vice versa."<sup>51</sup> This means that both forms coexist for a period of time until the V-neg-VP form wins over. Y.R. Chao's *Cantonese Premier* 粵語入門 of 1947 remarked that the V-neg-VP form – what he calls the 'close' form – is preferred,<sup>52</sup> and among the 34 examples of V-not-V questions with objects found in the text, only 4 have the form VP-neg-V while the rest have the form V-neg-VP. On the other hand, Huang & Kok, in their *Speak Cantonese* of 1960, gave both forms as choice-type questions, although they described the VP-neg-V form as placing emphasis upon the object.<sup>53</sup> As late as 1980, Gao Huanian 高華年 cited examples not only of both the VP-neg-V and the V-neg-VP types, but also the VP-neg type in his *Guangzhou Fangyan Yanjiu* 廣州方言研究. All these just show that while the new pattern is working its way through the lexicon, old patterns try to hold on to their former territories. The residual rate varies with speakers. As a native speaker of Hong Kong Cantonese myself, I have never used any form other than the V-neg-VP for neutral questions, for example.

To sum up, the introduction of the V-not-V question form into Cantonese, first the V(P)-neg-V and next the V-neg-VP form, follows more or less the same route and the same stages of lexical diffusion that we observed in Pekinese or in the Southern Min dialects.

At this point one might pose the question: did the syntactic change described in the three different cases above proceed via lexical item or was it determined by grammatical category – from copula to existential/possessive to optative, etc.? Can one explain the process of change by grammatical category alone? Both the copula and the possessive/existential verb in Chinese are one-item categories of high frequency usage. The optative verbs contain a small number of items, all of high frequency usage. The conditioning factor for change can be assigned to grammatical category alone if no other factor is involved at the same time and if one can show that the change proceeds in such a manner subsequently too. There is no evidence that when the change occurred, ALL optative verbs were affected at once or ALL transitive verbs of action, for example, were affected at once with no exceptions. Recalling the Jieyang dialect of Southern Min discussed at the end of section 3.2.1, none of the groups of examples categorized by verb classes in the V-not-V question forms occur without exceptions. Therefore, the more plausible, in fact, the only reasonable claim is that the change proceeded via lexical diffusion, beginning with high frequency verbs.

#### 4. The comparative construction

Another example of lexical diffusion in progress is the recent change observed in the comparative construction in a socially determined variety of Cantonese spoken in Hong Kong. For the comparative degree of comparison, the form **A + ADJ + 過 + B** (where ADJ stands for a comparative predicate and A, B the two terms for comparison) is used in colloquial speech; for example:

36. k'æy kou kuə ŋə 佢高過我  
 he tall surpass I = 'he is taller than I am'

However, recently the pattern **A + pei 比 + B + ADJ** of Northern Chinese has begun to creep into the literary stratum of Hong Kong Cantonese, beginning with structures with less colloquial expressions and with speakers who are more educated. Among a small number of speakers whom I investigated, those with less than high school education rarely use the *pei* 比 form, while those educated beyond middle school level use the *pei* 比 form typically within their circle but not with speakers below their educational level – for example, not with children or blue-collar workers. Or, within the speech of the same speaker, expressions with colloquial or vulgar words will prefer the use of *kuə* 過, for example:

37. k'æy kəŋj ε lek kuə ŋə 佢講得 [好] 過我  
 he speak smart surpass I = 'he speaks better than I do'



38. *k'æy tUk sy seŋ kuɔ ŋɔ* 佢讀書超過我  
 he read book smart surpass  
 I 'he studies better than I do'

The words *lek*<sup>5</sup> and *seŋ*<sup>35</sup> are colloquial and particular to Cantonese. In addition, in derogatory remarks, the *pei* 比 form is not used. However, the following sentence may have both variants depending on style — (a) is colloquial while (b) is literary:

- 39a. *k'æy tUk sy lek kuɔ ŋɔ* 佢讀書比我過我  
 he read book smart surpass I  
 'he studies better than I do'

- 39b. *k'æy tUk sy pei ŋɔ lek* 佢讀書比我過我  
 he read book compare I smart = 'ibid'

This is a case of sociolinguistic change via lexical diffusion. It is interesting to note that the route which the change takes, although determined by the style of speech — formal versus informal — is at the same time determined by the type of vocabulary — vulgar versus refined, since the style of speech is to a great extent determined by the lexical item employed.

### 5. Concluding remarks

Syntactic change is lexically gradual,<sup>54</sup> with analogues of competing changes and residue. The rate of change varies, depending on individual dialects and individual speakers and is hard to generalize. The higher the frequency of use of a lexical item the more susceptible it is to syntactic change and at the same time may also be the more resistant to extinction. Evidence for lexical diffusion abounds in the syntax of many dialects. I have selected here the most obvious cases supported either by historical documents or witnessed in its process as the beginning of further research into lexical diffusion in Chinese grammar.<sup>55</sup>

### Notes

- 1 The writing of this paper and the collection of dialectal information on which this paper is based, are supported by research grants from the National Endowment for the Humanities (grant #RO-22033-90) and the Chiang Ching-kuo Foundation. An earlier version was read at the Third International Symposium on Chinese Languages and Linguistics at the National Tsing Hua University in Hsinchu, Taiwan, July 1-3, 1992. I am indebted for Professor William S-Y. Wang for his suggestions while revising this paper.
- 2 All standard Mandarin forms are given in Pinyin romanization without tone marks.
- 3 See for example Hashimoto 1978, 1987.
- 4 For an overview of the controversies, see Peyraube 1988.
- 5 See W. Wang 1969 and 1979.
- 6 See W. Wang 1977 and 1989 for some prominent examples.

- 7 Very recently, the theory is being applied to historical lexicology, or changes in the (total) lexicon of a language. See Fischer 1989.
- 8 See Mei 1980 and Bennet 1981.
- 9 So far there are only five published papers — Kroch 1989, Cheng 1990, 1991; Her 1991 and Gunnell Tottie 1991 — and several unpublished ones — Cheng 1989, Hsieh 1989 and Ogura 1991.
- 10 See Bennett 1981, especially pp. 115, 120, 130.
- 11 A-not-A question forms refer to the so-called *fanfu wenju* 反復問句 or *zhengfan wenju* 正反問句 in Chinese, which are generally regarded as a kind of disjunctive question with the two disjuncts being the affirmative and the negative of a proposition. See for example W. Wang 1967. A different view is expressed in Huang 1988. Since there is confusion regarding the use of the term 'V-not-V' or 'A-not-A' to cover Zhu's two major types of questions, VP-*bu*(不)-VP and F-VP, we prefer to use the term 'neutral question' as suggested in Yue-Hashimoto 1988.
- 12 Zhu terms it 'VP-*bu*(不)-VP'. Since his VP-*bu*(不)-VP covers V-neg-V (e.g. *chi bu chi* 吃不吃? 'eat not eat = are you eating or not?'), VP-neg-VP (e.g. *chi fan bu chi fan* 吃飯不吃飯? 'eat rice not eat rice = are you eating rice or not eating rice?'), VP-neg-V (e.g. *chi fan bu chi* 吃飯不吃? 'eat rice not eat = are you eating rice or not?') and V-neg-VP (e.g. *chi bu chi fan* 吃不吃飯? 'eat not eat rice = are you eating rice or not?'), as we shall see in the following sections, we shall use 'V-not-V form' as the cover term to avoid confusion.
- 13 See for example S. Wang 1985 and Shi 1990. Actually among the majority of dialects we investigated, more than one type of neutral question forms coexist, as we shall see in section 3.
- 14 Quotations from personal communication.
- 15 See Yue-Hashimoto 1991.
- 16 Quotations from personal communication with Lien Chinfa.
- 17 See Yue-Hashimoto 1988, 1992a and 1992b for details.
- 18 See Zhu Dexi 1985 and 1990.
- 19 See He 1990, 1991.
- 20 Examples are all taken from dialects that either I myself or my colleagues of the Comparative Chinese Dialectal Grammar Project (supported by the NEH and the CCKF) investigated in detail. More examples can be found in Zhang 1990.
- 21 Information is taken from Zhang Min's unpublished dissertation. At the time when he wrote the dissertation, he was not aware how important his data were in providing what I consider decisive evidence supporting lexical diffusion in syntax. Discussions of this section are entirely based on his account. See Zhang 1990, especially pp. 72, 76-79. Subsequently, at my suggestion, Zhang Min uncovered more examples of lexical diffusion among the dialects he investigated and presented a paper in absentia at the First International Conference on Chinese Linguistics in Singapore in June, 1992. However, at the writing of this paper, his paper was not available to me.
- 22 It is beyond the scope of the present paper to bring up arguments concerning the probable homeland of the V-neg-VP form, which is discussed in Yue-Hashimoto 1992b. The encroachment of the V-neg-VP form into New Pekinese is mostly likely from contact with Southern Mandarin.
- 23 The V-not-V form with aspects, as with the great majority of dialects, is VP-*meiyou* 沒有 which can be considered either a VP-neg-V form (if one considers aspects to be derived from verbs) or a VP-neg form (if one allows *neg* to include cases of the combination or merger of the negative marker and aspects or final particles). Either analysis does not affect our main contention in this paper.
- 24 Zhu 1990 cites similar examples from the novel *Golden Lotus* 金瓶梅 of the Ming dynasty. See Zhu 1990, p. 222.
- 25 We can cite a very recent example of borrowing a **Verb + Destination** word order which is characteristic of the South, into standard Mandarin which native word order is



- dao** 到 + **Destination** + **Verb**. As a result, both forms are currently used. For example, *ta qu-le Beijing* 他去北京 'he go PERFECTIVE-ASPECT Beijing = he went to Beijing' is now as acceptable as *ta dao Beijing qu le* 他到北京去了 'he to Beijing go FINAL-PARTICLE = he went to Beijing'.
- 26 For details, see Zhang 1990, pp. 77-78.
- 27 See Zhang 1990, p. 76, for details.
- 28 However, the change was not determined by grammatical category alone, but by lexical item. See discussion at the end of section 3.2.2.
- 29 See W. Wang 1969.
- 30 The claim here is based on empirical evidence, but other possibilities exist. As we shall see in section 4, the literary portion of the lexicon seems to be attacked first.
- 31 The Yilan dialect was investigated during the summer of 1990 in Seattle. My informant was Ms. Yeo Shuchen 葉淑珍 then 30 years old, a native of Zhuangwei village 莊園村, Meicheng district 梅城鎮, situated to the east of the town of Yilan.
- 32 All dialectal forms are given in broad IPA notation without tone marks and with both standard and dialectal characters.
- 33 The Yilan dialect described here is strictly restricted to the variety mentioned in footnote 31. Prof. Li Jen-kuei, a native of Yilan, indicated that his variety of the dialect does not tolerate the V-not-V form at all.
- 34 For a study of the neutral question forms in these documents, see Yue-Hashimoto 1991.
- 35 Since the text was written in characters, no IPA transcriptions will be given.
- 36 Information of the Taizhong dialect was supplied in the fall of 1990 by Prof. Chang Yu-hung.
- 37 See Shi 1990.
- 38 The Zhangzhou examples were collected in the summer of 1991 in Hong Kong. My informant is Mr. Wu Si 吳錫, then 51 years old, who is from the city of Zhangzhou.
- 39 As noted in Yue-Hashimoto 1991, most ADV-VP questions in Yilan are non-neutral and carry the connotation of doubt.
- 40 The Jieyang dialect was investigated during the fall of 1990 in Seattle. My informant is Mr. Xu Bingchu 許秉初, then 74 years old, who is from the first district 第一區 of Jieyang city.
- 41 They show differences in phonology, usage of words and even syntactic patterns from contemporary standard Cantonese. There is thus the possibility that these materials purportedly standard Cantonese may not be standard Cantonese at all. However, at least with respect to the materials the materials used in this study, at the time when they were compiled, there was no comment or criticism that they did not reflect standard Cantonese. We have to presume that not only the compilers but also the users of such materials could not distinguish standard Cantonese from other dialects to prove this possibility. D. Ball, for one, has written on various Yue dialects of the delta area such as Dongguan (*China Review* 18, 1890), Shunde (ibid 25, 1900). It is thus unlikely that Ball cannot distinguish standard Cantonese from other Yue dialects. In addition, we cannot expect standard Cantonese not to have undergone any change within a century. As far as phonology is concerned, there may be greater risk involved in accepting these documents as standard Cantonese, since the pronunciation of neighboring dialects may differ even within close distance. To be sure, syntactic patterns may vary too, but to a much lesser extent, especially among Yue dialects of the delta area, although the standard metropolitan dialect is prone to be more susceptible to change than a rural dialect in a remote area.
- 42 See Yue-Hashimoto 1992a.
- 43 Our preliminary investigation of 16 Yue dialects around the delta area – such as Panyu 番禺, Conghua 從化, Huaxian 花縣, Zengcheng 增城, Bao'an 寶安, Dongguan 東莞, Zhongshan 中山, Sanshui 三水, Gaoming 高明, Shunde 順德, Nanhai 南海, Jiangmen 江門, Xinhui 新會,

- Doumenzhen 斗門鎮, Heshan 鶴山, Enping 恩平 – indicates an overwhelming preference for the V-neg-V and V-neg-VP forms. However, there are still strongholds of the VP-neg form, as observed in the Kaiping 開平, the Taishan 台山 (both investigated by myself) and the Yulin 雲林 (information due to Zhou Lieting 周烈婷) dialect, for example.
- 44 Recently a text dated 1841 was discovered by Prof. Benjamin T'sou, but I have not seen it yet.
- 45 The author of this book is unknown. The book, which was published by the St. Paul's College in Hong Kong, remains unknown until an alumnus of this college ran across it accidentally at the library of the Nankai University in Tianjin. A photo-copy was presented to the college in 1985. A statement on the cover of the book described it as a translation into the Cantonese colloquial from a collection called *Zi'erji* 自語集 (*From Nearby*).
- 46 The first edition of J.D. Ball's *Cantonese Made Easy* of 1883 was not available when I wrote this article, however, the 4th edition (revised and enlarged) was accessible through the generous help of Zhang Min. The lesson text of the 4th edition is essentially the same as that of the 3rd edition, which I recently checked at the library of the Chinese University of Hong Kong.
- 47 Thanks are due to Zhang Min for drawing my attention to this book and for providing me with a copy.
- 48 The text is written entirely in characters; therefore, no transcriptions will be given for the examples.
- 49 Justification for this interpretation was given in Yue-Hashimoto 1988. The main argument is that questions with [ma] in the Yue dialects can only be in the affirmative: *nei hœy ma?* 'you go F.P. = are you going?' is grammatical but not *\*nei m hœy ma?* 'you not go F.P. = are you not going?' The most reasonable explanation is that [ma] is the contraction of [m] + [a]. Since [ma] already contains the negative marker [m], it is natural that [m] would not occur again before the verb.
- 50 The examples are given in Ball's transcription.
- 51 See O'Melia 1938, pp. 31-32.
- 52 See Chao 1947, pp. 91-92.
- 53 See Huang & Kok 1960, p. 11.
- 54 Although not discussed in this paper, an intermediate stage can easily be attested in dialects with a native ADV-VP form and a borrowed V-not-V question form where a fused form of the two can also be found. An example is the Shantou dialect where the following 3 forms (taken from Shi 1990, p. 182) are all acceptable:
- a. k'a? 有來? ADV have come = 'did (he) come?'
- b. 有來阿無? have come or not-have = 'ibid'
- c. k'a? 有來阿無? ADV have come or not-have = 'ibid'
- The fused form (c) can be regarded as a product of an intermediate stage.
- 55 Currently, with the support of a grant from the Chiang Ching-kuo Foundation, an in-depth synchronic-diachronic study of lexical diffusion in syntax in several dialects is being undertaken by Lien Chinfa on Taiwanese neutral question forms as well as the comparative construction, by Zhang Min on neutral question forms in Mandarin and by myself on the comparative construction in Cantonese. It is hoped that the Wu dialects will be covered soon.

## References

- ANONYMOUS. 1877. 叢書四十年 (*Forty Chapters of Random Prose*). Hong Kong: St Paul's College.
- BALL, J. Dyer. 1894. *Readings in Cantonese Colloquia*. Hong Kong: Kelly & Walsh Ltd.



- . 1907, 1924. *Cantonese Made Easy*. 3rd & 4th eds., rev. & enlarged. Hong Kong: Kelly & Walsh Ltd.
- BENNET, Paul A. 1981. Is syntactic change gradual? *Glossa* 15:1.115-35.
- CHAO, Yuen Ren. 1947. *Cantonese Primer* 粵語入門. Cambridge: Harvard University Press.
- CHENG, Robert L. 1989. Competing forces in syntactic changes: the case of aspect and phrase markers in Taiwanese and Mandarin. Paper presented at the 8th International Workshop on Chinese Linguistics, POLA, University of California, Berkeley, March 20-21.
- . 1990. 台語的時態系統 (Tense systems in Taiwanese). *Proceedings of the 1st International Symposium on Chinese Languages and Linguistics*. 53-88.
- . 1991. 異形語的共存與淘汰 (The coexistence and selection of doublets). *Proceedings of the 2nd International Symposium on Chinese Languages and Linguistics*. 140-59.
- FISCHER, Andreas. 1989. Aspects of historical lexicology. *Meaning and Beyond*, ed. by Fries & Heuser, 71-91. Tübingen: Günter Narr Verlag.
- GAO, Huanian 高年華. 1980. 廣州方言研究 (*A Study of Cantonese*). Hong Kong: Commercial Press.
- HASHIMOTO, Mantaro 橋本萬太郎. 1978. 官話類型地理論 (*Linguistic Typogeography*). Tokyo: Kobundo.
- . 1987. 萬語被動式的歷史區域發展 (The historical-regional development of the passive voice in Chinese). *中國語文* 1.36-49.
- HE, Wei 魯巍. 1990. 瓊語方言的語法特點 (Syntactic characteristics of the Huojia dialect). *方言* 2.117-25.
- . 1991. 瓊語方言的疑問句 (Interrogative sentences in the Huojia dialect). *中國語文* 224.333-41.
- HER, One-soon. 1991. Interaction of syntactic changes. *Proceedings of the 2nd International Symposium on Chinese Languages and Linguistics*. 238-50.
- HSIEH, Hsin-I. 1989. History, structure and competition. Paper presented at the 8th International Workshop on Chinese Linguistics, P O L A, University of California, Berkeley, California, March 20-21.
- HUANG, P. & G.P. Kok. 1960. *Speak Cantonese*. New Haven: Yale University Press.
- HUANG, James 黃正德. 1988. 英語正反問句的模組語法 (A modular grammar of A-not-A questions in Chinese). *中國語文* 205.247-64.
- JONES, D. & K.T. Woo. 1912. *A Cantonese Phonetic Reader*. London: University of London Press.
- KROCH, Anthony S. 1989. Reflexes of grammar in patterns of language change. *Language Variation and Change* 1.199-244.
- MEI, Tsulin 梅祖麟. 1980. 三朝北歐彙編裡的白話資料 (Colloquial materials in the *Sanchao Beimeng Huibian*). *中國書目叢刊* 14.27-52.
- MIER, J.Z. 1987. A case of lexical diffusion in a language contact situation. *Studia Linguistica* 41:1.72-82.
- OGURA, Mieko. 1993. The development of periphrastic DO in English: a case of lexical diffusion in syntax. *Diachronica* 10.1.51-85.
- O'MELIA, T.A. 1938. *First Year Cantonese* 綜合粵語學習語法. Pt. 1. Hong Kong: Catholic Truth Society.
- PEYRAUBE, Alain. 1988. Syntactic change in Chinese: on grammaticalization. *中央研究院歷史語言研究所集刊* LIX-3.617-52.
- SHI, Qisheng 施其生. 1990. 汕頭方言的反復問句 (The V-not-V question in the Shantou dialect). *中國語文* 216.183-5.
- THOMASON, Sarah G. & Terrence Kaufman. 1988. *Language Contact, Creolization and Genetic Linguistics*. Berkeley & Los Angeles: University of California Press.

- TOTTIE, Gunnel. 1991. Lexical diffusion in syntactic change: frequency as a determinant of linguistic conservatism in the development of negation in English. *Historical English Syntax*, 439-67. (Mouton de Gruyter).
- WANG, Shihua 王世華. 1985. 柳州話兩種反復問句共存 (The coexistence of two types of V-not-V questions in the Yangzhou dialect). *中國語文* 189.415-6.
- WANG, William S-Y. 1967. Conjoining and deletion in Mandarin syntax. *Monumenta Serica* 26.224-36.
- . 1969. Competing sound change as a cause of residue. *Language* 45.9-25.
- . 1979. Language change – a lexical perspective. *Annual Review of Anthropology* 8.353-71.
- . 1989. Theoretical issues in studying Chinese dialects. *Journal of the Chinese Language Teachers Association* 25.1-34.
- & Chinfa Lien. Bidirectional diffusion in sound change. To appear in *Historical Linguistics: Problems and Prospective*, ed. by Charles Jones. London: Longman Group Ltd.
- WISNER, O.F. 1906. *Beginning Cantonese* 教語指南. Canton: China Baptist Publication Society.
- YUE-Hashimoto, Anne O. 余英芬. 1988. 漢語方言語法的比較研究 (A comparative study of Chinese dialectal syntax). *中央研究院歷史語言研究所集刊* 59.23-41.
- . 1991. Stratification in comparative dialectal grammar: a case in Southern Min. *Journal of Chinese Linguistics* 19-2.172-201.
- . 1992a. 廣東開平方言的中性問句 (Neutral questions in the Kaiping dialect of Guangdong). *中國語文* 229.279-86.
- . 1992b. Comparative dialectal grammar – problems and prospects. Paper for the 4th North American Conference on Chinese Linguistics, May 8-10, University of Michigan, Ann Arbor.
- . 1992c. Syntactic typology in Sino-Tibetan – A beginning. Paper for the 25th International Conference on Sino-Tibetan Languages & Linguistics, October 14-18, University of California at Berkeley.
- ZHANG, Min 張敏. 1990. 漢語方言反復問句的類型學研究：共時分佈及其歷時蘊含 (A typological study of Yes-No Questions in Chinese Dialects: in Diachronic Perspective). Peking University Ph.D. dissertation.
- ZHU, Dexi 朱德熙. 1985. 漢語方言裡的兩種反復問句 (Two types of V-not-V question in the Chinese dialects). *中國語文* 184.10-20.
- . 1990. A preliminary survey of the dialectal distribution of the interrogative sentence patterns V-bu-VO and VO-bu-V in Chinese. *Journal of Chinese Linguistics* 18-2.209-30.



## ARGUMENTS AGAINST 'SUBJECT' AND 'DIRECT OBJECT' AS VIABLE CONCEPTS IN CHINESE\*

*Randy J. LaPolla*

Source: *Bulletin of the Institute of History and Philology* 63/4, 1993, 759–813.

### 1.0 Introduction

Thirty-one years ago Tsu-lin Mei (1961) argued against the traditional doctrine that saw the subject-predicate distinction in grammar as parallel to the particular-universal distinction in logic, as he said it was a reflex of an Indo-European bias, and could not be valid, as 'Chinese . . . does not admit a distinction into subject and predicate' (p. 153). This has not stopped linguists working on Chinese from attempting to define 'subject' (and 'object') in Chinese. Though a number of linguists have lamented the difficulties in trying to define these concepts for Chinese (see below), most work done on Chinese still assumes that Chinese must have the same grammatical features as Indo-European, such as having a subject and a direct object, though no attempt is made to justify that view. This paper challenges that view and argues that there has been no grammaticalization of syntactic functions in Chinese. The correct assignment of semantic roles to the constituents of a discourse is done by the listener on the basis of the discourse structure and pragmatics (information flow, inference, relevance, and real world knowledge) (cf. Li & Thompson 1978, 1979; LaPolla 1990).

#### 1.1.0 Syntactic functions

Subject and direct object are generally referred to in the literature as 'grammatical relations'. I will break with tradition and use GRAMMATICAL RELATIONS to refer to all of the relational systems that might be involved in a grammar: syntactic relations, semantic relations, and pragmatic relations. In this paper I will be discussing syntactic relations, and I will use the term SYNTACTIC FUNCTION to refer to the concepts 'subject', 'direct object', and 'indirect object'. These terms represent particular restricted neutralizations of semantic roles in particular

syntactic environments (see below). In order for us to say that a language has a 'subject', etc., we need to find that in most syntactic environments (i.e. in most constructions) in the language, there is such a restricted neutralization. In fact we need to find THE SAME restricted neutralization in all or most of the constructions in the language for the concept of, for example, 'subject' to make any sense. It is especially important when working with non-Indo-European languages that we not assume the existence of particular grammatical categories, such as 'subject', 'object', 'definiteness', etc., in those languages without proper justification. Cumming puts it well in the following quote:

. . . if a number of independent properties converge on one construction or linguistic unit, then they can be said to define a category which is real for that language. Thus, the category 'subject' can be said to be a useful one for English, since the properties of preverbal position and government of verb agreement converge on the same NPs. However, if there is only one property (or a cluster of interdependent properties) which is unique to the construction or unit in question, then the use of a higher level term is not justified. Thus in a language in which preverbal NPs have no other unique properties, it is not useful to refer to these NPs as 'subject', since that term imputes properties which go beyond simple word order.

(1984: 365)<sup>1</sup>

As 'subject' is the most important syntactic function cross-linguistically, the lion's share of the discussion in this paper will deal with determining if Chinese has grammaticalized this syntactic function.

Comrie, in beginning his discussion of 'subject' (1981, Chapter 5), lays down the following preliminaries, which apply equally well to the present work:

First, we are not committed a priori to the view that subject is a necessary descriptive category in the grammar of every language: there may well be languages where it is not appropriate, though equally there are languages (including English) where it is appropriate. Secondly, we are not committed to the view that, even in a language where subject is generally valid, every sentence will have a subject. Thirdly, we are not committed to the view that the translation of a sentence from language X where a certain noun phrase is subject will necessarily have the same noun phrase as subject in language Y.

(p. 100)

There is no universal notion of 'subject' (Platt 1971; Johnson 1977, Van Valin 1977, 1981; Foley & Van Valin 1977, 1984; Gary & Keenan 1977; Comrie 1981); it is impossible to discuss the notion of 'subject' outside of a particular grammatical theory. As Marantz has pointed out, 'There can be no right definition of "subject" . . . only a correct (or better) syntactic theory' (1984: 3). (See also Marantz 1982, 1984 for arguments why syntactic functions should not be seen as



primitives or tied to semantic roles.) Sanders (1984: 222) states it more generally: 'It is simply true in general that empirically significant concepts are inherently incompatible with rigorous definition, i.e. in terms of necessary and sufficient conditions, except within the specific context of a particular scientific theory'.

In this paper, I will define 'subject' as an NP that can be shown to have special GRAMMATICALIZED referential properties, beyond the prominence that might be associated with its semantic role, as evidenced by a restricted neutralization of semantic roles in various syntactic environments. With this as our definition of subject, we can say that subjects are not universal, as not all languages show this type of restricted neutralization (see S. Anderson 1976, Van Valin 1977, 1981, Faarlund 1989, and Bhat 1991).

In order to determine if a language has such a grammaticalized subject, we can follow the methodology used, for example, in S. Anderson 1976, Van Valin 1981, and Faarlund 1989, that of examining various constructions in the language to determine which argument of the verb, if any, figures as the syntactic pivot in each of the constructions. Essentially, a pivot is 'any NP type to which a particular grammatical process is sensitive, either as controller or target' (Foley & Van Valin 1985: 305).<sup>2</sup> To determine if there is a pivot for a particular construction, we will look for restricted neutralizations among the semantic roles of the arguments of the verb. For ease of discussion, we will use what Dixon (1979: 59) has called 'universal semantic syntactic primitives' to refer to the three major types of argument. These are S, the single argument of an intransitive verb;<sup>3</sup> A, the argument which prototypically would be the agent of a transitive verb; and P, the argument which prototypically would be the patient of a transitive verb.<sup>4</sup> In a given language, if S and P function in the same way in a particular syntactic construction, and differently from A (and any other possible roles), then we can say that there is a neutralization of the distinction between S and P, and so the syntactic pivot for that construction is [S, P]. If on the other hand S and A function in the same way in a particular syntactic construction, and differently from P (and any other possible roles), then we can say there is a neutralization of the distinction between S and A, and so the syntactic pivot for that construction is [S, A]. In a language where all or most of the constructions in a language have [S, P] pivots, [S, P] can be said to be the subject of that language, and the language can be said to be syntactically ergative (e.g. Dyrbal, which has an [S, P] pivot for all coordination and subordination, indispensability, and relative clauses).<sup>5</sup> If, on the other hand, [S, A] is the major pivot pattern for all or most of the syntactic constructions of the language, then that grouping can be said to be the subject, and the language can be said to be syntactically accusative (e.g. English, which has an [S, A] pivot for coreferentiality between conjoined clauses, 'raising', and indispensability). If no consistent pattern emerges, then it is hard to say what the subject should be (e.g. Jaceltec, which has an [S, P] pivot for relativization, wh-question formation, and clefting, and an [S, A] pivot for cross-clause coreference). If there is no neutralization in any construction of the language, or unrestricted neutralization, then that language has no syntactic pivots, and it makes

no sense to talk of grammatical subjects, ergativity or accusativity (e.g. Archi—See Kibrik 1979, Van Valin 1981).<sup>6</sup>

The question then is what constructions should we look at in determining whether or not there are pivots in Chinese? Paul Schachter (1977) has shown that a distinction must be made between the semantic role-related properties and the reference-related properties of what we call 'subjects' in Indo-European languages. Dixon (1979) also points out that what he terms 'universal syntactic phenomena' (imperatives, jussive complements, etc.) are of no use in determining syntactic relations. Therefore, I will not discuss imperatives, jussive complements, or other role-related grammatical structures. We will look only at reference-related constructions such as 'raising', cross-clause coreference, relative clauses, reflexives, and certain Chinese-specific constructions (Section 2).

### 1.2. *Syntactic functions in Chinese*

We saw above that many scholars believe it is impossible to define 'subject' cross-linguistically (universally), but many do try to define subjects for individual languages. There have been a number of attempts to define a subject for Chinese, though no one has succeeded in this venture (see S. Lü 1979, Li & Thompson 1978, 1981, and L. Li 1985 on the difficulties of trying to define 'subject' for Chinese). In their attempts to define 'subject' in Chinese, scholars can be roughly divided into three camps: those who define 'subject' as the agent (possibly actor) (e.g. L. Wang 1956, T. Tang 1989), those who define it as the topic or whatever comes first in the sentence (e.g. Chao 1968), and those who believe both are right (S. Lü 1979, L. Li 1985). Several authors have also argued that though there is a 'subject' in Chinese, it does not play an important role in Chinese grammar (e.g. L. Li 1985, Li & Thompson 1981).

Those authors who define subjecthood simply on the basis of selectional restrictions vis-a-vis the verb are confusing semantics and syntax. They claim that subjects have such a selectional restriction, while topics do not. This definition would imply that subjects are not topics, though some that hold this view do say that the subject can also be a topic. That an NP has a selectional restriction vis-à-vis the verb simply means that that NP is an argument of the verb. This is a necessary condition for subjecthood, but not a sufficient one. Chinese syntax is sensitive to semantics in that the actor of a transitive verb will precede that verb, while an undergoer can either precede or follow the verb, depending on the pragmatic status (topicality) of the referent of the NP (see LaPolla 1993), but distinguishing actor from undergoer is not the same as distinguishing subject and object (cf. the comments to this regard by S. Lü [1979: 72]). A simple intersection of actor and topic in a particular sentence also does not make a subject. In Chinese there is no restriction on what semantic role can be the topic, though as actors are cross-linguistically more often within the presupposition (and the speaker, possibly the most common actor, is ALWAYS within the presupposition), they are very often topics,<sup>7</sup> and this is what seems to have led to the confusion. Word order<sup>8</sup> is to the



largest extent controlled by the nature of information flow (see LaPolla 1990, Chapter 3, LaPolla 1993), and secondarily by semantics. Syntactic functions play no part in the determination of the order of constituents in a sentence.

Shibatani (1988) claims that Chinese has an [S, A] 'subject', without giving much evidence. The methodology in that paper is flawed, in that Shibatani takes Japanese *wa* and *ga* marked NP's as prototypical topics and subjects, respectively, and uses the Japanese translations of sentences in other languages to determine whether that language has topics or subjects. Shibatani states that '[b]ecause of the merger between topic and subject in Western languages, the discussion of the grammatical subject in the West has been confounded by two basically distinct notions – an actor (or agent) and an entity which is being talked about' (1988: 2). In Japanese, on the other hand, according to Shibatani, these two distinct notions have distinct markings, *ga* and *wa* respectively. It seems then that Shibatani is equating actor with subject.

Tan 1988 also argues for the existence of a grammatical subject in Chinese, but the argumentation is again quite flawed, in that Tan attempts to use an NP's ability to appear in cleft constructions or to be questioned, etc. as proof of subjecthood. The problem is that Tan is not trying to prove the clefted or questioned NP is a 'subject' as opposed to some other syntactic function, but as opposed to being a 'topic', i.e., she feels that simply showing some argument to not be a 'topic' will prove that it is a 'subject'. As the clefted or questioned NP is a focused constituent, of course it could not be a 'topic', but that does not automatically prove it is a 'subject' (a methodological error also made in Tsao 1979).

Those who define 'subject' as whatever NP is sentence-initial are making almost the opposite mistake. Topichood is a pragmatic relation, not a syntactic one. Though the subject in languages that have this syntactic function is often also a topic, it need not be, as can be seen in sentence focus sentences<sup>9</sup> in English with 'dummy' subjects, such as *It's raining*. On the view of those who define 'subject' as topic (e.g. S. Lü 1979, L. Li 1985), a patient NP becomes a subject anytime it appears before the agent. There are then no 'topicalized' structures, since the 'topicalized' NP becomes the subject, as in the following examples from L. Li 1985: 70:

- (1) a. Wo yijing zhidao zhe jian shi le.  
1sg already know this CL affair ASP  
I already know about this affair.  
b. Zhe jian shi wo yijing zhidao le.  
this CL affair 1sg already know ASP  
This affair, I already know about.

On Li's analysis, in (1a) *zhe jian shi* 'this affair' is an object, while in (1b) it is a subject. At the same time, Li (following S. Lü 1979) says that 'subject' in Chinese has two natures: as the topic and as whatever role it is.<sup>10</sup> S. Lü's original

idea (1979: 72–73) was that since 'subject' and 'object' can both be filled by any semantic role, and are to a certain extent interchangeable, then we can say that subject is simply one of the objects of the verb that happens to be in topic position. One of the examples of what he means by 'interchangeable' is (2) (S. Lü 1979: 73):

- (2) a. Chuanghu yijing hu le zhi.  
window already paste ASP paper  
The window has already been pasted with paper.  
b. Zhi yijing hu le chuanghu.  
paper already paste ASP window  
The paper has already been pasted on the window.

S. Lü gives the analogy of a committee where each member has his own duties, but each member can also take turns being chairman of the committee. Some members will get to be chairman more than others, and some may never get to be chairman, but each has the possibility of filling both roles. This concept of the dual nature of 'subject' is S. Lü's (and L. Li's) solution to the problem of defining the concept of 'subject' in Chinese. It is clear that this definition does not give us a consistent definition for 'subject'; it simply states that the subject is the topic, and can be any semantic role.

In his monumental grammar, Y. R. Chao (1968) spoke of 'subjects', but not in the rigorous sense defined here. He loosely defined them as whatever came first in the sentence, and understood them more as topics than the kind of 'subjects' found for example in most Indo-European languages.

Li & Thompson (1974b, 1976a) argue persuasively for analyzing Chinese as a topic-prominent language. They also point out that '[t]here is simply no noun phrase in Mandarin sentences which has what E. L. Keenan [1976] has termed "subject properties"' (1976: 479). Aside from this, though, they give only one explicit argument, that of 'pseudo-passives' (see §2.7 below), to support the idea that there is no identifiable subject. In their later *Mandarin Chinese: A Functional Grammar* (1981), they do recognize a 'subject' for Chinese, but it 'is not a structurally [i.e. syntactically—RJL] definable notion' (1981: 19), and not very important structurally. For this reason they regard Chinese as a topic-prominent language rather than a subject-prominent language.

The 'subject' that Li & Thompson speak of is distinguished from 'topic' because it has a 'direct semantic relationship with the verb as the one that performs the action or exists in the state named by the verb' (p. 15), whereas the 'topic' need not necessarily have such a relationship with the verb. If this is the only criterion for determining a 'subject', though, then we are again simply substituting semantic relations for syntactic relations, and there is no subject that can be defined in syntactic terms.



In section 2, below, I will try to support Li & Thompson's earlier subjectless analysis of Chinese by presenting further arguments. Following the methodology outlined in §1.1, we will look at various reference-related constructions in Chinese with the intention of determining the pivot, if there is one, in each construction. We will see that there is no syntactic pivot in any of these constructions, so the concept of 'subject' as a syntactic function beyond semantic role simply does not exist in Chinese.

Section 3 deals with the question of whether there is a syntactic function 'direct object' in Chinese. As with the question of 'subject', there has been much discussion, but little resolution, often for the same reasons: confusion of semantics for syntax, or pragmatics for syntax. Again as with 'subject', 'object' is not a universal phenomenon (see for example Gil 1984, Collinge 1984), so we need to find a restricted neutralization of semantic roles in terms of behavioral and coding properties in order to say there is a grammaticalized direct object in Chinese.

J. Anderson (1984: 47) argues that the concept of 'object' is 'necessarily associated with subject-forming languages . . . unless the notion can be generalized over all second-ranking derived relations, if any other such there be'. If this is the case, then showing that there has been no grammaticalization of 'subject' should obviate the need for a lengthy discussion of 'object', but as there are other opinions on the connection between 'subject' and 'object' (see for example S. Lü 1979: 71, Gil 1984), and as the *ba* construction (see §3.2) figures crucially in many analyses of Chinese grammar, I will assume it is necessary to delineate the arguments against the syntactic function of 'object' in Chinese.

## 2.0 The question of 'subject' in Chinese

### 2.1.0 Cross-clause coreference

Our first test for subjecthood is to determine whether there are any constraints on deletion and coreference in complex constructions in Chinese. In a language with an [S, A] pivot for coordination (the accusative pattern), such as English, an argument shared by two conjoined clauses can be represented by a zero pronoun in the second clause only if it is in the S or A role in both clauses, as in (3a).

- (3) a. The man went downhill and  $\emptyset$  saw the dog.  
 b. The dog went downhill and  $\emptyset$  was seen by the man.  
 c. \*The dog went downhill and the man saw  $\emptyset$ .

If instead the argument the two clauses have in common is in the P role in the second clause, in order for the two clauses to be conjoined, the representation of the argument (here the zero pronoun) must appear as the derived S of a **PASSIVE** construction, as in (3b). It is not possible to have the A role NP of the

first clause corefering with a zero pronoun in the O role of the second clause, as in (3c).

In a language with an [S, P] pivot for coordination (the ergative pattern), such as **Dyirbal** (Dixon 1980: 461ff), a shared argument which appears as a zero pronoun in the second of two conjoined clauses must be in the S or P role in each clause, as in (4a). If the NP in the second clause is instead in the A role, in order for the two clauses to be conjoined and for the argument to appear as a zero pronoun in the second clause, the shared argument must appear as the derived S of an **ANTIPASSIVE** construction (4b). It is not possible to say the equivalent of (3a), with a transitive second verb and a zero anaphor referring to an A role argument not appearing as a derived S, as evidenced by (4c). (These examples from Dixon 1980: 461-2.)

- (4) a. **balan guda bujan bagul yarangu buran**  
 she+ABS dog+ABS descend+PAST he+ERG man+ERG see+PAST  
 The dog went downhill and was seen by the man.  
 (Lit.: The dog went downhill and the man saw  $\emptyset$ .)  
 b. **bayi yara bujan bulrahanyu bagun gudagu**  
 he+ABS man+ABS descend+PAST see+PAST+ANTI he+ABS dog+DAT  
 The man went downhill and saw the dog (with antipassive indicator *ya-y* on the second verb).  
 c. **\*bayi yara bujan buran bagul guda**  
 he+ABS man+ABS descend+PAST see+PAST he+ERG dog+ABS  
 The man went downhill and saw the dog (with transitive verb and A argument (yarangu) unexpressed).

In Chinese we don't find either the English or the Dyirbal type of restriction on cross-clause coreference. In Chinese it is possible for the shared argument of a conjoined structure to appear as a zero pronoun regardless of whether it is in the A or P role; there is no need for a passive or antipassive construction:

- (5) a. **Xiao gou zou dao shan dixia, nei ge ren jiu kanjian le.**  
 little dog walk to mountain bottom that CL person then saw ASP  
 The little dog went downhill and was seen by the man.  
 (Lit.: The little dog went downhill and the man saw  $\emptyset$ )  
 b. **Nei ge ren zou dao shan dixia, jiu kanjian le xiao gou.**  
 that CL person walk to mountain bottom then saw ASP little dog  
 The man went downhill and saw the little dog.

In (5a) the shared argument of the two conjoined clauses appears as an S role NP in the first clause, and a P role NP (here a zero pronoun) in the second of the two clauses, without appearing in any type of passive construction (cf. (3c)). In (5b) the shared argument of the two conjoined clauses appears as an S role NP in the first clause and an A role NP in the second clause, without appearing in any type of anti-passive construction (cf. (4c)).



Comrie (1988: 191) points out that '[i]n any given language, there is necessarily interplay between the strictly grammatical factors and the extralinguistic (world knowledge) factors that help in determining anaphoric relations', but then goes on (p. 193) to show how, in English, grammatical constraints on the control of anaphor can force a particular interpretation of a sentence, even though the result is nonsensical, as in (6):

- (6) The man dropped the melon and burst.

Because of the grammatical constraints on conjunction reduction in English, this sentence has to be interpreted as saying that the man burst after dropping the melon. In Chinese there are no such grammatical constraints, so the Chinese equivalent of (6) would be interpreted as saying that the melon burst after the man dropped it:

- (7) Nei ge ren ba xigua diao zai dishang, sui le.  
that CL person BA watermelon drop LOC ground broke-to-pieces ASP  
That man dropped the watermelon on the ground, (and it) burst.  
The same structure, but with different semantics, yields different results:
- (8) Nei ge ren ba xigua diao zai dishang, huang le.  
that CL person BA watermelon drop LOC ground get-flustered ASP  
That man dropped the watermelon on the ground, (and he) got flustered.  
It is semantics (real world knowledge) that determines coreference in these examples, not syntactic function.

Coreference in Chinese is in fact quite free. In the following three examples we have A=A (and P=P) coreference, S=P coreference, and A=S coreference respectively:

- (9) Wo na le ta de qian,  $\emptyset$  jiu reng  $\emptyset$  le.  
1sg pick-up ASP 3sg GEN money then throw ASP  
I picked up his money and threw it.
- (10) Yi zhi xiao-jir bu jian le, laoying zhua zou le  $\emptyset$ .  
one CL chick not see ASP eagle grab go ASP  
One chick disappeared, an eagle carried it away.
- (11) Nei ge ren na-zhe gunzi  $\emptyset$  pao le.  
that CL person holding stick run ASP  
That person ran away holding a stick.

We see no restricted neutralization of argument type which would allow us to identify a pivot in any of these examples. Similar examples can be found in any Chinese discourse or text.

In the examples above, the referent of the zero anaphor was an argument of both of the verbs in each example sentence, but this is not always the case. As shown in Li & Thompson 1976a, 1979, and 1981, and Tao 1986, it is generally the topic

of the sentence or discourse, not the 'subject', that controls cross-clause coreference; the coreferent constituent need not even be an argument of the verb in the first clause. Li & Thompson (1976: 469-470) give the following three examples ([12]-[14a] - [14b] is my own).

- (12) Nei ke shu yezi da, suoyi wo bu xihuan  $\emptyset$ .  
that CL tree leaves big so 1sg not like  
That tree (topic), the leaves are big, so I don't like it (the tree).
- (13) Nei kuai tian daozi zhangde hen da, suoyi  $\emptyset$  hen zhiqian.  
that CL field rice grow very big, so very valuable  
That field (topic), rice grows very big, so it (the land) is very valuable.
- (14) a. Nei chang huo xiaofangdui laide zao, \*(suoyi  $\emptyset$  hen lei).  
that CL fire fire brigade came early, so very tired  
That fire (topic), the fire brigade came early, so they're very tired.  
b. Nei chang huo xiaofangdui laide zao, suoyi sunshi bu da.  
that CL fire fire brigade came early, so loss not big  
That fire (topic), the fire brigade came early, so there wasn't much loss.

In examples (12) and (13), the zero anaphor in the second clause corefers with the topic of the first clause, and not what is usually referred to as the 'subject'. In example (14a) the zero anaphor cannot corefer with fire *brigade*, as the fire brigade is not the primary topic of the clause, even though it is what many linguists would call the 'subject' of the verb in the first clause and a logical candidate for 'subject' of the second clause. The zero anaphor also cannot corefer with the topic because the inanimacy of the topic is not compatible with the semantics of the verb *lei* 'tired'. Only in (14b) can we have the topic as the controller of the zero anaphor. The evidence in these examples is consonant with Givón's statement that 'the main behavioral manifestation of important topics in discourse is continuity, as expressed by frequency of occurrence' and participation in equi-topic chains (1984a: 138), but as the topic that is participating in the cross-clause coreference is not an argument of the verb, no case can be made for subject control of cross-clause coreference, and the idea that 'subject' and 'topic' are one and the same (as argued, for example, in Givón 1984a) is also then questionable. To sum up, we can see from these examples that cross-clause coreference is dependent on a complex interplay of semantic and pragmatic factors, but does not depend on syntactic factors such as syntactic relations.

### 2.2.0 Relativization

Keenan & Comrie (1979a) give the following hierarchy of accessibility to relativization (p. 650) and constraints on that accessibility (p. 653):

ACCESSIBILITY HIERARCHY (AH)  
SU > DO > IO > OBL > GEN > OCOMP  
ACCESSIBILITY HIERARCHY CONSTRAINT



- a. If a language can relativize any position on the AH with a primary strategy, then it can relativize all higher positions with that strategy.
- b. For each position on the AH, there are possible languages which can relativize that position with a primary strategy, but cannot relativize any lower position with that strategy.

By 'primary strategy' is meant the 'unmarked' type of relative, the type where no pronoun is retained (if there are both types). The basic import of these constraints is that if a language has a primary form of relativization, it will relativize subjects, as 'in absolute terms Subjects are the most relativizable of NP's . . . Subject is . . . the most relativizable position on the AH' (p. 653). We can then use this hierarchy in our search for a subject in Chinese. If only one NP type is relativizable, then based on Keenan and Comrie's generalizations, that NP will be a subject. Keenan and Comrie 1979b presents data from a number of languages, such as Aoban (Melanesian) and Arabic, showing a strict [S, A] pivot for relativization. That is, only S and A can be relativized on without a pronoun being retained.

In a language with an [S, P] pivot for relativization, such as Dyirbal, an NP to be relativized on must be in the S (naturally or derived by antipassivization) or P role in the subordinate clause (Dixon 1980: 463). In Yidiny, another Australian language, the NP must be in the S (again, either naturally or derived by antipassivization) or P role in both the subordinate and the matrix clause (Dixon 1980: 462). (15) is an example of a Yidiny relative construction (from Dixon 1980: 459):

- (15) **wagujangu bunya wawal gudagangu bajalnyum.**  
 man+ERG woman+ABS see+PRES dog+ERG bite+CAUS-SUBORD  
 The man is looking at the woman who had been bitten by the dog.

The two clauses of this sentence share the absolutive argument *bunya* 'the woman'. If instead we wanted to say the equivalent of 'The man is looking at the dog which had bitten the woman', then the relative clause must first be antipassivized, so that the A role NP appears in the absolutive (derived-S) case (from Dixon 1980: 463):

- (16) **wagujangu gudaaga wawal bajaajinyum bunyaanda.**  
 man+ERG dog+ABS see+PRES bite+ANTIPASS+TNS woman+DAT  
 The man is looking at the dog which had bitten the woman.

In Chinese, though, we find that an NP in any semantic role can be relativized upon. Consider the following examples (see the explanations of relevant semantic roles below; exx. (17i) and (17m) are adapted from Shi 1989: 246-47; the indexed zero in each example indicates the position the referent would have in a non-relative clause structure):

- (17) a. Wo  $\theta_1$  zai nei ge shitang chi fan de pengyou mai le shu.  
 1sg LOG that CL cafeteria eat rice REL friend buy ASP book  
 My friend who eats in that cafeteria bought some/a book(s).
- b. Gangcai  $\theta_1$  bu shufu de nei ge reni zou le.  
 just-now not comfortable REL that CL person go ASP  
 The person who was not well just now left.
- c. Wo taoyan wo pengyou zai nei ge shitang chi  $\theta_1$  de fani.  
 1sg dislike 1sg friend LOG that CL cafeteria eat REL rice  
 I dislike the rice my friend eats in that cafeteria.
- d. Wo bu xiang zai wo pengyou  $\theta_1$  chi fan de nei ge shitangi  
 1sg not want LOG 1sg friend eat rice REL that CL cafeteria  
 chi fan.  
 eat rice  
 I don't want to eat at the cafeteria where my friend eats.
- e. Wo mai pinguo gei ta<sub>i</sub> de nei ge pengyou<sub>i</sub> lai le.  
 1sg buy apples give 3sg REL that CL friend come ASP  
 The friend I bought the apples for came.
- f. Ta gei  $\theta_1$  A+ de xuesheng<sub>i</sub> bu duo.  
 3sg give A+ REL student(s) not many  
 He does not give A+ to many students.
- g. Wo gei  $\theta_1$  bang mang de nei ge reni yijing zou le.  
 1sg give help busy REL that CL person already leave ASP  
 The person I helped already left.
- h. Wo yong  $\theta_1$  lai xie zi de maobii bu jian le.  
 1sg use come write characters REL brush not see ASP  
 The brush(es) I use to write characters disappeared.
- i. Wo renshi  $\theta_1$  baba xie guo hen duo shu de nei ge reni.  
 1sg know father write ASP very many book(s) REL that CL person  
 I know that man whose father wrote many books.
- j.  $\theta_1$  Bi wo gao de nei ge reni zou le.  
 compared-to 1sg tall REL that CL person leave ASP  
 That person who is taller than me left.
- k. Wo bi ta<sub>i</sub> gao de nei ge reni zou le.  
 1sg compared-to 3sg tall REL that CL person leave ASP  
 That person that I am taller than just left.
- l. Xiaofangdui lai de zao de nei chang huoi sunshi bu da.  
 fire-brigade come CD early REL that CL fire loss not big  
 The loss from the fire that the fire brigade came early to was not big.
- m. Lisi cai gu lai  $\theta_1$   $\theta_1$  zhi gan le ji tian jiu bei ta  
 Lisi just hire come only work ASP several day then BEI 3sg  
 baba kaichu de nei ge reni you lai le.  
 father dismiss REL that CL person again come ASP  
 The man whom Lisi had just hired and who worked for only a few days,  
 and was fired by his (Lisi's) father has come again.



From these examples we can see that it is possible not only to relativize on A (17a), S (17b), and P (17c), it is also possible to relativize on a locative (17d), a goal (17e, f), a benefactive (17g), an instrument (17h), a possessor (17i), either argument in a comparative structure (17j, k), and a topic (whether an argument of the verb or not) (17l). It is even possible for the referent to fill two different semantic roles (P and S) within the same relative clause, as in (17m). Keenan & Comrie (1979b: 334) claim (citing Harlow 1973) that in all but subject and object relativizations in Chinese a pronoun must be retained. If we compare (17e), (17g), and (17f); we can see that only in (17e) is the pronoun retained, possibly because of the nature of this particular serial verb construction: the verb *mai* 'buy' in Chinese is not ditransitive, so if there is a goal argument it must be coded in a serial construction with the verb *gei* 'give'. In (17k) there is also a pronoun, for the same reason: to express the 'object' of comparison, the verb/preposition *bi* 'compared-to' must be added to a topic-plus-stative verb construction (see §2.2.3, below, for details). In both of these constructions, the secondary verb (*gei* or *bi*) would not be added unless it was needed to add an argument, and this is probably why they require the pronoun when the arguments they are adding are relativized.<sup>11</sup> In (17f,g) the goal/beneficiary does not require a pronoun, as *gei* here is the main verb; in fact (17f) would be less acceptable with the plural pronoun added. This question is secondary, though, as there is clearly no restriction on the neutralization of semantic roles such that we could determine a single pivot for this construction.

As relativization is referential by definition, a language that has no grammatical encoding of pragmatic referentiality (i.e., has no syntactic functions) should be free of restrictions on relativization (Foley & Van Valin 1977). We can see from the above that this is in fact the situation in Chinese.

### 2.3.0 Comparatives

Descriptions of the structure of the *bi* comparative in Chinese (see ex. (18) below) often refer to the 'subject'. For example, Li & Thompson (1981) state that the item being compared '... must be the subject or the Topic ... of the verb phrase that expresses the [comparative] dimension' (p. 569). McCawley (1989) criticizes the inclusion of topics in Li & Thompson's analysis because sentences with comparison of a fronted object, as in (19a, b), are ungrammatical. Yet there are examples where the topic can be compared. Li & Thompson give sentence (20):

- (18) *Wo bi John gao.*  
1sg compared-to John be-tall  
I am taller than John.
- (19) a. \**Gou bi mao wo xihuan.*  
dog compared-to cat 1sg like  
b. \**Gou wo bi mao xihuan.*  
dog 1sg compared-to cat like

- (20) *Xiang bi xiong bizi chang.*  
elephant comp-to bear nose be-long  
Elephants have longer noses than bears.

There is a very real difference between the topic-comment structure of (20), which is a 'double nominative' (Teng 1974) structure, and a structure such as that in (19). In the former, the nominal *bizi* 'nose' is part of the predication, whereas in the latter, *wo* '1sg' is not part of the predication. In the comparative construction there is always a topic about which a comment is being made, but there can only be one (this does not include the 'object' of the comparative verb/preposition *bi*). The examples in (19) are bad because there are two topics outside the predication.

A. Y. Hashimoto (1971) says that compared constituents 'need not be subject NP's ...; they may be NP's dominated by Time or Place expressions or prepositional phrases; however, they cannot be the object NP's' (p. 34).

Tsao (1990: 278ff) argues that 'direct objects' can be compared, as long as they appear in the secondary topic position (following the primary topic) or the tertiary topic position (following the secondary topic), and the comparison is done on two NPs at the same level of topicality, either both secondary or both tertiary topics. For him (19) would not be completely ungrammatical as long as *wo* '1sg' appears before the items being compared:

- (19') a. ?*Wo gou bi mao xihuan.*  
1sg dog compared-to cat like  
I like cats more than (I do) dogs.<sup>12</sup>

In general, though, in Chinese the problem is that the constituent that expresses the comparative dimension is an **INHERENTLY** comparative<sup>13</sup> single argument **PREDICATION** (stative verb), unlike English, where the constituent expressing the comparative dimension is a 'gradable' **ADJECTIVE** or **ADVERB** (Leech & Svartvik 1975). Because of this, to compare two 'objects' of a verb such as *xihuan* 'like', the whole clause must be repeated, with the comparative *bi* coming between the two clauses, as in (21):

- (21) *Wo xihuan ta bi wo xihuan ni duo.*  
1sg like 3sg compared-to 1sg like 2sg be-more  
I like him more than I like you.

*Duo* is a single argument verb, so the structure of a sentence that compares 'objects' must be the same as one that compares 'subjects', i.e. **X PP VP**, where **X** is the constituent being compared (a simple NP, or a whole clause as in [21]), and PP includes *bi* and the constituent **X** is being compared to. The **X** constituent is the topic about which an assertion is being made. The restriction on comparatives in Chinese then is not a function of 'subject' control, but is due to the nature of information structure and the class of verbs used in comparatives: a one argument



verb, such as a verb used in a comparative construction, can take only one direct argument (the topic), so it is irrelevant to talk of 'subject' vs. 'non-subject'. A second factor is that the items being compared must be topical at the same level (i.e. must both be primary, secondary, or tertiary topics).

#### 2.4.0 Raising to subject

Raising is seen by many (e.g. Chomsky 1981, Bresnan 1982) as a subject controlled construction, that is, only the subject of an embedded clause can be 'raised' to the subject of a verb such as *seem* (22):

- (22) a. It seems Paul bought the car.  
 b. Paul seems to have bought the car.  
 c. \*The car seems Paul to have bought.  
 d. It seems Paul is happy.  
 e. Paul seems to be happy.  
 f. The car seems to have been bought by Paul.

There is no problem 'raising' the A role or the S role NP of an embedded clause, as in (22b) and (22e), but 'raising' the P role NP results in the ungrammatical (22c). For the P role NP to be raised, it must first be passivized, and thereby become a derived-S, as in (22f). English then has an [S, A] pivot for this construction.

I was unable to find an example of 'raising' in any clearly ergative language (that is, a language where I would expect to find an [S, P] pivot for 'raising'), though as mentioned earlier, Dyrirbal has an [S, P] pivot for all constructions involving subordinate clauses (see Dixon 1972, 1980).

If we are to find a pivot for this construction in Chinese, we would need to find either an [S, A] or [S, P] restriction, yet in Chinese the equivalents of (22c), with the P role NP raised, and (22b), with the A role NP raised, are both perfectly acceptable:

- (22) a'. Haoxiang Paul mai le chezi.  
 seem buy ASP vehicle  
 It seems Paul bought the car.  
 b'. Paul haoxiang mai le chezi.  
 seem buy ASP vehicle  
 Paul seems to have bought the car.  
 c'. Chezi haoxiang Paul mai le.  
 vehicle seem buy ASP  
 The car seems Paul to have bought.

As we can see from these examples, either of the referential constituents, or neither, can appear before *haoxiang* 'seem' in Chinese, no matter what the semantic role, and there is no need for any passive construction.<sup>14</sup> As there is no restriction on the semantic roles which can be involved in raising, no evidence can be found

for identifying a pivot for this construction, and thus there is no evidence from raising for establishing a subject in Chinese.

#### 2.5.0 Indispensability

Keenan (1976) gives indispensability as one of the properties of his Subject Properties List. He says, 'A non-subject may often simply be eliminated from a sentence with the result still being a complete sentence. But this is usually not true of b[asic]-subjects' (p. 313). Connolly (1989: 1) also defines 'subject' as 'a NP which is required in (almost) every sentence and is some how distinguished from all other NPs'. In terms of looking for a restricted neutralization, if we found one NP type which could not be eliminated from the clause without the clause being incomplete, we would have possible evidence of a subject. For example, consider the following sentences:

- (23) a. Mark eats pizza when he is happy.  
 b. Mark eats when he is happy.  
 c. \*Eats when he is happy.

In (23b) the P role NP can be deleted without affecting the acceptability of the sentence, though (23c), with the A role NP deleted, is unacceptable. It is also the case that the single NP of intransitive clauses is also indispensable in English:

- (24) a. Mark is sleeping.  
 b. \*Is sleeping.

There is then an [S, A] pivot for indispensability in English. In Dyrirbal, ellipsis is quite common, though according to Dixon (1972: 70) every sentence must contain an NP in the absolutive<sup>15</sup> case. As the absolutive case is the unmarked case for the P role NP in a transitive sentence, in what Dixon calls a 'simple' sentence (i.e., one where there is unmarked case assignment) the A role NP (for which the unmarked form is the ergative case) can be left unspecified ([25b]), but not the P role NP ([25c]) (examples from Dixon 1972: 59, 70):

- (25) a. **balan dugumbil baggul yarangu balgan.**  
 she+ABS woman+ABS he+ERG man+ERG hit  
 Man is hitting woman.  
 b. **balan dugumbil balgan.**  
 she+ABS woman+ABS hit  
 woman is being hit [by someone].  
 c. **\*baggul yarangu balgan.**  
 he+ERG man+ERG hit

The verb in these examples is not inflected to agree with either NP, and though Dixon uses a passive to translate (25b), the verb form is the same in both (25a)



and (25b). Absolutive is also the case of the single direct argument of intransitive clauses (26a), and this argument cannot be ellided (26b):<sup>16</sup>

- (26) a. balan dugumbil baniju.  
she+ABS woman+ABS come  
Woman is coming.  
b. \*baniju.  
come

We then have a clear [S, P] pivot pattern for indispensability in Dyirbal. In Chinese, on the other hand, the verb phrase alone can be a complete sentence, as in (27):

- (27) Chi le.  
eat ASP  
I/you/he/she ate.

There are also no 'dummy' subjects in Chinese, as are found for example in English sentences dealing with weather phenomena such as *It's raining*:

- (28) Xia yu le.  
fall rain ASP  
(It's) raining.

In discussing 'subjectless' verbal expressions, Chao (1968: 61) states that '[a]lthough it is possible to supply subjects to such verbal expressions . . . they should be regarded as sufficient by themselves, because (a) there is not always one specific form of a subject that can be supplied, and (b) sometimes no subject can be supplied.'

We can see from this that there is no indispensable NP in the Chinese clause, and therefore indispensability also can not be evidence for a 'subject' in Chinese.

## 2.6. Reflexives

The control of reflexives is often said to be a property of subjects (Tan 1988, C. Tang 1989). C. Tang (1989: 99) formalizes this for Chinese with a categorical rule that states that 'The antecedent of a reflexive must be a subject'. As the following examples show, this is not descriptively adequate ([29a] is from Sun 1989):

- (29) a. Mama bu neng yongyuan ti nii zhaogu (ni)ziji.  
Mom not able forever for you look-after yourself  
Mom won't be able to look after you (lit. '(your)self') forever.  
b. Woi zhen fan, buguan woi zai nali, zong you ren lai  
1sg very annoy not-matter 1sg LOC where always have people come  
ganshe zijii de shi.

interfere self GEN affair

I'm really annoyed, no matter where I am, someone always interferes with what I am doing (Lit.: '. . . interferes with self's business').

- c. You ren lai jinggao Zhu Laoban shuo zijii de erzi  
have person come warn Zhu boss say self GEN son  
zai tou dongxi.  
DUR steal thing(s)  
Someone came to warn Boss Zhu that his (Zhu's) son was stealing things.  
d. Wo jintian gei nii pai le hao duo ren de zhaopian, xianzai  
1sg today give 2sg hit ASP very many people GEN photo now  
gei nii pai zijii de.  
give 2sg hit self GEN  
I took pictures of a lot of people for you today, now I'll take your picture (Lit.: '. . . take self's picture').

In none of the above cases could the antecedent of *ziji* 'self' be said to be in an immediately preceding 'subject' slot.

In general, reflexives in Chinese are pragmatically or semantically controlled. That is, the nature of the discourse situation, the semantics of the verb used, the topicality/referentiality of the participants, or the psychological perspective will determine the antecedent of the reflexive pronoun.<sup>17</sup> The concept of psychological perspective is from Zubin, Chun, & Li 1990 and Li & Zubin 1990; it refers to the degree of access to the perceptual thought processes of the character in the text under examination. This is comparable to Kuno's (1976, 1987) 'empathy' hierarchies, which Van Valin (1990: 212) reduces to a single principle 'E (more topical NP) > E (less topical NP)', i.e., empathy is with the more topical NP. The topicality of the controller of the reflexive anaphor then seems to be the key factor.

The influence of context is especially clear from a comparison of (30a) and (30b), below, in which the clause containing *ziji* (*Lao Zhang . . . gaosu Lao Wang zijii de erzi zai tou dongxi*) is the same in both examples, but the antecedent which controls *ziji* is different because of the different contexts:

- (30) a. Lao Zhang mingming zhidao Wang Huan (Lao Wang de erzi)  
old Zhang clearly know Wang Huan old Wang GEN son  
ba neixie lingjian nazoule, keshi yao zugou de zhengju  
BA those spare-parts take: leave-ASP but want sufficient REL proof  
cai neng gaosu Lao Wang, zijii, de erzi zai tou dongxi.  
then can tell old Wang self GEN son DUR steal thing(s)  
Old Zhang clearly knew that Wang Huan (Old Wang's son) took those spare parts, but he needed sufficient proof before he could tell Old Wang that self's (Old Wang's) son was stealing things.  
b. Lao Zhang, mingming zhidao to erzi ba neixie lingjian nazoule,  
old Zhang clearly know 3sg son BA those spare-parts take: go



keshi gaosu Lao Wang zijig<sub>i</sub> de erzi zai tou dongxi,  
but tell old Wang self GEN son DUR steal thing(s)  
Lao Zhang ye daomei le.  
old Zhang also in-trouble ASP.

Old Zhang clearly knew his son took those spare parts, but (if he) told Old Wang that self's (Old Zhang's) son was stealing things, he would also be in trouble.

In the two examples, *ziji* refers to either Lao Wang (30a) or Lao Zhang (30b) because it is known from the respective preceding contexts whose son is doing the stealing. The antecedent of *ziji* is determined by the semantics the whole utterance, not the syntactic function of the antecedent or its position in the sentence. This being the case, reflexives also give us no evidence for establishing a subject in Chinese.

### 2.7.0 Pseudo-passives

A common sentence type in Mandarin is where no A role is expressed, and the P role NP is in initial position, as in (31):

- (31) Jiu he le.  
wine drink ASP  
I/you/he/she drank the wine.

These are often called passives and given passive translations in English (e.g., (31) would be translated as 'The wine was drunk') by those wishing to establish syntactic relations for Chinese (e.g. Tan 1988), and the initial NP is seen as the subject. This type of 'passive' is only felicitous with inanimate patients; as there is no passive morphology, an animate noun in preverbal position would have to be interpreted as the agent of the verb unless intonation or some other clue informs the listener that it is the patient of the verb (cf. Teng 1975). An example of when it is logically clear that the sentence initial animate NP could not possibly be the agent is (32) (from L. Li 1986: 347):

- (32) Ta qiechu le liuzi le.  
2sg cut-out ASP tumor ASP  
He cut out (his) tumor. (i.e., He had his tumor cut out.)

An ambiguous case would be (33), the meaning of which only becomes clear when we know that Michael is only six years old.

- (33) Michael zuijin mei qu zhao-xiang.  
M. recently N-A go take-pictures  
a. Michael hasn't taken pictures recently.  
b. Michael hasn't had his picture taken recently.

It is clear from this that there really is no innate passive sense to the verb in this type of construction, and that in (31), *Jiu he le*, *jiu* cannot be a subject. It must then be a topical theme in an active sentence without an agent. A similar analysis is given in Li & Thompson 1976: 479-450, and Li & Thompson 1981: 498-499.

A good example to show that this type of construction is not passive is (34), which could be said if two old friends pass in the street and one does not notice the other. The person who was not noticed could call out

- (34) Eh, Lao pengyou dou bu renshi la!  
hey old friend all not recognize/know SFP  
Hey, (you) don't recognize (your) old friend!?

To read this as a passive sentence would be inappropriate to the situation, as the emphasis is on the person addressed not recognizing the speaker rather than it being on the speaker not being recognized by someone.

Another example is the first two parts of the famous saying in (35), below, which would not make sense if considered to be passivized.

- (35) Tian bu pa, di bu pa (zhi pa Guangdongren shuo Guanhua).  
heaven not fear, earth not fear (only fear Cantonese speak Mandarin)  
(I'm) not afraid of heaven or earth, (just afraid of a Cantonese speaking Mandarin).

Looking at (36), below, we can see another problem with the 'passive' analysis, pointed out by Lü Shuxiang (1986: 340):

- (36) a. Wo bu he jiu, yi di ye bu he.  
1sg not drink wine one drop even not drink  
I don't drink wine, not even one drop.  
b. (Ni) bie guan wo, ni shei ye bie guan.  
(2sg) don't pay-attention 1sg 2sg who also don't pay-attention  
Don't pay attention to me, don't pay attention to anyone.

If we were to say that the first clause of (36a) is active, but the second clause is passive because the P role NP occurs in initial position, then the parallelism is thrown off. In (36b) the topic is animate, and so the actor (ni) must be expressed in the second clause or shei 'anyone' would be seen as the actor, and the meaning would be 'Don't anyone bother me' (or 'Nobody bother me'). Comparing the two examples, we can see that they are both meant to be parallel structures, and both clauses of both sentences are active. The preverbal position of the P role NP is obligatory with *ye* 'also; even' (Derek Herforth, p.c.), and not related to any optional 'repackaging' (Foley & Van Vâlin 1985) strategy such as passivization.

One last argument against establishing a subject in Chinese also involves this type of topic-comment structure. Givón (1984a: 145) states that 'one may . . . view the grammar of subjectization as, in large part, the grammar of differentiating the subject



from the direct object case-role.<sup>18</sup> If we look at the example below, we can see that as there are two topic positions in Chinese, first and second (after the A-role NP) position in the sentence.<sup>19</sup> The A and P roles are differentiated solely on the basis of semantics; there is no marking for which NP is the 'subject' and which is the 'object'.

- (37) a. Zhangsan fan dou chi le.  
 Zhangsan rice all eat ASP  
 Zhangsan ate all the rice.  
 b. Fan Zhangsan dou chi le.  
 rice Zhangsan all eat ASP  
 Zhangsan ate all the rice.

Y. R. Chao (1968: 325) gives the following ambiguous example:

- (38) Zhe ge ren shei dou bu rende.  
 this CL man who all not know  
 a. Nobody knows this man.  
 b. This man doesn't know anybody.

If we accept Givón's statement, then since 'subject' and 'object' are not differentiated by the grammar, no subjectization has taken place.

To summarize this section briefly, we have looked at cross-clause coreference, relativization, *bi* comparatives, raising to subject, indispensability, reflexives, and pseudo-passives, and have found no restricted neutralizations of semantic roles in any of these constructions that would support the recognition of a subject in Chinese.

### 3.0 The question of 'direct object'

As with the question of 'subject', we would need to find restricted neutralizations in behavior or marking of semantic roles for us to be able to say there is a syntactic direct object in Chinese.

#### 3.1.0 Behavioral properties

In terms of behavioral properties, many of the same tests we used for 'subject' above, such as relativization and indispensability, apply equally well to the question of 'object'. As we found no restricted neutralizations in any of the constructions considered above, such as relativization, we have no behavioral evidence from those tests for a direct object in Chinese. One type of behavioral property unique to grammaticalized objects is what is known as 'dative shifting' ('promotion to direct object'), a construction with marked ('less usual') assignment of direct object status, that is, where an otherwise non-canonical direct object argument of a three argument verb is marked or behaves as (is 'promoted' to) a

direct object (Givon 1984b). The contrast between marked and unmarked assignment of direct object status can be seen from the examples in (39):

- (39) a. John gave a dog to the boy.  
 b. John gave the boy a dog.

In (39a) the NP in the immediate post-verbal direct object position is the theme *a dog*, and this is the unmarked assignment to direct object. In (39b) it is the recipient *the boy* which is the immediate post-verbal direct object position, and this is a marked assignment of direct object position. These two possibilities are referred to as 'alternate syntactic frames' in Dixon 1989. Chinese does not allow such alternate syntactic frames, as is pointed out by Dixon (1989: 99). With a small number of ditransitive verbs (those expressing 'giving' or 'sending'), it is possible to have the goal argument in other than immediate post-verbal position by putting it in a second clause with *gei* 'give', but this breaks the sending and giving into two clauses/actions:

- (40) a. Wo song haizi shu.  
 1sg send child book(s)  
 I sent the child(ren) (a) book(s).  
 b. Wo song shu gei haizi le.  
 1sg send book(s) give child ASP  
 I sent (a) book(s) to the child(ren).

This alternate form is not possible with ditransitives where there is no actual giving, and is not possible with *gei* 'give' itself:

- (41) a. \*Wo gaosu yi jian shi gei ni.  
 1sg tell one CL affair give you  
 (I'll tell you about something.)  
 b. \*Wo gei yi zhi you gei haizi.  
 1sg give one CL dog give child(ren)  
 (I gave a dog to the child(ren)).

There is also an alternant where the *gei* clause is placed before the verb, and this can be done with a wider range of verbs, but in this case the reading is a benefactive one:

- (42) Wo gei haizi song shu.  
 1sg give child(ren) send book(s)  
 I sent (a) book(s) for the children.

In each of these cases the goal or beneficiary remains in immediate post verbal (including *gei* as a verb) position, and does not take on the position (or markings) of a direct object.



A second behavioral property claimed for 'objects' in Chinese is inability to appear in the *shi* . . . (*de*) cleft construction. T-C. Tang (1983: 190) claims that objects, whether direct or indirect, cannot be clefted, that is, they 'cannot alone become the informational focus' (see also Teng 1979: 105). Examples of the *shi* . . . (*de*) cleft construction are given in (43b, c):

- (43) a. Ta ji gei wo liwu.  
3sg mail give 1sg present  
He sent me a present.  
b. Ta *shi* ji gei wo liwu *de*.  
3sg COP mail give 1sg present NOM  
He SENT me a present.  
c. Shi ta ji gei wo liwu (*de*).  
COP 3sg mail give 1sg present NOM  
He sent me a present.

This construction places a focal NP in the immediate post-copula focus position and nominalizes the main verb. As evidence that objects cannot become the informational focus, Tang (p. 190) gives the following sentences:

- (44) a. \*Ta ji gei wo *shi* liwu *de*.  
b. \*Ta ji *shi* gei wo liwu *de*.  
c. \*Ta ji gei *shi* wo liwu *de*.

All grammatical examples of the *shi* . . . (*de*) cleft construction have the verb within the *shi* . . . (*de*) phrase. As the function of *de*, when it appears, is to nominalize the verb, of course the verb must be within the nominalized phrase, and this excludes post-verbal arguments if the copula *shi* is to appear before *de*. The restriction then is not on 'objects' per se, or on any particular semantic role, but on post-verbal position. This can be seen from the fact that post-verbal arguments other than 'objects' and 'indirect objects' are also barred from appearing in this construction, such as the locative argument in (45):

- (45) a. Wo ba nei ben shu fang zai zhuozi shang.  
1sg BA that CL book place LOC table on  
I put that book on the table.  
b. \*Wo ba nei ben shu fang *shi* zai zhuozi shang *de*.

Other evidence that it is position and not semantic role that is the limiting factor is the fact that a 'fronted' P role NP CAN be the informational focus in a cleft construction, as in (46):

- (46) Shi pingguo wo mei mai.  
COP apples 1sg N-A buy  
It was APPLES I didn't buy.

There is also an alternate cleft construction, what Tang (1983) refers to as a 'changed cleft' construction, which CAN take post-verbal arguments, as the linear order of *shi* and *de* is reversed, avoiding the problem mentioned above:

- (47) a. Wo mei mai *de shi* pingguo.  
1sg N-A buy NOM COP apples  
What I didn't buy was APPLES.

We can see from the above that the restrictions on clefting are not related to semantic role, and so do not point to a restricted neutralization of semantic roles that we might identify as a 'direct object' in Chinese.

### 3.2.0 Marking properties

In terms of marking properties, as undergoers (P role and non-actor S role arguments) can occur either preverbally or postverbally, and there is no agreement of any argument with the verb, to prove the grammaticalization of a direct object, we would need to find some type of unique marking that distinguishes the argument said to be the direct object. It is often considered that the *ba* construction in Mandarin provides just this type of unique marking (see for example Sun & Givon 1985, in which *ba* is referred to as the OM ['object marker']). In the *ba* construction, the particle *ba* occurs between two NPs and (most often) before a resultative verb complex:

- (48) NP<sub>1</sub> *ba* NP<sub>2</sub> V<sub>1</sub> (V<sub>2</sub>) *le*

In this construction, V<sub>1</sub> is most often transitive, and V<sub>2</sub> is always intransitive or a movement/locative verb. NP<sub>2</sub> is then said to be the direct object of V<sub>1</sub> or the complex verb made up of V<sub>1</sub> and V<sub>2</sub> if there is a resultative complement, as in (49):

- (49) Zhangsan ba yifu xi huai le.  
Zhangsan BA clothes wash broken ASP  
Zhangsan ruined the clothes washing them.

In this case, *yifu* 'clothes' is the P of the verb *xi* 'wash', and is the S of the stative verb *huai* 'broken'. This configuration is said to have developed out of a serial verb construction where the first verb (*ba* - hich means 'hold' when it acts as a full verb) grammaticalized into a direct object-marking preposition or particle (Y.C. Li 1974; Li & Thompson 1974a, 1974c, 1976b, 1981; Peyraube 1987, 1989). We need to look more carefully, though, at the grammatical and semantic relations that hold between the constituents of a *ba* construction.

As has been pointed out elsewhere (than 1983, Z. Ma 1985), the post-*ba* position can be filled not only by a patient, but also by an agent, a locative, an



instrument, or an NP that has no selectional relation to the verb, but is involved in the action. Consider the examples below (from X. Ma 1987: 428-29):

- (50) a. Luobo ba dao qie dun le.  
radish BA knife cut dull ASP  
The radish made the knife dull (when I/you/he cut it).
- b. Ta ba bi xie to le.  
3sg BA pen(cil) write blunt ASP  
He made the pen(cil) blunt from writing with it.
- c. Zhe bao yishang ba wo xi lei le.  
this package clothes BA 1sg wash tired ASP  
Washing this pack of clothes has made me tired.
- d. Zhe xie shi ba toufa chou bai le.  
this few affair BA hair worry white ASP  
Worrying about these affairs has made (my/yours/his/her) hair turn white.
- e. Xiao Wang ba haizi dong bing le.  
Little Wang BA child freeze sick ASP  
Little Wang (did something such that his) child got sick from being too cold.

The examples above show several different possible relationships between the constituents of the *ba* construction: (50a) has the P of  $V_1$  in initial position, the S of  $V_2$  in the post-*ba* position, and no A argument specified; (50b) has the A of  $V_1$  in initial position, the instrument of  $V_1$ , which is also the S of  $V_2$ , in post-*ba* position, and no P argument specified; (50c) has the P of  $V_1$  in initial position, and the A of  $V_1$ , which is also the S of  $V_2$ , in post-*ba* position; (50d) has a non-argument topic in initial position, the S of  $V_2$  in post-*ba* position, and no core argument of  $V_1$  anywhere in the sentence; (50e) has the possessor of the S of both  $V_1$  and  $V_2$  in initial position and the S of both verbs in post-*ba* position.

As can be seen from these examples, there is no consistent relationship between the post-*ba* NP and the P of  $V_1$ . The only consistent relationship holding in these *ba* constructions is that between the post-*ba* argument and the S of  $V_2$ .

It might be argued that these verb complexes should be treated as single verbs, so the post-*ba* argument would then be the object of that single complex verb. That this would be incorrect can be seen from the fact that there cannot be, for example, a complex verb *xi-lei* 'to wash-tired', with clothes as the subject and a person as the object, as would have to be the case in (50c).

A second point is that the relationship between the post-*ba* NP and the S of  $V_2$  only holds when there IS a  $V_2$ . In the following examples there is no  $V_2$ :

- (51) a. Wo ba ni de qian mai le shu le.  
1sg BA 2sg GEN money buy ASP book ASP  
I bought books with your money.

- b. Ta ba diren dang pengyou.  
3sg BA enemy act-as friend  
He takes enemies to be friends.

In each of these examples there is only one verb, and there is no regularity to the semantics of the post-*ba* NP: in (51a), the post-*ba* NP is an instrument; in (51b), the post-*ba* NP is a locative. The use of *ba* in (51b) changes a non-causative verb into a causative one by adding an extra argument to an otherwise equational construction. (See also exx. (55a, b) for similar semantics.)

This lack of relationship with a specific semantic role is in concord with Tsao's (1987) analysis of the post-*ba* NP as a 'secondary topic', and with one of the functions of *ba* itself as clarifying the transitivity relation between the primary topic (the clause-initial NP) and this secondary topic (cf. Chao 1968: 702). I believe Thompson (1973) is correct in being more explicit about the transitivity function of the *ba* construction. She does call the post-*ba* NP the 'direct object', but of the whole sentence, not the verb, a somewhat broader notion of direct object (see also L. Li 1986: 352 for a similar argument). Her 'semantic condition' on the use of *ba* is that '[a] NP<sub>i</sub> may be fronted with *ba* if the rest of the sentence answers the question, "What did the agent do to NP<sub>i</sub>?", that is, if it is semantically the "direct object" of the sentence' (p. 220). We can see from the examples above that the pre-*ba* NP is not always an agent, so this condition does not always hold in *ba* constructions. In other words, it would be more correct to say that something affects something else, with no reference to semantic role or grammatical function. This transitivity function is clear in examples such as the following ([52a] is from a love song; [52b] is from Li & Thompson 1981: 469, their [27]):

- (52) a. Wo shou zai Xishan ba lang deng.  
1sg stay LOC West-Mountain BA man wait  
I stay at West Mountain and wait for (my) man.
- b. Ta ba xiao mao ai de yao si.  
3sg BA small cat love CD want die  
S/He loves the kitten very much (i.e. 'so much s/he could die').

Generally 'wait' and 'love' are not verbs of high transitivity, but to emphasize how much energy the woman/child is putting into waiting/loving, the *ba* construction is used. Li & Thompson (1981: 469) offer the explanation that sentence (52b) 'hyperbolically creates an image that such intense love must have some effect on the "small cat"'. From this example, though, we can see that *ba* here is intensifying the transitivity, but not intensifying the affectedness of the undergoer, as can be seen from the fact that the complement of result refers to the actor of the loving, not the undergoer. That the cat is not necessarily affected by the loving can be seen in the fact that the same sentence could be used about a fan loving a movie star that s/he had never met. Likewise, in



the following example, it is the one doing the loving, not the one loved who can't sleep:

- (53) *Ta ba ni ai de shui bu liao jiao.*  
 3sg BA 2sg love CD sleep not able sleep (n.)  
 She loves you so much she can't sleep.

As pointed out by McCawley (1989: 31), it is also possible to have ambiguity as to who is being affected in a sentence of this type, as in (54):

- (54) *Ta ba wo xiang si le.*  
 3sg BA 1sg think die ASP  
 a. He misses me so much he could die.  
 b. He makes me miss him so much I could die.

Another argument against seeing the *ba* construction as marking a direct object is that of the 'retained' object (a post-verbal object in a *ba* or *bei* construction – See Thompson 1973). Consider the examples below, both from Li & Thompson 1981: 471:

- (55) a. *Wo ba ta erzi huan le xingming.*  
 1sg BA 3sg son change ASP name  
 I changed his/her son's name.  
 b. *Ta ba huo jia le yi-dian you.*  
 3sg BA fire add ASP a-little oil.  
 S/He added a little oil to the fire.

In no sense could we say that *ta erzi* 'his/her son' is the direct object of *huan* 'change', or that *huo* 'fire' is the direct object of *jia* 'add'; (55a) is a case of possessor raising (Fox 1981), and there is no grammatical non-fronted form for (55b) without *ba* or *gei* to allow an added argument.

As we have found no consistency in the use of *ba* for marking a P role argument or any other type of argument, it cannot be used as evidence for the grammaticalization of the syntactic function 'direct object' in Chinese. We have, then, found neither behavioral or coding properties that could justify establishing the syntactic function 'direct object' in Chinese.

#### 4.0 Conclusion

In this paper we have looked at various constructions in Chinese to see if there are any restricted neutralizations of semantic roles that would point to a grammatically viable category of either 'subject' or 'direct object' in that language. We have found none. We have also compared the classic accusative and ergative

syntactic patterns and found Chinese to differ from them both. My conclusion is that Chinese has not grammaticalized either an accusative or an ergative pattern, and so the syntactic categories 'subject' and 'direct object' simply do not exist in Chinese.<sup>20</sup>

#### Notes

\* I owe a great debt of gratitude to Derek Herforth, Naicong Li, James D. McCawley, James A. Matisoff, Johanna Nichols, Tian-shin Jackson Sun, Sandra A. Thompson, Robert D. Van Valin, Jr., and two anonymous reviewers for their comments on earlier drafts of this paper. The following abbreviations are used in the interlinear glosses of the examples: ASP aspect marker; CL numeral classifier; COP copula; GEN genitive; LOC locative verb; N-A negative aspect marker; NOM nominalizer; REL relativizer; QP Question particle.

1 There are actually two parts to the question of 'subject':

... in order to say that a given grammatical relation exists in a given language this claim must be justified both language-internally and cross-linguistically. Language-internally, this means that a number of logically independent criteria must be established that serve to identify the grammatical relation in question as being syntactically significant in the language in question. Cross-linguistically, ... in assigning the same name to grammatical relations established independently in different languages, it must be the case that the relations in the two languages have a reasonable degree of overlap ...

(Comrie 1981: 60)

In this paper we will be concerned only with the language-internal question of 'subject', etc.

- 2 This concept is from Dixon 1979, but see also Foley & Van Valin 1984: 107-124, 1985: 304-306 for a discussion of the nature of pivots and the distinction between Pragmatic Pivots and Semantic Pivots. A Semantic Pivot is sensitive to semantic factors, while a Pragmatic Pivot is sensitive to the topicality of a referent. For Dixon, pivots are a surface phenomenon, as there is a deep universal subject. Foley & Van Valin's Role and Reference Grammar is a monostratal theory, and what Dixon calls deep subject properties, Foley & Van Valin analyze as role-related properties different from the reference-related properties that define pragmatic pivots. (The term 'pivot' goes back to Chao 1968, but there refers to the shared argument of a biclausal structure.)
- 3 The single argument of intransitive verbs can also be agentive or non-agentive. This semantic distinction is significant in the determination of word order in presentative and other constructions in Chinese (see LaPolla 1990, Chapter 3, LaPolla 1993), but it is not important for the discussion of pivots, as the question of which of two or more NPs is pivot is only relevant with transitive verbs.
- 4 These 'primitives' are 'semantic-syntactic' in the sense that in terms of transitive verbs the distinction is semantic, while in terms of intransitive verbs, the neutralization of semantic roles is syntactic. See Du Bois 1985 for arguments why A, S, P (his 'O') are not universal or primitives. Nonetheless, I will use them here, as Du Bois does, because they are useful heuristic notions. I am using 'P' instead of Dixon's (and Van Valin's) 'O' to refer to the patient of a prototypical transitive verb, following Comrie 1978, 1981. Dixon's use of 'O' stems from his positing of a level of 'deep' subject and object (see footnote 2). Though we are essentially talking about the same thing, I prefer not to use 'O' because of its association with 'object' and the confusion that might arise from this association.



- 5 I want to emphasize that I am talking here about syntactic ergativity; morphological ergativity has no necessary relationship to this syntactic type (Comrie 1981: 65 ff.), though it so happens that Dyirbal is morphologically ergative (with a pattern split according to person) as well.
- 6 This paragraph is partially adapted from Van Valin 1981: 862; see also Van Valin 1977, Comrie 1981: 64, 118.
- 7 See Silverstein 1981: 243 on the speaker and addressee as the 'maximally presupposable entities' and the most 'natural' topics.
- 8 I am dealing here only with the order of constituents in a sentence, not the order within constituents such as NPs. It might be said that the order of relative clause before head reflects information structure, but it is not clear how one could relate determiner-head order to pragmatic structure (though see Takashima 1985, 1987 for one attempt at this in the language of the Chinese oracle-bone inscriptions).
- 9 This term is from Lambrecht, to appear; roughly, a sentence-focus sentence is a sentence without a topical subject, as the entire sentence is focal.
- 10 Though in a later article L. Li (1986: 349) claims that not only the syntactic function, but also the semantic role of a referent changes with a change in position in a sentence. Li claims that in (i) the referent of '1pl' is a patient, while in (ii) it is an agent:
- (i) Zhe yi xia, jiu mang huai le women zhe xie ren.  
this one time then busy ruin ASP 1pl this few people  
This time we really got busy.
- (ii) Women zhe xie ren jiu mang huai le.  
1pl this few people then busy ruin ASP  
We really got busy.
- 11 Tsao (1990: 430-32) gives arguments to show that the degree of topicality of the relativized NP is directly correlated to the naturalness of it being relativized upon. In the case of (17k), the NP involved is not highly topical, and so not as relativizable.
- 12 This structure is much more acceptable when the items being compared are inanimate, as in (i):
- (i) wo daishu bi jihe xihuan.  
1sg algebra compared-to geometry like  
I like algebra more than (I do) geometry.
- This possibility is not available at all when the 'objects' are human, as in (21), below.
- 13 Unmodified Mandarin Chinese stative verbs, such as *gao* 'tall' are INHERENTLY comparative because a clause without the comparative PP is still comparative (Light 1989). For example, if there were two people standing in front of me and I said *John gao* (Lit. 'John tall'), it would mean 'John is taller (than the other person)', not 'John is tall'. To say the latter, the stative verb must be modified by *hen* 'very' or some other adverb.
- 14 See Tsao 1990: 378ff for other examples of 'raising' in Chinese showing the possibility of all arguments being 'raised'.
- 15 In Dixon 1972, the absolutive case is referred to as the 'nominative' case; I am here using 'absolutive' to conform with the examples cited above from Dixon 1980.
- 16 It is possible for the absolutive marked NP to not include a lexical noun, but there must at least be a noun class marker, and so there is still an overt absolutive NP, as in (i):
- (i) bayi baniju.  
he+ABS come  
(Man) is coming.

- 17 The nature and use of *ziji* 'self' in Chinese is actually quite complex. See J. Sun 1989 and Zubin, Chun, & Li 1990 for more complete discussions. See Li 1990 for a more complete discussion of psychological perspective framing, and Yan Huang 1989 for a thorough refutation of the Government-Binding analysis of reflexives and discussion of a possible Gricean analysis.
- 18 Though see Hopper & Thompson 1980 for arguments on why P case marking should be seen as 'functionally motivated by the Transitivity of the clause as a whole, rather than by the need to distinguish subject from P' (p. 292).
- 19 The case I am speaking of here is when there is both an A role NP and an P role NP in preverbal position – ignoring for the time being the question of the *ba*-construction (see §3.2) and preverbal temporal and locational phrases
- 20 For those whose theoretical orientation would preclude them from accepting my conclusion, the fact remains that the differences in syntactic patterning presented here are very real; a theory that assumes 'subject' and 'direct object' as universals must be able to explain how these categories can evince such radically different behavior in different languages.

## References

- Anderson, J. M. 1984. Objecthood. In Plank, ed. 1984, 29-54.
- Anderson, Stephen R. 1976. On the notion of subject in ergative languages. In C. N. Li, ed. 1976, 3-23.
- Bhat, D. N. S. 1991. *Grammatical relations: The evidence against their necessity and universality*. London and New York: Routledge.
- Bresnan, Joan. 1982. Control and complementation. *Linguistic Inquiry* 13.3: 343-435.
- Chao, Yuen Ren. 1968. *A grammar of Spoken Chinese*. Berkeley: University of California Press.
- Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris Publications.
- Cole, Peter & Jerold M. Sadock, eds. 1977. *Grammatical relations* (Syntax and semantics 8). New York and London: Academic Press.
- Collinge, N. E. 1984. How to discover objects. In Plank, ed. 1984, 9-27.
- Comrie, Bernard. 1978. *Ergativity. Syntactic typology: Studies in the phenomenology of language*, ed. by W. P. Lehmann, 329-94. Austin: University of Texas Press.
- . 1981. *Language Universals and Linguistic Typology*. Oxford: Blackwell, and Chicago: University of Chicago Press.
- . 1988. Coreference and conjunction reduction in grammar and discourse. *Explaining language universals*, ed. by John Hawkins, 186-208. Basil Blackwell.
- Connolly, Leo A. 1989. Case Grammar, subjecthood, and ergativity. Paper presented at the 1989 Annual Meeting of the LSA, Washington, D.C., Dec. 27-30.
- Cumming, Susanna. 1984. The sentence in Chinese. *Studies in Language* 8.3: 365-395.
- Dixon, R. M. W. 1972. *The Dyirbal language of North Queensland* (Cambridge studies in linguistics 9). Cambridge: Cambridge University Press.
- . 1979. Ergativity. *Language* 55: 59-138.
- . 1980. *The Languages of Australia*. Cambridge, London, and New York: Cambridge University Press.
- . 1989. Subject and object in Universal Grammar. *Essays on grammatical theory and Universal Grammar*, ed. by Doug Arnold, Martin Atkinson, Jacques Durand, Clair Grover, & Louisa Sadler, 91-118. Oxford: Clarendon.



- Du Bois, John W. 1985. Competing motivations. *Iconicity in syntax*, ed. by John Haiman, 343-365. Amsterdam/Philadelphia: John Benjamins Pub. Co.
- Faarlund, Jan Terje. 1989. Pragmatics and syntactic change. *Language change: contributions to the study of its causes* (Trends in linguistics, Studies and Monographs 43), ed. by Egil Leiv Breivik & Ernst Hkon Jahr, 71-98. Berlin and New York: Mouton de Gruyter.
- Foley, William A. & Robert D. Van Valin, Jr. 1977. On the viability of the notion of 'subject' in universal grammar. *Annual Meeting of the Berkeley Linguistics Society* 3.293-320.
- & ———. 1984. *Functional syntax and universal grammar*. Cambridge: Cambridge University Press.
- & ———. 1985. Information packaging in the clause. *Language typology and syntactic description, Vol. 1: Clause structure*, ed. by T. Shopen, 282-364. Cambridge University Press.
- Gary, J. O. & E. L. Keenan. 1977. On collapsing grammatical relations in universal grammar. In Cole and Sadock, eds., 83-120.
- Gil, D. 1984. On the notion of 'direct object' in patient prominent languages. In Plank, ed. 1984, 87-108.
- Givón, Talmy. 1984a. *Syntax: a functional-typological introduction, Vol I*. Amsterdam & Philadelphia: John Benjamins Pub. Co.
- . 1984b. Direct object and dative shifting: semantic and pragmatic case. In Plank, ed. 1984, 151-182.
- Harlow, S. J. 1973. Four reasons why Chinese is not an immediate dominance language. *York Papers in Linguistics* 3: 117-30.
- Hashimoto, Anne Y. 1971. Mandarin syntactic structures. *Chi-Lin (Unicorn)* 8: 1-149.
- Hopper, Paul J. & Sandra A. Thompson. 1980. Transitivity in grammar and discourse. *Language* 56.251-299.
- Huang, Yan. 1989. *Anaphora in Chinese: Towards a pragmatic analysis*. University of Cambridge PhD dissertation.
- Johnson, David E. 1977. On Keenan's definition of 'subject of'. *Linguistic Inquiry* 8.4: 673-692.
- Keenan, Edward L. 1976. Towards a universal definition of 'subject'. In C. N. Li, ed. 1976, 305-333. New York: Academic Press.
- Keenan, Edward L. & Bernard Comrie. 1979a. Noun phrase accessibility revisited. *Language* 55.3: 649-664.
- & ———. 1979b. Data on the noun phrase accessibility hierarchy. *Language* 55.2: 333-351.
- Kibrik, A. E. 1985. Toward a typology of ergativity. *Grammar inside and outside the clause*, ed. by Johanna Nichols, & Anthony Woodbury, 268-323. Cambridge, London and New York: Cambridge University Press.
- Kuno, Susumu. 1976. Subject, theme, and the speaker's empathy. In Li, ed. 1976, 417-444.
- . 1987. *Functional syntax: anaphora, discourse, and empathy*. Chicago: University of Chicago Press.
- Lambrecht, Knud. to appear. *Information structure and sentence form*. Cambridge: Cambridge University Press.
- LaPolla, Randy J. 1990. *Grammatical relations in Chinese: Synchronic and diachronic considerations*. UC Berkeley Ph. D. dissertation.
- . 1993. Pragmatic relations and word order in Chinese. *Word order and discourse*, ed. by P. Downing and M. Noonan. Amsterdam and Philadelphia: Benjamins Pub. Co.
- Leech, Geoffrey & Jan Svartvik. 1975. *A communicative grammar of English*. London: Longman Group LTD.

- Li, Charles N., ed. 1976. *Subject and topic*. New York: Academic Press.
- Li, Charles N. & Sandra A. Thompson. 1974a. An explanation of word order change SVO > SOV. *Foundations of Language* 12: 201-214.
- & ———. 1974b. Chinese as a topic-prominent language. Paper presented to the 7th International Conference on Sino-Tibetan Languages and Linguistics, Atlanta, Georgia, Oct. 18-19, 1974.
- & ———. 1974c. Historical change of word order: a case study in Chinese and its implications. *Historical Linguistics I*, ed. by J. M. Anderson & C. Jones. New York: American Elsevier Pub. Co.
- & ———. 1976a. Subject and topic: A new typology of language. In C. N. Li, ed. 1976, 459-489.
- & ———. 1976b. Development of the causative in Mandarin Chinese: interaction of diachronic processes. *The grammar of causative constructions* (Syntax and semantics 6), ed. by Masayoshi Shibatani, 477-492. New York: Academic Press.
- & ———. 1978. Grammatical relations in languages without grammatical signals. *Proceedings of the 12th International Congress of Linguists*, ed. by Wolfgang Dressler, 687-691. Innsbruck: Innsbrucher Beiträge zur Sprachwissenschaft, Universität Innsbruck.
- & ———. 1979. Third-person and zero-anaphora in Chinese discourse. *Discourse and syntax* (Syntax and semantics, Vol. 12), ed. by Talmy Givón, 311-335. New York, San Francisco & London: Academic Press.
- & ———. 1981. *Mandarin Chinese: a functional reference grammar*. Berkeley: University of California Press.
- Li, Linding. 1985. Zhuyu de yufa diwei (The status of subject in grammar). *Zhongguo Yuwen* 1985.1: 62-70.
- Li, Linding. 1986. *Shoushi chengfen ju leixing bijiao* (A comparison of sentence types with affected (patient) elements). *Zhongguo Yuwen* 1986.5: 341-352.
- Li, Naicong. 1991. *Perspective-taking in Mandarin discourse*. PhD dissertation, University at Buffalo.
- Li, Naicong & David A. Zubin. 1990. Discourse continuity and perspective taking. Paper presented to the 26th Regional Meeting of the Chicago Linguistic Society.
- Li, Ying-che. 1974. What does 'disposal' mean? Features of the verb and noun in Chinese. *Journal of Chinese* 2. 200-218.
- Light, Timothy. 1989. The door is closed on ZHE NE. *Functionalism and Chinese grammar* (Chinese Language Teachers Association Monograph Series, No. 1), ed. by James H-Y. Tai & Frank F.S. Hsueh, 127-156. South Orange, N.J.: Chinese Language Teachers Association.
- Lü, Shuxiang. 1979. *Hanyu yufa fenxi wenti* (Questions in the analysis of Chinese grammar). Beijing: Shangwu Yinshuguan.
- . 1986. Zhu-wei weiyuju juli (Examples of subject-predicate predicate sentences). *Zhongguo Yuwen* 1986.5: 334-340.
- Ma, Xiwen. 1987. Yu dongjieshi dongci youguan de mouxie jushi (Certain syntactic patterns associated with verb-result type verbs). *Zhongguo Yuwen* 1987.6: 424-441.
- Ma, Zhen. 1985. Ba zi ju buyi (Notes on ba sentences). *Xiandai Hanyu xuci sanlun* (Essays on grammatical particles in Modern Chinese), ed. by Lu Jianming & Ma Zhen, 200-211. Beijing: Peking University Press.
- Marantz, Alec P. 1982. Grammatical relations and explanation in linguistics. *Subjects and other subjects: Proceedings of the Harvard Conference on the Representation of Grammatical Relations*, ed. by Annie Zaenen, 1-24. Bloomington: IULC.



- Marantz, Alec P. 1984. *On the nature of grammatical relations* (Linguistic Inquiry Monograph 10). Cambridge, Mass: The MIT Press.
- McCawley, James D. 1988. The comparative conditional construction in English, German, and Chinese. *Proceedings of the 14th Annual Meeting of the Berkeley Linguistics Society*, 176-187.
- . 1989. Notes on Li and Thompson, Mandarin Chinese: A functional grammar. *Journal of the Chinese Language Teachers Association* 24.1: 19-42.
- Mei, Tsu-Lin. 1961. Subject and predicate: A grammatical preliminary. *Philosophical Review* 52: 153-175.
- Peyraube, Alain. 1987. Problems concerning the origin of the disposal construction in Medieval Chinese. Paper presented to U.C. Berkeley Dept. of Oriental Languages colloquium, August 28, 1987.
- . 1989. Zao qi ba zi ju de jige wenti (Several questions related to the *ba* construction). *Yuwen Yanjiu* 1989.1: 1-9.
- Plank, Frans, ed. 1984. *Objects: towards a theory of grammatical relations*. London: Academic Press.
- Platt, J. F. 1971. *Grammatical form and grammatical meaning: a tagmemic view of Fillmore's deep structure concepts*. Amsterdam: North-Holland.
- Sanders, George. 1984. Adverbials and objects. In Plank, ed. 1984, 221-241.
- Schachter, Paul. 1977. Reference-related and role-related properties of subjects. In Cole & Sadock eds. 1977, 279-306.
- Shi, Dingxu. 1989. Topic chain as a syntactic category in Chinese. *Journal of Chinese Linguistics* 17.2: 223-262.
- Shibatani, Masayoshi. 1988. Grammaticalization of topic into subject. Paper presented at the Symposium on Grammaticalization, May 12-15, Eugene, Oregon.
- Silverstein, Michael. 1981. Case marking and the nature of language. *Australian Journal of Linguistics* 1: 227-47.
- Sun, Chao-fen & Talmy Givon. 1985. On the so-called SOV word order in Mandarin Chinese: A quantified text study and its implications. *Language* 61: 329-51.
- Sun, Jackson T-S. 1989. *Toward explaining reflexive constructions in Mandarin Chinese*. ms., UC Berkeley.
- Takashima, Ken-ichi. 1985. On the quantitative complement in oracle-bone inscriptions. *Journal of Chinese Linguistics* 13.1: 44-68.
- . 1987. Noun phrases in the oracle-bone inscriptions. *Monumenta Serica* 36: 229-302.
- Tan, Fu. 1988. Passivization in Chinese rather than topicalization. *Proceedings of the West Coast Conference on Linguistics*, Oct. 13-15, 1988, California State University, Fresno, 267-281.
- Tang, Chih-chen Jane. 1989. Chinese reflexives. *Natural Language and Linguistic Theory* 7: 93-121.
- Tang, Ting-chi. 1983. Guoyu de jiaodian jiegou: 'fenlieju', 'fenliebianju', yu 'zhunfenlieju' (Focusing constructions in Chinese: cleft sentences and pseudo-cleft sentences). *Studies in Chinese syntax and semantics*, ed. by Ting-chi Tang, Robert L. Cheng, & Ying-che Li, 127-226. Taipei, Taiwan: Student Book Co.
- . 1989. Guoyu yufa de zhuyao lunti: jian ping Li Na yu Tang Sun zhu Hanyu Yufa ('zhi yi' zhi 'zhi wu') (The main topics in Chinese grammar: a review article of Li & Thompson 1981 (1-5). *Hanyu cifa jufa lunji* (A collection of articles on Chinese syntax and word formation), ed. by Tang Ting-chi, 149-240. Taipei: Student Book Co.

- Tao, Liang. 1986. Clause linkage and zero anaphora in Mandarin Chinese. *Davis Working Papers in Linguistics* 1.36-102.
- Teng, Shou-hsin. 1974. Double nominatives in Chinese. *Language* 50.3: 455-73.
- . 1975. *A semantic study of transitivity relations in Chinese*. Berkeley & Los Angeles: University of California Press.
- . 1979. Remarks on cleft sentences in Chinese. *Journal of Chinese Linguistics* 7.1: 101-114.
- Thompson, Sandra A. 1973. Transitivity and some problems with the *ba* construction in Mandarin Chinese. *Journal of Chinese Linguistics* 1.2: 208-221.
- Tsao, Feng-fu. 1979. *A functional study of topic in Chinese: the first step towards discourse analysis*. Taipei: Student Book Co.
- . 1987. A topic-comment approach to the *ba* construction. *Journal of Chinese Linguistics* 15.1: 1-54.
- . 1990. *Sentence and clause structure in Chinese: A functional perspective*. Taipei: Student Book Co.
- Van Valin, Robert D., Jr. 1977. Ergativity and the universality of subjects. *Proceedings of the 13th Regional Meeting of the Chicago Linguistics Society*, 689-705.
- . 1981. Grammatical relations in ergative languages. *Studies in Language* 5.3: 361-394.
- . 1990. Functionalism, anaphora and syntax. Review article of Kuno 1987. *Studies in Language* 14.1: 169-219.
- Wang, Liaoyi. 1956. Zhuyu de dingyi ji qi zai Hanyu zhong de yingyong (The definition and use of subject in Chinese). *Hanyu de zhuyu binyu wenti*, ed. by Lü Jiping et al., 169-180. Beijing: Zhonghua Shuju.
- Zhan, Kaidi. 1983. *Ba zi ju wei yu zhong dongci de fangxiang* (The direction of the verb in the predicate of a *ba* sentence). *Zhongguo Yuwen* 1983. 2: 93-96.
- Zubin, David A., Soon Ae Chun, & Naicong Li. 1990. Misbehaving reflexives in Korean and Mandarin. Paper presented to the 16th Annual Meeting of the Berkeley Linguistics Society, Feb. 16-19, UC Berkeley.