INTERACTION AND VARIATION IN THE CHINESE VO CONSTRUCTION

漢語動賓結構中的互動與變化

by

ONE-SOON HER
何萬順

To the loving memory of my parents,
HER Yu-Shou 何於壽 & KUO Wen-Ying 郭文英

PREFACE TO THE REVISED EDITION

The book was first published in 1997 and was rather crudely typeset in the DOS version of WordPerfect. I was therefore delighted to be offered the opportunity to do a revised edition. I thank Mr. Fu-Gong Chang, Crane's president, for his support. He has successfully established Crane to be the country's most important bookseller and publisher in the field of linguistics.

This revised edition has thus undergone quite an overhaul in formatting and style. For this I must thank my amazing assistant Li-Hsin Ning, whose excellent skills with the word-processor Word and careful proofreading are largely responsible for the book's fresh new look. I am also indebted to my good friend Karen Chung, who read the book carefully and found many of the typos for me. I thank my assistants Han-Wen Chen, Meng-Ying Chen, Hsiao-Chien Feng, Yu-Ying Ho, Yi-Hsuan Lu, Yi-Ting Sie, Bo-Wen Tseng, and Guang-Zhong Wu for carefully proofreading the final manuscript.

The book received a review by Danqing Liu, published in the year 2000 (28.1) issue of *Journal of Chinese Linguistics*. I thank the editor, Professor William S.-Y. Wang, and the review author for allowing me to include this review article. I believe the reader will benefit greatly from Liu's very insightful and informative review and has thus decided to place it before the chapters. Other than that, the content of this revised edition has not changed from the first edition in any substantial way.

I thank my old colleague and friend Joseph Pentheroudakis (www.jpentheroudakis.com), a linguist and artist, for his permission to base the cover design on one of his drawings (Untitled #27 (Homage to Brice Marden), pen and Sumi ink on paper, 2007). The drawing is in the collection of Dr. Dean Roehl and Dr. Robert Reid of Seattle, Washington; I thank them for their consent as well. The cover was designed by Chao-An Chen.

I dedicate this revised edition to the loving memory of my mother, Wen-Ying Kuo, and my father, Yu-Shou Her.

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There are three key terms in the discussions of this book: grammatical interaction, lexical-functional grammar, and VO construction. The first is the overall approach for interpreting the grammatical analyses, the second is the formal syntactic model within which grammatical analyses are rendered, and the third is the general scope of Chinese data examined, with some reference to English. The interactionist approach finds its origin in Prof. William Wang's inspirational lexical diffusion hypothesis. Prof. Hsin-I Hsieh extended the concept of 'competition' in lexical diffusion to the entire grammar, diachrony and synchrony, and made explicit what competition is in the general taxonomy of interaction types. I had the good fortune to be among those with whom he most generously shared his thinking on this exciting idea from the beginning and throughout its development.

I acquired the knowledge on the lexical functional theory while I was working on English-Chinese machine translation at ECS, Inc. in Utah. I am indebted to my then colleagues Dr. Dan Higginbotham and Dr. Joseph Pentheroudakis, indeed two of the most brilliant linguists I have known, for showing me how to look at a formal theory and formalism critically and make them computationally more efficient without relaxing their formal power. I also acknowledge Prof. Chu-Ren Huang's pioneering and continuous works on Chinese within the lexical theory, even though our analyses do not always agree.

Although the syntactic constructions discussed in the book can be covered under the term 'VO construction', certainly not all varieties of the VO construction in Chinese are dealt with. I thank C. J. Yin, my assistant for the past two years, for collecting some of the Chinese data on VO compounds and VO idioms from the Sinica Corpus and proofreading some parts of the manuscript.

Certain portions of the book have been presented before as conference papers or invited talks. I have benefitted from many colleagues' comments and especially encouragement from the more senior members of our field, at the conferences or elsewhere. I would like to thank them all, including Prof. Ting-Chi Tang, Prof. William Wang, Prof. Tsu-Lin Mei, Prof. James Huang, Prof. Robert Cheng, Prof. Ying-Che Li, Prof. Feng-Fu Tsao, Prof. Chin-Fa Lien, Prof. Guang-Yu Chang, Prof. Chao-Hui Tung, Prof. Bonnie Chiu, Prof. Cheng-Hsi Chu, Prof. Chien-Ching Mo, Prof. Yu-Chao Hsiao, and last but not least my good friend Prof. Claire Chang, who read parts of the

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I also acknowledge the support of my colleagues at the Graduate Program in Linguistics and the English Department of National Chengchi University, especially Prof. Wen-Pin Li, the former chair of the English Department, Prof. Yun-Mei Yin, the former director of the graduate linguistic program, and Prof. Yi-Li Yang, the current director. Thanks to their efforts, the university now has an excellent linguistic program, undergraduate and graduate, and provides a great environment for teaching and doing research in linguistics.

Some parts of the book were written during my visit to the University of Hawaii (UH) and the University of Queensland (UQ). I thank Prof. Michael Forman, chair of the Linguistics Department (UH), Dr. Ping Chen, then the acting chair of the Asian Languages Department (UQ), Dr. Kam Louie, chair of the Asian Languages Department (UQ), and especially Prof. Roly Sussex, director of the Center for Language Teaching and Research (UQ) for their kind support.

I thank God for a loving, understanding, and most loyal family. I take this opportunity to express my gratitude and affection for them, especially my dear father. I thank my wife Koto for the love we share, without whom this book would have been finished much sooner but with no sense of accomplishment. The two sweet kids in my life, Katherine and Hitoshi, have inspired me to look at things from a kinder and gentler perspective. I tried to integrate some of that in the tone of my argumentation, with some success I hope.

I acknowledge the several grants from National Science Council, NSC-85-2418-H-004-004, NSC-85-0501-I-004-027-A1, and NSC-34002F, that supported some parts of the research.

Finally, a very special thank-you to Professor Henry Hsin-I Hsieh, a good friend and a true teacher. I was never quite sure whether these two relationships were in *complementation* or in *competition* and consequently may have behaved erratically. Nonetheless, the fact remains that the *interactions* I had with him in the past twelve years, more than with any other living person, have directly or indirectly shaped my perception on language, love, and life.

TABLE OF CONTENTS

Journal of Chinese Linguistics 2000, 28.1

The interaction among factors on language and the interaction among approaches on linguistics: review on Her's *Interaction and Variation in the Chinese VO Construction*

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Interaction and Variation in the Chinese VO Construction (Taipei: Crane 1997) written by Dr. Her One-Soon is not simply a book engaged in discussions of the Chinese VO construction, but also an attempt to develop a new paradigm for syntactic research. As we know, scientific research always takes place under one or another paradigm. Besides following a dominant paradigm or creating a new one, one may also adopt a paradigm from some other field, or combine more than one paradigms into a new one. Her's book provides us with a good example in both the adoption and the combination of linguistic paradigms.

Directly inspired by previous works done by linguists like Hsieh Hsin-I and others, the author of this book advocates an approach he calls interactionalism, the main ideas of which originate in the influential Lexical Diffusion Theory (LDT) developed in William S-Y Wang and his co-operators' work. It is true that Wang's theory deals basically with diachronic linguistic change, in particular, phonological change. However, the significance of LDT should not be limited to that domain because LDT does direct our attention to some essential nature of human language. Like rules for sound change, many powerful rules can be drawn for syntactic phenomena in synchronic state of any single language. Nevertheless, like competing factors affecting the process and results of sound change as LDT illustrates, similar and even more complicated competing factors play a crucial part in synchronic syntax. They shadow the regularity of syntax, causing much syntactic variation and making syntactic rules not as neat and ideal as a formal theory likes to see. That is the reality of every (not

just some) human language. In addition, it might be impossible to claim a pure synchronic state for syntax in any language because no language will take breath in its perpetual diachronic change including syntactic change. There are not only synchronic syntactic rules which are the result of previous or newly finished change, but also syntactic phenomena which are on the half way of historical shift despite the neglect of these facts in some approaches of linguistics. Thus LDT might in a rather direct manner throw light on any account of synchronic syntactic phenomena. For these reasons, Her's attempt to systematically introduce ideas of LDT into syntactic research should be highly appreciated.

Of course, to adopt LDT for the purpose of developing a new syntactic paradigm is something more than merely introduction LDT. In his book, Her outlines and exemplifies several related pairs of competing factors in syntax by drawing upon recent decades' achievements in functional/cognitive grammar, e.g. adequacy for iconicity vs. linguistic economy, the principle of refinement vs. that of analogy, and so forth. On the other hand, competition is only one of the possible relationships among interacting factors. His overall scheme for interaction in syntax, a revised version of Hsieh's original one, is composed in a rather systematic fashion. There are two basic types of interaction: complementation (effective in different domains) and competition (effective in the same domain). Complementation is in turn divided into two opposite situations: feeding and counter-feeding (adopting Kiparsky's terms originally for phonology). Under competition, we can see two states: conflict (bleeding) and conspiracy (counter-bleeding).

That is what he does involving the adoption of a paradigm. The other respect of his efforts involves the combination of more than one paradigm.

While the author employs the term 'interaction' only in a sense of **language,** i.e. various factors interact with each other in shaping a particular set of syntactic rules, we can, interestingly enough, apply this term also in a sense of **linguistics** to describe another characteristic of his book**.** I mean the author is actually building a paradigm where formalism and functionalism interact with each other. Standing with Newmayer and some others, Her believes that a full picture of human language can be obtained only by the combination of formal and functional studies in language. While formalism is good at revealing the 'organs' (in Newmayer's metaphor) of language, functionalism is helpful in explaining the functions of various 'organs'. Therefore, in Her's book, formalism and

functionalism appear not to be in a competing relation, as opposed to people's stereotyped impression, but rather in a complemental one, or, to be more accurate, in a feeding relation. I would also like to put their relationships another way. While formalism reflects human being's untiring pursue for fine scientific method, especially formalised representation of observations, functionalism keeps reminding people of the complicated reality of human language. We should never give up our efforts to follow fine scientific methodology as closely as possible meanwhile we should dare to face and deal with the complexity of language. Therefore I share the confidence with Her that the combination or co-operation of formalism and functionalism will be a good way to achieve a more complete, comprehensive and realistic picture of language, and will have a prosperous future. In fact, Her's efforts in a formal account of the construction in question are at least not less than those in functional explanation, though the formal framework he takes is a somewhat moderate one, i.e. LFG (Lexical Functional Grammar), instead of the more radical mainstream, i.e. generative grammar. More importantly, I should say, his job is not only interesting, but encouraging as well.

Now let's take a closer look at how Her carries out his interactionism in dealing with the Chinese VO construction and how successfully he combines formalism and functionalism.

In the book, he discusses various problems regarding the VO construction in Chinese. We find two considerations dominate his concerns. The first one, which is actually a long-lasting controversial issue in Chinese linguistics, is how to define a word in Chinese, in particular a VO-compound verb, as differing from a VO phrase. This issue is related in turn to a more general question, i.e. where to lay the boundary between lexicon and syntax. Much of Chap. III, addressing VO sequences in general, and Chap. VII, dealing with VO idioms specially, is devoted to this issue. The second one, basically discussed in Chap. IV to VI involves the argument structure and subcategorization of various verbs, ranging from semi-transitive verbs, to ditransitive verbs and the V-R(esultative) construction.

Let's start with the first respect. As early as in Chap. II, focusing on a general framework for grammatical interaction, the author takes a formal hypothesis, i.e. the Lexical Integrity Hypothesis, as part of his theoretic basis, which is explicitly stated by C-T J. Huang as 'no phrase-level rule may affect a proper subpart of a word'. In Chap. III, based on this, he

suggests a more confined lexicon of VO compounds, only those which cannot be affected by any syntactic rules being listed as compounds, such as intransitive *shiwang* 'be disappointed', transitive *chuban* 'publish (books)' and semi-transitive *nashou* 'be good at'. On the other hand, he lets more semantically specified VO sequences belong to (idiom) phrases instead of words, because they are fully accessible to syntactic rules, such as *kai wanxiao* 'to joke' (lit. 'open joke'), and *shengqi* 'angry' (lit. 'generate air'). In his account, the quantity of items of dual status, i.e. both as words and phrases has been decreased. In addition, he leaves these items dually listed only in the lexicon. Once an item of this type occurs in a certain syntactic position, it will be specified either as a word or a phrase, but not both. For example, *danxin*, 'worry (about)' (lit. 'carry heart'), as a word, only occurs as a transitive verb as in *danxin ni* 'worry about you'. In this usage, its verb root, *dan* 'carry', is inaccessible to any syntactic rules like aspect-suffixing. As a phrase, with *xin* 'heart' as its object, *dan xin* can no longer take another object and both *dan* and *xin* are accessible to syntactic rules like aspect-suffixing or modification. Elements of dual status, which complicate the syntax, are certainly unwelcome to any syntactic theory. Her's formalist-style account of them successfully lessens the amount of them in syntax without the cost of complicating other parts of grammar. On the other hand, the existence of those elements is a normal reality of human language. The author does not try to neglect these facts, but rather, provides us with a reasonable explanation by adopting LDT. He thinks of lexicalization, a force to integrate phrases into lexicon, and ionization, a syntactic force to make words accessible to syntactic rules, as two competing factors. Since either force plays part in a manner of lexical diffusion, i.e. word by word, similar to sound change, the syntactic variation among VO sequences can be viewed as a natural result of interaction between the two factors. He also succeeds in applying this approach to a more detailed discussion of Chinese VO idioms in Chap. VII, where he convincingly argues that, due to the competitive interaction between lexicon and syntax, idioms may develop in two opposite potential directions, either relaxing their semantic and syntactic constraints in use and becoming more free in syntax, or being completely restrained and ultimately becoming lexicalized into fixed idioms. Both directions can be exemplified by English and Chinese idioms.

Now comes the second respect of his concerns, namely argument structure.

So-called semi-transitive verbs like *nashou* 'be good at' (lit. hold hand) discussed in Chapter IV is another challenging issue for Chinese linguistics. Semi-transitives are not transitive, but a subject alone fails to comprise a complete argument structure for this kind of verb. Instead, a topic should be added to make the sentence well-formed, e.g. *shuxue* in '*Shuxue ta hen nashou'* 'He is good at math' (lit. Math he be good'). I agree with Her that topics in Chinese can be a grammatical function (not just a pragmatic constituent), and for some verbs like *nashou* the topic should be represented in the argument structure, or in Her's LFG term, F-structure, though his formulation of topic for semi-transitive verbs (an object position with the feature '+frame' in f-structure and a realization of them as topics in c-structure) and his criticism of other LFG models (e.g. to treat them as subcategorized topics) need future discussion. Her's approach in this aspect seems to strengthen a trend in recent years' Chinese linguistics, no matter their theoretical backgrounds, i.e. to treat topics as a syntactic function and to let them occupy a syntactic position (c.f., Gasde & Paul 1996 for a formal account, and Xu & Liu 1998 for a typological view with a formal formulation). What interests me more is his LFG-style interactionist explanation of semi-transitive verbs, an attractive combination of formalism and functionalism. According to him, to integrate an object into a VO compound is a 'reanalysis' (in its functional and diachronic sense rather than its generative sense), where there are two competing factors at work. The original VO structure causes a c-structure constraint (CSC), which prevents these compounds from taking any other objects, while the transitive force causes a f-structure requirement (FSR) to take a patient-like argument. He also proposes a tetrachoric to show the consequences of the competition between both forces. The effect of sole CSC yields intransitive VO compounds like *shiwang* 'be disappointed', and that of sole FSR yields transitive VO compounds like *fuze* 'be responsible for'. Most importantly, the effect of CSC plus FSR, i.e. a literal interaction, yields interesting semi-transitive verbs like the above-mentioned *nashou.* Finally, there are no cases where neither rule operates, i.e. f-structure has no patient-like argument but c-structure contains an overt object. In addition, the author observes that there are sociolinguistic and phycholinguistic factors which cause diversity among native speakers in judging transitivity for VO compounds. In so doing, he

actually brings the interactionalism into a broader perspective.

Her spends the longest chapter, i.e. Chap. V, in dealing with dative alternatives (similar to English *John gave her a flower* vs. *John gave a flower to her*) and V-*gei* (give) compounds. An impressive observation he makes here is that there are two kinds of 'V+NP_{theme}+*gei*+ NP_{goal}', construction in Mandarin, provided that *gei* can serve as either a verb or a preposition. In cases where V is not subcategorized for a goal argument, e.g., *Lisi mai hua* (*gei ta*), lit. 'Lisi buy flower (give/to her)', 'g*ei*+ NP_{goal}' remains a VP, the second part of a serial verb construction, whereas in cases where V is subcategorized for a goal, e.g. *Lisi song hua* *(*gei ta*), lit. 'Lisi send/give flower give/to her', 'g*ei*+ NP_{goal}' functions as a PP, bringing in the goal for the verb. As for his LFG solution to dative shift, especially its mapping theory, I can see at least one advantage there, compared with other mentioned models. In his mapping device, the Chinese construction similar to English *John gave flowers to her* only undergoes universal mapping processes while the so-called double object construction must undergo a language-specific 'morpholexical operation', in addition to universal mapping processes. Thus, the latter is made a more marked construction. This treatment, besides its language internal power, properly accounts for a typological fact, i.e. while the construction with a dative PP is widely distributed, the double object construction can be attested only in a much limited number of languages and its use is more constrained within a language. It is also interesting that his proposal has in fact introduced markedness, one of the core notions in typology and functionalism, into a formal account. In addition, in this chapter, Her also proposes some more general revisions on current LFG mapping theory, again, in the light of markedness. The originally rigid subject requirement is changed by him into a more suitable one for languages like Chinese while its formal strength is maintained. In following chapters, he also attempts to develop his LFG formulation on V-R(esultative) construction and VO idioms in Chinese which I won't discuss in detail.

The main concern of Chap. VI is how to make a formal analysis of the puzzling ambiguity in sentences like *Zhangsan zhui lei le Lisi*, lit. 'Zhangsan chase be-tired Asp Lisi', which allows the first three of the following readings but rules out the last one: 1. Zhangsan chased Lisi and made Lisi tired; 2. Zhangsan chased Lisi and was tired; 3. Lisi chased Zhangsan and was tired; 4. Lisi chase Zhangsan and made Zhangsan tired. Unsatisfied with Y. Li's generative account of this, Her proposes his own

LFG account and claims its several advantages over Li's. I won't give a comparative valuation between the two accounts here. Instead, I will just briefly mention a couple of interesting points in Her's treatment and interactionist explanation. His analysis entails unequal status for the three possible readings, which in turn well accounts for their different distributions. In reading 1, *Zhangsan* is **ag** (agent) in f-structure while *Lisi* is a combination of **pt** (patient) and **th** (theme). Mapping **ag** to the subject and the combination of **pt** and **th** to the object is perfectly in line with the mapping principle. By contrast, in reading 2, *Zhangsan* is a combination of **ag** and **th**. While mapping **ag** to the subject follows the principle, mapping **th** there is out of the principle. Similarly, in reading 3, *Lisi* is a combination of **ag** and **th.** While mapping **th** to the object is desired, it is not true for mapping **ag** there. In either reading 2 or reading 3, something is not perfect in terms of the mapping principle, unlike perfect reading 1. Then, we see that, of the three readings, only the reading 1 has a wide syntactic distribution. In *ba*-clauses, where the original object precedes the verb with the help of *ba*, only reading 1 and 2 are allowed while reading 3 is ruled out. In *bei*-passive, neither reading 2 nor reading 3 exists, the sentence is no longer ambiguous. As for reading 4, it maps a combination of **pt** and **th** to the subject and maps **ag** to the object, a total violation of the mapping theory. That is why it is ungrammatical. Apparently, besides its formal strength, there is a kind of markedness theory playing a role in his account. The above syntactic assignment is well explained by him in the light of interactionalism. There can be two kinds of relationships between roles in a composite role: conspiracy and conflict (Recall his overall scheme introduced previously). When the composite role consists of **pt** and **th**, as in reading 1, they are in conspiracy. It causes the unmarked reading. If a composite role consists of **ag** and **th**, as in readings 2 and 3, there is a conflict. Any position fitting in one role will be unfitting in the other, hence the marked, less widely distributed readings. Furthermore, for Her, the three readings themselves are in competition. The diversity of their salience is attributed by him to the degree of iconicity. He claims that readings 1to 3 comprise a decreasing order of iconicity. From his claim, I can see a picture of multiple correlations among various aspects concerning grammar, i.e., the better a construction observes the mapping principle, the more widely it can be distributed syntactically, the more salient the corresponding interpretation will be, and the more iconic its syntactic rule is. How generally these correlations apply

in human languages could be a field deserving intensive studies in various languages.

When appreciating his encouraging work in developing a promising paradigm for syntax, I would also like to discuss a few remaining problems in the book.

While convinced with his classification of VO construction into compounds, phrases and dual-status one, I have not been completely satisfied yet. In his explanation, one question remains to be answered, i.e., given ionization is a syntactic force, and the interaction between lexicon and syntax is universal, why we have a considerable number of ionized verbal elements in Mandarin Chinese, and, as noted by many linguists including Her, even some non-VO verbs like *xiaobian* 'pee' (lit. 'little convenience') can often appear as VO phrases under ionization, whereas this kind of ionization can rarely be attested in other languages like English or even in other varieties of Chinese like old Chinese? Her agrees with C-R Huang in regarding the force of lexicalization as more powerful than the force of ionization because the latter is believed to increase the complexity of syntax or the depth of embedding. Then what exactly has motivated ionization in Mandarin? Perhaps some language-specific background and more interacting factors should be taken into account to explain this phenomenon. At least one important 'participant' involved in the interaction is missed in Her's book, that is the interface between phonology and morphosyntax on VO construction, an obviously supportive fact for Her's intended paradigm. Some morphological or syntactic operations in Mandarin prefer or exclusively apply to monosyllabic verbs (c.f. Liu 1993, 1996). That factor, together with other possible ones, should have played some part in the ionization of verbs. The preference for monosyllabic verbs in turn might have some further underlying reasons of which we remain unclear yet. To tackle ionizaiton, as well as many other syntactic problems in Chinese, consideration of phonological factors, especially prosodic factors, seems to be not only helpful, but also necessary.

Another pity arises from V-R construction. After a so detailed and in-depth discussion of the above classification of VO sequences, i.e. as compounds, phrases, or both, strictly in the line of the Lexical Integrity Hypothesis (LIH), no single word has been said about the status of V-R sequences like the author's example *zhui-lui* 'chase be-tired', though it is equally controversial among Chinese linguists in whether they are

compounds or phrases. Accordingly, the book fails to show how LIH applies to this construction though there is a whole chapter focusing on this construction.

The author's account concerning topics does not sound perfect. According to his LFG account, for verbs like *nashou* 'be good at', an 'objective' role with the feature 'frame' exists in f-structure and will be automatically mapped to the topic position in c-structure. Since all the topics in examples throughout the book are sentence initial, it seems the author, like many others working on Chinese (e.g., the famous paper Li & Thompson1976), supposes that topics can occur only sentence-initially. Consequently, his approach, while going well with sentences like *Shuxue ta nahsou* lit 'math he be-good', has to be in trouble with equally good sentences like *Ta shuxue nashou* lit. 'he math be-good', because *shuxue* 'math' here is mapped to a position which is not a topic in his framework. Something like subtopics must be posited as a syntactic position for Chinese to cope with this kind of facts, as well as many many other phenomena in Chinese (for detailed discussion, see Xu & Liu 1998).

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LIST OF ABBREVIATIONS AND SYMBOLS

ADJ	Adjunct Function in LFG
ag	agent
AOP	Asymmetrical Object Parameter
AP	Abstract Principle
ASP	Aspect
appl	applicative
ben	beneficiary
caus	causative
CL	Clitic (*de*)
CLS	Classifier
COMP	Inventory of Predicative Complements in LFG
CSC	c-structure Constraint
DC	Default Classifications
e	empty category
exp	experiencer
EXPD	Experienced
FSR	f-structure Requirement
GB	Government and Binding Theory
GF	Grammatical Functions
go	goal
GPSG	Generalized Phrase Structure Grammar
HPSG	Head-driven Phrase Structure Grammar
IC	Intrinsic Classifications
inst	instrument
IP	Iconic Principle
INTRS	Intersection
LFG	Lexical Functional Grammar
LIH	Lexical Integrity Hypothesis
LMT	Lexical Mapping Theory
loc	locative
MP	Mapping Principles
N	Noun
NP	Noun Phrase
O	Object
OBJ	Object Function in LFG
OBJ2	Second Object Function in LFG

OBJ_θ	Inventory of Oblique Object Functions in LFG
OBL_θ	Inventory of Oblique Functions in LFG
P	Preposition
pt	patient
PERF	Perfective aspect
POBJ	Possessive Object
POSS	Possessive
PRED	Predicates
PROG	Progressive aspect
prop	proposition
PTCL	Particle
PP	Prepositional Phrase
PSC	Phrase Structure Constraint
REFL	reflexive
res	resultative
S	Sentence, Subject
SPEC	Specifier
SUBCAT	Subcategorization
SUBJ	Subject Function
th	theme
TOPIC	Topic Function in LFG
STOPIC	Subcategorized Topic Function in LFG
TRNSP	Transparency
V	Verb
VO	Verb-Object
VP	Verb Phrase
WF	Well-formedness Conditions
XCOMP	Open Complement Function in LFG
XPRN	Experiential aspect
XP	Any Phrase

θ	theta role
$\emptyset$	role suppressed
+	plus value
-	minus value
( )	optional constituent or path (in f-structure)
[ ]	features
[af]	affected

[ncl]	nuclear
[o]	objective
[r]	thematically restricted
[sb]	subject
↑	the level of f-structure corresponding to my mother node of the c-structure
↓	the level of f-structure corresponding to my own node of the c-structure
=	unify with, literal meaning
$=_c$	must be identical with
#	idiomatic meaning
{}	conglomerated list (in f-structure)
X+	one or more instance of X (in c- or f-structure)
X*	zero or more instance of X (in c- or f-structure)
<XY>	X and Y as subcategorized, thematically assigned functions, as part of the value of PRED in LFG formalism

CHAPTER 1

TOWARDS
AN INTERACTIONIST PARADIGM

In a masterful exploration of the nature and structure of scientific endeavors and revolutions, Thomas S. Kuhn (1973), interestingly, adopts the term 'paradigm' from traditional grammar to refer to an entire constellation of background assumptions, concepts, methodologies, and evaluation standards that are shared by the members of a scientific discipline. Thus, a paradigm is in short an accepted model of scientific pursuit within a field. Although for some areas of social science, as Kuhn (1973:15) suggests, it may still be questionable whether such paradigms have ever been achieved, linguistics acquired its descriptive paradigm early this century when the structuralist framework was accepted by the majority of practicing linguists, and since then the field has also witnessed 'paradigm shifts'.

1.1 PARADIGMS IN CHINESE LINGUISTICS

Since the structuralist descriptive paradigm, Chinese linguists have applied various modern linguistic theories to the analysis of Chinese languages, and most intensively to Mandarin Chinese, the language with the largest number of native speakers (e.g., Comrie 1990:15-6, Norman 1988:ix, *World Almanac*, and *Republic of China Yearbook*). Since most modern linguistic theories have been developed out of the west, the application of innovative approaches to Chinese comes noticeably more slowly, compared to their application to western languages, especially English.

The structuralist paradigm dominated the study of Chinese from the late 1940's well into the 1960's. With the advent of the revolutionary generative linguistics, many Chinese linguists worked diligently and productively within the transformational grammar in its heyday of the 60's and 70's (cf., e.g., Tang 1982). In the meantime, alternative formal theories started to flourish, reacting to the inadequacies that many theorists perceived in the conventional transformational theory. Some of these alternative theories, for example Generalized Phrase Structure Grammar

(GPSG) and Lexicase, emphasize upon their 'generative' nature, in the sense of 'formal' and 'explicit', while others claim to be more feasible psychological models of human language, such as Lexical-Functional Grammar (LFG) and Head-driven Phrase Structure Grammar (HPSG). The current Chomskyan school of grammar, the Principles and Parameters Approach (formerly the Government and Binding Theory) is, however, still perceived as the mainstream in Chinese linguistics with its influential leaders like Ting-Chi Tang and James Huang and many ardent supporters. The article by James Huang and Audrey Li (1996) provides an excellent synthesis of the recent advances within this transformational framework.

Although the application of the alternative theories to Chinese linguistics has come noticeably more slowly and less forcefully in comparison to that of the mainstream frameworks, most of them have been applied in the analysis of Chinese, including Case Grammar (e.g., Li 1971 and Teng 1975), Lexicase (e.g., Starosta 1985 and Her 1985-6), Categorial Grammar (e.g., Liu 1986, Sheu 1991), GPSG (e.g., Shiu 1989, C. Huang 1987, 1988), HPSG (e.g., Li and McFetridge 1995), and LFG (e.g., C. Huang 1987, Her 1990a, Her, Higginbotham, and Pentheroudakis 1991, Her and Huang 1995). Among the non-mainstream theories LFG appears to be most active in its application to Chinese and other languages.

Not all Chinese linguists subscribe to an established theory, however. Some resort to a general, undefined framework. Others reject the generative formalist paradigm entirely and embrace the competing functionalist approach (e.g., Li and Thompson 1981, Tai and Hsueh 1989). The overall state of the current field of the study of Chinese grammar is therefore quite divided and sometimes even seems segregated. Truly, in any discipline of science, it is crucial for its members to contribute in a shared framework. Paradigm shifts are extraordinary. This current state of diversified theories and practices should not be a normal, stable state.

The systematic study of the Chinese language, however, has not always been under the lead of western theories, as there existed for centuries a traditional, indigenous school of philology (e.g., Tang 1989b, 1992f). This rich resource of traditional works has provided a solid basis for historical linguistics and dialectal studies. Rather than the mere application of western theories, a more ambitious vision has emerged in recent years for Chinese linguistics to take on a more aggressive stance in leading general linguistics with innovative approaches to linguistic problems. Huang and Li (1996), for example, have demonstrated convinc-

ingly how studies of Chinese syntax have led to the advancement of the dominant transformational theory. Shuan-Fan Huang, a keen advocate of the 'nativization' of linguistics in Taiwan and a vital proponent of the functionalist approach, has also been a pioneer in the sociological study of the current state of languages in Taiwan (i.e., Mandarin Chinese, Southern Min, Hakka, and various indigenous Austronesian languages) and the interrelations between language use and group identity (e.g., S. Huang 1993).

The best example of a 'paradigm shift' in general linguistics due to studies in Chinese linguistics is William S.-Y. Wang's theory of lexical diffusion (e.g., Wang 1969, Chen and Wang 1975, Wang and Lien 1993, Wang and Ogura 1990), which offered a more comprehensive and accurate model for linguistic changes than the previous dominant neo-grammarian approach. In recent years, Hsin-I Hsieh, incorporating the concepts of 'competition' in lexical diffusion and parallel autonomous grammatical planes, has furthered a theory of interaction as the overall framework for the reconciliation between formalism and functionalism (Hsieh 1989a, 1989b, 1992b, 1996b). His even grander vision is to promote interactionism as a competing paradigm with the theory of complexity for general science (Hsieh 1996b).

I want to point out quickly, however, this vision that these linguists promote for Chinese linguistics does not imply the rejection of any established theory, western or not, unless on purely scientific grounds. Indeed, any scientific revolution, or paradigm shift, must be based on earlier paradigms, and scientific progress must be made within a paradigm.

1.2 FORMALISM, FUNCTIONALISM, AND INTERACTIONISM

Theoretical linguistics has been largely dominated by the formalist generative paradigm for the last three decades. Though formal syntactic theories diverge significantly in various respects, formalist frameworks share the view that the internal system of grammar is to a large extent autonomous, or self-contained. Syntax is thus primarily concerned with the mathematical, computational principles that govern the linear and hierarchical interconnections of syntactic constituents. This abstract internal system accounts for a native speaker's grammatical 'competence'. Formal linguistics, as its name suggests, is concerned primarily with

linguistic forms, as opposed to communicative functions, and endorses (in fact often requires) the formalization of linguistic generalizations.

An increasingly formidable dissenting approach, known as functionalism or functional grammar, has emerged over the last two decades. The functionalist approach assumes that the cognitive and communicative functions of language essentially determine its structures (e.g., Thompson 1991). Functionalist research is thus primarily aimed at the relationship between language's internal system (grammar) and the external system (the patterns of functions, thought, and cognition). The studies on how temporal principles determine the linear relations among syntactic units in Chinese by James Tai, the leading figure in Chinese functional cognitive grammar, are a prime example (e.g., Tai 1985, 1989).

Functionalists, by and large, also share the rejection of the notion of autonomous grammar (Newmeyer 1991a). Grammatical structures are believed to be rooted in the cognitive faculty and the semantic, pragmatic functions in discourse. Linguistic forms thus mirror their cognitive and discoursal functions. The internal structure of grammar is to a great extent motivated by the functions it serves and is linked to the cognitive reality that it relates to. The following remark by Tomlin (1990:7) represents what could be characterized as a 'fundamentalist' functionalist position (Newmeyer 1991a):

> Syntax is not autonomous from semantics or pragmatics.... The rejection of autonomy derives from the observation that the use of particular grammatical forms is strongly linked, even deterministically linked, to the presence of particular semantic or pragmatic functions during discourse.

While it is true that the majority of formalists are not concerned with the functional, pragmatic aspects of language (e.g., Edmondson and Burquest 1992:28), it is also true that many functionalists take the extreme view that totally rejects autonomous syntax and the study of formal properties of languages. The little communication, other than the usual disposal of the other approach, between the two camps has created the impression for many that a reconciliation is impossible. To be fair, however, functionalists in general, in reaction to the formalist analyses, have paid more attention to the formal approach, though mostly in an

attempt to bring it to its demise. The co-existence of these two paradigms is thus at best an uneasy one with numerous confrontations.

The anti-formalist tone, for example, is quite prevalent in the collection of functionalist articles edited by Tai and Hsueh (1989), *Functionalism and Chinese Grammar*. However, as observed by C. Huang (1990b) in a sensible review of the book, the functional approach not only needs not to be motivated by the failure of formal accounts but is in fact compatible with formal approaches. The understanding of language must involve knowledge of both its communicative functions as well as internal structures, and indeed explicit formal accounts can often complement and even facilitate functional accounts.

Another encouraging attempt of reconciliation appeared in a major article by the prominent formalist Frederick Newmeyer (1991a), where he proposes that the rise of an autonomous syntactic component in language is due to a functional motivation, i.e., the survival advantage that better and more efficient verbal communication affords. In recognizing the significance of functional and cognitive motivations, he seeks a compromise. Although this friendly gesture is unfortunately not well-received among the functionalists who responded to this article, e.g., Thompson (1991), Scancarelli (1991), Romaine (1991), and Lakoff (1991), the further explanations that Newmeyer (1991b) offered still attempt to reconcile between the two seemingly mutually exclusive views. Newmeyer (1991b:102-3) renders an analogy of autonomous linguistic components to biological organs:

> ...the organs of the body....are autonomous in *precisely* the sense that grammar is autonomous. A kidney's form and function is determined by a genetic blueprint, it lends itself to characterization as a structural system, its functioning can be carried only in concert with other organs, and it can be affected by changes in its external environment.

Indeed, a formal characterization of the kidney as a coherent structural system does not imply its functions are thus not 'responsible' for the structure's being the way it is. Likewise, that the kidney's functions are in some ways strongly linked to its structure does not mean such a structure cannot be described as a coherent system in its own right. Autonomous syntax does not eliminate the possible functional, cognitive,

or discoursal principles that motivate language's structures. The generative formalist paradigm does not assume one way or the other whether the formal properties of language are rooted in or motivated by functional cognitive principles.

A compromise is therefore attainable, and necessary, I would argue. Form and function are two sides of a coin—one does not exist without the other. A research program focusing on the understanding of language as a social institution or as a cognitive projection should be entirely compatible with one that looks into the formal principles governing language's structures. The two complement each other. A complete picture of how language truly works cannot be obtained if the constant interaction between form and function is not taken into consideration. Language as an abstract system is of course not directly observable; what one actually observes directly is the communicative use of language in various social contexts. On the other hand, the use of language as a sophisticated communicative *system* cannot achieve its effectiveness and efficiency in conveying the infinite possible propositions without a coherent independent internal structural organization, regardless how such an organization is motivated.

The two seemingly polarized paradigms can be reconciled once we consider the internal interaction within an individual component as well as the external interaction between form and function. To be more specific, in order for this reconciliation to be successful, the functionalist should accept that language has a formal syntactic component which is, more or less, autonomous, while the formalist has to realize that this formal system of grammar is merely *one* of the components that comprise linguistic knowledge and that linguistic forms may, to various degrees, be linked to communicative functions and cognitive reality. More importantly perhaps, both sides should see that not only forces within each component interact within itself but these components interact and compete with one another. Newmeyer (1991b:104) touches upon this point in this reconciliatory remark:

> ...to characterize a faculty as 'autonomous' simply means that it is governed by its own system of principles. There is no implication intended that it fails to interact with other faculties. Indeed, my understanding of a modular approach to language is one in which autonomous systems, each

> governed by a simple set of elegant principles, *interact* to yield the observed complexity of language. (emphasis added)

This statement, though brief, represents a significant step. No functionalist would deny the existence of syntactic patterns and regularities and also that at least some of these patterns cannot be accounted for by functional accounts and are thus governed by syntax-internal principles (often characterized as 'arbitrary' in the functionalist literature). After all, in the functionalist methodology, generally a syntactic pattern or regularity is identified and described first in certain *syntax-internal* terms, such as NP, PP, subject, object, etc., before functional accounts are attempted to explain why such a pattern is the way it is, how it got to be that way, what function(s) it serves, etc. In Li and Thompson's (1981) *Mandarin Chinese: A Functional Reference Grammar*, for example, such illustrations can be found throughout the book. Similarly in the two major volumes, *A Functional Study of Topic in Chinese: the First Step towards Discourse Analysis* and *Sentence and Clause Structure in Chinese: a Functional Perspective*, by Feng-Fu Tsao (1987, 1990), another leading functionalist in Chinese linguistics, the goal is to make clear how syntax *interacts* with discourse. Thus, an independent plane of syntactic structures seems to be presupposed, to various degrees, by most functionalists. After all, to argue that syntax is not autonomous, one has to demonstrate that *all* syntactic generalizations and syntax-internal notions, such as categories, ordering, dominance, command, grammatical relations, etc., can be reduced to functional terms, with no exception.

True, most formalists *in practice* do not seem to be asking the kinds of questions that functionalists like Givon (1979:xiii) would consider 'the most interesting questions about the grammar of human language'. The widespread, and unfortunate, misunderstanding that follows is that the notion of autonomous syntax therefore *in principle* precludes asking these questions. The truth is that autonomous syntax does not in principle preclude semantic, functional, or cognitive motivations. Within Chinese linguistics, the best example would be some of the works by Ting-Chi Tang, indisputably the leading formalist in Taiwan. Although the majority of articles in the long list of his books consist of syntax-internal accounts, many others do demonstrate a harmonious co-existence between syntactic structures and semantic/discourse functions (e.g., Tang 1985d, 1985e,

1985f, 1988e, 1988f, 1992c, 1992d, 1992e). Furthermore, there are formalist theories that in varying degrees also aim at characterizing the functional aspect of grammar (Edmondson and Burquest 1992:28, Newmeyer 1991b:101, Prince 1991:79), such as Tagmemics (e.g., Pike 1982, 1987), stratificational linguistics (e.g., Fleming 1990), Role and Reference Grammar (e.g., Foley and Van Valin 1984), Kuno's functional syntax (e.g., Kuno 1987), HPSG (e.g., Pollard and Sag 1987), and LFG (e.g., Bresnan 1982a).

In fact, it would be difficult to conceive that any formalist, regardless of her theoretical persuasion, would reject the existence or the significance of functional motivations. The genuine dispute then, if there is one, is to what degree is syntax autonomous, in what ways is syntax directly or indirectly motivated by its communicative functions, or to what degree are syntactic principles parallel with pragmatic ones. The position that Newmeyer (1991a, 1991b) takes is that not only forms *could* be motivated by functions but also in many attested cases they *are*. The point he tries to make is that the emergence of autonomous syntax in the course of human language evolution was precisely due to the functional advantages it affords.

To make a reconciliation more reasonable and obtainable, I further suggest that it is unnecessary to assume the extreme position that all languages are alike in terms of the link between form and function. Functionalists in general assume that, universally, forms are to a great extent linked to their functions, while formalists assume that syntactic structures are autonomous from the functions they serve, again universally. A notable exception is Hsieh, who clearly takes the position that languages vary in the degree of iconic transparency between form and meaning, although all languages have developed a separate independent syntactic component due to the pressure of speech economy (e.g., Hsieh 1995). Several functionalists have also taken this position, though somewhat implicitly, for example, Tsao (1987, 1990) and Tai (1985, 1993), whose studies demonstrate that Chinese syntax is far more discoursally oriented and cognitively motivated than English, whose syntax enjoys a higher degree of autonomy. The same relativist position is also implicit in Du Bois (1985) and Hopper (1987).

Within this relativist view, a language of the more iconic type, for example Chinese, displays a more direct correspondence between form and meaning and utilizes less morpho-syntactic devices, while a more

abstract type like English uses more purely grammatical morpho-syntactic schemes and shows a looser connection between form and function. The perpetual interaction between the two counteracting forces, iconic accuracy and speech economy, thus creates a constantly dynamic state of language, which is the motive for Jespersen's observation that language is always in a flux and what Wang calls 'competition'. Within this interactionist view, languages may indeed form a continuum between two extremes: complete iconic transparency and absolute syntactic autonomy. As clearly neither extreme exists, the question is thus not *whether* syntax is autonomous, but *to what degree* is syntax autonomous. Furthermore, the answer should be individually answered regarding each language and each syntactic construction.

Since it is true that, within any given language, different structural patterns or constructions may likewise display varying degrees of iconic transparency, Hsieh has taken his position one significant step further and developed an interaction theory to capture and systemize all types of interactions within any particular component or across components (Hsieh 1991, 1992a, 1992b). The interaction theory aims to provide a comprehensive framework where the grammar is composed of several co-existing planes, each with its internal system of principles in place, and the various types of intra-system and inter-system interaction among principles are all fully describable. This view holds that not only interaction does exist and must be taken into account for a complete picture of grammar, but also that at any point in time, given any syntactic construction, grammatical rules applicable to this particular construction are engaged in a constant interaction of some sort. Variation or irregularity is viewed as the normal and natural consequence of such interaction.

Interaction is not a novel concept in either the formalist or the functional paradigm. The notion of 'competing motivations' familiar in the functionalist literature is completely compatible with the notion of interaction. Not only different iconic principles may compete (e.g., temporal sequence versus discourse prominence), iconic motivations may also conflict with other types of motivations, such as economic principles (e.g., Du Bois 1985, Hsieh 1992b, 1993). In the formalist paradigm, the well-accepted modular approach to grammar fits in well with the thesis of interaction in that forces from different modules may either compete for dominance or complement one another in any given structural domain.

The interactionist approach thus incorporates the formalist view of an internal abstract modular system of grammar and the functionalist view of a functional cognitive foundation of language. More significantly, I contend that interaction, which may be competition or complementation, between the force to maintain the integrity of the internal abstract system and the force to link directly with the external cognitive and communicative functions must obtain at all times. This constant interaction creates variations in linguistic patterns that are describable only through an understanding of the various types of interaction among these forces. The interaction theory as a general, comprehensive descriptive framework for language offers a plausible reconciliation for the ongoing confrontations between the formalist and the functionalist paradigms.

1.3 ORGANIZATION OF CHAPTERS

In this book, I aspire to integrate Hsieh's thesis of grammatical interaction, and thus also Wang's concept of 'competition', and the formal model of LFG. However, with the accounts I offer, I also attempt revisions on the theoretical framework. Chapter 2 presents an overview of the development of this recent thesis of grammatical interaction and the LFG model of grammatical analysis. I will also review some of the research results in Chinese linguistics carried out within this interactionist approach.

In Chapter 3 to 7, I provide a set of research results within the formal model of LFG with interactionist interpretations as further empirical support for the interaction thesis. Chapter 3 demonstrates that the variation of Chinese VO sequences can be accounted for by the competition of lexical and syntactic forces, and Chapter 4 studies the variation of transitivity exhibited in VO compounds and interprets this variation as the consequence of the competition between the functional structure and the constituent structure. In Chapter 5, I offer a detailed account of dative shift within LFG's lexical mapping theory and an interactionist interpretation. Chapter 6, again applying the lexical mapping theory, studies the subject-object inversion construction in resultative compounds. Chapter 7 examines idiom phrases and reviews two previous accounts in LFG. The solution I propose incorporates lexical constraints in LFG and Lakoff's work on metaphors and provides an interactionist interpretation for the semantic and syntactic behavior of idioms.

CHAPTER 2

THE THEORY OF GRAMMATICAL INTERACTION

The neo-grammarian paradigm, also known as the regularity hypothesis, which holds that all sound changes are regular, meaning that they operate without exceptions, commanded the course of research within historical and comparative linguistics for much of the nineteenth century and the early half of the twentieth century. The lexical diffusion thesis, first proposed and substantiated in the monumental work by William S.-Y. Wang (1969), no doubt has since firmly established itself as a significant 'paradigm shift', in the sense of Kuhn (1973), from the earlier dominant neo-grammarian doctrine. The lexical diffusion hypothesis maintains that a sound change, though phonetically abrupt, affects the applicable lexical items in the lexicon in a gradual manner; in other words, the sound change must diffuse across the lexicon. Essentially, it recognizes that a sound change must take an extended period of time to run its course; thus, before it reaches all the applicable lexical items in the lexicon, there may exist another concurrent sound change that competes for all or part of the same range of applicable lexical items in that language. Competing changes therefore may prevent each other from reaching all applicable lexical items and, as a result, cause residue, or irregularity.

As characteristic to paradigm shifts, the thesis of lexical diffusion is, indisputably, better than the earlier neo-grammarian regularity hypothesis in that it is much more accurate and explanatory and expands the data that historical linguistics looks at. As also common to paradigm shifts, the lexical diffusion thesis does not entirely overthrow the earlier neo-grammarian paradigm, which, in recognizing that linguistic changes operate in a systematic manner, provides an essential, if not necessary, working basis (e.g., Wang 1969, Labov 1978). The thesis of lexical diffusion is more accurate and comprehensive than the neo-grammarian principle by taking into consideration two additional factors in historical changes, 1) the temporal duration of the course of a particular change and 2) the possible interference of other changes. Linguistic changes therefore can still be recognized as inherently regular. However, irregularity obtains when a linguistic change does not run its full course or during the course

of a change there is another change competing for all or part of the same domain of application. Competition thus leads to variation.

The concept of competing rules in lexical diffusion has since been firmly upheld in historical phonology (e.g., Chen and Wang 1975, Lien 1987, Ogura 1990, Shen 1990, Cheng 1991a). Extending this well-accepted concept of competing sound changes to all grammatical changes as well as synchronic variations, Hsieh (1989a, 1991, 1992b) derives a general thesis of rule interaction, which holds the view that syntactic rules as well as functional and cognitive principles applicable to any given grammatical construction are constantly engaged in interaction of some sort at any point in time. Synchronic variations as well as diachronic irregularities are therefore to be attributed to the perpetual interaction among the various components in grammar for their individual dominance or the interaction of competing generalizations within the same component of grammar. The Saussurian distinction between irregularity in historical changes and variations in synchronic constructions is, within this thesis, superfluous. Furthermore, since the interaction between the internal force for formal structural coherence and the external force to link form and function directly is recognized as one of the many possible kinds of interactions among all the forces that influence grammar, both formalist and functionalist approaches are subsumed by the theory. Form, function, and their interaction must all be accounted for if a realistic picture of language is to be obtained.

This thesis of interaction gives a plausible interpretation to the observation that language is always in a flux and all grammars 'leak'. When taking into the consideration of interacting forces from various language-external social, economical, cultural, geographical, and political factors and motivations, this interaction thesis can further account for the observation that 'at any given time a language is *variable*' (Milroy 1992:1). However, while this theory provides an interpretation of the ever-changing nature of language, be it internal or external, it does not predict explicitly as to whether linguistic changes simplify or complicate grammar in the long run. It does however provide a potential theoretical foundation for Langacker's (1977) claim that the constant changing in language does not appear to decrease nor increase in overall complexity in the long run. The interaction thesis thus implies that the interactive forces may periodically simplifies or complicates a grammar but the grammar is ultimately in a natural state of dynamic equilibrium (Hsieh 1989, Her 1990b, 1994).

Paradoxically then, while regularity may be the *default* state of language, as the neo-grammarian paradigm entails, it may well be variation that is the *normal* state, as implied by the interaction theory and suggested by the existence of ample disputes between functionalist and formalist accounts.

2.1 AUTONOMOUS PLANES OF CO-DESCRIPTION

A common strategy in the scientific study of an elaborate intricate natural system is modularization, where the subject is factored into modular components to facilitate the separate study of individual components. Within this modular approach, the study of language has traditionally been factored into various largely autonomous components, such as phonology, morphology, syntax, semantics, etc. Although modularization diminishes interaction across components and optimizes interaction within components, in an integral system such as language, interaction across modules is necessary to provide a comprehensive account (e.g., see Du Bois 1985, Her 1994, Newmeyer 1991a, Sadock 1991), or, as Newmeyer (1991b:104) plainly states that a modular approach to language is one where multiple autonomous components, each has its own system-internal principles, interact to yield the observed intricacies of language.

The interaction theory adopts the view that grammatical principles may be factored along several distinct parallel planes. More specifically, it poses a four-way division of grammar into iconic, conceptual structure (i-structure), thematic structure (t-structure), functional structure (f-structure), and constituent structure (c-structure). The formal division of syntax into distinct planes of thematic, functional, and constituent structures connected through a mapping relationship is of course the well-known design feature of LFG (e.g., Bresnan 1982, Kaplan 1989).

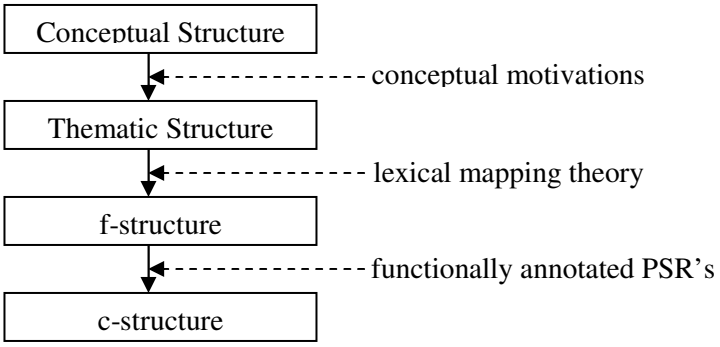


Fig. 1. Parallel Planes of Grammatical Description

The augmentation of the iconic, conceptual plane is due to the influence of the functionalist approach in general, and the work on cognitive, iconic principles in Chinese grammar by James Tai in particular. A similar four-way division is also proposed in C. Huang (1989) as his interpretation of the LFG theory. In this way, the interaction theory I adopt here subsumes LFG as its formal descriptive model of syntax, while it also provides an overall system to account for all linguistic variations, regardless of which grammatical framework is employed in syntactic description.

Within the four grammatical planes, I take the cognitive and thematic planes to be the functional component of grammar, while the f-structure and c-structure form the formal syntactic component. In Chapter 4, the nature of the c-structure and f-structure will be illustrated in more details and I will demonstrate an instance of interaction between these two formal planes in syntax to account for the variation of transitivity exhibited by Mandarin VO compound verbs. The monotonous mapping between the thematic structure, or t-structure, and the f-structure is a more recent and still somewhat fluxing development of LFG, known as the Lexical Mapping Theory (LMT). In Chapter 5, I will give a detailed exposition of this theory and propose a revised and simplified LMT, together with an illustration of how the so-called 'dative shift' can be accounted for in Mandarin. In Chapter 6 the variation in semantic and syntactic behavior of resultative compounds is also accounted for within the lexical mapping theory. For an overview of the formal model and formalism of LFG, refer to Kaplan and Bresnan (1982) or Her (1990a).

2.2 MODULARITY OF SYNTAX AND LEXICON

In addition to postulating a four-way parallel planes of co-description, the interaction theory I subscribe to also assumes modularity of syntax and lexicon in the universal grammar, as embodied in the lexical integrity principle that words are formed by morpholexical rules in the lexicon and syntactic phrases are built by syntactic principles different from those operative in the lexicon. A version of the lexical integrity principle is stated explicitly in J. Huang (1984:60) as the 'Lexical Integrity Hypothesis' (LIH):

> The Lexical Integrity Hypothesis
> No phrase-level rule may affect a proper subpart of a word.

I adopt J. Huang's version of lexical integrity for it is the strongest version possible in suggesting that the internal structure of words is inaccessible to all phrase-level rules. It thus assumes strict modularity of syntax and lexicon. Some researchers have argued however that lexical structures may in certain cases be accessible to syntactic processes (e.g., Cho and Sells 1995; Mohanan 1996; Bresnan and Mchombo 1995). In adopting J. Huang's version, I am not claiming that strict lexical integrity can be maintained universally; however, it should be the starting working hypothesis and relaxed only as a necessary compromise. Within this assumption of strict modularity of syntax and lexicon, a word is a linguistic expression whose inner morphological structure is entirely inaccessible to synchronic phrase-level rules; on the other hand, an expression whose internal structure may be affected by any synchronic phrase-level rule must not be a word and is thus a phrase. This criterion based on the modularity hypothesis thus rectifies the inaccuracy and lack of common ground in the traditional discussions and treatments of words, compounds, and idiom phrases in the literature of Chinese linguistics.

2.3 TAXONOMY OF INTERACTION TYPES

The initial taxonomy of interaction of Hsieh (1991) identifies two basic types of rule interaction: complementation and competition, as shown in Fig. 2. Two rules are said to be in 'complementation' if their domains of application do not intersect. On the other hand, two rules are in

'competition' if their domains of application intersect or coincide; furthermore, if competition yields variation or irregularity, then the competing rules are said to be in 'conflict'. However, if no variation or irregularity arises from the competition, then the two rules are in 'conspiracy'.

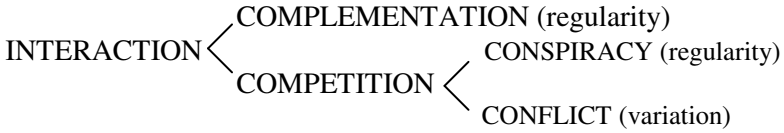


Fig. 2. Basic types of interaction (Hsieh 1991)

Her (1994) further incorporates the more familiar terminology and concepts of 'feeding' and 'bleeding' (e.g., Kiparsky 1978) in historical phonology into Hsieh's taxonomy. Thus, two rules in 'complementation' are in a 'feeding' relation when the output of one rule expands, or 'feeds', the other rule's domain of application. Two rules in 'conflict' are in a 'bleeding' relation, for now the application of one deprives the other of (some of) its inputs (Kiparsky 1978). I will reiterate the definitions of the various types of rule interaction in more explicit terms from Her (1994). Note that Hsieh's conflict and conspiracy are identified with bleeding and counter-bleeding respectively, and complementation is further distinguished into two subtypes, feeding and counter-feeding, and thus a symmetry between complementation and competition is achieved.

> Complementation: Given a specified domain, D, and two rules, R1 and R2, if R1 applies in D while R2 does not, then R1 and R2 are in complementation.
>
> Feeding: Given two rules in complementation, R1 and R2, if the output of R1 may serve as the input of R2, then R1 is in a feeding relationship with R2.
>
> Counter-feeding: Given two rules in complementation, R1 and R2, if the output of R1 may not be the input of R2, then R1 is in a counter-feeding relationship with R2.

Competition: Given a specified domain, D, and two rules, R1 and R2, if both R1 and R2 apply in D, then R1 and R2 are in competition.

Conflict (or bleeding): Given two competing rules, R1 and R2, if the same input may yield two or more results, then R1 and R2 are in conflict (or in a bleeding relationship).

Conspiracy (or counter-bleeding): Given two competing rules, R1 and R2, if the same input always yields a unique result, then R1 and R2 are in conspiracy (or in a counter-bleeding relationship).

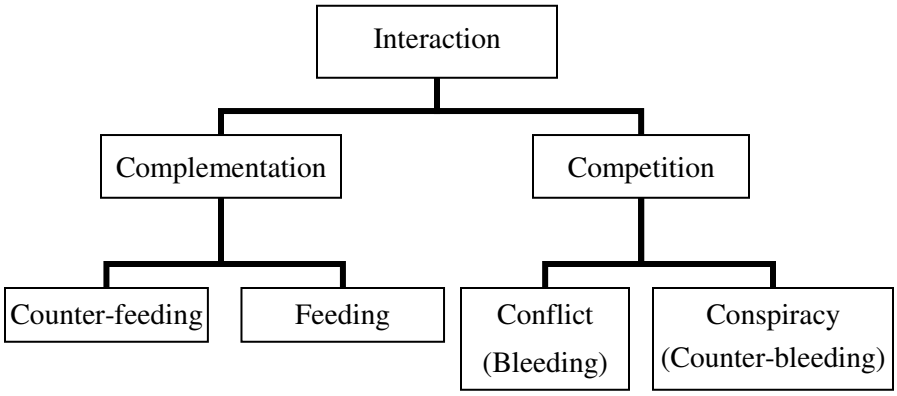


Fig. 3. Basic types of interaction (Her 1994)

However, like Hsieh's original classification, this taxonomy also defines each interaction type distinctively and individually; thus, the interrelationships that exist among the interaction types remain unrevealed. First of all, there is the concept of domain intersection that can be extracted. Competition involves intersection of rules, while complementation does not. Secondly, ordering, explicit or implicit, can also be extracted from interactions of rules. For feeding or bleeding to obtain, the two rules involved must be ordered accordingly. Based on these two more fundamental concepts, I offer a simplified reorganization of interaction types, where only the two fundamental concepts need to be defined.

Rule Domain: Given a rule R which applies to elements *e1*, *e2*..., *en*, R's domain D = {*e1*, *e2*..., *en*}.

INTERSECTION (INTRS): Given two rules R1 and R2 and their respective domains D1 and D2, if an element *e* exists in both D1 and D2, then R1 and R2 intersect.

TRANSPARENCY (TRNSP): Given two rules R1 and R2 and their respective domains D1 and D2, if the ordering of R1 and R2 is such that the domain of the second rule is affected, then such ordering is transparent.

Type \ FEATURE	INTRS	TRNSP
Bleeding (Conflict)	+	+
Counter-bleeding (conspiracy)	+	-
Feeding (Complementation)	-	+
Counter-feeding (Complementation)	-	-

Fig. 4. A Reorganization of Interaction Types

Four interaction types are available logically, which are themselves consequences of the interaction of the two basic interaction features. Any two rules are thus engaged in an interaction of one of the types above.

2.4 PREVIOUS RESEARCH RESULTS

One of the primary foci of the interaction thesis is therefore clearly on the reconciliation of the seemingly opposing views of the functionalists and formalists, or as Huang and Li (1996:51) put it most eloquently:

> There are also important efforts to bring formalism and functionalism together, showing that a thorough understanding of Chinese grammar, and of grammar in general, requires not only an investigation of both its formal and functional properties, but also a thorough look at the interaction of these properties. The most significant of these efforts is represented by the 'interaction theory' proposed by Hsieh...

Bridging the gap between functionalist accounts and formalist analyses has indeed been the theme of some of the works by proponents of the interaction thesis. Furthermore, within the view that diachronic irregularity and synchronic variation are similarly due to grammatical interactions among various forces, the conventional distinction between irregularity in historical changes and variations in synchronic constructions is no longer significant. Some of the researches within this interactionist approach indeed cover both synchronic and diachronic accounts. However, due to the recentness of this theory, many of the research results thus far remain unpublished or semi-published; hence, here I will give a survey of some of the research results within this interactionist framework. In the following chapters, I will present a set of results within the interactionist paradigm that account for various VO constructions in Mandarin. I hope that this monograph will serve as a bridge for those who are interested in crossing over to this interactionist approach.

Hsieh, being the primary theorist of the interaction framework has provided several compelling pieces of supporting evidence in his works. Hsieh's (1989a) paper 'History, structure, and competition' presents a set of data regarding Taiwanese tone sandhi and demonstrates that virtually all of the components of the grammar interact in enforcing the actualization of tone sandhi. In the same article, a study on the perfective maker *-le* shows how a competition between rules of the iconic component and those of the abstract, structural component in Mandarin grammar determines the placement of this aspect marker. This work on *-le* has inspired further research by Chang (1990a, 1991).

In the article 'Time and imagery in Chinese', Hsieh (1989b) attempts to demonstrate the iconic reflection of temporal sequence in Chinese sentence structures. He reinterprets the Principle of Temporal Sequence espoused in Tai (1985) by classifying the temporal concept into three categories: real time, inferred time, and imaginary time and observes that only when the interaction of internal abstract rules and external iconic principles is understood, can a full account of grammar be obtained.

Hsieh (1992a) proposes a grammatical foundation, in addition to the usual phonological one, for dialect subgrouping, based on a comparative method focusing on the internal competition among grammatical rules. As a specific example, Hsieh interprets the results of Cheng's (1985) dialectological study of grammatical variation among Mainland Mandarin, Taiwan Mandarin, and Taiwanese within the interaction framework to

reveal the same insight that Cheng has derived that Taiwan Mandarin often maintains a compromised grammatical form under the competing forces between Mainland Mandarin and Taiwanese.

In another article, 'Cognitive grammar of Chinese: four phases in research', Hsieh (1992b) discusses the historical development of the notion of cognitive grammar within the field of Chinese linguistics. In his view, the notion of cognitive grammar has four phases in research: the intuitive phase (e.g., Li 1976, Li and Thompson 1981), the systematic phase (e.g., Tai 1985, 1989, 1993), the conceptual phase (e.g., Hsieh 1993), and the interactive phase. At the interactive phase not only do iconic, cognitive motivations and abstract, mathematical principles interact, but functional motivations and abstract rules also compete among themselves. This article is therefore also valuable in that it has demonstrated how earlier researches, especially within the tradition of cognitive grammar, can be extended, integrated, and improved upon within the interactionist approach.

The first significant congregation of interactionist ideas was found in a series of papers delivered at the 1991 North America Conference of Chinese Linguistics (NACCL III); they are M. Hsieh (1991), Zhu (1991), Gai (1991) and Her (1991d). The initial tentative interactionist account of variation of transitivity in VO compound verbs of Her (1991d) will be elaborated and substantiated in chapter 4. M. Hsieh (1991) approaches the verb copying construction in Chinese from a historical perspective and offers disambiguation as the motivation and suggests that analogy, as a type of interaction, is the process via which verb copying came about. In terms of verb copying, three types of verbs arose as the consequences of this interaction process: obligatory, optional, and prohibited. In total, five variations of the verb copying construction are identified, with three subtypes of obligatory verb copying.

Recognizing the common misconception that *ji3* 'how many' quantifies only non-mass nouns and *duo1shao3* 'how many/much' may quantifies all nouns, Zhu (1991) gives an account of the actually much more complex distribution of two Mandarin quantifiers *duo1shao3* and *ji3*. Based on a ten-category taxonomy of nouns: 1) material mass, 2) abstract mass, 3) material mass measured, 4) abstract mass measured, 5) material mass contained, 6) abstract mass contained, 7) material mass further contained, 8) abstract mass further contained, 9) duration, and 10) frequency, Zhu discovers that only in category 1) and 2) complementation

of *ji3* and *duoshao3* is observed, as the latter is the only choice, but elsewhere conflict prevails as both quantifiers may appear and are thus in competition. Zhu further discusses in more detail some instances of local complementation in certain restricted syntactic environments. Geographical variations manifested in different dialects are also accounted for by this interactionist analysis.

Gai (1991), on the other hand, examines another contrastive pair of lexical elements, *you4* 'again' and *zai4* 'again' or 'subsequently'. Two competing principles govern the use of the two lexical items: one, an abstract principle (AP) based on the 'factual' versus 'non-factual' distinction, and the other, an iconic principle (IP) based on the 'repetition' versus 'resumption' distinction. While the AP assigns *you4* to the factual and *zai4* to the non-factual, the IP assigns *you4* to repetition and *zai4* to resumption. In any given sentence the two assignment principles thus interact by claiming its domain of application. Consequently, as predicted by the interaction between the AP and IP, Mandarin speakers of different regions may have different preference in the choice of the two contractive words. Largely, in the northern regions of China, the AP assignment seems to be preferred, while in the southern regions the IP assignment appears to be more dominant.

A major contribution to the interactionist framework is found in the dissertation of Chang (1991), *Interaction between Syntax and Morphology: A Case Study of Mandarin Chinese*. One of the primary goals of this dissertation is to show that grammatical constructions cannot be fully accounted for by syntax-internal constituent structure and grammatical functions alone, and that syntax-external thematic as well as conceptual conditions have to be taken into consideration, and the two types of forces are often counteractive. Based on the four-way division of grammar, conceptual or iconic structure, thematic structure, functional structure, and constituent structure, Chang successfully demonstrates that variations and irregularity can be accounted for as the results of interaction among different structures. The placement of perfective aspect maker *-le* is determined by an interaction between thematic structure and conceptual structure, and the interaction between the thematic structure of the verb and the functional or constituent structure accounts for the variation of the verb copying construction. Furthermore, while the formation of VO compounds is bound by an interaction between thematic structure and

constituent structure, the interaction between syntax and morphology accounts for the variations in the Mandarin serial verb construction.

Another congregation of interactionist ideas was found at a panel discussion session titled 'Interaction Theory in Chinese Linguistics: Syntax, Phonology, and Discourse' at the 1992 annual conference of Chinese Language Teachers Association. Five papers were presented, with a commentary given by James Tai. Biq (1992) provides a perspective on the interaction of different factors in the discoursal level, while Hsiao (1992) examines the interface between syntax and phonology, where syntactic forces interact with phonological principles. While Zhu (1992) focuses on the cognitive plane and addresses the interaction between the iconic, cognitive principles and the structural forces within syntax, both Chang (1992) and Her (1992b) demonstrate interaction within the syntax proper. Chang demonstrates how the variation of serial verb construction, of which the so-called V-V compound is a variety, is due to the interaction of conceptual mechanisms, semantic principles, and structural forces. Her (1992b), on the other hand, attributes the variation of VO sequences, i.e., VO compounds, VO idioms, dual status VO construction, and VO phrases, to the competition between the structural force of syntax and the push of lexicalization. I will elaborate this particular application of the interaction theory in Chapter 3.

The most inspiring work within the interactionist framework in the area of sociolinguistics and dialectal study is Cheng's (1991b) account of the variation of the aspectual systems in Taiwanese, Taiwan Mandarin, and Mainland Mandarin. Essentially, in Cheng's view, the differences in the three aspectual systems can be attributed as the consequences of the competition among a network of interactive iconic, conceptual forces and abstract, grammatical ones, along the social, historical, and geographical dimensions. Furthermore, indeed as Hsieh (1992b:246) realizes, Cheng's contribution goes far beyond simply making clear the time-expression systems in these three dialects:

> Using aspect, phase, and tense systems as illustrative examples, Cheng showed the interaction of rules or tendencies within the social, geographical, historical, and grammatical dimensions of Chinese. In particular, within the grammatical domain-as Cheng pointed out-iconic power and abstract power are in competition. The iconic principle

> mainly dictates that events which occur in temporal sequence should be linked in their original order without having constituent elements in one event dislocated in another event. But the abstract principle mixes verbs which form separate events to form a sequence of verbs, so that only one of these verbs retains its full status as a verb, and the rest are reduced to aspect makers, adverbs, or other less verb-like words. ....until Cheng's study, there was virtually no convincing linguistic data showing where and how the system of abstract syntax meets the world of concrete imagery. ....Thus, Cheng's view of an interaction between the iconic and abstract components of grammar brings us a step further to understanding the connection between language and reality.

Her (1994), in the article entitled 'Interaction of syntactic changes', provides a mechanism of interaction to account for the historical development of *yi3, ba3, jiang1,* and *na2* underwent. More specifically, the article demonstrates how the principles of refinement and analogy work in *complementation* in creating the historical changes in the function-form relations of these lexical elements. Based upon generally accepted accounts and specific statistics on data from *Shishuo Xinyu* and texts of *Chuanqi* and *Bianwen*, the following systematic account is given in Her (1990b).

Stage 1: before the Tang Dynasty

a. *yi3* functioned in verbal, instrumental and disposal constructions.
b. *jiang1*, a verb, shared *yi3*'s verbal function.
c. *ba3*, also a complete verb, shared *jiang1*'s function as a verb, meaning 'to take' or 'to hold'.

Stage 2: during the Tang Dynasty

a. *yi3* lost its function as a verb and the use of *yi3* in instrumental and disposal constructions decreased.
b. *jiang1*'s functions increased: verbal, instrumental, and disposal, and in the disposal construction, *jiang1* was the dominant choice.
c. *ba3* also started to appear, though far less frequently than *jiang1*, in instrumental and disposal constructions.

Stage 3: in modern Mandarin
a. *yi3* has lost all its functions in speech.
b. *jiang1* is hardly ever used in speech, either.
c. *ba3* dominates the disposal construction, but it has lost all the other functions.
d. *na2*, which shares *ba3*'s verbal meaning, has also acquired the instrumental function, and in some limited cases, it is competing with disposal *ba3*.

The rise and fall of the functions of *yi3*, *jiang1*, *ba3*, and *na2* suggests that there are two principles at work facilitating this chain of changes: refinement and analogy, formalized as the following:

The principle of refinement:
if element X has multiple functions, say, f1, f2, and f3, then X is likely to reduce the number of its functions.

The principle of analogy:
if element Y shares its function, e.g., f1, with X, then Y is more likely, than elements that share no functions with X, to acquire some or all of X's other functions, e.g., f2 and f3.

While refinement accounts for the eventual decline of *yi3*, *jiang1*, and verbal and instrumental *ba3*, analogy provides an interpretation of the rise of instrumental and disposal *jiang1*, *ba3*, and *na2*. Notice also that the refinement process reduces a one-to-many relation between a linguistic form and its functions and thus promotes linguistic 'transparency' (Langacker 1977); analogy, on the contrary, encourages a one-to-many relation by increasing the syntactic functions of a linguistic form. From this perspective, the development of *yi3*, *jiang1*, *ba3*, and *na2* can be summarized as below:

Stage 1:
a. *yi3*: candidate for refinement
b. *jiang1*: candidate for analogy to *yi3*
c. *ba3*: candidate for analogy to *jiang1*

Stage 2:
a. *yi3*: undergoing refinement
b. *jiang1*: undergoing analogy to *yi3*, and also becoming a candidate for refinement
c. *ba3*: starting to undergo analogy to *jiang1* and also becoming a candidate for refinement

Stage 3:
a. *yi3*: has undergone refinement
b. *jiang1*: has undergone refinement
c. *ba3*: has also undergone refinement
d. *na2*: candidate for analogy to *ba3*, and undergoing the process

In terms of the interaction between analogy and refinement, since refinement applies to linguistic forms with multiple functions, while analogy tends to apply to elements with a single (shared) function, these two principles do not compete for each other's domain of application. Therefore, they serve as an example of rules in complementation.

RULE TYPE	DOMAIN OF APPLICATION	RESULT
Analogy	forms with a shared function	1-to-many
Refinement	forms with multiple functions	1-to-1 or null
	No intersection (COMPLEMENTATION)	feeding ↓

Fig. 5. Complementation of analogy and refinement

Moreover, the principle of analogy is also in complementation, or in a 'feeding' relation, with the principle of refinement, in that the output of analogy is applicable to, or 'feeds', refinement, as shown in Fig. 5. Thus, after the analogous development, *ba3*, *jiang1*, and perhaps *na2* as well have also become candidates for refinement.

Finally, I should mention that, as a recognition of the significance of and the increasing interest in the theme of interaction, the International Symposium of Chinese Languages and Linguistics (IsCLL) of 1996 had a focus on the interaction between form and function in Chinese linguistics, although in a more general sense. Since papers presented at the conference

were distributed in the pre-conference proceedings and a formal anthology of selected papers is in the working, I will not go into the individual papers here and would encourage interested readers to look over the pre-conference proceedings and the forthcoming formal anthology.

2.5 SUMMARY

I have recounted in this chapter the development of the interaction theory, its roots in the notion of competing changes in lexical diffusion, and its compatibility with concepts familiar in both the functionalist and formalist approaches. In addition, the interaction theory acknowledges the modularity of syntax and lexicon entailed by the lexical integrity hypothesis and the four-way division of grammatical co-description: i.e., iconic structure, thematic structure, functional structure, and constituent structure, a co-descriptive scheme to a large extent shared with LFG. Based upon Hsieh's taxonomy of interaction types and previous related notions of rule relations, I then proposed a revised taxonomy of the various types of interaction according to two primitive rule-relation features: intersection and transparency. Finally, I briefly reviewed some of the research results within the interaction theory.

CHAPTER 3

VARIATION OF MANDARIN VO CONSTRUCTION

The VO sequences traditionally identified as 'VO compounds' can be explicitly classified into three types in terms of their constituent category: 1) those function only as words, 2) those function only as phrases, and 3) those of dual status: lexical and phrasal (J. Huang 1984, Her 1993), assuming the modularity of syntax and lexicon entailed by the lexical integrity hypothesis (J. Huang 1984, 1988a).

In light of this classification, I will first examine the previous accounts in Chao (1968), Jin (1991), and Huang (1984) in pursuit of a synchronic solution of this variation.[1] I will argue against the ionization account implied in Chao (1968) and also reject the comparable 'restoration' solution of Jin (1991). I will further demonstrate that, although it is via lexicalization that genuine VO compounds have emerged diachronically, lexicalization as a synchronic process would complicate the grammar unnecessarily and is also impossible to generalize; it is therefore also rejected. I support the dual listing solution as the simplest and most elegant account in the synchronic grammar of Mandarin, regarding the dual status as both words and idiom phrases, and thus against the process-oriented solutions, i.e., lexicalization and ionization. From the diachronic perspective, I will further establish within the thesis of grammatical interaction that this variation within the VO construction is the natural result of the competition between the lexical force, lexicalization of VO phrases into VO compounds, and ionization, the syntactic force that reverses a word into a VO phrase.

This chapter is organized as follows. Section 3.1 identifies each of the three subtype of VO sequences and section 3.2 seeks a proper synchronic account of the three types of VO sequences. An interactionist interpretation of the variation of the VO construction is given in section 3.3. Section 3.4 is a summary along with some concluding remarks.

3.1 THREE TYPES OF VO SEQUENCES

In order to carry on a meaningful discussion on 'VO compounds', one must first explicitly define what a VO compound is. The term 'compound' is unfortunately often used incorrectly. Li and Thompson (1981), for example, include many VO sequences that are clearly VO phrases, e.g., *shuo1 huang3* 'tell lies', in their discussion of so-called 'VO compounds'. Compounding, in the standard sense as a word-formation process, involves the creation of a word out of two or more words (e.g. Starosta 1985:251) or roots (e.g., Kaplan 1995:85). A VO compound is thus a lexical unit (of an X-zero category in X-bar terms) whose inner structure is of a [V+O] origin (Her 1994). An important feature that distinguishes lexical units from phrasal units is of course lexical integrity. A version of the lexical integrity principle is stated in Huang (1984:60) as the 'Lexical Integrity Hypothesis' (LIH): no phrase-level rule may affect a proper subpart of a word.

A sensible way to identify a VO sequence as a compound is therefore to demonstrate that no phrase level rule may affect the two subparts, V and O. Lexical integrity thus also entails that a VO sequence whose VO structure is affected by any syntactic rule must be recognized as a phrase. According to the Lexical Integrity Hypothesis then, there could logically exist three types of VO sequences: 1) those that behave only as words, 2) those that behave only as phrases, and 3) those that behave as words and phrases in different environments.

3.1.1 VO Sequences as Words Only

Genuine VO compounds are found in all major lexical categories, such as adverb, e.g., *zhuan3yan3* (turn eye) 'instantly', *zhao4chang2* (follow normality) 'as usual', and *dao4di3* (reach bottom) 'after all'; noun, e.g., *bang3tui3* (tie leg) 'gaiter', *zhen3tou2* (rest head) 'pillow', and *ling3shi4* (lead affair) '(diplomatic) consul'; and most importantly, verb. Verbs by far form the majority of VO compounds and will be the focus of our discussion. VO verbs can be further classified into three subtypes in terms of transitivity: 1) intransitive, 2) transitive, and 3) semi-transitive; Table 1 offers some examples.[2]

Table 1. VO Compounds that Function Only as Words[3]

1) Intransitive:		
shi1wang4	(lose hope)	'be disappointed'
de2yi4	(gain will)	'be proud'
chuan2shen2	(convey spirit)	'be animated'
wang4wo3	(forget I)	'be absorbed'
2) Transitive:		
liu2yi4	(keep intent)	'observe'
guan1xin1	(shut heart)	'be concerned about'
chu1ban3	(produce plate)	'publish'
tiao2ji4	(mix dose)	'adjust'
3) Semi-transitive:		
zai4hang2	(at profession)	'be good at'
na2shou3	(take hand)	'be good at'
guo4mu4	(pass eye)	'skim through'
wen4jin1	(ask ferry)	'show interest in'

As stated earlier, in order to establish the status of a genuine VO compound, one should demonstrate that no phrase level rule may affect the two subparts, V and O. Although it is not practical to enumerate and test each and every syntactic process, several facts do indicate that no phrase-level rules may affect the inner VO structure of these compounds. First of all, no grammatical elements, including aspect markers, can come in between V and O, as in 1. (The only possible exception to this is the A-not-AB construction, which I will discuss momentarily.) In cases where verb-copying is possible (cf., Chang 1990b, 1991), the second occurrence of the verb has to be the entire VO, never just V by itself, as in 2; whereas in a phrasal [verb+object] construction, the 'copied' form can only be the verb, as in 5. Furthermore, the answer to a yes-no question, V-not-VO, or VO-not-VO question cannot be the V subpart alone. It must be the entire VO verb, as in 3 and 4; whereas in a phrasal [verb-object] construction like 6, no such restrictions apply. Finally, a non-echo wh-question cannot be formed with *she2me* 'what' in the place of the O in VO compound verbs, as in 7, again unlike a syntactic object, as in 8.[4]

1.*Ta1 shi1-le-wang4.
he was-disappointed
He was disappointed.

2. Wo3 liu2yi4 ta1 liu2*(yi4) le hen3 jiu3.[5]
   I observe he observe PERF[6] very long
   I have watched him for a long time.

3. q: Ta1 guan1xin1 ni3 ma?
      he concerned you PTCL
      Is he concerned about you?
   a: (Bu4) guan1*(xin1).

4. q: Ying1wen2, ta1 zai4(hang2)-bu4-zai4hang2?
      English he ZAI HANG not good-at
      Is he good at English?
   a: (Bu4) zai4*(hang2).

5. Wo3 xi3 che1 xi3 (*che1) le hen3 jiu3.
   I wash car wash car PERF very long
   I have been washing the car for a long time.

6. q: ta1 jiao1-bu4-jiao1 ying1wen2?
      he teach not teach English
      Does he teach English?
   a: (Bu4) jiao1 (ying1wen2).

7.*Ta1 shi1she2me?
    he disappointed

8. Ta1 mai3 she2me?
   he buy what
   What does he buy?

One might suspect that in a V-not-VO question form of a VO compound, lexical integrity is violated, as *zai4 bu2 zai4hang2* in sentence 4. However, the general A-not-AB construction, of which V-not-VO is one instance, is not a syntactic process, a position upheld in both Huang (1984:75; 1988a), where the reduplication of A is post-syntactic and phonological, and Dai (1990; 1991), where the reduplication is morphological. The two competing accounts thus both preserve lexical integrity.[7]

3.1.2 VO Sequences as (Idiom) Phrases Only

Aside from the straightforward regular [verb + object] phrases, there are also VO idioms, with non-literal meaning available within certain structural constraints. It is commonly assumed that such idiom phrases are lexically encoded. It is the idiom phrases that are particularly of our concern here, for they have been often misidentified as VO compounds. As Huang (1984:73) has pointed out, the majority of the so-called 'VO compound' verbs in previous discussions, e.g., Chao (1968), Lu (1982), and Li and Thompson (1981), are in fact idiom phrases under a more explicit definition.

Unlike Type 1 VO compounds, the [verb + object] structure of Type 2 idiom phrases is assigned through, and thus accessible to, syntactic rules. Therefore, in accordance with the Lexical Integrity Hypothesis, they must be phrases. Examples are shown in Table 2.

Table 2. VO Sequences that Function Only as Phrases

sheng1..qi4	(generate..air)	'be angry'
kai1..wan2xiao4	(open..joke)	'joke'
kai1..dao1	(open..knife)	'operate (surgically)'
chi1..dou4fu3	(eat..tofu)	'tease (flirtatiously)'
chi1..ruan3 fan4	(eat..soft rice)	'live off a woman'
chi1..cu4	(eat..vinegar)	'be jealous'
qiao4..bian4zi	(stick up..pigtail)	'kick the bucket'
tai2..gang4	(carry..lever)	'argue'

Since the [VO] structure here is syntactically transparent, additional phrasal elements, such as aspect markers (9), possessive NPs (10), and various adjunctive modifiers (11-12), can appear between V and O.[8]

9. Ta1 hai2zai4 sheng1 zhe qi4.
   he still generate PROG air
   He is still being angry.

10. Ta1 kai1 ni3 de wan2xiao4.
    he open you POSS joke
    He is joking with you.

11. Ta1 xi3huan1 chi1 nen4 dou4fu3.
    he like eat tender tofu
    He likes to eat tender tofu. OR
    He likes to flirt with the young ones.

12. Ta1 dei3 kai1 ji3 ci4 dao1?
    he must open how-many time knife
    How many times must he operate?

Due to their idiomatic nature, some of the Type 2 VO sequences, e.g., 11, may be ambiguous with a predictable compositional reading and a conventionalized idiomatic reading. Also, each VO idiom may have its (largely unpredictable) restrictions in terms of syntactic processes, such as internal modification, quantification, specification, topicalization, *ba* construction, *bei* construction, deletion, anaphora, etc. It is the idiom's non-compositional or non-literal meaning together with the particular syntactic environments where such reading is available that need to be specified in the lexicon.

Finally, one might question the strict lexical integrity again regarding idioms whose idiomatic reading is available only in a highly constrained syntactic context. In the case of *qiao4..bian4zi* 'kick the bucket', for example, the only element that is allowed between V, *qiao4*, and O, *bian4zi*, is the aspect marker *le*. One thus might suggest that it can be treated as a compound rather than an idiom phrase, if lexical integrity may be relaxed a bit to allow *le* insertion. Such an account, however, would have difficulty explaining why such compounds, unlike the majority of compounds, need to be marked for this *le* insertion and why, among the three aspect makers, *zhe*, *guo*, and *le*, only *le* violates lexical integrity. The idiom solution, however, maintains two generalizations: idiosyncratic constraints on idioms are lexically specified, and no phrase level rule may violate lexical integrity.

3.1.3 VO Sequences of Dual Status

There are certain VO sequences that are of dual status in that they function both as words and idiom phrases respectively in different environments. Unlike Type 1 VO compounds and Type 2 VO idioms, instances of Type 3 are scarce, but their sheer existence calls for careful

examination and an explanatory account. Table 3 lists the ones that I have identified so far.

Table 3. VO Sequences of Dual Status

dan1-xin1	(carry heart)	'worry'
fang4-xin1	(release heart)	'not worried'
fu4-ze2	(bear duty)	'be responsible'
bang1-mang2	(help business)	'help'
you1-mo4	(humor)	'joke'

Note that 'dual status' does not mean that a VO sequence is both lexical and phrasal in a given context. Rather, a Type 3 VO sequence may behave exactly like a word in one environment and yet behave like a phrase elsewhere. Thus, formally a VO sequence is either a VO compound, where the VO structure is word-internal and unaffected by any syntactic rule, or a VO phrase, whose VO structure is affected by one or more phrase-level rules.[9] Therefore, in a given environment a Type 3 sequence is never ambiguous in its status. To be more precise, when a VO sequence of Type 3 is followed by another NP, it functions as a single transitive verb, as shown in 13a. The only alternative is to treat *dan1* and *xin1* as separate categories, each accessible to syntactic rules, as in 13b.

13. a. Ta1 $[\text{dan1xin1}]_{V}$ ni3.
he worry you
He worries about you.

b. Ta1 $[\text{dan1}]_{V}$ $[\text{xin1}]_{NP}$ $[\text{ni3}]_{NP}$.
he carry heart you
He worries about you.

Huang (1984) rejects 13b according to his Phrase Structure Constraint (PSC) that in Chinese a verb may not be followed by more than one constituent. Other independent evidence is also available. This structure of 13b suggests that *dan1* is ditransitive, similar to verbs such as *gei3* 'give' or *qiang3* 'rob', with a direct object and an indirect object. Yet, the fact that *dan1*, unlike other ditransitive verbs (see 14), cannot be separated from *xin1* in this particular usage (as in 15) negates this possibility. Moreover, the fact that *dan1xin1* in 13 can have an aspect

marker attached to it (see 16) positively identifies it as an independent transitive verb.

14. Ta1 gei3 le ni3 xin4xin1.
    he give PERF you confidence
    He gave you confidence.

15.*Ta1 dan1 le/zhe/guo4 xin1 ta1.
    he carry PERF/PROG/XPRN heart he
    He was/am/have worried about him.

16. Ta1 dan1xin1 zhe ni3.
    he worry PROG you
    He is worrying about you.

All of the syntactic tests for Type 1 compounds, e.g., the A-not-AB (17) and yes-no question (18), among others, also confirm that transitive *dan1xin1* is a word.

17. q: Ni3 dan1-bu4-dan1xin1 ta1?
       you DAN not worry he
       Are you worried about him?
    a: (Bu4) dan1*(xin1).

18. q: Ni3 dan1xin1 ta1 ma?
       you worry he PTCL
       Are you worried about him?
    a: (Bu4) dan1*(xin1).

Elsewhere, however, *dan1..xin1* behaves like a VO idiom phrase, for they may easily be separated, as shown in 19-22, and are subject to various syntactic operations.

19. Ta1 dan1 le ban4tian1 xin1.
    he carry PERF half-day heart
    He was worried for quite a while.

20. Ni3 she2me xin1 ye3 bie2 dan1.
you what heart also don't carry
You don't have to worry at all.

21. Zhe4 zhong3 xin1 ni3 bie2 dan1.
this kind heart you don't carry
Don't you worry about such a thing.

22. Ta1 dan1 shei2 de xin1?
he carry who POSS heart
Who is he worried about?

Those critical of strict lexical integrity might again suggest that *dan1xin1* be treated as a compound that allows certain (arbitrary) syntactic processes to access its lexical subparts *dan1* and *xin1*. The same arguments provided towards the end of 3.1.2 and in note 7 apply here as well against this unprincipled violation of lexical integrity.

3.2 SYNCHRONIC SOLUTIONS

From the historical perspective, Her (1993) interprets the idiosyncrasies of VO idioms and compounds as consequences of lexical diffusion in the lexicalization process and attributes the variation of VO sequences to the interaction between ionization and lexicalization, two competing processes. Compounds (Type 1) would obtain where lexicalization prevails over ionization, while phrasal status (Type 2) obtains when ionization prevails. When the competition between lexicalization and ionization is unresolved or on-going, lexical status and phrasal status would coexist and Type 3 dual status obtains. While historical insights may certainly be relevant to synchronic accounts, historical mechanisms are not the same as synchronic processes. For instance, the fact that most prepositions in Modern Chinese emerged via the grammaticalization of their predecessor verbs does not suggest that synchronically prepositions should be listed as verbs and undergo a category-shift process. Precisely as Huang (1984) has suggested, there are three competing synchronic solutions: 1) ionization, 2) lexicalization, and 3) dual listing.

Ionization: VO sequences of dual status are listed as words only in the lexicon, with a reanalysis rule which relabels its two composing subparts as phrasal categories under appropriate circumstances.

Lexicalization: VO sequences of dual status are listed solely as phrases, which are lexicalized into words.

Dual Listing: VO sequences of dual status are listed in the lexicon as both words and phrases.

3.2.1 Ionization

Ionization was first suggested by Chao (1968) in his description of the phrasal behavior of certain VO compounds; its theoretical implications in a synchronic grammar, however, were not made clear until Huang (1984). The ionization account has a Type 3 VO sequence, e.g., *dan1-xin1*, listed only as a word in the lexicon. Its necessary phrasal status is considered the outcome of a synchronic reanalysis rule which splits, or ionizes, a word into two parts, *dan1* and *xin1* for example, and relabels them as V and N respectively.

The first undesirable feature of the ionization solution is that it distinguishes between Type 1 VO compounds like *chu1ban3* 'publish' and Type 3 compounds like *dan1xin1* even though formally they behave the same. In addition, while ionization must be barred from applying to Type 1 compounds to avoid the overgeneration of (non-existing) VO phrases out of Type 1 compounds, it must optionally apply to Type 3 compounds in order to generate their phrasal counterparts. More specifically, as Huang (1984:70) notes, for Type 3 VO compounds listed in the lexicon, ionization must be stated as obligatory when they function as phrases. Equally implausible is when Type 3 compounds function as words, ionization must be obligatorily barred; an ad hoc stipulation indeed.

Type 2 VO idiom phrases present another disconcerting dilemma. If Type 2 phrases, e.g., *chi1..dou4fu4* 'flirt', are listed as words only, then ionization must distinguish between Type 2, to which ionization applies obligatorily, and Type 1 compounds, to which ionization is barred. This would also mean that there is a class of words, i.e., Type 2 base forms, that are never used in the language as such. The better alternative is to list Type 2 idiom phrases as phrases in the lexicon and thus avoid ionization all

together. However, this is hardly satisfactory either, because now the grammar distinguishes two types of VO idiom phrases, one, Type 2, that is listed in the lexicon, the other, Type 3, that is generated by ionization. Again, such a distinction is unnecessary and unfounded as there is no principled difference in behavior between these VO idioms.

The most serious problem for ionization is that there is simply no general way to state this ionization process. A newly-generated VO idiom phrase must be constrained in terms of semantic content and syntactic behavior. As shown in the examples in Table 2 and 3, the idiomatic meaning cannot be predicted from the composition of its parts. A couple of examples should suffice to illustrate the kind of necessary yet arbitrary syntactic constraints that ionization must impose on the newly-generated phrase for the idiomatic meaning to obtain. As is well-known, idiom phrases vary greatly in terms of their syntactic behavior (e.g., Wasow *et al*. 1983, Her *et al*. 1994), such as internal modification, quantification, definiteness, topicalization, ergativization, *ba*-fronting, *bei*-fronting, deletion, anaphora, etc. A few examples are given in 23-28. Note the = sign here indicates that the sentence has a literal meaning only (thus, the idiomatic reading expressed in the English translation is *not* available).

23. Ta1 dan1 le ban4tian1 xin1.
    he carry PERF half-day heart
    He was worried for quite a while.

24. Ta1 fang4 le ban4tian1 xin1. (=)
    he release PERF half-day heart
    He has been unworried for quite a while.

25. Ta1 dan1 shei2 de xin1?
    he carry whose POSS heart
    Who is he worried about?

26. Ta1 fang4 shei2 de xin1? (=)
    he release who POSS heart
    Who is he not worried about?

27. Zhe4 zhong3 xin1 ni3 bie2 dan1.
this kind heart you don't carry
Don't you worry about such a thing.

28. Zhe4 zhong3 xin1 ni3 bie2 fang4. (=)
this kind heart you don't release
Don't be unworried about this kind of affairs.

Through ionization, [*dan1xin1*]$_{v}$ and [*fang41xin1*]$_{v}$ would turn into the idiom phrase [*dan1*]$_{v}$..[*xin1*]$_{n}$ and [*fang1*]$_{v}$..[*xin1*]$_{n}$ respectively. However, this cannot be the end of the story. For [*fang1*]$_{v}$..[*xin1*]$_{n}$ to have its idiomatic meaning, syntactic constraints must be specified, for instance, *xin1* cannot be modified by a duration adjunct (24), take a possessor (26), or be topicalized (28). Although [*dan1*]$_{v}$..[*xin1*]$_{n}$ seems to be free from these constraints (see 23, 25, and 27), it has its own unique set of syntactic requirements. Let's see a few more examples.

29. Xin1, ni3 bie2 dan1. (=)
heart you don'tcarry
Don't you be worried.

30. Wan2xiao4, ni3 bie2 kai1.
joke you don'topen
Don't you joke around.

31. Ta1 ba3 xin1 dan1 le. (=)
he BA heart carry PERF
He did worry.

32. Ta1 ba3 wan2xiao4 kai1da4 le.
he BA joke open big PERF
His joke went overboard.

While [*xin1*]$_{n}$ in the idiom [*dan1*]$_{v}$..[*xin1*]$_{n}$ can be topicalized when modified by *zhe4 zhong3* 'this kind' (27), it cannot be topicalized by itself (see 29). Furthermore, it cannot appear in a *ba* construction (31). *Wan2xiao4*, as in the idiom *kai1..wan2xiao4*, on the other hand, appears to be still freer (30, 32). To account for all the idiosyncracies, the ionization

rule would have to be broken down to as many individual sets of stipulations as there are applicable VO idioms. This would certainly render the ionization analysis vacuous.

In support of Chao's ionization and against Huang's lexicalization solution, Jin (1991:43) offers his observation that native speakers 'feel more comfortable' with a dual status VO sequence, such as *dan1-xin1*, as a single transitive verb than as an idiom phrase, and also that a dual status VO sequence can be used in a wider context as a word than as a phrase. However, this claim contradicts his own citing of S. Huang's (1986) statistics that only about 5% of VO sequences are transitive. In any event, the degree of native speakers' comfort or frequency and context of use has nothing to do with whether a linguistic expression is to be listed in the lexicon or to be derived.[10] Jin (1991:44-45) further confuses the issue by using examples of ionization as a mechanism of historical development as evidence for a synchronic process.[11]

3.2.2 Lexicalization

Lexicalization would specify that a Type 3 VO sequence, e.g., *dan1-xin1*, is listed only as an idiom phrase and that its word status is the outcome of a reanalysis rule which fuses the two words in the idiom phrase into a single word. As it does to ionization, the conflicting status of Type 1 and Type 2 VO sequences presents a similar dilemma to lexicalization.

Consider Type 1 VO compounds, e.g., *de2yi4* 'be proud', within the lexicalization analysis. There are two alternatives, as Huang (1984:73) is amply aware. One, they may be listed as phrases, e.g., $[de2]_{v}..[yi4]_{n}$ 'be proud', and lexicalization must be stated as obligatory. In this case, the grammar would create a class of VO idiom phrases listed in the lexicon but never used as such. Recall that there are also VO compounds of non-verbal categories, such as adverbs, e.g., *zhuan3yan3* (turn-eye) 'instantaneously', and nouns, e.g., *bang3tui3* (tie-leg) 'gaiter'. The grammar would be made too powerful to be revealing if synchronically a noun or adverb were to be obligatorily derived from a lexically listed verbal phrase. The better alternative is of course to list all Type 1 compounds as words in the lexicon. However, now the grammar distinguishes two different types of VO compounds: one that is listed in the lexicon (Type 1), and the other that can only be generated through lexicalization (Type 3), but formally there is no difference whatsoever between them.

When it comes to Type 2 VO sequences, which never behave as words, again there are two options. The worse option is to allow lexicalization to apply and overgenerate. To give an example, $[chi1dou4fu3]_v$ the non-existing verb will be generated through $[chi1]_v..[dou4fu3]_n$ the idiom phrase. The alternative is of course to bar lexicalization from applying to Type 2 phrases. This indeed is Huang's choice (1984:73). Now the lexicalization rule, though barred from applying to Type 2 phrases, must apply to Type 3 phrases in order to generate their counterpart VO compounds. Recall that one criticism of ionization is that ionization must be stated as obligatory when Type 3 VO compounds function as phrases. Same criticism pertains to the lexicalization account: lexicalization must be stated as obligatory when Type 3 VO phrases function as words. Also, the grammar now distinguishes two different types of VO idiom phrases: one barred from lexicalization (Type 2), and the other allowed for optional lexicalization (Type 3). Incidentally, as noted earlier, while the number of Type 2 VO phrases is vast, Type 3 dual status VO sequences are scarce. The application of lexicalization to Type 3 phrases is therefore at the cost of marking the majority of VO phrases as barred from lexicalization.

Like ionization, then, the most serious problem with the lexicalization solution is that there is simply no elegant way to generalize the semantic properties and syntactic behavior of its output compound verbs. The output VO compounds, being full-fledged verbs, vary greatly in terms of gradability, subcategorization requirements, aspect marking, selectional restrictions on the object, etc., again to name just a few. Here are some examples.

33. Ta1 hen3 fang4xin1 ni3.
    he very not worry you
    He doesn't worry about you at all.

34. Ta1 (*hen3) fu4ze2 zhe4 jian4 shi4.
    he very responsible this CLS matter
    He is (very much) in charge of this matter.

35. Ni3 (*hen3) bang1mang2 ta1 (ban1 jia1).
    you very help he move home
    You help him (move).

36. Ni3 (*hen3) you1mo4 ta1 (*ban1 jia1).
you very tease he move home
You tease him (a lot) (about his moving).

37. Ni3 dan1xin1 ta1 hui4 si3.
you worry he will die
You are worried that he may die.

38. *Ni3 fang4xin1 ta1 hui4 si3.
you not worry he will die
You are not worried that he may die.

39. Ta1 zai4 dan1xin1 ni3.
he progressively worry you
He is worrying about you.

40. Ta1 (*zai4) fang4xin1 ni3.
he progressively not worry you
He is not (being) worried about you.

41. Ta1 hen3 dan1xin1 ni3 de jiao4yu4.
he very worry you POSS education
He is very worried about your education.

42. ?Ta1 you1mo4 ni3 de jiao4yu4.
he tease you POSS education
He teases your education.

In terms of gradability, *fang4xin1* can be modified by an intensifier (33), but *fu4ze2* and *bang1mang2* cannot (34, 35); as for subcategorization requirements, *bang1mang2* subcategorizes for an NP object and an optional VP compliment (35), while *fang4xin1*, *fu4ze2*, and *you1mo4* subcategorize for an NP object only (33, 34, 36). *Dan1xin1* may subcategorize for an S compliment instead of an NP object (37), but *fang4xin1* may not (38); furthermore, while *dan1xin1* takes aspect makers (39), *fang4xin1* does not (40). And finally, while *dan1xin1* does not seem to impose any selectional restrictions on its object (39, 41), *you1mo4*

requires its object to be [+human] (42). These individual requirements of Type 3 compound verbs are shown more completely below.

	Grade.	Subcat.	Asp.	Restr. on obj.
dan1xin1	+	NP, VP, S	+	none
fang4xin1	+	NP	-	none
fu4ze2	-	NP	-	none
bang1mang2	-	NP, <NP VP>	+	human
you1mo4	+	NP	+	human

In short, in order to account for all the categorial, functional, and semantic idiosyncracies of the output compounds, the lexicalization rule, like ionization, would need to have as many individual sets of stipulations as there are applicable Type 3 VO phrases. Such ad hoc stipulations suggest strongly a lexicalist solution, where all categorial, functional, and semantic information is specified in each of the individual lexical entries of these compounds, exactly like other words.

3.2.3 Dual Listing

The general argument against the process-oriented solutions, i.e., ionization and lexicalization, is that they have little productivity and present tremendous difficulty in generalizing the idiosyncratic outcomes of their application, although on the surface they seem to offer a principled account. Given that the most straightforward solution for Type 1 and Type 2 sequences is to list them in the lexicon exactly as what they are: words and idiom phrases respectively, any process-oriented account, where the few Type 3 sequences must undergo a synchronic process, would complicate the grammar unnecessarily. The obvious solution is thus to list Type 3 sequences as both words and idiom phrases in the lexicon.[12]

VO verbs are of course not the only kind of compounds, nor are VO idioms the only type of idioms. All the other types of VO compounds (i.e., VO compound nouns and adverbs), VV compounds, and NV compounds, as well as other types of idiom phrases must be listed in the lexicon, quite independent of the analysis of the VO sequences discussed here. Clearly then, the listing of Type 1 as words, Type 2 as idiom phrases, and Type 3 as both words and phrases requires only mechanisms that are already available in the grammar. This dual listing solution is thus more a

principled account than ionization and lexicalization in that it requires no new or additional mechanism and thus does not complicate the grammar in any way.

Huang's only objection to dual listing is that it does not seem to offer 'any independent principle which forces one to insert a phrase rather than a word in sentence-final position' (Huang 1984:70). This would not be a problem, however, for the principle of subcategorization would ensure the correct selection (cf., e.g., Her 1990a).[13]

43. *Ta1 zai4 dan1xin1.
he progressively worry
He is worrying.

44. Ta1 zai4 dan1 xin1.
he progressively carry heart
He is worrying.

45. Ta1 zai4 dan1 shui3.
he progressively carry water
He is carrying water.

Take *dan1xin1* the verb and *dan1..xin1* the idiom for example. In the dual listing solution, the syntactic and semantic requirements, idiosyncratic or not, can be stated in the entries of the verb and the idiom phrase. The lexical entry of $[dan1xin1]_v$ specifies that it is transitive and that it specifically subcategorizes for an NP object or an S complement. When [*dan1xin1*] is inserted in a sentence-final position as in 43, and an NP object or an S complement subcategorized for by the verb cannot be fulfilled, the sentence is ruled out. Subcategorization requirements thus force the selection of the phrase $[dan1]_v..[xin1]_n$, as in 44, where it is well-formed since the NP object subcategorized for by *dan1* is fulfilled by *xin1*. Furthermore, the sentence satisfies the syntactic requirements for the idiomatic reading *worry*. Sentence 45 is thus parallel to 44, except that 45 does not satisfy the idiom's requirement that the object NP be *xin1*.

To summarize, I have first distinguished three types of VO sequences, assuming the Lexical Integrity Hypothesis of Huang (1984). While there are many VO sequences that function either as words only or phrases only, a relatively few are found to be of dual status and function as words in one

context and as phrases elsewhere. Diachronically, all genuine VO compounds indeed have emerged via the lexicalization of VO phrases, while ionization also plays a significant role in creating VO idiom phrases. Nonetheless, in a synchronic grammar of Chinese, I conclude, VO compounds and VO idiom phrases are simply listed in the lexicon as such; likewise, the few VO sequences that function as both words and phrases in different contexts are also listed as such, that is, as both words and phrases.

3.3 INTERACTION BETWEEN SYNTAX AND LEXICON

I will now examine the indispensable role of lexicalization in the rise of VO compounds and the secondary, nonetheless indispensable, role of ionization in the emergence of VO idiom phrases. Within the view that lexicalization and ionization are competing forces of the two respective distinct modules of lexicon and syntax, I offer an interpretation for the variations of VO sequences within the thesis of interaction.

3.3.1 Lexicalization and Ionization

Chinese linguists have long recognized various types of existing compounds in Chinese as the results of the lexicalization of earlier phrases, in part due to the disyllabification tendency and the increase of polysyllabic words in the language (e.g., Li and Thompson 1981:68). In fact, as Huang (1984:71) aptly points out, the emergence of new lexical items through the process of lexicalization is common in all languages. The Chinese VO compounds are so called precisely because their internal [VO] structure, though inaccessible to synchronic syntactic rules, was an external structure of $[\text{verb-object}]_{vp}$ transparent in syntax historically.

Therefore, as mentioned earlier, the idiomatic expressions whose $[\text{verb-object}]_{vp}$ structure is externally assigned in syntax, i.e., Type 2 VO sequences, should not be taken as compounds. More specifically, syntactically idiom phrases have not completed the process of lexicalization, although their semantic structure has been lexicalized and thus merits lexical encoding. Given this understanding, the number of VO compounds should be far smaller than previously conceived. Often, the original [V-O] phrase, after lexicalization, loses its phrasal status, the result of which is a Type 1 compound. However, it is entirely conceivable that, while lexicalization produces a new VO compound, the original

$[V\text{-}O]_{vp}$ phrase retains its phrasal status in the language, as evidenced by the Type 3 VO sequences like *dan1-xin1*, which functions both as a word and an idiom phrase. Figure 1 below depicts, rather simplistically no doubt, the two stages of this historical process.

Stage	Idiom Phrase	Process	Verb	Type
1	$[de2]_v..[yi4]_n$	LXL →	$[de2yi4]_v$	
	$[chi1]_v..[cu4]_n$		ø	
	$[dan1]_v..[xin1]_n$	LXL →	$[dan1xin1]_v$	
2	ø		$[de2yi4]_v$	1
	$[chi1]_v..[cu4]_n$		ø	2
	$[dan1]_v..[xin1]_n$		$[dan1xin1]_v$	3

Fig. 1. Historical process of lexicalization

However, lexicalization cannot account for the current state of what I will call 'pseudo-VO compounds', e.g., *you1mo4* 'tease', and 'pseudo-VO idioms', e.g., *xiao3..bian4* 'pee' and *you1..yi1 mo4* 'tease..a bit'. Historically, a pseudo-VO compound is not a lexicalized VO phrase, and yet synchronically it must have a corresponding pseudo-VO idiom phrase. A pseudo-VO idiom phrase, unlike genuine VO phrases, attains its VO structure only in the strict syntactic context where the idiomatic meaning is possible; in other words, its composing verb and noun may not function as such elsewhere. Although these are extremely rare, their sheer existence has interesting implications.

You1mo4 was originally a loan word, a noun, from English *humor*, but it now also functions as a verb, transitively (47) and intransitively (46), and in a strictly constrained syntactic environment *you1* and *mo4* appear to function as a VO idiom phrase (48).[14]

46. q: Ta1 you1-bu4-you1mo4?
    he YOU not humorous
    Is he humorous?
    a: (Bu4) you1*(mo4).

47. Ta1 chang2 you1mo4 ni3.
he often tease you
He teases you often.

48. Wo3 you1 le ta1 yi1 mo4.
I YOU PERF he one MO
I teased him a bit.

The fact that *you1* does not function as a verb nor *mo4* a noun individually positively identifies the verb you1mo4 (most likely in its transitive reading) as the source of the by-now phrase *you1* someone *yi1 mo4*. I will refer to this historical process as 'ionization', a term first used in Chao (1968) in referring to the phenomenon or process where the composing elements of a lexical item, e.g., the two syllables in a VO compound, become separate independent constituents and thus accessible by syntactic rules (cf., Huang 1984:76, Jin 1991). Notice that, like lexicalization, ionization does not necessarily prevent the input base form from retaining its original lexical status; thus, *you1mo4* still functions as a single verb. In this sense, its (mis-)perceived VO internal structure is in actuality due to back-formation.

Instances are also found of verbs losing their word status while gaining their VO phrasal status via ionization, for example, *xiao3..bian4* 'pee' and *ju2..gong1* 'bow'. In the following sentences, 49-50 indicate the phrasal status of the VO sequences by separability, while 51-52 by the possible answers to the V-not-VO question form.

49. Ni3 xiao3 le san1 ci4 bian4.
you pee PERF three time body-waste
You peed three times.

50. Ni3 ju2 le san1 ge gong1.
you bow PERF three CLS bow
You made three bows.

51. q: Ni3 xiao3-bu4-xiao3 bian4?
you XIAO not pee body-waste
Do you pee?
a: (Bu4) xiao3 (bian4).

52. q: Ni3 ju2-bu4-ju2 gong1?
you JU not bow bow
Do you bow?
a: (Bu4) ju2 (gong1).

However, unlike loan words, the (now defunct) compound verbs *xiao3bian4* and *ju2gong1*, from which ionized phrases came, were themselves words which came from lexicalization. Figure 2 sketches the three stages of the evolution of some of the ionized words in the language.

Stage	Phrase	Process	Verb	Type
1	$[de2]_a..[yi4]_n$	LXL →	$[de2yi4]_v$	
	$[xiao3]_a..[bian4]_n$	LXL →	$[xiao3bian4]_v$	
	ø		$[you1mo4]_v$	
2	ø		$[de2yi4]_v$	
	$[xiao3]_v..[bian4]_n$	← INZ	$[xiao3bian4]_v$	
	$[you1]_v..[mo4]_n$	← INZ	$[you1mo4]_v$	
3	ø		$[de2yi4]_v$	1
	$[xiao3]_v..[bian4]_n$		ø	2
	$[you1]_v..[mo4]_n$		$[you1mo4]_v$	3

Fig. 2. Historical process of ionization

3.3.2 An Interactionist Interpretation

An essential notion of the lexical diffusion hypothesis is that a sound change affects the applicable lexical items in the lexicon one at a time; in other words, it diffuses through the lexicon in a gradual manner (Wang 1969). This notion of diffusion may be extended to grammatical changes (e.g., 1994) as well as dialectal deviations (e.g., Hsieh 1992a, Shen 1990). At a given point in time, among the VO phrases which are candidates for lexicalization, it is likely that only a portion of them have become words, since the lexicalization process affects them one at a time. Likewise, same kind of effect is observed with ionization: only a few of the applicable words have been ionized into phrases. Furthermore, the lexical diffusion hypothesis also recognizes the possibility for a competing change and thus the possibility that a change does run its entire course.

Given the modularity hypothesis embodied in Huang's (1984) LIH, syntax and lexicon, being two separate modules in grammar, each has its inherent force to claim its integrity. Ionization thus can be viewed as a force of syntax, which preserves accessible phrasal categories and also disintegrates lexical items into syntactically transparent phrases. Lexicalization, on the other hand, enhances the lexicon by maintaining the integrity of existing words as well as by integrating phrases into syntactically opaque compounds. Within this broader interpretation of ionization and lexicalization where they not only represent the process but also the state, ionization and lexicalization are two opposing counteractive forces. Four consequences may obtain due to the competition between these two forces, as shown in Table 4 below.

Table 4. Interaction of Lexicalization and Ionization

Ionization	Lexicalization	Consequence
-	+	Type 1. Word only
+	-	Type 2. Phrase only
+	+	Type 3. Dual status
-	-	Type 4. Obsolete

A linguistic expression, whether a phrase or a word, that is by now obsolete in the current language is thus taken to be one that serves neither as a phrase nor a word. Words are those whose internal structure, if any, remains inaccessible to syntax and thus unaffected by ionization; they may originate in the lexicon, e.g., loan words like *luo2ji2* 'logic', or they may be lexicalized compounds such as Type 1 VO compounds. In contrast, those whose structure is assigned through syntax and thus unaffected by lexicalization are phrases, regular or idiomatic, including Type 2 VO idiom phrases. And again, either they originate in syntax, e.g., *mai3 shu1* 'buy books' and *chi1 cu4* 'be jealous', or they are ionized words such as *xiao3..bian4* 'pee'. Finally, those affected by both lexicalization and ionization are of dual status. They can still have emerged through two entirely different paths: 1) a phrase which retains its phrasal status after lexicalization, e.g., *dan1-xin1* 'be concerned', or 2) a word which retains its word status after ionization, e.g., *you1-mo4* 'tease'.[15]

The interaction thesis thus provides an interpretation of the variations of VO sequences: words, phrases, and dual status, as the consequence of

the interaction between lexicalization, a force of lexicon, and ionization, a force of syntax. However, as I have observed, a great deal more phrases are lexicalized into words compared to words ionized into syntactically transparent phrases; lexicalization thus seems to be a stronger force than ionization. A plausible interpretation for this is given in Huang (1984:71):

> Ionization involves the increasing of the complexity of a structure, or increasing the depth of embedding in a tree. Lexicalization, on the other hand, has the effect of regularizing a more complex structure into a simpler one: making a simple word out of a phrase.

3.4 CONCLUSION

To summarize, I have first distinguished four types of VO sequences, assuming the modularity of syntax and lexicon, and of them there are three types that need to be specified in the lexicon. While there are many VO sequences that function either as words only (Type 1) or phrases only (Type 2), a relatively few are found to be of dual status (Type 3). Based on this explicit classification, I repudiate the process-oriented solutions, i.e., ionization and lexicalization, both of which are non-productive, lack the power of prediction, and complicate the grammar. This confirms that the dual listing of Type 3 sequences as both words and idiom phrases provides the simplest solution in the synchronic grammar of Chinese.

Historically, however, most VO compounds in modern Chinese are indeed originally VO phrases and have undergone lexicalization, but there are also a rare few so-called 'pseudo-VO idioms' recognized as ionized words. I interpret the idiosyncrasies of VO idioms and compounds as consequences of lexical diffusion, and the variation of VO sequences as the consequence of the interaction between ionization and lexicalization, two competing forces of structure and lexicon. In cases where lexicalization, the force of lexicon, prevails over the force of syntax, ionization, compounds, or words in more general terms, obtain; where ionization prevails, phrasal status obtains. Lexical status and phrasal status coexist when the competition between lexicalization and ionization is unresolved or still on-going. This constant, dynamic counteraction and balancing between these two forces thus not only accounts for the variation of VO construction in modern Chinese, but also provides a theoretical

foundation for Langacker's (1977) claim that the constant changing in language does not appear to decrease nor increase in overall complexity in the long run. The interaction thesis thus predicts that the grammar is naturally in a state of dynamic equilibrium of state (Hsieh 1989, Her 1994).

NOTES

1. Both Huang (1984) and Jin (1991) cover the verb-resultative sequences as well; however, this chapter concerns VO sequences only. See Chapter 6 for a discussion on resultative compounds.

2. Semi-transitivity refers to the requirement of a non-overt object. Semi-transitive verbs, though they seem to require an objective argument (53), do not allow an objective postverbal NP (54); therefore, the required object must be fulfilled via an anaphoric relation, for example topicalization (55), relativization (56), and cleft (57).

53. *Ta na2shou3.
he be-good-at
*He is good at.

54. *Ta na2shou3 shu4xue2.
he be-good-at math.
He is good at math.

55. Shu4xue2, ta1 na2shou3.
math he be-good-at
Math, he is good at.

56. Ta1 na2shou3 de ke1mu4.
he be-good-at COMP subject
The subject that he is good at.

57. Ta1 na2shou3 de shi4 shu4xue2.
he be-good-at COMP be math
What he is good at is math.

Refer to Her (1991a) and Chapter 6 for a more comprehensive description of their different behavior, a formal account within LFG, and also an interactionist account of the occurrence of this variation in transitivity.

3. A VO sequence with only word status is transcribed continuously, such as *guan1xin1* 'to be concerned'; a sequence with phrasal status only is written as V..O, e.g., *kai1..dao1* 'to operate (surgically)'; and a sequence of possible dual status has a dash between V and O, e.g. *dan1-xin1* 'to be worried', thus an abbreviation of *dan1xin1* plus *dan1..xin1*.

4. Echo questions can of course be formed with *she2me* replacing O in VO compounds, which simply means that the O component forms a phonological unit.

5. The notation x*(y) indicates that y is required for *xy* to be acceptable, while x(*y) indicates that *xy* would be unacceptable.

6. Throughout the entire book, perfective aspect is abbreviated as PERF; progressive aspect, PROG; experiential aspect, XPRN; sentence-final particles, PTCL; and the possessive marker, POSS.

7. In the syntactic solution proposed by Sheu (1991) within the Categorial Grammar, strict lexical integrity is indeed violated (James Huang p.c.). The consequence is that syntactic rules must now be allowed to refer to non-lexical, non-syntactic phonological units such as syllables, because the A-not-AB construction applies to nearly all disyllabic verbs, including temporarily-borrowed foreign words, for example English *crazy*.

58. Ni3 shuo1 ta1 CRA bu4 CRAZY?
you say he CRA not crazy
Wouldn't you say he's crazy?

The heavy price for compromising lexical integrity is thus the complication of grammar. The A-not-AB syntactic rule is now an exception, while all other syntactic rules refer to lexical or phrasal categories only. Secondly, there are a handful of VO verbs that allow only the VO-not-VO but not the V-not-VO question form, what Chao

(1968:426) calls 'solid VO compounds'. These verbs must be marked as exceptions to this syntactic duplication rule. While such arbitrary exceptions are not uncommon to morpholexical processes, they are rather uncharacteristic to syntactic processes.

8. Due to their idiomatic nature, it is largely unpredictable whether these VO idioms may undergo syntactic transformations, and if they may, what; also, there are individual constraints, as arbitrary as their idiomatic readings, on each transformation allowed. Nonetheless, the fact that their subparts can all be separated is sufficient evidence, again according to LIH, that they are phrases, not words. Refer to Chapter 7 for a detailed discussion on idioms.

9. In this formal sense Type 3 is superfluous for in actual use a Type 3 sequence is either a compound word, just like a Type 1 sequence, or a VO phrase, like a Type 2 phrase. Type 3 is thus identified only in terms of its phonetic form. The lexicalist solution of dual listing I argue for in section 3.4 captures this insight.

10. For instance, *scissors*, *trousers*, *lao3shi1* 'teacher', and *lao3hu3* 'tiger' are arguably derived respectively from *scissor*, *trouser*, *shi1* 'teacher', and *hu3* 'tiger', but the inflected or derived forms are obviously used more frequently and in wider contexts than the base forms.

11. To account for the transitive VO compounds that were historically of the [VO] structure, Jin (1991) attempts a remedy called 'restoration', which specifies 'when the two subparts of them are separated by other words they simply restore their original phrasal status' (Jin 1991:46). This idea of 'restoration' inherits all the problems of the ionization account. Furthermore, in the lexicon, among all VO compounds listed, the ones that are restorable have to be marked as such, since restoration cannot apply to loan words like *you1-mo4* 'humor', which have no original phrasal status, but *you1 le ta1 yi1 mo4* 'teased him a bit' is indeed a phrase. And semantically what do the 'restored' idiom phrases, e.g., *dan1..xin1*, 'restore' to? Aside from the fact that there is no definite 'original' state to restore to, syntactically or semantically, it is also entirely unfounded to assume that naive native speakers possess knowledge of the history of the language in this regard.

12. Given the increasing evidence that human language processing is often memory-intensive rather than processing-intensive, the lexicalist dual-listing solution, which is memory-intensive, should be preferred on psycholinguistic grounds even when process-intensive solutions, such as lexicalization and ionization, are equally valid on formal grounds.

13. The principle of subcategorization exists in virtually all grammatical theories in various forms, for example in the 'completeness' condition in the theory of Lexical-Functional Grammar (Bresnan 1982), the SUBCAT feature in Head-driven Phrase Structure Grammar (Pollard and Sag 1987), or similarly the Projection Principle in the mainstream transformational framework (J. Huang 1982).

14. It is of course via lexicalization that the intransitive state verb *you1mo4*, meaning 'humorous', and the transitive verb, meaning 'to tease', have come about.

15. Both paths are also found in some English examples. The phrases in 59 are cases where they have retained their phrasal status after lexicalization, while 60a-c are examples of words (compounds) that have maintained their word status after ionization.

59. a. *kick someone's ass* → *kick-ass* (adj)
    b. *cut someone's throat* → *cut-throat* (adj)
    c. *stick to it* → *stick-to-itiveness* (n)
    d. *who've done it* → *who-dunit* (n)
    e. *wannabes, has-beens, might-have-beens*

60. a. smoking or *non-smoking* → smoking or *non*
    b. *pro-capital punishment* or anti-capital punishment
       → *pro* or anti-capital punishment
    c. *skin diving* or scuba diving
       → '*skin* or scuba diving is prohibited' (sign posted at Santa Cruz Fishermen's Wharf)

CHAPTER 4

VARIATION OF TRANSITIVITY

We have seen in the previous chapter that among Chinese VO compound verbs a further classification can be made in terms of transitivity. Although the majority of VO verbs do not allow objective postverbal NPs, some of them do behave transitively in that they take postverbal objects. However, there also exist a small number of semi-transitive VO verbs, for example *na2shou3* 'be good at', which do not fit in either of the intransitive or transitive category in that they allow no objective postverbal NPs and yet require an object that is anaphorically fulfilled by a long-distance control relation, for example by a topic or a relativized NP.[1]

In this chapter, I will first illustrate the three different types of verbal transitivity and their syntactic behavior. Section 4.2 then seeks a proper account of this variation in transitivity within LFG's functional structure. I will reject analyses that pose subcategorizable TOPIC in Chinese or postulate an additional function STOPIC, which is subcategorizable in Chinese. I propose a simple straightforward account based on Her (1991a), where TOPIC is non-subcategorizable in Chinese and semi-transitive verbs are different from transitive verbs only in that they pose an additional functional constraint on the functional structure which effectively bars any overt objects and allows the required object only through the unification with a topic. Based on the LFG account rendered, section 4.3 then provides an interactionist interpretation: this three-way variation of transitivity in VO compounds is viewed as the natural consequence of the competition between the c-structure and f-structure in terms of transitivity requirements.

4.1 INTRANSITIVITY, TRANSITIVITY, AND SEMI-TRANSITIVITY

Semi-transitive verbs were initially reported and given an LFG account in C. Huang (1989) and later in Mo (1990), where they are referred to as 'predicates with subcategorized TOPICs'. I will however refer to them more accurately as 'semi-transitive' verbs, since I will refute the notion of subcategorized topics in Mandarin and will also demonstrate

that these verbs are transitive in functional structures and yet intransitive in terms of constituent structure.

Thus, in terms of transitivity, three types of VO verbs are identified in Mandarin Chinese: a) intransitive, e.g., *shi1yi4* 'be depressed', b) transitive, e.g., *fu4ze2* 'be responsible for', and c) semi-transitive, e.g., *na2shou3* 'be good at'. Other than these three types of intransitive or monotransitive verbs, another type of transitive verbs are ditransitive and subcategorize for not one but two objective NPs. These ditransitive verbs and their interaction with the preposition *gei3* are discussed extensively in Chapter 5. Examples of the three transitivity types and their different syntactic behavior are given in 1 and 2 below.

1. Variation of Transitivity in VO Compound Verbs

a) Intransitive:

shi1wang4	(lose hope)	'be disappointed'
de2yi4	(gain will)	'be proud'
lu4gu3	(show bone)	'be too revealing'
chuan2shen2	(convey spirit)	'be animated'
wang4wo3	(forget I)	'be mesmerized'

b) Transitive:

cong2shi4	(follow matter)	'be engaged in'
liu2yi4	(keep intent)	'observe'
guan1xin1	(shut heart)	'be concerned about'
chu1ban3	(produce plate)	'publish'
tiao2ji4	(mix dose)	'adjust'

c) Semi-transitive:

zai4hang2	(at profession)	'be good at'
na2shou3	(take hand)	'be good at'
guo4mu4	(pass eye)	'skim through'
dao3dan4	(break egg)	'mess up'
wen4jin1	(ask ferry)	'show interest in'

2. a. Ta zui4jin4 hen3 shi1yi4. `intransitive
he recently very depressed
He has been very depressed recently.

b. *Ta hen3 shi1yi4 ma3li4.
he very depressed Mary

c. *Ma3li4, ta hen3 shi1yi4.
Mary he very depressed

3. a. *Ta fu4ze2. `transitive
he be-responsible-for

b. Ta fu4ze2 zhe4 jian4 shi4.
he be-responsible-for this CLS matter
He is responsible for this matter.

c. Zhe4 jian4 shi4, ta1 fu4ze2.
This matter, he is responsible for.

4. a. *Ta na2shou3. `semi-transitive
he be-good-at

b. *Ta na2shou3 shu4xue2.
he be-good-at math.

c. Shu4xue2, ta1 na2shou3.
Math, he is good at.

The differences in transitive and intransitive verbs are straightforward: while intransitive verbs allow no postverbal NP objects (2b) or objective topics (2c), transitive verbs require either a postverbal object (3b) or an objective topic (3c) to be well-formed. Semi-transitive verbs, however, present a kind of 'split' between transitivity and intransitivity in that they share with intransitive verbs the disallowance of postverbal objective NPs (4b) and behave similarly as transitive verbs in requiring an objective topic to be well-formed (4a, 4c). The term 'semi-transitive' is thus reasonably justified. In the rest of this chapter, I will seek a proper account of these verbs within the formal framework of LFG and provide an explanation of this variation in transitivity based on this LFG account.

4.2 AN LFG ACCOUNT OF VO COMPOUND VERBS

As mentioned in Chapter 2, and 3, the interaction theory assumes the modularity of lexicon and syntax, as entailed by the lexical integrity

hypothesis. Hence, a VO compound is formally a lexical unit, or a word, (an X-zero category in terms of X-bar theory), whose internal structure, though historically traceable to a [V-O] construction, is irrelevant to phrase level rules, and thus behaves exactly like other non-compound words of its syntactic category.

While a formal account of the typically transitive and intransitive verbs may be straightforward, that of the semi-transitive verbs is not, due to their 'semi-transitivity' obviously. There exist three previous accounts, all of which within the general framework of LFG. C. Huang (1989) and Mo (1990) both treat the semi-transitive verbs as predicates with a subcategorized topic. I shall discuss the difficulties with this concept in Chinese, and argue for an analysis based on Her (1991a), which does not utilize the concept of subcategorized topic.

4.2.1 Grammatical Functions and F-structure

The theory of grammar LFG has been developed to serve as a psychologically realistic and computationally precise model of natural language (Bresnan 1982a, Sells 1985). It assigns two levels of syntactic representation to a sentence: a constituent structure (c-structure), represented as a tree, and a functional structure (f-structure). While the c-structure reflects the phrasal hierarchy and linear ordering in a sentence, the f-structure is an abstraction of the grammatical and functional information away from both phrasal constituency and ordering. It is in the f-structure that grammatical relations like TOPIC, SUBJ (subject) and OBJ (object) are stated. The c-structure and f-structure together form a co-description of a linguistic expression; thus, although they are two different kinds of syntactic representation, they are an integrated whole. Fig. 1 illustrates with a simple example the LFG co-description of c-structure, represented as a tree, and f-structure, shown in a bracketed dag (i.e., directed acyclic graph) representation of feature-value pairs.

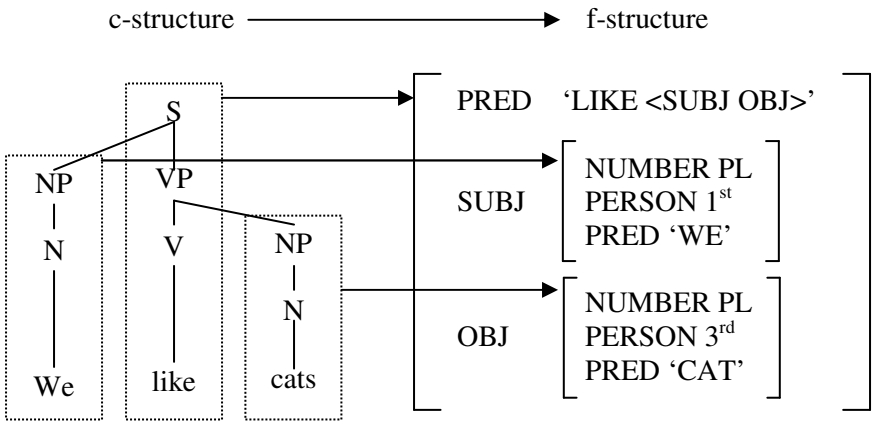


Fig. 1. LFG Co-description of c- and f-structure

While phrase structure rules regulate c-structures and are bound by certain X-bar parameters, LFG also posits certain well-formedness conditions on f-structures, two most important ones of which are the Completeness and Coherence Conditions. The Completeness and Coherence conditions are directly related to the concept of subcategorized grammatical functions.

Completeness
An f-structure is locally complete if and only if it contains all the subcategorizable grammatical functions that its predicate subcategorizes for. An f-structure is complete if and only if all its subsidiary f-structures are locally complete.

Coherence
An f-structure is locally coherent if and only if all the subcategorizable grammatical functions that it contains are subcategorized-for by a local predicate. An f-structure is coherent if and only if all its subsidiary f-structures are locally coherent.

A subcategorizable function in an f-structure has to obey the conditions of Completeness and Coherence; nevertheless, a non-subcategorizable function, e.g., ADJUNCTS, does not. A grammatical

function must be either subcategorizable or non-subcategorizable in a given language. TOPIC in LFG is a grammatical relation parallel to subject and object. While SUBJ and OBJ are recognized in the theory as universally subcategorizable, the subcategorizablity of TOPIC is language-dependent. It is clear then that in LFG intransitive verbs subcategorize for SUBJ but not OBJ, and transitive verbs must subcategorize for both SUBJ and OBJ; but the analysis of semi-transitive verbs depends crucially upon whether TOPIC is subcategorizable in Chinese.

In the literature of Chinese linguistics there is an inconsistency in the use of 'topic,' in referring to a syntactic as well as a semantic notion, which therefore often leads to imprecise generalizations regarding topic. To correct this problem, I follow Her (1991a) and reserve the term 'topic' to refer to a grammatical function, a syntactic notion parallel to 'subject' and 'object,' as it is used in LFG and use another term 'frame' to refer to the semantic or discoursal function encoded by the syntactic topic. Furthermore, I argue that TOPIC, as a grammatical function in LFG, should not be subcategorizable in Mandarin Chinese.

4.2.2 An Account of Subcategorized TOPIC (C. Huang 1989)

C. Huang (1989) proposes that TOPIC be subcategorizable in Chinese and semi-transitive verbs subcategorize for <TOPIC SUBJ>. Sentence 4c thus has the following f-structure.

4c-f1. Shu4xue2, ta1 na2shou3.

$$\begin{bmatrix} \text{PRED} & \text{'BE-GOOD-AT <TOPIC SUBJ>'} \\ \text{TOPIC} & [\ \text{PRED} \quad \text{'MATH'} \quad] \\ \text{SUBJ} & [\ \text{PRED} \quad \text{'HE'} \quad\ ] \end{bmatrix}$$

Note that in LFG even if there is only one lexical item that subcategorizes for a grammatical function, then this function must be subcategorizable throughout the entire language. I contend that the notion of subcategorized TOPIC in Chinese has unsound implications. Observe the occurrences of TOPIC in the following examples.

5. a. Yu2, wo3 zhi3 xi3huan1 zun1yu2.
fish I only like trout
When it comes to fish, I only like trout.

b. Zhang1san1, wo3 hui4 ma4 ta1.
John I will scold him.
John, I will scold him.

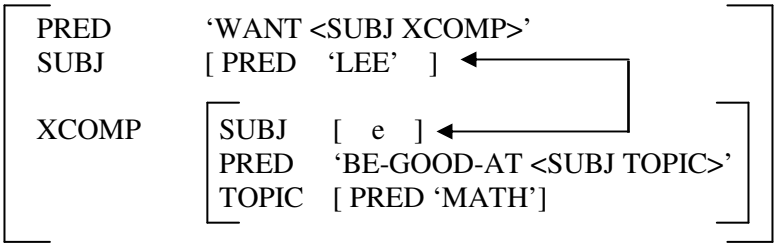
c. Mei3guo2, wo3 you3 qin1qi1.
U.S. I have relatives
In the U.S., I have relatives.

d. Na4 chang3 da4huo3, wo3men tai4 xing4yun4 le.
that CLS fire we too lucky PTCL
Talking about that fire, we were too lucky.

Since it is possible for virtually all Chinese sentences without a topic to have an optional topic attached to its sentence-initial position, the notion of subcategorizable TOPIC entails that not only all Chinese verbs would have to be subcategorized for TOPIC (to satisfy Coherence when topic is present), but also, except for semi-transitive verbs, all other verbs must subcategorize for TOPIC optionally (to avoid Incompleteness when topic is absent). Such an entailment definitely overthrows the claim of subcategorized TOPICs in Chinese.

A further problem is that when a semi-transitive verb appears in an embedded non-finite VP (known as XCOMP in LFG), it is actually impossible for it to have the required topic. However, this analysis of subcategorized TOPIC does not rule it out.

6. *Li3si4 xiang3yao4 shu4xue2 na2shou3.
Lee want math be-good-at
Lee wants to be good at math.



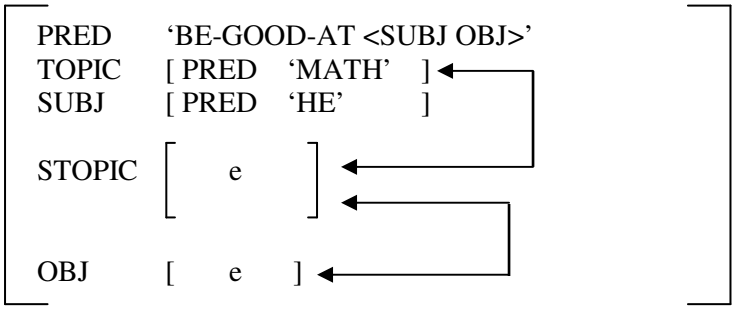
4.2.3 An Account of Subcategorized STOPIC (Mo 1990)

Mo (1990) offers two further arguments against the above analysis: 1) it fails to account for the objective nature of the required topic, and 2) it violates the lexical mapping principle that a thematic structure, e.g., <exp th> for *na2shou3* 'to be good at' and *fu4ze2* 'to be responsible for', cannot be mapped to two different lexical forms, e.g., <SUBJ TOPIC> and <SUBJ OBJ>.[3] She proposes that, in addition to TOPIC, a new grammatical function STOPIC ('S' stands for 'subcategorized') be introduced in Chinese, and that semi-transitive verbs subcategorize for SUBJ and OBJ instead, with the addition of two functional equations in their lexical entries to ensure the existence of topic.

na2shou3 V, ↑ PRED = 'BE-GOOD-AT <SUBJ OBJ>'
↑ STOPIC = ↑ OBJ
↑ STOPIC

The constraint (↑ STOPIC) ensures the existence of STOPIC in the f-structure; and (↑ STOPIC = ↑ OBJ) identifies the missing OBJ with STOPIC (Equal sign = indicates unification). Sentence 4c thus has the following f-structure.

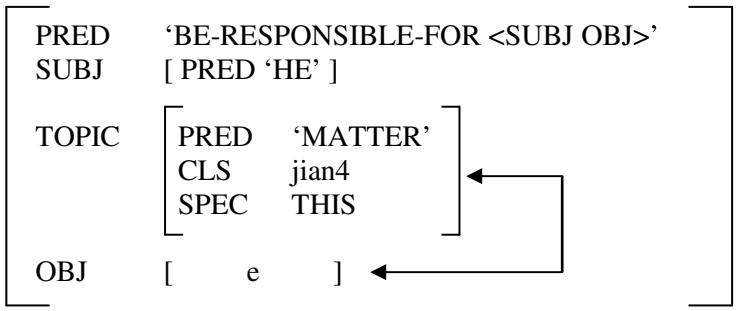
4c-f2. Shu4xue2, ta1 na2shou3.



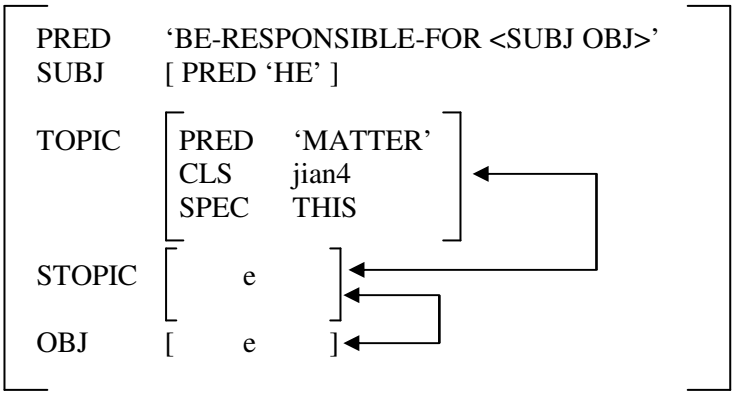
Although this analysis, in recognizing the objective nature of the required topic, corrects the previous problems, it itself has a number of difficulties. First of all, if STOPIC is indeed subcategorized as its name and its author's claims indicate, then it should observe Coherence and Completeness.[4] Consequently, the above f-structure 4c-f2 is in fact incoherent and thus ill-formed, for STOPIC is not subcategorized by the predicate.

Secondly, STOPIC, which is introduced to an f-structure only through a functional equation in a lexical entry and can never be lexically overt, is a rather ad hoc stipulation. The implication that there are two kinds of topic in Chinese—TOPIC, which is non-subcategorizable, and STOPIC, which must be subcategorized, leads to an unnecessary complication of the grammar. This analysis allows, in theory at least, all transitive verbs with a missing object identifiable with its topic two possible structures. Sentence 3c, for instance, now could have two equally sound f-structures, one with a matrix TOPIC (3c-f1), the other with a matrix TOPIC as well as a local STOPIC.

3c-f1. Zhe4 jian4 shi4, ta1 fu4ze2.

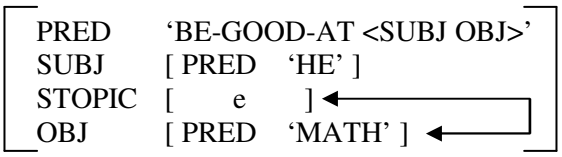


3c-f2.



Finally, this analysis incorrectly predicts that ill-formed sentences like 4b are well-formed. Sentence 4b would have the following f-structure, and nothing within this analysis would rule it out.

4b-f1. *Ta1 na2shou3 shu4xue2.



4.2.4 An Account of Non-subcategorizable TOPIC

An alternative analysis, also within LFG, is put forth by Her (1991a), which identifies TOPIC as a strictly non-subcategorizable grammatical function in Chinese, and also recognizes the objective nature of the required topic. Here I will propose that the grammatical TOPIC be assigned the feature-value pair [FRAME +] due to its discourse function.

7. a. shi1yi4 V, ↑ PRED = 'BE-DEPRESSED <SUBJ>'
   b. fu4ze2 V, ↑ PRED = 'BE-RESPONSIBLE-FOR <SUBJ OBJ>'
   c. na2shou3 V, ↑ PRED = 'BE-GOOD-AT <SUBJ OBJ>'
   ↑ OBJ FRAME $=_c$ +

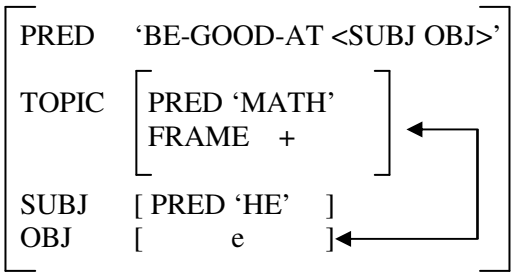
8. a. S' → NP S
   ↑ TOPIC = ↓ ↑ = ↓
   ↑ FRAME = +
   ↑ ... = ↓

   b. S → (NP) VP
   ↑ SUBJ = ↓ ↑ = ↓

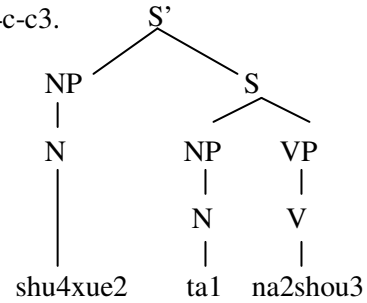
   c. VP → V (NP)
   ↑ = ↓ ↑ OBJ = ↓

Semi-transitive verbs subcategorize for SUBJ and OBJ; also, the OBJ must have the attribute-value pair of [FRAME +]. (Note that $=_c$ indicates a constraint, or 'must be'.) Since TOPIC usually encodes old or given information (e.g., Cheng 1983), it is reasonable to assign [FRAME +] to it. Sentence 4c thus has the following c- and f-structure.

4c-f3. Shu4xue2, ta1 na2shou3.



4c-c3.



'Math, he is good at.'

The constraint (↑ OBJ FRAME) $=_c$ +) is satisfied in the above f-structure of 4c since its OBJ unifies with TOPIC through the operation of functional uncertainty (↑ ... = ↓).[5] According to this analysis, 4a and 4b are ill-formed because their respective f-structure violates this functional constraint. Neither 4a's nor 4b's OBJ would have [FRAME +], which can only be obtained through unification with TOPIC; both sentences are therefore ill-formed for violating this constraint.[6]

This LFG analysis specifies that a transitive verb must subcategorize for OBJ in f-structure and also must allow an objective postverbal NP in c-structure. An intransitive verb, on the other hand, must not subcategorize for OBJ in f-structure and must not allow objective postverbal NPs, for the presence of which will cause incoherence. Semi-transitive verbs are those that subcategorize for OBJ in f-structure and yet do not allow objective postverbal NPs.

This analysis avoids all the previous difficulties, and also maintains several linguistic generalizations. The analysis assigns identical grammatical functions and control relations to both topic constructions of 3c and 4c, where the missing OBJ is controlled by the matrix TOPIC, while both Huang's and Mo's accounts would stipulate two different f-structures. Furthermore, the analysis generalizes that the incompleteness of 3a and 4a alike arises from the unfulfilled OBJ, while the two other accounts must give different reasons for their ill-formedness.

Complex sentences with embedded VP (e.g., 9a-a'), relative clauses (e.g., 9b-b'), and pseudo-cleft constructions (e.g., 9c-c') provide further examples of the generality of the analysis I adopt (Her 1990).

9. a. Zhe4 jian4 shi4, ta1 hui4 fu4ze2.
this CLS matter he will be-responsible
This matter, he will be responsible for.

a' Shu4xue2, ta1 hui4 na2shou3.
math he will be-good-at
Math, he will be good at.

b. Ta1 fu4ze2 de xiang4mu4.
he be-responsible DE item
The item that he is responsible for.

b' Ta1 na2shou3 de xiang4mu4.
he be-good-at DE item
The item that he is good at.

c. Ta1 fu4ze2 de shi4 zhe4 jian4 shi4.
he be-responsible DE be this CLS matter
What he is responsible for is this matter.

c' Ta1 na2shou3 de shi4 shu4xue2.
he be-good-at DE be math
What he is good at is math.

Again, between the sentence with a transitive verb and its primed counterpart with a semi-transitive verb, the analysis I adopt provides an identical f-structure and a single control relation identifying the missing OBJ with the matrix TOPIC, while accounts with subcategorized TOPIC or STOPIC assigns drastically different f-structures and control relations.

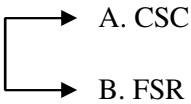
4.3 AN INTERACTIONIST INTERPRETATION

The 'lexical diffusion hypothesis' (Wang 1969, Chen and Wang 1975) has been recognized as a valid account for irregularity in a sound change—a sound change may not reach the entire lexicon if there is another concurrent sound change competing for (part of) the same domain of application; competing changes thus may cause residue, or irregularity. Extending the concept of competing changes to other components of the

grammar, Hsieh (1989, 1990, 1991) put forth a thesis of rule interaction to account for variation in synchronic grammatical constructions. The interaction theory holds that at any point in time, given any grammatical pattern, grammatical rules applicable to this particular pattern are engaged in a constant interaction, i.e., competition or complementation; and competition may result in variation or irregularity.

I will employ this interactionist view to interpret the variation of transitivity in VO verbs within the LFG analysis. The incorporation of the object in VO compounding can be regarded as a process of reanalysis of the VO syntactic structure. I submit that there are two competing forces affecting the f-structure and c-structure in VO verbs, which are the results of this reanalysis. The intransitive force imposes a c-structure constraint (or CSC in short) that disallows a postverbal objective NP, while the transitive force imposes an f-structure requirement (FSR in short) for an OBJ.

10. [V incorporates OBJ] → V:



Four logical consequences may result from the competition between 10A (CSC) and 10B (FSR) in the c-structure and the f-structure of VO compound verbs.

CSC	FSR	Consequence
+	-	Intransitive: *shi1yi4*
-	+	Transitive: *fu4ze2*
+	+	Semi-transitive: *na2shou3*
-	-	None

Figure 2. Variation of transitivity in VO verbs

The variation of transitivity is therefore the consequence of two competing rules affecting the f-structure and c-structure in these compound verbs. In transitive VO compounds like *fu4ze2*, transitive FSR prevails over intransitive CSC; thus, OBJ is required in the f-structure and a postverbal NP allowed in the c-structure. The opposite obtains in intransi-

tive VO compounds like *shi1yi4*, where a postverbal NP is not allowed in c-structure and OBJ not required in f-structure. As for semi-transitive VO verbs like *na2shou3*, both CSC and FSR obtain; hence, the verb cannot take a lexically overt postverbal NP but requires OBJ. Consequently, the OBJ required by the f-structure cannot be fulfilled by a lexically overt postverbal NP; rather it has to be fulfilled by an anaphoric control relation with TOPIC. Their lexical entries therefore must contain the constraint: ($\uparrow$ OBJ FRAME $=_c$ +), to ensure the existence of a TOPIC that anaphorically controls their OBJ, and to also rule out a lexically overt, structurally assigned OBJ, which would not be assigned [FRAME +].

The last logical consequence due to this interaction is VO verbs whose c-structure is transitive, requiring a postverbal NP, but whose f-structure is intransitive, disallowing OBJ. Nonetheless, I find no such cases in Chinese; and I do not believe any such case will ever be found, in any language. Such a consequence necessarily leads to an incoherent, thus ill-formed, f-structure since the lexically overt, structurally assigned OBJ, a universally subcategorizable function, is not subcategorized-for by the verb within the f-structure. The universal grammar therefore predicts, correctly in this case at least, that the interaction between the two rules 10A and 10B will never yield such a consequence.

Since the Transitive Rule and the Intransitive Rule are both applicable to VO verbs, they are in competition, as defined in Chapter 2. In other words, the domains of their application intersect. Furthermore, since as a result of their competition, a single input of these two rules may have three possible variations in terms of its transitivity, the two rules are also in conflict, again as defined in Chapter 2; or to borrow the terminology in historical phonology, they are in a 'bleeding' relation, i.e., the application of one rule deprives the applicability of the other.

RULES	DOMAIN OF APPLICATION	RESULT
CSC	VO	variation in
FSR	VERBS	transitivity
	(intersection)	(conflict)

Figure 3. Competition of transitivity and intransitivity

Finally I note that while collecting data for these three types of VO verbs, I found that there was considerable diversity among native speakers' judgment as to both the lexical integrity and the transitivity of various VO verbs. Since many VO compounds are residue from classical Chinese, the educational background of the native speaker seems to be an important factor. Generally however, there is a strong tendency that the less familiar a VO verb is to the speaker, the more likely it is judged intransitive and lexically integrated. This observation, though anecdotal, has sociolinguistic implications and again can be interpreted through the lexical diffusion model and thus also the extended theory of grammatical interaction. A linguistic change thus not only diffuses gradually through the lexicon, but also through its population of speakers. A previous study of lexical diffusion from the population perspective can be found in Shen (1990).

4.4 CONCLUSION

Three variations of transitivity are identified among Mandarin VO verbs: intransitive, transitive and semi-transitive. Semi-transitive verbs are interesting for they do not allow postverbal objective NPs and yet require an objective topic. I have argued against previous accounts with subcategorizable TOPIC or STOPIC, and accepted an alternative LFG analysis which recognizes that in Chinese TOPIC is a non-subcategorizable grammatical function and it encodes the discourse frame. By treating semi-transitive verbs as subcategorizing for subject and object, the analysis I adopt not only accounts for the objective nature of the required topic, but also maintains linguistic generalizations that would be missed in an account of subcategorized TOPIC.

Furthermore, the interactionist view that the competition between the two forces affecting a VO verb's c- and f-structure, one propels towards intransitivity, the other towards transitivity, provides a valid interpretation of the variation in transitivity among VO verbs. This view also implies that the transitivity of a VO verb may not stay unchanged as the competition may not have run its full course. Semi-transitive verbs may thus only be a passing phenomenon.

NOTES

1. The similar compound verbs in English, e.g., *babysit*, *bartend*, *job-hunt*, and *grocery-shop*, etc., may not be genuine OV compounds, as there is no general pattern of [OV] in English syntax. Rather, they should be considered sporadic backformations from the fairly productive noun-noun compounds like *babysitter*, *bartender*, *job-hunting*, and *grocery-shopping* (Baker 1988:78). Like VO verbs in Chinese, however, most of these verbs are intransitive, with only a few occasional exceptions, e.g., *babysit* and *typeset*. However, no semi-transitive verbs are found.

a. Jenny has to babysit her little brother tonight.
b. We can typeset the book for you at $9.50 per page.

2. Note some of the examples of semi-transitive verbs given in C. Huang (1989) and Mo (1990) lack lexical integrity and should really be treated as idioms. Note also that both papers use the term 'predicates with subcategorized TOPICs' to refer to what I call semi-transitive verbs.

3. Actually, aside from relation changing morpholexical rules (Bresnan and Kanerva 1989), which, as Mo recognizes, are one way for predicates with an identical thematic structure to have different subcategorization requirements, non-thematically assigned grammatical functions (Bresnan 1982) present another possibility. However, neither is relevant to C. Huang's analysis. See section 5.3 for a detailed discussion on the lexical mapping theory.

4. For example, Mo (1990:78) states, 'As this *subcategorized topic* phenomenon is a lexical property of certain verbs, we may assume that a verb belongs to this class if and only if it has the equation attached in its lexical entry.' (Emphasis added.) The equation she refers to is (↑ STOPIC = ↑ OBJ).

5. Refer to C. Huang (1992) and C. Huang *et al.* (1989) for more thorough LFG accounts of functional uncertainty and TOPIC in Chinese.

6. Recall that the c- and f-structure in LFG are co-description of a linguistic expression. Although they are two different kinds of information, they are an integrated whole. Thus, what appears to be a c-structure constraint may in fact be fulfilled by an f-structure condition. Take the following sentence for example:

14. *Mary kissed John a kiss.
    (Intended meaning: Mary gave John a kiss.)

Although it seems like a c-structure constraint that prohibits the verb *kiss* from taking a second NP, the actual fulfillment of this constraint is by way of an f-structure condition—the sentence is ruled out due to the incoherent OBJ2 (indirect object) in the f-structure. Similarly, the fact that in the f-structure *kiss* cannot have OBJ2 also means that in c-structure it does not allow a second NP. Similarly, the c-structure constraint that *na2shou3* does not allow postverbal objective NPs is fulfilled through an f-structure constraint that its OBJ must contain [FRAME +].

CHAPTER 5

DATIVE ALTERNATION AND *GEI* COMPOUNDING

Transitivity, as demonstrated in Chapter 4, has three types: intransitivity, transitivity, and semi-transitivity. A subtype of transitive verbs subcategorizes for not one but two postverbal objects, a primary object and a secondary object. Given the monostratal nature of the lexical functional theory, the dative alternation between a secondary object and an oblique function is due to a lexical process, rather than movement. This chapter focuses on the element *gei3* and dative alternation in Chinese. I will provide an account within the recent lexical mapping theory of LFG and an interactionist interpretation of this account.

5.1 BACKGROUND

The dative alternation in Chinese and English seem to parallel, as shown in 1-2, where Mandarin post-object *gei3* looks suspiciously similar to the English goal-marking preposition *to*. This prepositional analysis for post-object *gei3* is indeed the received view, and most accounts also extend the prepositional status to *gei3* immediately following the verb and preceding the indirect object, as shown in 3 (e.g., Teng 1975, T. Tang 1982:208-212, 1985b, 1985c, 1988b, J. Tang 1990, Li and Thompson 1981, Her 1990, H. Huang 1995, Her and Huang 1995b, among many others).

1. a. Li3si4 song4 le ta1 yi1 duo3 hua1.
   Lee give PERF her one CLS flower
   b. Lee gave her a flower.

2. a. Li3si4 song4 le yi1 duo3 hua1 gei3 ta1.
   Lee give PERF one CLS flower to her
   b. Lee gave a flower to her.

3. a. Li3si4 song4 gei3 le ta1 yi1 duo3 hua1.
   Lee give to PERF her one CLS flower
   b. ?Lee gave to her a flower.

Against this conventional view and in support of Chao (1968), Huang and Mo (1992) (HM henceforth) argue instead that 2a involves a serial verb construction, where post-object *gei3* is a verb, and in 3a *gei3* is a verbal suffix in the V*gei3* sequence (C. Huang 1990, 1993). Thus, in their view, no parallel is justified between English dative *to* and Mandarin *gei3*.

In this chapter I will establish that *gei3* is not a suffix in the V*gei3* sequence; rather it is a verbal root and V*gei3* is thus a V-V compound. I further argue that *gei3* as the second verb in a serial verb construction does not rule out the grammaticality of the preposition *gei3* in constructions like 2a. Thus, 1a and 3a are identical in syntactic structures, while 1a and 2a are two distinct surface structures related to each other by the same thematic structure, parallel to their English counterparts, 1b and 2b. Section 5.2 also demonstrates that the prepositional analysis of post-object *gei3* is indispensable in identifying a natural class of verbs that form V*gei3* compounds.

Section 5.3 then implements this analysis of Mandarin dative alternation within a revised lexical mapping theory (LMT) of Lexical-Functional Grammar (LFG). I will first introduce two previous versions of LMT and discuss the modifications that have been suggested. I then present a revised LMT with a single unified mapping principle. Within this revised LMT, dative and passive in Chinese and English as analyzed in section 5.2 are accounted for with two morpholexical rules. Previous LMT accounts of dative shift in Chinese and English are then reviewed. Section 5.4 discusses the implications of this LMT account. Concluding remarks are given in section 5.5.

5.2 STATUS OF *GEI3* AND DATIVE SHIFT

Like other Chinese prepositions, e.g., *gen1* and *zai4*, *gei3* functions as a preposition as well as a verb, meaning 'to give'. In this chapter, I will not discuss its preverbal functions as a preposition, such as an agent marker, patient marker (e.g., Paul 1988, Dan 1994), and beneficiary marker (e.g., Li and Thompson 1981, Paul 1988). Rather, the focus is on *gei3* the ditransitive verb, as in 4 below, and its somewhat controversial status in postverbal positions, as in constructions 5 and 6.

4. *gei3* NP_2 NP_1
5. V *gei3* NP_2 NP_1

6. V NP_1 *gei3* NP_2

In 4 *gei3* is a full-fledged ditransitive verb, much like *song4* (1a) and English *give* (1b); however, its status in 5 and 6 is less clear. In 5.2.1 I present evidence that suggests V*gei3* in construction 5 is a ditransitive compound verb. In 5.2.2 I argue that *gei3* in 6 may be either a verb or a preposition, depending on the predicate argument structure of the matrix V. I then integrate the two analyses in 5.2.3 and identify a semantically coherent class of verbs that form V*gei3* compounds. In 5.2.4 I present a classification of ditransitive verbs, and in 5.2.5, I demonstrate that although Chinese and English share the same dative shift constructions, the interaction between dative shift and passive is different in the two languages.

5.2.1 V*gei3* Compounds

The attachment of aspect markers is the most commonly employed test for the verb status of a Mandarin word. It is often misused, however, to test the lack of verbhood as well. While verbs typically allow aspect attachment, some, e.g., pivot verbs such as *shi3* 'cause', *ling4* 'make', *bi1* 'force', and *rang4* 'allow' and modal verbs such as *ying1gai1* 'should', *neng2* 'can', and *bi4xu1* 'must', do not (e.g., Her 1990a). On the other hand, only verbs, not prepositions or anything else, allow aspect markers (e.g., Chao 1968, Her 1990a, McCawley 1992). The crucial point is thus that aspect attachment is a sufficient, but not necessary, condition of verbhood in Mandarin. Indeed no other test is more reliable for the positive identification of Mandarin verbhood (e.g., McCawley 1992:227, Tang 1990, HM).

7. a. Li3si4 diu1 le yi1 duo3 hua1 gei3 ta1.
Lee toss PERF one CLS flower to her
Lee tossed a flower to her.

b. Li3si4 diu1gei3 le ta1 yi1 duo3 hua1.
Lee toss PERF her one CLS flower
Lee tossed her a flower.

c. *Li3si4 diu1 le gei3 ta1 yi1 duo3 hua1.
Lee toss PERF to her one CLS flower

8. a. Li3si4 mai3 le yi1 duo3 hua1 gei3 ta1.
Lee buy PERF one CLS flower to her
Lee bought a flower for her.

b. Li3si4 mai3gei3 le ta1 yi1 duo3 hua1.
Lee buy PERF her one CLS flower
Lee bought her a flower.

c. *Li3si4 mai3 le gei3 ta1 yi1 duo3 hua1.
Lee buy PERF to her one CLS flower

Sentences 7a and 8a thus show that *diu1* 'toss' and *mai3* 'buy' are verbs. Likewise, *le* attachment in 7b and 8b positively identifies *diu1gei3* and *mai3gei3* as verbs, while the ungrammaticality of 7c and 8c also indicates that V*gei3* sequences are lexical units, whose lexical integrity must be maintained. Therefore C. Huang (1990c) and HM should be applauded for supporting this position of Chao's (1968), which indeed had been long overlooked. The issue remains, however, whether *gei3* is a suffix or a root in a V*gei3* verb. In other words, is V*gei3* a compound or not?

A word on terminology is needed at this point. McCawley (1992:227), using the test of aspect attachment, has reached the same conclusion that V*gei3* is a verb.[1] He also calls it a compound, although without any justification. HM, on the other hand, in treating *gei3* as a 'derivational suffix' in V*gei3* 'compounds,' may have confused the terminology. Affixing and compounding are two distinct processes. A compound, e.g., English *freeze-dry* and Mandarin *kan4jian4* (look-see) 'see', is generally considered a word formed by the combination of words (free morphemes, lexemes, or roots) (e.g., Liles 1975, Tartter 1986, Todd 1987, Starosta 1985:251, Cowie 1995:185, Kaplan 1995:85), while affixes, e.g., English *pre-* and *-ize* and Mandarin ordinal prefix *di4-* and plural suffix *-men*, are bound lexical formatives that are distinct from words (roots, lexemes, or free morphemes). Tang (1992h:31), for example, specifies for Chinese that the two or more morphemes in a compound word are all roots. Similarly, Chi (1985:38) defines a compound in Chinese as a word that 'consists of at

least two morphemes *neither of which is affixal*' (emphasis added). Since HM specifically argue for *gei3* as a suffix, they cannot consider V*gei3* verbs compounds at the same time. In fact, C. Huang (1993:363), citing Starosta's (1985:251-252) position, states explicitly that *gei3* is a suffix and that V*gei3* verbs should not be mischaracterized as compounds.[2]

HM base their suffix account on four observations. First, *gei3* selects a (somewhat arbitrary) class of verbs. Secondly, V*gei3* sequences observe lexical integrity, and thirdly they may show semantic shift and idiosyncratic gaps. Fourthly, *gei3* introduces an additional goal role to the thematic structure of the verb V*gei3*. (I will show in 2.3 that *gei3* in fact selects a clearly definable class of verbs in V*gei3* compounds, but let's accept these observations for the moment.) None of these observations is inconsistent with *gei3* as a verbal root or V*gei3* as a compound. Compounding, which may or may not be productive, selects a class of lexical items and indeed has the capacity to alter the lexical semantics of predicates. On the contrary, there is substantial evidence against the suffix analysis.

9. a. Li3si4 gei3 le ta1 yi1 duo3 hua1.
Lee give PERF her one CLS flower
Lee gave her a flower.

b. Li3si4 song4gei3 le ta1 yi1 duo3 hua1.
Lee give PERF her one CLS flower
Lee gave her a flower.

c. *Li3si4 gei3 le yi1 duo3 hua1 gei3 ta1.
Lee give PERF one CLS flower to her
Lee gave a flower to her.

d. *Li3si4 song4/diu1/mai3-gei3 hua1 gei3 ta.
Lee give/toss/buy flower to her
Lee gave/tossed/bought flowers to her.

First of all, *gei3* is a free morpheme, a word, as shown in 9a. To treat it as a verbal root in compounds is thus straightforward, while to pose it as a suffix, a bound morpheme, would be a complication to the grammar. In addition, the thematic structure of verb *gei3*, <ag go th>, is identical with

that of a V*gei3* compound, compare 9a with 9b. More importantly, *gei3*, as a verb, is well-known for its inability to take a postverbal goal-marking *gei3* phrase, as in 9c, and it is the unique exception among all ditransitive verbs with thematic structure <ag go th>. (However, see note 13.) With verb *gei3* as a root, all V*gei3* compounds, naturally, behave exactly the same in this regard, as seen in 9d. Also, the account for the non-occurrence of **gei3gei3* as a V*gei3* compound is straightforward: verb *gei3* does not take itself in this compounding process. Why? Because the resulting form would not have any syntactic or semantic attribute that is different from verb *gei3* itself; thus, the application of the compounding process would be entirely vacuous.[3] For this same reason a V*gei3* compound also does not 'recycle' and become V*gei3gei3*. An affixation analysis would offer no grammatical explanation to **gei3gei3* and must resort to haplology, a phonological constraint that bars certain adjacent identical elements (cf., e.g., Teng 1975, Tang 1985c, 1992g, C. Huang 1993).[4]

Phonological evidence, in fact, also supports *gei3* as the verbal root. *Gei3*, like other roots in compounds, such as *gan1xi3* [dry-wash] 'to dry-clean', *qian2jin4* [forward-advance] 'to move forward', and *zhuan3yan3* [turn-eye] 'immediately', retains its full tone, while suffixes (not prefixes!) typically reduce to the neutral tone, such as *chi1le* [eat-perfective suffix] 'have eaten', *wo3men* [I-human plural suffix] 'we', *xie2zi* [shoe-ZI suffix] 'shoe', and *fang2li* [house-inside] '(in) the house'. That *gei3* retains its full tone as a root can be further confirmed by the fact that it induces the third-to-second tone sandhi in V*gei3* compounds, for example, *mai3gei3* in 8c becomes *mai2gei3* phonetically.

Historically, many suffixes indeed have developed out of compounds, for example, derivational suffixes *-hood*, *-dom*, *-ly* in modern English, which came from earlier compounds *cild-had* 'condition of a child', *freo-dom* 'realm of freedom', and *man-lic* 'body of a man' (Cowie 1995:183). A prominent example in Chinese is the grammaticalization of Middle Chinese verb *liao3* 'finish' in V*liao3* compounds to modern perfective aspect suffix *-le*. As argued in Starosta (1985), Mandarin noun localizers have also become suffixes. However, I find no evidence thus far indicating that *gei3* in V*gei3* compounds has reached this final stage of grammaticalization.[5]

Finally one might suggest that it is the goal-marking preposition *gei3*, as in 2a, 7a, and 8a, that forms the V*gei3* compound. Available evidence is also in favor of a V-V over a V-P analysis. First of all, the existence of any

V-P compound verb in Chinese is at best controversial, but V-V compounding is a familiar and prolific word-formation process.[6] Furthermore, HM (1992:110) are entirely correct in their observation that there is little theoretical motivation or empirical evidence for a PP position between a verb and its object. Thus, no structural model exists in the language for V*gei3* as V-P compounds. Another theoretical consideration is that V*gei3*'s thematic structure and syntactic behavior are exactly like those of verb *gei3*; this point will be further discussed towards the end of 5.2.3.

5.2.2 Post-object Preposition *Gei3*

Having established the proper compound status of V*gei3* verbs, I now turn to the controversial status of *gei3* in another postverbal construction, [V NP_1 *gei3* NP_2], as in 6 and examples of 2a, 7a, and 8a. Following Chao (1968), HM argue ardently that here *gei3* is a verb and this thus is a serial verb construction. Between 10 and 11 below, 10 is thus the only valid analysis. I contend, however, if V subcategorizes for an oblique goal, then *gei3* indeed must be regarded as a goal-marking preposition, otherwise a verb. In other words, 10 and 11 are both valid.

10. [V NP [$_{VP}$ [$_{V}$ *gei3* $_{V}$] NP] $_{VP}$]
11. [V NP [$_{PP}$ [$_{P}$ *gei3* $_{P}$] NP] $_{PP}$]

The many arguments for construction 10 that HM put forth are rather unnecessary, for it is a given that *gei3* is a verb, as in 9a. Like any other active verb then, such as *song4* or *song4gei3* 'give' in 12a, *gei3* of course can be the second verb in a serial verb construction, as in 12b.

12. a. Li3si4 mai3 hua1 [$_{V}$ song4(gei3) $_{V}$] ta1.
Lee buy flower give her
Lee bought flowers to give to her.

b. Li3si4 mai3 hua1 [$_{V}$ gei3 $_{V}$] ta1.
Lee buy flower give her
Lee bought flowers to give to her.

The question is, however, given 12b, whether construction 11 is also valid; after all, *gei3*, much like *zai4*, can be a preposition in the preverbal position (13a-b). Note first that a post-object PP position is independently motivated for subcategorized oblique locative roles (14a). Therefore, by allowing a subcategorized *gei3*-marked goal in the post-object PP position, as in 14b, construction 11 complicates neither the analysis of *gei3* nor the overall grammar. Quite the contrary, it generalizes the post-object PP position to all locus-like roles, i.e., those that indicate the terminus point of the theme.[7]

13. a. Li3si4 [$_P$ zai4 $_P$] jie1shang4 mai3 le hua1.
Lee at street-top buy PERF flower
Lee bought flowers on the street.

b. Li3si4 [$_P$ gei3 $_P$] ta1 mai3 le yi1 duo3 hua1.
Lee for her buy PERF one CLS flower
Lee bought a flower for her.

14. a. Ta1 diu1 le yi1 duo3 hua1 [$_P$ zai4 $_P$] zhuo1shang4.
he toss PERF one CLS flower at table-top
He tossed a flower on the table.

b. Li3si4 diu1 le yi1 duo3 hua1 [$_P$ gei3 $_P$] ta1.
Lee toss PERF one CLS flower to her
Lee tossed a flower to her.

The central issue for the validation of construction 11, as in 14b, is thus whether a subcategorized goal may indeed be realized as an oblique function, thus a PP, in Chinese. Let's examine the structures of two ditransitive verbs, *song4* 'give' and *hui2* 'return', which, with no controversy, subcategorize for a goal role.

15. a. Li3si4 song4 le <u>ta1</u> yi1 duo3 hua1.
Lee give PERF her one CLS flower
Lee gave her a flower.

b. Li3si4 hui2 le ta1 yi1 ge dian4hua4.
Lee return PERF her one CLS call
Lee returned her call.

The underlined NP is the subcategorized goal in the thematic structure <ag go th> of these verbs. Here goal is realized as a secondary object, traditionally known as indirect object, generally considered the most marked grammatical relation, which many languages lack (e.g., Bresnan and Zaenen 1990). Hence the unmarked choice for goal is to link to the less marked oblique relation in the same language, which is precisely borne out by my proposal to recognize construction 11 for 16a-b below, where preposition *gei3* marks the subcategorized goal. By linking a subcategorized goal to the most marked secondary object only, and never to the less marked oblique function, HM's analysis is inconsistent with this universal tendency.[8] This stipulation is dubious in that no other roles in the language behave this way.

16. a. Li3si4 song4 le yi1 duo3 hua1 gei3 ta1.
Lee give PERF one CLS flower to her
a' Lee gave a flower to her.

b. Li3si4 hui2 le yi1 ge dian4hua4 gei3 ta1.
Lee return PERF one CLS call to her
b' Lee returned her call.[9]

Also, within my analysis, verbs in 15a-b and 16a-b, are related by the same thematic structure <ag go th>, with goal alternatively mapped to a secondary object NP and an oblique PP. Goal-marking preposition *gei3* and English goal-marking *to* and *for* are therefore exactly parallel. Not recognizing goal-marking preposition *gei3*, HM (1992:114) treat *gei3* as a verb and consequently the VP *gei3 ta1* in 16 as an adjunct. This analysis renders 15a-b and 16a-b different in thematic structure, <ag go th> and <ag th> respectively, but 15a-b and 16a-b are in fact identical in meaning with only slight variation of focus (cf., Cheng 1983).

Evidence suggests that [*gei3* NP] in 16a-b is a subcategorized constituent, not an adjunct. Subcategorized constituents tend to be obligatory and associated with semantic roles that are ontologically necessary for a complete proposition (e.g., Pollard and Sag 1987, Her

1990). Although Chinese, unlike English, allows greater freedom of missing arguments, 16a-b, without the goal constituent, do seem incomplete, as shown in 17a-b (cf., Her 1990).

17. a. ?Li3si4 song4 yi1 duo3 hua1.
Lee give one CLS flower
a' ?Lee gives a flower.

b. ?Li3si4 jie4 yi1 duo3 hua1.
Lee lend one CLS flower
b' ?Lee lends a flower.

More importantly, a subcategorized argument identifies a subcategory of predicates. As shown with 16a-b, *gei3*-marked goal constituent indeed identifies a class of verbs in Chinese that have thematic structure of <ag go th>; besides *song4* 'give' and *jie4* 'lend', other such verbs include *shang3* 'bestow', *huan2* 'return', *ti2gong1* 'provide', *zu1* 'rent', *ji4* 'mail', *jiao1* 'hand in', *mai4* 'sell', *di4* 'hand', and *chuan2* 'pass'. Some of them alternate between the ditransitive dative construction, as in 19, and the *gei3*-marked PP construction, as in 11 (repeated below as 18), while others do not and allow construction 18 only. The important point is that post-object *gei3*, as a preposition, marks the subcategorized goal and selects the subcategory of verbs that have thematic structure <ag go th>. (As mentioned earlier, the verb *gei3* 'give' is of course well-known as the only exception, which appears in 19 but not 18; see 9a and 9c above. I will discuss this further in 5.2.3 and 5.2.4.)

18. [V NP_1 [$_{PP}$ [$_{P}$ *gei3* $_{P}$] NP_2 $_{PP}$]]
19. [V NP_2 NP_1]

Recall, however, the serial verb construction of 10 is recognized along with 11 (repeated as 18), where [*gei3* NP] is a VP adjunct and a subcategorized PP respectively. One might criticize this dual status as creating two ambiguous structures. Given the principle of subcategorization, nonetheless, 20a is ruled out for dative verbs, because the subcategorized goal can not be found in this construction.

20. a. *Li3si4 song4 yi1 duo3 hua1 [$_{VP}$ [$_{V}$ *gei3* $_{V}$] ta1 $_{VP}$]].
b. Li3si4 song4 yi1 duo3 hua1 [$_{PP}$ [$_{P}$ *gei3* $_{P}$] ta1 $_{PP}$]].

On the other hand, for verbs that do not subcategorize for a goal role, construction 10 is the only grammatical analysis. The principle of subcategorization would rule out 11, which contains a subcategorizable PP that is not subcategorized-for by the predicate.[10] *Diu1chu1* 'toss out' in 21a-b and *mai3xia4* 'buy' in 22a-b for example subcategorize for agent and theme, but not goal, and thus construction 11 is not a valid analysis.

21. a. Li3si4 diu1chu1 le yi1 duo3 hua1 [$_{VP}$ [$_{V}$*gei3*$_{V}$] ta1 $_{VP}$]].
Lee toss-out PERF one CLS flower give her
Lee tossed out a flower to give to her.

b. *Li3si4 diu1chu1 le yi1 duo3 hua1 [$_{PP}$ [$_{P}$ *gei3* $_{P}$] ta1 $_{PP}$]].

22. a. Li3si4 mai3xia4 le yi1 duo3 hua1 [$_{VP}$ [$_{V}$ *gei3* $_{V}$] ta1 $_{VP}$]].
Lee buy-down PERF one CLS flower give her
Lee bought a flower to give to her.

b.*Li3si4 mai3xia4 le yi1 duo3 hua1 [$_{PP}$ [$_{P}$ *gei3*$_{P}$] ta1 $_{PP}$]].

There are, however, transitive verbs that optionally subcategorize for an additional goal. For such verbs, e.g., *diu1* 'toss', *ti1* 'kick', *mai3* 'buy', *mai4* 'sell', *xie3* 'write', and *ji4* 'mail', [*gei3* NP] may indeed be ambiguous between a VP and a PP. The thematic structure of 23a and 24a is <ag th> with [*gei3* NP] being a modifying VP adjunct, while the thematic structure of 23b and 24b is <ag go th>, where goal is linked to [*gei3* NP], a PP.

23. a. Li3si4 diu1 le yi1 duo3 hua1 [$_{VP}$ [$_{V}$ *gei3* $_{V}$] ta1 $_{VP}$]].
Lee toss PERF one CLS flower to her
Lee tossed a flower to give to her.

b. Li3si4 diu1 le yi1 duo3 hua1 [$_{PP}$ [$_{P}$ *gei3* $_{P}$] ta1 $_{PP}$]].
Lee tossed a flower to her.

24. a. Li3si4 mai3 le yi1 duo3 hua1 [$_{VP}$ [$_{V}$ *gei3* $_{V}$] ta1 $_{VP}$]].
Lee buy PERF one CLS flower give her
Lee bought a flower to give to her.

b. Li3si4 mai3 le yi1 duo3 hua1 [$_{PP}$ [$_{P}$ *gei3* $_{P}$] ta1 $_{PP}$]].
Lee bought a flower for her.

Note, however, this kind of ambiguity between an argument, thus a subcategorized constituent, and an adjunct is not at all uncommon in languages, and the preferred reading is generally the one with the subcategorized constituent.[11] English locomotive verbs, for example, optionally subcategorize for a locative role. 25a thus has two readings analogous to 25b and 25c, where the locational PP is an argument and an adjunct respectively (Bresnan 1989), and the preferred reading is also clearly that of the locational argument, i.e., 25b.

25. a. Lee jumped in the pool.
b. In the pool jumped Lee.
c. In the pool, Lee jumped.

In short, two points are established so far: 1) V*gei3* is a compound verb, where *gei3* is a verbal root, and 2) post-object *gei3* is a goal-marking preposition if the predicate subcategorizes for goal, otherwise a verb heading a VP adjunct.[12] In 2.3 I will bring these two analysis together into a coherent account that also reveals a semantically definable class of verbs that form V*gei3* compounds.

5.2.3 A Semantically Definable Class of Verbs for V*gei3* Compounds

HM (1992:111-113) argue that the verbs that may form V*gei3* compounds, though known to be a subset of transitive verbs, cannot be independently defined. Although it is true that compounding may often have idiosyncratic gaps, it is not a necessary condition. V*gei3* compounding is productive in that it applies to new or possible verbs in the language, a fact that HM (1992:111) also acknowledge. For example, temporarily-borrowed transitive verbs from English like *fax*, *mail*, or *pass* in 26 do form V*gei3* ditransitive verbs, as in 27.

26. Wo3 FAX/MAIL/PASS yi1 fen4 wen2jian4.
I one CLS document
I fax/mail/pass a document.

27. Wo3 FAX/MAIL/PASSgei3 ta1 yi1 fen4 wen2jian4.
I her one CLS document
I fax/mail/pass her a document.

No doubt influenced by their view that disallows *gei3*-marked postverbal PP goal, HM have overlooked the fact that all of the transitive verbs that form V*gei3* compounds, existing or possible, without exception, can also take a goal role marked by preposition *gei3*, as in 28a. Likewise, those that do not form V*gei3* compounds also do not allow *gei3*-marked goal, as in 28b-c.

28. a. Wo3 FAX/MAIL/PASS yi1 fen4 wen2jian4 gei3 ta1.
I one CLS document to her
I pass/fax/mail a document to her.

b. *Wo3 chi1/he1/xiao1hua4 yi1 wan3 tang1 gei3 ta1.
I eat/drink/digest one bowl soup to her

c. *Wo3 chi1/he1/xiao1hua4-gei3 ta1 yi1 wan3 tang1.
I eat/drink/digest her one bowl soup

This indicates that the class of verbs that verb *gei3* selects in V*gei3* compounds can be quite clearly defined as those sharing *gei3*'s thematic structure <ag go th>. Since only a rather small subset of verbs that subcategorize for a *gei3*-marked goal are ditransitive verbs (i.e., they allow construction 10, [V NP_2 NP_1]), construction 11, [V NP_1 [$_{PP}$ [$_P$ *gei3* $_P$] NP_2] $_{PP}$], remains the only reliable test for a verb as to whether it forms a V*gei3* compound. In other words, 10 is a sufficient condition but not a necessary one, while 11 is both sufficient and necessary.

Gei Compounding:
V_i<ag go th> + [$_V$ *gei3* $_V$] → V_i*gei3*<ag go th>
Test: [V_i NP_1 [$_{PP}$ [$_P$ *gei3* $_P$] NP_2]$_{PP}$]

Now, I will look more closely at the two cases that HM (1992:112) claim to be counter-examples to the above generalization. One, they claim that the active/stative distinction is irrelevant to the class of V*gei3* compounds, for even the stative verb *guan4* 'to carry (a name)', as in 29a, forms a *guan4gei3* compound, as in 29b. There are two relevant facts they have overlooked here. First, *guan4* may be both stative and active, as shown in 29a and 29c respectively. Secondly, as an active verb, *guan4* indeed subcategorizes for goal and appear in construction 11, as shown in 29c. It is, therefore, the active *guan4* with thematic structure <ag go th>, not the stative one, that combines with verb *gei3* to form the compound in 29b.

29. a. Ta1 guan4 fu1xing4.
she carry husband-surname
She carries her husband's surname.

b. Ta1 guan4gei3 li3si4 yi1 ge wai4hao4.
she name-give Lee one CLS nickname
She gave Lee a nickname.

c. Ta1 guan4 le yi1 ge wai4hao4 gei3 li3si4.
she name PERF one CLS nickname to Lee
She gave a nickname to Lee.

HM (1992:112) also produce verbs like *shuo1* 'say' and *gao4su4* 'tell' as counter-examples. Although these *say*-type verbs do subcategorize for a goal-like role (e.g., Tang 1985b), they do not subcategorize for a theme-like role; instead, they require a proposition, as evident in 30a-b. This proposition role may be expressed by an S or a reduced VP, as in 30a-b, or a *statement*-type noun, as in 31a-b. Thus, *say*-type verbs, with thematic structure <ag go prop>, do not subcategorize for theme. Predictably then, they do not allow a *gei3*-marked PP goal, as shown in 32a-b, and fail the test for V*gei3* compounding (32c-d).

30. a. Li3si4 dui4 ta1 shuo1 tian1qi4 bu4 hao3.
Lee to her say weather not good
Lee said to her that the weather was not good.

b. Li3si4 gao4su4 ta1 bu2 qu4 le.
Lee tell her not go PTCL
Lee told her that he wasn't going anymore.

31. a. Li3si4 dui4 ta1 shuo1 le yi1xie1 hao3hua4.
Lee to her say PERF some nice-words
Lee said some nice things to her.

b. Li3si4 gao4su4 ta1 yi1xie1 mi4mi.
Lee tell her some secret
Lee told her some secrets.

32. a. *Li3si4 shuo1 le yi1xie1 hao3hua4 gei3 ta1.
Lee say PERF some nice-words to her
Lee said some nice things to her.

b. *Li3si4 gao4su4 yi1xie1 mi4mi gei3 ta1.
Lee tell some secret to her
?Lee told some secrets to her.

c. *Li3si4 shuo1gei3 le ta1 yi1xie1 hao3hua4.
Lee say PERF her some nice-words
Lee said some nice things to her.

d. *Li3si4 gao4su4gei3 ta1 yi1xie1 mi4mi.
Lee tell her some secret
?Lee told some secrets to her.

It is therefore my conclusion that *gei3*, as a verbal root, selects a well-defined class of verbs in V*gei3* compounding, i.e., verbs that share its thematic structure <ag go th>. Within this analysis the behavior of V*gei3* compounds receives a logical explanation: a V*gei3* compound, formed by verb *gei3* and another verb of the same thematic structure, syntactically behaves just like *gei3*. Recall that *gei3*, the only exception in the class of verbs of thematic structure <ag go th>, requires the double object construction (19), and does not allow a *gei3*-marked goal PP (18). The resulting compound verb V*gei3* inherits this restraint and thus quite naturally allows an indirect object only, not a *gei3*-marked PP. This also

provides another motivation for favoring the V-V analysis over the V-P analysis of V*gei3* compounds discussed at the end of 5.2.2. Within the V-P analysis or a suffix analysis, such a coherent account of V*gei3* compounds' syntactic behavior is unattainable.

5.2.4 Three Subtypes of <ag go th> Verbs

It has been shown that goal-marking preposition *gei3* and English dative *to* are exactly parallel. However, not all verbs of thematic structure <ag go th> in Chinese alternate between an oblique function and an indirect object. The two constructions of dative shift are repeated here as 33 and 34 respectively. 33 and 34 are thus two surface syntactic structures related to each other by the same thematic structure <ag go th>.

33. Goal linked to an oblique PP: [V NP_1 [$_P$ *gei3* $_P$] NP_2]
34. Goal linked to an indirect object: [V NP_2 NP_1]

Accordingly, <ag go th> verbs can be classified into three subtypes (cf., Tang 1985b, 1985c, H. Huang 1995). The first type, e.g., *ji4* 'mail', *jiao1* 'hand in', *mai4* 'sell', *di4* 'hand', *chuan2* 'pass', *ti1* 'kick', *diu1* 'toss', is <ag go th> verbs that allow surface structure 33 but not 34, as demonstrated below in 35.

35. a. Li3si4 di4 le yi1 duo3 hua1 gei3 ta1.
Lee hand PERF one CLS flower to her
Lee handed a flower to her.

b. *Li3si4 di4 le ta1 yi1 duo3 hua1.
Lee hand PERF her one CLS flower
Lee handed her a flower.

Since the indirect, or secondary, object, i.e., NP_2 in 34, is the most marked grammatical relation in languages, it is expected that the default function for goal is an oblique function. This type of verbs thus allows the most direct linking between its thematic structure and surface syntactic functions.

The second type, e.g., *song4* 'give', *jie4* 'lend', *shang3* 'bestow', *ti2gong1* 'provide', *zu1* 'rent', and *huan2* 'return', is verbs that allow the

alternation between 33 and 34, as in 36a-b below. Compared with the first type, type two has far fewer verbs.

36. a. Li3si4 song4 le yi1 duo3 hua1 gei3 ta1.
Lee give PERF one CLS flower to her
Lee gave a flower to her.

b. Li3si4 song4 le ta1 yi1 duo3 hua1.
Lee give PERF her one CLS flower
Lee gave her a flower.

The third type, e.g., *gei3* 'give', *song4gei3* 'give', *diu1gei3* 'toss', *mai3gei3* 'buy', and *FAXgei3*, as shown in 37a-b, is verb *gei3* along with all V*gei3* compounds. They are <ag go th> verbs that require an indirect object and do not allow the subcategorized goal to be linked to the *gei3*-marked oblique function.

37. a. *Wo3 (song4)gei3 le yi1 duo3 hua1 gei3 ta1.
I give PERF one CLS flower to she
I gave a flower to her.

b. Wo3 (song4)gei3 le ta1 yi1 duo3 hua1.
I give PERF her one CLS flower
I gave her a flower.

This classification to a large extent coincides with Tang (1985b, 1985c), where he distinguishes four types of ditransitive verbs according to their syntactic behavior and gives a detailed exposition of each type. The major difference is that my classification deals with <ag go th> verbs only, his covers all ditransitive verbs in Chinese. Thus, his first and second types are identical with mine and cover verbs of thematic structure <ag go th>. The verb *gei3* however is grouped in type two, in spite of its inability to form a *gei3gei3* compound or take a *gei3*-marked PP.[13] His type three is the *say*-type verbs, e.g., *shuo1* 'say', *gao4su4* 'tell', *wen4* 'ask', *jiao1* 'teach', and *jiang3* 'say, tell'. As mentioned in 2.3, these verbs only superficially behave like <ag go th> verbs and syntactically they allow an indirect object but not a *gei3*-marked PP. As argued earlier, these verbs have a different thematic structure, <ag go prop>, and as such they are also

not relevant in my classification of <ag go th> verbs. Likewise, the class of verbs that Tang (1985b, 1985c) classifies as type four also seem to behave like <ag go th> verbs, as shown in 38. These *deprive*-type verbs include *chi1* 'eat', *he1* 'drink', *zhuan4* 'earn', *fa2* 'fine', *qiang3* 'rob', *tou1* 'steal', *qian4* 'owe', *hua1* 'spend', etc.

38. a. *Li3si4 chi1 le yi1 zhi1 ji1 gei3 ta1.
Lee eat PERF one CLS chicken to her
(To her dislike,) Lee ate a chicken of hers.

b. Li3si4 chi1 le ta1 yi1 zhi1 ji1.
Lee eat PERF her one CLS chicken
(To her dislike,) Lee ate a chicken of hers.

Again, although these verbs share the same constituent structure [V NP NP] as type three <ag go th> verbs, they do not have thematic structure <ag go th> either and thus have no place in this classification. Rather, they subcategorize for a patient role, which is linked to the primary object. Thus they have thematic structure <ag pt th> instead. In 39, then, *ta1*, as patient and the primary object, can be passivized (39a) and appear in the *ba*-construction (39b), unlike goal and a secondary object (see example 40b in 5.2.5 and 39c). See H. Huang (1995) for a lexical mapping account in LFG.

39. a. Ta1 bei4 Li3si4 chi1 le yi1 zhi1 ji1.
she BEI Lee eat PERF one CLS chicken
She had a chicken eaten by Lee.

b. Li3si4 ba3 ta1 chi1 le yi1 zhi1 ji1.
Lee BA her eat PERF one CLS chicken
(To her dislike,) Lee ate a chicken of hers.

c. *Li3si4 ba3 ta1 song4 le yi1 zhi1 ji1.
Lee BA her give PERF one CLS chicken
Lee gave her a chicken.

5.2.5 Interaction of Dative Shift and Passive

In passive constructions, verbs of thematic structure <ag go th> display interesting variance between Chinese and English. Chinese strictly forbids the passivization of goal and allows only theme to be passivized, while both goal and theme are passivizable in English.

40. a. *Ta1(bei4 Li3si4) diu1 le yi1 duo3 hua1.
she BEI Lee toss PERF one CLS flower
a' She was tossed a flower (by Lee).

b. *Ta1 (bei4 Li3si4) gei3 le yi1 duo3 hua1.
she BEI Lee give PERF one CLS flower
b' She was given a flower (by Lee).

c. Hua1 (bei4 Li3si4) diu1 le gei3 ta1.
flower BEI Lee toss PERF to her
c' The flower was tossed to her (by Lee).

d. Hua1 (bei4 Li3si4) gei3 le ta1.
flower BEI Lee give PERF her
d' %The flower was given her (by Lee).[14]

5.3 A LEXICAL MAPPING IMPLEMENTATION

The analysis and observations presented in section 5.2 will be implemented within LFG's lexical mapping theory (LMT). The theory of lexical mapping is presented in 5.3.1, where two previous versions are presented and proposed revisions discussed. In 5.3.2 I then provide a formal account for the analyses in section 5.2, within the revised LMT I propose. Several previous LMT accounts of Mandarin and English dative alternation are reviewed in 5.3.3.

5.3.1 The Lexical Mapping Theory

An essential assumption of LFG is that the lexical semantic structure, the relational structure of grammatical functions (or f-structure), and the structure of phrasal constituents (or c-structure), are parallel autonomous

planes of grammatical organization related by local structural correspondences, the same way a melody of a song relates to its lyrics (Bresnan and Kanerva 1989, BK henceforth). The lexical mapping theory is the part of LFG that constrains the correspondence between the lexical semantic structure and the lexical form of a predicate. Specifically, LMT relates thematic roles, e.g., agent and theme, to grammatical functions (GF's), e.g., SUBJ and OBJ.

5.3.1.1 LMT in BK

The details of LMT were first introduced in BK in a systematic manner. A different version was later presented in Bresnan and Zaenen (1990) (BZ henceforth). Though several other versions have also been proposed, I will review only the above-mentioned two since they are the two most widely adopted in the literature.

To the best of my knowledge, all versions of LMT, with the exception of Huang (1993), assume a universal thematic hierarchy, which descends from agent, the most active or topical participant in events, down to locus, as shown in 41A. In a thematic structure, the left-to-right ordering of thematic roles reflects this hierarchy, for example, <ag go th> of *gei3* 'give'.

41. A. the universal thematic hierarchy:
ag > ben > go/exp > inst > pt/th > loc

A markedness hierarchy among the GF's is also assumed, where SUBJ is ranked the highest, i.e., the least marked, and OBJ_θ the lowest, the most marked, as shown in 41B1. This markedness hierarchy is in turn the consequence of the set of natural classes based on a further classification of GF's along two binary features: [r] (thematically restricted) and [o] (objective), as in 41B2, where SUBJ has the minus values and OBJ_θ has the plus values. SUBJ and OBJ are [-r], thematically unrestricted, as they correspond to the whole range of thematic roles, whereas OBL_θ and OBJ_θ are [+r] and encode only the thematic role θ. In addition, OBJ and OBJ_θ are [+o] and complement transitive predicators, while SUBJ and OBL_θ are non-objective.

41. B.1 the markedness hierarchy of GF's:

SUBJ	least marked
OBJ/OBL$_\theta$	↓
OBJ$_\theta$	most marked

B.2 classification of grammatical functions:

SUBJ [-r -o]	OBJ [-r +o]
OBL$_\theta$ [+r -o]	OBJ$_\theta$ [+r +o]

BK's LMT contains two other components: lexical mapping principles (41C) and well-formedness conditions (41D). The former component determines the syntactic assignment of thematic roles, while the latter component filters out lexical forms that are ill-formed.

41. C. lexical mapping principles:

1. intrinsic classifications (IC's):
   th/pat → [-r]; ag → [-o]; loc → [-o]
2. morpholexical operations:
   e.g., (English) Passive: < θ...>
   ↓
   ø
3. default classifications (DC's):
   1. <[f] loc>, loc → [-r]; otherwise,
   2. $\hat{\theta}$ → [-r]; all others → [+r]
4. *monotonicity* condition: feature assignment must be feature-preserving.

D. well-formedness conditions (WF's):

1. The Subject Condition: every lexical form must have a subject.
2. Function-Argument Biuniqueness: each expressed role must be mapped to a unique function, and conversely.

Lexical mapping principles map thematic roles to surface grammatical functions by classifying thematic roles along the same two binary features [r] and [o]. These mapping principles are organized into

three sub-components: intrinsic role classifications (IC's), morpholexical operations, and default role classifications (DC's). BK and Bresnan (1989) listed three cross-linguistic generalizations of the unmarked $\hat{\theta}$, grammatical encoding of theme/patient, agent, and locative, as in 41C1. Morpholexical operations, if any, then apply and affect an argument structure by adding, suppressing, or binding thematic roles. An example is the English passive rule, which suppresses the highest role in a thematic structure, as shown in 41C2. Default classifications (DC's) then apply to capture the generalization that the highest role in a thematic structure, or defaults to the GF SUBJ while lower roles default to non-subject functions. All classifications, however, must preserve syntactic information in that a conflicting value of an existing feature cannot apply. This is known as the monotonicity condition. Lexical forms are also subject to two well-formedness conditions (WF's): the Subject Condition and Biuniqueness Condition. A simple demonstration of the theory with English passive, e.g., *broken* in *the door was broken*, is given in 42.

42.

	broken <	ag	th >
IC's:		[-o]	[-r]
Passive:		ø	
DC's:			

			S/O
WF's:			SUBJ

5.3.1.2 LMT in BZ

Bresnan and Zaenen (1990), maintaining the same universal thematic hierarchy (41A) and classification of grammatical functions (41B), presents a different organization of syntactic classifications and mapping principles. An a-structure is assumed to carry the basic unmarked classifications, which are oriented around the patient role, as shown in 43C1. Since these basic unmarked syntactic features are identical in nature to BK's intrinsic classifications (IC's), I will continue to use the term here. An a-structure emerges after morpholexical operations, if any, that affect the thematic roles (43C2). BZ also propose two lexical mapping principles (43D), which replace BK's default classifications and provide principled

mapping relations between a-structures and lexical forms. The same well-formedness conditions on lexical forms are imposed, i.e., the Subject Condition and the Function-Argument Biuniqueness Condition.

43. Components of LMT in BZ:

A) the universal thematic hierarchy (see 41A)
B) classification of grammatical functions (see 41B)

C) the theory of a-structures:
1. unmarked classifications (IC's):
patientlike roles → [-r]
secondary patientlike roles → [+o][15]
other roles → [-o]
2. morpholexical operations:
e.g., (English) Passive: (see 41C2)

D) Mapping principles (MP's):
1. Subject roles:
a. map the highest role with [-o] to SUBJ; otherwise:
b. map a role with [-r] to SUBJ
2. All other roles are mapped onto the lowest compatible function on the markedness hierarchy.

E) well-formedness conditions (see 41D)

In BZ's scheme, it is necessary to make a distinction between the thematic structure (or the lexical semantic structure) and the a-structure.[16] For example, active *pound* and passive *pound* have the same thematic structure <ag th> but different a-structures, <ag[-o] pt[-r]> and <pt[-r]> respectively, as shown in 44a-b.

44. a. pound < ag pt > (thematic structure)
-o -r (IC's)

< ag[-o] pt[-r] > (a-structure)
SUBJ OBJ (MP's & WF's)

b. pound <	ag	pt	>	(thematic structure)
	-o	-r		(IC's)
	---	---		
	< ag[-o]	pt[-r]	>	(a-structure)
	ø			(Passive)
		SUBJ		(MP's & WF's)

BZ's version of LMT seems to be more widely received than BK's, and rightly so, I believe. BZ's LMT constitutes at least two improvements over that of BK. One, the markedness hierarchy of grammatical functions (41B2) plays an essential part in the mapping of non-SUBJ GF's (see 43D2), which makes a more coherent theory. Secondly, morpholexical or morphosyntactic rules have access to not only thematic roles but also syntactic classifications. For example, English resultative predication requires the resultative be predicate of a [-r] argument (BZ:53).

5.3.1.3 An LMT further simplified

Two revisions to BK and BZ's LMT are proposed in Her and Huang (1995a) (HH henceforth): 1) morpholexical operations may have access to and assign syntactic features, and 2) the Subject Condition be replaced with a more general Unmarkedness Condition: every expressed role must be mapped to the least marked grammatical function permissible. In BK and BZ, morpholexical rules may affect the a-structure only by adding, suppressing, or binding semantics roles. Following Zaenen (1987), Her (1990), Ackerman (1992), and Markantonatou (1995), HH argue that it makes a more coherent LMT to allow syntactic feature assignment in morpholexical operations, since thematic roles are mapped onto GF's based on their syntactic features, and many function-changing morpholexical operations, e.g., English dative shift and locative inversion, do not at all affect the thematic structure.[17]

While the markedness hierarchy of GF's is non-consequential in BK, its consequence in BZ is strenuous. BZ's second mapping principle maps each role, except the highest one, to the *most* marked compatible GF on the markedness hierarchy. This is inconsistent with the nature of the markedness hierarchy, which is nonetheless quite faithfully reflected in BZ's first mapping principle, which maps the highest role in an a-structure

to the least marked GF, i.e., SUBJ. The Unmarkedness Condition that HH propose thus provides a consistent mapping principle for all roles to be mapped onto the least marked permissible grammatical function. HH's Unmarkedness Condition, consistent as it may be, is not quite complete in that it does not reflect the generalization that BZ's first mapping principle captures, i.e., the 'unmarked' mapping of the highest role is to the least marked GF, SUBJ. It is also problematic in cases where the least marked compatible function violates the well-formedness condition Function-Argument Biuniqueness. I thus propose that mapping is in effect from the highest to the lowest role in a-structure, and each role is mapped to the least marked compatible GF that is not associated with another role. Such a general principle could also consolidate the two well-formedness conditions. More discussion on this point will continue momentarily.

HH further propose that only agent-like and patient-like roles receive intrinsic syntactic assignments, other roles do not. Locative is intrinsically [-o] in BK, which in turn makes necessary a special default rule to handle locative inversion in languages like English (cf., Bresnan 1989) and Chichewa. HH demonstrate that locative cannot be intrinsically [-o] in Chinese since the locative role alternates among SUBJ, OBJ_θ, and OBL_θ and a [-o] feature bars the mapping to an objective GF. Likewise, all non-patientlike roles, locative included, are intrinsically [-o] in BZ's model. This would also bar the goal role from mapping to OBJ_θ in English and Chinese, where goal alternates between OBL_θ and OBJ_θ. Having non-agentlike and non-patientlike roles unspecified intrinsically and allowing morpholexical operations to add syntactic classifications, HH's model allows all intrinsic syntactic assignments to be maximally universal and language-specific variances to be reflected through morpholexical operations. The lexical mapping theory I propose, presented below in 45, incorporates the advantages of BZ's and HH's models but avoids their complications.

45. LMT further revised:

A) the universal thematic hierarchy (see 41A)
B) classification of grammatical functions (see 41B)

C) the theory of a-structures:

1. intrinsic classifications (IC's):

primary patient-like role → [-r]

secondary patient-like role → [+o]

agent-like role → [-o][18]

2. morpholexical/morphosyntactic operations:

e.g., (Eng/Chi) locative inversion: <th loc>

↓ ↓

+o -r

3. default classifications (DC's):

all non-$\hat{\theta}$ roles → [+r]

4. *monotonicity* condition (see 41C4)

D) Mapping Principle (MP):

For each role in a-structure that has no higher role available*, map it to the least marked compatible GF available.

(**Availability*: A role or a GF is *available* iff it is not linked to a GF or a role, respectively.)

There are several revisions. First, morpholexical/morphosyntactic rules may assign syntactic features. Second, no DC is needed for $\hat{\theta}$, while all other roles receive DC [+r]. DC's thus can also be seen as a default or *elsewhere* morphosyntactic operation. Third, a single mapping principle is sufficient. Four, well-formedness filters are no longer necessary.

Given the proper syntactic assignment of thematic roles via IC's and DC's, the mapping principle (MP) can be stated generally enough to default every role to the highest, i.e., the least marked, compatible GF that is unique in the lexical form. It also gives the highest role the 'unmarked' linking to the least marked GF, SUBJ, unless otherwise mediated by morpholexical operations, which, because of their feature assignment capacity, may perform function-changing operations. Also note that MP is declarative, not procedural; in other words, MP applies to each role in a-structure randomly, although it in effect applies to roles from the highest to the lowest.

As acknowledged by BK (1989: 28) and BZ (1990: 51), the Subject Condition (that every lexical form must have a subject) may need to be parameterized so that it holds only for certain languages. Within this revised LMT, this is a built-in condition and constitutes the unmarked case, because MP defaults the highest role in a-structure to the least marked GF, SUBJ. However, this condition, now implicit in the theory, may be overturned by morpholexical operations or parameterized IC's or DC's.

MP also embodies the Function-Argument Biuniqueness Condition, which is designed to rule out two kinds of violation, 1) a role is mapped to more than one GF, and 2) a GF is associated with more than one role. The first scenario cannot arise because monotonicity ensures that each role receives only compatible features and MP ensures that each role, even when underspecified, is mapped to a single GF. The second scenario is also ruled out by the MP, which specifies that a role can only be mapped to an *available* GF, that is, a GF not associated with any other role. Conceptually then, a GF that is associated with a role is 'removed' from the inventory of GF and becomes unavailable.[19] The well-formedness filters of lexical forms in previous versions of LMT are thus both implicit within the mapping principle I propose and fall out from the constructs of the theory.

5.3.2 LMT Account of Dative Shift and Passive

It is plainly obvious that within the LMT proposed above the only component that allows language-specific syntactic assignments is morpholexical operations. Given the analysis of dative shift that verbs of thematic structure <ag go th> alternate between two surface syntactic patterns, LMT dictates that a morpholexical rule is responsible for this function-changing operation.

46. Dative (Eng & Chi): <ag go th>
↓
+o

Since Chinese and English are parallel in this construction, the same dative operation accounts for both languages. As shown in 47a below, goal is mapped to an oblique function marked by a semantically restricted

preposition *gei3* or *to*. Note that although in the a-structure goal[+r] and theme[-r] are both underspecified, the MP correctly links them to the appropriate GF's. The ditransitive verbs, on the other hand, have an a-structure that undergoes the morpholexical operation of Dative, go → +o, as shown in 47b, the addition of this syntactic feature also predicts correctly the same dative functional structure for both languages.

47. a.

song4/give <	ag	go	th >
IC's	-o		-r
DC's		+r	
GF Class.	S/OBL_θ	OBL_θ/OBJ_θ	S/O
MP	SUBJ	OBL_θ	OBJ

Li3si4 song4 le yi1 ben3 shu1 gei3 ta1.
Lee gave a flower to her.

b.

song4/give <	ag	go	th >
IC's	-o		-r
Dative		+o	
DC's		+r	
GF Class.	S/OBL_θ	OBJ_θ	S/O
MP	SUBJ	OBJ_θ	OBJ

Li3si4 song4 le ta1 yi1 duo3 hua1.
Lee gave her a flower.

In the pre-LMT 'classical' model of LFG, dative alternation is accounted for by a lexical rule that derives the lexical form 'GIVE <SUBJ OBJ OBJ2>' from the lexical form 'GIVE <SUBJ OBJ OBL_θ>' (e.g., cf., Bresnan 1982b:43-45). The current lexical mapping theory relates the two alternative lexical forms 'GIVE <SUBJ OBL_θ OBJ>' and 'GIVE <SUBJ OBJ_θ OBJ>' to a single thematic structure, 'GIVE <ag go th>'. The Dative operation proposed here still reveals the intuition that previous accounts of syntactic derivation or lexical derivation were able to capture, namely that the lexical form associated with an a-structure unaffected by

morpholexical rules is more basic, unmarked, while lexical forms linked to a-structures affected by morpholexical operations are 'derived' or relatively more marked.

In 5.2.4, verbs of thematic structure <ag go th> are further distinguished among three types; each type can now be identified by its relationship with the Dative rule. Verbs of the first type, e.g., *diu1* 'toss', which do not allow the ditransitive construction, are not marked for the Dative rule. Thus, their thematic structure <ag go th> maps to lexical form <SUBJ OBJ OBL_θ> only. Verbs of the second type, e.g., *mai4* 'sell', which do allow the ditransitive construction, are marked for an optional Dative. Two lexical forms emerge from the thematic structure: <SUBJ OBJ OBL_θ> and <SUBJ OBJ_θ OBJ>. Finally, the third type, i.e., verb *gei3* and V*gei3* compounds, which appears only in the ditransitive construction, is marked for an obligatory Dative and has lexical form <SUBJ OBJ_θ OBJ> only.

Table 1. Lexical Forms of <ag go th> Verbs

	Dative	<S OBL_θ O>	<S OBJ_θ O>	
TYPE 1	N/A	+	-	diu1 'toss'
TYPE 2	Optional	+	+	mai4 'sell'
TYPE 3	Obligatory	-	+	gei3 'give'

Following the analysis in section 5.2 of V*gei3* compounds and the *Gei*-compounding rule, repeated below, all V*gei3* compound verbs also undergo the dative operation obligatorily, which is quite reasonable since verb *gei3* as the root is independently marked for obligatory Dative. Or, to use Alsina's (1994) term, *gei3*, as the verbal root, carries over its Dative 'lexical option' to V*gei3* compounds.

Gei Compounding:

V_i<ag go th>+[$_V$ *gei3* $_V$] → V_i*gei3*<ag go th>

48.

	diu1gei3 < ag	go	th >	'toss'
IC's	-o		-r	
Dative		+o		
DC's		+r		
GF Class.	S/OBL_θ	OBJ_θ	S/O	
MP	SUBJ	OBJ_θ	OBJ	

Li3si4 diu1gei3 le ta1 yi1 duo3 hua1.
Lee tossed her a flower.

Passive, however, as shown in 5.2.5, is different between Chinese and English. English is more relaxed in that goal, like theme, can also be passivized. The passive operation (49) that I propose for Chinese is thus straightforward and suppresses the highest role.

49. (Chinese) Passive: <θ…>
↓
ø

Example 50 shows that the Passive rule correctly predicts the only well-formed lexical form of passivized <ag go th> verbs in Chinese. The ungrammatical 51, where goal is the passivized subject, does not have a valid mapping. A [+r] from DC's ensures the linking of goal in a passive sentence to a semantically restricted, thus non-subject, GF. The interaction of Dative and Passive in Chinese is shown in 52; again, it correctly accounts for the well-formed lexical form and rules out 53 with an ill-formed passivized goal.

50.

	diu1	< ag	go	th >
IC's		-o		-r
Passive		ø		
DC's			+r	
GF Class.			OBL_θ/OBJ_θ	S/O
MP			OBL_θ	SUBJ

Hua1 (bei4 Li3si4) diu1 le gei3 ta1.
The flower was tossed to her (by Lee).

51. *Ta1 (bei4 Li3si4) diu1 le yi1 duo3 hua1.
She was tossed a flower by Lee.

52.

gei3	<	ag	go	th >
IC's		-o		-r
Dative			+o	
Passive		ø		
DC's			+r	
GF Class.			OBJ_θ	S/O
MP			OBJ_θ	SUBJ

Hua1 (bei4 Li3si4) gei3 le ta1.
The flower was given her (by Lee).

53. *Ta1 (bei4 Li3si4) gei3 le yi1 duo3 hua1.
She was given a flower (by Lee).

Since in English passive the goal role may or may not be the subject, English passive operation, shown in 54 below, assigns an optional [-r] to goal, which is optional itself. Since the Chinese goal cannot be the passivized subject, its passive rule of course does not assign [-r] to the gaol. Example 55a demonstrates that goal is the passivized subject if goal opts for the [-r] option allowed by the passive rule. Theme however also receives [-r] as an IC. MP maps goal, the higher role, to SUBJ, and thus makes it unavailable for theme. 55b shows that goal receives [+r] from DC's, which leaves theme as the only candidate for subjecthood.

54. (English) Passive: < θ..(go)..>
↓ ↓
ø (-r)

55. a.

	give < ag	go	th >
IC's	-o		-r
Passive	ø	-r	
DC's			
GF Class.		S/O	S/O
MP		SUBJ	OBJ

She was given a flower (by Lee).

b.

	give < ag	go	th >
IC's	-o		-r
Passive	ø		
DC's		+r	
GF Class.		OBL_θ/OBJ_θ	S/O
MP		OBL_θ	SUBJ

A flower was given to her (by Lee).

English Passive, like its Chinese counterpart, also interacts with Dative. Since goal may or may not receive [-r] due to the passive rule but is restricted to be [+o] by Dative, it appears either as an object (56a) or a secondary object (56b), although the two sentences share an exactly identical c-structure. Note that there is no particular order of application between Dative and Passive.

56. a.

	give < ag	go	th >
IC's	-o		-r
Dative		+o	
Passive	ø	-r	
DC's			
GF Class.		OBJ	S/O
MP		OBJ	SUBJ

%A flower was given her (by Lee).

b.	give < ag	go	th >
IC's	-o		-r
Dative		+o	
Passive	ø		
DC's		+r	
GF Class.		OBJ_θ	S/O
MP		OBJ_θ	SUBJ

%A flower was given her (by Lee).

Sentences like 56, although deemed unacceptable by prescriptive grammarians, are quite acceptable in some dialects of English (e.g., Jaeggli 1986:596, Anderson 1988:300, Dryer 1986:833). Note that its counterpart in Chinese, 52, is quite acceptable as well. A satisfactory account ideally provides a reasonable explanation and a parameter for this variation, rather than simply ruling it out or ruling it in. Note first that an unmarked NP in the c-structure position immediately following the verb may indeed encode either OBJ or OBJ_θ, see the following c-structure rule.

57. VP →	V	(NP)	(NP)	PP*	(S')
	↑=↓	$\uparrow OBJ_\theta=\downarrow$	↑OBJ=↓	$\uparrow OBL_\theta=\downarrow$	↑COMP=↓

The resulting dual status of OBJ_θ and OBJ associated with the goal NP thus creates two analyses, or two f-structures more specifically, and thus may present a difficulty in processing. Also, it is a highly marked construction in the sense that Dative and Passive must both apply to yield this construction. Therefore, for English speakers who do not accept such sentences, it can be stipulated that Dative and Passive do not jointly apply to the same thematic structure.

In short, the Dative operation, go → [+o], and the parameterization in the Passive operation, (go) → ([-r]), account for the whole range of behavior regarding the goal role in passive constructions in English and Chinese and the variation between the two languages.

5.3.3 Previous LMT Accounts

There are several previous LMT accounts of Chinese and English dative. This section reviews C. Huang (1993) and Tan (1991) of Chinese dative and Zaenen (1987) for English.[20]

5.3.3.1 C. Huang (1993)

C. Huang (1993) proposes an LMT specifically for Chinese and covers a wide range of syntactic structures in the language. This LMT for Chinese, though based on the architecture of BK's model, proposes a language-specific thematic hierarchy, one that puts goal lower than theme (58), as well as an additional IC that assigns [+o] to patientlike roles lower than theme (59).[21] The same DC's and WF's in BK are assumed (see 41C-D).

58. Thematic Hierarchy (Chinese):
ag > ben > inst > pat/th > go/exp > loc (C. Huang 15)

59. Intrinsic Classifications:
agentlike: -o
patientlike: -r OR
+o if lower than theme (C. Huang 19)

The ditransitive construction of <ag th go> is accounted for straightforwardly; 60a is an example. In addition, placing goal lower than theme and assigning IC [+o] to it accounts for its non-occurrence as a passivized subject, as in 60b, where theme is the subject.

60. a. song4 < ag th go > (C. Huang 21)

IC's	-o	-r	+o
DC's	-r		+r
	SUBJ	S/O	OBJ_θ
WF's	SUBJ	OBJ	OBJ_θ

Wo3 song4 le li3si4 yi1 ben3 shu1.
I give ASP Lee one CLS book
I gave Lee a book.

b. song4 <	ag	th	go >
IC's	-o	-r	+o
Passive	ø		
DC's			+r
WF's		SUBJ	OBJ_θ

Na4 ben3 shu1 (bei4 (wo3)) song4 le Li3si4.
that CLS book BEI me give ASP Lee
That book was given Lee (by me).

This account nonetheless rules out entirely the possibility of an oblique goal; the [+o] IC of goal dictates that goal be always mapped to the most marked GF OBJ_θ, never to an OBL_θ marked by preposition *gei3*. The post-verbal *gei3* NP phrase is therefore a non-subcategorized PP or VP adjunct, never a subcategorized PP. Such an analysis leaves unaccounted for verbs like *song4* 'give' whose thematic structure <ag go th> projects to two surface syntactic structures, where goal is alternatively realized as either OBL_θ or OBJ_θ.

As for V*gei3* verbs, C. Huang (1993), like HM, treats *gei3* as a derivational suffix that encodes a morpholexical rule introducing a so-called applicative goal to a thematic structure, shown in 61.

61. $<\theta..\theta_i\ \theta_j..> \rightarrow <\theta..go_i\ \theta_j..>$ (C. Huang 23)

There are thus two kinds of goal in this account, one that originates in a thematic structure and the other introduced by suffix *-gei3*. A verb like *ti1* 'kick', which must form a V*gei3* compound to be ditransitive, has thematic structure <ag th> and 'does not subcategorize for a goal argument' (C. Huang 1993:362), as in 62a. However, being semantically compatible with goal, it may have a goal role introduced via *gei3* suffix. Thus, *ti1gei3* has the thematic structure $<ag\ go_{appl}\ th>$, as in 62b.

62. a. Zhang1san1 ti1 qiu2.
John kick ball
John kicks the ball.

b. Zhang1san1 ti1gei3 li3si4 yi1 ge qiu2.
John kick Lee one CLS ball
John kicked a ball to Lee.

On the other hand, a verb like *song4* 'give', which can be ditransitive with or without suffix *-gei3*, is said to have two distinct thematic structures <ag go th> and <ag th>. (The nature of the relation between the two thematic structures is not clear in C. Huang (1993).) It is of course *song4* <ag th> that may receive an applicative goal from *-gei3* suffix. *Song4* <ag go th> is shown in 63a, and *song4gei3* <ag go_{appl} th> in 63b. *Song4* <ag th>, however, may be problematic because 63c does not seem to be complete.

63. a. Zhang1san1 song4 li3si4 yi1 ge qiu2.
John give Lee one CLS ball
John gave a ball to Lee.

b. Zhang1san1 song4gei3 li3si4 yi1 ge qiu2.
John give Lee one CLS ball
John gave a ball to Lee.

c. ?Zhang1san1 song4 yi1 ge qiu2.
John give one CLS ball
?John gave a ball.

The third type of verbs distinguished by the *-gei3* suffixing rule comprises a single member, verb *gei3*, which is ditransitive and cannot form a V*gei3* verb. C. Huang offers the usual haplology to account for **gei3gei3*, which must be reduced to a single syllable. Therefore, *gei3gei3* is ruled out in this account purely on phonological ground, which means verb *gei3*, like *song4* 'give', does have two distinct thematic structures <ag go th> and <ag th>. *Gei3* <ag th> indeed may optionally receive an applicative goal from *-gei3* suffixing to be *gei3gei3* <ag go_{appl} th>, whose phonological shape is then reduced to the single syllable *gei3*. This

account of *gei3* thus still produces three thematic structures: *gei3* <ag go th>, *gei3* <ag go_{appl} th>, and *gei3* <ag th>. Again, 64a may be problematic as it is predicted to be grammatical, and that 64b is ambiguous with a subcategorized goal and an applicative goal not subcategorized for is just not plausible.

64. a. ?Zhang1san1 gei3 yi1 ge qiu2.
John give one CLS ball
?John gave a ball.

b. Zhang1san1 gei3 li3si4 yi1 ge qiu2.
John give Lee one CLS ball
John gave a ball to Lee.

Failing to recognize the class of <ag go th> verbs in all V*gei3* compounds, C. Huang's classification of the three types of verbs based on *-gei3* suffixing duplicates the classification of <ag go th> verbs based on their f-structures and misses the generalization that V*gei3* compounds behave exactly like verb *gei3* syntactically.

Furthermore, though C. Huang's LMT is most likely not meant to be language-specific in its entirety, the Chinese-only thematic hierarchy and IC's are nonetheless serious compromises of LMT's universal appeal. It makes the dative shift constructions in Chinese unduly distinct from English, in spite of their completely parallel thematic and surface structures.

5.3.3.2 Tan (1991)

In her dissertation on the notion of subject in Chinese, Tan (1991:170) accounts for the difference in passive goal subjects in Chinese and English by an additional IC for the goal role (65), and a subject default rule with specific parameters for Chinese and English (66). The LMT she adopts otherwise follows BK's model. With these two additional stipulations, Tan is able to rule out passivized goal in Chinese and allow it for English.

65. IC's: ag → -o, pt/th → -r, go → -r

66. Subject default rule:
θ[-o] → SUBJ; otherwise θ[-r] → SUBJ in English,
pt/th → SUBJ in Chinese

67.

	song4 < ag	go	th >
IC's	-o	-r	-r
Passive	ø		
DC's			
		S/O	S/O
Subj. def. & WF's		OBJ	SUBJ

Na4 ben3 shu1 (bei4 (wo3)) song4 le Li3si4.
that CLS book BEI me give ASP Lee
That book was given Lee (by me).

68. a.

	give < ag	go	th >
IC's	-o	-r	-r
Passive	ø		
DC's			
		S/O	S/O
Subj. def. & WF's		SUBJ	OBJ

Lee was given a book (by me).

b.

	give < ag	go	th >
IC's	-o	-r	-r
Passive	ø		
DC's			
		S/O	S/O
Subj. def. & WF's		OBJ	SUBJ

%A book was given Lee (by me).

Note that passivized goal and theme in English are accomplished by setting both roles to be intrinsically [-r]. This violates the constraint that no more than one role can receive [-r] from IC's, stated in 69. It has been argued that English is an AOP language (BZ:50) in which this constraint holds, and so is Chinese (C. Huang 1993, H. Huang 1995).

69. Asymmetrical Object Parameter (AOP):
*.. θ[-r]..θ[-r].. (Bresnan and Moshi l990:66)

Furthermore, the IC that sets goal to be [-r] also rules out the possibility for goal to be mapped onto OBL_{θ}, a [+r] GF and a valid GF to be associated with goal. As shown in 70 below, this account fails to account for oblique functions marked by prepositions *gei3*/*to* in the four sentences in 70. In fact, without the Passive morpholexical operation, thematic structure <ag go th> in 71 does not link to any well-formed lexical form at all.

70. a. Wo3 song4 yi1 ben3 shu1 gei3 li3si4.
I give one CLS book to Lee
a' I gave a book to Lee.

b. Na4 ben3 shu1 (bei4 (wo3)) song4 gei3 Li3si4.
that CLS book BEI me give to Lee
b' That book was given to Lee (by me).

71.

	song4/give	< ag	go	th >
IC's		-o	-r	-r
DC's		-r		
		SUBJ	S/O	S/O
Subj. def. & WF's		SUBJ	?	?

The subject default rule introduces into LMT an additional mechanism that is function-specific as well as language-specific. Similarly ad hoc is the specific IC for a non-proto role like goal. Both stipulations lack generality, besides failing to account for the full range of data in Chinese or English.

5.3.3.3 Zaenen (1987)

Zaenen (1987), in an overview of lexical information in LFG, contains a treatment of English dative alternation within a lexical mapping framework largely based on that of BK, with two variations. Zaenen (1987:16) allows morpholexical rules to provide further syntactic features, a position that I have also advocated. Nonetheless, no morpholexical rule is proposed for dative shift. She also proposes the following DC's (72).

72. DC's (Zaenen 1987:16):
    a. the highest role → -r
    b. the next role → +o
    c. the third role → +r

73.

	give < ag	go	th >
IC's	-o		-r
DC's	-r	+o	
	SUBJ	OBJ/OBJ$_\theta$	S/O
WF's	SUBJ	OBJ$_\theta$	OBJ

Lee gave her a book.

Indeed her account allows a realization of the goal as OBJ$_\theta$ (Zaenen 1987:19); however, it does not allow goal to be mapped to the oblique function marked by *to*. Furthermore, while it accounts for passivized theme subject and goal object (74a), it fails to account for oblique goal (74b) or passivized goal subject (74c).

74.

	give < ag	go	th >
IC's	-o		-r
Passive	ø		
DC's		+o	
		OBJ/OBJ$_\theta$	S/O
WF's		OBJ/OBJ$_\theta$	SUBJ

a. %A flower was given her (by Lee).
b. A flower was given to her (by Lee).
c. She was given a flower (by Lee).

5.4 DISCUSSION

In comparison with these previous LMT accounts, the account I have proposed covers a wider range of data in both English and Chinese. It offers a consistent analysis for the dative alternation, which the two languages have in common, with the same morpholexical operation that assigns an additional [+o] to goal. The difference with passivized goal is accounted for with a simple parameter of the syntactic assignment of [-r] to goal in English.

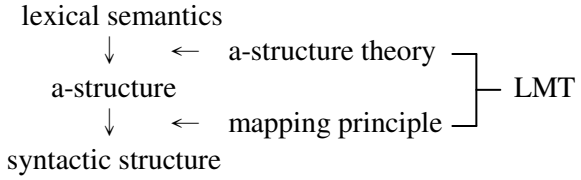
5.4.1 Morpholexical Operations and Syntactic Classifications

By allowing morpholexical operations to be the only non-universal, or language-specific, component, the theory maintains the optimal generality of all other components, i.e., the thematic hierarchy, the natural classes of GF's and the markedness hierarchy, IC's and DC's, and the mapping principle. Language-specific morpholexical operations, nonetheless, may indeed be similar in different languages, for example, the Locative Inversion shared by three unrelated and typologically disparate languages, Chinese, English, and Chichewa (BK, HH) and the Dative operation in Chinese and English. Since morpholexical operations are language-specific, their non-occurrence in some languages is expected. They may also vary among languages in constrained ways where a parameterized operation accounts for the variation, for example Chinese and English passive. Of course certain morpholexical processes may be unique to certain languages. Given the monotonicity condition that feature assignment must be feature-preserving, function-changing morpholexical operations are universally constrained and thus constitute a locale in grammar where systematic typological variations in the mapping relations between lexical semantic structures and lexical forms can be uncovered.

Since two components in the a-structure theory, i.e., IC's and DC's, assign syntactic features, allowing the other component, i.e., morpholexical operations, the same capacity does not increase the formal power of the formalism. The restrictive hypothesis suggested by Alsina

and Mchombo (1988) that morpholexical operations do not syntactically classify thematic roles thus seems rather unnecessarily restrictive, especially given that morpholexical rules can affect the lexical semantics of predicates, a much more powerful mechanism in nature than the simple addition of non-conflicting syntactic features to roles. Given that semantic roles are intrinsically syntactically classified, morpholexical operations that suppress, add, or bind roles inherently affect syntactic assignments. After all, the nature of LMT is that of an interface; it links the information of lexical semantics and that of syntactic structure, two distinct parallel planes, and thus has access to information at both planes. As stated in Bresnan (1995), a-structure thus has two faces, semantic and syntactic. Morpholexical operations, being part of the a-structure theory, naturally contain information that characterizes the syntactically-required dependents, i.e., GF's, of a predicate.

75. A-structure: an interface of two planes



Markantonatou (1995), for example, proposes a nominalization operation (76) that relates certain types of verbs in Modern Greek to deverbal nominal predicates. This morpholexical operation accesses syntactically classified thematic roles as well as syntactically classifies a particular role in a-structure.

76. (Modern Greek) Nominalization operation:

Non-morpheme	<(θ)	θ	(EXPD)>
	-o	-r	
	↓		↓
	ø		-o

This operation requires a verb with an a-structure that contains 1) a [-r] role, 2) if a higher role exists, it must be the highest role with [-o], and

3) if a lower role is found, it must be EXPD (experienced) and the lowest role. Operations include: 1) suppress the highest role, if it is [+o], 2) assign [-o] to EXPD, if found. A nominalized predicate thus has a-structure <θ[-r] (EXPD[-o])>. It is difficult to conceive how the input a-structures can be otherwise specified and how the function-changing effect on EXPD can be achieved without access to syntactic classifications.

This feature-adding capacity thus proves to make morpholexical rules more expressive and the a-structure theory more coherent. As demonstrated in this study, an addition of [+o] to goal accounts for dative alternation, and by an optional [-r] feature to the goal role in English passive triggers the difference in passivizable goal subject in English and Chinese. Without this feature assignment capacity, morpholexical rules could not perform function-changing operations, which would then have to be done by the manipulation of IC's or DC's and thus compromise the universality of these two components (Her and Huang 1995a, 1995b).

5.4.2 Morpholexical Rules and Iconicity

Having a language-specific module interact with other universal modules, our account, partially at least, captures the insight that languages diverge and converge at the same time (e.g., Hsieh 1995). This LMT view also supports the relativist position that languages (and the various constructions within a single language) vary in degree in terms of iconicity (e.g., Tai 1992, Tai 1993, Hsieh 1993), with iconicity taken to be a direct mapping between the lexical semantic structure and the surface syntactic structure with no mediation of morpholexical operations.

Morpholexical operations can also be viewed as relations of lexical redundancy among different word classes. The canonical dative form, undergoing no morpholexical operations, is an unmarked structure with an oblique *gei3/to*, while the ditransitive dative form, mediated by the Dative operation, derives a more marked construction with an OBJ_{θ}. As demonstrated earlier, three types of <ag go th> verbs can be distinguished in terms of Dative. This variation can be re-interpreted as the consequence of the competition between the iconic canonical mapping and the more opaque mapping induced by Dative.

Table 2. Competition of Transparency and Opaqueness

	Transparent	Opaque	
TYPE 1	+	-	diu1 'toss'
TYPE 2	+	+	mai4 'sell'
TYPE 3	-	+	gei3 'give'
TYPE 4	-	-	N/A

The tendency in the language seems to prefer the more iconic type, as the most transparent Type 1 forms the majority of <ag go th> verbs, while the most opaque Type 3 has a unique non-derived verb *gei3* only, together with its derived compounds. It is thus also worth noting that in ceratin dialects of Mandarin, where verb *gei3* does allow a post-object preposition *gei3* and thus behaves like a Type 2 verb (Tang 1985c), the opaque Type 3 does not exist. For example, in both Chao (1968:318) and Li (1969:125), sentences like the following are accepted as well-formed. However, the more iconic Type 1 and 2 are found in all dialects of Mandarin.

77. Wo3 gei3 le qian2 gei3 ta1.
I give PERF money to him
I gave money to him.

A passivized dative construction is thus even more marked in the sense that two morpholexical operations must apply to yield the lexical form. Again, the interaction between the two rules also creates structural variations among <ag go th> verbs.

Table 3. Competition of Dative and Passive

Dative	Passive	
-	-	(78)
-	+	(79)
+	-	(80)
+	+	(81)

78. Li3si4 song4 le yi1 duo3 hua1 gei3 ta1.
Lee give PERF one CLS flower to her
Lee gave a flower to her.

79. Hua1 (bei4 Li3si4) song4 le gei3 ta1.
flower BEI Lee give PERF to her
The flower was given to her (by Lee).

80. Li3si4 song4 le ta1 yi1 duo3 hua1.
Lee give PERF her one CLS flower
Lee gave her a flower.

81. Hua1 (bei4 Li3si4) song4 le ta1.
flower BEI Lee give PERF her
%The flower was given her (by Lee).

5.4.3 The Mapping Principle

The single mapping principle I have proposed displaces the function-specific Subject Condition and the Function-Argument Biuniqueness Condition. The constraints in these explicitly-stated well-formedness filters are now implicit and fall out from the constructs of the lexical mapping theory. The mapping principle fully realizes the implications of the thematic hierarchy and the markedness hierarchy derived from the natural classes of GF's by defaulting each and every role to the least marked compatible GF that is not associated with a higher role. It captures not only the generalization that the highest role is the 'logical' subject but also the tendency that all roles, within the parameters set by intrinsic and default assignments, are linked to the least marked compatible GF.

Also, given this mapping principle, the inventory of GF, i.e., SUBJ, OBJ, OBL_{θ}, and OBJ_{θ}, can be universally maintained. For languages that do not employ OBJ_{θ}, the only GF identified as not universally employed, the asymmetrical object parameter (AOP) does not apply so that a secondary object receives IC [-r], instead of [+o] as other languages. For a role to be mapped onto OBJ_{θ}, it has to be fully specified as [+o +r]. Since neither IC's nor DC's assign [+o], a role is never mapped to this most marked GF without the mediation of a lexical option or morpholexical operation. Consequently, the universal inventory is maintained; for non-AOP languages, OBJ_{θ} is still in the inventory of GF, it is just not selected.

5.5 CONCLUSION

A moderate aim of this chapter is to provide a coherent, formalized analysis of Chinese dative shift, *gei3* as a verb and a goal-marking preposition, the proper status of V*gei3* sequences, and verbs with thematic structure <ag go th>. To that aim, I have demonstrated that Chinese has a parallel dative shift as English in that post-object *gei3* may indeed be a semantically restricted preposition encoding a subcategorized oblique function. I have also shown that the prolific V*gei3* verbs are V-V compounds where *gei3* is a verbal root, not a suffix, and selects the class of <ag go th> verbs. The completely identical syntactic behavior between V*gei3* verbs and verb *gei3* thus receives a natural explanation. This account is then implemented in the general framework of LFG's Lexical Mapping Theory.

A more ambitious aim is to use this analysis to test the validity of the revised lexical mapping theory I proposed, where the overall strategy is to maximize the universality of the theory, with the belief that the more generally formulated a theory, the more applicable it is. To accomplish that, all components of the theory are designed to be language-independent, except morpholexical operations, which are extended the capacity of assigning syntactic features to accommodate function-changing lexical processes that do not affect the lexical semantics of predicates. More importantly, the two previously explicitly-stated well-formedness filters of lexical forms are now implicit, built-in conditions in a single mapping principle, which constitutes a coherent generalization reflecting the significant correspondence between the universal thematic hierarchy and the markedness hierarchy of grammatical functions. Within the revised lexical mapping framework, identical structures of dative shift in Chinese and English receive an identical account. The two languages differ however in that English allows passivized goal and Chinese does not. This variation is accounted for with a single parameter in passive operations: Chinese goal does not receive a [-r] from the passive rule and maps only to semantically restricted functions, whereas in English this syntactic assignment of [-r] is optionally allowed by passive and thus passivized goal is possible.

NOTES

1. HM and McCawley (1992) also use ellipsis of the NP following *gei3* to show that *gei3* is not a preposition in V-*gei3* sequence. Examples 82a-b are from McCawley (1992:227), 82c from HM (1992:111).

82. a. Wo3 fu4gei3 $200 de na4 ge ren2.
I pay $200 COMP that CLS person
The person whom you paid $200.

b. Na4 ge ren2, wo3 fu4gei3 $200.
that CLS person I pay $200
That person, you paid $200.

c. shun4shou3 jiu4 di4gei3 yi1 er4 qian1 yuan2
off-hand then hand-out one two thousand dollar
de xiao3fei4.
DE tip
Handing out tips of one or two thousand bucks off hand.

However, all of the native speakers I have checked with find these sentences difficult to accept. Tang (1985b), in his detailed exposition of Chinese ditransitive verbs, also clearly rejects sentences with <ag go th> verbs (i.e., his first and second type of ditransitive verbs) involving ellipsis of the indirect object. In fact, HM (1992:114), citing C. Huang (1992), were correct with the observation that 'Mandarin does not allow indirect object gap in general'. Their example above is thus self-contradictory.

2. Note that Starosta (1985) does not specifically discuss whether V*gei3* is a case of compounding or suffixing. In fact, he is quite emphatic about the point that a compound is composed of two or more words (Starosta 1985:251). Accordingly, he argues against treating localizer attachment in Mandarin as a case of compounding since localizers such as *-li3* 'inside', *-wai4* 'outside', and *-shang4* 'surface' are arguably no longer words or free morphemes in modern spoken Chinese. By this criterion, V*gei3* must be recognized as compounding since both V and *gei3* are words.

3. Note also that reduplication is a fairly productive word-formation process of Mandarin active verbs indicating tentativeness (e.g., Li and Thompson 1981).

83. Chang2chang2 zhe4 ge tang1, gou4 xian2 ma1?
taste-taste this CLS soup enough salty PTCL
Taste the soup a bit, is it salty enough?

84. Zhe4 zhong3 li3wu4, ni3 gei3gei3-kan4, shei2 yao4?
this kind gift you give-give-see who want
This kind of gift, you can try and give it out; who would want it?

Thus, given the pressure for a transparent one-to-one relation between form and function in language processing, the existence of *gei3gei3* as a reduplicated form offers another motivation for the non-occurrence of *gei3gei3* as a ditransitive compound verb. From the interactionist point of view, then, reduplication and V*gei3* compounding are two word-formation processes in conflict over verb *gei3*, where they intersect; the result, reduplication prevails, or in Kiparsky's (1978) term, reduplication bleeds V*gei3* compounding. Furthermore, given the pressure for economy in language production and thus a one-to-many relation between form and function, the fact that *gei3gei3* as the compound form would function exactly identically as verb *gei3* also motivates its non-occurrence to avoid a many-to-one correspondence.

4. C. Huang (1993), along with Teng (1975) and Tang (1985c), accounts for **gei3gei3* by haplology, a term first used in Chinese linguistics by Chao (1968) referring to a phonological rule that reduces two adjacent *le*'s in the sentence-final position to one single syllable *le*, e.g., **ta1 lai2 le le* 'he has come', where the first *le* is the perfective aspect marker and the second the sentential modal particle indicating a change of state. As C. Huang (1993:363) has correctly pointed out, haplology is attested for cases of affixed elements, e.g., suffixes, clitics, and particles. What is more important, however, is that in well-attested cases of haplology such as the one with *le*'s supported by Chao (1968), both adjacent elements are affixational. 85a shows that possessive clitic *de* is required for proper nouns as possessors, and thus in 85b the *de de* sequence is reduced to a single *de*, even though the first *de*, a nominalizer clitic, has been

lexicalized as part of the word *yao4fan4de* (one that begs for rice) 'beggar'. However, in 85c, the *ma1 ma1* sequence where the first *ma1* is part of a full-fledged lexical item followed by question particle *ma1* is perfectly good; likewise *ba ba* in 85d and *guo4 guo4* in 85e are also good.

85. a. Ta1 shi4 li3si4-*(de) mei4mei.
she be Lee POSS sister
She is Lee's sister.

b. Ta1 shi4 na4 ge yao4fan4de-(*de) mei4mei.
she be that CLS beggar POSS sister
She is the beggar's sister.

c. Ta1 shi4 ni3 ma1 ma1?
she is you mom PTCL
Is she your mom?

d. Wo3men xian1 qu4 kan4 ba4ba ba!
we first go see pop PTCL
Let's go see papa first!

e. Zhe4 zhong3 sheng1huo2 ni3 guo4 guo4 ma1?
this kind life you live XPRN PTCL
Have you ever had such a lifestyle?

Therefore, as long as the first *gei3* is a verb, haplology does not really account for **gei3gei3*, regardless whether the second *gei3* is a suffix or a verb.

5. In all fairness, however, it should be noted that some morphologists do propose an intermediate category between suffix and the second compound member. For instance, as quoted in Haspelmath (1992:71-72), terms like 'suffixoid' (Fleischer 1975:70) and 'semi-suffix' (Marchand 1969:356) have been proposed to refer to items like English *-like*, *-monger*, *-wise*, and *-worthy*. Also, Starosta (1985) uses the term 'pseudo-compounding' to refer to the derivational localizers in Chinese, acknowledging their less than clear-cut status. Within such a view, HM's position, though not intended to be such a case by its authors, would seem less far-fetched than

it first appears to be. There are two indications that V*gei3*, like the well-known resultative compounding in Chinese, is not a typical compound: 1) its lexical semantics is predictable, and 2) it is productive. Although neither, nor both taken together, is adequate enough to disqualify V*gei3* as a compound, they do show that, compared to other second V-V compound members, *gei3* is more likely a candidate for further grammaticalization to become a so-called 'semi-suffix'.

6. Li (1985) and Lin (1990) propose a V-P compounding that involves the postverbal locative prepositions such as *zai4* 'at'. See Tang (1988b), H. Huang (1995), and Her and Huang (1995) for arguments against this analysis.

86. Li3si4 zuo4 zai4 tai2-shang4.
Lee sit at stage-top
Lee is sitting on the stage.

7. For example, Bresnan (1989:291) suggests that location can be understood in an abstract sense in English *to*-dative sentences. Thus, goal, like locative, also undergoes locative inversion.

87. a. To Louis was given the gift of optimism.
b. To a French research team has been attributed the discovery of a new virus.

8. In C. Huang (1993, 1990), he actually supports the PP analysis of post-object *gei3*. However, he poses two kinds of goal in the thematic structure, one subcategorized for by the verb and the other, introduced only by an applicative morpholexical rule. While the applicative goal is linked to an oblique function, thus a PP, a subcategorized goal is linked to an indirect object. I agree with the PP analysis but will refute the dual sources of goal in section 5.3.

9. Sentences like 14b and 15b also clearly show that the post-object *gei3* does not have verb *gei3*'s meaning of 'giving' and provides direct evidence against HM's (1992:118) view based on Li (1990) and Chao-fen Sun (p.c.): 'the post-DO *gei*...has the full predicative meaning involving the act of giving'.

10. Likewise, in *he cried in his room*, the locational PP can only be an adjunct, not subcategorized-for by the verb *cry*. See note 9.

11. Blocking is a well-known phenomenon in morphology and phonology where exceptions to a general rule supersede the general rule, or the elsewhere condition. For example, irregular plural forms in English such as *children*, *feet*, and *deer* generally block regular forms, thus **childs*, **foots*, and **deers*. This blocking effect, or so-called elsewhere principle, does not seem to be as strict a constraint in syntax. However, see Zeevat (1995) for a discussion on the phenomenon of idiomatic blocking and how the elsewhere principle could provide a reasonable explanation. I would suggest that subcategorized PP's do show such a tendency. Subcategorization is a particular requirement imposed by individual predicates while a PP can in general be an adjunct to any predicate; in other words, a PP is subcategorized-for only if a predicate requires it, elsewhere an adjunct.

12. Post-verbal *gei3* can also introduce a purposive clause, as in 88a-b.

88. a. Wo3 fei1 gei3 ni3 *(kan4).
I fly for you see
a' I'll fly for you to see.

b. Li3si4 tan2 ji2ta1 gei3 ta1 *(ting1).
Lee play guitar for she listen
b' Lee plays the guitar for her to enjoy.

Here *gei3*, arguably, can be regarded as a complimentizer that introduces an embedded clause, similar to the *for-to* or *in order that* clauses in English. HM (1992) use sentences like these and argue that since the object of *gei3* is also the functional subject of the embedded VP, which is obligatory in 88a-b, *gei3* must be a verb. If *gei3* is indeed a verb here, it is certainly not the ditransitive *gei3* of thematic structure <ag go th>. It would be similar to pivot verbs like *rang4* 'allow' and *qing3* 'invite', whose thematic structure is <ag th prop>, as in 89a-b.

89. a. Wo3 rang4/qing3/gei3 ni3 kan4 dian4shi4.
I allow/invite/let you watch TV
a' I'll allow/invite/let you (to) watch TV.

b. Li3si4 bu4 rang4/qing3/gei3 ta1 ting1.
Lee not allow/invite/let her listen
b' Lee won't allow/invite/let her (to) listen.

I do not intend to argue one way or the other whether this *gei3* is a pivot verb or a preposition similar to English *for*. Refer to Paul (1988) for a more detailed discussion. I do wish to reiterate two relevant points however, 1) regardless of *gei3*'s status here, the entire purposive clause is an adjunct, not a subcategorized constituent, and 2) that *gei3* is a verb elsewhere does not preclude the legitimacy of its post-object prepositional status. Sentences in 90 again confirm these points, where the first [*gei3* NP] is a subcategorized PP and the later [*gei3* NP VP] phrase an adjunctive element.

90. a. Wo3 song4 le ta1 yi1xie1 shu1 gei3 ta1 er2zi kan4.
I give PERF she some book for her son read
I gave her some books for her son to read.

b. Wo3 song4 le yi1xie1 shu1 gei3 ta1 gei3 ta1
I give PERF some book to her for her
er2zi kan4.
son read
I gave some books to her for her son to read.

13. Tang's classification of verb *gei3* as type two <ag go th> verbs is in fact reasonable given his analysis. In my scheme, *gei3* differs from type two in two respects: 1) *gei3* does not form a V*gei3* compound, 2) *gei3* does not allow post-object preposition *gei3*. In his analysis, Tang allows the *gei3gei3* compound in a reduced form as *gei3*, due to haplology. The first difference disappears. Also, citing Chao (1968:318) and Li (1969:125), he allows verb *gei3* to take post-object *gei3* (91). The second difference is thus also eliminated.

91. Ta1 gei3 le shi2 kuai4 qian2 gei3 wo3.
he give PERF ten dollar money to me
He gave ten dollars to me.

However, in my analysis, I have argued against haplology. See 5.2.1 and note 4 above. As for sentences like 91, this construction may well be a dialectal or diachronic variation. See more discussion in 5.4.2.

14. This sentence is quite acceptable in some dialects of English (e.g., Jaeggli 1986:596, Anderson 1988:300, Dryer 1986:833). Therefore, the important point to note here is that a satisfactory account should provide a sensible parameter and an explanation for this variation, instead of simply ruling it out or ruling it in. See 5.3.2 for details.

15. Secondary patientlike roles can be [-r] intrinsically in symmetrical (so-called 'double object') languages, i.e., languages that allow more than one role to be [-r]. See Bresnan and Moshi (1990) for details. English has been found to be an asymmetrical language (BZ:50), and so is Chinese (C. Huang 1993:346, H. Huang 1995).

16. Markantonatou (1995) uses the term 'Lexical Conceptual Structure' to refer to what I call 'thematic structure'. The latter is a familiar term, while the former term may be a bit obscure, especially given that LFG incorporates a conceptual structure (e.g., C. Huang 1993) and also a lexico-semantic structure (Bresnan 1995).

17. Ackerman (1992:56) distinguishes two types of morphological operations: morpholexical and morphosyntactic. While morpholexical operations alter the lexical semantic properties, morphosyntactic operations supplement syntactic features only and can thus affect the final GF assignments but cannot alter the lexical semantics of predicates. Alsina (1994) distinguishes lexical operations, which are morphologically overt, and lexical options, which are without morphological markings. Four types of operations obtain, consequently.

Table 4. Four Types of Lexical Operations

	Affecting lexical semantics	Morphologically overt
TYPE 1	+	+
TYPE 2	+	-
TYPE 3	-	+
TYPE 4	-	-

18. Chen-Fu Li reminded me that this IC for the agent-like role may not be necessary, for the unified MP would default agent, the highest role, to SUBJ. The only drawback in getting rid of this IC is that it opens up the possibility for morpholexical operations to link agent to [+o] GF's. Since I do not have evidence for that, I will keep this IC for now.

19. Note that OBL_{θ} and OBJ_{θ} are cover terms of all semantically restricted oblique functions and secondary objects such as OBL_{go}, OBL_{loc}, OBJ_{go}, OBJ_{loc}, etc. Thus, the linking of a role with a particular subtype, e.g., OBL_{go}, only 'removes' that subtype alone from the GF inventory, all other subtypes are still available.

20. See H. Huang (1995) and Her and Huang (1995b) for a review of Lai (1994), an unpublished paper treating Chinese dative within LMT.

21. Locative, according to this IC, is [+o] as a role lower than theme (C. Huang 1993:357-358). Yet, in order to account for locative inversion, C. Huang (1993:369), following Bresnan (1989), argues that locative is also agent-like and receives IC [-o]. Refer to HH for a detailed discussion.

CHAPTER 6

RESULTATIVE SUBJECT-OBJECT INVERSION

The subject and object of resultative compounds exhibit interesting behavior in terms of inversion and causativity. This chapter discusses how causativity is assigned to a particular thematic role by resultative compounding, how the thematic structures of the two predicates in the compound are bound to form a new thematic structure, and how two thematic arguments, e.g., agent and theme, bound as one composite role, compete for prominence in linking the entire role to a grammatical function. I will demonstrate that the rather complicated semantic and syntactic behavior of certain resultative compounds is due to the fact that such competition may result in not just conflict, where one role prevails over the other, but also conspiracy, where both roles figure equally in the syntactic assignment of the composite role. Each consequence is in turn manifested in a different pattern of argument-function linking, and the inversion pattern merely reflects one such consequence.

In section 6.1, the basic data at issue is introduced with no bias towards any theoretical persuasion. Section 6.2 then reviews the government and binding (GB) analysis put forth in Li (1995) that involves additional grammatical devices of causative roles and causative hierarchy. An alternative lexical mapping account within LFG is proposed in section 6.3, which utilizes only existing concepts in the theory. Section 6.4 discusses the advantages that this lexical mapping account has over Li's analysis of causative roles. An interactionist interpretation of this lexical mapping account will be given in section 6.5. Section 6.6 concludes the chapter.

6.1 THE BASIC DATA

A resultative compound is formed by two verbs, where the first verb denotes the causing action or event and the second indicates the resulting state or event. I will follow the terms in Li (1995) and refer to them as V_{caus} and V_{res} respectively. While V_{caus} may be either transitive, e.g., *zhui1* 'chase' and *sha1* 'kill', or intransitive, e.g., *pao3* 'run' and *ku1* 'cry', V_{res}

is typically intransitive, e.g., *lei4* 'tired', *si3* 'dead', and *shi1* 'wet'. In order to keep the discussion focused, I will for now use only an example of transitive V_{caus} and expand to other types in later sections.

1. zhui1 'chase': <ag pt>
2. lei4 'tired': <th>
3. zhui1-lei4: a. <ag pt-th> b. <ag-th pt>

The thematic structure of a resultative compound inherits thematic roles from both of the composing verbs; thus, as shown in 1-3, *zhui1-lei4* inherits <ag pt> from *zhui1*, <th> from *lei4* and consequently there may be two possible thematic structures: <ag pt-th> (3a), where the theme role required by *lei4* is bound with the patient role of *zhui1* and forms a composite role, or <ag-th pt> (3b). And as we can see in sentence 4 below, both thematic structures are valid for *zhui1-lei4*; however, quite interestingly, there are not two, but three possible readings from the two thematic structures.[1]

4. Zhang1san1 zhui1-lei4 le Li3si4.
   John chase-tired PERF Lee

   a. John chased Lee and Lee got tired.
      <ag pt-th> (thematic roles)
      S O (syntactic assignment)
      John Lee

   b. John chased Lee and (John) got tired.
      <ag-th pt>
      S O
      John Lee

   c.*Lee chased John and John got tired.
      <ag pt-th>
      O S
      Lee John

d. Lee chased John and (Lee) got tired.
<ag-th pt>
O S
Lee John

As shown in sentence 4's three possible readings, the subject and object positions of resultative compounds may reflect diversified thematic roles, and, as reflected in the reading of 4d, the inversion of subject and object seems to be allowed as well, much like a locative inversion verb, as demonstrated in 5.

5. a. Zhang1san1 zuo4 zai4 tai2-shang4.
John sit at stage-top
John was sitting on the stage.

b. Tai2shang4 zuo4-zhe Zhang1san1.
stage-top sit-PROG John
On the stage was sitting John.

The question is of course why inversion in 4c is ruled out and yet well-formed in 4d. Another important fact to be noted regarding resultative compounds is that under certain circumstances they assign a causative meaning to the sentence. The extended readings of 4 are listed in 6 below.

6. Zhang1san1 zhui1-lei4-le Li3si4.
a. John chased Lee and made Lee tired.
b. John chased Lee and got tired.
c. *Lee chased John and John got tired.
d. Lee chased John and John made him tired.

In both 6a and 6d, Zhangsan, the subject, is the one that is responsible in causing Lisi, the affectee in object position, to be tired. However, note also that such causer-affectee meaning is not immediately available in 6b between Zhangsan and Lisi. Stated simply, the purpose of our discussion here is to answer two questions: 1) why is the inversion in 6d possible while that of 6c is not? 2) why is the causative meaning present in 6a and 6d, but not in 6b? In the next section I will review the

account provided in Li (1995) and my own analysis within LFG will be given and defended in section 6.3 and 6.4.

6.2 A GOVERNMENT AND BINDING ACCOUNT

In the government and binding framework, the linking between theta roles of a predicate and syntactic argument positions is constrained by the thematic hierarchy, where the prominence of theta roles, e.g., agent over patient, must correspond to the structural prominence of the syntactic argument positions, e.g., subject over object (e.g., Li 1990, 1995, Grimshaw 1990, Higginbotham 1985). This widely accepted assumption in GB seems to be adequate in ruling out the reading of 4c, where the more prominent agent role is assigned to the less prominent object while the less prominent patient is linked to the most prominent subject position. Li (1995), in a GB analysis, thus employs the thematic hierarchy to account for 4c; nonetheless, to him, the same thematic hierarchy is powerless facing 4d, where he sees a comparable violation of the thematic hierarchy as in 4c and yet here the reading is allowed. The goal of his paper is thus to account for this 'legal' violation of thematic hierarchy.

Li achieves this by employing additional theoretical constructs: two causative roles (or c-roles in short), Cause and Affectee, in a 'causative hierarchy', where Cause is more prominent than Affectee. Note that the causative roles and the causative hierarchy are distinct from the thematic roles and the thematic hierarchy. While it is not clear whether c-roles are in general lexically assigned to syntactic positions, resultative compound verbs assign c-roles directly to a syntactic argument position according to the causative hierarchy, i.e., Cause to subject, Affectee to object. However, the c-role assignment scheme needs to be further constrained to rule out 6c.

7. C-role assignment conditions (Li 1995: 267-268 (24)):
   a. The argument in the subject position receives the c-role Cause from a resultative compound only if it does not receive a theta role from V_{res}.
   b. The argument in the object position receives the c-role Affectee from a resultative compound if it receives a theta role at least from V_{res}.

Another stipulation crucial to his analysis is that the causative hierarchy may override the thematic hierarchy, as stated in 8 below (Li 1995: 269 (27)):

> 8. Theta roles can be assigned contrary to the thematic hierarchy if the arguments receiving them are assigned c-roles in ways compatible with the causative hierarchy.

A violation of the thematic hierarchy is thus no longer sufficient to rule out a certain syntactic assignment. It has to be accompanied by either a violation of the causative hierarchy or the absence of c-roles in subject and object positions. As shown in 4c, the subject does receive a theta role from V_{res}, and thus according to 7a does not receive c-role Cause; furthermore, its object position does not receive a theta role from V_{res} and thus according to 7b receives no c-role Affectee. The reading of 4c/6c is therefore ruled out not simply because the syntactic assignment of its theta roles violates the thematic hierarchy but also because the arguments receiving the theta roles receive no c-roles to override such a violation.

The reading in 4d/6d, on the other hand, though it violates the thematic hierarchy in the syntactic assignment of theta roles, conforms with the causative hierarchy and is thus good. As shown in 4d, its subject, Zhangsan, does not receive a theta role from V_{res} and thus gets assigned c-role Cause, as prescribed in 7a; its object, Lisi, on the contrary, does receive a theta role from V_{res} and therefore is assigned Affectee, according to 7b. Since the causative hierarchy is observed in the syntactic assignment of agent and patient, the reading of 6d is well-formed in spite of its apparent violation of the thematic hierarchy. Thus, Lisi chased Zhangsan and got tired, but Zhangsan, the Cause, was responsible in putting Lisi, the Affectee, in that state.

The grammaticality as well as the causative meaning of 4a/6a and 4b/6b, both of which observe the thematic hierarchy, are also similarly accounted for. In 6a, subject receives an agent role only from V_{caus}, not V_{res}, and thus also the c-role Cause; object gets a theta role assignment from both of the two composing verbs and thus also the c-role Affectee. So, Zhangsan chased Lisi and caused Lisi to be tired. The subject and object in 6b, however, though receiving theta roles compatible with the thematic hierarchy, do not qualify the conditions in 7a-b and receive no c-roles. Thus, 6b has no causative meaning available.

Li's analysis is descriptively adequate and accounts for the basic data. Nonetheless, the analysis complicates the grammar by the employment of additional theoretical constructs: two c-roles and the overriding causative hierarchy. Furthermore, it relies on rather arbitrary conditions to properly assign c-roles. The conditions put forth in 7a and 7b are simply descriptive. But, why is it that Cause must be, and can only be, assigned to the subject position with no theta assignment from V_{res}? Likewise, why is it that only the object position can and must be assigned Affectee when it receives a theta role by V_{res}? The c-role assignment conditions reveal nothing about the 'logic' of c-role assignment, or why c-role assignment takes place in the manner that it does.

6.3 A LEXICAL MAPPING ACCOUNT

I will now attempt an adequate and revealing analysis within the lexical mapping theory (LMT) of LFG. First, I will summarize the version of the lexical mapping theory proposed in the previous chapter. Then in 6.3.2, the issue of grammaticality within the basic data will be dealt with and a proper analysis given, while the issue of causativity will be accounted for in 6.3.3. Some relevant data beyond the basic data is given in 6.3.4 and accounted for within the same analysis.

6.3.1 A Simplified Lexical Mapping Theory

I will first briefly review the lexical mapping theory, or LMT in short. LMT assumes a universal hierarchy for thematic roles and for grammatical functions, or GF's in short, shown in 9 and 10.

9. Thematic Hierarchy:
   ag > ben > go/exp > inst > pt/th > loc

10. Markedness Hierarchy of GF's:

SUBJ	least marked
OBJ/OBL_{θ}	↓
OBJ_{θ}	most marked

The thematic hierarchy assumes an order of prominence among semantic arguments in language, descending from agent to locative.

Among the GF's, SUBJ is ranked the highest, i.e., the least marked, and OBJ_θ the lowest, the most marked. This markedness hierarchy is based on a further classification of GF's in terms of two features: [r] (thematically restricted) and [o] (objective), as in 11, where SUBJ has the minus values and OBJ_θ has the plus values.

11. Classification of GF's:

SUBJ	[-r -o]	OBL_θ	[+r -o]
OBJ	[-r +o]	OBJ_θ	[+r +o]

The simplified lexical mapping theory I have proposed in Chapter 5 consists of two components: the theory of a-structure (12) and a single mapping principle (13).

12. The theory of a-structures:
    a. intrinsic classifications (IC's):
        primary patient-like role → [-r]
        secondary patient-like role → [+o]
        agent-like role → [-o]
    b. morpholexical/morphosyntactic operations:
        e.g., (Eng/Chi) locative inversion: <th loc>
        ↓ ↓
        +o -r
    c. default classifications (DC's):
        all non-$\hat{\theta}$ roles → [+r]

13. The mapping principle (MP):
    For each role in a-structure that has no higher role available*, map it to the least marked compatible GF available.
    (**Availability*: A role or a GF is *available* iff it is not linked to a GF or a role, respectively.)

First I need to point out the different assumptions behind the term 'thematic hierarchy' in GB and LFG. In LFG, the assumption is simply that there is a universal order of prominence among semantic arguments; unlike GB, however, it does not assume that the thematic hierarchy

'aligns' with the order of prominence among grammatical functions. Such alignment between the thematic hierarchy and the hierarchy of GF's is the default case nonetheless, which is implicit in the mapping principle (see section 5.3 for a detailed discussion on this point). Thus, inversions or other syntactic assignments that seemingly violate the thematic hierarchy in GB's term may be allowed in LFG as long as such an assignment is sanctioned by the theory of a-structures and the mapping principle. In most of such constructions where this kind of mismatch between the thematic hierarchy and the prominence order of GF's occurs, it is specifically sanctioned by lexical rules in LFG and by movements in GB. As an example, I will describe briefly an LMT account of Mandarin locative inversion given in Her and Huang (1995a).[2] Sentences given earlier in 5 are repeated here, with illustrations of argument-function linking. Note that the morpholexical operations of locative inversion are given in 12b above.

5. a. zuo4 < th loc > 'sit'
IC's: -r
DC's: +r

S/O OBL_θ/OBJ_θ
MP: S OBL_θ

Zhang1san1 zuo4 zai4 tai2-shang4.
John sit at stage-top
John was sitting on the stage.

b. zuo4 < th loc > 'sit'
IC's: -r
Loc.Inv. +o -r
DC's:

O S/O
MP: O S

Tai2shang4 zuo4-zhe Zhang1san1.
stage-top sit-PROG John
On the stage was sitting John.

Without the intervention of any morpholexical operations, in 5a the theme role is linked to subject while the lower locative role maps to an oblique function. In 5b, however, the inversion rule assigns [+o] to theme and [-r] to the locative role and thus alters their syntactic assignment.[3]

6.3.2 The Issue of Grammaticality within the Basic Data

Recall that, as exemplified in 3 (repeated as 14 below), the resultative compound receives thematic roles from both of the composing verbs. The verb *zhui1-lei4* thus inherits <ag pt> from *zhui1*, <th> from *lei4*. Either of *zhui1*'s two roles may be bound with the theme role of V_{res}, resulting in two possible thematic structures: <ag pt-th> (14a) and <ag-th pt> (14b). And as the possible readings of 4 (repeated as 15) indicate, both of the two thematic structures are valid for *zhui1-lei4*.

14. zhui1-lei4 'chase-tired'
    a. <ag pt-th>
    b. <ag-th pt>

15. Zhang1san1 zhui1-lei4 le Li3si4.
    John chase-tired PERF Lee

    a. John chased Lee and Lee got tired.
       <ag pt-th>
        S O
       John Lee

    b. John chased Lee and (John) got tired.
       <ag-th pt>
        S O
       John Lee

    c. *Lee chased John and John got tired.
       <ag pt-th>
        O S
       Lee John

d. Lee chased John and (Lee) got tired.

<ag-th	pt>
O	S
Lee	John

What is interesting is of course the fact that the thematic structure <ag pt-th> allows only one reading 15a, i.e., one argument-function match: agent to SUBJ and pt-th to OBJ, and inversion (15c) is impossible; the other thematic structure, <ag-th pt>, on the other hand, has two argument-function linking patterns: 15b, where ag-th maps to SUBJ and patient maps to OBJ, and 15d, where, contrary to 15b, ag-th maps to OBJ while patient maps to SUBJ. That is why the syntactic assignment in 15d is considered to be subject-object inversion, for it is precisely the opposite pattern of 15b, where Zhangsan, the agent, is the subject. Let's take a closer look at how LMT predicts what each thematic structure's syntactic assignment will be. I will repeat 15a and 15c as 16a and 16c below with lexical mapping details.

16. a. John chased Lee and Lee got tired.

	<ag	**pt-th>**
IC	-o	-r
DC		
	S/OBL$_\theta$	S/O
MP	S	O
	John	Lee

16. c. *Lee chased John and John got tired.

<ag	pt-th>
O	S
Lee	John

Note that within the composite role **pt-th**, the two composing roles share exactly the same syntactic classifications, and therefore both may figure equally prominently (indicated by bold characters) in the syntactic assignment of the entire composite role; thus, one does not figure more prominently than the other. Given <ag pt-th> then, LMT predicts correctly that 15a is well-formed, where ag maps to subject, pt-th to object.

Furthermore, LMT predicts that the 16a has the only possible syntactic assignment for <ag pt-th> and thus rules out 16c. The other thematic structure <ag-th pt>, on the other hand, has two possible readings, 15b and 15d, repeated below as 16b and 16d, again with lexical mapping details.

16. b. John chased Lee and (John) got tired.

	<ag-th	**pt>**
IC	-o	-r
DC		
	S/OBL_θ	S/O
MP	S	O
	John	Lee

16. d. Lee chased John and (Lee) got tired.

	<ag-**th**	**pt>**
IC	+o	-r
DC		
	O/OBJ_θ	S/O
MP	O	S
	Lee	John

Note that the composing roles, agent and theme, within the composite role ag-th have different syntactic classifications, according to the theory of a-structure in 12. The two thus cannot figure equally in the syntactic assignment of the composite role—one has to dominate over the other. In 16b then, agent figures prominently over theme, in the linking of the entire composite role **ag**-th to subject. In 16d, however, the opposite takes place—theme figures prominently over agent and links the composite role ag-**th** to object, while the primary patient maps to subject, creating an inversion of grammatical functions in comparison with 16b. Note that in 16d, between the single patient role, pt, and the ag-**th** composite role where th figures prominently, naturally it is the single patient role that is the primary patient and receives [-r] and ag-**th** is the secondary patient, due to its agentive attributes from the 'partner' agent, and thus receives [+o]. Both 16b and 16d are nevertheless well-formed, as predicted by LMT. Having accounted for the grammaticality of the basic data by employing

only the existing theoretical constructs within LMT, I now move on to the issue of causativity.

6.3.3 The Issue of Causativity

Within the three possible readings in 16, the fact remains that the causative meaning exists in 16a and 16d but not 16b. The extended readings are given below.

16. Zhang1san1 zhui1-lei4-le Li3si4.
    a. John chased Lee and made Lee tired. (Causative)
    b. John chased Lee and got tired. (non-Causative)
    d. Lee chased John and John made him tired. (Causative)

Since all these readings share an identical constituent structure, or c-structure, the causative reading certainly cannot be assigned by any structural configuration. Although in 16a and 16d the cause is always the subject, the affectee always the object, the subject and object in 16b do not carry such meaning.[4] This indicates that the causative meaning is not consistently identified with any grammatical function either. Likewise, it is not always associated with any particular thematic roles either. In 16a, agent John is the cause, patient Lee the affectee; yet in 16d, John, now the patient, is the cause, Lee, the chaser, is the affectee, not to mention the fact that thematic roles in 16b carry no such meanings. Moreover, the causative meaning is not a semantic property of either of the two composing verbs, V_{caus} or V_{res}. It is therefore reasonable to conclude that the causative meaning comes from the resultative compound as a whole. I also agree with Li's (1995:266-267) hypothesis that such causative meaning is assigned by a predicate only if the internal structure of a causal event is overtly represented by this predicate, because monomorphemic verbs do not overtly represent the internal structure of a causal event. However, I do not consider it necessary to stipulate an independent plane of representation consisting of causative roles. The causative meaning can simply be a property within the general domain of semantics.

A closer look at the thematic structures and syntactic assignments of 16a and 16d, where the causative meaning is present, would reveal that the affectee is always the theme role of V_{res}. But why is it that the same theme role in 16b carries no such affectee meaning? The answer lies in the one

property shared by the theme role of V_{res} in 16a and 16d. This theme role, bound with the patient of V_{caus} in the composite role pt-th in 16a and bound with agent of V_{caus} in the composite role ag-th in 16d, figures prominently in the syntactic assignment of the entire composite role in both 16a and 16d. In 16b, however, agent dominates over theme in the syntactic assignment of the composite role ag-th. It is therefore reasonable to assume that resultative compounding assigns the thematic role of V_{res} the additional meaning of being affected, indicated by the feature [af], which however is not available for semantic interpretation if this role does not figure prominently in syntactic assignment.

17. Causative Assignment in Resultative Compounding:
    Assign [af] to the role from V_{res}.

In 18 below I will illustrate the syntactic assignment of thematic roles in the basic data, giving only the relevant facts. Again, note that a thematic role that figures prominently in syntactic assignment is highlighted with bold print.

18. Zhang1san1 zhui1-lei4 le Li3si4.
    John chase-tired PERF Lee

    a. John chased Lee and made Lee tired.
       <ag pt-th[af]> (causative)
       S O[af]
       John Lee

    b. John chased Lee and got tired.
       <ag-th[af] **pt>** (non-causative)
       S O
       John Lee

    d. Lee chased John and John made him tired.
       <ag-**th[af] pt>** (causative)
       O[af] S
       Lee John

Only in 18b, where the subject John carries no affected meaning, th[af] does not figure prominently in syntactic assignment, while it does in

both 18a and 18d. Thus, the affectee is present in syntax due to the syntactic assignment of the theme role marked with [af]. With the affectee or the causee accounted for, let's consider the cause. The cause, unlike the theme affectee, does not seem to be associated with a particular thematic role, being agent in 18a, but patient in 18d. But is the cause always the subject as Li (1995) claims? Consider the following sentences.

19. Li3si4 bei4 zhang1san1 she4si3 le.
    Lee BEI John shoot-dead PTCL
    Lee was shot dead by Lee.

20. Li3si4 si3 yu2 ai4zi1bing4.
    Lee die at AIDS
    Lee died of AIDS.

21. Qi4ch1 bei4 ge1po4 lun2tai1.
    car BEI cut-break tires
    The car got its tires slashed.

In 19 and 20, Lee, the affectee, occupies the subject position, while the cause, John and AIDS respectively, occupies an oblique function of a prepositional phrase. In 21, the cause is implied by *bei* but not overtly expressed in the sentence; the subject position is occupied by something other than the cause. Li's claim that cause is always the subject thus appears to be too restrictive. I therefore propose that cause be discoursally derived, unless syntactically or morphologically marked. Furthermore, I propose that the selection of a syntactic argument position for a discoursally appropriate cause respects the hierarchy of grammatical functions (given in 10, repeated in 22 below), where the subject is the most prominent. In other words, a cause can be discoursally assigned to a lower function only if such assignment is discoursally more appropriate than the assignment to each higher function. In both 18a and 18d, the subject Zhangsan, is discoursally appropriate and is thus designated as the cause. This analysis thus predicts correctly that 18a and 18d are both causative and 18b is not.

22. Hierarchy of GF's for discoursally derived cause
    SUBJ > OBJ/OBL_θ > OBJ_θ

In summary, the affectee in 18a and 18d is in the syntactic argument position linked to the theme role of V_{res}, which is assigned the feature [af] by the resultative compound and figures prominently in syntactic assignment. The cause in the two readings, on the other hand, is associated with the discoursally appropriate subject.

6.3.4 Further Data

The basic data consists of the most common type of resultative compounds, where V_{caus} is transitive. I will now extend this LMT analysis to resultative compounds where V_{caus} is intransitive. The single thematic role of V_{res} may or may not be bound with the single role of V_{caus}. In 23 and 24 an example is found where the two roles are not bound in a composite role.

23. ku1-hong2 'cry-red': V, <ag th>

24. Li3si4 ku1-hong2 le yan3jing1.
    Lee cry-red PERF eye
    Lee cried his eyes red.

	<ag	**th[af]>**
IC	-o	-r
DC		
	S/OBL$_\theta$	S/O
MP	S	O[af]
	Lee	eyes

The LMT account predicts, correctly, that 24 has only one well-formed reading, which carries the causative meaning with the th[af] as affectee and the discoursally appropriate subject as cause. Next, let's look at an example in 25, where thematic roles of V_{caus} and V_{res} are bound in a single composite role.

25. Li3si4 ku1-lei4 le.
    Lee cry-tired PTCL
    Lee got tired from crying.

a. <**ag**-th[af]>
IC -o
DC

S/OBL_{θ}
MP S
Lee

b. <ag-**th[af]**>
IC -r
DC

S/O
MP S[af]
Lee

The syntactic assignment of the entire composite role may in turn be steered by either agent or theme[af]. In both cases the composite role is linked with subject. Since the only grammatical function, subject, is already occupied by the affectee in the sentence, a cause is not available. The sentence thus does not have a causative reading. A similar situation is found in an unusual type of resultative compound where V_{caus} is a state verb and V_{res} is an action verb (cf., Li 1995:279). In the example below, it is the agent role of V_{res} that receives [af] from the resultative compound.

26. Li3si4 e4-ku1 le.
Lee hungry-cry PTCL
Lee was so hungry that he cried.

a. <**th**-ag[af]>
IC -r
DC

S/O
MP S
Lee

b. <th-**ag[af]**>
IC -o
DC

S/OBL$_\theta$
MP S[af]
Lee

Whether theme or agent figures prominently in syntactic assignment of the composite role, the function linked is always subject. As no other function is available for cause, the sentence is thus non-causative. The LMT account I have proposed also extends to resultative compounds in the *ba*-construction. As noted in Li (1995:271), although the sentence in the basic data has three possible readings, its *ba* counterpart allows only the two causative readings.

27. Zhang1san1 ba3 Li3si4 zhui1-lei4 le.
John BA Lee chase-tired PTCL

a. John chased Lee and made Lee tired.
<ag pt-th[af]> (Causative)
S O[af]
John Lee

b. *John chased Lee and got tired.
<ag-th[af] **pt>**
S O
John Lee

c. *Lee chased John and John got tired.
<ag pt-th[af]>
O S
Lee John

d. Lee chased John and John made him tired.
<ag-**th[af] pt>** (Causative)
O[af] S
Lee John

It is well-known that *ba* introduces an affected object; thus, the LMT account I proposed would predict that, when used with a resultative compound, *ba* can only introduce the argument that receives the feature [af] and maps to object. And indeed it does. In both 27a and 27d, the *ba*-marked NP, i.e., Lee, is associated with object and in turn the affected theme. In 27b, however, the only possible syntactic assignment for the affected theme is to the subject position, which makes it impossible for the object to receive the affected meaning; 27b is thus not a possible reading. (Recall that 27c is ill-formed because of its untenable syntactic assignment.)

The *bei* construction is even more restrictive—only one of the three possible readings is permissible with the resultative compound. The morpholexical rule responsible for passive operations, stated in 28 below, suppresses the highest role, which may be bound with an adjunctive function marked by *bei*.

28. Passive: < θ..>
    ↓
    ø

29. Li3si4 bei4 (Zhang1san1) zhui1-lei4 le.
    Lee BEI John chase-tired PTCL
    a. Lee was chased and made tired (by John).

	<ag	**pt-th[af]>**
IC	-o	-r
PASS.	ø	
DC		

		S/O
MP		S[af]
	(John)	Lee

    b. *John chased Lee and got tired.

<ag-th[af]	**pt>**
ø	S
(John)	Lee

c. *Lee chased John and John got tired.
<ag pt-th[af]>
ø S
(John) Lee

d. *Lee chased John and John made him tired.
<ag-**th[af] pt>**
ø S
(John) Lee

As noted by Li (1995:277) and many others, the morpheme *bei* requires a verb with an affected internal argument, which is linked with the passivized subject. In the four logically possible readings in 29 above, only in 29a the affected argument, th[af], is linked to the subject and still retains its theme reading. The LMT account thus predicts correctly that only 29a is well-formed. The sentence is also causative, with Lee, the subject, as the affectee and John, an adjunctive function, as the cause, indicated by *bei*.

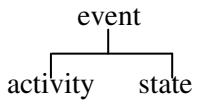
6.4 DISCUSSION

How does the LMT account fare, compared with Li's c-role analysis? First of all, no additional theoretical constructs such as c-roles or the causative hierarchy are needed in the LMT account, where existing concepts and devices are sufficient. Moreover, the thematic hierarchy is universally maintained within LMT, while a violation arises in Li's analysis. The former is thus simpler and more straightforward. Recall that I have also criticized the arbitrariness of the c-role assignment conditions. There is no logical reason why the c-role conditions should override the thematic hierarchy; why Cause should be assigned to subject only, and only when it does not receive theta assignment from V_{res}; and why only object may receive Affectee, and only when it does receive a theta role from V_{res}. In short, these conditions do not seem to reflect any significance or logical consequence of other components within the theory of GB.

Within the LMT account, the grammaticality of the four logically possible readings of *zhui1-lei4* is fully predicted by the theory. The assignment of the affected meaning, thus the feature [af], to the thematic role of V_{res}, though of course data-driven, also follows from the logic of

the event structure of the resultative compound, in which V_{caus} and V_{res} overtly represent the activity and the resulting state respectively (e.g., Li 1995:279).

30.



An affected role within this event structure of the resultative compound is most naturally the role undergoing the resulting state represented by V_{res}. There is no restriction for an affected role, i.e., one marked with [af], to be associated with any particular grammatical function. As for the condition that the affected role must figure prominently in syntactic assignment for its affectee meaning to be salient or immediately available in a sentence, again it is data-driven, but it is also quite reasonable because the affected role that does not figure prominently in syntactic assignment does not carry through its syntactic classifications, including the [af] feature.

The cause of the affectee is however derived according to discourse principles in this LMT account, while both affectee and cause are lexically assigned in Li's c-role account. I will examine Li's analysis first, where c-role Affectee is always assigned to object, Cause subject, and demonstrate that even within his account there are cases where Cause needs to be discoursally derived. Consider a passive sentence with an overt agent.

31. Li3si4 bei4 Zhang1san1 zhui1-lei4 le.
Lee was chased and made tired by John.

Clearly, Lee, Affectee, is the subject in 31 and John, Cause, is associate with the complement of *bei*. Thus, Li (1995: 277) has to claim that c-role assignment is at D-structure and 31 is merely an apparent counter-example to his c-role assignment conditions. Nonetheless, in a standard movement account of passive (e.g., Tsao 1996:163-167), Zhangsan, the agent, does not occupy the subject position in D-structure. The subject position, in fact, is empty, while Lisi, occupying the object position and receiving a theta role at D-structure, moves to the empty subject position to receive case at S-structure. The NP *Zhangsan*, receives a theta role from *by/bei*, is never in the subject position, at either

D-structure or S-structure. Consequently, Cause cannot be lexically assigned by the resultative compound. Furthermore, consider the same passive sentence without the overt agent.

32. Li3si bei4 zhui1-lei4 le.
    Lee BEI chase-tired PTCL
    Lee was chased and made tired.

Certainly nothing is in the subject position at D-structure to receive Cause in 32. The sentence nonetheless remains causative in that Cause is still logically entailed as well as discoursally deriveable. In the LMT account, *Zhangsan* in the *bei* adjunctive function in 31 is syntactically marked as the cause, while in 32, the cause either remains implicit or can be derived from the discourse context beyond the sentence. Note that in both sentences, the subject is linked with affectee instead.

6.5 AN INTERACTIONIST INTERPRETATION

What attracted my attention about Li's c-role analysis at the first place was the interaction he proposed between the causative hierarchy and the thematic hierarchy, or more specifically the conflict between the two hierarchies, where the former prevails over, or 'bleeds', the latter. Although in the LMT account I proposed the causativity hierarchy is unnecessary, the assignment of the affectee and the causer proves to be no less interesting. The assignment of the affectee is lexical via the resultative compound, while the identification of the cause is discoursal. According to the taxonomy of interaction I proposed in Chapter 2, as far as causativity is concerned, the two assignments are in complementation, where cause identification is required to apply after affectee assignment. More precisely, the two sets of conditions are in a transparent order of application and the affectee assignment 'feeds' the cause assignment. Thus, causativity in resultative compounds is approached from a 'modularity' point of view, in the sense of J. Huang (1988), and two different modules of grammar, namely thematic structure and discourse structure, are involved in accounting for a seemingly single construction.

In the LMT account, causativity also crucially depends on whether the affected role, i.e., the role marked with feature [af], figures prominently in syntactic assignment. As an independent role in the thematic structure of

a resultative compound, it necessarily figures prominently in syntactic assignment; nonetheless, as a composing role in a composite role, it competes for syntactic assignment with the other composing role. As demonstrated earlier in 17 and 18 (summarized in 33 below), the interaction between the two composing roles may result in either conspiracy or conflict. In 33a, where patient and theme in the composite role share identical syntactic classifications and both figure prominently in linking to object, a conspiracy obtains as there is only one possible outcome.

33. Zhang1san1 zhui1-lei4 le Li3si4.
John chase-tired PERF Lee

a. John chased Lee and made Lee tired.
<ag pt-th[af]> (Causative)
S O[af]
John Lee

b. John chased Lee and got tired.
<ag-th[af] **pt>** (non-Causative)
S O
John Lee

c.*Lee chased John and John got tired.
<ag pt-th[af]>
O S
Lee John

d. Lee chased John and John made him tired.
<ag-**th[af] pt>** (Causative)
O[af] S
Lee John

In 33b, however, agent in the composite role dominates over theme[af] in syntactic assignment. The opposite takes place in 33d, where the affected meaning is preserved. The latter two cases are of course typical conflicts, or 'mutual bleeding' more precisely. The interaction between the two composing roles within a composite role thus leads to

three possible consequences, each corresponding to a distinctive reading. Note also that the syntactic assignment of thematic roles affects the ultimate availability of the affected meaning. In the case of 33b, the affected meaning is inadvertently 'bled' because agent dominates over the th[af] role in their competition for the syntactic assignment of the entire composite role.

Again from a modularity point of view, the grammaticality of the four possible readings has to be accounted for in the two modules of thematic structure and functional structure. For example, the linking between the thematic structure and the functional structure of 33c is not sanctioned by the lexical mapping theory and thus ruled out.

In addition, the competition among the three well-formed readings is meaningful as well. In actual use within a discourse, one of the three readings would most likely be selected by pragmatic and discoursal factors. However, in isolation sentence 33 has the 'basic' meaning of 33a, i.e., John chased Lee and made Lee tired (cf., Li 1995:256fn). While the meaning of 33b, i.e., John chased Lee and got tired, is harder to obtain, that of 33d is no doubt by far the most difficult. In his continuous research on resultative compounds, this last reading in fact came much later as a surprise to Li when made aware of its possibility (Li 1995:257). I would argue that this order of saliency among the readings (i.e., a > b > d) reflects their iconicity, or the degree of transparency between the thematic structure and the syntactic structure.

33. a. **<ag pt-th>** 'iconic
S O
b. **<ag**-th **pt>** 'less iconic
S O
d. <ag-**th** **pt>** 'least iconic
O S

In 33a, the composite role is formed by patient and theme, two roles that share identical syntactic classifications. Agent defaults to subject; pt-th defaults to object. Both are straightforward linking relations. The syntactic structure of 33a is thus the most iconic to its thematic structure. In 33b the complication is that agent dominates over theme in the syntactic assignment of the composite role, although syntactic assignment is ultimately similar to that of 33a. In 33d, however, theme dominates over

agent in linking the composite role to object, thus creating an inversion with patient mapping to subject; the syntactic assignment of thematic roles is therefore more opaque compared with the other two readings.

An interesting comparison can be made here between Chinese and English on the resultative construction. English resultative has two characteristics: one, the resultative structure is overtly represented in syntax, and two, the syntactic assignment of thematic roles is straightforward and strictly follows the thematic hierarchy (e.g., Simpson 1983, Bresnan and Zaenen 1990). Unlike the basic data in Chinese discussed above, no 'inversion' or any other mismatch that produces ambiguity is allowed.

34. a. Lee watered the flowers flat.
    b. Lee shot John dead.

<ag pt> + <th> → <ag pt-th <prop>>
S O XCOMP

35. a. Lee cried his eyes blind.
    b. Lee laughed himself silly.

<ag> + <th> → <ag <th prop>>
S O XCOMP

As shown above, observing the thematic hierarchy, the agent-like role always maps to SUBJ and the theme-like role to OBJ. The matrix verb and the embedded verb overtly represent the event's activity and result respectively in syntax. The less iconic thematic structure of 33b and the inversion assignment of 33d in Chinese are not allowed in English. Contrary to the common stereotype that Chinese is a more iconic language than English (e.g., Tai 1992, Tai 1993), in this particular case, English is in fact more iconic than Chinese. As argued in Chapter 1, not only languages may have different typology in their overall iconicity, individual constructions within a language may also vary greatly. Given any syntactic construction, applicable grammatical principles are constantly engaged in interaction; thus, the various constructions within a single language may undergo different types of interaction among applicable rules. The

syntactic assignment of thematic roles in English and Chinese resultative constructions thus supports Hsieh's (1993) relativist position on iconicity.

6.6 CONCLUSION

In the lexical mapping account I proposed, no causative roles or causative hierarchy, in fact, no additional theoretical devices or mechanisms are needed to account for the issues of grammaticality and causativity within resultative compounds. The rather complicated semantic and syntactic behavior of resultative compounds is due to the fact that the affected role designated by the resultative compound may be bound with either of the two roles of the activity verb and within this composite role the two composing roles may compete for syntactic assignment. Thus, once again, the observation of a variation in data induces an account where grammatical interactions prove to be responsible.

NOTES

1. The readings in 4b and 4d may be somewhat difficult to obtain for some native speakers. The following corresponding examples should make the task much easier. The semantic and syntactic structure of 36 is identical with that of 4b, and 37 is similar to 4d.

36. Zhang1san1 chi1-bao3 le fan4.
    John eat-full PERF rice
    John ate rice and got full.

    <ag-th pt>
    S O
    John rice

37. Zhe4me xiao3 de zi4 hui4 kan4-huai4 yan3.
    such small DE word will read-bad eye
    Reading such fine print may ruin one's eyes.

    <ag-th pt>
    O S
    eyes fine print

2. For a critical review of movement theories in dealing with locative inversion, refer to section 5 of Bresnan and Kanerva (1989). Li (1995), incidentally, also rejects movement-based analyses for subject-object inversion in resultative compounds and opts for his c-role analysis within the general GB framework.

3. The account given in Bresnan and Kanerva (1989) is actually different from the one presented here. See Her and Huang (1995a) for detailed discussions.

4. I will largely follow Li's (1995) use of the terms 'Cause' and 'Affectee', rather than J. Huang's (1988) 'Causer' and 'Causee'. As Li has noted (1995: 266), the term 'Causer' is often associated with agentivity or volition, which is not always true for the cause in a causative sentence. Note however, I do not capitalize 'cause' and 'affectee', for I use them as general terms, not as the so-called c-roles proposed by Li.

CHAPTER 7

VO IDIOMS: VARIATION AND REPRESENTATION

This chapter discusses idiom chunks, specifically the VO collocation type, e.g., *keep tabs on* and *kick the bucket* in English or *pai1 ma3pi4* (pat horse-ass)'to flatter' and *chi1 dou4fu3* (eat tofu)'to flirt' in Chinese, including the so-called 'possessive object' construction, such as *pai1 ta1-de ma3pi4* (pat his horse-ass) 'to kiss his ass'. I will demonstrate with relevant facts and argue within the lexical functional theory, especially within its lexical mapping theory, that the ambiguous (literal and idiomatic) readings of idiom chunks cannot be adequately accounted for within the c-structure, the f-structure, or the thematic structure. I propose a solution that integrates Lakoff's (1987) 'motivatio' account of idioms and lexical specifications in LFG. While the focus is on idioms of the VO type, the discussions should apply to idioms of all types; likewise, while the data in the chapter are from Chinese and English, the discussions should apply to other languages as well.

This chapter is organized as follows. Section 7.1 gives a definition of idioms and discusses the variation among the syntactic constraints that idiom phrases impose on the idiomatic interpretations. Section 7.2 then discusses the c-structure solution implied in the treatment of VO compounds by Chao (1968) and Li and Thompson (1981). Section 7.3 is a critical review of the f-structure account that C. Huang (1986, 1990a) argues for. Bresnan's (1982b) 'classical' analysis of idiom chunks, which involves the thematic structure and non-thematic functions, is examined in section 7.4. In section 7.5, I will propose a solution that views idioms as lexicalized metaphors within the overall framework of Lakoff (1987) and LFG. Section 7.6 provides an interactionist interpretation for the variation in the syntactic and semantic behavior of idioms; section 7.7 concludes the chapter.

7.1 IDIOMS AND SYNTACTIC CONSTRAINTS

The expressions covered under the term 'idiom' in the literature are diverse, to say the least (e.g., Everaert, van der Linden, Schenk, and

Schreuder 1995). An idiom is defined in the discussion here as a phrase with an intended meaning different from the literal meaning of the whole phrase, and perhaps more importantly, such an idiomatic interpretation is available only when this phrase appears in a limited range of syntactic environments. Idioms thus have two defining characteristics: one, its non-literal meaning, and two, its syntactic constraints. Both of the two are predictable only to a limited extent. For an example, I will use probably the most famous idiom in the literature, *kick the bucket*. Whether the idiomatic meaning of 'to die' or 'to lose (one's) life' may be considered compositional or not, this meaning most definitely cannot be predicated from the literal meanings of its parts. What is also well-known is that this idiomatic meaning is obtainable only in certain strictly limited syntactic environments, as the following examples amply demonstrate. (Note that = indicates that the literal reading is available, # the idiomatic reading.)

1. a. He kicked the red bucket. (=)
   b. He kicked the buckets. (=)
   c. He kicked his bucket. (=)
   d. He kicked a bucket. (=)
   e. He kicked buckets. (=)
   f. He kicked three buckets. (=)
   g. The bucket was kicked by him. (=)
   h. It was the bucket that he kicked. (=)
   i. He kicked the barrel. (=)
   j. He kicked the political bucket. (#?)
   k. He kicked the fucking bucket. (=,#)

This idiom is in fact among the most restricted, allowing almost no syntactic variation. As shown above, *kick the bucket* allows only an expletive modifier on the noun (1k) and any other variation of the syntactic environment would make the idiomatic reading unattainable. The Chinese idiom *qiao4 bian4zi* (stick up braid), which shares the same meaning of 'to die' or 'to lose (one's) life', is also similarly restrictive. Nonetheless, it is also not difficult to imagine some of the non-idiomatic sentences above used in a real discourse to hint at the idiomatic meaning, perhaps jokingly or sarcastically. The most obvious one is 1j, which is of course a creative use of the idiom. When used in an appropriate discourse context it would no doubt convey the intended idiomatic meaning that this person was

politically finished, especially given the fact that the literal reading is simply unfeasible. Nonetheless, both the speaker and the hearer would also know that this is an innovation, not part of the conventionalized form of the idiom.[1] (It is of course possible that in time such creative uses may 'diffuse' into the conventionalized idiom. See section 7.6 for more discussion on this point.) The idiomatic reading, being more marked, is thus more prominent over the literal reading and often 'blocks' the literal reading (see Zeevat (1995) for more discussion on this point).

Besides syntactic restrictions, idioms may also impose functional or pragmatic restrictions. Consider the idiom *hold your horses* for example, it must be used as a direct or indirect command or request, never as an assertion (Kaplan 1995:89). *Break a leg*, on the other hand, must be used as a direct command only. *Kick the bucket*, however, unlike the verb *die*, cannot be used as a command. The idiom *is the Pope Catholic* is most restricted functionally in that the idiomatic interpretation of 'most certainly' does not obtain unless the phrase functions as a rhetorical question.

2. a. Hold your horses! (=,#)
   b. I told you to hold your horses. (=,#)
   c. You held your horses. (=)

3. a. Break a leg! (=,#)
   b. I told her to break a leg. (=)
   c. She broke a leg. (=)

4. a. Kick the bucket! (=)
   b. I told you to kick the bucket. (=)
   c. He kicked the bucket. (=,#)

5. a. Is the Pope Catholic? (=,#)
   b. The Pope is Catholic. (=)
   c. Is the Pope Christian? (=)

Since idioms vary greatly in terms of their individual semantic structure, they most certainly do not share the same syntactic and pragmatic constraints. It has been claimed, however, that the syntactic constraints of an idiom is to a large extent determined by the semantic

relationship among its parts (Wasow, Sag, and Nunberg 1983). The question is of course to *what* extent. Note that even the two regular, non-idiomatic verbs *eat* and *devour*, as it is well-known, though semantically very similar, if not identical, have very different syntactic requirements.[2]

6. a. Lee ate.
   b. Lee ate the eggs.

7. a. *Lee devoured.
   b. Lee devoured the eggs.

Syntactic variation, it seems, may be far greater among idioms with a similar semantic structure. Let's see some examples. The two idioms, *kick someone's ass* and *kiss someone's ass*, I will demonstrate, have a similar semantic structure. Given the idiomatic readings of 'to punish someone' and 'to flatter someone' respectively, one may argue that *ass* here does not bear a semantic role. However, the following sentences, all allowing the idiomatic readings, would indicate that *ass* in both idioms has clearly identifiable, independent semantic content, referring to the person being punished or flattered in an abstract sense.

8. a. I enjoyed kicking his white/black ass. (=,#)
   b. I enjoyed kicking his fat/bony ass. (=,#)
   c. You mean you kicked the king's royal ass? (=,#)

9. a. No way I would kiss his white/black ass. (=,#)
   b. No way I would kiss his fat/bony ass. (=,#)
   c. You mean you kissed the king's royal ass? (=,#)

The semantic content and the semantic relationships among the parts of the two idioms thus do seem to be parallel. However, there are differences in their syntactic and morpholexical behavior and the differences seem arbitrary.

10. a. I'm sure you'll kick ass. (#)
    b. ?I'm sure you'll kiss ass.

11. a. Lee got/had his ass kicked. (=,#)
    b. Lee got/had his ass kissed. (=)

12. a. ?What an ass-kicking player!
    b. What an ass-kissing son of bitch!

13. a. This is some kick-ass fast car!
    b. *What a kiss-ass lousy guy!

14. a. *brown-footer/*brown-footing
    b. brown-noser, brown-nosing

Perhaps a more dramatic pair of examples is *hold your horses* and *hold your breath*. The semantic relationships among the parts are identical, but the former does not seem to allow negation, while the latter must be negated to have the idiomatic reading. Furthermore, while the former must be used as a command or request, the latter has no such functional restrictions.

15. a. Hold your horses. (=,#)
    b. Don't hold your horses. (=)
    c. I told you not to hold your horses. (=)
    d. He's holding his horses. (=)
    e. He's not holding his horses. (=)

16. a. Hold your breath. (=)
    b. Don't hold your breath. (=,#)
    c. I told you not to hold your breath. (=,#)
    d. He's holding his breath. (=)
    e. He's not holding his breath. (=,#)

I will now illustrate more extensively and systematically (but most certainly not exhaustively) the range of syntactic and functional restrictions that VO idioms may impose in Chinese. The two examples used here are *chi1 dou4fu3* (eat tofu) 'to flirt (with)' or 'to take (sexual) advantage of' and *peng4 ding1zi* (knock-against nail) 'to be rejected' or 'to face a rejection'.

A. Syntactic behavior of O in VO idioms:

I. Modification of O

a. numerical quantification (number + measure word, e.g., *kuai4* 'piece' for tofu or classifier *gen1* for nails.)
17. Ta1 chi1 le yi1 kuai4 dou4fu3. (=)
He ate a piece of tofu.
18. Ta1 peng4 le yi1 gen1 ding1zi. (=,#)
He suffered a rejection.

b. mass quantification, e.g., *bu4shao3* 'a lot of'.
19. Ni3 chi1 le ta1 bu4shao3 dou4fu3. (=,#)
You flirted with her quite a bit.
20. Ni3 peng4 le ta1 bu4shao3 ding1zi. (=,#)
You were rejected by her quite a few times.

c. adjective, e.g., *nen4* 'tender' and *ruan3* 'soft', without DE (note however, *dou4fu3* can only be modified by *nen4*, *ding1zi* only be *ruan3*. Neither idiom takes a wide range of adjectives.)
21. Ta1 zhuan1 chi1 nen4 dou4fu3. (=,#)
He flirts with the young ones only.
22. Ta1 peng4 le yi1 ge ruan3 ding1zi. (=,#)
He was subtly rejected.

d. adjective with DE
23. Ta1 zhuan1 chi1 nen4 de dou4fu3. (=)
He only eats tender tofu.
24. Ta1 peng4 le yi1 ge ruan3 de ding1zi. (=)
He knocked against a soft nail.

e. zhe4/na4 zhong3 'this/that kind'
25. Ta1 bu2 hui4 chi1 zhe4 zhong3 dou4fu3. (=,#)
He won't flirt like this.
26. Ta1 bu2 hui4 peng4 zhe4 zhong3 ding1zi. (=,#)
He won't face this kind of rejection.

f. determiner
27. Ta1 chi1 le zhe4 dou4fu3. (=)
He ate this tofu.
28. Ta1 peng4 le zhe4 ding1zi. (=,#)
He suffered this rejection.

g. time phrase, e.g., *zuo2tian1* 'yesterday', with DE
29. Zuo2tian1 de dou4fu3 hai2 mei2 chi1 gou4 ma1? (=,#)
Didn't you do enough flirting yesterday?
30. Zuo2tian1 de ding1zi mei2 peng4 gou4 a? (=,#)
Didn't you get enough rejections yesterday?

h. duration phrase, e.g., *ban4tian1* 'quite a while', with or without DE
31. Ta1 chi1 le ban4tian1 de dou4fu3. (=,#)
He flirted for quite a while.
32. Ta1 peng4 le ban4tian1 de ding1zi. (=,#)
He suffered rejections for quite a while.

i. frequency phrase, e.g., *san1 ci4* 'three times', with or without DE
33. Ta1 chi1 le san1 ci4 dou4fu3. (=,#)
He flirted three times.
34. Ta1 peng4 le san1 ci4 ding1zi. (=,#)
He was rejected three times.

j. possessive NP with DE
35. Ta1 chi1 wo3 de dou4fu3. (=,#)
He flirted with me.
36. Ta1 peng4 le wo3 de ding1zi. (=,#)
He was rejected by me.

k. possessive NP without DE
37. Ta1 chi1 wo3 dou4fu3. (=,#)
He flirted with me.
38. *Ta1 peng4 wo3 ding1zi.

II. 'Movement' of O

l. Bare topic

39. Dou4fu3 ta1 chi1 duo1 le. (=)
    Tofu, he ate quite a bit.
40. Ding1zi ta1 peng4 duo1 le. (=,#)
    He suffered a lot of rejections.

m. Modified topic

41. Zhe4 zhong3 dou4fu3 ni3 ye3 gan3 chi1? (=,#)
    How dare you flirt like this?
42. Zhe4 zhong3 ding1zi ta1 chang2 peng4. (=,#)
    He often gets this kind of rejections.

n. BA construction

43. Ta1 ba3 dou4fu3 chi1 le. (=)
    He ate the tofu.
44. Ta1 ba3 ding1zi peng4 le. (=)
    He knocked against the nail.

o. BEI construction

45. Ta1 de dou4fu3 bei4 ni3 chi1jin4 le. (=,#)
    She has been fully taken advantage of by you (sexually).
46. Ta1 de ding1zi bei4 ni3 peng4jin4 le. (=)
    Her nails were all knocked against by you.

p. cleft

47. Ta1 chi1 de ke3 shi4 ni3 de dou4fu3. (=,#)
    It was you after all that he flirted with.
48. Ta1 peng4 de ke3 shi4 ni3 de ding1zi. (=)
    It was your nails that he touched.

q. relativized O

49. Ni3 chi1 de dou4fu3 hai2 bu2 gou4 duo1 a? (=,#)
    Haven't you done enough flirtations?
50. Ni3 peng4 de ding1zi hai2 bu2 gou4 duo1 a? (=,#)
    Haven't you had enough rejections?

III. Anaphora of O

r. verb copying (within a sentence):

51. Ni3 chi1 ta1 de dou4fu3 chi1 le ban4tian1. (=,#)
    You have been flirting with her for quite a while.
52. Ni3 peng4 ta1 de ding1zi peng4 le ban4tian1. (=)
    You have been touching her nails for quite a while.

s. Purposive clause

53. Ta1 zhuan1 zhao3 nen4 dou4fu3 chi1. (=,#)
    He seeks out the young ones to flirt with.
54. Ta1 zhuan1 zhao3 ruan3 ding1zi peng4. (=)
    He seeks out the soft nails to touch.

t. Discourse recovery

55. Ta1 hen3 hui4 chi1 dou4fu3, chi1 de hen3 ji4qiao3. Bei4 chi1 de ren2 gen1ben3 bu4 zhi1dao4. (=,#)
    He is very good at flirting, and does so skillfully.
    Sometimes, the person he's flirting with doesn't even realize it.
56. Wo3 kan4 ta1 lao3shi4 peng4 ding1zi. Wei4she2me ni3 hen3shao3 peng4? (=,#)
    I see that he often gets rejected. How come it seldom happens to you?

B. Syntactic Behavior of V in VO Idioms

u. aspect marker

57. Ni3 chi1 guo4 ta1 de dou4fu3. (=,#)
    You have flirted with her before.
58. Ni3 peng4 guo4 ta1 de ding1zi. (=,#)
    You have been rejected by her before.

v. resultative

59. Ni3 chi1-bu2-dao4 ta1 de dou4fu3. (=,#)
    You wouldn't get to flirt with her.
60. Ni3 peng4-bu2-dao4 ta1 de ding1zi. (=,#)
    You wouldn't get rejected by her.

w. reduplication

61. Wo3 chi1 le chi1 ta1 de dou4fu3. (=,#)
    I flirted with her a bit.
62. Wo3 peng4 le peng4 ta1 de ding1zi. (=)
    I touched her nails a bit.

x. prefix *hao3* (tough construction)

63. Ta1 de dou4fu3 ke3 bu4 hao3chi1. (=,#)
    It's tough to flirt with her.
64. Ta1 de ding1zi ke3 bu4 hao3peng4. (=)
    Her nails are tough to touch.

C. Discourse Functions

y. Request/command

65. Chi1 ta1 de dou4fu3! (=,#)
    Flirt with her!
66. Peng4 ta1 de ding1zi! (=)
    Knock against her nails.

z. Question

67. Ni3 chi1 le ta1 de dou4fu3 ma? (=,#)
    Did you flirt with her?
68. Ni3 peng4 le ta1 de ding1zi ma? (=,#)
    Did you get rejected by her?

With this systematic review of even just two idioms, it should be clear enough that the syntactic constraints on the idiomatic interpretations are first of all real, and secondly hard to predict from either the meaning of the idiom as a whole or the semantic relationships among the parts. An adequate treatment of idiom phrases therefore must account for not only the relationship between the idiomatic meaning and the literal parts but also the allowable syntactic environments in which the idiomatic reading may obtain.

7.2 THE C-STRUCTURE SOLUTION

There are two fundamentally different approaches for the analysis of idioms: one approach considers idioms similar to words as basic lexical units, and the other treats idioms as phrases whose internal syntactic structures participate in the structure of the sentence (e.g., Stock 1987). A c-structure solution, where the ambiguity between a literal reading and an idiomatic reading is accounted for by assigning two distinct tree structures to the two readings, is certainly of the first approach. As far as I know, such a solution has never been seriously or explicitly proposed within LFG. However, studies of VO compounds that treat VO idioms as compounds in essence imply that the idiomatic reading, where the idiom is a compound and thus of the lexical category V, has a tree structure distinct from that of its literal reading, where the same VO string forms a phrasal category, VP, as shown in 69-70.

69. Ta1 xi3huan1 [$_{V}$chi-dou4fu3$_{V}$]
    he like flirt
    He likes to flirt.

70. Ta1 xi3huan1 [$_{VP}$[$_{V}$chi1$_{V}$][$_{NP}$dou4fu3$_{NP}$]$_{VP}$]
    he like eat tofu
    He likes to eat tofu.

First of all, if the lexical integrity hypothesis is assumed as in all earlier chapters, then the status of any given VO sequence is easily distinguished: a string that allows no syntactic rule to affect its sub-parts is, by definition, a word, and thus not a phrase, idiomatic or not. There are indeed many such compounds, e.g., *guan1xin1* (close-heart) 'to be concerned about' and *na2shou3* (take hand) 'to be good at'. However, as demonstrated in Chapter 3, there are also plenty of genuine idiom phrases, such as *chi1 dou4fu3*. Thus, under the lexical integrity hypothesis, the ambiguity in idiom phrases cannot be accounted for by c-structure variations, for the two readings are assigned the identical phrasal category VP.

71. Ta1 xi3huan1 [$_{VP}$[$_{V}$chi1$_{V}$][$_{NP}$nen4 dou4fu3$_{NP}$]$_{VP}$]
he like eat tender tofu
He likes to eat tender tofu. OR
He likes to flirt with the young ones.

On the other hand, if we follow Chao's (1968) proposal that idiomaticity of a VO sequence is sufficient for its compound status and thus abandon lexical integrity, then indeed *chi1 dou4fu3* would pose the two distinct c-structures 69 and 70. In Chao (1968) and Li and Thompson (1981) many idiomatic VO phrases are indeed taken to be VO compounds instead of phrases. I have discussed the drawbacks of this confusion between lexicon and syntax in Chapter 3. Here I will simply demonstrate why such a position is unworkable. This account is immediately in trouble in the presence of the following examples.

72. Ta1 xi3huan1 chi1 ni3/ta1/Ma3li4/na4 ge ren2-de dou4fu3.
He likes to flirt with you/her/Mary/that person.

The possessive NPs that may intervene the subparts of the idiom are productive. Furthermore, as I have demonstrated in the previous section, the possible intervening elements are certainly not limited to possessive NPs. Since the lexicon of a grammar must always be limited and constrained, this account, which renders an infinitely large lexicon, is impossible.

7.3 THE F-STRUCTURE SOLUTION

C. Huang's (1986) dissertation contains an f-structure solution for the ambiguity of idiom chunks. Within the formal model of LFG, given that grammatical functions play a central role in grammatical description and that the idiom shares an identical c-structure with the literal reading (see section 1 and the discussion in section 2.A of C. Huang 1990a:265-267), the next logical step is certainly to look for a solution in the f-structure. This section is a critical review of the f-structure account further revised and formalized in C. Huang (1990a), where the two readings of an idiom chunk, for example 73a-b, are assigned two distinct f-structures.

73. San1bai2 chi1 cu4.
Sanbai eat vinegar
a. Sanbai eats vinegar.
b. Sanbai gets jealous.

First of all, I should point out the inconsistency between the conclusion C. Huang makes from his observation and the actual formulation of his analysis. He observes that the idiomatic reading and the literal reading are radically different in their semantics, but concludes that 'there is *no evidence of any syntactic distinction* between them from which the semantic differences can be derived' (C. Huang 1990a:263, emphasis added). What he proposes, nevertheless, is a syntax-based solution, or in his words 'a lexically-based LFG analysis in which the differences between the two constructions are accounted for in terms of *differences in f-structure*' (C. Huang 1990a:263, emphasis added). The f-structure, however, is part of the syntax proper. One of the most important aspects of f-structure autonomy is that grammatical functions cannot be semantically derived. The relation between thematic structure (or the lexical semantic structure) and the functional structure is that of mapping or correspondence, not derivation. The following is LFG's model of semantics-syntax interface, in contrast with that of the transformational model, from Bresnan (1995).

74. a. The LFG Model of Syntactic Projection

lexical semantics
↓ Lexico-semantic projection
a-structure
↓ Lexico-syntactic projection
syntactic structure

b. The Transformational Model of Syntactic Projection

lexical semantics
↓ Lexicon
a-structure
↓ Syntactic projection
initial syntactic structure
↓ Syntactic transformations
final syntactic structure

In LFG the interface a-structure maps to the syntactic structure, i.e., f-structure, as shown in 74a. The c-structure and f-structure are the two parallel planes of syntax, and the f-structure is in fact the core of syntax. Huang's solution is thus well within the domain of syntax. Consequently, if his conclusion that no syntactic distinction exists between the idiom and the literal reading is correct, then his analysis, which assigns different f-structures to the two readings, can be expected to have difficulties. Let's take a closer look at this f-structure account: 75a-b are assigned the following two distinct f-structures.

75. San1bai2 chi1 cu4.
a. Sanbai eats vinegar.
a-f

SUBJ	[PRED 'SANBAI']
PRED	'EAT <SUBJ OBJ>'
OBJ	[PRED 'VINEGAR']

b. Sanbai is jealous.
b-f

SUBJ	[PRED 'SANBAI']
VMORF	CHI
PRED	'BE-JEALOUS <SUBJ>'

Note that the idiom *chi1 cu4* (eat vinegar) 'to be jealous' in 75b-f does not have the function OBJ, which the literal *cu4* 'vinegar' necessarily

encodes, as in 75a-f. Idiomatic *cu4* is not recognized as an argument in 75b-f at all. This position is based on three syntactic tests: coordination, wh-question formation, and topicalization (C. Huang 1990a:269-270). Let's go over them one by one.

76. Li3si4 chi1 pang2xie4 gen1 cu4.
    Lee eat crab and vinegar
    a. Lee eats crabs and vinegar.
    b. *Lee eats crabs and is jealous.

Coordination involves parallel constructions sharing an identical grammatical function, for example, OBJ *pang2xie4* and OBJ *cu4* in 76a. Since *pang2xie4*, an argument, cannot be conjoined with the idiomatic *cu4* in 76b, Huang concludes that *cu4* must not be argument in the idiom *chi1 cu4*. However, coordination requires more than parallel grammatical functions; 76b thus may be ruled out due to another violation.

77. Ta1 kai1 le men2 gen1 tai2deng1.
    he open/turn-on PERF door and lamp
    a. He opened the door and the lamp.
    b. *He opened the door and turned on the lamp.

78. *I admire Mary and honesty.

Clearly, *tai2deng1* is an OBJ argument; 77b is ruled out because *kai1* is allowed the reading of 'to open' due to the adjacent 'door'. Similarly, 78 is ill-formed because 'Mary' and 'honesty' are not semantically compatible as conjoined elements. Therefore, it is entirely plausible for the idiomatic *cu4* to be a referential argument OBJ and that 77b is ruled out due to the semantic incompatibility between *pang2xie4* 'crab' and the idiomatic *cu4* and/or the ambiguous readings of *chi1*. An equally plausible, and compatible, explanation is due to the defining characteristic of idioms that the idiomatic reading is obtainable only in restricted syntactic environments. Thus, 76b is ill-formed simply because idiomatic *cu4* allows no conjunction, period. Only this last explanation of syntactic constraint accounts for the following sentence's non-idiomatic reading. Given the equal idiomatic, non-argument status of *dou4fu3* and *cu4* in Huang's account, the idiomatic reading of 79b should be allowed as well, but is not.

79. Li3si4 chi1 dou4fu3 gen1 cu4.
    Lee eat tofu and vinegar
    a. Lee eats tofu and vinegar.
    b. *Lee flirts and gets jealous.

The next test Huang employs is wh-questions. It is a fact, as C. Huang (1990a:270) points out, that syntactic arguments can form wh-questions. He thus concludes, from the unavailability of 80b below, that *qi4* in the idiom *sheng1 qi4* (generate air) 'to be angry' must not be a syntactic argument.

80. Ta1 sheng1 she2me?
    she generate what
    a. What does she generate?
    b. *What is she angry with?
    c. *What does she give birth to a baby?

81. Ta1 sheng1 xiao3hai2.
    she generate baby
    She gives birth to a baby.

The problem with this particular argument is with its logic. Given the necessary condition that *sheng1* and *qi4* must co-occur in certain restricted syntactic environments for the idiomatic reading to obtain, 80 of course cannot possibly maintain the idiomatic reading with the position of *qi4* replaced by a wh-word. By the same token, non-idiomatic *xiao3hai2* in 81 can be replaced by a wh-word, as in 80; nonetheless, 80 certainly cannot have the same meaning as 81, shown in 80c. The last test is topicalization. It seems that the NP of an idiom cannot be topicalized and thus does not behave like an argument.

82. Cu4, ta1 chi1.
    vinegar he eat
    a. Vinegar, he eats.
    b. *He is jealous.

What Huang has overlooked is that although the bare N, like *cu4*, in VO idioms indeed usually does not topicalize, often when it is modified in

some way, topicalization may indeed take place, indicating the referentiality and argumenthood of the head noun.

83. Zhe4 zhong3 cu4 ni3 ye3 chi1, tai4 hai2ziqi4 le.
this kind vinegar you also eat too childish PTCL
You are jealous because of this, that's childish.

84. Zhe4 zhong3 qi4 bu4 zhi2de2 sheng1.
this kind air not worth generate
It's not worth it to be angry about this.

85. Ta1 de dou4fu3 ni3 ye3 gan3 chi1?
she POSS tofu you also dare eat
You dare take sexual advantage of her?

Treating the idiomatic NP as a non-argument, Huang's analysis also fails to account for passivizable idioms, for example the idiom *chu1 yang2xiang4* that Huang (1990a:282) specifically mentions in his analysis and similarly the idiom *diu1 lian3* 'to lose face'.

86. a. Ta1 chu1jin4 le yang2xiang4.
he produce-all PERF foreign-picture
He totally made an ass out of himself.

b. Yang2xiang4 bei4 ta1 chu1jin4 le.
foreign-picture BEI him produce-finish PTCL
What an ass he totally made out of himself.

87. a. Ta1 shu1 le qian2 hai2 diu1 le lian3.
he lose PERF money and lose PERF face
He lost money and lost face.

b. Lian3 bei4 ta1 diu1-guang1 le.
face BEI him lose-empty PTCL
All honor is lost by him.

Within the pre-LMT model of LFG, which Huang seems to assume (see Huang's (1990a:272) discussion on passive), the passive lexical rule

(88) converts OBJ to SUBJ. Therefore, Huang's analysis predicts, incorrectly, that VO idioms are non-passivizable. Since *yang2xiang4* and *lian3* bear no grammatical function OBJ, they cannot possibly be converted to passive SUBJ; see 88.

88. Passive (Bresnan 1982b): SUBJ → ø/OBL
OBJ → SUBJ

89. Passive (Bresnan 1989): <θ..>
↓
ø

Within the current theory of lexical mapping (see Chapter 5 for details), *yang2xiang4* and *lian3*, treated as non-arguments in Huang's analysis, likewise cannot be mapped to SUBJ as the passive morpholexical rule (89) suppresses the highest role. Passive 86b and 87b are thus still predicted to be non-existent. Following this line of argument, all lexical processes that involve either the function OBJ in the pre-LMT model or a thematic role linked to this OBJ in LMT are ruled out in Huang's analysis.

Another distinctive feature of Huang's analysis is that the noun, rather than the verb, of the idiom is considered the lexical head. This is accomplished by stipulations of additional c-structure rules and lexical entries for both the noun and the verb.

90. a. $chi1_2$: V, ↑ VMORF = CHI
b. $cu4_2$: V, ↑ PRED = 'BE-JEALOUS <SUBJ>'
↑ VMORF $=_c$ CHI

91. VP → V NP
↑ = ↓

It is rather common to pose homophone entries for idiomatic elements, although it does lead to a proliferation of lexical entries.[3] Another problem is with the c-structure rule (91), which is needed for the sole purpose of generating the stipulated f-structure of VO idioms like *chi1 cu4*. Note that this rule duplicates the c-structure constructed by the regular VP rule (92), the only difference being the schemata specifying the NP head.

92. VP → V NP
↑ = ↓ ↑ OBJ = ↓

Consider this question: which of the two rules should actually apply to a given applicable string? In the case of idiom phrases, both rules need to apply to produce the ambiguous readings, but for phrases with a literal reading only, the idiom VP rule must then be barred. Consequently, rule marking must be introduced into the LFG formalism, an undesirable feature for any grammatical framework with an X-bar scheme.

Another undesirable consequence of this analysis is that any adjunctive element of the noun necessarily has the entire idiom as its scope, not just the noun. Take *chi1 dou4fu3* for example. The modifier *nen4* 'tender' of tofu in 93 below would have the entire idiom as its scope, as shown in 93-f. This is incorrect for the sentence does not mean 'Lee only flirts tenderly' or 'Lee only flirts youthfully' as the scope of *nen4* is clearly limited to the noun, tofu, that it modifies.

93. Li3si4 zhuan1 chi1 nen4 dou4fu3.
Lee only eat tender tofu
Lee only flirts with the young ones.

-f
$$\begin{bmatrix} \text{SUBJ} & [\ \text{PRED 'LEE'} &] \\ \text{ADJ} & \left\{ \begin{matrix} [\ \text{PRED 'ONLY'} &] \\ [\ \text{PRED 'TENDER'} &] \end{matrix} \right\} \\ \text{VMORF} & \text{CHI} \\ \text{PRED} & \text{'FLIRT <SUBJ>'} \end{bmatrix}$$

The fact that the noun in the idiom may be independently modified also argues for its referentiality, and thus against Huang's treatment of it as a non-argument. This is confirmed by the fact that the noun in the idiom may be referred to by an empty anaphora.

94. Ta1 ai4 chi1 *dou4fu3*, hai2 zhuan1 chi1 nen4 de *e*.
he like eat tofu and only eat tender COMP
He likes to flirt and only with the young ones.

95. Ta1 ai4 pai1 *ma3pi4*, dan4 pai1 *e* de bu4 hao3.
he like pat horse-ass but pat COMP not good
He likes to kiss ass, but he's not good at it.

Huang's analysis is further complicated by his treatment of the so-called 'possessive objects' (POBJ). The possessive Mary in 96a has the function POSS within the function OBJ; however, in the idiom (96b), it is treated as an OBL_{goal} independently. Additional NP rule (97b) is thus needed, other than the regular NP rule (97a) that assigns POSS to NP-de, to build an OBL function out of the NP-de phrase.

96. Li3si4 chi1 Ma3li4-de dou4fu3.
Lee eat Mary-POSS tofu
a. Lee eats Mary's tofu.
a-f

$$\begin{bmatrix} \text{SUBJ} & [\ \text{PRED 'LEE'}\ ] \\ \text{PRED} & \text{'EAT <SUBJ OBJ>'} \\ \text{OBJ} & \begin{bmatrix} \text{POSS}\ [\ \text{'MARY'}\ ] \\ \text{PRED 'TOFU'} \end{bmatrix} \end{bmatrix}$$

b. Lee flirts with Mary.
b-f

$$\begin{bmatrix} \text{SUBJ} & [\ \text{PRED 'LEE'}\ ] \\ \text{VMORF} & \text{CHI} \\ \text{PRED} & \text{'FLIRT <SUBJ OBL>'} \\ \text{OBL} & [\ \text{PRED 'MARY'}\ ] \end{bmatrix}$$

97. a. NP → (NP) (XP*) (CL) N
↑ POSS= ↓ ↓ ∈ ↑ ADJ ↑ = ↓

b. NP → (NP) (XP*) (CL) N
↑ OBL= ↓ ↓ ∈ ↑ ADJ ↑ = ↓

The use of the term 'possessive object' to refer to NP1 of [NP1 de NP2] within a VO idiom finds its origin in Chao's (1968:321) discussions

on VO compounds, where the term refers to 'an apparent possessive modifier, instead of the object, (that) represents the goal'. It is rather curious for Huang to retain this term, since he sees [NP1 de] as neither possessive nor objective. Rather, he identifies it as an oblique grammatical function, or OBL, that bears the goal role. The only piece of evidence offered for this function assignment is from such 'synonymous' pairs (Huang 1990a:274):

98. a. Wo3 jian4 le ta1 de mian4.
I see PERF she POSS face
I met her.

b. Wo3 gen1 ta1 jian4 le mian4.
I with her see PERF face
I met her.

99. a. Yung2niang3 sheng1 San1bai2 de qi4.
Yungniang generate Sanbai POSS air
Yungniang is angry with Sanbai.

b. Yung2niang3 gen1 San1bai2 sheng1 qi4.
Yungniang with Sanbai generate air
Yungniang is angry with Sanbai.

Such pairs are reminiscent of the similar observation made in Chao (1968:321-322, 430-431). However, Chao (1968:321-2) has also noted that many of these idioms do not paraphrase into a corresponding sentence where NP1 occurs in a PP, goal-like or not. For example, *chai1 tai2* (dismantle platform) 'to spoil someone's plan', *ge2 ming4* (revolt life) 'to revolt (against someone)', as well as some of the dozen or so idioms listed in Huang's account like *chi1 dou4fu3* (eat tofu) 'to take (sexual) advantage of' and *chi1 bing1qi2lin2* (eat ice cream) 'to take (visual) advantage of'. Worse still, again as noted by Chao (1968:322), often the corresponding sentences with NP1 in a PP would have entirely different meaning, as shown in 100-101 below.

100. Ta1 gao4 Ma3li4 de zhuang4.
he tell Mary POSS suit
He made a complaint against Mary.

101. Ta1 gen1/xiang4/dui4 Ma3li4 gao4 zhuang4.
he with/towards/to Mary tell suit
He made a complaint to Mary (again someone else).

The fundamental problem is that it is altogether unreliable to determine the grammatical function of an element in a particular construction by its paraphrase in another construction. The active-passive paraphrase, dative shift, locative inversion, and cleft, to name just a few, are obvious examples of paraphrase constructions that assign different grammatical functions to the same semantic role. Some example sentences are shown in 102-104 below.

102. a. John loaded grapes in the truck.
OBJ OBL
b. Grapes were loaded in the truck.
SUBJ OBL
c. John loaded the truck with grapes.
OBJ OBL
d. The truck was loaded with grapes.
SUBJ OBL

103. a. My wife Koto is sitting among the CEO's.
SUBJ OBL
b. Among the CEO's is sitting my wife Koto.
SUBJ OBJ

104. a. I handed the award to her.
OBJ OBL
b. I handed her the award.
OBJ_{θ} OBJ

An even more basic question is whether the possessive NP in a VO idiom behaves like an argument or like other regular possessor NPs. Let's look at the various tests Huang employs for its argument status. The first

two are wh-question formation and reflexive pronoun (C. Huang 1990a:270-271).

105. Ta1 sheng1 shei2-de qi4?
he generate who POSS air
Who is he angry with?

106. San1bai2 sheng1 zi4ji3-de qi4.
Sanbai generate self POSS air
Sanbai is angry with himself.

Huang (1990a:271) argues that the possessive NP in idioms can be questioned and replaced by a reflexive pronoun suggests that NP1 is a referential argument. Referential, yes; argument, not necessarily. Look at the following two sentences.

107. Ta1 xiang3 shei2-de shi4?
he think who POSS affair
Whose affairs does he think about?

108. Ta1 xiang3 zi4ji3-de shi4.
he think self POSS affair
He thinks about his own affairs.

The possessive NP here passes the same tests, but certainly it cannot be considered an argument of *xiang3* 'to think'. Huang further employs evidence from selectional restrictions to argue for NP1's argumenthood. His argument goes likes this: '..the predicate *jian-mian* 'to meet' selects a human object...The fact that the idiom chunk *jian-mian* 'to meet' imposes selectional restrictions on NP1 indicates that NP1 is an argument of the idiom chunk, regardless of its position in a syntactic tree' (C. Huang 1990a:272).

109. Ta1 jian4 le zhuo1zi de mian4.
he see PERF table POSS face/surface
a. He saw the surface of the table.
b. *He met the table.

Huang's argument presupposes that *jian4 mian4* as an idiom is semantically a single non-decomposable predicate that requires a human object. Hence, his conclusion that NP1 is an argument (and NP2 *mian4* is not) is already in the presupposition. Nonetheless, the anomaly of 109b is not necessarily due to NP1 *zhuo1zi*'s violation of selection restriction of the idiom. Note that *mian4* is itself ambiguous between 'surface' and 'face', the latter being that of a human. Thus, the two compounds *mian4zhi3* (face-paper) 'facial tissue-paper' and *zhuo1mian4* 'table-top' involve the two different readings of *mian4*. The problem with 109b is therefore the anomalous reading 'table's (human) face'. However, to be fair, this kind of explanation is not available for VO idioms where the object noun like *dou4fu3* 'tofu' is not ambiguous.

110. Ta1 ai4 chi1 na4 jia1 dian4 de dou4fu3.
he like eat that CLS shop POSS tofu
a. He likes to eat the tofu from that store.
b. *He likes to flirt with that store.

We therefore still have to go back to the syntactically and semantically restricted nature of idioms for a general explanation. As mentioned earlier, one defining character of idioms is that the idiomatic reading is obtainable only in restricted syntactic environments. One of the restrictions for VO idioms like *chi1 dou4fu3* 'to flirt (with)' and *jian4 mian4* 'to meet' is that the noun can only take human possessors. (Note that some VO idioms do not allow possessors at all, for example *qiao4 bian4zi* and *kick the bucket*). This restriction is also not unreasonable in itself, given that nouns do often allow only a restricted, and sometimes arbitrary, range of possessors. See the following two sets of examples.

111. a. the man's face
b. the dog's face
c. ?the fish's face
d. *the book's face
e. *the mountain's face
f. ?IBM's face

112. a. the man's words
b. ?the dog's words

c. ?the fish's words
d. the book's words
e. *the mountain's words
f. IBM's words

Likewise, the fact that *chi1 dou4fu3* as an idiom also selects a very small number of adjectives on *dou4fu3*, for example *nen4* 'tender' but not *ruan3* 'soft', cannot be taken to indicate that these adjectives are thus arguments. Next Huang uses the test of conjunction to argue that NP1 in the idiom [V NP1 de NP2] is not a case of possessor. In the example of 113, where if Wangwu, obviously the possessor of *pang2xie4* 'crab', is also the possessor of the idiomatic *cu4* 'vinegar', the conjoined phrase should still allow the idiomatic reading. The fact that 113b is not available is thus taken to indicate that Wangwu does not have the same possessor function to idiomatic *cu4*.

113. Li3si4 chi1 Wang2wu3 de pang2xie4 gen1 cu4.
Lee eat Wangwu POSS crab and vinegar
a. Lee eats Wangwu's crabs and vinegar.
b. *Lee eats Wangwu's crabs and is jealous of him.

Again, two functions being identical is merely one of the necessary conditions for a well-formed conjunction, not the only one. As mentioned earlier, there are two compatible explanations here: 1) *pang2xie4* 'crab' and idiomatic *cu4* are semantically incompatible for conjunction, and 2) the idiom does not allow *cu4* to be conjoined, period. This is merely one of the many constraints that this idiom imposes. Thus, that 113b is not available is simply because the idiomatic reading of *chi1 cu4* cannot obtain in a syntactic environment where *cu4* is conjoined. Wangwu remains the possessor of *cu4*, idiomatic or not. This explains why 114b below is not available, while Huang's account, where Wangwu as OBL in both idioms should allow conjunction, would predict that it is well-formed.

114. Li3si4 chi1 Wang2wu3 de dou4fu3 gen1 cu4.
Lee eat Wangwu POSS tofu and vinegar
a. Lee eats Wangwu's tofu and vinegar.
b. *Lee flirts with Wangwu and is jealous of him.

The more convincing argument that Huang provides against treating NP1 as a regular possessor comes from anaphora. He points out the difference in the binding relations between regular phrases and the idiom phrase. Pay close attention to the binding relations in the following sentences.

115. a. San1bai2$_i$ xi3huan1 zi4ji3$_i$-de shi1.
Sanbai like self POSS poem
Sanbai likes his own poem.

b. San1bai2$_i$ xi3huan1 ta1$_{i/j}$-de shi1.
Sanbai like s/he POSS poem
Sanbai likes his poem.

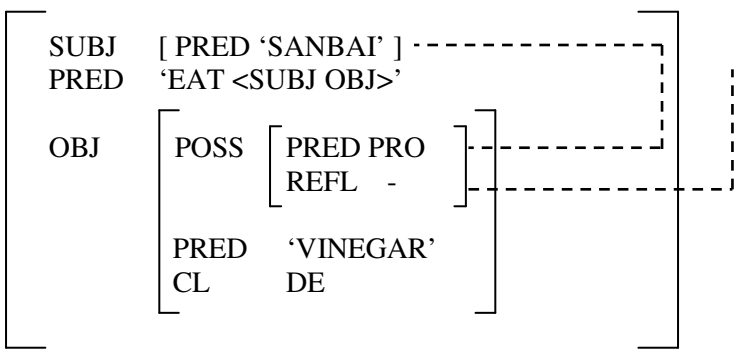
116. a. San1bai2$_i$ chi1 zi4ji3$_i$-de cu4.
Sanbai eat self POSS vinegar
Sanbai is jealous with himself.

b. San1bai2$_i$ chi1 ta1$_{*i/j}$-de cu4.
Sanbai eat s/he POSS vinegar
Sanbai is jealous with him.

Reflexive *zi4ji3* as NP1 always refers back to the matrix subject whether the verb phrase is idiomatic or literal, as shown in 115a and 116a. No drama here. However, while a non-reflexive pronoun as NP1 is free within the regular sentence (115b), it must not be bound with the matrix subject in the sentence of a VO idiom (116b). The two different f-structures in Huang's analysis for the regular possessor and the idiomatic possessor, which is an OBL argument, provides an explanation.

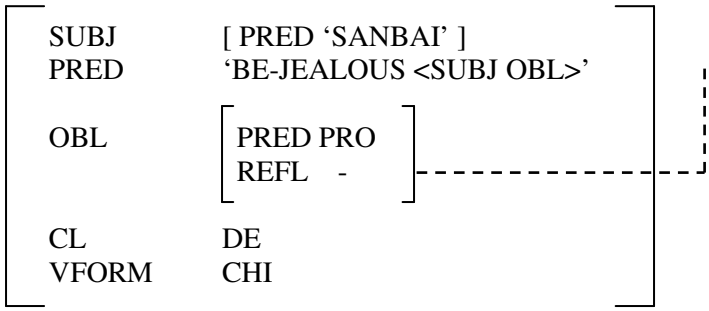
117. San1bai2$_i$ chi1 ta1$_{i/j}$-de cu4. (literal reading)
Sanbai eats his vinegar.

-f



118. San1bai2$_i$ chi1 ta1$_{*i/j}$-de cu4. (idiomatic reading)
Sanbai is jealous of him.

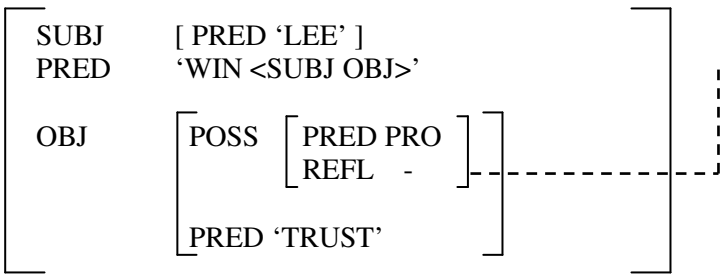
-f



The non-reflexive pronoun *ta1* in Chinese has the binding attribute [-ncl], meaning that it must not find an antecedent within the minimal nucleus. A nucleus is in turn defined as an f-structure containing a PRED attribute. Within 117-f of the regular possessor, the non-reflexive pronoun thus must not find an antecedent within OBJ, the minimal nucleus *ta1* is in, and is therefore free to be bound with Sanbai the matrix subject or some other element outside of the sentence. Within the idiomatic f-structure 118-f, however, the minimal nucleus that contains the non-reflexive pronoun is the entire f-structure; thus, as predicted, *ta1* cannot refer to Sanbai the subject. Huang's account thus seems adequate concerning these data. Unfortunately however, behavior of the non-reflexive pronoun is not

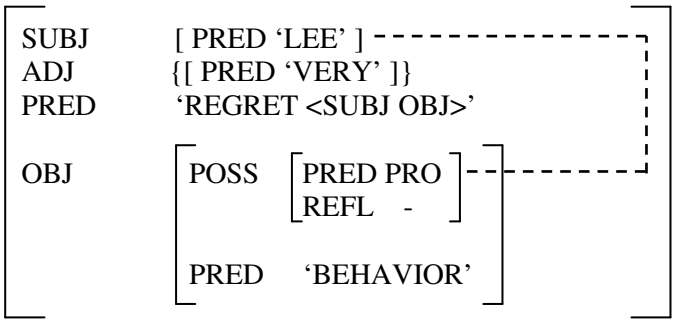
so straightforward. Consider first the following regular verb phrase, which shares the POSS f-structure with 118-f above.

119. Li3si4$_i$ ying2de2 le ta1$_{*i/j}$-de xin4ren4.
Lee win PERF s/he POSS trust
Lee won his trust.

-f


Unlike 117-f, the non-reflexive pronoun here cannot be bound with the matrix subject, while Huang's account predicts that it would since SUBJ is outside the minimal nucleus containing the pronoun. The next sentence presents a problem that is quite the opposite.

120. Li3si4$_i$ hen3 hou4hui3 ta1$_{i/*j}$-de xing2wei2.
Lee very regret s/he POSS behavior
Lee regrets his behavior.

-f


121. Li3si4$_i$ hen3 hou4hui3 zi4ji3$_{i/*j}$-de xing2wei2.
Lee very regret self POSS behavior
Lee regrets his own behavior.

Again, while f-structure 120-f here is identical to 117-f of regular POSS and to 119-f, it does not allow the non-reflexive pronoun to be free outside of the scope of the sentence. Instead, the pronoun must be bound with the matrix subject and nothing else, again contrary to the prediction of Huang's account. In other words, the verb *hou4hui3* 'regret' forces the non-reflexive pronoun (*ta1* in 120) in its OBJ to behave like a reflexive pronoun (*zi4ji3* in 121).

Since the general pattern of non-reflexive binding in Chinese is indeed as described in Huang's account and represents the unmarked case (C. Huang 1990a:286), the deviations, or the marked cases, in 119 and 120 would have to be lexically sanctioned and override the general binding principles. Within such an analysis, it is entirely unnecessary to pose a different f-structure with OBL for the possessive NP1 in idiom chunks.

In 119, the binding pattern of the possessive NP is sanctioned by the head noun *xin4ren4* 'to trust', a nominalized transitive verb, which specifies that its subjective [REFL -] POSS be free within the minimal nucleus containing the POSS and a SUBJective function; the head verb *hou4hui3* 'to regret', on the other hand, requires that the subjective POSS in its OBJ be [+ncl +sb], i.e., bound with the SUBJ of the minimal nucleus that contains the POSS and the SUBJ.

This analysis of lexically sanctioned binding relations (which can override the general binding principles) thus accounts for all the grammatical sentences in 122-123, and also provides a sound explanation for the ill-formed 124, where the joint binding requirements from the object *xin4ren4* 'to trust' and the verb *hou4hui3* 'to regret' force *ta1* to be bound *simultaneously* with both the matrix SUBJ and some other element outside the sentence; consequently, the sentence has an impossible binding relation.

122. a. Li3si4$_i$ zheng1qu3 ta1$_{*i/j}$-de xin4ren4.
Lee strives for his trust.

b. Li3si4$_i$ xu1yao4 ta1$_{*i/j}$-de xin4ren4.
Lee needs his trust.

c. Li3si4$_i$ zai4hu1 ta1$_{*i/j}$-de xin4ren4.
Lee cares about his trust.

d. Li3si4$_i$ gu1fu4 le ta1$_{*i/j}$-de xin4ren4.
Lee betrayed his trust.

123. a. Li3si4$_i$ hen3 hou4hui3 ta1$_{i/*j}$-de lu3mang3.
Lee regrets his imprudence.

b. Li3si4$_i$ hen3 hou4hui3 ta1$_{i/*j}$-de tan2hua4.
Lee regrets his talk.

c. Li3si4$_i$ hen3 hou4hui3 ta1$_{i/*j}$-de zuo4fa3.
Lee regrets his method.

d. Li3si4$_i$ hen3 hou4hui3 ta1$_{i/*j}$-de cu1xin1.
Lee regrets his carelessness.

124. a. *Li3si4$_i$ hen3 hou4hui3 ta1$_{i/j}$-de xin4ren4.

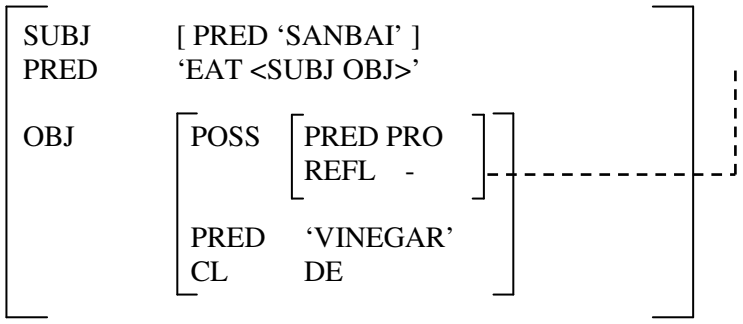
In light of the independently needed lexically sanctioned binding relations, I thus contend that the possessive NP in VO idioms has exactly the same f-structure as the regular literal possessive NP and that the 'exceptional', marked, binding relation that the possessive NP1 exhibits in idioms is lexically sanctioned by the individual idioms. Another way to look at this is that the idiomatic reading is obtainable only if the [REFL -] POSS, if any, is not bound with the SUBJ in the minimal nucleus containing a SUBJ.

125. San1bai2$_i$ chi1 ta1$_i$-de cu4. (literal only)

-f
$$\begin{bmatrix} \text{SUBJ} & [\ \text{PRED 'SANBAI'}\ ] \\ \text{PRED} & \text{'EAT <SUBJ OBJ>'} \\ \text{OBJ} & \begin{bmatrix} \text{POSS} & \begin{bmatrix} \text{PRED} & \text{PRO} \\ \text{REFL} & - \end{bmatrix} \\ \text{PRED} & \text{'VINEGAR'} \\ \text{CL} & \text{DE} \end{bmatrix} \end{bmatrix}$$

126. San1bai2$_i$ chi1 ta1$_j$-de cu4. (literal and idiomatic)

-f



This analysis is further confirmed by the fact that a non-reflexive possessive pronoun in some VO idioms actually behaves exactly opposite and requires a binding relation with the SUBJ of the minimal nucleus, again similarly to the reflexive pronoun *zi4ji3*.

127. Ta1$_i$ zou3 ta1$_{i/*j}$-de Yang2guan1 dao4.
s/he go s/he POSS Yangguan road
He goes his own way.

128. Li3si4$_i$ ying4 zhe ta1$_{i/*j}$-de tou2pi2
Lee harden PROG s/he POSS scalp
cheng2ren4 le.
confess PTCL
Lee forced himself and confessed.

129. The President$_i$ again ate his$_{i/*j}$ words.
130. The President$_i$ is talking through his$_{i/*j}$ hat again.
131. The President$_i$ put his$_{i/*j}$ foot in his$_{i/*j}$ mouth again.

Huang's account of the so-called POBJ with an OBL function cannot cope with the data cited above, where the non-reflexive possessive pronoun, again behaving rather like a reflexive pronoun, must be bound with the SUBJ within the minimal nucleus that contains itself and a SUBJ. Nor can his account explain why an idiom may require a reflexive possessive pronoun and forbids a non-reflexive one.

132. Li3si4$_i$ da3 zi4ji3$_i$-de zui3ba1. (=,#)
Lee slap self POSS mouth
a. Lee slapped his own mouth.
b. Lee contradicted himself.

133. Li3si4$_i$ da3 ta1$_{i/j}$-de zui3ba1. (=)
a. Lee$_i$ slapped his$_j$ mouth.
b. Lee$_i$ slapped his own$_i$ mouth.

The idiomatic reading is obtainable only when the required reflexive possessive pronoun is present (132). More interestingly, even when a non-reflexive possessive pronoun is bound with the matrix SUBJ, the idiomatic reading is not obtainable (133). All these examples clearly demonstrate that specific syntactic requirements must be fulfilled, including binding relations, for an idiomatic reading to obtain, and more importantly, that it is entirely unnecessary for the idiomatic reading to have a different f-structure from that of the literal reading.

To summarize, for each supporting argument that Huang has raised, the alternative that does not involve a distinct f-structure is found to be consistently more viable once further data is considered. Furthermore, Huang's f-structure account has two major drawbacks. First, the account entails that for each type of idiom with a different c-structure, two c-structure rules are needed, one for the regular phrase and the other for the idiom phrase. The two rules are identical in their c-structure components but different in their functional schemata (for the building of different f-structures). This would cause the proliferation, if not doubling, of c-structure rules; after all, idioms come in numerous different constituent structures and the potential is unlimited. Secondly, whether this account assumes the current lexical mapping theory or the pre-1986 'classical' model of lexical rules, it does not account for morpholexical processes, e.g., passive, dative, locative inversion, that involve an element in the idiom as a thematic argument or subcategorized function.

7.4 THE THEMATIC STRUCTURE SOLUTION

Given the fact that syntax proper, i.e., the c-structure and the f-structure, offers no adequate solutions to the ambiguity of idiom chunks, the next logical place to explore is the thematic structure. This brings us

to the 'classical' LFG treatment of idiom chunks proposed in Bresnan (1982b).

Bresnan's solution assigns different thematic structures to the lexical heads of the idiomatic reading and the literal reading. I will discuss extractable idioms like *keep tabs on* first. The lexical head *keep* is a three-place predicate, requiring thematic structure <ag th loc>, for its literal reading. In the idiomatic reading, however, it is a two-place predicate, requiring <ag th>, similar to verbs such as *watch* or *investigate* that require two arguments, and the assignment of grammatical functions is the following (Bresnan 1982b:46):

134. Mary kept money on the counter.
keep <ag th loc> 'thematic structure
<S O OBL> 'subcategorization
135. The FBI kept tabs on John.
keep-tabs-on <ag th> 'thematic structure
<S OBL> OBJ FORM TABS 'subcategorization

Note that this treatment is formulated within the so-called classic, i.e., pre-LMT, model of LFG, where function-changing rules such as passive and dative were stated in function terms. For example, the 'classical' passive rule converts OBJ to SUBJ, and suppresses the SUBJ or converts it to an OBL. (Rule repeated in 136.)

136. Passive (Bresnan 1982b): SUBJ → ø/OBL
OBJ → SUBJ

Within this formulation, the passive counterpart of the idiom, shown in 137, is accounted for, where *tabs*, the OBJ, is now the passivized SUBJ. Moreover, the ungrammatical 138 is ruled out, for the theme role, *John*, as an OBL, cannot be passivized.

137. Tabs were kept on John (by the FBI).
138. *John was kept tabs on (by the FBI).

Nonetheless, as I have demonstrated in Chapter 5 and 6, the mapping from the thematic semantical structure to the so-called lexical form is no

longer stipulated in the current LFG framework, rather it is principled and constrained by the various well-attested lexical mapping principles. As convincingly argued in Levin (1987) and Bresnan and Kanerva (1989), among others, the lexical mapping theory, one of the most important theoretical advances in LFG in recent years, constitutes a tremendous improvement over the arbitrary stipulations in the 'classical' mapping between thematic roles and grammatical functions. Within LMT and its formulation of passive, however, Bresnan's treatment of idiom chunks quickly runs into difficulty. As shown below, while LMT correctly predicts the lexical form of *keep* in its literal reading (139), it incorrectly links theme, i.e., John in 140, of the idiom *keep tabs on* to OBJ, rather than the *on*-marked OBL required. To be fair, I will assume the version of LMT in Bresnan (1989) and Bresnan and Kanerva (1989) (see 5.3.1.1 for details).

139.

	Mary	money	on the counter
keep	<ag	th	loc>
IC	-o	-r	-o
DC	-r		+r
WF	<S	O	OBL>

140.

		FBI	John	tabs
	keep-tabs-on	<ag	th>	ø
IC		-o	-r	
DC		-r		
		S	S/O	
WF		S	*O	

This account predicts that <ag th> maps to the incorrect <SUBJ OBJ>, rather than the well-formed <SUBJ OBL>. The outcome is no more encouraging when we take into consideration the non-thematic OBJ stipulated in the lexical form of *keep-tabs-on*, whose FORM is designated to be TABS. Given the Function-Argument Biuniqueness Condition, the theme role cannot map to any grammatical function, as shown below, since the OBJ function is no longer available. There is simply no way to derive

the required lexical form, <SUBJ OBL> OBJ FORM TABS, without resorting to the earlier arbitrary stipulations of grammatical functions.

141.

		FBI	John	
	keep-tabs-on	<ag	th>	OBJ FORM TABS
IC		-o	-r	
DC		-r		
		S	S/O	OBJ FORM TABS
WF		<S	?>	OBJ FORM TABS

Worse still, given the passive rule within LMT (repeated in 142), the well-formed passivized counterpart of the idiom (137) cannot be accounted for, while the ill-formed passivized theme (138) is incorrectly predicted to be grammatical.

142. Passive (BK 1989): < θ..>
↓
ø

143.

	FBI	John	
keep	<ag	th>	OBJ FORM TABS
IC	-o	-r	
PASSIVE	ø		
DC			
WF	<S>		OBJ FORM TABS

144. *John was kept tabs on (by the FBI).

One might suggest that *keep-tabs-on* be treated as a lexical unit to get around the above-mentioned problems. Modification and extraction, among others, provided two kinds of evidence against this proposal, see 145-146.

145. The FBI is keeping close tabs on John.
146. Close tabs are being kept on John.

In 145, *tabs* can be modified by an adjective and it can be passivized as well (146). Both sentences demonstrate that *keep tabs on* violates lexical integrity and is thus a phrase. It is quite clear then, that the lexical mapping theory dictates that an element accessible to any morpholexical rule, such as passive or dative, must be thematic. In this idiom, *tabs* can be modified as well as passivized; thus, it must bear a thematic role. Rendering a thematic element non-thematic, Bresnan's (1982b) classical treatment of idioms like *keep tabs on* is bound to fail within LMT. Therefore, for extractable idioms, idiomatic and literal readings must share the same thematic structure.

Bresnan's account fares much better for non-extractable idioms, such as *kick the bucket*. While *kick* has thematic structure <ag th> for its literal reading, the idiom has <th> for its meaning of 'to die'. Lexical mapping also predicts the two lexical forms correctly.

147. John kicked the barrel.

	kick	<ag	th>
IC		-o	-r
DC		-r	
		S	S/O
WF		<S	O>

148. John kicked the bucket. (meaning 'John died')

	kick-the-bucket	<th>	OBJ	FORM	BUCKET
IC		-r			
DC					
		S/O			
WF		<S>	OBJ	FORM	BUCKET

The primary reason for the thematic structure <th> is of course because *kick the bucket* has the idiomatic reading of 'to die', a one-place predicate. Therefore, *the bucket*, or more precisely the grammatical function OBJ subcategorized for by *kick*, must be stipulated to be non-thematic. However, consider the idiom *rock the boat*, which, though non-extractable just like *kick the bucket*, cannot be paraphrased in a one-place predicate; rather, it has to be understood as something like 'to

disturb the situation', a paraphrase syntactically parallel to the idiom itself. Therefore, *rock* can have a single thematic structure <ag th> for its literal reading as well as the idiomatic reading, as long as OBJ FORM ROCK is specified in the lexical form. Likewise, the idiom *kick the bucket* can just be easily understood as 'to lose (one's) life', which, compared with 'to die', is syntactically much more comparable to *kick the bucket*. If so understood, *kick* would be the same two-place predicate in both the idiomatic reading and the literal reading.

For verbal idioms with a subcategorized PP, e.g., *fall on deaf ears*, *disappear into thin air*, and *throw one's hat in the air*, Bresnan's account would again have problems. It would not have a thematic role for idiomatic *thin air* for example, as shown in 149 below, which must be stipulated in the lexical form, much the same way [OBJ FORM BUCKET] is stipulated for *kick the bucket*.

149. The public support has disappeared into thin air. (#)

disappear-into-thin-air	<th> OBL_{loc} FORM AIR
IC	-r
DC	
---	---
	S/O
WF	<S> OBL_{loc} FORM AIR

150. The UFO has disappeared into the dark sky. (=)

disappear	<th	loc>
IC	-o	-o
DC	-r	+r
---	---	---
	S	OBL_{loc}
WF	<S	OBL_{loc}>

In its non-idiomatic use, as in 150, *disappear* has the thematic structure <th loc>, which, via lexical mapping, links to lexical form <SUBJ OBL_{loc}>. However, not allowing the idiomatic *into thin air* to be linked to a thematic role, this account violates a universal condition on grammatical functions as specified in the lexical mapping theory (e.g., Bresnan and Kanerva 1989, or see Chapter 5 for details). Recall that SUBJ and OBJ are the only two functions that are classified as [-r], i.e.,

non-restricted to any particular thematic role; thus, only SUBJ and OBJ are allowed to be non-thematic, i.e., bearing no thematic role. An OBL function, however, is classified [+r], or thematically restricted, and must be linked to a particular thematic role. Therefore *into thin air* as OBL_{loc} must be linked to a locative role in the a-structure. The analysis in 149 is therefore impossible given the current theory of lexical mapping. Furthermore, this analysis also fails to account for the possible locative inversion constructions, as in 151-152. In general this account cannot handle idioms that allow function-changing constructions that in LMT terms must involve thematic roles, such as passive, locative inversion, and dative shift.

151. However, soon after the election the scandal exploded and into thin air disappeared the public support.

152. In spite of all the signs of Iraqi aggression, on Washington's deaf ears fell his repeated warnings.

In short, Bresnan's account, though an alternative for non-extractable idioms, is unworkable for idioms that undergo relation-changing morpholexical operations or subcategorize for an oblique function, which, by definition, is thematically restricted and thus must be linked to a specific thematic role. This account therefore does not provide a consistent explanation to all types of idioms.

7.5 THE LEXICALIZED METAPHOR SOLUTION

The conclusion to be derived from the discussions above is this: an idiom is either fixed or syntactically analyzable, and in the former case, it should be considered a single lexical item with lexical integrity, while in the latter case, the thematic structure of the head predicator and the f- and c-structures of the idiom are no different from those of the regular, literal expression. To account for the idiomatic readings, I propose a solution based on Her, Higginbotham, and Pentheroudakis (1994), Wasow *et al.* (1983), and Lakoff (1987); a solution that considers the subparts of an idiom as analyzable and compositional elements with metaphorical references.

Her *et al.* (1994) present a treatment of idioms within an LFG-based machine translation system and recognize two types of idioms: 1) lexical idioms, continuous phrases stored as lexical units in the lexicon; 2) transfer idioms, idiom phrases that parse compositionally to produce a non-ambiguous f-structure but translate literally and idiomatically to two distinct phrases in the target language. In this approach, a lexical idiom is a fixed expression, or more precisely a lexical item, for example *you-know-who*, *who-done-it*, *tongue-in-cheek*, or the many VO compounds that we have discussed in Chapter 3 and 4. A genuine idiom phrase must be syntactically analyzable and its syntactic structure is never ambiguous. Since I have demonstrated in earlier sections that previous accounts that pose distinct thematic structures, f-structures, or c-structures for idiom phrases are all unsatisfactory or unworkable, the solution I propose will adopt Her *et al.*'s position that idioms do not have different syntactic or thematic structures.

Wasow *et al.* (1983) examine several different types of idioms in English, most of which are of the VO construction and their conclusion can be seen as three closely related but logically separate claims. First, they argue that syntactically phrasal idioms have normal structures. This is the same position upheld in Her *et al*. (1994), Stock (1987), Wasow *et al*. (1983), Gazdar *et al.* (1985), among others, and it is also the position I will take here. Their second claim is that, semantically, idioms differ in terms of whether the assignment of the idiomatic meaning is to the idiom chunk as a whole or to its parts. In other words, some idioms are semantically analyzable and compositional, while others are not. They distinguish three classes: 1) noncompositional idioms (*kick the bucket*, *saw log*); 2) conventionalized metaphors (*take advantage of*, *spill the beans*); and 3) compositional idioms (*pull strings*). This position is also rather reasonable as that the associations between forms and meanings in idioms are not equally motivated or arbitrary. However, I do not agree with their conclusion that a uniform analysis of idioms is therefore not available.

The third claim that Wasow *et al*. make is that the syntactic constraints of idioms are to a large extent predictable by the semantic relationships among their parts. While Wasow *et al.* have made a strong case for their first two claims with ample examples and discussions, this last claim is much less substantiated and in fact may be logically circular. Take *kick the bucket* for example. They first claim that the idiomatic meaning is assigned to the whole phrase and not composed of idiomatic

interpretations of the parts, and then claim that the fact that internal modifiers on *the bucket* are ruled out is thus predictable because *the bucket* has no idiomatic meaning of its own. However, I contend that the reversal of this argument is just sensible: that *the bucket* in the idiom does not allow modification or extraction indicates that it does not have an independent meaning. One can also argue that the idiomatic meaning of *kick the bucket* is composed of idiomatic interpretations of its parts and that this idiom imposes a set of syntactic constraints, including one that bars internal modifiers. After all, as shown in section 7.1 with the two verbs *eat* and *devour* and the several pairs of idioms *kick someone's ass* and *kiss someone's ass*, *hold your horses* and *hold your breath*, and Chinese *chi1 dou4fu3* (eat tofu) 'to flirt' and *peng4 ding1zi* (knock-against nail) 'to be rejected', idioms with very similar semantic structures may behave in different ways syntactically. This line of argument also fares much better with the creative uses such as *kick the political/financial bucket*; indeed, nothing in principle would rule out the possibility that these creative uses become part of the conventionalized idiom.

Lakoff (1987) provides an account of idioms within the overall scheme of metaphor, metonymy, and conventional image, which is much more general. Here is a quote from him regarding the analysis on Japanese classifiers, which, I think, applies quite well to his analysis of idioms as well.

> Ideally, each instance of a classifier outside the central sense should have a motivation. The motivation cannot be ad hoc—one cannot just make up a metonymy or image schema just to handle that case. This imposes a criterion of adequacy on the analysis of classifier languages. (Lakoff (1987:107)

Thus, each idiom should ideally have a motivation, be it metaphorical like *blow one's top* or *ji1dan4 li3 tiao1 gu3tou2* (egg inside pick bone) 'to be unreasonably critical', metonymical like *put in a good word for someone* or *bi4 yan3* (close eyes) 'to die', mental imagery like *saw logs* or *qiao4 bian4zi* (stick-up braid) 'to die', or some types of combination of two or more motivations, for example *zheng1 yi1 zhi1 yan3, bi4 yi1 zhi1 yan3* (open one eye, close one eye) 'to turn a blind eye' can be seen as both metaphorical and metonymical and *hell freezes over* can be both

metaphorical and imageable. I also agree that the motivation of any idiom should not be ad hoc; however, that does not mean motivations of idioms are all equally transparent. To use an example from Wasow *et al*. (1983:111): *saw logs* and *kick the bucket*.

> What is different about these two idioms, however, is that the relationship between the literal and idiomatic interpretations in *saw logs* is relatively transparent, viz., the sound of sawing logs is similar to that of snoring. Hence this idiom is probably interpretable to those unfamiliar with it, by means of the normal mechanisms for interpreting metaphors (whatever they might be); in contrast, we presume that *kick the bucket* would be uninterpretable (on its idiomatic sense) to a first-time hearer.

Recognizing Lakoff's position and Wasow *et al*.'s observation, the point I want to make is this: the degree of motivation and the degree of transparency of the motivation may vary from idiom to idiom, and more importantly, from time to time and from speaker to speaker. For example, the seemingly unmotivated and opaque idiom *kick the bucket*, assuming its motivation was from the mental image that someone completes the act of hanging oneself by kicking the bucket one stands on, could be quite transparent at one time to speakers in certain regions and maybe even today. On the other hand, the idiom *saw logs* may still be part of a person's 'vocabulary' even if that person has never actually heard the sound of sawing logs. Much like the difference between etymology and folk etymologies (such as instances of back formation), it is a linguist's job to find out the overall network of systematic metaphors in a language (and perhaps culture) that idioms fit in and the history of each idiom. However, for the naive native speaker, many of the idioms may simply be conventionalized expressions and/or have motivations different from the genuine original motivations. Between opaqueness and transparency is thus a continuum.

As Lakoff has recognized (1987:451), idioms that have ambiguous, or even conflicting, idiomatic interpretations serve as the most illuminating examples for the varying degree of transparency in idioms. Consider the idiom *a rolling stone gathers no moss*. Although the motivation is clearly

metaphorical, there are two primary interpretations of this metaphor that are nearly opposite: 1) one cannot accumulate good things, e.g., wealth and status, if one does not stay in one place, and 2) one loses his freedom or vitality if one stays at a place too long. In the first reading, the moss is viewed as a good thing, while seen as something negative in the second reading. An example from Chinese is *bi4 yan3* (close eyes) 'to die' and *bi4bi yan3jing1* (close eyes) 'to take a nap'. With the delimitive aspect of the verb *bi4* 'to close' by way of reduplication, the second idiom does not follow the first idiom to mean 'to die a little'. With a similar motivation based on an image and perhaps metonymy, the two idioms however do not share a similar semantic content.

Perhaps more drastically than regular lexical items, idioms may also widen or narrow its semantic range or become obsolete as time goes. Take idiom *chi1 dou4fu3* (eat tofu) 'to flirt' for example. The image of tofu takes after the fair supple flesh of a woman and thus the idiom was first used to refer to a man's taking advantage of a woman in a physical manner with sexual implications. However, the idiomatic interpretation is now much wider: both sexes may be at the giving end or the receiving end and the action may be physical or verbal. For some speakers, this idiom has been even further bleached of the sexual connotation and simply means to tease someone.

To be brief, in the solution I propose, phrasal idioms have regular syntactic structures, or a-structure, f-structure, and c-structure in LFG terms, and have motivations based on metaphors, metonymies, or mental images, with a varying degree of transparency between the literal reading and the idiomatic interpretation. Therefore, the solution consists of two essential parts: (1) syntactic constraints on the idiom interpretation of an idiom, and (2) motivation of the idiom interpretation. I will propose a formulation of (1) within LFG and adopt Lakoff's treatment of (2). I will explain (2) first. Lakoff (1987:448) clearly defines the concept of *motivation* as follows:

> The relationship between A and B is *motivated* just in case there is an independently existing link, L, such that A-L-B "fit together." L *makes sense* of the relationship between A and B.

The link between the literal meaning and the idiomatic interpretation may be of the form *image + knowledge + metaphor(s)*. For an idiom, although the image described by its literal reading may be quite vague in many ways, the actual image associated with the idiom may be far more specific and thus can be considered as conventional. Lakoff (1987:448-449) uses the idiom *keep someone at arm's length* as an example. The literal reading of the phrase says nothing about the height or the orientation of the arm, the position of the hand, among other things. However, the conventional image associated with the idiom is largely stable in many respects, such as the arm is tense, not lax, and chest high, extending forward with open palm facing the other person's front. In addition, there is specific knowledge associated with such images, such as the purpose of the extending arm is to prevent the possible harm that this someone could inflict. The image, the knowledge, and two metaphors that exist independently in the conceptual system of English speakers complete the link. Finally, two metaphors that exist independently in the conceptual system of English speakers are also part of the link:

153. Intimacy is Physical Closeness.
154. Social (or Psychological) Harm is Physical Harm.

The conventional image, the associated knowledge, and the two metaphors complete the link. Keeping someone away physically at arm's length is keeping him from getting physically close, and thereby keeping him from inflicting physical harm on oneself. The metaphors map this knowledge into the idiomatic meaning, *to keep someone from inflicting social or psychological harm on oneself by keeping him from becoming intimate*. The explanation goes like this in detail (Lakoff 1987:449):

-The literal meaning of the idiom fits the conventional image (although undermines it).
-The image has accompanying knowledge.
-The two metaphors map the literal meaning, the image, and its associated knowledge into the meaning of the idiom.
-Letting A be the idiom and B be its meaning, L is the conventional image plus its associated knowledge plus the two metaphors. L thus links A to B.

A consequence of this account is that the more motivated an idiomatic reading is, the more elaborate the link is. In other words, the more intricate the link between the idiom and its meaning is, the more transparent the link, L, is, the easier to make sense out of the idiom. The simpler, the more opaque, the more arbitrary. Take the idiom *kick the bucket* as another example, whose idiomatic reading is in general considered less motivated, thus opaque. The link is simply an image of someone kicking a (perhaps upside-down) bucket (perhaps while standing on it) and the knowledge that the image is associated with death. There are no independently motivated general metaphors involved.

Lakoff's account is adopted as the second part of the solution I propose, that is motivations of the idiomatic interpretations. I will now complete the solution by demonstrating how the syntactic restrictions that idioms impose on their idiomatic readings can be specified. Again, take *keep someone at arm's length* for example.

155. a. She kept John at an arm's distance. (=)
b. She kept John at full arm's length. (=)
c. John was kept at arm's length (by her). (=,#)

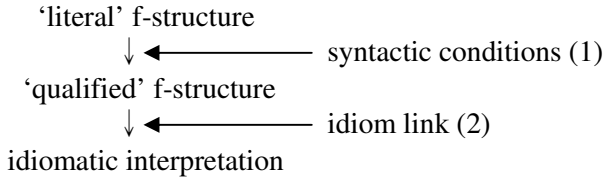
Unlike the idioms *kiss/kick someone's ass*, which allow the synonymous *behind* or *butt* for *ass*, this idiom does not allow *distance* to replace *length*. While it allows passive, it does not allow any modifiers or determiners on either *arm* or *length*. All these have to be accounted for. I propose that such conditions be specified in the lexical entry of the idiom's lexical head, the verb. Thus, in the lexical entry of *keep*, there is a set of conditions to be checked. Another example shown below is for *chi1* 'eat' as in *chi1 dou4fu3* (eat tofu) 'to flirt (with)'.

156. keep V
↑ PRED 'KEEP <ag-SUBJ th-OBJ loc-OBL>'
IF [↑ SUBJ HUMAN =$_c$ +
[↑ OBJ HUMAN =$_c$ + 'active
OR
↑ OBJ = NONE 'passive
↑ VOICE =$_c$ PASSIVE
]
↑ OBL$_{loc}$ PRED =$_c$ LENGTH
↑ OBL$_{loc}$ PFORM =$_c$ AT
↑ OBL$_{loc}$ ADJS = NONE
↑ OBL$_{loc}$ POSS PRED =$_c$ ARM
↑ OBL$_{loc}$ POSS DEFINITE = NONE
~ ↑ OBL$_{loc}$ POSS ADJS
]
THEN[↑ IDIOM-LINK = keep-at-arm's-length]

157. chi1 V
↑ PRED 'CHI1 <ag-SUBJ th-OBJ>'
IF [↑ SUBJ HUMAN =$_c$ +
↑ OBJ PRED =$_c$ 'DOU4FU3'
[IF ↑ OBJ ADJS
THEN ↑ OBJ ADJS =$_c$ {[PRED 'NEN4'] }
] (tender)
[IF ↑ OBJ POSS
THEN ↑ OBJ POSS HUMAN =$_c$ +
]
]
THEN [↑ IDIOM-LINK = chi1-dou4fu3]

If the syntactic constraints are all fulfilled, the f-structure of *keep..at arm's length* and *chi1 dou4fu3* is assigned an attribute LINK with respective value of the appropriate idiom link, which triggers the idiom interpretation mechanism just described above and thus links the 'qualified' f-structure with their idiomatic interpretation.[4]

158. An LFG model of idiomatic linking



In summary, the solution I propose integrates (1) LFG's lexical specifications in functional terms, and (2) Lakoff's account of idioms based on *motivation*. The lexical head of an idiom instantiates the checking of a set of f-structure conditions; if fulfilled, the f-structure, now assigned the feature IDIOM-LINK, triggers the idiomatic interpretation linked to the f-structure.

7.6 AN INTERACTIONIST INTERPRETATION

According to the modularity of syntax and lexicon I have assumed, an idiom with phrasal characteristics must be recognized as a phrase. Nonetheless, not all phrases are equal in their 'syntacticity', or syntactic freedom. Nicolas (1995), for example, distinguishes a typology of 1) free combinations, 2) collocations, and 3) idioms among V-NP phrases. An idiom is in fact like a metaphor or an instance of it in that it is understood in terms of another kind of meaning or experience, one that is denoted by the literal reading of the idiom. However, the difference is that the metaphors enjoy much more syntactic freedom than idioms. Thus, I observe the following hierarchy of syntacticity among different types of phrases in descending order.

159. Degree of syntacticity:
free combinations > collocations > metaphors > idioms

By the same token, not all lexical items are equal in their degree of lexicality. A monosyllabic word in Chinese is the most lexical in that it is nearly impossible to be 'ionized' into a phrase (in the sense of Chao (1968), see Chapter 3 for discussion) even temporally as in a language play.[5] Among bisyllabic or polysyllabic words, a distinction can still be made

between non-derived words, such as *e4luo2si1* 'Russia', *mei2gui1* 'rose', and *bo1li2* 'glass', and derived words, which can be further classified into several categories with varying degrees of lexicality. They include people's full names, e.g., *deng4 xiao3ping2* 'Deng Xioaping' and *deng4 li4jun1* 'Terresa Teng', compounds, e.g., *guan1xin1* (close heart) 'be concerned about' and *ai4ren2* (love person) 'lover' or 'spouse', prefixed words, e.g., *lao3shu3* 'mouse' and *di4yi1* 'first', suffixed words, e.g., *yi3zi* 'chair' and *wo3men* 'we', and reduplication, e.g., *chang2chang2* 'often' and *huan1huan1xi3xi3* 'happily'. Thus, a hierarchy of lexicality may roughly look like this in ascending order:

160. Degree of lexicality:
fixed idioms < personal full names < compounds
< polysyllabic words < monosyllabic words

This observation confirms Lakoff's (1987:852) position that it is a continuum between syntax and lexicon. Furthermore, it validates Hsieh's extension of the concept of competition in Wang's lexical diffusion hypothesis to the entire grammar. Therefore, the hierarchy of syntacticity and the hierarchy of lexicality can be viewed as the perpetual competition between the syntactic force and the lexical force. In syntax, while the syntactic force prevails, phrases, such as idioms, may still exhibit varying degrees of lexical influence. Likewise, in the lexicon, lexical items are subject to the dominant lexical force but certain types of lexical items are far more likely, practically and psychologically, to be broken up into phrases.

Idioms, as demonstrated in previous sections, seem to be 'split' between syntax and lexicon. On the one hand, they must be recognized as phrases due to their syntactic behavior; on the other hand, they allow at best a drastically restricted range of syntactic environments in comparison to regular phrases. These syntactic restrictions, as I have argued in the previous section, need to be lexically specified (see also van Gestel (1995) and Jackendoff (1995) for lexically constraining idiom phrases). Likewise, semantically, most idioms, as argued by myself in this chapter and Wasow *et al.* (1983), Lakoff (1987), and Her *et al*. (1994), among others, can indeed be viewed as compositional; however, it is also clear that in most cases the parts of a compositional idiom, unlike regular lexical items, do not individually, in isolation, correspond to an identifiable meaning in the

idiomatic interpretations. Again, while an idiom may be compositional like a regular phrase, the restricted individual idiomatic reading must be lexically linked.

Thus, from the perspective of the competition between syntax and lexicon, while the syntactic force prevails in idiom phrases, the lexical force has its claim as well as the constraints need to be lexically specified. The see-saw battle can also be seen in the changes that idioms undergo. An idiom, for example, may relax its semantic and/or syntactic constraints through time.[6] As mentioned earlier, the idiom *chi1 dou4fu3* (eat tofu) 'to flirt' has extended the agent's male gender to both genders and has also increased the syntactic environments allowed for its idiomatic meaning.[7] Conversely, an idiom may in time become completely restricted and ultimately lexicalized into a fixed idiom, thus a lexical item. Many compounds, for example *cut-throat*, *break-neck*, *know-it-all*, *pick-me-up*, *who-dunit*, and *stick-to-itiveness* in English and *wang4wo3* (forget self) 'to be totally absorbed' and *dan1xin1* (carry heart) 'worry' in Chinese, can all find their origin in a phrase. The idiom *qiao4 bian4zi* 'to die', for example, seems to have become more constrained than before and is on its way to lexicalization and perhaps distinction. Most of the younger speakers, below 25, I have checked with do not allow any internal modification on *bian4zi*, while most of the older speakers, above 40, accept the following sentence as idiomatic.

161. Zhe4 xiao3gui3 bu4 ting1 lao3zi de hua4, jie2guo3
this kid not listen I POSS word consequently
ba3 ge xiao3 bian4zi gei3 qiao4diao4 le?
BA CLS small braid GEI stick-off PTCL
See, this dude wouldn't listen to me, so he kissed his young life good-bye, didn't he?

What we have is thus a sort of 'lexical diffusion' in grammar—a phrase may lose its syntacticity not abruptly, but gradually, construction by construction, speaker by speaker. In other words, the lexical force diffuses through the syntactic constructions that its target phrase allows. The syntactic force, likewise, may 'invade' the lexicon and break up a lexical item and increase its syntacticity by gradually admitting more syntactic constructions. In the case of *chi1 dou4fu3*, then, the syntactic force has

been gaining more and more ground as the idiom allows a broader range of semantic and syntactic environments for its idiomatic interpretation.

7.7 CONCLUSION

Idioms have two defining characteristics: non-literal interpretations and (somewhat arbitrary) syntactic constraints. They should be recognized as phrases if they are not fixed, in other words if they violate lexical integrity. An adequate treatment of idiom phrases therefore must account for not only the relationship between the idiomatic meaning and the literal syntactic parts but also the allowable syntactic environments in which the idiomatic reading obtains. I have discussed the three possible planes in LFG where the ambiguous readings and the relationship between them can be accounted for and demonstrated that the c-structure account implicit in Chao (1968) and Li and Thompson (1981), the f-structure solution given by C. Huang (1990a), and Bresnan's (1982b) account at the thematic structure are all inadequate.

Contrary to the conventional view that idiomatic interpretations are non-compositional (e.g., C. Huang 1990a, Bresnan 1982b, among others), I contended that the subparts of an idiom are syntactically analyzable and to a large extend semantically compositional with metaphorical references, a position in line with Her *et al*. (1994), Wasow *et al*. (1983), Lakoff (1987), among others. The solution I proposed integrates two essential theoretical constructs: one, LFG's lexical specifications in functional terms, and two, Lakoff's account of idioms based on the concept of *motivation*. The lexical head of an idiom instantiates a set of f-structure conditions; if satisfied, the f-structure is linked to the idiomatic interpretation. The link provides the motivation for the idiomatic interpretation of the qualified f-structure. This solution offers a unified treatment of extractable as well as non-extractable idioms and does not increase the formal power of LFG. Finally, within this analysis, I provided an interactionist interpretation of the semantic and syntactic behavior of idioms in particular and the continuum of 'syntacticity' and 'lexicality' among various types of phrases and lexical items in general.

NOTES

1. I have run into several interesting examples of this kind of creative use of idioms. 'We will stay in this race *until hell freezes over, and then we will fight on the ice*' (1996 U.S. presidential candidate Pat Buchanan on staying in the race for the Republican nomination, emphasis added). 'Bob Dole just *put in a few more nails in the campaign coffin*' (CNN Headline News, March 12, 1996, on Super Tuesday; emphasis added). '...the sixty-four thousand yen question' (Hong Kong Governor Chris Patten, Feb. 18, 1995, to the National Press Club, Australia). In the eighteenth-century satire *Ru2lin2 Wai4shi3* (*The Scholars*), there is a famous quote that also involves this kind of language play: *lai4ha2ma xiang3 chi1 tian1e2 pi4* (toad want eat swan fart) 'having undeserving desires', where the usual *tian1e2 rou4* 'swan meat' has been 'demoted' to *tian1e2 pi4* 'swan fart'.

2. A much more dramatic illustration is given in Sag and Pollard with a set of English verbs closely related in meaning to *become* (1989:171):

162. a. Kim grew poetical.
     b. *Kim grew a success.
     c. *Kim grew sent more and more leaflets.
     d. *Kim grew doing all the work.
     e. Kim grew to like anchovies.

163. a. Kim got poetical.
     b. *Kim got a success.
     c. Kim got sent more and more leaflets.
     d. *Kim got doing all the work.
     e. Kim got to like anchovies.

164. a. Kim turned out poetical.
     b. Kim turned out a success.
     c. *Kim turned out sent more and more leaflets.
     d. *Kim turned out doing all the work.
     e. Kim turned out to like anchovies.

165. a. Kim ended up poetical.
     b. Kim ended up a success.

c. *Kim ended up sent more and more leaflets.
d. Kim ended up doing all the work.
e. *Kim ended up to like anchovies.

166. a. Kim waxed poetical.
b. *Kim waxed a success.
c. *Kim waxed sent more and more leaflets.
d. *Kim waxed doing all the work.
e. *Kim waxed to like anchovies.

3. Another complication of setting up a homophone entry for an idiomatic verb like *chi1* is that all the morphological processes, e.g., resultaive, reduplication, *hao*-compounding, and *gei*-compounding, that the verb undergoes have to be duplicated, once for the regular verb, once for the idiomatic verb.

4. Idioms may certainly be organized into subclasses with shared syntactic and functional specifications abstracted in separate inheritance entries. Refer to Her (1990) for such an implementation of inheritance structure. Also refer to Her *et al*. (1994) for a computational implementation of idiomatic specification.

5. In the following English example, the syntactic force has given the compound *blue chips* a 'crack'—'From *the bluest of blue chips* to the most wildly speculative over-the-counter stocks...' (Wall Street Journal; emphasis added). All following examples show a similar 'crack': 'Smoking or *non*?', 'Are you *pro* or anti-capital punishment?', and '*SKIN* OR SCUBA DIVING IS PROHIBITED' (sign posted at Santa Cruz Fishermen's Wharf).

6. In a study using a 50-million-word English newspaper corpus, Nicolas (1995:1) discovered that:

> ... contrary to received views, at least 90% of V-NP idioms, including many usually regarded as completely frozen, appear to allow some form of (syntactically) internal modification.

7. See note 6 and the examples in note 1, which all show the potential for the idioms to be syntactically more loose. Here I give a Chinese example from a dialogue I overheard at the teacher's lounge of my university.

167. A: Zhe4 zhen1shi4 jiao4 zhuan1jia1 die2po4 yan3jing4.
this really make experts shatter glasses
This really was out of the expectations of even the experts.

B: Hai2hao3 wo3 dai4 yin3xing2-yan3jing4...
lucky I wear contact-lenses
Lucky that I'm wearing contact lenses.

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