AN ANALYSIS OF CLAUSE LINKAGE

IN MANDARIN CHINESE

by

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A Dissertation
Submitted to the Faculty of Graduate Studies
in Partial Fulfilment of the requirements
for the Degree of

DOCTOR OF PHILOSOPHY

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Cell 0379
Ecology 0329
Entomology 0353
Genetics 0369
Limnology 0793
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Loisirs	0575
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Pathologie	0571
Pharmacie	0572
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Santé publique	0573
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Généralités	0485
Biochimie	487
Chimie agricole	0749
Chimie analytique	0486
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Chimie organique	0490
Chimie pharmaceutique	0491
Physique	0494
PolymÇres	0495
Radiation	0754
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Généralités	0605
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AN ANALYSIS OF CLAUSE LINKAGE
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MICHELLE MENGSONG FU

A Thesis/Practicum submitted to the Faculty of Graduate Studies of the University of Manitoba in partial
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Michelle Mengsong Fu   © 1996

ABSTRACT

This dissertation investigates the syntactic properties of clause linkage in Mandarin complex sentences. Two questions are addressed: 1) what kind of linkage relations are there in Mandarin complex sentences, and 2) how are the syntactic properties of these linkage relations to be explained?

Role and Reference Grammar (Foley & Van Valin 1984, Van Valin 1993) was chosen as the theoretical base for this research. Six criteria derived from the theory were used to establish fourteen syntactic tests for linkage types. Four of these were provided by the theory, six adapted from the linguistic literature and four constructed for this study. These diagnostic tests were used to identify both nexus and juncture characteristics of various construction types.

It was determined that Mandarin complex sentences exhibit three nexus categories, coordination, subordination, and cosubordination. Three syntactic levels, periphery, core, and nucleus, are involved in the formation of complex linkage relations. However, none of the nexus types occurs at all three levels. Coordination and subordination are found only at the peripheral and core levels, and cosubordination only at the peripheral and nuclear levels. The six linkage types exhibit a continuum in their degree of syntactic bondedness, with peripheral coordination occurring at the loosest end of the continuum, and nuclear cosubordination at the tightest end of the continuum. The degree of syntactic bondedness between juncts was found to be tied directly to the degree of semantic cohesion between them, as reflected in the capacity of linked juncts to encode single, discrete events. The looser the linkage, the higher the capacity for each individual junct to encode a single event, and vice versa. Two construction types in Mandarin, the "marked type" of core subordination and the potential complement construction, pose questions about some claims made by the authors of Role and Reference Grammar.

In summary, the interaction between nexus relations and the degree of syntactic bondedness is characteristic of Mandarin complex sentences. The theoretical base used in this research served well, but has limitations in its application to Mandarin Chinese.

iv

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Finally, my most personal thanks go to my family which includes my parents, brother Robert, sister-in-law Vivien, and niece Diana for their unlimited support and love. It is to them that this thesis is dedicated.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ABBREVIATIONS

1sg	first person singular
2sg	second person singular
3sg	third person singular
ART	article
BA	ba particle
CL	classifier
CM	clause marker
CONT	continuous
COOR	coordination
COSUB	cosubordination
DE	de particle
DEF	definite
DIFF	different
DIR	directional
DUR	durative
EVID	evidentiality
EXP	experiential
HAB	habitual
ILLO	illocutionary force
IMP	imperative
INT	interjection
LOC	locative
NOM	nominalizer
NP	noun phrase
NEG	negative
NUCL	nuclear
PL	plural
POSS	possessive
PERI	peripheral
PRES	present
PST	past
PERF	perfective
PROG	progressive
Q	question
RE	response to expectation
RTM	relative tense marker
S	sentence
SA	solicit agreement
SUBOR	subordination
TOP	topic
TR	transitive
U	undergoer
VP	verb phrase

Chapter 1

Introduction

1.0 Introduction

The purpose of this dissertation is to investigate clause linkage in Mandarin complex sentences. Linguistically, the sentence is generally viewed as the smallest unit of discourse in natural language. Sentences appear in two distinct forms: simple sentences, made up of a single clause, and complex sentences, made up of two or more clauses that are syntactically linked. Given this view of complex sentences, a number of questions are of immediate interest. Why do languages syntactically link clauses? How are clauses connected to each other to produce a coherent complex sentence? What is the nature of the various syntactic structures in which clauses are coherently linked? Are they merely juxtaposed randomly, or connected by some means that are rule-governed? What is the informational status of each linked clause in the complex construction in which it occurs; i.e., does the clause contain foregrounded or background information? These topics have interested linguists for some time, and different theories have been proposed for their investigation.

1.1 The Traditional Approach

The traditional approach in the investigation of complex sentences is based in large part on the investigation of Indo-European languages, and takes a dichotomous approach to the structure of complex sentences. It views the linkage between clauses as being of two distinct types: coordination and subordination. Coordinate structure generally refers to that which consists of clauses of equal status. Subordinate structure, on the other hand, is roughly defined as that which contains clauses of unequal status, with one clause being the main clause and the rest being subordinate clauses. Each of the linkage types is claimed to be associated with certain constraints. Coordinate structures, for example, are subject to the Coordinate Structure Constraint (Ross, 1967), whereas subordinate structures have to show a hierarchical relationship between clauses: e.g., a subordinate clause may be embedded within a main clause, where it fills the role of a peripheral argument, such as Time, Place, or Manner.

The concepts of this dichotomous approach have been adopted by linguists for generations, and have been applied to languages of many different families. Like most 'classical' categories, the concepts of coordination and subordination are assumed to be criterially defined, and to exhibit no overlap. In actual practice, however, when one strays very far from the 'prototypical' usages of such categories, it becomes very difficult to decide whether clauses have 'equal' or 'unequal'

status, as there have been few attempts to specifically define the criteria needed to make such a distinction. As a result of this lack of specific criteria, problems concerning the putative sharp distinction between coordination and subordination have arisen. Linguists have started to question the validity and universality of many aspects of this approach.

Reference to the work of several authors illustrates the problems of the traditional approach. Kuno (1973), for example, has argued that the dichotomy approach should be replaced by a continuum approach, in which the concepts of coordination and subordination are not treated as either/or phenomena, but as scalar phenomena. Haiman and Thompson (1984) have argued that neither the dichotomy approach nor the continuum approach is satisfactory, since both treat a multidimensional phenomenon as a unidimensional one. The notion of 'subordinate clause', for example, refers to more than a single grammatical category. Its treatment as one single grammatical category 'has caused a great amount of difficulty for grammarians', especially for those who are 'interested in language universals' (Haiman and Thompson 1984: 520). Others (e.g., Franklin 1971; Thurman 1975; Roberts 1988) have pointed out the difficulty in maintaining a sharp two-way distinction between coordination and subordination in the analysis of Papua New Guinea languages with switch-reference (SR) constructions, as SR may sometimes be

3

identified with coordinate structures by some syntactic rules, and sometimes may be identified with subordinate structures by other syntactic rules.

Scholars using the dichotomy approach have also encountered difficulty in analyzing linkage types in Mandarin complex sentences. For example, the debate on the linkage situation in complex sentences like (1) has lasted for decades.

(1) *Ta   pao de hen   kuai.*

    3sg run DE very fast

    'S/he runs very fast.'

Agreement seemingly cannot be reached regarding whether the first clause *ta pao de* 's/he runs', or the second clause *hen kuai* 'very fast' constitutes a subordinate clause. Such a difficult situation seems to be caused by the lack of specific, defining criteria offered by the traditional approach. Other problems appear to result from the fact that previous scholars working on Mandarin clause linkage have taken the concepts of coordination and subordination as given, and have tried to impose these concepts on various syntactic structures in Mandarin, where the concepts do not seem to fit. A critical review of previous studies on Mandarin clause linkage will be presented in Chapter Two.

1.2 The Current Study

This dissertation is a case study of Mandarin complex sentences through theoretical analysis and empirical research using a new approach. It investigates how clauses are syntactically linked to form complex sentences in Mandarin. Application of the theory chosen will, in turn, clarify Mandarin clause linkage and test the universality of the theory. The term 'clause' is defined in this thesis as a syntactic structure that makes a predication. It must contain some kind of predicate plus required argument(s).

As previously indicated, linguists in the past have adopted the traditional, dichotomous approach in the analysis of Mandarin Chinese and have encountered difficulties in their analysis. It will be shown in Chapter Two that due to the special characteristics of the language, none of the previous attempts, in spite of differences in their approaches, has been able to offer an entirely satisfactory solution to the puzzles that the language has presented to us, as far as clause linkage is concerned. There is lack of control, clarity and comprehensiveness in this area. This situation demands the use of a different approach in analyzing Mandarin complex sentences.

The present study is designed to fill a gap in the understanding of the syntactic structure of Mandarin complex sentences. Further, the theoretical contribution of the study will lie in its addition to the understanding of work on

5

language universals. It will test the range of applicability
of the theory used in this dissertation through the testing of
its application to Mandarin. Whatever the test results turn
out to be, they should contribute to the theory of Chinese
grammar in particular, and the theory of language universals
in general.

1.3 Choice of Theory

The selection of the theory to be used in this
dissertation is based on these factors. Not only must it
serve as the foundation for analysis, but also it must be a
basis for critical examination. More specifically, the theory
used in this dissertation must be designed to search for
language universals and have a record of success in its
application to the study of a diverse variety of languages.
It must be conceptually powerful, unambiguous and specific in
its statement for effective application.

Role and Reference Grammar (hereafter RRG), developed by
Foley and Van Valin (1984), appears to be an appropriate
choice.   Addressing many aspects of inter-clausal and
intra-clausal syntax (see the discussion of this theory in
Chapter Three), it has already been successfully applied to a
wide variety of languages of many different families in Foley
and Van Valin's study (1984).   Aimed at achieving
universality, RRG is one of the first theories to emerge that
has offered specific theoretical and analytical guidelines for

the systematic study of clause linkage relations in complex sentences. It is also a well-articulated theory that attempts to offer explanations of linkage phenomena from a synthetic view of the syntactic, semantic, and pragmatic interactions of clauses in complex constructions. The strength of RRG is revealed in two ways when compared with the traditional approach. First, it offers a richer set of concepts for an examination of a wider range of construction types. For example, it allows nine distinct linkage types, rather than just two. Second, the nine distinct linkage types are well-defined by a set of specific criteria. In practice, this should leave no room for ambiguity: for any given construction, one should be able to quickly determine its linkage type by a series of specific tests. As such, it may offer considerable insight in dealing with the residual problems present in previous accounts of Mandarin clause linkage (see Chapter Two for the literature review). There are some limitations to the theory which will be discussed later.

Mandarin Chinese has a noteworthy characteristic which is relevant to the use of RRG. Most of the languages to which the theory has so far been applied are rich in bound morphology, and most of the grammatical categories that are crucial in identifying different types of clause linkage are overtly marked in those languages. Mandarin Chinese, on the other hand, is a strongly isolating language, with very little

bound morphology. Therefore, applying RRG to such a language will pose a great challenge to the theory; this promises to be of theoretical importance.

On balance, the merits of RRG appear to be sufficient for its application here. A discussion of its strengths and limitations when applied to Mandarin will be included in this dissertation.

1.4 The Data Base

The data used in this study include both oral and written examples. The oral examples consist of data collected from daily conversations among native Mandarin speakers, and of personal narratives of Mandarin speakers recorded by the author during her six weeks' field trip to China in 1993. The informants from whom the oral data were taken are people of at least twenty years of age. Most of them have never left China, although a few have been in Canada for two or three years. The purpose in choosing to collect data from people who are over twenty is to make sure that the informants have roughly the same level of maturity and proficiency in their use of the language. The written examples include data taken from recent Chinese newspapers, from novels written by contemporary authors, and from works by other linguists. Data analysis in this study will be descriptive in nature, and will include only qualitative measures.

1.5 Method

In order to identify different linkage types in the data collected, possible operators in Mandarin will be investigated first. Foley and Van Valin (1984) have identified a number of universal operators, including illocutionary force, evidentiality, tense, status, modality, aspect, etc. These operators are claimed to have different scope relations. Illocutionary force, for example, has all the other operators and the full clause under its scope; therefore, it is labelled a peripheral operator. Aspect, on the other hand, has only the predicate, usually a verb, under its scope, and it is labelled a nuclear operator. The scope of each operator is utilized as a criterion by Foley and Van Valin to determine different juncture-nexus types in the languages they have studied.

As Mandarin Chinese is an isolating language with very few bound morphemes, clauses tend to be linked without having overt morphemes to indicate the relationship between them, particularly towards the stronger end of the linkage hierarchy. This investigation will begin with weakly-linked clauses, where overt markers of linkage type can be located and identified, and will then proceed to clauses without any overt markers. To identify linkages which are not overtly marked, reliance will be placed on the semantic context in which the clause occurs, and on intuitive judgements backed by substantial experience with the Chinese language and culture.

In order to apply the RRG theory for the analytical and empirical treatment of Mandarin complex sentences, it will be necessary to develop a series of diagnostics for control of the study. In part these diagnostics may already be provided in the RRG theory, but additional work will be needed to supplement this research base.

To provide specific direction to the development of the dissertation, two research questions are of fundamental importance. They are:

1. What kind of linkage relations are there in Mandarin complex sentences?

2. How are the syntactic properties of these linkage relations to be explained?

1.6 Organization of the Dissertation

This dissertation is composed of seven chapters. The present chapter provides the basic framework. Its topics cover the purpose, the justification, and the layout plan for the whole thesis. Chapter Two contains a literature review. It discusses in detail: a) previous approaches to various complex sentence constructions in Mandarin Chinese, and b) problems associated with these previous analyses. Chapter Three outlines the theoretical framework that is used in this study. The relevant concepts regarding clause-internal and cross-clause phenomena will be defined, summarized, and discussed. Chapter Four covers the analysis of clause

structure in Mandarin, with an emphasis on the examination of the system of predicate semantics and event types. An analysis of possible operators at different levels of clause structure in Mandarin is carried out in Chapter Five. Next, Chapter Six is the major focus of this dissertation; it provides the diagnostic examination of linkage types of various kinds in Mandarin. Lastly, a concise summary and conclusion for the dissertation is given in Chapter Seven.

Chapter 2

Literature Review

2.0 Introduction

This chapter provides a critical review of works on Mandarin clause linkage by a variety of authors. Many scholars have taken the concepts of coordination and subordination as given, and have applied them without question to complex sentences in Mandarin. They have tried to classify the various types of complex constructions in Mandarin into the categories of coordination or subordination. They differ in their interpretation of these categories, and this leads to some variety in their analyses of complex constructions. They also differ in the degree of caution they display in their analysis of certain sentence types. The writings of these scholars have established a traditional position, or orthodoxy, in the field of Mandarin clause linkage (cf. Chao 1968, Chu 1983, Henne et al 1977, Lin 1989, Li & Thompson 1973, Tiee 1986, etc.).

A radically different approach is provided by Li and Thompson (1981). Their work provides a descriptive theory which completely avoids use of the concepts of coordination and subordination in the analysis of Mandarin clause linkage. Instead, new terms, purely descriptive in nature, have been

created to replace the traditional terms.

The RRG position is taken by Liang (1986) and Hansell (1993) in their analysis of Mandarin complex sentences. It will be shown that the results of their investigations are incomplete, and therefore are unsatisfactory.

Following the summarization and critical examination of the selected works, an overall summary will identify the major problems that persist for work in the field of Mandarin clause linkage.

2.1 Authors

2.1.1 The Procrustean Approach of Tiee

Tiee (1986) appears to hold an extreme view, in the sense that he has applied the traditional concepts of coordination and subordination in the analysis of every complex sentence type in Mandarin. He has grouped three complex constructions, which he has labelled 'simple conjunctions', 'correlative conjunctions', and 'adverbial conjunctions', under the category of coordination. Constructions that contain relative clauses, adverbial clauses, or nominal clauses are grouped under the category of subordination. Serial verb constructions, telescopic (or pivotal) sentences, and topic-comment constructions are also analyzed as examples of subordination. In Tiee's account, different sentence types in Mandarin are either subsumed under the category of coordination or under the category of subordination; there are

13

no cases that are considered to be intermediate types, or cases that cannot be explained by the use of the traditional concepts.

Tiee briefly defined coordination as the syntactic device that links two or more syntactic units of equal rank, and subordination as the syntactic device that links structures of unequal rank. Adverbial conjunctions were analyzed as coordinate structures in his work. An example of such a construction is provided in (1) (Tiee 1986: 241):

(1) *Wang xiansheng you   qian   le, Wang taitai jiu*

    Wang Mr.   have money RTM Wang Mrs.   then

              bu   zuoshi le.

              NEG work   RTM

    'Mr. Wang has become rich, so Mrs. Wang does not

           work any more.'

According to Tiee, the highlighted adverbial conjunction marker, placed before the predicate of the second clause, marks a coordinate relation between the two clauses. It indicates that the second clause expresses the result of the action carried out by the first clause. Without the presence of *jiu* 'then' the two clauses, out of context, could be viewed as representing two independent events.

According to Tiee (1986: 253), an adverbial clause in a subordinate construction in Mandarin is usually marked by a function word known as a subordinator. The main clause in the same sentence may contain an associated adverb occurring

14

before the predicate. Tiee provided the following example to illustrate his point (p. 256):

(2) *Ta likai jia* **yihou**, *tade fumuqin* **jiu** *shengbing le.*

he leave home after, his parents then be-sick RTM

'After he left home, his parents became sick.'

Yihou 'after' is analyzed as a subordinator, signalling that the first clause is a subordinate clause expressing time. *Jiu* 'then' in the main clause is regarded as an associated adverb. Together they signal the construction as being one of subordination.

The problem with this type of analysis is that in Mandarin there are cases where subordinators do not need to occur overtly in sentences like (2). In fact, the presence of *yihou* 'after' in (2) is optional. When it is deleted, the whole sentence still maintains more or less the same meaning as when it is present. However, a problem arises when the so-called subordinator in (2) is deleted, as the sentence will then have the same surface form as that of example (1), which was analyzed as a coordinate construction by Tiee. Note example (3) with the subordinator deleted:

(3) *Ta likai jia,* *tade fumuqin jiu* *shengbing le.*

he leave home, his parents then be-sick RTM

'(Right after) he left home, his parents then

became sick.'

How would Tiee analyze a sentence like (3)? Is *jiu* 'then' an adverbial conjunction linking two coordinated clauses in (3),

or is it an associated adverb? In other words, is sentence (3) a coordinate structure or a subordinate structure? If example (3) is analyzed as a subordinate construction, what criteria will Tiee use to decide that the two clauses in (3) are of unequal rank? Similarly, if it is treated as a coordinate construction, what guideline will Tiee follow to determine that the two clauses in (3) are of equal status? Tiee did not provide an answer to any of these questions, other than mentioning that there exists a logical relationship between two clauses in an adverbial conjunction such as (1). This is certainly not a satisfactory explanation, as it is well known that there exists some logical relation between any two linked clauses in a complex sentence, be it a subordinate construction or a coordinate construction in traditional terms. Indeed, the primary function of clause linkage seems to be that of marking the existence of such logical relations. It is clear that Tiee has distinguished two types of adverbial clauses on formal grounds; i.e., the presence of certain subordinators is crucial in Tiee's analysis. This method is apparently inadequate and generates confusion among readers, as it has been demonstrated that there exist many complex sentences in Mandarin, especially in oral discourse, where the linkage device is not overtly marked. Such sentences certainly cannot be dealt with by Tiee's method.

2.1.2 The Centre Diagnostic of Lin

Like Tiee (1986), Lin (1989) has classified various complex sentences under the categories of coordination and subordination by following more or less the same criteria, although different terms were used in Lin's work. The 'centre' diagnostic was used in her work, but a definition for 'centre' was not provided. For Lin, a coordination is a construction which contains clauses such that each is a centre by itself, and each clause has approximately the same functions as the whole construction. A subordination, on the other hand, is a construction in which only one of the clauses constitutes a centre, and the rest are modifiers in the sense that they modify the centre by providing background information. Accordingly, choice-type sentences, correlative conjunctions, etc., are grouped as coordinations. Other complex sentence types, such as different kinds of serial verb constructions, adverbial conjunctions, conditionals, and concessive constructions are grouped as subordinations. What distinguishes her analysis from that of Tiee (1986) is her account of what Tiee calls adverbial conjunctions. In Lin's account, adverbial conjunctions are one type of temporal construction in which the event expressed in the first clause is tense iconic; i.e., the order of the clauses reflects the order of occurrence of the events described. The first clause, according to Lin, indicates the time at which, or the condition under which, the second event takes place. As such,

17

it constitutes a modifier rather than a centre. Based on this, example (1) from Tiee (1986), repeated in (4), is viewed as a subordinate construction in Lin's treatment, as it can be seen that the order of the clauses reflects the order of the events, and that the first clause indicates the condition under which the event expressed in the second clause takes place.

> (4) *Wang xiansheng you   qian   le,   Wang taitai jiu*
>
> Wang Mr.   have money RTM   Wang Mrs.   then
>
> *bu   zuoshi le.*
>
> NEG work   RTM
>
> 'Mr. Wang has become rich, so Mrs. Wang does not
>
> work any more.'

Another type of sentence, called the commentary sentence, was analyzed as a coordinate construction in Lin's account. Note example (5) (Lin 1989: 62):

> (5) *Ta jiran bu   lai   kan ni,   weishenme ni   qu kan ta.*
>
> he since not come see you, why   you go see he
>
> 'Since he does not come to visit you, why should you
>
> visit him?'

According to Lin, the two clauses in (5) constitute two centres, and therefore stand in a coordinate relationship. Without clarifying how she identified a centre, she argued that the first clause is a comment which serves as a starting point for the speaker to bring out his/her opinion, expressed in the second clause. MacWhinney (1977: 152-168) has argued

18

that a starting point may function like a topic. According to this view, a clause expressing a comment which serves as a starting point should not be in a coordinate relation with the following clause that expresses the speaker's opinions, as the former provides some kind of background information for the latter.

Lin did not define, nor did she provide any criteria for the identification of, the concepts 'centre' and 'modifier'. Her judgement of them appears to be based on intuition only. Therefore, she could not explain in what way example (4) is different from (5) in terms of linkage type.

The problem with Lin's analysis is the same as that in Tiee's (1986): neither has provided specific criteria for establishing the distinction between clauses that exhibit a coordinate relation and clauses that exhibit a subordinate relation. While other scholars use diagnostics such as the syntactic order of the linked clauses (Henne, Rongen & Hansen 1977), and the topicalization test (Li & Thompson 1973) to identify linkage types (see the discussion in the following), both Tiee and Lin appear to rely on their own intuitive interpretation of the traditional concepts in their analyses, without providing specific criteria for their general line of approach.

2.1.3 Accent, Intonation and Pauses

Many authors have noticed the important role that intonation and pauses play in the make-up of complex sentences. Henne, Rongen and Hansen (1977, hereafter HRH) have pointed out that in Mandarin sentences where there are no overt connectors present, pause and intonation are the only clues to rely on for the identification of the different types of complex sentence. For example, the same string of words with different phonological signals constitute different types of constructions, as in (6) and (7) (p. 96):

(6) *Ni   qu, wo bu   qu.*

you go, I   not go.

'If you go, I won't go.'

(7) *Ni   qu; wo bu   qu.*

you go   I   not go

'You go, and I don't.'

Example (6) is analyzed as a subordinate construction, with the first clause subordinate to the second; while example (7) is treated as a coordinate construction. HRH used both phonological signals and the order of the clauses to determine the syntactic status of the clauses in (6) and (7). They argued that in (6) the pause[1] is optional, but in (7) it is obligatory. They further pointed out that the reversal of the

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[1]   The term 'pause' in this context refers to a perceived hiatus in the flow of speech, corresponding to a major structural boundary. It is the perception of hiatus that is important here, rather than physical (i.e., acoustically measurable) reality.

order of the two clauses in (6) results in a change in meaning, whereas in (7) it will not change the basic meaning of the sentence.

Further, HRH observed that even when there is an overt connector in the sentence, due to the somewhat vague and abstract nature of certain connectors, phonological signals such as intonation and pause are the decisive factors for a final interpretation of syntactic construction types. To illustrate, two examples from HRH (1977: 96) are provided in (8) and (9)[2]:

(8) *Ni qu; danshi wo bu qu.*

　　you go　but　　I　not go

　　'You go, but I don't.'

(9) *Ni qu. Danshi wo bu qu.*

　　you go　but　　I　not go

　　'You go. But I don't.'

They stated that the word *danshi* 'but' can be a coordinator as in (8), or a sentence starter as in (9). Its interpretation relies on the phonological signals that the speaker has used. The first clause in example (8) is said with a slightly higher pitch. There is no drop in pitch level and no final pause before the speaker proceeds to produce the second cause. However, the two sentences in example (9) are said with the same level of pitch, and each has a pitch drop and a final

---

[2]　The semantic difference between (8) and (9) is subtle. Example (9) suggests a higher degree of determination on the part of the speaker than (8) does.

21

pause at the end. Such prosodic features as pause and intonation determine whether the two units constitute a whole, as in (8), or separate sentences, as in (9).

HRH tried to use prosodic signals plus clause order to determine linkage types. With appropriate prosodic signals, when the order of any two connected clauses is reversible without producing a meaning change, the sentence is coordinate, otherwise it is subordinate. These two criteria, however, are often in conflict with each other in real practice. Example (1) from Tiee (1986), for instance, must be uttered with an obligatory pause between the two clauses, and the pause criterion of HRH would apparently indicate that the example is a coordinate sentence. However, since the order of the two clauses cannot be reversed without producing a great change in meaning, the sentence would have to be analyzed as an example of subordination according to HRH's clause order criterion. Contradictory factors like these do not seem to be well handled by the traditional approach, and have forced scholars such as HRH to recognize some of its criteria while ignoring others in their accounts.

2.1.4 Early work by Li and Thompson

Li and Thompson (1973, hereafter LT) shared the views of this group in the early 1970s. They applied the traditional theory to the analysis of one type of Mandarin serial verb construction, which has a configuration of the following form:

22

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(10) (NP)        V (NP)              (NP)     V     (NP)
```

   Subject   Predicate 1   Predicate 2

In this construction type the two predicates, each expressing

a separate event or state of affairs, are juxtaposed to

express an overall event or state of affairs. There is no

overt marker linking the predicates that would serve to signal

the type of linkage relation existing between them. Due to

this situation, the relationship between any given linked

predicates, when viewed in isolation, may be perceived quite

differently by different listeners. Note the following

sentence from LT (1973: 96):

    (11) *Ni   gui-xialai qiu Zhang-san*

         you kneel-down beg Zhang-san

This example is ambiguous, both in structure and in meaning.

Structurally, the sentence can be understood as a construction

of subordination or of coordination. Hence LT suggest that it

may have two different deep structures, shown by the diagrams

as follows:

(12) a.

```
                    S
                  /   _____
                 /     \          \
               NP      VP          S
                |       |         /  \
                |       |        /    \
                |       |      NP      VP
                |       |       |      /  \
                |       |       |     /    \
                |       |       |    V      NP
                |       |       |    |      |
               Ni    gui-xialai (ni) qiu  Zhang-san
               you   kneel down  you  beg  Zhang-san
```

b.

```
                        S
                    ___/ \___
                   /         \
                  S           S
                  |           |
                  |           |
            Ni gui-xialai   ni  qiu Zhang-san
            you kneel down  you beg Zhang-san
```
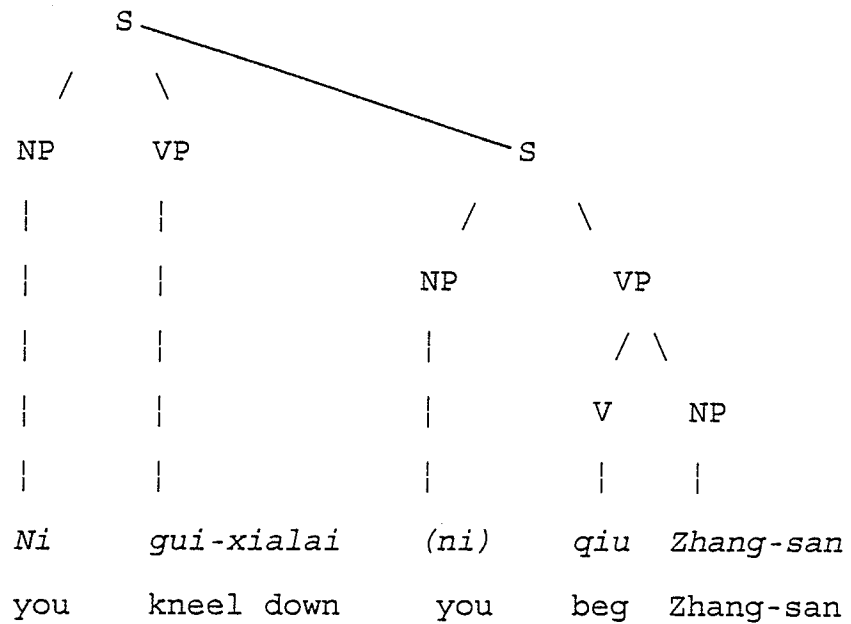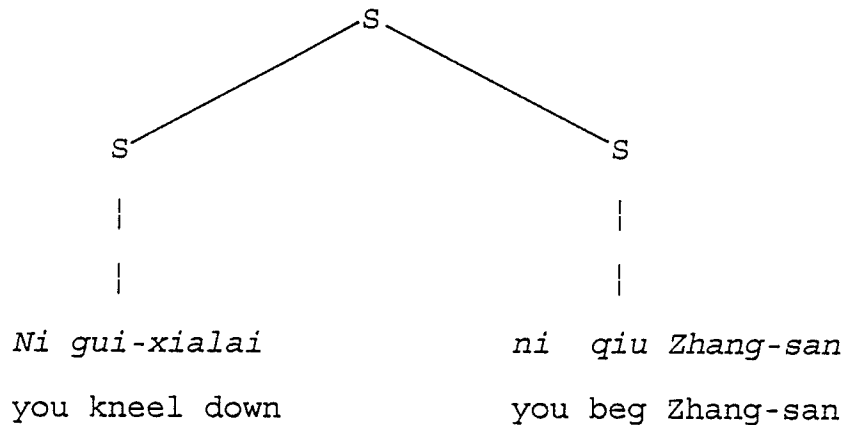
Diagram (12a) contains a main clause and a subordinate clause, and indicates that there is an embedding relationship between the clauses. Sentence (12b) contains two coordinated clauses, a construction which expresses an independent or a parallel relationship between the clauses. Different structures generate different semantic readings. For example, (12a) will render a purpose reading:

(13) 'You knelt down in order to beg Zhang-san.'

(Purpose)

Sentence (12b), on the other hand, has the following possible readings:

(14) 'You knelt down and then begged Zhang-san.'

(Consecutive)

(15) 'You knelt down begging Zhang-san.'

(Simultaneous action)

(16) 'You knelt down and begged Zhang-san.'

(Alternating action[3])

LT stated that what interpretation the listener arrives at will depend on the context in which the sentence is produced, and the world-view that the listener currently possesses.

2.1.4.1 The Topicalization Test

Several syntactic tests have been designed by LT in support of their analysis of (11). One of the major ones is a test of topicalization, which was used as a formal movement rule in LT. They argued that if (11) is a subordinate construction, the object 'Zhang-san' of the second verb *qiu* 'beg' can be topicalized, as in (17). However, if (11) is a coordinate structure, topicalization of 'Zhang-san' is not possible, as in (18):

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[3] The term 'alternating action' was used in Li and Thompson's (1973) study to refer to the situation in which actions expressed in a serial verb construction occur in turn .

(17) *Zhang-san, ni gui-xialai qiu.*

Zhang-san you kneel-down beg

'Zhang-san, you kneel down to beg.'

(Purpose)

(18) a. '*Zhang-san, you kneel down and then beg.'

(Consecutive)

b. '*Zhang-san, you kneel down begging.'

(Simultaneous action)

c. '*Zhang-san, you kneel down and beg.'

(Alternating action)

The results of this test, argued by LT, are expected, as it is well known that elements can be extracted from a subordinate structure, but not from a coordinate structure, this being the simple consequence of the Coordinate Structure Constraint (Ross 1967).

2.1.4.2 A Contribution by Dai

Dai (1990) has provided additional evidence to support LT's (1973) analysis by pointing out that the object of the first predicate, if present, can also be topicalized in a subordination reading, but not in a coordination reading, as in (19) and (20). The ungrammaticality of the latter reading, again, results from a violation of the Coordinate Structure Constraint of Ross (1967).

(19) *Ta jian qilai na   gen gunzi da ren.*

　　　he pick up   that CL stick hit people

　　　'He picked up that stick in order to hit people.'

　　　　　(Purpose)

　　　'He picked up that stick and then hit people.'

　　　　　(Consecutive)

(20) *Na   gen gunzi, ta jian qilai da ren.*

　　　that CL stick, he pick up   hit people

　　　'That stick, he picked up in order to hit people.'

　　　　　(Purpose)

　　　'*That stick, he picked up and then hit people.'

　　　　　(Consecutive)

2.1.4.3 Issues Raised by the Topicalization Test

The problem with this topicalization test is that it is
not always reliable. Topicalization of the object sometimes
works with serial verb constructions with the purpose reading,
as seen above, but sometimes it does not, and sometimes it may
work with constructions without the purpose reading, as will
be shown by the following examples:

(21) *Wo pao chu han   lai le.*

　　　I ran exit sweat DIR RTM

　　　'I ran and as a result I produced sweat.'

　　　'I sweated as a result of running.'

The translation indicates that there is no purpose reading in
(21), yet topicalization of the object is possible:

(22) *Han,*   *wo pao chu   lai le.*

     sweat, I   run exit DIR RTM

     'The sweat, I produced it as a result of running.'

Topicalization of the second object of Dai's example in (19), on the other hand, results in an ungrammatical sentence, even though the sentence has a purposive reading:

(23) **Ren,*   *ta jian qilai na   gen gunzi da.*

     people, he pick up   that CL stick hit

     '*People, he picked up that stick in order to hit.'

          (Purpose)

Note that Dai's original example in (19) has two objects: topicalizing the first object is possible, as seen in (20), but topicalizing the second is impossible, as in (23). Is it because of the presence of the first object that topicalization of the second object fails? The answer to this is no. Note the examples in (24) and (25):

(24) *Women kai hui   taolun na   ge wenti.*

     we   hold meeting discuss that CL problem

     'We held a/the meeting to discuss that problem.'

          (Purpose)

     'We held a/the meeting and discussed that problem.'

          (Consecutive)

(25) *Na   ge wenti,   women kai hui   taolun   le.*

that CL problem, we   hold meeting discuss RTM

'That problem, we held a/the meeting to discuss it.'

(Purpose)

'*That problem, we held a/the meeting and

discussed it.'

(Consecutive)

The interesting thing about (24) is that one can only topicalize the second object, but not the first, as seen in example (26):

(26) **Hui,   women kai taolun   na   ge wenti.*

meeting, we   hold discuss that CL problem

'*The meeting, we held to discuss that problem.'

(Purpose)

It is clear that it is not the presence of the first object that blocks the application of the test to the second object in (23), nor is it the presence of the second object that causes the failure in applying the test to the first object in (26). It seems that whether an object can be topicalized is not related to whether the construction is purposive or not. This hypothesis may be further supported by example (27):

29

(27) *Zhe   ge haizi zhao   wenti   wen Zhang-san.*

   this CL child look-for question ask Zhang-san

   'This child looked for questions to ask Zhang-san.'

               (Purpose)

   'This child looked for questions and then asked

            Zhang-san.'

            (Consecutive)

As can be seen, one of the readings that sentence (27) has is purposive and must therefore contain a subordinate clause, as analyzed by LT. However, neither of the objects in (27) can be topicalized, as is shown in (28):

   (28) a. **Wenti,   zhe   ge haizi zhao   wen*

         question, this CL child look-for ask

            Zhang-san.

            Zhang-san

         '*The questions, this child looked for to ask

            Zhang-san.'

            (Purpose)

   b. **Zhang-san, zhe   ge haizi zhao   wenti*

      Zhang-san, this CL child look-for question

            wen.

            ask

         '*Zhang-san, this child looked for questions to

            ask.'

            (Purpose)

Similarly, example (29) has only one object, but again topicalization fails to apply, as in (30):

(29) *Ta mai huoche piao hui jia.*

   3sg buy train ticket return home

   'He bought a/the train ticket in order to return

       home.'

           (Purpose)

(30) **Huoche piao, ta mai hui jia.*

   train ticket, he buy return home

   '*The train ticket, he bought to return home.'

Since all the examples in (11), (19), (24), (27) and (29) are serial verb constructions containing a purpose reading, and therefore subordinate constructions according to LT (1973) and Dai (1990), there seems to be no reason why the topicalization test succeeds in some cases and fails in others. Further, neither can the previous accounts explain why the test is able to apply to the serial verb construction without a purpose reading, as in (21). Given this situation, one possible conclusion about the test may be that it is not a reliable test for subordination. Although addressing the concerns raised by the topicalization test is outside the scope of the present study, one might at least conclude that some of these putative examples of subordination do not in fact contain subordinate structures.

2.1.5 Controversy Surrounding Serial Verbs

Another seemingly endless controversy among Chinese linguists about the nature of clause linkage concerns serial verb constructions containing the linking particle *de*, as in (31):

(31) a. *Ta lai de hen zao.*

3sg come DE very early

'He came very early.'

b. *Wo zou de hen lei.*

I walk DE very tired

'I was very tired from walking.'

Each example above contains two verbal predicates, one before *de*, labelled V1; one after *de*, labelled V2. *Hen zao* 'very early' and *hen lei* 'very tired' are verbs in Mandarin (cf. Chao 1968, Teng 1975, Li & Thompson 1981 etc.), as they can stand alone to function as a verb and can be negated, as shown in (32):

(32) a. *Ta   hen zao.*

3sg very early

'S/he is very early.'

b. *Ta bu zao.*

3sg NEG early

'S/he is not early.'

Based on the semantic interpretations of these kinds of constructions, those like (31a) are traditionally labelled as descriptive complement constructions, and those like (31b) as

32

resultative complement constructions. There have been basically two opposite hypotheses regarding the linkage types of the above examples. One view, held by Chao (1968), Tai (1973), Tang (1977), Li and Thompson (1978, 1981), Chu (1983), C-R Huang and Mangione (1985), and C-R Huang (1990), claims that V1 in (31) is in the sentential subject; V2, on the other hand, is the matrix predicate. This hypothesis is known as the Primary Predicate Hypothesis (PPH). The opposite view holds that V1 in (31) is the main predicate, while V2 is a subordinate predicate (see Mei 1972, 1978, Henne, Rongen & Hansen 1977, Paris 1979, Zhu 1982, C-T Huang 1982, Ross 1984, Li 1985, C-T Huang 1988). This view is known as the Secondary Predicate Hypothesis (SPH). Each side has provided seemingly plausible arguments in favour of their analyses, which are outlined in the following section.

2.1.5.1 The A-not-A Test

PPH adherents have used the test of A-not-A question formation as evidence in favour of their hypothesis. They pointed out that when a *de* construction is in an A-not-A question form, it is V2 that will be put in an A-not-A form, but not V1, as shown in (33):

(33) a. *Ta chang de lei-bu-lei?*

he sing DE tired-not-tired

'Was he tired from singing?'

33

b.*_Ta chang-bu-chang de lei_?

he sing-not-sing DE tired

PPH adherents argued that, since in Mandarin only a main verb can appear in an A-not-A form, V2 must be a main predicate while V1 is a reduced predicate of some kind; hence the first clause is a dependent clause and the second the main clause.

This argument was argued against by SPH adherents, who presented evidence that A-not-A forms can also occur with subordinate verbs, therefore it is not a legitimate test for main predicates. The clear counterexample to PPH's argument provided by C-T Huang (1988: 279) is shown in (34), where the A-not-A form occurs in the lower clause:

(34) _Ni   renwei tamen hui-bu-hui   lai_?

You think they will-not-will come

'Do you think that they will come or do you think they won't?'

In reply to C-T Huang (1988), C-R Huang (1990) first pointed out that all main verbs in Mandarin are capable of being in the A-not-A form. He then argued that, although C-T Huang was right in claiming that the A-not-A form can involve subordinate verbs, his argument however, cannot predict when a subordinate verb may appear in an A-not-A form, as only verbs that are subordinate to verbs of cognition (e.g. think, know, etc.) can be in an A-not-A form. Since all the main verbs can be put in an A-not-A form, whereas only verbs subordinate to verbs of cognition can appear in such a form,

34

C-T Huang's (1988) argument cannot predict under what circumstance a main verb cannot take an A-not-A form, while a subordinate verb can.

2.1.5.2 The -*le* Suffix Test

Another argument offered by PPH adherents has to do with the attachment of the aspect marker -*le*. It appears that the -*le* suffix can only attach to V2 in a *de* construction, as in (35):

    (35) a. *Ming gaoxing de tiao-le   qilai.*

          Ming happy   DE jump-PERF up

          'Ming was so happy that he jumped up.'

      b.*Ming gaoxing-le de tiao qilai*

          Ming happy-PERF DE jump up

This points to the subordinate status of V1, according to the PPH adherents.

Again, their argument was argued against by C-T Huang (1988), a SPH supporter. He pointed out that the -*le* suffix signals boundedness, attaching to verbs that express bounded events only. Since there are main verbs that do not allow the attachment of -*le* due to the fact that they do not express bounded events, the aspect attachment is independently motivated and does not prove that V1 is a reduced predicate. Therefore, he argued, the reason why V1 is not able to take -*le* is because it does not express a bounded event when it is followed by some descriptive comments, or comments regarding

35

the result expressed in V2.

In response to C-T Huang (1988), C-R Huang (1990) first pointed that V1 simply cannot have any aspect marker, not just -*le*, whereas V2 can. He argued that C-T Huang may be correct in saying that V1 cannot be suffixed by the -*le* aspect marker due to its unbounded nature, however, this argument cannot explain why the attachment of any aspect marker only involves V2 but not V1. C-R Huang (1990) further pointed that C-T Huang (1988) could not provide counter evidence showing that an aspect marker is required to be suffixed to V1, but is prohibited from being suffixed to V2. This is the false situation that C-T Huang's PPH arguments appeared to predict.

2.1.5.3 The Binding Condition C Test

Binding Condition C is another test offered by PPH defenders. In example (36):
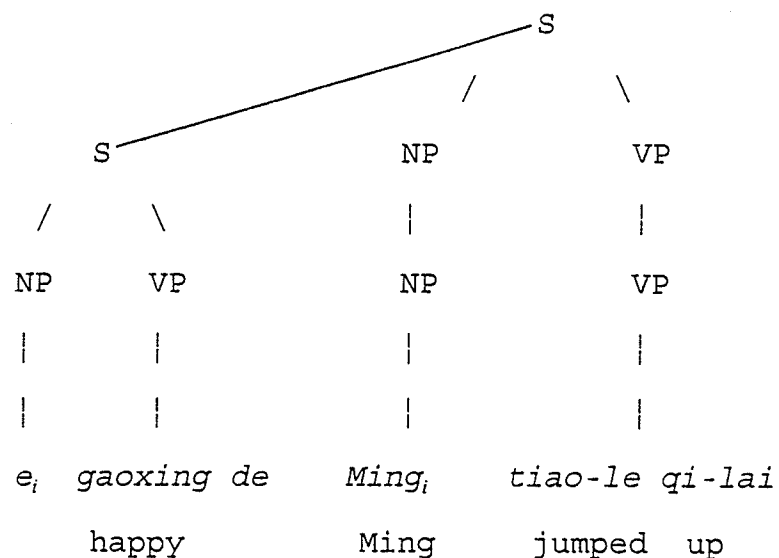
(36) *Gaoxing de Ming tiao-le   qilai*

     happy   DE Ming jump-PERF up

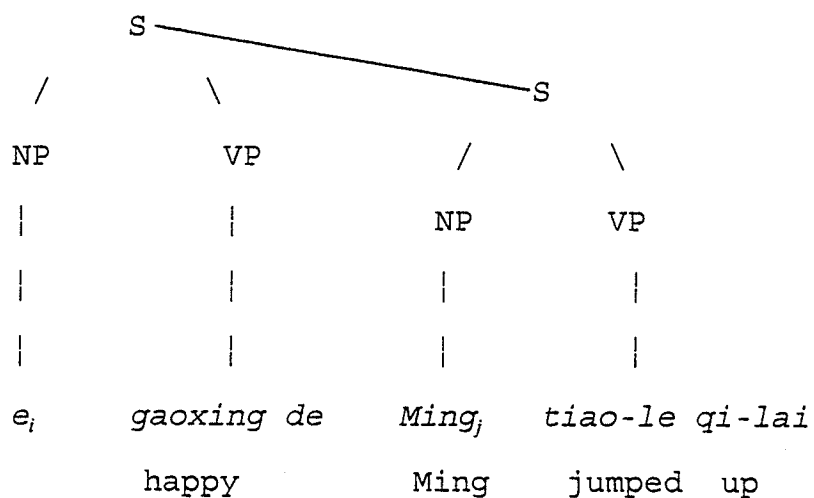   'Ming was so happy that he jumped up'

the subject of V1 is empty; however, it can be understood that the subject is deleted under coreference with the subject of V2. In this case, argued PPH advocates, V2 should be analyzed as a primary predicate, otherwise Binding Condition C will be violated, as is shown in (37):

36

(37)

```
                                          S
                                       /     \
        S                            NP       VP
      /   \                          |        |
    NP     VP        NP       VP
    |      |         |        |
    |      |         |        |
    e_i  gaoxing de  Ming_i  tiao-le qi-lai
         happy       Ming    jumped  up
```

Once more, SPH followers have attempted to argue against
such reasoning. C-T Huang (1988) pointed out that the empty
subject in (36) refers to an external causer in the previous
discourse. In this case, it is not coreferential with the
subject of V2, and Condition C is not violated. His position
can be represented by the following tree in (38):

(38)

```
              S
            /    \
          NP      VP        S
          |       |       /    \
          |       |      NP     VP
          |       |      |      |
                         |      |
          e_i  gaoxing de  Ming_j  tiao-le qi-lai
               happy       Ming    jumped  up
```

C-T Huang argued that since the empty subject in (36) is a
free zero pronoun referring to some external causer, Condition
C is not violated. In this case there will be no hinderance

if V1 is analyzed as a main predicate. However, he also suggested that a better translation for (36) would be '(It) got Ming so happy that he jumped up' (p. 293). Note that his translation clearly indicates that Ming is still the logical subject of *gaoxing* 'happy'. In this case, C-T Huang's explanation about the existence of an external cause appears to be irrelevant, as long as Ming is the logical subject of *gaoxing* 'happy'.

C-R Huang (1990) points out that arguments like the one offered by C-T Huang (1988) crucially depend on theory-internal argumentation drawn from the Government-Binding theory. As such, they are (p. 330)

> '... formally debatable. Even if fully vindicated, J. [C-T] Huang's (1988) negative arguments only demonstrate that the tests showing that V2 is the matrix are not absolute. As far as I can see, no theory-independent evidence has been offered to show that V1 is the matrix.'

2.1.5.4 Issues Regarding the PPH and SPH Dispute

What makes this debate between PPH and SPH followers so interesting is the fact that both sides seem to have offered plausible arguments for their respective hypotheses. However, neither has succeeded in convincing the opposite side of the merits of its arguments, although the debate has been carried on for decades. One possible explanation for such an open-ended situation may be found in the fact that both sides have restricted themselves to the traditional syntactic categories, and therefore are unable to offer any theory-neutral and

38

cross-linguistic explanations for the linkage type of *de* complex constructions.

2.1.6 Chao's Cautious Approach

Chao's (1968) approach to clause linkage in Mandarin is slightly different from that of the authors reviewed so far in terms of the degree of caution he showed in applying the traditional theory to certain complex constructions. He used the terms 'compound' and 'complex' sentences to refer to coordinate and subordinate sentences, respectively. Besides following the traditional definitions for coordination and subordination, Chao added some of his own interpretations concerning truth values of constructions in these two categories. He claimed that (1968: 122):

> 'a workable criterion for a sufficient condition for
> a complex sentence can be stated in terms of its truth
> value: In a compound sentence the truth value of the
> whole is a conjunction of the truth values of its
> constituent coordinate clauses; while the truth value
> of a complex sentence is taken as a whole and the
> constituent clauses may have different truth values
> from that of the whole sentence or may not even make
> sense as to truth value.'

He was very specific with some complex constructions, carefully grouping them into either compound or complex categories, and providing ample examples. However, when it came to the analysis of correlative constructions, he was rather vague and unclear. At one point in his account he classified constructions of concession, whose clauses are linked by two correlative adverbs, into the category of

subordination. Then he changed his mind and claimed that they should be in the category of coordination, after the truth value criterion was applied in their analysis. He mentioned that there is a split in the correlative constructions, some of them being coordinations, and some being subordinations. However, he did not demonstrate how the truth value test works in sorting out correlative constructions of different linkage status. As a result, it is not clear which correlative constructions are coordinate and which are subordinate with regard to his truth value criterion.

Chao was also careful in the treatment of various kinds of serial verb constructions. He claimed that they are an intermediate type between coordinate and subordinate constructions, but more like subordinate than coordinate constructions. Without clarifying what he meant by an intermediate type, Chao went on and stated that some serial verb constructions are coordinate constructions and many others are subordinate constructions, depending on the syntactic status of the clauses that they contain. For example, if one of the verbal expressions functions as a modifier, then the whole string of the serial verb construction is subordinate. Unlike Tiee (1986) and Lin (1989), who placed pivotal constructions into the category of subordination, Chao was very cautious, and did not try to classify them in terms of the traditional theory. Instead, he treated them as a separate group, distinct from the categories

40

of coordination and subordination.

2.1.7 Further Caution by Chu

Like Chao (1968), Chu (1983) also exhibited some caution in his account of complex constructions. Following Chao, he adopted the terms compound and complex sentences to refer to different linkage types in complex constructions. Although complex sentences are equal to subordinate sentences, compound sentences are not exactly equivalent to coordinate sentences. Chu claimed that 'strictly speaking, there are no coordinate conjunctions (such as the English and) for clauses in Mandarin Chinese' (1983:278). The term compound sentence is used to refer to constructions where 'it is impossible to determine if any of' the constituent clauses 'is structurally subordinate to any other' (1983:241). Again being vague and ambiguous like Chao (1968), Chu simply stated that some correlative constructions may be considered as coordinate, and some as subordinate. He did not make any effort to clarify exactly which category each individual correlative construction is subsumed under.

Various kinds of serial verb constructions are analyzed into different categories. Pivotal constructions, for example, were put in the category of subordination. Loosely bound clauses, equivalent to Li and Thompson's (1973) serial verb constructions mentioned above, are regarded as coordinate constructions.

2.1.8 Innovation by Li and Thompson

Li and Thompson's later (1981: 632) approach is entirely different from that of the contributions discussed so far, including their own position advocated in 1973. This later contribution views Mandarin sentence linking as splitting into two types, forward linking and backward linking. The former type refers to the situation where the first clause is always dependent on the second clause for its meaning to be complete; the latter refers to the situation where the second clause is dependent on the previous clause for its meaning to be complete. Accordingly, different complex constructions in Mandarin, whether they are overtly linked or not, were classified into either forward linking or backward linking types. This line of analysis, however, was not applied to various serial verb constructions. Serial verb constructions were discussed instead with the focus on what kind of messages were conveyed by the meanings of the different verbs involved in the constructions. For example, the emphasis of the analysis was laid on whether the two clauses in a serial verb construction express consecutive events or alternating events. The focus of examination was also placed on the kind of semantic relationship that holds between clauses in serial verb constructions; for instance, whether the second clause is interpreted as a description of manner or result relating to the action expressed by the first clause.

It is clear that the traditional concepts of coordination and subordination are literally ignored in this new innovative analysis.   Issues of sentence linking are explored and discussed instead in a purely descriptive manner, with little light shed on the theoretical issues involved.

2.1.9 The RRG Approach of Liang and Hansell

Liang (1986) and Hansell (1993) touched upon the analysis of clause linkage in Mandarin through the utilization of the RRG theory. Liang's study, for example, focused on various aspects of the zero pronoun by investigating its occurrence in two types of complex sentences, serial verb constructions and parallel constructions.   It appears that only selected construction types that were considered to be relevant to her discussion of zero pronouns were examined. For reasons which were not explained in her study, certain construction types, for example, the purpose construction to be discussed in 6.4 in the present study, were left out, even though they do have relevance for the discussion of zero pronouns. The category of subordination was not examined in her study either.

Although zero pronouns were analyzed in the context of two types of complex sentences by means of the RRG theory, her attention appeared to be heavily placed on analyzing zero pronouns, rather than on issues in clause linkage. Therefore, in identifying the linkage status of construction types in her study, she limited herself to the diagnostic of operator scope

only, without utilizing other equally important criteria. For example, such criteria as the nature of the syntactic embedding exhibited, the informational status of the linked clauses, the presence or absence of an intonational break, and the question of whether a peripheral argument is obligatorily shared or not, were ignored in her identification of the linkage types (see the relevant discussion in Chapter Six for the criteria mentioned here). Due to the limited criteria used in her analysis of the linkage relation in the two types of complex sentences, her suggestions concerning this area of research were incomplete, as she did not provide conclusive evidence to substantiate her argument.

Hansell's (1993) study of clause linkage in Mandarin was also incomplete. Like Liang (1986), he restricted himself to the study of a limited number of construction types, and with the application of operator scope as the only diagnostic in his identification of those types. Further, his discussion was directed to coordination and cosubordination only, with no mention of subordination.

In short, with limited construction types covered and limited linkage relations examined in their attempts, and with only one diagnostic used in the identification of linkage types, both studies are brief and narrow in scope, and fail to provide a detailed and comprehensive account of the linkage situation in Mandarin.

2.2 Summary

The situation regarding the study of Mandarin clause linkage, as reflected in the different approaches taken by the cited scholars, lacks clarity, control and comprehensiveness. These deficiencies seem especially to be centred around the analysis of correlative constructions and serial verb constructions. Two problems concerning these previous studies emerge very clearly.

First, there is no coherent and unified account for apparently complicated linkage devices in Mandarin, as this literature review has shown. Within the group of scholars using the traditional theory, there are scholars who took the concepts of coordination and subordination as given, and applied them to different complex sentences without reservation, although they disagreed with regard to the linkage status of some correlative constructions and serial verb constructions. There are also scholars who took a very cautious approach towards the analysis of the above-mentioned constructions. They were either vague about their position (by trying to make a general statement without providing specific examples to back it up), or tried to be non-committal by avoiding discussion of problematic constructions. The approach of scholars using the descriptive theory is innovative, and drastically different from that of the other group. However, being essentially descriptive in nature, their approach is of little or no theoretical value. The

attempts to use the RRG theory by Liang (1986) and Hansell (1993) are not satisfactory either, as their studies are incomplete. Giving attention to a very limited set of construction types, they fail to provide a comprehensive picture of Mandarin clause linkage.

Second, since the traditional group restricts themselves exclusively to the syntactic categories made available by the traditional approach, they are not original enough to break the bounds which this approach imposes. When problems were encountered in applying the traditional concepts to complex constructions, some scholars, such as Chao (1968) and Chu (1983), carefully avoid the problem area rather than addressing it directly, in order to be true to the traditional categories.

In view of these difficulties, an approach to clause linkage in Mandarin that is unified, coherent, and original from the theoretical point of view, is surely in order. This is the task that the rest of this dissertation is committed to undertake. It will be shown that RRG concepts may address the problems prevailing in the previous approaches in a more illuminating way.

Chapter 3

Theoretical Framework

3.0 Introduction

This chapter outlines the theoretical framework of this dissertation; i.e., the theory known as Role and Reference Grammar (hereafter RRG). Relevant concepts to be summarized and discussed include: the layered structure of the clause, the system of universal operators, and the structure of complex constructions.

3.1 Background Information

Role and Reference Grammar was developed by Foley and Van Valin in a number of works in the late 1970s and early 1980s (see Foley & Van Valin 1977, Van Valin 1980, 1981, Van Valin & Foley 1980). The theory was initially designed to explore clause-internal phenomena in role-dominated languages, with pragmatic pivots, and reference-dominated languages, with or without semantic pivots. It was not until 1984 that the theory was extended to encompass complex sentences, when Foley and Van Valin incorporated into the theory ideas developed by Olson (1981) in the analysis of clause linkage phenomena in Barai, a language of Papua New Guinea. Recently the 1984 version of RRG has been further revised and enriched by Van
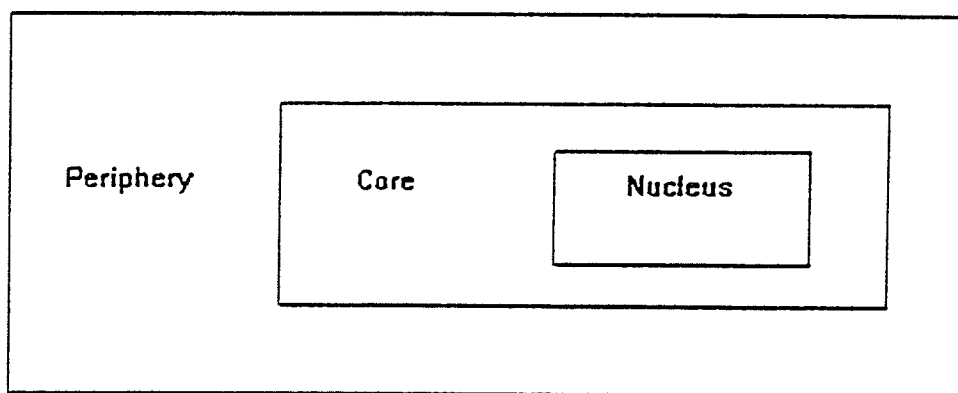
47

Valin (1993). The theory, throughout its development, has taken a perspective that is neither extremely formal, when compared to Chomsky's (1981) view that language is grammar, nor too functional, when compared to Hopper's (1987) view that grammar is discourse. Falling between these two extremes, it views language as a system which can only be understood and explained through its semantic and pragmatic functions (Van Valin 1993: 2). Because of this, it is labelled 'a structural-functionalist theory of grammar' (Van Valin, 1993: 1). The theory attempts to provide a universal explanatory base that can be used to analyze many aspects of clause-internal structure and clause linkage phenomena in natural languages.

3.2 The Layered Structure of the Clause

RRG provides an abstract template for any given clause by viewing the clause as containing three layers, each with its own corresponding set of operators. The three layers are: the nucleus, the core, and the periphery. There is a hierarchical nesting relationship among these layers. The nuclear layer comprises the innermost layer of the clause, and contains nothing but a predicate, normally a verb. The core layer, which consists of core arguments as well as the nuclear layer, forms the middle layer of the clause. Core arguments refer to logical subjects and logical objects. Logical objects include both direct and indirect objects. The periphery, which

contains the nuclear layer, the core layer, and other non-argument constituents, constitutes the outer-most layer of the clause. The term 'non-argument constituents' usually refers to temporal and locative phrases. This hypothetical structure proposed in RRG can be schematized along the lines of the following diagram:
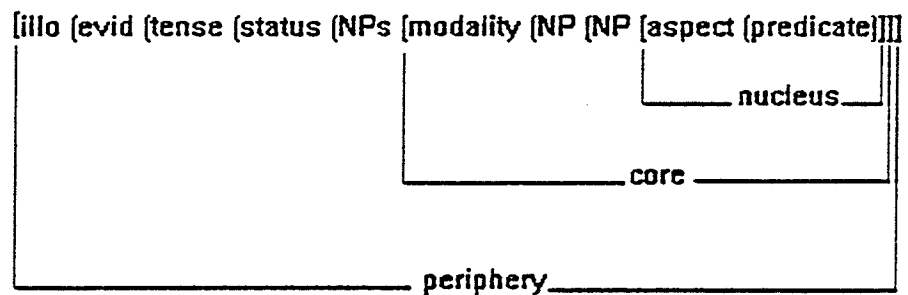
(1)

```
+-------------------------------------------------+
|                                                 |
|   +-----------------------------------------+   |
|   |               +---------------------+   |   |
| Periphery   Core  |      Nucleus        |   |   |
|   |               +---------------------+   |   |
|   +-----------------------------------------+   |
|                                                 |
+-------------------------------------------------+
```

3.3 Universal Operators

3.3.1 Scopes of Operators

Each layer of the clause is associated with its own distinctive set of operators. The term 'operator' is used here in essentially the same way that it is used in symbolic logic, complete with the standard notion of scope relations. Nuclear operators have only the predicate within their scope. It has been claimed that aspect is a universal nuclear

49

operator.   Core operators have both the predicate and its arguments within their scope.   It has been suggested that modality is a universal core operator.   Peripheral operators affect the whole clause, and include such things as status, tense, evidentiality, and illocutionary force (IF). Operators demonstrate increasing scope relations, with aspect, the innermost nuclear operator, having the smallest scope, and illocutionary force, the outermost peripheral operator, the greatest scope.   A language need not overtly mark all of the operators just mentioned; however, if it does, the ordering of the morphemes that realize these operators, with reference to the position of the predicate, will occur as follows (Foley and Van Valin 1984).

(2)

[illo [evid [tense [status [NPs [modality [NP [NP [aspect [predicate]]]]
                                                              └───── nucleus ───┘
                                      └────────────── core ──────────────┘
              └───────────────────────── periphery ──────────────────────┘

Studies by Foley and Van Valin (1984) and Bybee (1985) of overtly marked operators have not found any exceptions to this hierarchical ordering of the three layers of operators. These studies were made in a large number of languages belonging to different families. However they did find some variation in terms of ordering among operators within the same layer. For example, status occurs further away from a verb than tense does in some of the languages surveyed (Foley & Van Valin 1984).

3.3.2 Semantics of Operators

In RRG, operators that are claimed to be universal by Foley and Van Valin (1984) and Van Valin (1993) are defined semantically. Aspect is defined as an element that concerns only the internal temporal structure of a verb; e.g., describing whether a verb is in a perfective, inceptive, or durative state. Since it makes no reference at all to the arguments of the verb, aspect has a direct semantic effect only on the predicate. It has no semantic interaction with the arguments of the verb (Foldy & Van Valin 1984). However, this statement may produce confusion if cases are considered in which aspect choice affects surface case-marking of core arguments in some languages.

In the preceding paragraph the statement by Foley and Van Valin (1984) appears to be directed only to the semantic contribution of aspect, without involving its morphological

51

effects.   In languages like Hindi and Georgian, perfective aspect triggers ergative case marking, while imperfectives exhibit non-ergative marking (Hopper & Thompson 1980). However, this morphological difference in case marking does not have semantic import.   It has been argued by several scholars (cf. Hopper & Thompson 1980, Givon 1984) that this morphological difference in case marking triggered by choice of aspect, is pragmatic in nature.   Givon (1984) pointed out that the difference results from encoding the higher degree of transitivity of the perfective clause.   He (1984: 145) proposed that ergative languages use ergative case marking to solve the functional dilemma regarding how languages 'express simultaneously the semantic case-role of an argument and its pragmatic case-role as subject'.   The distinction in case marking triggered by different aspects in languages like Hindi and Georgian, therefore, does not alter the semantic relations of the arguments to the predicate but rather, the pragmatic relations.   In this view, aspect affects only the predicate in terms of meaning, and this is what the RRG theory seems to be claiming, but the claim is somewhat unclear.

Modality, a core operator, is defined by the theory as an element that concerns the relationship between the actor and her/his accomplishment of the action described by the verb. Identical with what is generally called 'deontic modality', it indicates certain conditions on the actor with regard to the action.   For example, does the actor have an obligation to

52

perform a certain action? Or, does s/he have permission to carry out a certain action? It is obvious that a modality marker describes a semantic connection between a verb and the actor.

It was mentioned earlier in this chapter that in RRG the core layer consists of core arguments, actor and undergoer, and the nucleus, which is normally a verb (Foley & Van Valin 1984, Van Valin 1993). Given this definition, it may be inferred that both actor and undergoer enter into an equal relationship with the verb. It is also to be expected that a core operator, such as modality, would have scope over all three members of the layer. Van Valin (1993: 7) argued that the major difference between RRG and other theories is that their notion of the core layer finds 'no direct counterpart'. However, on the basis of the definition of modality mentioned above it would appear that the interpretation of a core operator only includes the actor and the verb, but not the undergoer. This seems to point to an inconsistency in RRG in this particular instance.

Status is a peripheral operator, describing the degree of the speaker's commitment to the truth value of the proposition in the real world (traditionally known as 'epistemic modality'); i.e., whether the speaker views the realization of the predication as possible, probable, impossible, etc. It directly affects the meaning of the entire proposition. Tense locates the time of the reported event with reference to the

time of the speech act. It is another peripheral operator that has the whole clause under its scope, since it places the situation expressed by the whole proposition in a certain time frame with respect to the speech time without changing the meaning of the predication. It makes no difference whether the situation is located in the past or in the present: the meaning signalled by the proposition will always remain the same. Evidentiality has the second largest scope among peripheral operators. It identifies the source of evidence for the speaker's proposition; e.g., whether the message expressed by the proposition is merely hearsay or was witnessed by the speaker himself. Since the indication of the source of the information expressed by the proposition involves no change in the meaning signalled by the clause, evidentiality, in the same manner that tense does, has the whole clause within its scope. The category that has the largest scope in a clause is IF. It indicates what kind of communicative function a proposition has. Is it a question, a statement, a command, an assertion, or a suggestion? IF distinctions, therefore, have a direct effect on the communicative function of the whole clause.

3.4 Assumptions of Layered Clause Structure

The concept, proposed in RRG, of a clause containing three layered units and three layers of operators is based on a fundamental assumption (Van Valin 1993: 5): that all human

54

languages have means available to distinguish a predicate from its arguments, and to distinguish arguments from non-arguments. These two types of contrasts exist regardless of how they are represented syntactically in a language, be it a free-order language, a fixed-order language, a configurational language, or a non-configurational language. In other words, a given clause in any human language may consist of three layered units, the nucleus, the core, and the periphery, and three types of operators modifying these units, nuclear operators, core operators, and peripheral operators. The linear order of the constituents comprising the three layers may differ from language to language, and the ways those three layers are coded may also differ from language to language. However, the contrasts between the predicate and its arguments, and between arguments and non-arguments, always exist, as do the scope relations among operators.

3.5 The Complex Construction
3.5.1 Two-way Distinction

With the establishment of an abstract clause template, RRG further proposes templates for different kinds of complex constructions, in which two or more units, usually clauses or reduced clauses, are linked. It has been customary in many studies to analyze complex constructions by making sharp distinctions between coordinate and subordinate clause structure. Such a tradition is based partly on the

55

investigation of Indo-European languages and their written forms (Hopper & Traugott 1993). The term coordination has been used by many grammarians to refer to both syndetic coordination, in which coordinated units are linked by overt coordinators, and asyndetic coordination, in which the coordination relationship is implicitly marked (Quirk, Greenbaum, Leech & Svartvik, 1972). Whether units in coordination are linked explicitly or implicitly, they are of the same rank (Longacre 1985). By contrast, units in subordination are generally understood by many grammarians as demonstrating an unequal relationship, and the terms 'subordinate' and 'main' have been adopted for generations to capture the hierarchical relationship of embedding.

Problems with such a two-way distinction have been demonstrated by several recent studies, including a cross-linguistic study by Foley and Van Valin in 1984 (cf. also Brugman et al., 1984, Haiman & Thompson 1984). Foley and Van Valin (1984) argue that limiting linkage distinctions to coordination and subordination only makes it difficult to explain certain linkage phenomena in some languages, as certain linkage types are not subsumed under coordination or subordination. For example:

(3) Kewa

Ni reka-no agaa la-a

1sg stand-DIFF talk say-3sgPST
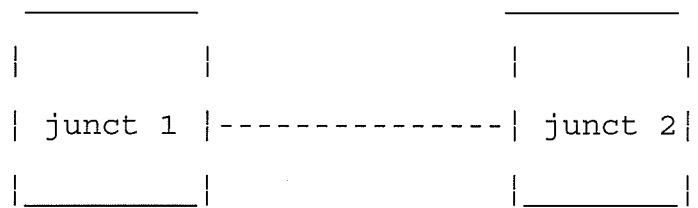
'I stood up and he talked.'

This Kewa sentence is, according to Foley and Van Valin (1984: 257), neither a coordinate nor a subordinate structure. It is not a coordination because the medial verb 'stand' cannot be marked for tense. They must depend on the final verb 'say' for past tense inflection. This suggests that they are not of equal rank with the final verb. However, the sentence cannot be analyzed as a subordinate structure either, because there is no clause embedded within another; i.e., no clause serves as an argument of any other. As a result, it is not possible to tell 'main' from 'subordinate' clauses.
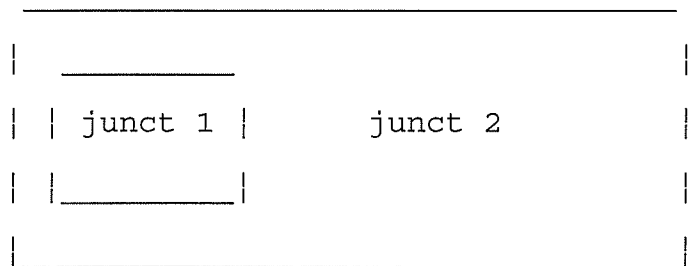
3.5.2 Three-way Distinction

To explain the nature of this kind of linkage Olson (1981) proposed a new concept, cosubordination, intended as a third, distinctive type of clause linkage. Drawing upon Olson's (1981) work, Foley and Van Valin (1984) claim that the difference between coordination, subordination, and cosubordination is as follows: in coordination, neither clause, or junct, is embedded in the other; they are independent of each other. In subordination, the subordinate junct is syntactically embedded in a superordinate junct, and typically provides some type of background information. In cosubordination, neither junct is embedded in the other; however, one is dependent on the other for the specification of various operators, and possibly for specific arguments, as well. These differences among the three types of clause

57

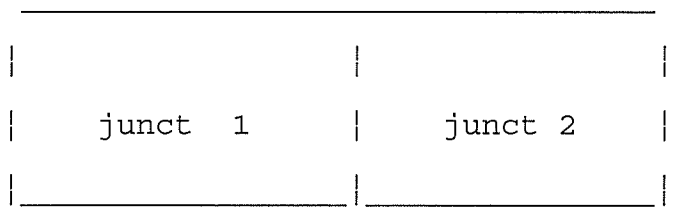linkage can be illustrated by the following templates:

(4)   a. coordination

```
      _____                      _____
     |         |                    |         |
     | junct 1 |----------------| junct 2|
     |_____|                    |_____|
```


b. subordination

```
       _____
      |    _____                          |
      |   | junct 1 |        junct 2         |
      |   |_____|                         |
      |_____|
```


c. cosubordination

```
       _____
      |                   |                   |
      |     junct  1      |     junct 2       |
      |_____|_____|
```
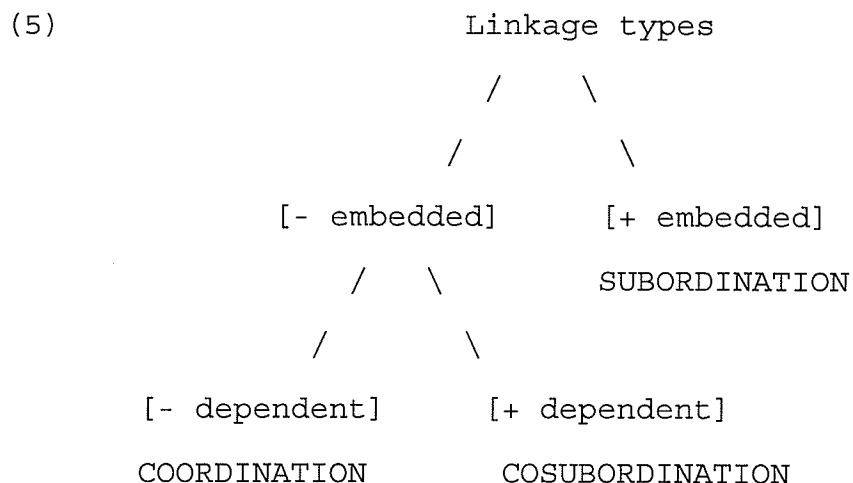

Since each linkage type possesses its own defining features to
separate   it   from   the   other   types,   a   feature   tree
representation   is   another   simple   way   of   showing   the
differences among them (Van Valin, 1993: 118).

(5)   Linkage types
                                     /   \
                                   /   \
                  [- embedded]   [+ embedded]
                      /   \   SUBORDINATION
                    /   \
         [- dependent]   [+ dependent]
         COORDINATION   COSUBORDINATION

3.5.3 Juncture and Nexus

It is proposed in the RRG theory that when single clauses
are linked to produce a complex sentence, there are two
factors that need to be considered. One of them concerns
levels of linkage in a complex structure. The theory
hypothesizes that the linkage in a complex structure may be
manifested at any of the three levels defined above; i.e., the
peripheral level, the core level, or the nuclear level. This
assumption follows from the analysis of a single clause as
containing three hierarchical layers. In unmarked cases, when
two or more units are linked to form a complex structure, the
linked units tend to be of the same kind. What this means is
that there can be a complex structure that consists of at
least two peripheries, two cores, or two nuclei. In this
theory, a complex structure is labelled a 'juncture' at some
specific level. The units that form a juncture at some level
are called 'juncts'. In the RRG framework, the arbitrary

59

criterion of 'one verb per junct' is used to determine the number of juncts in the complex structure. When two or more peripheral juncts are joined they produce a peripheral juncture, and when two or more core juncts are linked they result in a core juncture. Similarly, when two or more nuclear juncts are joined, they will produce a nuclear juncture.

A second factor that comes into play in a complex sentence concerns the concept of 'nexus'. Nexus is the term used to refer to the nature or type of linkage between juncts. According to RRG, nexus types manifest a three-way distinction: coordination, subordination, and cosubordination. The differences among these were discussed in the previous section. Given that there are three possible juncture types and three possible nexus types in the production of a complex sentence, there will be nine possible juncture-nexus combinations. The following is a list of the nine possibilities that may occur in human languages:

(6)   a.   peripheral coordination

                 b.   core coordination

                 c.   nuclear coordination

                 d.   peripheral subordination

                 e.   core subordination

                 f.   nuclear subordination

                 g.   peripheral cosubordination

                 h.   core cosubordination

                 i.   nuclear cosubordination

3.5.4 Examples of Juncture-nexus Types

Studies of juncture-nexus types in various languages within the framework of RRG show that most languages do not have all nine types. This number simply represents the maximum number of juncture-nexus types that a language may potentially manifest. The following examples, according to Foley and Van Valin (1984) and Van Valin (1993), illustrate the differences among the types of juncture-nexus combinations:

(7)   English

      a. *Please sit down, and I'll get you some tea.*

           (peripheral coordination)

      b. *Mary has to force Tom to eat.*

           (core coordination)

Barai

   c. *Fu   vazai ufu furi   numu akoe.*

      3sg grass cut finish pile throw.away

      'He finished cutting, piled, and threw away the

         grass.'

        (nuclear coordination, Van Valin, 1993:113)

It is claimed in RRG that the above are examples of coordinate nexus at the three different juncture levels. Foley and Van Valin (1984) argued that none of these three sentences exhibit syntactic embedding. Sentence (7a) contains two juncts that are coordinated at the peripheral level, sentence (7b) consists of two juncts that are coordinated at the core level (see the discussion on absence of syntactic embedding in sentences like (7b) in Chapter Six), while (7c) has two juncts that are coordinated at the nuclear level. In (7a) there are two independent clauses. They are linked by the coordinator 'and'. Each clause in (7a) is independently marked for the peripheral operator illocutionary force. The first clause has an imperative illocutionary force, and only this clause is under the scope of that operator. The second clause, on the other hand, has an assertive illocutionary force, and only that clause is within the scope of that operator. In terms of the scope of the illocutionary force operators, the two juncts in (7a) are clearly independent of one another.

A similar situation is found in (7b). Before discussion of the similarities between (7a) and (7b), however, the differences between them will be examined. In (7b) there are two core juncts, rather than two peripheral juncts as in (7a). There are two reasons to claim that (7b) contains two core juncts. First, the two juncts in (7b) obligatorily share all peripheral operators, such as illocutionary force and tense. However, although this is a necessary factor, it is not sufficient to determine the core status of the juncts in (7b), since in a peripheral cosubordination, all the juncts must share the same peripheral operators (see the discussion about juncts in peripheral cosubordination in the following section). A clearer reason that determines the juncts in (7b) as being core juncts is that the two juncts must share a core argument, which in this case is 'Tom'. 'Tom' functions as the logical object of the first junct, as well as the logical subject of the second junct. This means that neither junct in (7b) can function as an independent unit, as those in (7a) do.

In sentence (7b) there is a syntactic overlapping between the two juncts, as they have to share an argument. The sentence contains a modality operator, 'has to'. Native speakers of English agree that 'has to' only affects the first core junct, not the second. Based on the definition of coordination offered in RRG, the two core juncts demonstrate an independent relationship in terms of the modality operator 'has to' in (7b).

Sentence (7c) is an example of nuclear coordination. (An example from Barai has been chosen, as English does not utilize this linkage type.) A nuclear coordinate structure is one that shows the phenomenon of coordination at the nuclear level. As such, the coordinate nuclei must share all arguments, whether core or non-core, and all operators above the nuclear level. In (7c), the three verbs are coordinated, because the nuclear operator *furi* 'finish' affects only the first verb, without having any effect on the other two; i.e., the verbs are independent with regard to the scope of nuclear operators.

All these sentences are coordinate structures because they share the feature of '- dependent', although at different levels of juncture.

The following set of sentences contains examples of subordinate constructions at different levels:

(8)   English

   a. *After Mary left, Jim walked home.*

         (peripheral subordination)

   b. *That Mary knew the president surprised Tom.*

         (core subordination)

Barai

c. *Fu kai   fu-one   kume-fie   va.*

   3sg friend 3sg-POSS call-listen continue

   'He continued calling and listening for his

       friend.'

       (nuclear subordination (Van Valin, 1993:113))

The definition for subordination is '+ embedded'.
Sentence (8a) is a subordinate structure at the peripheral
level, as the subordinate junct that is marked by the
subordinator 'after' is embedded in the main junct as a non-
argument, modifying the main junct. Sentence (8b) represents
a core subordination, since the subordinate junct is embedded
as a core argument in the main junct. Example (8c) is a
nuclear subordination, where the last verb *va* assumes a
secondary role by acting as an aspect marker modifying the
other two verbs.

The following are examples of cosubordinate structures:

(9) a. Kewa

       Ni reka-no   agaa la-a

       1sg stand-DIFF talk say-3sgPST

       'I stood up and he talked.'

           (peripheral cosubordination)

           (Foley & Van Valin, 1984: 257)

   b. English

       Tom can sit playing the piano for hours.

           (core cosubordination)

65

c. Fijian

    E viri-tu-ra   tu na duru na turaga.

    CM put-stand-TR CONT ART post ART chief

    'The chief continues to erect the post.'

        (nuclear cosubordination)

        (Foley & Van Valin, 1984: 262)

The crucial feature that separates cosubordination from the other two nexus types is '+ dependent'. Example (9a) is a peripheral cosubordination in which each junct has its own set of arguments; however, the juncts must share both tense and illocutionary force. In (9b), the two juncts share a core argument, and they must share the core operator *can*, in the sense that *can* must modify *sit playing* rather than *sit* only. Sentence (9c) demonstrates a nuclear construction with only one set of arguments shared by both juncts. It is considered to be a cosubordinate structure because the aspect marked by *tu* 'continue' has scope over both *viri* 'put' and *tu* 'stand'.

3.6 The Syntactic Hierarchies

    The theory makes statements concerning the degree of syntactic tightness between the linked juncts from two angles, the level of linkage and the nature of linkage in a complex sentence. When syntactic tightness among different levels of linkage is considered, the theory suggests that 1) peripheral junctures are the loosest junctures, with each individual junct capable of having its own peripheral arguments; 2) core

66

junctures are tighter than peripheral junctures, as the linked core juncts usually share at least one core argument; and 3) nuclear junctures are the tightest junctures among these three juncture types, due to the fact that the linked juncts must share all arguments.   Hence, the levels of linkage may be ranked as follows:

(10) Periphery > core > nucleus

When syntactic tightness among different nexus types is examined, the theory predicts that coordination represents the loosest nexus type, subordination stands in the middle and cosubordination represents the tightest linkage type. Cross-linguistic studies by Foley and Van Valin show that coordinately linked units have more independence, as they are allowed to have their own operators. Such independence is reduced in subordination and cosubordination where the subordinate junct must depend on the matrix junct for the specification of operators at a given level. When subordinate constructions are compared with cosubordinate constructions, however, the latter demonstrate a tighter relationship between juncts in their studies. For example, the arguments in a subordinate junct of a peripheral subordinate construction in English are always specified; whereas the argument in a subordinate junct of a peripheral cosubordinate construction in English is missing and depends on the matrix junct for such a reference. For example:

(11) a. Peripheral subordination

Because Bruce left, the party really heated up.

(Foley & Van Valin 1984: 249)

b. Peripheral cosubordination

Max went to the store and bought some beer.

(Foley & Van Valin 1984: 259)

In (11a) each clause has its own core argument, with *Bruce* in the subordinate clause and *the party* in the matrix clause; but in (11b) the overtly expressed argument *Max* in the first clause serves as a source of reference for the missing argument in the dependent clause. Situations like this led Foley and Van Valin (1984) to the prediction of the hierarchy in (12):

(12) Coordination > subordination > cosubordination

Combining the two hierarchies together, the nine possible juncture-nexus combinations may thus be re-ranked in (13) on the basis of the degree of syntactic tightness that each linkage type demonstrates (Foley & Van Valin 1984: 267).

(13)   Loosest

      a. peripheral coordination

      b. peripheral subordination

      c. peripheral cosubordination

      d. core coordination

      e. core subordination

      f. core cosubordination

      g. nuclear coordination

      h. nuclear subordination

      i. nuclear cosubordination

      Tightest

Although Foley and Van Valin did not mention the fact, another hierarchy, determined primarily by nexus type rather than level of juncture, is logically possible, as shown in (14).

(14)   Loosest

      a. peripheral coordination

      b. core coordination

      c. nuclear coordination

      d. peripheral subordination

      e. core subordination

      f. nuclear subordination

      g. peripheral cosubordination

      h. core cosubordination

      i. nuclear cosubordination

      Tightest

Failure on the part of Foley and Van Valin to mention this possibility is clearly due to the fact that their fairly extensive sample of languages provided no empirical support for it at all. Their investigations of clause linkage clearly revealed that the degree of tightness of syntactic clause linkage is more strongly determined by juncture level characteristics, such as the sharing of arguments and absence of an intonational break between clauses, than by nexus characteristics, such as the sharing of operators (see the discussion in Chapter Six). Clause linkage in Mandarin, as revealed by Chapter Six in this study, exhibits precisely the same effects.

3.7 The Significance of Syntactic Tightness

Foley and Van Valin (1984) then go further to attempt to explain the significance of the syntactic hierarchy in (13). They propose that syntactic tightness suggests semantic or conceptual closeness. There is a direct relation between the tightness of the semantic relations and the tightness of the syntactic structures. For example, the causative relation, the tightest semantic relation identified by the theory, will be expressed by the tightest syntactic structure available in any given language. The loosest semantic relation, for example, the unspecified relation or the action-action relation between linked juncts, will be expressed by the loosest syntactic structure available in a given language.

70

When linked juncts operate together to describe an event or events, the more semantic cohesion there is between the linked juncts, the tighter the syntactic link between them. It is further claimed in RRG that there is no one-to-one matching relation between a particular kind of syntactic structure and a certain semantic relation. A certain kind of semantic relation may have several syntactic realizations, and vice versa. For example, the causative relation may be realized in several juncture-nexus types in a given language. It is crucial that no matter how many syntactic realizations the causative relation may have in a language, one of the syntactic realizations must be the tightest juncture-nexus type in that language.

3.8 Summary

In this chapter, various concepts intrinsic to the RRG theory regarding intra-clause structure and cross-clause structure have been reviewed and discussed, particularly the concepts regarding the layered structure of the clause, the scope of operators, and the level and nature of linkage in complex sentences. It is seen from the preceding review that the RRG statement regarding scope of aspect required clarification and interpretation. The RRG definition of scope of core operators also seems to exhibit some inconsistency. However, the suitability of the use of RRG remains. It is worthy of note that many other RRG concepts appear to be

well-defined, and are rich in content. What is more important is the fact that they are based on cross-linguistic studies of a fairly broad sample of typologically distinct languages, drawn from geographically disparate areas, and with various genetic affiliations. As such, RRG is appropriate to serve as a conceptual and explanatory base. It will provide the fundamental theoretical framework for the analysis to be carried out in the subsequent chapters of this dissertation.

Chapter 4

Event Types and Macroroles

4.0 Introduction

Clauses are building blocks for complex sentences. The study of clause structure is essential to the study of complex sentences, as one's view of the former affects his/her approach to the study of the latter. It has been mentioned previously that RRG specifies clause structure in terms of levels (or layers); i.e., the levels of nucleus, core, and periphery, with the nucleus inside the core and the core inside the periphery. Associated with this proposal are views regarding the specification of different event types in terms of who is the agent, who is the patient, and what evolves. This chapter applies these RRG concepts regarding intra-clausal evidence for layered clause structure to Mandarin. Focus is placed on lexical decomposition, event types, macroroles, and coding strategies.

4.1 Background

RRG addresses the task of analyzing clause structure in natural language by providing devices that characterize: 1) predicates in general, and 2) the semantic relations that hold between a predicate and its argument(s). Inspired by the work

of Gruber (1965), Vendler (1967), Jackendoff (1972, 1976), and Dowty (1979), RRG has developed a system that utilizes two techniques for the above purposes: 1) a method of lexical decomposition of predicates into a set of predicates and operators; and 2) the establishment of the concepts of the macroroles actor and undergoer. In the following section these two techniques are briefly summarized and then applied to the Mandarin data.

4.2 Lexical Decomposition

RRG adopts both Vendler (1967) and Dowty's (1979) systems of lexical decomposition of predicates, with the aim of capturing only the general aspects of the meaning of predicates. The event types expressed by predicates and their arguments are classified into four types: states, achievements, accomplishments, and activities, with each possessing some unique features. They can be distinguished from one another on both syntactic and semantic grounds.

A state event or predication differs from the other event types by referring to static situations only, with no possibility of dynamic change. Its temporal structure is homogeneous in nature, making no reference to inception or completion. As such, it persists over stretches of time, and is incompatible with the progressive aspect, as in English and Mandarin.

74

An activity event differs from a state event in that it describes dynamic situations. Its temporal structure may make reference to either inception or duration, but not the culmination of the event.

An accomplishment event consists of two phases in its temporal structure, one describing duration and the other describing the associated culmination. In RRG, the duration of an accomplishment is analyzed as a causing process, and the associated culmination is treated as a caused outcome. Once the action reaches the point of culmination, the process cannot continue.

An achievement predication focuses on culmination in its temporal structure. The culmination or outcome expressed in such a predication is usually instantaneous in nature; therefore, there is no requirement (and sometimes it is not possible) to pin down a duration or process. For example, the verb *die* in English is considered to be an achievement verb, in the sense that a person is either alive or dead; there is no mid-stage where one is found neither alive nor dead.

Based on the unique temporal structures of each event type, RRG proposes four distinct logical structures to represent them. They make use of two abstract operators 'BECOME' and 'DO', and a connector 'CAUSE' to capture the abstract nature of these different types of predicates (Van Valin 1993:36), as is shown in Table 4.1:

Table 4.1: *Event types and their logical structures*

Event type	Logical Structure
STATE	**predicate′** (x) or (x, y)
ACHIEVEMENT	BECOME **predicate′** (x) or (x, y)
ACTIVITY	(DO (x)) [**predicate′** (x) or (x, y)])
ACCOMPLISHMENT	ϕ CAUSE ψ, where ϕ is normally an activity predicate and ψ an achievement predicate.

The letters x and y represent arguments that associate with the predicates in these event types. The operator 'DO' signals agency and control.

The tests that distinguish these four classes from one another in English are summarised in the following table (Van Valin 1993:35):

Table 4.2: *Syntactic and semantic tests used for English*

Criterion	States	Achievements	Accomplishments	Activities
1. Occurs with progressive	No	D:Yes/P:No	Yes	Yes
2. Occurs with adverbs like *vigorously, actively*, etc.	No	No	Yes	Yes
3. Occurs with ϕ *for an hour, spend an hour ϕing*	Yes	D:Yes/P:No	Yes	Yes
4. Occurs with ϕ *in an hour, take an hour to ϕ*	No	D:Yes/P:No	Yes	No
5. ϕ *for an hour* entails ϕ at all times in the hour	Yes	D:No/P:d.n.a.	No	Yes
6. *x is ϕing* entails *x has ϕed*	d.n.a.	D:No/P:d.n.a.	No	Yes
7. Has inherent causative semantics	No	No	Yes	No

d.n.a=the test does not apply.
D=durative, P=punctual

As in other studies (cf. Walton 1986, Watters 1988, Wilkins 1988, Van Valin 1990a, etc.), these four event types are regarded as universal in RRG, based on the fact that human beings, although speaking different languages, share common perceptual and cognitive abilities. However, Foley and Van Valin (1984) point out that syntactic tests that distinguish these event types from one another may differ from language to language, and should be constructed within the framework of the language studied.

4.3 Event Types in Mandarin

In this section, different syntactic tests are designed, based on the unique features of Mandarin, for the purpose of identifying the basic event types. Investigation shows that the event types proposed are central to the organization of the verbal system in Mandarin as well.

4.3.1 States

Recall that a state predication describes a situation that must endure over a stretch of time. The situation is permanent, in the sense that there are no temporal edges in such an event, and there is no sequence of events involved. In Mandarin, verbs such as *renshi* 'know', *you* 'have' and *hao* 'good' are among those that describe states.

(1) a. *Wo renshi Zhangsan.*

    I   know   Zhangsan.

    'I know Zhangsan.'

  b. *Wo you na   zhong bi.*

    I have that CL   pen

    'I have that kind of pen.'

Verbs in this category:

(2) a. cannot occur with the progressive aspectual verb *zai* 'be-at';

  b. can be modified by durative adverbials such as *san nian* 'three years';

  c. cannot be modified by frame adverbials like *yi xiaoshi nei* 'in an hour';

  d. cannot be modified by frequency adverbials like *yi xia* 'one strike' that indicate the number of times that an action occurs;

  e. cannot be modified by point adverbials such as *san dianzhong* 'three o'clock'.

Note the following examples:

(3) a. **Wo zai   renshi Lisi.*

    I be-at know   Lisi

    'I was knowing Lisi.'

  b. *Wo renshi Lisi renshi san   nian le.*

    I know   Lisi know   three year RTM

    'I have known Lisi for three years.'

c. *_Wo san   nian nei renshi Lisi._

    I   three year in   know   Lisi

    'I knew Lisi in three years.'

d. *_Wo renshi yi xia   Lisi._

    I   know   one strike Lisi

    'I knew Lisi for one time.'

e. *_Wo san dianzhong renshi Lisi._

    I   three o'clock know   Lisi

    'I knew Lisi at three o'clock.'

(4) a. *_Wo zai   you   na   zhong bi._

    I   be-at have that kind pen

    'I was having that kind of pen.'

b. _Wo you   na   zhong bi you-le   san   nian le._

    I   have that CL   pen have-PERF three year RTM

    'I have had that kind of pen for three years.'

c. *_Wo san   nian nei you   na   zhong bi._

    I   three year in have that kind pen

    'I had that kind of pen in three years.'

d. *_Wo you yi xia   na   zhong bi._

    I   have one strike that CL   pen

    'I had that kind of pen for one time.'

e. *_Wo san dianzhong you   na   zhong bi._

    I   three o'clock have that CL   pen

    'I had that kind of pen at three o'clock.'

The results of these tests with the above examples support the analysis that state predications describe a single event that,

once it starts, will remain the same over a long stretch of time. There is no end point implied in such an event. For example, the sentence *wo renshi Lisi* 'I know Lisi' implies that: 1) I knew Lisi before the time of the speech act, 2) I know Lisi at the time of the speech act, and 3) I will still know Lisi after the time of the speech act, if there is no other expression indicating that the knowing of Lisi has stopped. The situation of knowing Lisi is permanent and stable on the relevant time scale, if not otherwise indicated. Due to these characteristics, the predicate used in describing a state cannot be modified by frame, frequency, or point adverbials, but can be modified by durative expressions. Since a state refers to a static situation, not a dynamic one, it cannot be put in the progressive aspect. This is the crucial difference that sets a state apart from an activity in Mandarin.

4.3.2 Activities

Activity predications involve verbs that describe dynamic situations. In Mandarin, verbs like *chang* 'sing', *tiao* 'jump', *pao* 'run', and *tui* 'push' can be placed in this category.

    (5) a. *Wo chang ge.*

         I sing song.

         'I sing.'

b. *Ta   tiao shen.*

   3sg jump rope

   'He jumps rope.'

c. *Ming tui   che.*

   Ming push vehicle

   'Ming pushes a vehicle.'

Verbs in these examples:

(6) a. can appear with the progressive aspectual verb

   zai 'be-at';

b. can be modified by durative adverbials such as

   yi xiaoshi 'one hour', or co-occur with the

   durative verb *hua* 'spend';

c. cannot be modified by frame adverbials like

   yixiaoshi nei 'in an hour';

d. can be modified by *yi xia* 'one strike' to show

   the number of times that an action takes place;

e. can be modified by point adverbials like *san*

   dianzhong 'three o'clock'.

See the following examples:

(7) a. *Wo zai   chang ge.*

   I   be-at sing   song

   'I am singing.'

b. *Wo chang ge   chang-le yi   xiaoshi le.*

   I   sing   song sing-PERF one hour   RTM

   'I have sung for an hour.'

81

c. *Wo hua-le   yi xiaoshi chang ge.*

   I   spend-PERF one hour   sing song

   'I spent an hour singing.'

d. **Wo yi   xiaoshi nei chang ge.*

   I   one hour   in sing   song

   'I sang in an hour.'

e. *Wo chang-le   yi xia   ge.*

   Wo sing   PERF one strike song

   'I sang for a little while.'

f. *Wo san   dianzhong chang ge.*

   I   three o'clock   sing   song

   'I sang at three o'clock.'

(8) a. *Ta zai   tiao shen.*

   3sg be-at jump rope

   'S/he is jumping rope.'

b. *Ta tiao shen tiao-le   yi xiaoshi.*

   3sg jump rope jump-PERF one hour

   'S/he jumped rope for an hour.'

c. *Ta hua-le   yi xiaoshi tiao shen.*

   3sg spend-PERF one hour   jump rope

   'S/he spent an hour jumping rope.'

d. **Ta yi   xiaoshi nei tiao shen.*

   3sg one hour   in jump rope

   'S/he jumped rope in an hour.'

e. *Ta tiao-le yi xia shen.*

   3sg jump-PERF one strike rope

   'S/he jumped rope once (i.e., one time).'

f. *Ta san dianzhong tiao shen.*

   3sg three o'clock jump rope

   'S/he jumped rope at three o'clock.'

(9) a. *Ming zai tui che.*

   Ming be-at push vehicle

   'Ming is pushing a vehicle.'

b. *Ming tui che tui-le yi xiaoshi le.*

   Ming push vehicle push-PERF one hour RTM

   'Ming pushed a vehicle for an hour.'

c. *Ming hua-le yi xiaoshi tui che.*

   Ming spend-PERF one hour push vehicle

   'Ming spent an hour pushing a vehicle.'

d. **Ming yi xiaoshi nei tui che.*

   Ming one hour in push vehicle

   'Ming pushed a vehicle in an hour.'

e. *Ming tui-le yi xia che.*

   Ming push-PERF one strike vehicle

   'Ming pushed a vehicle once (i.e., one time).'

f. *Ming san dianzhong tui che.*

   Ming three o'clock push vehicle

   'Ming pushed a vehicle at three o'clock.'

Verbs in this category are compatible with expressions that describe either the inception or the duration of the action

83

that the verb signifies. The tests of the progressive aspectual verb *zai*, durative adverbials and the durative verb *hua* capture the duration of the action, while the tests of scalar adverbials like *yi xia* 'one strike' and point adverbials like *san dianzhong* 'three o'clock' indicate the inception of the action. Since frame adverbials, such as *yi xiaoshi nei* 'in an hour', test for the boundedness and the culmination of an action, they cannot be used to modify verbs in this category. The results of these tests with the above examples prove that the activity verbs under discussion do possess the said features which set them apart from verbs of other categories.

4.3.3 Accomplishments

An accomplishment event is defined by its feature of containing a process followed by a related outcome. In the RRG framework, the process in an accomplishment event is viewed to be a causing phase, and the related outcome is considered to be a caused phase. The fact that an accomplishment has an end-point built into its structure distinguishes it from an activity, and the fact that it contains a process distinguishes it from an achievement.

For example, in English, the process plus the outcome may be coded by one verb only, as in *He painted a picture.* Or the process is expressed by a verb, and its related outcome by a preposition, such as *to* in *Bill ran to the park.* The verb *run*

describes an activity, while the preposition *to* indicates the outcome of the activity. Comparing *Bill ran to the park* with *Bill ran in the park*, the second predication, due to the use of *in*, does not have a marked end-point; therefore, it is analyzed as an activity. The associated end-point of the activity may also be expressed by the quantification status of direct arguments of the verb in English. For example, the predication expressed by *Larry ate fish* is considered to be an activity, due to the use of the generic noun *fish* in the sentence. Once the generic noun *fish* is replaced by *the fish*, referring to a specific fish that Larry ate, the predication will change from an activity to an accomplishment. With the end-point of an accomplishment event coded by elements other than an additional verb in English, the progressive test is often utilized to distinguish such an event type from an achievement.

James Tai (1984) has stated that Chinese does not have the category of accomplishment verbs. His arguments are based on two observations. First, the outcome of an action is expressed by a resultative verb compound in Chinese, which has only the result aspect without the implication of an activity. Second, such a compound cannot be in progressive aspect. To support this, he argued that when the adverb *jihu* 'almost' is inserted in the sentence, as in (10), the resultative compound *hua-wan* 'paint-finish' only has a result reading.

(10) *Zhangsan jihu hua-wan-le yi zhang hua.*

Zhangsan almost paint-finish-PERF one CL picture

'Zhangsan almost finished painting a picture.'

Tai pointed out that the Chinese sentence does not show a scope ambiguity. It implies that Zhangsan did begin work on the picture and he almost but not quite finished it. However, its English counterpart *Zhangsan almost painted a picture*, shows ambiguity. The latter implies: 1) Zhangsan had the intention of painting a picture but changed his mind and did not do it at all; or 2) Zhangsan did start painting but he almost but not quite finished it. Tai argued that this kind of ambiguity in the English sentence is not surprising , as *paint* is an accomplishment verb in English which involves both a process and a result. No ambiguity is found in the Chinese sentence, because the compound *hua-wan* 'paint-finish' does not express an accomplishment but an achievement. It shows an outcome only, not a process plus an outcome. He further argued that the difference between the English verb *paint* and the Chinese compound *hua-wan* 'paint-finish' can be illustrated by the use of progressive aspect, with the former capable of being in progressive aspect, while the latter cannot.

(11) a. *He was painting a picture.*

b. **Zhangsan zai hua-wan yi zhang hua.*

Zhangsan be-at paint-finish one CL picture

'Zhangsan was finishing painting a picture.'

86

He stated that since all Chinese resultative compounds behave the same, it may be concluded that Chinese does not have accomplishment verbs.

Such a statement by Tai, with its relevant evidence, sounds convincing. However, a closer look into Chinese resultative compounds suggests otherwise. It appears that the incompatibility these compounds exhibit with the progressive aspect is due to the fact that they ARE compounds; more specifically, it is the predicate which encodes the result phase of the proposition that is "at fault". In a compound like *hua-wan* 'paint-finish', it is the predicate *wan* 'finish' that encodes the result phase, and it is the semantic properties of this type of predicate which block acceptability of the progressive. Hence, incompatibility with the progressive aspect is not a property of the event type; it is, rather, a property of one of the predicates which enters into the complex construction that realizes the event type. It will be shown in the following that although Chinese resultative compounds cannot be in progressive aspect, they are compatible with durative expressions such as *yi xiaoshi* 'one hour', and with frame adverbials like *yi xiaoshi nei* 'within an hour'. This suggests that such compounds encode both a process and an outcome, hence the existence of accomplishment predications in Mandarin (cf. Smith 1989). Mandarin accomplishments differ from English accomplishments in how such an event type is syntactically encoded. The

former is expressed by two verbs: one activity verb coding the process, the other verb, a resultative verb, coding the culmination, as in *hua-wan* 'paint-finish'. The latter, on the other hand, as mentioned earlier, is expressed by 1) a verb only, or 2) a verb plus a preposition, or 3) referential arguments, as in (12):

    (12) a. *He painted a picture.*

        b. *He walked to the store.*

        c. *He ate the fish.*

Such a difference in expressing an accomplishment in these two languages accounts for the presence or absence of a possible scope ambiguity, and compatibility or incompatibility with progressive aspect.

    Here are some examples illustrating accomplishments in Mandarin:

    (13) a. *Ming ba men   la-kai-le.*

          Ming BA door pull-open-PERF.

          'Ming pulled the door open.'

        b. *Wo kan-jian ta   le.*

          I   look-see 3sg RTM

          'I saw him.'

        c. *Wo ting-dong   le.*

          I   listen-understand RTM

          'I understood (by listening).'

Predicates in this category:

(14) a. cannot be in the progressive aspect;

b. can co-occur with durative expressions, such as *yi xiaoshi* 'an hour', and durative verbs, such as *hua* 'spend';

c. can co-occur with frame adverbials like *yi xiaoshi nei* 'in an hour';

d. cannot be modified by frequency adverbials like *yi xia* 'one strike' that indicate the number of times that an action takes place;

e. cannot be modified by point adverbials like *san dianzhong* 'three o'clock'.

Evidence can be provided by the following examples:

(15) a. **Ming zai   ba men   la-kai.*

Ming be-at BA door pull-open

'Ming was pull-opening the door.'

b. *Ming la-le   yi xiaoshi cai ba men*

Ming pull-PERF one hour   then BA door

la-kai.

pull-open

'Ming pulled for an hour before he got the door open.'

89

c. *Ming hua-le   yi xiaoshi cai ba men*

   Ming spend-PERF one hour   then BA door

         la-kai.

         pull-open

   'It took Ming an hour to pull the door open.'

d. *Ming yi xiaoshi nei ba men la-kai-le.*

   Ming one hour   in BA door pull-open-PERF

   'Ming pulled the door open within an hour.'

e. **Ming ba men la-kai-le   yi xia.*

    Ming BA door pull-open-PERF one strike

    'Ming pull-opened the door one time.'

f. *Ming san   dianzhong ba men   la-kai-le.*

   Ming three o'clock   BA door pull-open-PERF

   'Ming pulled the door open at three o'clock.'

(16) a. **Wo zai   kan-jian ta.*

     I   be-at look-see 3sg

     'I was seeing her/him.'

b. *Wo kan-le   yi xiaoshi cai kan-jian ta.*

   I   look-PERF one hour   then look-see 3sg

   'I looked for an hour before I saw her/him.'

c. *Wo hua-le   yi xiaoshi cai kan-jian ta.*

   I   spend-PERF one hour   then look-see 3sg

   'It took me an hour to see her/him.'

d. *Wo yi xiaoshi nei kan-jian ta le.*

   I   one hour   in look-see 3sg RTM

   'I saw her/him within an hour.'

90

e. *Wo kan-jian yi xia   ta.

   I   look-see one strike 3sg

   'I saw her/him one time.'

f. Wo san dianzhong kan-jian ta   le.

   I   three o'clock look-see 3sg RTM

   'I saw her/him at three o'clock.'

(17) a. *Wo zai   ting-dong.

   I   be-at listen-understand

   'I was understanding.'

b. Wo ting-le   yi xiaoshi cai

  Wo ting-PERF one hour   then

      ting-dong.

      listen-understand

  'I listened for an hour before I understood.'

c. Wo hua-le   yi xiaoshi cai ting-dong.

  I spend-PERF one hour   then listen-understand

  'It took me an hour to understand (by

      listening).'

d. Wo yi xiaoshi nei ting-dong   le.

  I   one hour   in listen-understand RTM

  'I understood within an hour.'

e. *Wo ting-dong   yi xia.

  I   listen-understand one strike

  'I understood one time.'

f. *Wo san dianzhong cai   ting-dong.*

   I   three o'clock then listen-understand

   'I did not understand until three o'clock.'

The (a) examples are ungrammatical, as resultative compounds are not compatible with progressive aspect.   Durative expressions, frame adverbials and point adverbials, on the other hand, are all compatible with accomplishments in Mandarin.   This is because durative expressions portray the activity component of an accomplishment, which can be seen in the (b-c) examples; frame adverbials show the duration and the associated outcome of the action, as in the (d) examples; and point adverbials emphasize the culmination component of the accomplishment, as in the (f) examples.   The compatibility of the resultative compounds in (15-17) with these adverbials suggests that the accomplishment event type does exist in Mandarin.   Frequency adverbials, such as *yi xia* 'one strike', as in the (e) examples, cannot be used to modify this category of verbs.   This is expected, as the temporal structure defining an accomplishment is one that consists of an activity and an outcome, and the component of outcome is incompatible with the concept of frequency.

The fact that an accomplishment predication in Mandarin is typically expressed by two verbs, with one activity verb and one resultative verb, suggests that the causing-caused relationship in such an event type is grammaticalized in Mandarin.   This situation is more iconic than it is in

English, in the sense that the complex hypothetical structure for accomplishments proposed by RRG is directly realized by the surface structure of this event type in Mandarin.

4.3.4 Achievements

Like accomplishments, achievement predications also involve transition, i.e., a change of some sort. However, the change in an achievement is considered to occur instantaneously, rather than gradually as in an accomplishment. It has a 'point-like' quality to it (Pustejovsky, 1991: 50). Examples of achievements in Mandarin are given in the following:

(18) a. *Ta   dao-da   Nanjing le.*

3sg arrive-reach Nanjing RTM

'S/he arrived at Nanjing.'

b. *Ta   yeye   shi-le.*

3sg grandfather die-PERF

'Her/his grandfather died.'

c. *Wo shou-dao   yi ge baoguo.*

I   receive-arrive one CL parcel

'I received a parcel.'

d. *Ta   ba shu   diu-le.*

3sg BA book lose-PERF

'S/he lost the book.'

Signalling an instantaneous change, achievements in Mandarin:

    (19) a. cannot be in the progressive aspect;

        b. cannot be modified by frame adverbials such as *yi xiaoshi nei* 'in an hour', or co-occur with the durative verb *hua* 'spend';

        c. cannot co-occur with frequency adverbials, such as *yi xia* 'one strike', that show the number of times that the action takes place; but

        d. are compatible with point adverbials such as *san dianzhong* 'three o'clock';

        e. if the achievement event is expressed by a verb compound, the first verb in that compound cannot be modified by durative adverbials like *yi xiaoshi* 'one hour'.

Note the following examples:

    (20) a. **Ta   zai   dao-da   Nanjing.*
           3sg be-at arrive-reach Nanjing
           'S/he was arriving at Nanjing.'

        b. **Ta yi xiaoshi nei dao-da   Nanjing.*[1]
           3sg one hour   in arrive-reach Nanjing
           'S/he arrived at Nanjing in an hour.'

        c. **Ta hua   yi xiaoshi dao-da   Nanjing.*
           3sg spend one hour   arrive-reach Nanjing
           'S/he spent an hour arriving in Nanjing.'

---

[1] Sentences like (20c) are wrong if they are interpreted to mean that the execution of the action takes an hour to complete.

d. *Ta dao-da   Nanjing yi xia.

      3sg arrive-reach Nanjing   one strike

      'S/he arrived at Nanjing one time.'

e. Ta   san   dianzhong dao-da   Nanjing.

      3sg three o'clock   arrive-reach Nanjing

      'S/he arrived at Nanjing at three o'clock.'

f. *Ta   dao-le   yi xiaoshi cai

      3sg arrive-PERF   one hour   then

            dao-da   Nanjing.

            arrive-reach Nanjing

      'S/he arrived for an hour before he arrived at

            Nanjing.'

(21) a. *Wo zai   shou-dao   yi ge baoguo.

      I   be-at receive-arrive one CL parcel

      'I was receiving a parcel.'

b. *Wo yi xiaoshi nei shou-dao   yi ge

      I   one hour   in receive-arrive one CL

            baoguo.

            parcel

      'I received a parcel in an hour.'

c. *Wo hua   yi xiaoshi shou-dao   yi

      I   spend one hour   receive-arrive one

            ge baoguo.

            CL parcel

      'I spent an hour receiving a parcel.'

95

d. *Wo shou-dao   yi xia   baoguo.

   I receive-arrive one strike parcel

   'I received a parcel one time.'

e. Wo san   dianzhong shou-dao   baoguo.

   I three o'clock   receive-arrive parcel

   'I received a parcel at three o'clock.'

f. *Wo shou-le   yi xiaoshi shou-dao

   I receive-PERF one hour   receive-arrive

        baoguo.

        parcel

   'I received for an hour before I received a

        parcel.'

(22) a. *Ta yeye   zai   si.

    3sg grandpa be-at die

    'Her/his grandpa was dying.'

  b. *Ta yeye   yi xiaoshi nei si.

    3sg grandpa one hour   in die

    'Her/his grandpa died in an hour.'

  c. *Ta yeye   hua   yi xiaoshi si.

    3sg grandpa spend one hour   die

    'Her/his grandpa spent an hour dying.'

  d. *Ta yeye   si yi xia.

    3sg grandpa die one strike

    'Her/his grandpa died one time.'

96

e. *Ta yeye   san   dianzhong   cai si.*

  3sg grandpa be three o'clock then die

  'Her/his grandpa did not die until three o'clock.'

In (22a), the Chinese sentence is ungrammatical, although the English translation is not. The results of these tests again support the analysis of achievements proposed in RRG. Progressive aspectual verbs, durative expressions, frame adverbials, and frequency adverbials are incompatible with the temporal structure of this category, and therefore cannot be applied, as shown in the (a-d) and (f) examples. On the other hand, point adverbials fits the temporal structure and are a diagnostic for achievements in Mandarin, as shown in the (e) examples.

4.3.5 Summary

Based on both the semantic and the syntactic behaviours of the various predicates examined above, the conclusion can be drawn that Mandarin does provide the linguistic evidence required to recognize the event types that have been widely established for other languages. The state and activity event types are expressed by single predicates, whereas the accomplishment and achievement event types are often expressed by multiple predicates, directly reflecting the complex logical structures of such event types proposed in RRG. The following table summarises the syntactic and semantic tests used to identify these four event types.

Table 4.3: *Syntactic and semantic tests used for Mandarin*

Criterion	States	Activities	Accomplishments	Achievements
1. Occurs with **progressive aspect**	No	Yes	No	No
2. Occurs with *yi xiaoshi* 'one hour', or *hua* 'spend', etc.	Yes	Yes	Yes	No
3. Occurs with *yi xiaoshi nei* 'in an hour'	No	No	Yes	No
4. Occurs with *yi xia* 'one strike'	No	Yes	No	No
5. Occurs with *san dianzhong* 'three o'clock'	No	Yes	Yes	Yes
6. Has inherent causative semantics	No	No	Yes	No

4.4 Macroroles

The concept of macrorole is another important tool used by RRG in the analysis of layered clause structure. RRG has proposed two basic semantic relations, actor and undergoer, as the most generalized semantic relations that hold between predicates and their argument(s). Actor is defined in RRG as the semantic macrorole that is filled by a potential initiator and/or controller of the action expressed by the predicate. It is not an equivalent to syntactic subject, as in (23); and it encompasses several semantic relations, such as agent, effector, experiencer, etc., depending on the nature of the predicate that it co-occurs with, as in (24) (Foley & Van Valin 1984). In both examples, the arguments that are actors are shown in bold:

(23) a. *The hunter shot the bear.*

(Agent)

b. *The bear was shot by the hunter.*

(Agent)

(24) a. *The boy went to the store.*

(Agent)

b. *The door squeaks.*

(Effector)

c. *I saw her on the street.*

(Experiencer)

The undergoer, contrary to the actor, does not perform, initiate or control an action or a situation, but is affected by the action in one way or another. Like the actor, it is not an equivalent to syntactic direct object, and it is an umbrella semantic macrorole that covers several semantic relations, such as patient, theme and locative, etc., again depending on the semantics of the predicate that it is associated with, as is shown in (25). The arguments that indicate undergoers are also shown in bold:

(25) a. *The bear was shot by the hunter.*

(Patient)

b. *The boy was sick.*

(Patient)

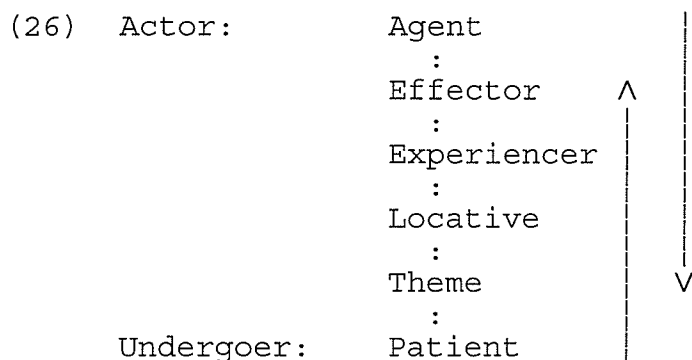c. *Radiation is emitted by the sun.*

(Theme)

d. *A telegram was received by the lawyer.*

(Theme)

e. *The ball hit the wall.*

(Locative)

It can be seen that actor is not equated to syntactic subject, as in (23), nor undergoer to syntactic direct object, as in (25). It can also be seen that they do not have constant semantic content. These two relations are held as universal in RRG, and it is with respect to these two that various grammatical processes in natural languages are to be understood. Based on the study of these macroroles in English, Foley and Van Valin (1984) have proposed a universal hierarchy of primitive semantic relations, showing a continuum of increasingly marked choices for the two macroroles, as represented in (26) (Van Valin 1993: 41):

```
(26)  Actor:         Agent          |
                       :            |
                      Effector   Λ  |
                       :         |  |
                      Experiencer|  |
                       :         |  |
                      Locative   |  |
                       :         |  |
                      Theme      |  V
                       :         |
        Undergoer:    Patient    |
```

Actor/Undergoer hierarchy

They point out that this hierarchy represents a possible semantic range that is found in all languages, with agent representing one end, patient the other, and all of the other semantic relations being points along the hierarchy. They

100

point out that there is no definite number of semantic distinctions that every language must make (Van Valin 1993: 41). Some variation is possible in the middle of this hierarchy from one language to another. For example, languages may make more or fewer semantic relations than what is listed in the hierarchy. However, there is strong evidence that certain of those distinctions are universal and they generally fall within this continuum.

Another important point that needs to be mentioned is that in RRG a specific semantic relation is not arbitrarily assigned to a predicate, as is the case in case grammar, but is derived from the logical structure in which it occurs (Van Valin 1993: 43). In case grammar (Fillmore 1968), for example, constant case values are posited to nouns regardless of environments in which nouns occur. These case roles are assigned to verbs by means of case frames. For example, the case frame for a verb like 'open' would be [___ (A) P (I)], with agent and instrument being optional. The arbitrariness of this approach to semantic roles lies in the fact that the assignment of semantic roles to verbs does not follow from the semantic structure of the verb, as semantic roles are treated as entities existing independently of the verbs that they are assigned to (Foley & Van Valin 1984). In RRG, on the other hand, whether an argument is interpreted as an agent, locative, or patient, depends upon its role in the logical representation of the predication in which it occurs. (The

101

lexical content of an argument does play a role in its interpretation, but this role is far less significant than that of the semantic structure of the predication.) Table 4.4 shows various interpretations of arguments in the state and the activity event types in English (Van Valin 1993:39).

Table 4.4: *Logical structures and semantic relations in English*

```
I   State Verbs
    A. Locational              be-at'(x,y)        x=theme, y=locative
    B. Non-locational
       1. State or condition   broken'(x)         x=patient
       2. Perception           see'(x,y)          x=experiencer, y=theme
       3. Cognition            believe'(x,y)      x=experiencer, y=theme
       4. Possession           have'(x,y)         x=locative, y=theme
       5. Equational           be'(x,y)           x=locative, y=theme

II Active verbs
   A. Uncontrolled
       1. Non-motion           cry'(x)            x=effector, y=locative
                               or eat'(x,y)
       2. Motion               roll'(x)           x=theme
   B. Controlled               DO(x,[cry'(x)])    x=agent
```


4.5 Macroroles in Mandarin

4.5.1 Semantic relations

This section attempts to show that their notion of macroroles proves to be an adequate tool to characterize the relation between predicates and their arguments in Mandarin clauses. As predicted in RRG, each macrorole in Mandarin subsumes several semantic relations which may be derived from the logical structure of predicates proposed in RRG. Note (27) and (28):

102

(27) a. *Shu   zai   zhuo   shang*.   (Theme)

        book be-at table   LOC

        'The book was on the table.'

    b. *Wo bing-le*.   (Patient)

        I   sick-PERF

        'I was sick.'

    c. *Ming xiangxin wo*.   (Experiencer)

        Ming believe me

        'Ming believed me.'

(28) a. *Shu   zai   zhuo   shang*.   (Locative)

        book be-at table LOC

        'The book was on the table.'

    b. *Ming xiangxin wo*.   (Theme)

        Ming believe me

        'Ming believed me.'

The arguments in bold which bear different semantic relations in example (27) are all actors, while arguments in bold in (28) which again show different semantic relations are undergoers. In (27a) and (28a), *zai* 'be-at' is a two-place locational stative predicate. The logical structure of such a predicate requires x (the actor) to be a located entity, hence a theme; and y (the undergoer) to be a location, hence a locative. The example in (27b) contains a non-locational state predicate of condition, its single actor argument *wo* 'I' is a patient. In (27c) and (28b), the cognition verb *xiangxin* 'believe' is a two-place non-locational state predicate. The

103

actor argument is a believer, hence an experiencer, and the undergoer is the belief, hence bearing a theme relation to *xiangxin* 'believe'.

The verb of possession in the RRG theory requires the actor to be a location, hence a locative; and the undergoer to be a located entity, hence a theme. This logical structure for the possessive verb 'have' is directly realized in Mandarin, evidence that supports the analysis in RRG of the relation between the logical structure of a predicate and the semantic relations of the arguments that the predicate governs. For example, in (29), the locative noun *zhuo shang* 'table surface' functions as the actor of *you* 'have', whereas the English translation has to turn it into a prepositional phrase. The undergoer *bi* 'pen' is the entity that may be located, hence a theme.

> (29) **Zhuo   shang** *you   yi   zhi* **bi**.   (Locative, Theme)
>
>   table   LOC   have that CL   pen
>
>   'There was a pen on the table.'
>
>   Literally: 'The table surface had a pen.'

The equational construction in RRG receives a localistic semantic analysis, a position taken by many other scholars as well, such as Anderson (1971), Gruber (1976), and Jackendoff (1976, 1983), inter alia. What distinguishes the RRG position from that of other scholars is that the actor argument in an equational construction in RRG is treated as a locative rather than a theme, and the attribute is analyzed as a theme rather

than a locative. This line of analysis for equational constructions was also used by Schwartz (1993), and it may find supporting evidence from Mandarin equational constructions. Note that the example in (30) has a locative noun *zhuo shang* 'table surface' functioning as the actor of the equational predicate, and indicating that the table surface is where the undergoer, the theme entity *yi ben shu* 'one book', is located.

(30) ***Zhuo   shang*** *shi yi ben **shu**.*   (Locative, Theme)

    table   LOC   be   one CL   book

    On the table was a book.

    Literally: '*The table surface was a book.'

The fact that *zhuo shang* 'table surface' is a location is clearly marked by the localizer *shang*. Chao (1968) has called words like *zhuo shang* place words, which are distinguished both morphologically and syntactically from nouns for places. Nouns for places usually need the addition of some kind of localizer to form place words, and it is only place words that can occur with the verb *zai* 'be-at'. Note the following examples:

(31) a. *Ta zai   shan   **shang**.*

        3sg be-at mountain LOC

        'S/he was on the mountain.'

    b. **Ta zai   shan.*

        3sg be-at   mountain

c. *Ta   zhan   zai   men   **nar**.*

   3sg stand be-at door there

   'S/he stood at the door.'

e. **Ta*   zhan   zai   men*.

   3sg stand be-at door

A localizer may have semantic content, as is the case with *nar* 'there' in (31c). Therefore, the fact that the actor argument in (30) is marked by a localizer shows that it is a noun bearing a locative relation with its predicate, thus supporting the RRG position for equational constructions.

    The actor argument in (32) is an effector, meaning that the action is not under control by its actor.

  (32) ***Na*   *xiaohai* *ku-le*.**   (Effector)

      that child   cry-PERF

      'That child cried.'

    The example in (33) contains a two-place activity verb *chi* 'eat' with a non-human actor. It initiates the activity but without intention, thus constituting an effector.

  (33) ***Ji***   *chi* **mi**   *le*.   (Effector, Locative)

      chicken eat rice RTM

      'The chicken ate rice.'

Mi 'rice' the undergoer of *chi* 'eat' is viewed as a locative according to RRG, as it is a participant in an unbounded, dynamic state of affairs.

    The actor argument of the motion verb *gun* 'roll' in (34), is a theme, as it undergoes a change of location.

(34) *Qiu   gun-le.*   (Theme)

      ball roll-PERF

      'The ball rolled.'

Finally, the example in (35) contains a prototypical agent, in the sense that the actor is in control of the action.

(35) *Na   haizi   guyi   ku-le.*   (Agent)

      that child   purposely cry-PERF

      'The child purposely cried.'

To summarize, this examination of some of the predicates occurring in state and activity event types in Mandarin shows that Mandarin makes the same kind of semantic distinctions that English does. The following table summarizes the logical structures of the predicates examined and the semantic relations they bear.

Table 4.5: *Logical structures and semantic relations in Mandarin* [2]

```
I  State Verbs
   A. Locational              zai'   'be-at'(x,y)   x=theme, y=locative
   B. Non-locational
      1. State or condition   bing'    'ill'(x)      x=patient
      2. Cognition            xiangxin'              x=experiencer, y=theme
                              'believe'(x,y)
      3. Possession           you'   'have'(x,y)    x=locative, y=theme
      4. Equational           shi'   'be'(x,y)      x=locative, y=theme

II Active verbs
   A. Uncontrolled
      1. Non-motion           ku'    'cry'(x) or    x=effector, y=locative
                              chi'   'eat'(x,y)
      2. Motion               gun'   'roll'(x)         x=theme
   B. Controlled              DO(x,[ku' 'cry'(x)])    x=agent
```

---

[2]   English glosses are provided for the purpose of interpretation only. They are not part of the logical structures.

4.5.2 The Actor and Undergoer Hierarchy

This section investigates whether these semantic distinctions in Mandarin fall on the continuum predicted by RRG. Note the following example:

(36) *Ming yong shitou ba wan za-sui-le.*

Ming use stone BA bowl hit-broken-PERF

'Ming broke the bowl with a stone.'

[[DO (Ming, [**do'**[3] (Ming)])] CAUSE [**do'** (shitou)]]

CAUSE [BECOME **broken'** (wan)]

There are three verbs in (36), *yong* 'use', *za* 'hit' and *sui* 'broken'. *Yong* is an activity verb, the other two form an agentive accomplishment compound. This sentence is read: Ming intentionally used a stone, which caused the stone to hit the bowl, and this caused the bowl to be broken. The logical structure of (36) shows that Ming is the only argument of 'DO', therefore the agent; *shitou* 'stone', on the other hand, is the effector, and *wan* 'bowl' is the patient. Both the agent and the effector are possible candidates for the actor macrorole. However, the hierarchy in RRG states that when there is an agent in an active sentence, it must be the actor; this is directly reflected in (36) where only *Ming* may be an actor, but not *shitou* 'stone'. If the latter is made the actor, then the resulting sentence is unacceptable as far as the meaning is concerned:

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[3] The symbol 'do'' should not be confused with 'DO'. The former signals 'predicate'', while the latter expresses agency and control.

108

(37) *Shitou yong Ming ba wan za-sui-le.

     stone   use Ming BA bowl hit-broken-PERF

     'The stone broke the bowl with Ming.'

However, if the agent *Ming* is absent, the effector *shitou*
'stone' may be interpreted as an actor:

(38) *Shitou ba wan za-sui-le.*

     stone BA bowl hit-broken-PERF

     'The stone broke the bowl.'

     [**do'**(shitou) CAUSE [BECOME **broken'**(wan)]

These data show that the agent and effector in Mandarin do
follow the agent > effector hierarchy for access to the actor
macrorole.

    Now consider another example:

(39) *Zhe jian shi shi ta xiang-le hen duo*

     this CL matter make 3sg think-PERF very many

              wenti.

              questions

     'This matter made her/him think of many questions.'

     [**do'**(zhe jian shi) CAUSE [**think'**(ta, wenti)]]

There are two predicates, *shi* 'make' and *xiang* 'think', in
this example. Together they express an accomplishment event,
with the first predicate signalling the causing phase and the
second predicate indicating the caused phase. The sentence is
read: This matter unintentionally did something which caused
her/him to think of many questions. By virtue of the meaning
of the predicates with which the three arguments in (39) are

associated, *zhe jian shi* 'this matter' is an effector, *ta* '3sg' is an experiencer, and *wenti* 'questions' is a theme. The RRG hierarchy predicts that when a sentence contains both an effector and an experiencer, the effector should outrank the experiencer to become the actor, and this is manifested by (39). If the experiencer is made to outrank the effector, the resulting sentence is again unacceptable due to its strange meaning:

      (40) **Ta shi zhe jian shi xiang-le hen duo*

          3sg make this CL matter think-PERF very much

                wenti.

                questions

         'S/he made this matter think of many questions.'

This establishes the validity of the hierarchy effector > experiencer with Mandarin data. The English sentence *Her mother made her kill John* appears to violate such a hierarchy at first glance, as *her* is an agent, not an experiencer. However, a closer look will show that the mother in such a sentence is also an agent, therefore the hierarchy effector > experiencer is not violated.

    Now consider this example:

    (41) *Ta xiang qu shangdian.*

          3sg want go store

          'S/he wanted to go to the store.'

          want'(ta, [[**do'**(ta)] CAUSE [BECOME **be-at'**(ta,

              shangdian)]])

Example (41) is an 'equi' construction, consisting of two predicates, the cognition verb *xiang* 'want' and the motion verb *qu* 'go'. The logical structure shows that the first *ta* '3sg' is an experiencer, and the argument *shangdian* 'store' is a locative. There are two more *ta*'s in the logical structure, the effector and the theme. Since they are under coreference with the experiencer, all three of them will be linked to the same syntactic function *ta* '3sg'. As is expected, the experiencer will outrank the locative for access to the actor macrorole, but not vice versa. Note the ungrammaticality of the example in (42), where such a reversal has been attempted:

(42) *Shangdian xiang qu ta.*

      store   want go 3sg

      'The store wanted to go to her/him.'

What has been discussed so far has confirmed the hierarchy agent > effector > experiencer > locative for access to actor in Mandarin. Will the hierarchy be as valid with the undergoer in Mandarin? See the example in (43):

(43) *Ming gei wo yi ben shu.*

      Ming give me one CL book

      'Ming gave me a book.'

      [DO (Ming, [**do'** (Ming)])] CAUSE [BECOME **have'** (wo,

          shu)]

The verb *gei* 'give' in (43) is a three-place accomplishment verb. The first argument *Ming* is the actor, as it is the only argument of 'DO'. The other two arguments, *wo* 'me', the

111

locative, and *shu* 'book', the theme, are both potential choices for the undergoer. The hierarchy proposed in RRG predicts that when these two are present in the same clause, theme should outrank locative for access to the undergoer macrorole; i.e., only *shu* can be interpreted as the undergoer. This line of analysis is confirmed by the following examples:

(44) a. *Shu bei Ming gei wo le.*

　　　 book by Ming give me RTM

　　　 'The book was given to me by Ming.'

　　 b. **Wo bei Ming gei shu le.*

　　　 I by Ming give book RTM

　　　 'I was given the book by Ming.'

The notions of actor and undergoer are used by the RRG theory to explain the active-passive opposition. In an active construction, the actor occupies the subject position; while in a passive construction, the undergoer does. The example (44a) shows that the theme *shu* 'book' occurs in a subject position, and (44b) shows that the locative *wo* 'I' cannot. This suggests that *shu* 'book' is the only legitimate choice for the undergoer in (43), thus corroborating the hierarchy of the undergoer, suggested in RRG; i.e., theme outranks locative for access to the undergoer macrorole.

The semantic relation of patient is proposed by RRG as the prototypical undergoer, in the sense that a patient is always the undergoer if it is present, outranking any other semantic relations for such an interpretation. This proposal

112

is supported by Mandarin data, as in (36), which are repeated in (45), where the patient can only be understood as the undergoer:

> (45) *Ming yong shitou ba **wan** za-sui-le.* (Patient)
>
> Ming use stone BA bowl hit-broken-PERF
>
> 'Ming broke the bowl with a stone.'

Since the patient has priority over other semantic relations for access to the undergoer macrorole, and only the undergoer can be made the subject of a passive structure, then the patient subject *wan* in the passive construction is grammatical, as expected, whereas the effector subject in the same structure is ungrammatical:

> (46) a. ***Wan** bei Ming yong shitou za-sui-le.*
>
> bowl by Ming use stone hit-broken-PERF
>
> 'The bowl was broken by Ming with a stone.'
>
> (Patient)
>
> b. **Shitou bei Ming yong ba wan za-sui-le.*
>
> stone by Ming use BA bowl hit-broken-PERF
>
> 'The stone was used by Ming to have broken the bowl.'
>
> (Effector)

With respect to the data investigated, it can be concluded that the hierarchy of actor and undergoer is found in Mandarin as predicted in RRG. Although the situation in Mandarin is not exactly like that found in other languages studied in RRG, such as English, a general statement can still

be made that the semantic relations that Mandarin utilizes do fall along the continuum as expected.

4.5.3 The Syntax of the Actor and Undergoer
4.5.3.1 The Mediators

It has been seen that each of these two macroroles in Mandarin subsumes several semantic relations, as they do in other languages, and that they form a continuum, with one pole being the agent and the other being the patient. They are not equated with a particular syntactic function, just as is the case in other languages. Consider the examples in (47), where the particular macrorole that the highlighted arguments bear to their respective predicates is given in brackets:

(47) a. *Ming da-le   wo.*   (Actor)

      Ming hit-PERF me

      'Ming hit me.'

  b. *Wo bei Ming da-le.*   (Undergoer)

      I by Ming hit-PERF

      'I was hit by Ming.'

  c. *Ji   ba mi chi-wan-le.*   (Actor)

      chicken BA rice eat-finish-PERF

      'The chicken ate the rice.'

d. *Mi   bei ji   chi-wan-le.* (Undergoer)

rice by chicken eat-finish-PERF

'The rice was eaten by the chicken.'

e. *Zhe zhi bi   hen hao.*   (Undergoer)

this CL   pen very good

'This pen is very good.'

f. *Ta tiao-le   yi xia.*   (Actor)

3sg jump-PERF one strike

'S/he jumped one time.'

These data are intended to show that in Mandarin the actor
does not equate to the syntactic subject, nor does the
undergoer equate to the syntactic direct object. The question
now arises as to the motivation for the creation of these two
macroroles. RRG states that the establishment of such notions
is to capture the generalization that some of the semantic
relations tend to be treated alike with regard to certain
grammatical processes. In English, for example, agent,
effector, and experiencer tend to fill the actor role, whereas
patient, theme, and locative tend to fill the undergoer role.
With the concept of the macrorole, the active construction in
English can be easily described as one with an actor subject;
while the passive construction can be described as one with an
undergoer subject. This explanation applies to Mandarin as
well. For example, regardless of the type of semantic
relation arguments bear with their predicates, it can be seen
that the syntactic subject of the active constructions in

115

(47a) and (47c) is the actor, while the syntactic subject of their passive equivalents in (47b) and (47d) is the undergoer. Each of the two macroroles can be the single argument of a one-place predicate, as is shown in (47e) and (47f). The macroroles, therefore, can be described as the mediators between semantic roles and grammatical functions.

4.5.3.2 Coding Strategies in Mandarin

Coding strategies are proposed in RRG as main criteria utilized by languages to mark the actor/undergoer distinction. Of the three basic strategies, namely, word order, case marking and cross-referencing (agreement), that are used to code syntactic functions, Mandarin mainly utilizes the first one, with occasional use of the second strategy. Like English, Mandarin has a 'determinate' word order system, i.e., a system in which grammatical principles prescribe the order of different arguments to a considerable extent. In a transitive sentence with unmarked word order, preverbal position is generally occupied by actor, and postverbal position by undergoer. Consider example (48):

  (48) a. *Wo da-le ta.*

     I hit-PERF 3sg

     'I hit her/him.'

    b. *Ta da-le wo.*

     3sg hit-PERF me

     'S/he hit me.'

116

In (48a) *wo* 'I' is a preverbal argument, hence the actor; while *ta* '3sg' is a postverbal argument, hence the undergoer. In (48b), however, *wo* is the undergoer as it appears in the postverbal position, whereas *ta* is the actor as it occupies the preverbal position. There are ways for the undergoer in a transitive clause to appear in the preverbal position. This requires the use of constructions with marked word order as in (49):

> (49) a. *Ta **bei** wo da-le.*
>
>   3sg by me hit-PERF
>
>   'S/he was hit by me.'
>
>   b. *Wo **ba** ta da-le.*
>
>   I BA 3sg hit-PERF
>
>   I hit him.

Their marked status in comparison to (49) is indicated by *bei* 'by' in (49a) and *ba* in (49b). The constructions exemplified in (49) are motivated by discourse pragmatic considerations. The passive construction (49a) is used to signal that the unmarked position for the primary topical participant is occupied by the undergoer *ta* '3sg'; while (49b) is used to signal additional emphasis for the focus *ta*. Regardless of the marked syntactic positions that they occupy in each construction, their semantic relation remains the same, the undergoer.

4.6 Summary

Utilizing the theoretical resources of RRG, this chapter has investigated intra-clausal syntax in Mandarin in terms of lexical decomposition, event types, macroroles, and coding strategies. These concepts will be used in the analysis of clause linkage in Mandarin in subsequent chapters. The result of this brief exploration of these concepts using Mandarin data agrees with what Foley and Van Valin (1984) have proposed in their studies of a wide range of languages. The RRG revised criteria selected from Dowty's (1979) work for the identification of event types have served as a guideline for examining the Mandarin event distinctions, and have proven to be adequate, thus adding evidence for their cross-linguistic validity. The RRG concept of macroroles is useful in generalizing complicated semantic relations of arguments in Mandarin clauses. They have added attractiveness for the use of the RRG theory. Since all the concepts explored in this chapter will be used in the investigation of Mandarin complex sentences, this examination of intra-clausal phenomena in Mandarin proves to be essential. It prepares for the analysis of complex sentences to be carried out in the subsequent chapters.

Chapter 5

Operators

5.0 Introduction

In RRG a clause is viewed as consisting of three fundamental units, nucleus, core, and periphery, with a nesting relationship among them. Each of these units may be modified by its corresponding operators, or grammatical categories, such as aspect, modality, tense, and illocutionary force. For example, aspect is predicted to be an operator affecting the nuclear level. Modality is argued to be an operator for the core layer, while operators such as tense and illocutionary force are claimed to have effect on the peripheral level. These operators demonstrate an increasing scope relationship, with nuclear operators, such as aspect, exhibiting the smallest scope, and peripheral operators, such as illocutionary force, showing the largest scope. The scope of operators plays an important role in the RRG theory in identifying nexus types of different kinds in complex sentences. This chapter prepares for the analysis of clause linkage in Mandarin by exploring its operator system. Attempts will be made to carefully define each operator found in the data, and to classify them on both syntactic and semantic grounds.

5.1 Operators in Mandarin

5.1.1 Nuclear Operators

Through their study of a variety of languages, Foley and Van Valin (1984) have discovered that aspect is a universal operator at the nuclear layer. The Mandarin data investigated here support this claim, and reveal that aspect is the only operator in Mandarin for the nuclear layer. There are several aspect markers in Mandarin, each describing an internal temporal structure of a narrated event, such as *-le* 'perfective aspect marker', *-zhe* 'durative aspect marker', and *-guo* 'experiential aspect marker'. Examples that contain these aspect markers are given in (1).

(1) a. *Wo chi-le fan le.*

wo eat-PERF rice RTM

'I have eaten.'

b. *Wo chi-zhe fan.*

I eat-DUR rice

'I was eating.'

c. *Wo chi-guo fan.*

I eat-EXP rice

'I have eaten.'

Two things are clear from these examples. First, all of these aspect markers are suffixed to the verb. Second, the interpretation of the verb and its aspect marker does not involve the meaning of any arguments (see 3.3.2 for the relevant discussion). The information regarding whether an

120

action is completed, in progress, or has been experienced once before, is solely provided by the verb plus its aspect marker. In other words, the aspectual distinctions in the above examples describe the 'feature changing' properties of a predicate, which do not depend on other features, such as the features of arguments. For instance, example (1a) has the feature of [+ momentaneous], while (1b) has the feature of [-momentaneous]. This feature of momentaneousness operates on the predicate *chi* 'eat' only, without involving the arguments of the predicate.

Due to this specific function of aspectual categories, the predicate and its aspect marker often form a tight construction, so close that nothing can be inserted between them. Examples from Mandarin are shown in (2):

(2) a. **Wo chi fan -zhe*.

     I   eat rice -DUR

  b. **Wo chi fan -guo*.

     I   eat rice-EXP

The close relation between the verb and the aspect marker can also be seen from other angles. Compared to other Mandarin grammatical categories, such as tense and illocutionary force, aspect happens to be the only grammatical category that may be suffixed to the predicate. When a predicate occurs by itself to form an elliptical answer to a question, the relevant aspect marker suffixed to the verb has to be kept, even though other elements (such as arguments) may

be deleted, as is shown in (3):

    (3) a: A: *Ni chi-le   fan le ma?*

            you eat-PERF rice RTM Q

            'Have you eaten yet?'

        B: *Chi-le.   /*Chi.*

            eat-PERF /eat

            '(I) have eaten.'

These facts present syntactic and semantic evidence from
Mandarin that supports the RRG claim that the predicate in a
clause comprises a distinct layer, the nuclear layer, with
aspect as its sole operator.

5.1.2 Core Operators

    Core operators are those that operate on the core layer;
i.e., the predicate plus its argument(s). Such a definition
stems from the fact that the grammatical categories expressed
by core operators concern the relationships between the
predicate and its argument(s), rather than properties of the
predicate itself. More specifically, core operators express
the grammatical categories which specify the speaker's
estimate of the relationship of the actor of an event to its
accomplishment; i.e., whether the action performed by the
actor is actual or not, whether the orientation of the action
is towards the speaker or not, or whether the actor has the
obligation, the intention, or the ability to perform it or not
(cf. Foley & Van Valin 1984: 214, Van Valin 1993: 8). This is

the crucial evidence that RRG (and other functional approaches to clause structure) utilizes for explaining the scope differences exhibited by core and nuclear operators, respectively (see also Hengeveld 1989, 1990, Dik, Hengeveld, Vester & Vet 1990, Siewierska 1991, etc.). Note that such a definition for core operators does not include the undergoer, although the undergoer is claimed to be a member of the core layer.

Mandarin has several core operators. They include: two directional morphemes, *lai* 'expressing the orientation of motion towards the speaker', *qu* 'expressing the orientation of motion away from the speaker', and a number of modality markers. These core operators are discussed individually in the following sections.

5.1.2.1 Directionals

Two directional verbs *qu* 'go' and *lai* 'come' are found to be core operators, as both specify the direction of the action with reference to a speech act participant (cf. Van Valin 1993: 8). Consider the following examples:

(4) a. *Ming dao   xuexiao qu le.*

      Ming arrive school DIR RTM

      'Ming went to school (i.e. move in a direction

          away from the speaker).'

    b. *Ming dao-le   xuexiao lai le.*

       Ming arrive-PERF school   DIR RTM

       'Ming came to school (i.e. move in the direction

           of the speaker).'

    c. *Wo dao   xuexiao* **qu** *le.*

       I arrive school DIR RTM

       'I went to school (i.e. move in a direction

       away from the addressee).'

Several observations follow from the above examples. First, directionals, like aspect markers, appear in a postverbal position. However, compared to aspect markers, directionals occur farther away from the predicate than aspect markers do, and they can be separated from the verb by other elements, such as an undergoer, as illustrated by (4a-c). This is not surprising, as core operators such as directionals are expected to modify the whole core, whereas aspect markers are expected to modify the predicate only. This differential syntactic distance shown respectively by nuclear operators and core operators in relation to the predicate position serves to indicate the relative semantic distance that each type of operator bears to the predicate. Suffixed to the predicate, the nuclear operator of aspect bears the tightest semantic relation with the predicate. Capable of being separated from the predicate by other elements, core operators of direction, on the other hand, exhibit a relatively looser semantic relation to the predicate.

Second, it can be seen that the meaning of directionals must be included in the interpretation of the predicates in (4). For example, in (4a) the verb *dao* 'arrive' and the directional *qu* together mean 'to go'.

Third, the meaning of directionals must make reference to the position of either the actor or the speaker. Based on the definition of the core operator offered in RRG, directionals *lai* and *qu* in Mandarin must be analyzed as core operators, as they clearly have the whole core under their scope.

Fourth, just as it was alluded to in Chapter Three and again in 5.1.2, the interpretation of these directionals does not involve the undergoer. This appears to raise the question of whether the undergoer, such as *xuexiao* 'school' in (4), is indeed at the same level with the actor, such as *Ming*. Although RRG predicts that it is, the empirical evidence from Mandarin that directionals do not affect the undergoer suggests otherwise.

5.1.2.2 Various Modality Markers

Also functioning as core operators are various modality markers in Mandarin. These morphemes reflect the speaker's estimate of the relationship between the core arguments and the realization of the event expressed by the core. These modality distinctions include: ability, permissibility, obligation, volition, etc., which are traditionally referred to as deontic modalities. Here are some examples:

125

(5) a. *Ming **neng*** *dao* *xuexiao qu.*

Ming be-able-to arrive school DIR

'Ming was able to go to school.'

b. *Ming **keyi** dao* *xuexiao lai.*

Ming may arrive school DIR

'Ming may come to school.'

c. *Ming **bixu*** *qu xuexiao.*

Ming ought-to go school

'Ming ought to go to school.'

d. *Ming **hui*** *shuo zhongwen.*

Ming know-how-to speak Chinese

'Ming knew how to speak Chinese.'

e. *Ming **xiang** xue* *zhongwen.*

Ming desire study Chinese

'Ming had a desire to study Chinese.'

f. *Ming **yao** xue* *zhongwen.*

Ming want study Chinese

'Ming wanted to study Chinese.'

Note that these highlighted modality morphemes appear preverbally in a clause. Since the interpretation of different modality morphemes reflects the speaker's knowledge of the relationship between a core argument and the occurrence of a given situation, the function of modality markers go beyond describing the properties of a bare predicate. Thus, they are treated as core operators. However, the same problem that arises in the discussion of directionals is again

encountered here. Modality markers indicate a relation between the actor and the verb only, without involving the undergoer. The evidence from Mandarin does not appear to support the RRG statement that the core layer involves all three members, actor, verb and undergoer, when semantic scope of core operators is used for such a judgement.

5.1.3 Peripheral Operators

Peripheral operators (or clausal operators) differ from core operators in that the former have the whole proposition under their scope, while the latter have only the core layer under their scope. Peripheral operators in Mandarin include status markers, tense markers, evidentiality morphemes and a number of sentential particles describing illocutionary force distinctions.

5.1.3.1 Status Markers

Status markers describe what is traditionally referred to as epistemic modalities. They depict the evaluation by the speaker of the likelihood of the actuality of the event expressed by the proposition. The semantic difference between a modality marker, which is a core operator, and a status marker, which is a peripheral operator, lies in the following distinction: the speaker offers his/her knowledge about a given situation by means of a core operator, while he/she presents an evaluation of the likelihood of occurrence of a

127

given situation by means of a peripheral operator. Examples
(6a-c) illustrate the use of different status markers in
Mandarin:

> (6) a. *Ming **keneng** neng lai.*
>
>   Ming possible be-able-to come
>
>   'It is possible that Ming is able to come.'
>
>   b. *Ming **kending** hui shuo zhongwen.*
>
>   Ming certain know-how-to speak Chinese
>
>   'It is certain that Ming knows how to speak
>
>   Chinese.'
>
>   c. *Ming **juedui** xiang qu Beijing.*
>
>   Ming absolutely-certain want go Beijing.
>
>   'It is absolutely certain that Ming wants to go
>
>   to Beijing.'

Status markers occur preverbally. Like epistemic modality
markers in other languages, these epistemic expressions in
Mandarin are quantifiable on a scale ranging from absolute
certainty to impossibility. Note in examples (6a-c), in which
both status and modality markers appear in the same clause,
status markers occur further away from the predicate than the
modality markers. This is expected, as modality markers are
core operators modifying the core layer only, whereas status
markers are peripheral operators modifying the whole
proposition. Once again the range of the semantic scope of
these different types of operators is reflected in the
syntactic distance of the relevant operator in relation to the

predicate.

5.1.3.2 Relative Tense Marker

The term relative tense refers to a tense that does not include as part of its meaning the present moment as deictic centre, but relies on the reference time given by the context for the location of a situation in time (Comrie 1985: 56). Following this definition, the sentence particle *le* in Mandarin will be treated as a relative tense marker. This analysis is contrary to the previous analyses found in the literature, where the sentence particle *le* has been suggested to be an aspect marker (see Teng 1975, Chan 1980, Huang & Davis 1989, etc.). The treatment of *le* as a tense marker was first mentioned briefly by Liang (1986). The current analysis supports Liang (1986) by providing evidence substantiating such a treatment. The arguments are based on the following properties of *le*: 1) the sentence particle *le* does not concern the internal temporal properties of the predicate, but depicts the location in time of a situation, designated by the whole predication, as points in a linear sequence; 2) the interpretation of the sentence particle involves the identification of a temporal referent point provided in the speech act. Now consider the examples in (7):

(7) a. *Ming mai dongxi qu le.*

   Ming buy thing DIR RTM

   'Ming has gone out shopping.'

   'Ming is out shopping.'

   'Ming went out shopping.'

   b. *Ming na   tian mai dongxi qu le.*

   Ming that day buy thing DIR RTM

   'Ming went out shopping that day.'

   c. *Ni na   tian da dianha   de shihou, Ming*

   you that day hit telephone NOM time,   Ming

   mai dongxi qu le.

   buy thing DIR RTM

   'When you called that day, Ming had gone out

   shopping.'

   d. *Ming zuotian   mai dongxi qu le.*

   Ming yesterday buy thing DIR RTM

   'Yesterday Ming went out shopping.'

   e. *Ming mingtian jiu dao   jianada qu le.*

   Ming tomorrow then arrive Canada DIR RTM

   'Tomorrow Ming will have gone to Canada.'

A straight-forward observation following the above examples is
that the particle *le* does not contribute to the description of
the internal temporal properties of any of the predicates
above, rather it concerns the location of the situations above
along a linear time axis, with past, present and future being
temporal points. Therefore the sentence particle *le* belongs

130

to the category tense rather than that of aspect.

Attention now turns to the analysis of which subcategory of tense the particle belongs to; i.e., whether it is an absolute tense marker or a relative tense marker. Note in (7a) there is no explicit time adverbial to provide a reference point for time. Therefore the reference point is automatically understood to be the present moment; i.e. Ming is out shopping as of the time the speech act is conducted. As such, it has three different readings, each of which is compatible with the referent point of the present moment. In examples (7b), the adverbial *na tian* is relative to the present moment, therefore it receives a past time reference, and serves as a reference point which locates *Ming mai dongxi qu le* 'Ming goes out shopping' in the past. The adverbial *na tian* in (7c) also gets a past time reference. However, it provides a reference point for the past time location of *ni da dianhua* 'you call', which in turn provides a past time reference point for locating *Ming mai dongxi qu le* 'Ming goes out shopping' in time prior to *ni da dianhua* 'you call'. Examples (7d) and (7e) contain absolute time reference adverbials *zuotian* 'yesterday' and *mingtian* 'tomorrow', respectively, with *zuotian* expressing a time point anterior to the present moment, and *mingtian* describing a time point posterior to the present moment. These reference time points serve to locate the events in those two examples in time accordingly. These facts suggest that the interpretation of

131

the sentence particle *le* is sensitive to the reference time point provided by the context. Whether to use the present moment or some other reference time as a temporal reference point is totally context-dependent. This is what Comrie (1985) has defined as relative tense, and *le* in Mandarin is such a marker. It locates the occurrence of an event in time on the basis of the reference time point provided by the speech act.

Having established the grammatical status of *le*, the explanation for other syntactic as well as semantic features of the particle becomes easier and clearer under the current approach. Note that in (7) *le* occurs postverbally. As a peripheral operator, the relative tense marker *le* is expected to appear further away from the predicate than nuclear and core operators that also occur postverbally, and this is exactly what happens in Mandarin. See the following example where all three operator types are present in the same clause:

(8) a. *Ming dao-le   xuexiao lai le.*

   Ming arrive-PERF school DIR RTM

   'Ming has come to school.'

 b. **Ming dao-le   xuexiao le lai.*

   Ming arrive-PERF school   RTM DIR

In (8a) the nuclear operator, the perfective aspect marker *-le* appears closest to the verb, followed by the core operator *lai*, which is followed by the relative tense marker *le*. Any other ordering of the above operators will render the sentence

132

ungrammatical, as in (8b), where an attempt to do this reordering fails.

The correct ordering, once again, is determined by the semantic scope relations that each type of operator has with the predicate. As has been mentioned earlier, the nuclear operator qualifies internal structure of the predicate, the core operator qualifies the predication expressed by the core layer, and the peripheral operator specifies the properties of the whole proposition. Each type of operator has its own semantic domain, and it is the scope of these semantic domains that defines the level of a particular operator. The relative tense marker *le* locates the time for the whole proposition. Thus it is a peripheral operator, and as such it bears the loosest semantic relation with the predicate, when compared with nuclear and core operators. Hence, it is ordered furthest from the predicate position.

However, it is sometimes difficult to determine the status of *le* when it occurs after a verb at the end of a sentence, as is shown in example (9):

(9) *Ming xiao   le.*

    Ming smile PERF/RTM

    'Ming smiled.'

    'Ming has smiled.'

    'Ming now smiles.'

What is the grammatical status of *le* in (9), a perfective aspect marker, a relative tense marker, or both? It could be

133

an aspect marker, as it comes right after the verb *xiao* 'smile', with no other element standing between them. It could be a relative tense marker locating *Ming xiao* in time relative to the present moment, as it occurs at the end of the sentence. It could also be both an aspect marker and a relative tense marker, lumped into one phonological shape by what Chao (1968: 247) calls haplology in Mandarin. The first two possibilities can be distinguished from one another by the context. For example, with some verbs such as *si* 'die' in (10), only the perfective reading of *-le* is possible, as these verbs do not allow ambiguous interpretation of boundedness:

    (10) *Ming si-le.*

        Ming die-PERF

        'Ming died.'

Addition of the negation marker *bu* to the example (9) will also help to eliminate any interpretational ambiguity, as is shown in (11):

    (11) *Ming bu xiao le.*

        Ming not smile RTM

        'Ming does not smile now.'

This is because the negation marker *bu* signals an unbounded event by denying the existence of such an event. The reading of *bu* is thus incompatible with the perfective interpretation of *-le*, and *le* in (11) can only be understood as a relative tense marker. In the case of (9), context will normally show whether the action of 'smiling' is generic, habitual, or a

specific activity. If it is a generic or habitual activity,
le is interpreted as a relative tense marker, hence the
interpretation 'Ming now smiles' for (9). If it is a specific
activity, *le* may be interpreted as both an aspect marker and
a relative tense marker, indicating that the activity of
'smiling' is a bounded event, and that the time of its
occurrence is relative to the present moment, hence the
readings 'Ming smiled' and 'Ming has smiled'. What is crucial
to the discussion of the relative tense in Mandarin is the
fact that when *le* functions as both an aspect marker and a
relative tense marker at the same time, it does not in any way
conflict with the current approach to operators on the basis
of their different scope relations with the predicate. For
example, in (9), when the two markers -*le* and *le* are merged
into one form through haplology (cf. Chao 1968: 247), their
underlying ordering is still the one with aspect preceding
tense, based on examples where haplology does not operate.

5.1.3.3 Evidentiality

Evidentiality represents the speaker's estimate of the
truth value of a proposition; as such, it would have the
entire proposition within its scope, and is thus a peripheral
operator. In Mandarin evidentiality is expressed by adverbs
such as *xianran* 'evidently', *queshi* 'firmly', *chuanshuo* 'it is
said', etc. These adverbs appear preverbally, before any
other preverbal operators discussed so far:

135

(12) a. *Ming xianran/queshi/chuanshuo*   *keneng*

        Ming evidently/firmly/it-is-said possible

               neng   *lai Beijing.*

               be-able-to come Beijing

        'Evidently/firmly/it is said, it is possible

        that Ming is able to come to Beijing.'

    b. *Xianran/queshi/chuanshuo*   *Ming keneng*

        evidently/firmly/it-is-said Ming possible

               neng   *lai Beijing.*

               be-able-to come Beijing

        'Evidently/firmly/it is said, it is possible

        that Ming is able to come to Beijing.'

The fact that the highlighted evidential morphemes can appear before the status marker *keneng* 'possible' and the modality marker *neng* 'be-able-to' suggests that their scope is wider than that of those occurring after them. With widest scope among all the preverbal operators investigated so far, the evidential morphemes have more freedom than the other preverbal operators by being able to occur either before the actor argument, as in (12a), or after the actor argument, as in (12b).

5.1.3.4 Illocutionary Force

The term illocutionary force is used to denote the communicative intention of the speech act; i.e., whether the proposition is an act of asserting, informing, questioning,

136

predicting, etc. It is assumed that every utterance has an illocutionary force, due to the communicative function of language in general. There are several overt illocutionary force markers in Mandarin. The ones that will be discussed include: *ma* 'question marker', A-not-A question form, *ba* 'solicit agreement marker', and *ne* 'response to expectation marker'. The terminology for these markers is borrowed from Li and Thompson (1981). Now consider the examples in (13):

(13) a. *Ming kending neng   dao   Beijing lai le*

    Ming certain be-able-to arrive Beijing DIR RTM

        ma?

        Q

    'Is it certain that Ming is able to come to

        Beijing now?'

   b. *Ming **shi-bu-shi** kending neng   dao*

    Ming be-not-be certain be-able-to arrive

        Beijing lai le?

        Beijing DIR RTM

    'Is it certain that Ming is able to come to

        Beijing?'

   c. *Ming kending neng   dao   Beijing lai le*

    Ming certain be-able-to arrive Beijing DIR RTM

        ba.

        SA

    'It is certain that Ming is able to come to

        Beijing, don't you agree?'

d. *Ming keneng   neng   dao   Beijing lai le*

   Ming possible be-able-to arrive Beijing DIR RTM

   ne.

   RE

   'It is possible that Ming is able to come

   to Beijing.'

The highlighted elements in these examples are illocutionary
force markers, expressing different kinds of communicative
functions. The morpheme *ma* occurring after both the relative
tense marker *le* and the directional marker *lai* in (13a) turns
a statement into a question. The A-not-A form *shi-bu-shi* 'be-
not-be' in (13b) shows an alternative way of forming a yes-no
question in Mandarin. Occurring preverbally, it appears
before the preverbal operators of status *kending* 'certain' and
of modality *neng* 'be-able-to'. The semantic function of the
particle *ba* in (13c) is like the English tag question, mainly
to ask the listener's opinion about the proposition made by
the speaker (cf. Li & Thompson 1981). Again, it appears after
the tense marker *le* which follows the directional marker *lai*.
The particle *ne* in (13d), occurring sentence-finally, is used
to respond to the listener's expectation. For example, (13d)
could be used in a context when the listener is not expecting
Ming to come to Beijing and the speaker is telling him/her
otherwise. The occurrence of *ne* implies something to the
effect that 'your expectation about Ming is wrong, and this is
what I know.' Although the semantic functions of these

138

illocutionary force markers may differ from one another, two things are clear in (13). First, the illocutionary force markers have the whole proposition under their scope. Second, their syntactic positions suggest that they have the widest scope among operators in relation to the predicate. The postverbal illocutionary force markers, for example, must occur in a sentence-final position, and thus are furthest away from the predicate. The preverbal *shi-bu-shi* 'be-not-be' form must appear before all other preverbal operators, again the furthest category away from the predicate.

5.2 Summary

This investigation of the operator system has shown that, in terms of their syntactic positions, operators in Mandarin are divided into two groups, preverbal and postverbal. In terms of their effect on the semantic content of a sentence, they can be classified into three kinds: peripheral, core, and nuclear. Further, the ordering of their morphological realizations (if any) is iconic, and "pictures" their scope relations: the wider the scope, the further from the predicate, as is shown in table 5.1:

139

Table 5.1: *Operator System in Mandarin*

1. The Order of Preverbal Operators:

    (Illo (Evid (Status [(Modality [Predicate])])))

    --------------------   ---------

         Periphery   Core

2. The Order of Postverbal Operators:

    (([([([Predicate] Aspect)] Directional)] Tense) Illo)

                     ------- ------------- ------------

                     Nucleus   Core   Periphery

Examples that have most of these operators present in the same
sentence are not uncommon in Mandarin. Here are two of them:

      (14) a. Ming shi-bu-shi queshi kending neng

           Ming be-not-be firmly certain be-able-to

                dao   Beijing lai le?

                arrive Beijing DIR RTM

          Is it absolutely certain that Ming is able to

               come to Beijing?

        b. Ming queshi kending dao-le   Beijing

           Ming firmly certain arrive-PERF Beijing

                le ba?

                RTM SA

          It is absolutely certain that Ming has come to

               Beijing, don't you think?

In general this examination of the operator system in Mandarin supports the layered clause structure proposed in RRG by providing evidence that there are grounds to believe that grammatical categories such as aspect, modality, tense, and illocutionary force in Mandarin affect different parts of the clause. Their different scope relations with the predicate, reflected by their syntactic positions in a clause, appear to shed light on the explanation of the word order system in Mandarin in general.

However, there is one inconsistency found in the RRG theory, which is substantiated by the empirical evidence from Mandarin. Contrary to what is claimed in RRG, scope of core operators in Mandarin covers the actor and the verb, but not the undergoer. This situation weakens the RRG proposal of the core layer. A theoretical explanation for this phenomenon is needed in order to describe this discrepancy.

Chapter Six

Clause Linkage in Mandarin

6.0 Introduction

As noted in Chapter Three, RRG recognizes three nexus types: coordination, subordination and cosubordination. These nexus types can be realized at three structural levels: periphery, core, and nucleus. Generally speaking, coordination links juncts that are syntactically and pragmatically independent of one another. This means that there is no obligatory sharing of any grammatical category or operator, and that both juncts code foregrounded information. Subordination, on the other hand, links juncts that are not equal, either syntactically or pragmatically. Syntactically, one junct (the subordinate junct) is embedded within the other (the matrix junct). Pragmatically, the embedded junct typically encodes background information, while the main junct provides foregrounded information. Cosubordination differs from subordination in that there is no syntactic embedding involved in the construction. It differs syntactically from coordination, however, in that there exists some sort of obligatory structural dependency between the two juncts, such as the sharing of relevant operators or arguments. Pragmatically, cosubordination is like coordination in that

both juncts typically contain foregrounded information. All three nexus types are found in Mandarin.

6.1 RRG Criteria

A detailed study of these nexus types at each of the juncture levels where they may be realized is provided in this chapter. The identification of these various clause linkage types will rely on the following criteria. These criteria have been perceived by the author of this dissertation after careful examination of the RRG theory. They are:

(1) a. the presence or absence of syntactic embedding;

    b. the information structure of the juncts, with regard to whether they carry foregrounded or background information;

    c. the syntactic and semantic behaviours of relevant operators;

    d. phonological cues, such as pause and/or intonation;

    e. the nature of argument-sharing between the linked juncts, if any;

    f. the degree of semantic cohesion between the linked juncts, in terms of their ability to encode single discrete events.

Criteria (1a-c) are intended to identify nexus types; i.e., whether the complex construction under investigation is coordinate, subordinate, or cosubordinate.

Assuming the correctness of the theoretical concepts of RRG, a prototypical coordinate construction at a given level: 1) does not exhibit the phenomenon of syntactic embedding, 2) both of its linked juncts carry foregrounded information, and 3) each junct is allowed to have its own operators. On the other hand, a prototypical subordinate construction at a given level: 1) does exhibit syntactic embedding, 2) the subordinate junct typically carries presupposed information, and 3) the subordinate junct often depends on the matrix junct for the specification of certain operators, such as illocutionary force in a peripheral juncture. Lastly, a prototypical cosubordinate construction at a given level: 1) does not display syntactic embedding, 2) the linked juncts both carry foregrounded information, and 3) the linked juncts must share all relevant operators.

Criteria (1d-f) are intended to identify juncture types; i.e., whether the complex construction in question constitutes a peripheral juncture, a core juncture, or a nuclear juncture. In general terms, a peripheral juncture allows an intonation break between the linked juncts, whereas a core juncture or a nuclear juncture does not. The linked juncts in a peripheral juncture, except peripheral cosubordination, may have their own core arguments, but the linked juncts in a core juncture must share at least one core argument, and the linked juncts in a nuclear juncture must share all core arguments. Finally, the degree of element sharing between the linked juncts is

inversely correlated with the ability of any individual junct to encode a single event. Therefore, a maximum capacity for such encoding is retained by a peripheral junct, which requires the least sharing of elements. Core juncture, which requires more sharing of elements, exhibits a diminished capacity for a single junct to encode a discrete event. Nuclear juncture, which requires almost total sharing of elements, results in a situation where the capacity of a single junct to encode a single event is eroded to virtually nil.

6.2 Development of Diagnostics

To apply the RRG theory, fourteen diagnostics are developed on the basis of the six criteria listed in (1). These diagnostics can be divided into two groups on the basis of their functions, and will be used to examine both nexus and juncture properties exhibited by each linkage type in Mandarin. Group one, applied to identify nexus characteristics, includes tests (A), (C), (D), (E), (F), (H), (J), (L), (M) and (N). Group two consists of tests (B), (G), (I), and (K), used to diagnose juncture characteristics. These syntactic tests are derived from three sources: 1) those that are already well established in the linguistic literature, as in (A-F); 2) those that were suggested by Foley and Van Valin (1984), as in (G-J); and 3) those that have been constructed by the author, as in (K-N).

(A) Coordination reduction (Haiman 1985a, b). Haiman has argued that this process applies to coordinate constructions only. This operation refers to the deletion of identical elements in a larger constituent of which they are a part. Thus it has been adopted to examine whether a given construction type is a coordinate structure or a subordinate structure.

(B) Structural sharing test (Givon 1979, 1990, Haiman 1983, 1985b, Foley & Van Valin 1984, Lehmann 1988, Van Valin 1993). The term 'structural sharing' in this study refers to the degree that the linked juncts share syntactic and semantic categories. It includes: the sharing of arguments, whether peripheral or core, and the sharing of operators at different levels, thus bringing the results of application of tests (G), (H), and (K) together in an overall picture. It has been argued that the tighter the linkage between juncts, the greater the structural sharing they exhibit.

(C) Syntactic position test (Haiman 1985b). Haiman has argued that one of the characteristics of subordinate clauses is that they tend to have more freedom to move around than coordinate clauses with conjunctions. This criterion therefore is adopted in this study to examine the degree of freedom for peripheral clauses to shift around so as to determine their syntactic status.

(D) Backwards pronominalization (Jacobs & Rosenbaum 1968). This is a test for syntactic embedding, based upon the

well-known constraint that a pronoun may not precede its antecedent unless it is more deeply embedded. If a construction type allows backwards pronominalization, where the pronoun precedes its antecedent, then this constitutes evidence that the clause containing the pronoun is more deeply embedded than the clause containing the antecedent.

(E) Tense iconicity test (Haiman 1985b). Haiman has argued that tense iconicity, where the sequential order of clauses reflects the temporal order of the events described, is characteristic of coordinate constructions, but not of subordinate constructions. In this study, this test is extended to the cosubordinate construction as well, and it will be shown that tense iconicity is also characteristic of peripheral cosubordination.

(F) Negation (Haiman 1985b). This test is adopted to examine the presuppositional status of a certain junct. Following Haiman, it is assumed that when the information expressed by a clause is presupposed, it is not open to denial. It will be shown that juncts in coordinate and cosubordinate constructions are equally open to denial, but subordinate juncts are not.

(G) Coreferential deletion (Foley & Van Valin 1984). This test is different from coordination reduction in that it is used to identify juncture properties, while the latter is for the identification of nexus features (cf. A). Being more specific than A, it refers to the deletion of coreferential

147

arguments only, whereas (A) refers to deletion of any identical element, be it a verb, a noun, or a correlative marker. It will be shown that while coreferential deletion is optional in some constructions, it is obligatory in others. In general, it will be shown that the tighter the linkage between juncts, the more likely that coreferential deletion is obligatory (Foley & Van Valin 1984).

(H) Scope of operators (Foley & Van Valin 1984, Van Valin 1993). This test is crucial in the RRG theory in identifying the nexus type of a complex construction. It has been shown that juncts in a coordinate construction do not necessarily share relevant operators, while juncts in a subordinate or a cosubordinate construction do.

(I) Intonational break test (Foley & Van Valin 1984, Van Valin 1993, Mithun 1988). This diagnostic is adopted to examine the degree of syntactic tightness of the linkage. It will be shown that an intonational break occurs with loose junctures, while tighter junctures typically form a single intonational unit.

(J) Passivization. This term refers to the well-known construction type in which a logical 'direct object' forms a syntactic subject. Foley and Van Valin (1984) have used this test to determine whether a junct is embedded in another junct as a direct object constituent, since only clauses of this type are subject to passivization. It is used here as both a test for syntactic role and constituency.

(K) Constraints on argument structure. Foley and Van Valin (1984) have claimed that the tighter the linkage between two juncts, the greater the semantic restrictions placed upon the linkage. This test is designed to show that one of the main types of semantic restriction takes the form of constraints on argument structure; most typically, the constraint is one of obligatory coreference, where a construction is well-formed only if certain arguments in the linked juncts (e.g., undergoer-actor) are shared.

(L) Constituent test. This test includes three sub-tests, namely, syntactic position, insertion of a negator, and formation of afterthought. It will be argued that when a junct is identified as functioning as a constituent by means of these three sub-tests, it may be treated as an embedded junct.

(M) First mention test. This test has been designed to examine the informational status of a relevant junct in the context of discourse. If the information expressed by the junct occurs in a discourse for the first time, it is assumed to be the new, forgrounded information (unless extralinguistic cues suggest otherwise). By testing the pragmatic acceptability of 'first mentions' in various construction types, the informational status of the juncts in those construction types is in part revealed. For example, subordinate clauses typically do not allow 'first mentions', from which it is concluded that embedded juncts typically

149

convey given, background information.

(N) Co-occurrence restrictions. When linkage occurs in Mandarin at the nuclear level, the linked nuclei exhibit differences in whether they must co-occur in some situations or not. This test, therefore, is designed to examine how closely bound the linked nuclei are by investigating whether they must co-occur with one another or not in certain situations. It is assumed that the tighter the linkage, the more likely they will obey co-occurrence restrictions.

Different linkage types may require the application of different diagnostics in the elucidation of their structure. The order of application of the relevant diagnostics to the linkage type in question will be given at the outset of the discussion of each linkage type. Further, the detailed function of each diagnostic will also be provided before it is applied.

Although the application of these diagnostics to various construction types in Mandarin often produces the results predicted by the RRG theory, thus solving the problems existing in various previous accounts, it must be noted that this is not always the case, particularly in the treatment of core and nuclear junctures. As a result, it has produced a number of new, unsolved mysteries. The unexpected results from the application of these diagnostics seem to point out the weak areas that the theory has not yet addressed, or has failed to handle in an appropriate way.

150

In what follows, the nexus types in Mandarin are explored by levels; i.e., the nexus types at the peripheral level will be examined first, then those at the core level, and finally those at the nuclear level. The order of this investigation is intended to follow the RRG prediction that the juncture becomes tighter and tighter when it moves "downward" from the peripheral level to the nuclear level.

6.3 Peripheral Juncture-nexus Combinations

Peripheral (or clausal) juncture-nexus combinations refer to constructions that are formed at the peripheral level. All three nexus types occur at this level in Mandarin, which are illustrated by the examples in (2):

(2) a. *Nimen   zuo, wo qu dao   cha.*

you-pl sit, I go pour tea

'You(pl) sit, I'll go pour some tea.'

(peripheral coordination)

b. *Ta   jiran bu   lai   kan ni,   weishenme ni   qu*

3sg since NEG come see you, why   you go

kan ta?

see 3sg

'Since s/he has not come to visit you, why

should you visit her/him?'

(Lin 1989: 62)

(peripheral subordination)

c. *Ta   gui   xia   lai qiu Zhangsan.*

3sg kneel down DIR beg Zhangsan

'S/he knelt down to beg Zhangsan.'

'S/he knelt down and begged Zhangsan.'

'S/he knelt down begging Zhangsan.'

(Li & Thompson 1973: 96)

(peripheral cosubordination)

Example (2a) is taken from the data collected by the author, and examples (2b-c) are taken from the scholars whose approaches to complex constructions in Mandarin were reviewed in Chapter Two. Although they are all complex constructions, only (2b) is marked by an overt linking element *jiran* 'since'; the juncts in (2a) and (2c) are simply juxtaposed, with no overt marking of linkage. Further, the juncts in (2a) and (2b) are obviously more loosely linked than the juncts in (2c), as those two allow a pause, exemplified by the comma, between the juncts.

Examples like (2a) are analyzed as coordinate constructions in traditional approaches, just as they are in the present approach. However, the criteria that have been utilized to identify this construction type in the traditional approach are not as clear as those that will be used in the present study. For example, Lin (1989), has claimed that sentences like (2a) are coordinate constructions, as they consist of two 'centres'. The problem is that she did not define the term 'centre', nor offer any evidence for the

152

existence of two 'centres' in examples like (2a). Therefore her 'centre' diagnostic is vague and unsatisfactory.

Constructions like (2b) and (2c) have generated a great deal of controversy among traditionalists. Examples like (2b), with an overt linking element in one of its clauses, are analyzed as coordinate constructions by Lin (1989), through her vaguely defined 'centre' criterion; however, they are considered to be subordinate constructions in Chao's (1968) study, and are claimed to contain a forward linking relation in Li and Thompson's (1981) analysis. Examples like (2c) are analyzed as subordinate constructions by Li and Thompson (1981); however, the major syntactic test that they have used for such an identification is questionable on several grounds, which will be seen in the following discussion. Other scholars have either viewed constructions like (2c) as an intermediate type between coordination and subordination (cf. Chao 1968), or have placed them in the coordinate category without offering any clear explanation as to why they are so identified (cf. Chu 1983). Such inconsistencies in the treatment of examples like (2b) and (2c) lie in the fact that there are no well defined prototypical characteristics for nexus categories in traditional approaches, and hence no corresponding criteria for their identification. Problems such as these may be solved by the use of the RRG theory.

In the following sections, each nexus type, as exemplified by the sentences in (2), will be studied. The

similarities and differences among them will be examined and accounted for. The discussion will start from peripheral coordination, proceed to peripheral subordination, and conclude with peripheral cosubordination.

6.3.1 Peripheral Coordination

Peripheral coordination refers to instances in which independent clauses are linked to form a complex sentence. Its properties include:

(3) a. lack of syntactic embedding;

    b. each junct typically conveys foregrounded information;

    c. no obligatory sharing of peripheral operators, such as illocutionary force;

    d. the linked juncts belong to separate intonation units;

    e. no obligatory sharing of arguments;

    f. each individual junct is capable of expressing a single discrete event.

The diagnostics to be used to identify these properties include: coordination reduction, scope of illocutionary force, intonational break, coreferential deletion, and structural sharing.

Here are some examples:

(4) a. *Nimen zuo,   wo qu dao cha.*

    you-pl sit, I go pour tea

    'You(pl) sit, I'll go pour some tea.'

b. *Ou, Ming lai le,   Li zou le   ma?*

    INT Ming come PERF/RTM, Li go PERF/RTM Q

    'Oh, Ming has come, (but) has Li left yet?'

c. *Ni **haishi** yao kan zhe ben shu, ni **haishi***

    you or   want read this CL book, you or

        yao kan na   ben shu?

        want read that CL book

    'Do you want to read this book, or do you want

        to read that book?'

d. *Ta hen   you qian, **danshi** ta bu xingfu.*

    3sg very have money, but   3sg NEG happy

    'S/he has lots of money, but s/he is not happy.'

e. *Na   ge ren   **budan**   ma   ren,*

    that CL person not only curse person

        *ta **erqie** hai da   ren.*

        3sg but   also hit person

    'That person not only cursed people, but he also

        hit people.'

Note that unlike (4c-e), the juncts in (4a-b) are simply juxtaposed. Thus the first question arising from (4a-b) is this: in what way are juncts which are not overtly linked different from simple, separate sentences? The answer to this

question can be found in phonological evidence that shows that the juncts in (4a-b) are part of their respective complex constructions. The intonation pattern in (4a-b) shows that there exists what Chao (1968: 41) calls a pattern of suspense-conclusion intonation; i.e., the first junct carries a suspense intonation, while the second carries a concluding, or falling, intonation. To be specific, the first junct is pitched slightly higher than the second junct to signal that it is not the end of the sentence, but that there is more to come. For example, the intonation pattern for (4a) is: ↑ *Nimen zuo*, ↓ *wo qu dao cha* 'you-pl sit, I'll go pour some tea'. If *nimen zuo* 'you-pl sit' were a simple sentence, it would carry a concluding intonation in the same way *wo qu dao cha* 'I'll go pour some tea' does. The same situation is also found in (4b). This fact indicates that the juncts in (4a-b) are not separate sentences. Instead, they are linked through intonation and juxtaposition to form a complex sentence.

This phenomenon is not unusual. In fact, as Mithun (1988) has pointed out, it has been attested in many other languages. For example, both Kamchadal, a Luoravetlan language of Siberia, and Gurung, a Sino-Tibetan language from Nepal, may indicate clause coordination by intonation and juxtaposition alone (Mithun 1988: 336):

(5) a. Kamchadal

   Kíma o:zózk   hīnc mílkicen   ésxanke
   I   tomorrow not will go to the father

   ténaq, nanqwátaxman   kíma xkálan   sítlxpqel.
   again, one will burn me   with hot firebrands

   'I will not go to my father again, or they will

              burn me with hot firebrands.'

   b. Gurung

   kwí   xra: kúdi   mxaé-m, kwí   laĩ   kudi
   some ferris swing play-NP some long swing

         mxaé-m.

         play-NP

   'Some play on the ferris wheel, and some play on

              the long swing.'

The examples in (4c-e) differ from (4a-b) in that they
contain overt linking morphemes in their constructions (see
the highlighted morphemes in (4c-e)). Example (4d) contains
a single morpheme *danshi* 'but', which signals a disjunctive
relation between the linked clauses. Examples (4c) and (4e)
are traditionally called correlative sentences. The clauses
in them are linked by two correlative markers, which often
occur in pairs to express a specific relation between the
linked juncts. For example, the correlative markers in (4c)
are *haishi...haishi* 'or...or', marking a choice relation
between the linked clauses; and those in (4e) are

budan...erqie 'not only...but also', indicating that the second junct is a "pure" addition to the first.

6.3.1.1 Nexus Characteristics

6.3.1.1.1 The Notion of Symmetry

Analysis shows that the examples in (4) are coordinately linked. Both syntactically and semantically, the juncts in (4) exhibit the kind of symmetrical relation that typifies coordinate constructions (Haiman 1985a). The crucial notion of symmetry defined in Haiman (1985a:74) requires that A and B are symmetrical with respect to some relation *r*, if both *A r B* and *B r A* are true. For example, in the English sentence *Max and Harry are similar*, that Max is similar to Harry implies that Harry is also similar to Max. Clauses are viewed to be symmetrical if they 1) denote events which occur simultaneously, 2) denote events which occur in alternation, and 3) denote events which are mutually dependent (Haiman 1985b: 74).

Mandarin examples like (4) employ both syntactic and semantic devices to express symmetry. Syntactically, the linked juncts are of the same rank, with neither junct being embedded in the other as an argument. Formal symmetry is also revealed by the behaviour of illocutionary force markers, to be discussed in the following section. Semantically, the linked juncts in (4a-b) have what RRG calls an unspecified action-action semantic relation; i.e., the order of the events

described is irrelevant. Therefore, the two juncts in them can freely switch their order without affecting the overall meaning of the message intended, as is shown in (6):

    (6) a. *Nimen zuo,   wo qu dao cha.*

        you-pl sit, I go pour tea

        'You(pl) sit, I'll go pour some tea.'

      b. *Wo qu dao cha, nimen zuo.*

        I go pour tea you-pl sit

        'I'll go pour some tea, you(pl) sit.'

Example (4d) has a disjunctive relation marked by *danshi* 'but', and (4e) has a relation of addition, marked by *budan...erqie* 'not only...but also'. Both of these relations require that the linked juncts be symmetrical in meaning and form.

6.3.1.1.2 Coordination Reduction

    Due to the symmetrical characteristics of coordination, identical elements may be deleted from the construction. This process, motivated by the principle of economy, is known as coordination reduction. It applies to coordination but not subordination, as illustrated by the following English sentences in (7) (Haiman 1985b:43):

    (7) a. *Max likes coffee and Hortense Ø tea.*

      b. *If Max likes coffee, Hortense (likes/*Ø) tea.*

Like English, the Mandarin examples in (4) are subject to such an operation. Observe (4c), repeated here in (8a):

(8) a. *Ni haishi yao kan zhe ben shu, ni haishi*

    you or   want read this CL book, you or

          yao kan na ben shu?

          want read that CL book

    'Do you want to read this book, or do you want

        to read that book?'

    b. *Ni ____ yao kan zhe ben shu, ni haishi*

    you ____ want read this CL book, you or

          yao kan na ben shu?

          want read that CL book

    'Do you want to read this book, or do you want

        to read that book?'

    c. *Ni ____ yao kan zhe ben shu, ____ haishi*

    you ____ want read this CL book, ____ or

          yao kan na ben shu?

          want read that CL book

    'Do you want to read this book, or do you want

        to read that book?'

    d. *Ni ____ yao kan zhe ben shu, ____ haishi*

    you ____ want read this CL book, ____ or

          ____ *na ben shu?*

          ____ that CL book

    'Do you want to read this book, or that book?'

6.3.1.1.3 Evidence from Information Structure

The formal symmetry that holds between the linked juncts in (4) in turn marks their conceptual symmetry (cf. Haiman 1985a). The latter is reflected in the pragmatic status of the linked juncts, i.e., both juncts in the examples of (4) encode foregrounded information. Each junct contains an assertion; neither contains information which elucidates, or assists in the semantic interpretation of, the other.

6.3.1.1.4 Scope of Illocutionary Force

The semantic and syntactic symmetry in (4) is also reflected in the use of the peripheral operator illocutionary force. Note that each individual junct in (4) may have its own illocutionary force. For example, the first junct in (4a) is an imperative, whereas the second is a declarative. Similarly the first clause in (4b) is declarative, while the second is an interrogative. The same situation can be found with the overtly linked examples in (4c-e) as well. Note the following examples, where the juncts in each example can have different illocutionary force:

(9) a. *Nimen zuo,   wo qu dao   cha.*

   you-pl sit, I go pour tea

   'You(pl) sit, I'll go pour some tea.'

 b. *Ta   hen   you qian,   danshi ta   xingfu **ma**?.*

   3sg very   have money, but   3sg happy Q

   'S/he has lots of money, but is s/he happy?'

The first junct in (9a) is imperative, while the second is assertive. Similarly, the first junct in (9b) is a statement, whereas the second is a question. Each kind of illocutionary force has one junct under its scope. The fact that each individual junct may have its own illocutionary force operator indicates that there is no structural dependency between the linked juncts with regard to the use of this operator, thus ruling out the possibility of a cosubordination analysis for (4).

6.3.1.2 Juncture Characteristics

It has been argued that the examples in (4) represent instances of coordination. This section provides evidence that they also constitute peripheral junctures. The evidence comes from the fact that each junct in examples like (4) behaves like a full-fledged clause in allowing its own peripheral operators, such as illocutionary force. The fact that the two juncts are independent of one another in the specification of illocutionary force, the outermost peripheral operator, shows that they are both peripheral units.

6.3.1.2.1 Phonological Evidence--Intonational Break Test

Phonological facts regarding examples like (4) also provide support for such a claim. It can be seen that each junct in (4) represents a single intonation unit, and that the linked units are separated by an obligatory pause, marked by

162

the comma.   This is expected, since according to RRG
peripheral coordination encodes the loosest relation between
the linked juncts, both syntactically and semantically.

6.3.1.2.2 Coreferential Deletion

As the loosest juncture-nexus type, juncts in peripheral
coordination are allowed to have their own set of core
arguments, with no obligatory sharing of such arguments. This
is exactly what is shown by (4). Compare (4c-e), repeated in
(10a-c), with (10a'-c'):

(10) a. *Ni   haishi yao   kan   zhe   ben shu,   ni   haishi*

you or   want read this CL   book, you or

yao   kan   na   ben shu?

want read that CL   book

'Do you want to read this book, or do you want

to read that book?'

a'. *Ni   shi yao   kan   zhe   ben shu,   ___   haishi*

you be   want read this CL   book, ___   or

yao   kan   na   ben shu?

want read that CL   book

'Do you want to read this book, or do you want

to read that book?'

b. *Ta   hen   you   qian,   danshi ta   bu   xingfu.*

3sg very   have money,   but   3sg NEG happy

'S/he has lots of money, but s/he is not happy.'

b'. *Ta   hen   you   qian,   danshi* ___ *bu   xingfu.*

    3sg very have money,   but   ___ NEG happy

    'S/he has lots of money, but s/he is not happy.'

c. *Na   ge ren   budan   ma   ren,*

    that CL person not only curse person

           <u>*ta*</u> *erqie hai da   ren.*

           3sg but   also hit person

    'That person not only cursed people, but he also

        hit people.'

c'. *Na   ge ren   budan   ma   ren,*

    that CL person not only curse person

        ___   *erqie hai   da   ren.*

        ___   but   also hit person

    'That person not only cursed people, but also

        hit people.'

Note that when the actor arguments in the two juncts happen to
have the same reference, the morphological realization of the
second actor argument is optional rather than obligatory. The
absence of the otherwise morphologically realized actor
arguments does not affect the meaning of the original
sentences.

Further, it is only the second coreferential actor that
may be deleted, not the first. Note the ungrammaticality of
(11), where the deletion of the first actor in each sentence
is attempted:

164

(11) a. * ___ *hen you qian, danshi ta bu xingfu.*

       ___ very have money, but   3sg NEG happy

    b. * ___ *shi yao kan zhe ben shu, ni haishi*

       ___ be want read this CL book, you or

       yao kan na ben shu?

       want read that CL book

    c. * ___ *budan ma ren, na ge ren*

       ___ not only curse person that CL person

       erqie hai da ren.

       but also hit person

Example (11) shows that the left-most coreferential actor argument cannot serve as an optional deletion site in peripheral coordinate constructions.

6.3.1.2.3 Structural Sharing Status

The last peripheral characteristic of (4) to be examined is the fact that each individual junct retains its full capacity to encode a single discrete action. This claim is made on the basis of two properties: 1) the obligatory presence of a pause between the linked juncts, and 2) the lack of any requirement for structural sharing between the linked juncts in examples like (4). The claim follows from well known iconicity principles proposed by various scholars. For example, Mithun (1988) has argued that many languages employ intonational breaks to mark whether various facets of a described action or event are conceptually unitary or

165

distinct. Actions that are conceptually more distinct are separated intonationally, and are expressed in a series of distinct intonation units. Similarly, Givon (1979) has contended that any reduction of the linked clauses indicates the fusion of the events expressed by them. He has argued that the degree of multi-propositional coherence is affected by whether the linked propositions share the same referent, the same time, the same location, etc. (Givon 1990: 827). In other words, the more semantic categories the linked propositions share, the greater the propositional coherence.

Haiman (1983:128) has also proposed that fusion signals semantic fusion, while formal separation signals semantic separation. He has argued that semantic or conceptual closeness between ideas expressed by the complex sentence may be measured by factors such as whether the linked clauses (Haiman 1985b: 107):

(12) a. share semantic features, properties, or parts;

b. affect each other;

c. are factually inseparable;

d. are perceived as a unit, whether factually

inseparable or not.

In this study, the judgement of whether an individual junct is capable of encoding a single event or not is based on 1) the degree of structural sharing between the linked juncts, and 2) whether an intonation break is present or not. The former appears to play a more important role, since it will be

seen later in this chapter that when the juncture becomes tighter and tighter, the issue of an intonation break becomes irrelevant. Thus, it is the degree of structural sharing which takes precedence in determining the degree of fusion between the linked juncts, which in turn determines the capability of an individual junct to encode a single event.

When these two properties are applied to the examples in (4), it can be seen that the juncts in each example do not have to share a core argument, as in (4a-b), repeated in (13):

(13) a. *Nimen   zuo, wo qu dao   cha.*

      you-pl sit, I go pour tea

      'You(pl) sit, I'll go pour some tea.'

    b. *Ou,   Ming lai   le,   Li zou le   ma?*

      INT Ming come PERF/RTM, Li go PERF/RTM Q

      'Oh, Ming has come, but has Li left yet?'

They do not have to share a peripheral argument either, as in (14):

(14) *Ta **xianzai** hen you qian, danshi **yizhi**   bu*

     3sg now   very have money, but   all along NEG

        xingfu

        happy

    'S/he has lots of money now, but all along s/he

        has not been happy'

where each junct may have its own peripheral argument. Further they do not have to share the same illocutionary force, as is shown in (13a-b), and they do not have to share

peripheral status operators, which are adverbs in the traditional sense. Consider example (15):

(15) *Ta* **queshi** *hen you qian, danshi* **xianran** *bu*

3sg certain very have money, but   obvious NEG

xingfu

happy

'It is certain that s/he has lots of money, but it

is obvious that s/he is not happy'

where the two clauses may have their own status operators. Each junct in (4) appears to constitute a complete semantic unit, without affecting one another as far as the meaning is concerned. As such, they are perceived as separate units, and are obligatorily separated by an intonational break.

6.3.1.3 Summary

In summary, the examples in (4) have satisfied all six criteria listed in (3). They are by definition examples of peripheral coordination.

6.3.2 Peripheral Subordination

Subordination is a nexus type in which one clause serves as an argument of the other; in the case of peripheral subordination, the embedded junct comprises an entire periphery. It functions as a peripheral argument, such as a temporal or other kind of peripheral adjunct, in the resulting complex construction. The properties it possesses include:

168

(16) a. the presence of syntactic embedding;

    b. the embedded clause typically conveys background information, while the main clause conveys foregrounded information;

    c. the sharing of peripheral operators, such as illocutionary force;

    d. the linked juncts belong to separate intonation units;

    e. there is no obligatory sharing of arguments;

    f. the ability of the individual juncts to depict distinct events.

The diagnostics to be used to identify these properties are: syntactic position, coordination reduction, coreferential deletion, backwards pronominalization, tense iconicity, negation, intonational break, scope of illocutionary force and structural sharing.

Here are some examples:

(17) a. *Ta jiran bu lai kan ni, weishenme ni qu*

      3sg since NEG come see you, why   you go

        kan ta?

        see 3sg

     'Since s/he has not come to visit you, why should you visit her/him?'

     (Lin 1989: 62)

b. *Mama shao fan **yiqian**, ta hui lai le.*

    mother cook rice before, 3sg return DIR RTM

    'Before mother cooked the meal, s/he came back.'

c. *Ta **yinwei** muqin shengbing le, **suoyi** ta*

    3sg because mother ill   RTM so   3sg

        meiyou qu xuexiao.

        NEG   go school

    'Because her/his mother was ill, s/he did not

        go to school.'

d. *Ta **ruguo** xiang kan dianying, ta **jiu***

    3sg if   want watch movie,   3sg then

        bixu xi wan.

        have to wash dishes

    'If s/he wants to watch the movie, s/he has to

        wash the dishes.'

e. *Ni mingtian wanshang bu lai, wo bu qu.*

    you tomorrow night   not come, I not go

    'If you don't come tomorrow night, I will not

        go.'

Each example in (17) contains at least two clauses. Those in (17a-d) are overtly linked, with (17a-b) linked by a single morpheme, and (17c-d) by correlative morphemes. There is no overt morpheme, however, linking the juncts in (17e). The principle used to interpret it as a complex construction is the same one that was discussed in 6.3.1; i.e., there exists

a suspense-conclusion intonation pattern in (17e).

6.3.2.1 Nexus Characteristics

Whether overtly linked or not, these examples represent instances of subordinate constructions, as they all contain an embedded junct. The embedded junct, occurring as the first clause in the construction, functions as a peripheral argument, serving to provide a variety of background information for the matrix junct. For example, the adverbial clause in (17a) functions as an argument of concession, the one in (17b) serves as an argument of time, the one in (17c) acts like an argument of reason, and the embedded clauses in (17d-e) perform the role of an argument of condition.

6.3.2.1.1 Syntactic Position

There are several diagnostics for the identification of these clauses as subordinate. The most obvious one in Mandarin is the syntactic position of the subordinate clause: it can occur in more than one place. Its unmarked position is the left margin of the sentence. However, it can also appear inside the matrix clause, immediately after the actor. Note the examples in (18):

171

(18) a. *Ruguo* ta xiang kan   dianying, ta *jiu*

        if   3sg want watch movie,   3sg then

                bixu   *xi*   *wan.*

                have to wash dishes

      'If s/he wants to watch the movie, s/he has to

         wash the dishes.'

   b. *Ta* *ruguo* xiang kan   dianying, *jiu*

      3sg if   want watch movie,   then

             bixu   *xi*   *wan.*

             have to wash dishes

     'If s/he wants to watch the movie, s/he has to

        wash the dishes.'

   c. *Mama*   *shao fan yiqian, Ming hui   lai le.*

     mother cook rice before, Ming return DIR RTM

     'Before mother cooked the meal, Ming came back.'

   d. *Ming, mama   shao fan yiqian, hui   lai le.*

     Ming, mother cook rice before, return DIR RTM

     'Ming, before mother cooked the meal, came back.'

In (18a) and (18c) the embedded clause appears at the left
margin of the sentence, while in (18b) and (18d) the embedded
clause follows the main clause actor. This ability of the
subordinate clause to 'move around' is not unique to Mandarin,
as it can be found in English and many other languages (cf.
Haiman 1985b). Haiman has argued that this freedom of
movement, however, is not possible for coordinate clauses with
conjunctions:

(19) a. *Sammy's mad and I'm glad.*

    b. **And I'm glad Sammy's mad.*

       (Haiman 1985b: 41)

The same situation is found in Mandarin. Take the peripheral coordinate construction (4d), repeated in (20), as an example:

(20) *Ta hen you qian,* **danshi** *ta bu xingfu.*

     3sg very have money, but   3sg NEG happy

     'S/he has lots of money, but s/he is not happy.'

When the coordinate clause with the conjunction *danshi* 'but' is moved around the result is an ungrammatical sentence:

(21) **Danshi** *ta bu xingfu, ta hen you qian.*

     but   3sg NEG happy, 3sg very have money

The coordinating conjunction must 'stay put' between the clauses it conjoins (thus maintaining symmetry), but subordinate clauses have considerable freedom of movement, together with their subordinator/complementizer (Haiman 1985b: 41). Unlike the situation in English, however, any attempt to simply transpose the two clauses results in an ungrammatical sentence, as is shown in (22):

(22) a. **Ta* **jiu** *bixu xi wan, ta* **ruguo** *xiang*

       3sg then have to wash dishes 3sg if   want

       kan dianying.

       watch movie

   b. **Ta hui lai le, Mama shao fan* **yiqian**.

      3sg return DIR RTM, mother cook rice before

173

c. *Suoyi ta meiyou qu xuexiao, ta yinwei

           so   3sg NEG   go school, 3sg because

              muqin   shengbing le.

              mother ill   RTM

6.3.2.1.2 Coordination Reduction

   A second diagnostic for peripheral subordination is the
test of coordination reduction mentioned in section 6.3.1.1.2.
Compare (23a) with (23b):

   (23) a. Wo yao hong cha, ta Ø lü cha

        I want red tea, 3sg Ø lü cha

        'I want red tea and s/he green tea'

              (Peripheral coordination)

        b. Wo yao hong cha, ta jiu (yao/*Ø) lü   cha

           Wo yao red tea, 3sg then (want/*Ø) green tea

           'If I want red tea, then s/he wants green tea'

              (Peripheral subordination)

where the coordination reduction operation applies to the
peripheral coordinate construction of (23a), but not to the
peripheral subordinate construction of (23b).

6.3.2.1.3   Coreferential   Deletion   and   Backwards Pronominalization

   The third diagnostic for the subordinate status in (17)
appears when their behaviour with regard to coreferential
deletion is examined. As noted above, peripheral coordinate

constructions allow such deletion only for the second of two coreferential arguments, as in (10a'-c'). Examples like those in (17), however, optionally allow <u>either</u> of the two coreferential arguments to be deleted, as seen in (24):

(24) a. *Ruguo ta xiang kan dianying, ta jiu*

       if   3sg want watch movie,   3sg then

            bixu   xi   wan.

            have to wash dishes

b. *Ruguo ta xiang kan dianying, ___ jiu*

       if   3sg want watch movie,   3sg then

            bixu   xi   wan.

            have to wash dishes

c. *Ruguo ___ xiang kan dianying, ta jiu*

       if   3sg want watch movie,   3sg then

            bixu   xi   wan.

            have to wash dishes

      'If s/he wants to watch the movie, s/he has to wash the dishes.'

The fact that 'backwards pronominalization' is permitted in these sentences argues that the first of the coreferential arguments cannot command the second, and must thus occur 'deeper' in the syntactic structure, i.e., in a subordinate (embedded) clause. This follows from the well-known constraint that pronouns cannot both precede and command their antecedents (cf. Jacobs & Rosenbaum 1968).

6.3.2.1.4 Tense Iconicity

A fourth diagnostic is found in the observation that subordinate clauses are not required to observe tense iconicity; i.e., the sequential order of clauses need not follow the temporal order of the events described. Note example (25):

(25) *Mama   shao fan yiqian, ta hui   lai le.*

     mother cook rice before, 3sg return DIR RTM

     'Before mother cooked the meal, s/he came back.'

Here the event expressed in the first junct clearly occurred after the event described in the second junct. In coordinate structures, on the other hand, the order of event occurrence is matched by the order of clauses, as is shown by (26):

(26) a. *Ta qunian   jiehun   le,   ranhou ta*

     3sg last year get married RTM, then   3sg

          zhangfu si   le.

          husband die RTM

     'She got married last year, then her husband

          died.'

          (Peripheral coordination)

b. *Ta   zhangfu si le,   ranhou ta   qunian*

   3sg husband die RTM, then   3sg last year

     jiehun   le.

     get married RTM

  'Her husband died, then she got married last

    year.'

   (Peripheral coordination)

Here the matching between the order of events and the order of clauses is described by Haiman (1985b) as being tense iconic. He has argued that, in general, coordinate clauses are tense iconic, while subordinate clauses do not necessarily exhibit this property.

6.3.2.1.5 Negation Test

It is clear that the unmarked constituent ordering in Mandarin follows the general principle of topic-focus sequence. When the subordinate clause precedes the main clause, as in (17), it represents such an unmarked order, since such clauses typically represent 'topical' or 'pragmatically presupposed' information, as has been shown by a number of studies (Haiman 1978, Thompson 1985, Givon 1987, Ramsay 1987, Lehmann 1988, Lambrecht 1994, etc.). That is, the information expressed by the embedded clauses in (17) is assumed to be known, or is ready to be taken for granted by the listener, at the time the sentence is uttered. As such, the information content of these embedded clauses is

backgrounded, and not subject to interrogation or contradiction, as can be seen in (27):

(27) a. *Xiao Gang hui   lai yiqian, mama   zai   shao*

    Xiao Gang return DIR before, mother PROG cook

        fan.

        rice

    'Before Xiao Gang came back, mother was cooking

        the meal.'

b. *Ta   bu   zai.*

    3sg NEG PROG

    'She was not.'

c. *Ta   meiyou.*

    3sg NEG

    '*He did not.'

    'She was not.'

Example (27b) is an acceptable contradiction of (27a), since it contradicts the asserted information of the matrix clause. Example (27c) is only acceptable if the pronoun *ta* refers to *mama* 'mother', not to *Xiao Gang*. Again, the contradicted information must be that of the main clause, not the subordinate clause.

6.3.2.1.6 Scope of Illocutionary Force

Further, the embedded peripheral clause in Mandarin is always assertive, and may not be independently marked for illocutionary force, a universal phenomenon noted by a number

178

of scholars (e.g., Foley and Van Valin (1984), Haiman (1985b: 40), Lehmann (1988: 193), Van Valin (1993)). Note (28):

(28) *Yinwei muqin shengbing-mei-shengbing, suoyi
     because mother ill   NEG ill   so

          ta   meiyou qu xuexiao.
          3sg NEG   go school

     'Because was her/his mother ill, s/he did not go
      to school?'

In this example the subordinate clause has been rendered with the A-not-A question form, a marker of illocutionary force of interrogation; as a result, the sentence is simply ungrammatical. In conclusion, it has been shown that all diagnostics argue that examples like those in (17) are subordinate constructions.

6.3.2.2 Juncture Characteristics

The linkage between the two clauses in (17) occurs at the peripheral level. Three pieces of evidence substantiate this argument.

6.3.2.2.1 Phonological Evidence--Intonational Break Test

First, a pause, expressed by a comma, is obligatory between the embedded clauses and their respective main clauses, since each constitutes a separate intonation unit. As noted above, such a constraint is expected only at the "weakest" level of linkage, which is to say, the periphery.

179

6.3.2.2.2 Structural Sharing Status

Second, notice that each clause in (17) has its own set of core arguments. Obligatory sharing of any core argument is not required. Rather, the occurrence or omission of a coreferential core argument is entirely optional, as has been shown in (24). Third, with the fact that there is no obligatory sharing of arguments between the linked juncts, and that there is an obligatory pause between the linked clauses, each individual junct forms a complete semantic unit which presents a single action. As noted above in section 6.3.1.2.3, various scholars have argued that formal separation of clauses reflects semantic independence. However, due to the fact that the subordinate clause may not be independently marked for illocutionary force (although it is always interpreted as being assertive), its ability to encode a discrete event is somewhat reduced compared to the peripheral coordinate clause, which may be independently marked for illocutionary force. Therefore, the peripheral subordinate construction has a tighter linkage than the peripheral coordinate construction. All of these semantic and syntactic facts point to an analysis of peripheral subordination for the examples in (17).

6.3.3 Peripheral Cosubordination

Peripheral cosubordination refers to the juncture-nexus type in which two peripheral juncts are not only linked

together, but also exhibit some dependency. As is the case with subordination, the two linked clauses are not equal: the cosubordinate clause is dependent upon the main clause for the specification of peripheral operators, and may also look to the main clause for the identification of an argument. Hence, the cosubordinate clause is less like an independent sentence than is the main clause. Peripheral cosubordination in Mandarin can be identified by the following characteristics:

(29) a. the absence of syntactic embedding;

b. both juncts typically convey foregrounded information;

c. the obligatory sharing of peripheral operators, such as illocutionary force, tense, etc.;

d. the linked juncts may not belong to separate intonation units;

e. the obligatory sharing of the actor argument;

f. the ability to describe discrete actions is further reduced.

The diagnostics to be utilized to identify these properties are: tense iconicity, backwards pronominalization, negation, scope of peripheral operators, intonational break, and structural sharing.

Here are some examples:

(30) a. *Ta   gui   xia   lai* ___ *qiu Zhangsan.*

   3sg kneel down DIR ___ beg Zhangsan

   1) 'S/he knelt down to beg Zhangsan.'

   2) 'S/he knelt down begging Zhangsan.'

   3) 'S/he knelt down and begged Zhangsan.'

   (Li & Thompson 1973)

   b. *Lao daniang jintian zai   jia* ___ *xi   yifu.*

   old woman   today be-at home ___ wash clothes

   'The old woman was at home washing clothes

   today.'

   c. *Wo dao shangdian qu* ___ *mai yi tai jisuanji*

   I go store   DIR ___ buy one CL computer

   qu.

   DIR

   'I will go to the store and buy a computer.'

   d. *Tamen dou xia ban* ___ *hui   jia le.*

   they all off shift ___ return home RTM

   'They were all off work and went home.'

   Example (30a) was analyzed as a subordinate construction
in Li & Thompson's 1973 study. One piece of crucial evidence
for their analysis relies on the possibility that the 'purpose
clause' in (30a) may be preposed, as in (31) (see Chapter Two
for the relevant discussion):

(31) *Qiu Zhangsan (ma),   ta   gui   xia   lai.*

　　　beg Zhangsan (TOP), 3sg kneel down DIR

　　　'To beg Zhangsan, 3sg knelt down.'

Bach (1982), however, has proposed that the preposed clause is
a rationale clause, not a purpose clause.　Following Bach,
Cutrer (1993:177-178) has defined the rationale clause as one
which encodes the rationale or the goal that results from the
event expressed in the main clause, and the purpose clause as
one which encodes the purpose to which an entity is put.　The
two types of clauses can be distinguished from one another on
several grounds　(Bach 1982),　one　of　them　being　that　the
rationale clause, as in (30a), may be preposed, as in (31),
but the purpose clause may not, as in (32):

(32) a. *Ta   mai cidai ting.*

　　　　　3sg buy tape　listen to

　　　　　'S/he bought tapes to listen to.'

　　　b. **Ting,*　　　ta　mai cidai.*

　　　　　listen to, 3sg buy tape

　　　　　'To listen to, s/he bought tapes.'

It will be argued here that example (30a) is structurally
ambiguous, as is suggested by the range of acceptable English
translations.　The　structure　represented　by　the　semantic
reading of (30a1) can be paraphrased with the topic-comment
structure of example (31).　That it does indeed exhibit topic-
comment structure is revealed by the fact that the topic can
be optionally followed by the topic marker *ma*; in fact, the

183

use of *ma* is stylistically preferred in such sentences. It is
significant that the reading of (30a2-3) cannot be paraphrased
in this way.   To demonstrate this fact, it helps to place a
durative marker or a perfective marker in (30a), which serves
to force the readings in (30a2) and (30a3), respectively. Now
we have example (33):

> (33) a. *Ta gui xia   lai qiu-zhe Zhangsan.*
>
> 3sg kneel down DIR beg-DUR Zhangsan
>
> 'S/he knelt down begging Zhangsan.'
>
> b. **Qiu-zhe Zhangsan, ta gui   xia lai.*
>
> beg-DUR Zhangsan, 3sg kneel down DIR
>
> 'Begging Zhangsan, s/he knelt down.'
>
> c. *Ta gui   xia lai qiu-le   Zhangsan.*
>
> 3sg kneel down DIR beg-PERF Zhangsan
>
> 'S/he knelt down and begged Zhangsan.'
>
> d. **Qiu-le Zhangsan, ta gui   xia lai.*
>
> beg-PERF Zhangsan, 3sg kneel down DIR
>
> 'And begged Zhangsan, s/he knelt down.'

It will be argued in the following section that the readings
in (30a2-3) or (33a) and (33c) are examples of peripheral
cosubordination.

6.3.3.1 Nexus Characteristics

6.3.3.1.1 Tense Iconicity

Analysis reveals that the linkage device in (30) is
neither coordination nor subordination, but cosubordination at

the peripheral level. Evidence comes from several sources.
First, both the syntactic structure and semantic content of
the clauses in (30)[1] indicate that they do not form a
hierarchy. Structurally, neither clause is embedded as a
constituent of the other. Recall that Haiman (1985b) has
argued that subordinate clauses need not observe tense
iconicity, while coordinate clauses do. Clauses in examples
like (30) behave like coordinate clauses with regard to this
property, as is shown in (34):

> (34) a. *Wo dao shangdian qu* ___ *mai yi tai jisuanji*
>
>   I go store   DIR ___ buy one CL computer
>
>   *qu.*
>
>   DIR
>
>   'I will go to the store and buy a computer.'
>
> b. **Wo mai yi tai jisuanji qu* ___ *dao shangdian*
>
>   I buy one CL computer DIR ___ go store
>
>   *qu.*
>
>   DIR

---

[1] Examples (30a1) and (31) are not relevant to the discussion.

Example (34b) is ungrammatical, since tense iconicity is destroyed.

6.3.3.1.2 Backwards Pronominalization

Further, like the peripheral coordinate constructions in (17), the examples in (30) only allow the deletion of the second coreferential actor. 'Backwards pronominalization', allowed by the peripheral subordinate constructions in (17), is not permitted for (30):

(35) a. *Jintian ___ zai jia Lao daniang xi yifu.

today ___ be-at home old woman wash

b. *___ dao shangdian qu wo mai yi tai jisuanji

___ go store DIR I buy one CL computer

qu.

DIR

6.3.3.1.3 Negation Test

Semantically, it is also clear that there is no hierarchical relationship between the linked juncts of the examples in (30). Neither clause in these examples presents information as if it is presupposed. The information in both clauses is foregrounded, and constitutes an assertion, assuming no prior knowledge on the part of the listener. For example, the clauses in (30b), repeated here in (36), are both open to challenge and denial:

(36) a. *Lao daniang jintian zai   jia ___ xi   yifu.*

   old woman   today   be-at home ___ wash clothes

   'The old woman was at home today washing

     clothes.'

   b. *Bu, ta bu zai.*

   NEG she NEG be-at

   'She was not (at home).'

   c. *Bu, ta meiyou.*

   NEG she NEG

   'She did not (wash clothes).'

6.3.3.1.4 Scope of Peripheral Operators

   The last diagnostic for nexus types involves the behaviour of operators. Although the linked clauses in (30) are of equal importance in their information status, they exhibit a dependent relationship in the use of peripheral operators. The clauses in each example of (30) must share the same peripheral operators, a situation which distinguishes (30) from (17), which contains examples of peripheral coordinate constructions. For example, when there is a question operator in the main clause, this operator must have the entire sentence under its scope. This can be seen from (37), in which both juncts are part of the question:

187

(37) a. *Ta   gui   xia   lai qiu Zhangsan **ma**?*

        3sg kneel down DIR beg Zhangsan Q

        'Did s/he kneel down and beg Zhangsan?'

        '*S/he knelt down and did beg Zhangsan?'

  b. *Lao daniang jintian zai   jia xi   yifu*

        old woman   today   be-at home wash clothes

             ***ma**?*

             Q

        'Was the old woman at home washing clothes

            today?'

        '*The old woman was at home did wash clothes

            today?'

  c. *Ni   dao shangdian qu   mai yi   tai jisuanji*

        you go   store   DIR buy one CL   computer

             *qu,   **shi-bu-shi**?*

             DIR, be-not-be

        'You are going to go to the store and buy a

            computer, aren't you?'

        '*You are going to go to the store and will buy

            a computer, won't you?'

  d. *Tamen **shi-bu-shi** dou xia ban   hui   jia   le?*

        they be-not-be all off shift return home RTM

        'Have they all gotten off work and returned

            home?'

        '*Were they all off work and have returned home?'

Examples (37a-b) and (37d) contain a yes-no question marker, whereas (37c) has an interrogative tag. Although the yes-no question marker *shi-bu-shi* differs from *ma* and the tag question marker in terms of syntactic position, with the former occurring in the first clause and the latter two sentence finally, they have one thing in common: all have the entire sentence under their scope. If the question marker is interpreted as affecting only the junct in which it occurs (or is closest to, in the case of the tag question), it renders the sentence ungrammatical, as is shown by the starred translations in (37).

Other peripheral operators, such as evidentiality and tense, must also have the entire sentence under their scope. For example, in (30d) and (37d) both juncts are under the scope of the relative tense operator, even though only the second junct immediately precedes the morpheme *le*. Understanding it otherwise produces an incorrect interpretation:

> (38) *Tamen dou xia ban   hui   jia le.*
>
> they all off shift return home RTM
>
> 'They have all gotten off work and have returned
>
> home.'
>
> But not: 'They were all off work and have returned
>
> home.'

When an evidentiality operator is added to (38), as in (39), the effect once more extends to both juncts, rather than being

limited to the junct which contains the realization of the operator:

(39) *Tamen* **xianran** *dou xia ban   hui   jia   le.*

they obvious all off shift return home RTM

'Obviously, they have all gotten off work and

returned home.'

But not: 'They have all gotten obviously off work

and have returned home.'

This investigation shows that the examples in (30) represent instances of cosubordination, as the clauses in (30) are not independent clauses like the ones of peripheral coordination in (17).   Rather, they are dependent, in the sense that the linked clauses have to share peripheral operators.   This is the crucial evidence for the claim that (30) exhibits cosubordinate nexus.   Further, the dependency exhibited by cosubordinate clauses like those in (30a) may not be interpreted as being result of 'coordination reduction'. A crucial assumption about 'coordination reduction' is that as a transformational rule it cannot alter meaning (cf. Chomsky 1965, Jacobs & Rosenbaum 1968).   The fact that examples like (30a) may have several readings suggests that the obligatory sharing of the elements exhibited by the sentence does not result from the syntactic process of 'coordination reduction', hence the examples in (30) are not coordinate constructions.

6.3.3.2 Juncture Characteristics

6.3.3.2.1 Phonological Evidence--Intonational Break Test

Investigation also shows that it is at the peripheral level that the juncts in (30) are linked. Note that, unlike examples of peripheral coordination and peripheral subordination, the examples in (30) do not allow a pause between the clauses. This fact indicates that the syntactic linkage between these clauses must be tighter than those of peripheral coordination and peripheral subordination.

6.3.3.2.2 Situation of Argument Sharing

This tightness is also reflected in the obligatory sharing of the actor argument. It has been pointed out in (35) that the morphologically unrealized actor must appear in the second junct, since 'backwards pronominalization' is not allowed for cosubordinate examples like (30). It will be shown in (40) that with the same intonation and readings as (30a-b) any attempt to realize the second actor by the introduction of an anaphoric pronoun will result in an ungrammatical output:

(40) a. *Ta   gui   xia lai ta qiu Zhangsan.

       3sg kneel down DIR 3sg beg Zhangsan Q

   b. *Lao daniang jintian zai   jia   ta   xi

      old woman   today   be-at home she wash

        yifu.

        clothes

However, peripheral cosubordinate juncts may have their own peripheral arguments, as in (41). This is one of the important properties that distinguish a peripheral cosubordinate junct from a more reduced junct, such as a core or nuclear junct (see 6.4 and 6.5 for the discussion on core and nuclear juncture-nexus combinations respectively):

(41) a. *Lao daniang **jintian** zai jia **yi zheng tian***

old woman today be-at home one whole day

dou zai xi yifu.

all PROG wash clothes

'The old woman was at home today washing clothes all day long.'

b. *Ta **zuotian** dao shangdian **shunbian***

3sg yesterday go store in passing

mai-le yi tai jisuanji.

buy-PERF one CL computer

'S/he went to the store yesterday and bought a computer in passing.'

(The meaning of this sentence is that the purchase of the computer was not the original purpose of going to the store. It was purchased due to the convenience of the person being at the store.)

The meaning of the highlighted peripheral arguments in (41) applies only to the clause where they occur.

6.3.3.2.3 Overall Situation of Structural Sharing

Finally, the ability of peripheral cosubordinate juncts to encode discrete single events is further reduced, compared to subordinate juncts. In peripheral cosubordinate constructions, there is no intonation break between the linked juncts, while in peripheral subordinate constructions there is. The linked peripheral cosubordinate juncts must share the actor argument, and peripheral operators, such as illocutionary force, evidentiality and tense; the peripheral subordinate construction, on the other hand, only requires the obligatory sharing of illocutionary force. Although the linked peripheral cosubordinate juncts must share more elements than the linked juncts in a peripheral subordinate construction, they do not exhibit the same degree of sharing that core juncts require, which will be shown in the following section. In other words, although the peripheral cosubordinate construction has a tighter linkage than a peripheral subordinate construction, its linkage is still looser than that of a core juncture.

6.3.4 Summary

To conclude, the examples in (4), (17), and (30) represent prototypical instances of peripheral coordination, peripheral subordination, and peripheral cosubordination, respectively. It would seem that the approach taken by RRG has been more effective than those adopted by earlier workers

193

in Mandarin syntax in accounting for problematic structures, such as those presented in (2). In particular, RRG presents clearer criteria for the identification of various linkage types, and those criteria are easier to apply. The theory also allows for easy integration of such well-established syntactic tests as coordination reduction, 'backwards pronominalization', etc.

6.4 Core Juncture-nexus Combinations

Core juncture-nexus combinations refer to complex constructions in which the linkage between juncts occurs at the core level. Given this definition, elements that are outside the core layer are expected to be shared. It will be shown that this is what is revealed by the Mandarin data. It will also be shown that nexus types constructed at the core level are both syntactically and semantically tighter than those formed at the peripheral level, as the events conveyed by the two core juncts overlap. Two nexus types, core coordination and core subordination, are found in the data investigated, but not core cosubordination.

The nexus characteristics of core cosubordination include: 1) the linked core juncts obligatorily share core operators, and 2) no syntactic embedding is involved. The first characteristic sets it apart from core coordination, and the second sets it apart from core subordination. Such a nexus type has been found in other languages, such as English

194

and Yoruba, as is shown in (42):

(42) English

    a. *Paul sat playing his guitar for hours.*

            (Foley & Van Valin 1984:262)

Yoruba

    b. *Mo mú íwé wá ilé.*

      1sg take book come home

      'I brought a book home.'

            (Foley & Van Valin 1984:261)

Foley and Van Valin have stated that the juncts in these sentences must share all core operators, plus a core argument. They do not exhibit syntactic embedding. In (42a) for example, if the core operator *can* is inserted in the sentence, as in (43):

(43) *Paul can sit playing his guitar for hours*

the operator 'does not express Paul's ability to sit but rather his ability to sit playing the guitar, and therefore it has scope over both verbs' (Foley & Van Valin 1984: 262). Further, the verb *sit* is intransitive, and the verb *play* has a direct object *his guitar*, therefore neither junct could be embedded under the other junct as a direct object. For these two reasons, Foley and Van Valin have placed (42a) in the category of cosubordination. That the juncture is at the core level is further revealed by the fact that the verbs must share the same actor argument *Paul.*

Note that the two juncts in the English example (42a) express the semantic relation of simultaneity. Such a relation is often encoded in Mandarin by the serial verb construction type that has been identified in this study as peripheral cosubordination, not core cosubordination. A crucial characteristic that distinguishes peripheral cosubordination from core junctures in Mandarin is that the juncts in the former may have their own peripheral arguments, as is illustrated in (44), while the juncts in the latter may not (see examples in 6.4.1.2.3 and 6.4.2.2.2.2).

> (44) a. *Ta   zuo-zhe tan   jita.*
>
> 3sg sit-DUR play guitar
>
> 'S/he was sitting playing the guitar.'
>
> b. *Ta   **shangwu** zuo-zhe **yizhi**   zai   tan   jita.*
>
> 3sg morning sit-DUR all-along PROG play guitar
>
> 'S/he was sitting in the morning and playing the
>
> guitar all the time.'

The other two nexus types, core coordination and core subordination, have been found in Mandarin, and are illustrated in (45):

> (45) a. *Xiao Qi jiao   ta   tan   gangqing.*
>
> Xiao Qi teach 3sg play piano
>
> 'Xiao Qi taught her/him to play the piano.'
>
> (Core coordination)

b. *Women zhong cai   chi.*

    We   plant vegetables eat

    'We planted vegetables to eat.'

            (Core coordination)

c. *Wo pao de hen kuai.*

    I   run DE very fast

    'I run very fast.'

    Literally: 'My running is very fast.'

            (Core subordination)

            (C-T Huang 1988: 275)

Examples (45a-b) are selected from the data collected by the author, while (45c) is taken from C-T Huang (1988), a supporter of the Secondary Predication Hypothesis (see Chapter Two for the discussion). Examples like (45a) have been called pivotal sentences, while examples like (45b) have been labelled serial verb constructions (cf. Chao 1968, Li & Thompson 1981, Chu 1983), or purpose clauses (cf. Bach 1982, Cutrer 1993). Some scholars, such as Tiee (1986) and Lin (1989), have placed the pivotal construction type like (45a) into the category of subordination. However their criteria for such an identification are vague and unclear. Other scholars, such as Chao (1968), did not try to classify it in terms of the traditional linkage categories (see the discussion in Chapter Two). It would appear that no attempt has been made by any scholar working on Mandarin syntax to further classify sentence types like those in (45b) into the

traditional coordinate or subordinate categories either, nor has any analysis been attempted to distinguish serial verb constructions of peripheral cosubordination like those in (30) from serial verb constructions linked at the core level like (45b). This situation is presumably caused by the fact that these sentence types do not fit neatly into the traditional dichotomous categories. Using the RRG theory, however, the situation may be cleared, as it will be seen that the criteria proposed by RRG clearly place sentence types like (45a-b) into the coordinate category.

Examples like (45c) have posed a serious problem for earlier studies with regard to which junct is the matrix junct, and which one is the subordinate junct (see Chapter Two for the relevant discussion). It will be argued here that the first junct of the *de* construction constitutes a subordinate clause, while the second is the matrix clause. The investigation supports the Primary Predicate Hypothesis by offering new evidence from the application of the RRG theory.

Although successful in handling some construction types like those mentioned above, the RRG theory is not free from drawbacks. It will be shown that its concepts are not adequate to treat certain types of core subordinate constructions in Mandarin.

6.4.1 Core Coordination

Core coordination refers to instances in which juncts are coordinately linked at the core level. Constructions of this type exhibit the following features:

(46) a. the absence of syntactic embedding;

    b. both juncts typically convey foregrounded information;

    c. each junct is free to have its own core operators;

    d. the linked juncts belong to one intonation unit;

    e. the obligatory sharing of core arguments;

    f. the further reduced ability for an individual junct to encode a discrete single event.

The diagnostics that will be utilized to identify these properties include: passivization, negation, scope of operators, intonational break, constraints on argument sharing and structural sharing.

Some examples of this linkage type are given in (47):

(47) a. *Xiao Qi jiao ta   tan   gangqing.*

       Xiao Qi teach 3sg play piano

       'Xiao Qi taught her/him to play the piano.'

    b. *Zhe jian shi   shi wo hen nanguo.*

       this CL   matter make me very sad

       'This thing made me very sad.'

c. *Xiao Wang mingtian qing   ni   qu ta jia.*

   Xiao Wang tomorrow invite you go his house

   'Tomorrow Xiao Wang invited you to go to

   her/his house.'

d. *Women zhong cai   chi.*

   We   plant vegetables eat

   'We planted vegetables to eat.'

e. *Ta baba   gei   ta   qian yong.*

   3sg father give 3sg money use

   'Her/His father gave her/him money to use.'

Examples (47a-c) are pivotal constructions, while examples
(47d-e) are serial verb or purpose constructions. It will be
seen that these two construction types differ from each other
both syntactically and semantically. However, they may both
be viewed as examples of core coordination.

6.4.1.1 Nexus Characteristics

This section discusses the characteristics that place
examples like (47) in the nexus category of coordination.
Several pieces of evidence are relevant to this claim.

6.4.1.1.1 Passivization

First, there are no embedded juncts in (47). This fact
can be seen through the application of the widely used
syntactic test of passivization to examples like those in
(47). The application of the test to the Mandarin data is

inspired by Foley and Van Valin's (1984) work. They have used
the test to argue that the accusative plus infinitive
construction in English is an example of core coordination
rather than of core subordination, as is illustrated in (48)
(Foley & Van Valin 1984: 247):

(48) a. *Philip believes Doreen to have tickled the
poodle.*

b. *Doreen is believed by Philip to have tickled
the poodle.*

c. ***Doreen to have tickled the poodle is believed
by Philip.*

These writers pointed out that the argument *Doreen* is shared
by both the finite predicate and the infinitival complement,
which identifies (48a) as a core juncture.

Second, the core argument of the finite predicate in
(48a) is *Doreen*, but not *Doreen to have tickled the poodle*.
This is borne out by the fact that *Doreen* and the infinitival
complement can be separated from one another by the
passivization test. They concluded that the infinitive
complement is not embedded as a core argument of the finite
predicate.

When the passivization test is applied to the Mandarin
examples of (47), the same results are produced, as is shown
in (49):

(49) a. *Xiao Qi jiao   ta   tan   gangqing.*

    Xiao Qi teach 3sg play piano

    'Xiao Qi taught her/him to play the piano.'

          (Pivotal construction)

  a'. *Ta   you Xiao Qi jiao   ta   tan   gangqin.*

    3sg by Xiao Qi teach 3sg play piano

    'S/he was taught by Xiao Qi to play the piano.'

  a". **Ta tan gangqin you Xiao Qi jiao ta.*

    3sg play piano by Xiao Qi teach 3sg

  b. *Xiao Zhang changchang jie   cidai ting.*

    Xiao Zhang often   borrow tape listen

    'Xiao Zhang often borrowed tapes to listen to.'

          (Serial verb construction)

  b'. *Cidai changchang bei Xiao Zhang jie   qu*

    tape often   by Xiao Zhang borrow DIR

      ting.

      listen

    'The tapes were often borrowed to listen to

      by Xiao Zhang.'

  b". **Cidai qu   ting   changchang bei Xiao Zhang*

    tape DIR listen often   by Xiao Zhang

      jie.

    borrow

Examples (49a'-b') are the passive counterparts of (49a-b).
It can be seen that both pivotal and serial verb
constructions, as in (49a'-b'), may undergo passivization.

When pivotal constructions undergo passivization, a resumptive pronoun may appear in the passive form, as in (49a'). However, what is crucial to the discussion regarding syntactic embedding in (47) is the fact that what is promoted to the actor position is the single NP that functions as an undergoer core argument of the first junct in the construction. The second junct, in which the promoted NP also functions as a core argument, is not affected by passivization. For example, in (49a'), it is the undergoer core argument *ta* '3sg' that has been promoted, but not the junct *(ta) tan gangqin* '(s/he) plays the piano', in which *ta* functions as an actor argument. Therefore it is *ta*, but not *(ta) tan gangqin* '(s/he) plays the piano' that constitutes the syntactic argument of *jiao* 'teach'. Similarly, in (49b'), it is the undergoer argument *cidai* 'tape', but not the junct *ting (cidai)* 'listen to (tapes)', in which the promoted NP functions as an undergoer argument, that has been promoted. Thus it is the former that comprises the syntactic argument of *jie* 'borrow'. Attempts to promote the whole junct to the actor position results in an ungrammatical sentence, as is shown in (49a"-b"). From this, a conclusion may be drawn that (47) does not exhibit junct embedding, which eliminates the possible analysis of core subordination for (47).

6.4.1.1.2 Negation Test

The above conclusion may be reinforced by the results from the negation test. The examples in (50) show that both juncts in examples like (47) carry foregrounded information, since the content of either junct may be challenged (cf. Haiman 1985b):

(50) a. *Xiao Qi jiao ta tan gangqing.*

  Xiao Qi teach 3sg play piano

  'Xiao Qi taught her/him to play the piano.'

  b. *Bu, ta mei jiao ta tan gangqing, ta jiao*

  NEG 3sg NEG teach 3sg play piano,   3sg teach

   ta shuo yingyu.

   3sg speak English

  'No, s/he did not teach her/him to play the piano, s/he taught her/him to speak English.'

  c. *Bu, ta mei jiao ta tan gangqing, ta dai*

  NEG 3sg NEG teach 3sg play piano   3sg take

   ta qu gongyuan le.

   3sg go park   RTM

  'No, s/he did not teach her/him to play the piano, s/he took her/him to the park.'

In (50b) the second junct is negated, while in (50c) the first junct is. This suggests that there is no implication of presupposition in either of the juncts in (50a); instead, they are of equal importance with regard to their informational status.

204

6.4.1.1.3 Scope of Operators

So far, it has been argued that examples like (47) do not exhibit syntactic embedding, nor carry presupposed information, thus a possible subordinate analysis for (47) is excluded. In order to ascertain whether coordination or cosubordination is involved in (47), the core-level operator modality has to be examined with respect to those examples. Note (51):

(51) a. *Xiao Qi* **xiang** *jiao ta tan gangqin.*

Xiao Qi desire teach 3sg play piano

'Xiao Qi wanted to teach her/him to play

the piano.'

b. *Tamen* **bixu** *zhong cai chi.*

they must plant vegetable eat

'They must plant vegetables to eat.'

It is quite clear that in these examples the modality operator has scope only over the verb in the first junct. For example, in (51a) only Xiao Qi's desire, expressed by the deontic modality marker *xiang*, not the third person's desire, is at issue. The example (51b) is interpreted as 'they have the obligation to plant vegetables to eat', rather than 'they have the obligation to plant vegetables and have the obligation to eat (vegetables)'. Thus the semantic domain of a modality operator is over the first junct in a core coordinate construction, but not the whole construction. In other words there is no dependency relation between linked core coordinate

205

juncts with respect to the use of core-level operators.

Further, as core junctures, the examples in (47) must share peripheral operators such as tense and illocutionary force. This is illustrated by the examples in (52):

(52) a. *Xiao Qi jiao ta tan gangqin le ma*?

Xiao Qi teach 3sg play piano   RTM Q

'Has Xiao Qi taught her/him to play the piano.'

a'. **Xiao Qi jiao le ta tan gangqin le ma*?

Xiao Qi teach RTM 3sg play piano   RTM Q

b. *Tamen zhong cai   chi le ma*?

they plant vegetable eat RTM Q

'Have they planted vegetables to eat yet?'

b'. **Tamen zhong cai   le chi le ma*?

they plant vegetable RTM eat RTM Q

According to the theory of RRG, core junctures must share elements that are above the core level, such as peripheral operators, thus (52a-b) are grammatical, with both juncts in each example occurring within the semantic domain of the relative tense marker *le* and the illocutionary force marker *ma*, while (52a'-b') are ungrammatical, where each individual junct is allowed to have its own relative tense marker *le*.

To conclude, all these three tests, passivization, negation, and scope of operators, clearly eliminate both subordination and cosubordination analyses for examples like those in (47) and put them in the nexus category of coordination.

6.4.1.2 Juncture Characteristics

It has been demonstrated that the juncts in (47) are coordinately linked. It will be argued in this section that the linkage in examples like those in (47) occurs at the core level.

6.4.1.2.1 Phonological Evidence--the Intonational Break Test

The first core juncture characteristic is shown by the fact that the linked juncts in (47) belong to one intonation unit, without an intonational break. This suggests that the junctures in (47) are at least tighter than the peripheral coordinate junctures in (4), and the peripheral subordinate junctures in (17), which require an intonational break. It will not, however, differentiate the junctures in (47) from the peripheral cosubordinate junctures in (30), which also disallow an intonational break. This analytical problem will find its solution in the discussion that follows.

6.4.1.2.2 Constraints on Argument Structure

Another core juncture characteristic of (47) is revealed by the heavy constraints on argument structure that exist with respect to constructions like these. It should be noted that, like the shared arguments in the peripheral cosubordinate examples of (30), the shared arguments in the core coordinate examples of (47) are also obligatory. The question arises again: what distinguishes the examples of core coordination in

207

(47) from the examples of peripheral cosubordination in (30)? The answer may be found in the nature of argument sharing demonstrated by these two juncture-nexus types.

Constructions of core coordination show richer and stronger constraints on the core arguments of the individual cores constituting the juncture than are encountered at the peripheral level. Stronger constraints on constructions of core coordination are shown by both the type of, and the number of, obligatorily shared arguments that this construction type must have. Recall that the linked juncts in constructions of peripheral cosubordination exhibit only one kind of obligatory coreferential relation, i.e., actor-actor coreference. Constructions of core coordination, on the other hand, often involve coreference of the main clause undergoer, and may have three distinct types of coreferential relations: undergoer-actor, actor-actor, and undergoer-undergoer coreference.

For instance, the pivotal constructions in (47a-c) show an undergoer-actor coreference, as it can be seen that the undergoer arguments of the first juncts in (47a-c) also serve as the actor arguments of the second juncts. Following Foley and Van Valin (1984), verbs like *jiao* 'teach', as in (47a), and *shi* 'make', as in (47b), can be viewed as containing a basic causative meaning. In the case of *jiao* 'teach' and *shi* 'make', the actor of these verbs does something to the undergoer, which in turn causes the undergoer to do something.

Since the strength of causation may vary from verb to verb (Searle 1975: 348, Foley & Van Valin 1984: 308-310), the verb *shi* 'make' may be viewed as a strongly implicative verb when compared to *jiao* 'teach'. Thus predicates like *shi* 'make' may be labelled implicative causative verbs, and predicates like *jiao* 'teach' are non-implicative causative verbs. The crucial point is that these verbs, whether strongly implicative or non-implicative, share a common feature; i.e., they all have undergoer control. This phenomenon follows directly from the semantics of these causative predicates, in the sense that the undergoer that is acted upon in the causing event is also the actor of the caused event. Since pivotal constructions require the use of predicates with a causative meaning, they are restricted by the choice of predicates that are available to them. Such a restriction, however, is absent for peripheral junctures, which can employ any predicate.

The richness of argument-sharing constraints on core coordination is also shown by the serial verb constructions in (47d-e), which have two coexisting coreferential relations: actor-actor coreference and undergoer-undergoer coreference. This type of coreferential relation is again determined by the nature of the predicates required. To be specific, both predicates in core coordinate construction like (47d-e) must be transitive. Compare (53) with (54):

(53) a. *Women zhong cai*   *chi.*

           we   plant vegetables   eat

           'We planted vegetables to eat.'

    b.* *Women zhong cai*   *pao.*

          we   plant vegetables run

              (Core coordination)

(54) a. *Ta gui xia lai qiu Zhangsan.*

          3sg kneel down DIR beg Zhangsan

          'S/he knelt down and begged Zhangsan.'

            (Peripheral cosubordination)

It can be seen that the core coordinate construction of (53) requires both predicates to be transitive, while the predicates in the peripheral cosubordinate construction of (54) are not subject to such a constraint.

To conclude, the constraints on argument structure discussed above appear to result from the tightness of linkage exhibited by core junctures. Foley and Van Valin (1984) claim that the tighter the syntactic linkage, the greater the semantic constraints that are forced upon the linkage type. In the core coordinate constructions of Mandarin, semantic restrictions are revealed in the heavy restrictions on the choice of verbs allowed by this linkage type, which in turn brings about constraints on argument structure of core coordination.

6.4.1.2.3 Core Coordination and Peripheral Arguments

In addition to the required sharing of at least one core argument, core coordinate constructions also require the obligatory sharing of all peripheral arguments. Compare (30b), a peripheral cosubordinate construction, repeated here in (55), with (56), the core coordinate constructions:

(55) a. *Lao daniang* **jintian** *zai* *jia* **yizhi** *zai*

    old woman   today   be-at home all-along be-at

        xi *yifu.*

        wash clothes

    'The old woman was at home washing clothes all

        day long today.'

(56) a. *Wang laoshi* **mei** *xingqi* **san** *jiao* *ta* *tan*

    Wang teacher every week   three teach 3sg play

        gangqin.

        piano

    'Teacher Wang teaches her/him every Wednesday to

        play the piano.'

  a' **Wang laoshi* *jiao* *ta* **mei** *xingqi* *san* *tan*

    Wang teacher teach 3sg every week   three play

        gangqin.

        piano

    'Teacher Wang teaches her/him to every

        Wednesday play the piano.'

b. *Women **mei nian** dou zhong cai   chi.*

We   very year all plant vegetables eat

'We plant vegetables to eat every year.'

b'. **Women zhong cai   mei   nian dou chi.*

woman plant vegetable every year all eat

'We plant vegetables to every year eat.'

Examples (55-56) show that the peripheral juncts may have
their own peripheral argument, while the core coordinate
juncts may not.   In core coordinate constructions, the
peripheral argument must be shared and appear in the first
junct, as in (56a-b). If it occurs in the second junct, the
resulting sentence is ungrammatical, as in (56a'-b').

There is one exception to this situation, though, which
is offered by pivotal constructions with directive verbs, the
type of verb that suggests a command on the part of the actor.
Consider example (47c), repeated here in (57):

(57) a. *Xiao Wang **mingtian** qing   ni qu ta jia*

Xiao Wang tomorrow invite you go his house

'Tomorrow Xiao Wang will invite you to go to

her/his house'

b. *Xiao Wang qing   ni **mingtian** qu ta   jia*

Xiao Wang invite you tomorrow go her/his house

'Xiao Wang invited you to go to her/his house

tomorrow'

where the peripheral argument *mingtian* 'tomorrow' may appear
in either junct. The explanation for this exception may be

found in the semantic characteristics of the verb used in (57). According to Searle (1975), verbs like *qing* 'invite' are a kind of verbal causative rather than causatives like *shi* 'make' in (47b), in the sense that the actor tries to get the undergoer to perform some action by means of a verbal utterance. Searle (1975) has labelled them 'directives'. Because of the fact that the causing events encoded by directive predicates are verbal, it is natural for the caused event to have a future orientation with respect to the causing event. Thus it is possible for the caused event, expressed by the second junct, as in (57), to have its own peripheral temporal argument to indicate such future orientation.

This exception does not appear to pose serious analytical problems for pivotal constructions in general, as all pivotal constructions are subject to the obligatory sharing of peripheral operators discussed in 6.4.1.1.3 and the constraints on argument structure discussed in 6.4.1.2.2. It appears that pivotal constructions with directive verbs may be viewed as the loosest core coordinate juncture type, bridging constructions of peripheral cosubordination and other core coordinate construction types, an analysis that is permitted by the scalar nature of the RRG concepts.

6.4.1.2.4 Overall Situation of Structural Sharing

The last core characteristic of (47) that needs to be identified is whether each individual junct in (47) is able to

encode a discrete event. Applying to (47) the two criteria discussed in 6.3.1.2.3, it can be seen that there appears to exist heavy structural sharing between the linked juncts in each example: the juncts must share peripheral operators, as in (52), peripheral arguments, as in (56), and at least one core argument, as is discussed in 6.4.1.2.2. Second, each individual junct does not form an independent intonation unit. The conclusion that may be drawn from these facts is that the core juncts in (47) may not encode a discrete event by themselves. Such an ability is reduced compared to that exhibited by the juncts of a peripheral cosubordinate construction. Recall that the latter must share peripheral operators, one actor argument, and they also do not form independent intonation units. However, they do not have to share peripheral arguments. This fundamental difference between peripheral cosubordinate junctures, as in (30), and core junctures, as in (47), supports the RRG prediction that peripheral juncts tend to encode a distinct event or activity, whereas core juncts tend to encode distinct phases of a single event. Syntactically, linked peripheral juncts tend not to integrate into a single unit, while core juncts tend to do just that.

6.4.1.3 Summary

Equipped with the criteria provided by the RRG theory, the examples in (47), the analysis of which has never been

successfully attempted by scholars working within a
traditional frame, may now be viewed as instances of
coordination at the core level. Further, the mechanisms in
the RRG approach allow the subtle but possible distinction
between peripheral cosubordination and core coordination in
Mandarin. For example, the difference between the peripheral
cosubordinate constructions of (30) and the core coordinate
constructions of (47d-e), which are both serial verb
constructions, may now be accounted for, using the criterion
of argument-sharing provided by the RRG theory. Further, due
to the common characteristics that the pivotal construction
and the serial verb construction share, which have been
discussed above, the two construction types may now receive a
unified account, both being placed in the category of core
coordination, notwithstanding the facts that they differ from
one another both syntactically and semantically, and that they
have been viewed as two distinct construction types in
previous, more traditional approaches.

6.4.2 Core Subordination

6.4.2.1 Definition

The term core subordination is used in RRG to refer to
two very distinct construction types: one where a <u>bare core
junct</u> is embedded under another core as a core argument, and
one where a <u>periphery</u> is embedded under a core junct as a core
argument. Foley and Van Valin (1984) regard the first of

these construction types as 'the unmarked case', because the juncts linked are of the same type; i.e., a core linked with a core. They treat the second construction type as 'the marked case', due to the fact that the linked juncts are of different types; i.e., a core linked with a periphery. For example, (58a) represents the unmarked type where the bare core is embedded under another core, while (58b) represents the marked type, where a periphery is embedded under a core (Foley & Van Valin 1984: 250-251):

(58) Barai

    a. *Juare   ij-ia   a   ni   [mave n-one*

       garden DEF-LOC 2sg IMP pig   1sg-POSS

       sak-a-mo]   g-a-ne.

       bite-2sgU-PRES/HAB look-3sgU-IMP

       'In the garden look for [it]: my pig bites!'

   English

    b. *Max reported that Louise will arrive in London*

       tomorrow.

It is clear from the treatment afforded these distinct construction types by Foley and Van Valin that they regard the first, 'unmarked' type as being more typical of the category 'core subordination', and that they themselves were not entirely satisfied with the inclusion of the second, 'marked' type in this category (see discussion in section 6.4.2.3). Accordingly, these two types of construction will be analyzed separately here, beginning with the unmarked.

6.4.2.2 Characteristics of Core Subordination

Setting aside the second, 'marked' construction, this linkage type, according to RRG, is prototypically characterized by the following properties:

(59) a. the presence of syntactic embedding at the core level;

b. inequality in the information structure of the linked juncts;

c. the reliance of the subordinate junct on the matrix junct for the specification of operators;

d. the linked juncts belong to one intonation unit;

e. the incorporation of the embedded junct into the matrix junct;

f. lack of capacity for an individual junct to encode a single, discrete event.

The diagnostics that will be used to identify these characteristics include: syntactic position, insertion of a negator, formation of afterthought, first mention test, negation test, scope of operators, intonational break, and structural sharing.

This linkage type in Mandarin is illustrated by the examples in (60):

(60) a. *Na   ge ren   pao de hen   kuai.*

that CL person run DE very fast

'That person ran very fast.'

Literally: 'That person's running was very

fast.'

b. *Ta   xie   de hen   man.*

3sg write DE very slow

'S/he wrote very slowly.'

Literally: 'Her/his writing was very slow.'

c. *Women tiao de hen lei.*

we   dance DE very tired

'We were very tired from dancing.'

Literally: 'Our dancing made us very tired.'

Examples (60a-c) are traditionally labelled 'descriptive complement constructions', and 'resultative complement constructions' (cf. C-T Huang 1988), or in Li and Thompson's terms, 'complex stative constructions' (1981). They represent cases where a bare core is embedded under another core, hence, following RRG, they are viewed as the unmarked types. It was mentioned in Chapter Two that although there is only one verb in the English translation for (60a-c), each Mandarin example has two verbs, one action verb and one stative verb. For example in (60a), the two verbs are *pao* 'run' and *kuai* 'fast'.

Sentences like these have been the focus of dispute among scholars of Chinese for decades, concerning the type of linkage exhibited by these constructions (see Chapter Two for

218

discussion). It will be argued that all examples in (60) exhibit a subordinate relation, and that in each case the embedded junct is a bare core.

6.4.2.2.1 Nexus Characteristics

Nexus characteristics that place (60) in the category of subordination are revealed from both syntactic and pragmatic evidence. Three specific properties are related to this analysis: syntactic embedding, information structure, and scope of operators, and they will be discussed in this section.

6.4.2.2.1.1 Syntactic Embedding

The first characteristic to be discussed is syntactic embedding, which may occur in both the actor and the undergoer position (Foley & Van Valin 1984). In Mandarin, syntactic embedding only appears in the actor position in unmarked types. Van Valin (1993) claims that the crucial feature of subordination is embedding, and the passivization test has been used in RRG to attest its existence. However, such a test is not suitable for examining the embedding situation in (60), because in the *de* construction the two predicates employed are either intransitive or stative. The situation of junct embedding in (60), therefore, has to be shown by means of other tests. There are three tests that may serve this purpose, namely syntactic position, insertion of a negator,

and formation of afterthought. Although simplistic compared to the test of passivization, they are able to provide evidence that shows that the embedded junct in (60), occupying the same syntactic position that a simple NP does, functions as a core argument of the complex construction.

6.4.2.2.1.1.1 Syntactic Position Test

The syntactic position test shows that the first junct in a *de* construction occupies the syntactic position that is normally reserved for an actor argument, as is shown in (61):

(61) a. *Na   ge ren   pao de hen   kuai.*

   that CL person run DE very fast

   'That person ran very fast.'

   Literally: 'That person's running was very

         fast.'

   a'. *Na   ge ren   hen kuai.*

   that CL person very fast

   'That person was fast.'

   b. *Ta xie   de hen   man.*

   3sg write DE very slow

   'S/he wrote very slowly.'

   Literally: 'Her/his writing was very slow.'

   b'. *Ta hen man.*

   3sg very slow

   'S/he was slow.'

c. *Women tiao de hen lei.*

    we   dance DE very tired

    'We were very tired from dancing.'

    Literally: 'Our dancing made us very tired.'

c'. *Women hen lei.*

    we   very tired

    'We were very tired.'

Comparing (61a-c) with (61a'-c'), it is seen that both the highlighted core juncts and the highlighted noun phrases hold the same syntactic position. This fact suggests that the first junct in the *de* construction is embedded, and functions as an actor argument of the whole construction.

6.4.2.2.1.1.2 Insertion of a Negator

That the embedded junct occupies the actor position may be further shown by insertion of a negator in (60). Note (62):

    (62) a. *Na   ge ren   **bu** hen kuai.*

          that CL person NEG very fast

          'That person was not very fast.'

      b. *Na   ge ren   pao de **bu** hen kuai.*

          that CL person run DE NEG very fast

          'That person did not run very fast.'

      c. *Na   ge ren   **bu** pao.*

          that CL person NEG run

          'That person will not run.'

d. *Na   ge ren   bu pao de hen   kuai.

that CL person NEG run DE very fast

Here it is clear that the negator *bu* appears between the actor

and the main predicate, as is shown in (62a-c).   It is

ungrammatical if it occurs before the subordinate predicate,

as is shown in (62d). The insertion test once again indicates

that the first junct in (60) functions like an actor argument.

6.4.2.2.1.1.3 Formation of Afterthought Test

Additional evidence that the highlighted core juncts in

(60) are functioning as actor arguments may be provided by a

phenomenon concerning the formation of afterthought.   Note

(63):

(63) a. *Ta   yingwen shuo   de hen   hao.*

3sg English speak DE very well

'S/he speaks English very well.'

b. *Hen   hao,   ta yingwen shuo   de.*

very well, 3sg English speak DE

'Very well, s/he speaks English.'

c. *Ta   hen   hao,   yingwen shuo   de.*

3sg very well, English speak DE

'S/he is very well in terms of speaking English.'

d. **Ta   yingwen   de hen   hao,   shuo.*

3sg English   DE very well, speak

*Ta   yingwen shuo   hen   hao,   de.

3sg English speak very well, DE

222

The distributional evidence regarding the formation of afterthought shows that the afterthought may only be expressed by the whole core, as in (63b-c), but not by any random string of words, as in (63d).

6.4.2.2.1.1.4 Summary

Application of the tests of syntactic position, insertion of a negator, and formation of afterthought to (60) has identified the highlighted core juncts in (60) as functioning as actor arguments of the complex constructions in which they occur. Two conclusions may be drawn from these observations. First, there exists syntactic embedding in (60), and second, the embedding occurs at the core level. This provides the basis for the statement that examples like those in (60) are core subordinate constructions.

6.4.2.2.1.2 Unequal Information Structure

It has been argued that (60) exhibits junct embedding, which in the RRG framework provides the syntactic evidence for viewing it as core subordination. It is argued here that the pragmatic evidence also supports this analysis. In the case of core subordination, the pragmatic evidence comes from an unequal information structure exhibited by the linked juncts. Two tests, the first mention test and the negation test, are able to reveal the unequal informational status of the juncts. The former is discussed in 6.4.2.2.1.2.1, and the latter in

223

6.4.2.2.1.2.2.

6.4.2.2.1.2.1 First Mention Test

According to RRG, the embedded juncts must be subordinate to their respective matrix juncts pragmatically as well as syntactically; i.e., they describe background information. Both the oral and written texts examined show that constructions like (64a-c) cannot appear in discourse without prior mention of the information contained in the embedded junct. Here are some examples taken from both the oral and written texts investigated:

(64) a. A: *Ta tiantian xie mao bi zi.*

   3sg everyday write brush pen character

   'S/he writes characters with a brush pen everyday.'

   B: *Na mei tian yao hua ta hen duo*

   then every day will spend 3sg very much

   shijian le.

   time RTM

   'Then it will take her/him a lot of time everyday.'

   A: *Shi a. Ta xie de hen man.*

   Yes 3sg write DE very slowly

   'Yes. S/he writes very slowly.'

b. *Fuyi na   nian shiyi sui.   Yi tian, zu*

  Fuyi that year eleven year old. one day   grand

  mu,   muqin dai-zhe   er   di

  mother, mother carry-DUR second younger brother

  he da   mei   lai kan   ta. Fuyi

  and first younger sister come visit him. Fuyi

  *he didi,   meimei   **wan***

  and younger brother, younger sister play

  *zhuomicang,   **wan** de feichang kaixin.*

  hide-and-seek, play DE extremely happy

  That year Fuyi was eleven years old. One day

  grandmother and mother took the second younger

  brother and the first younger sister to come to

  visit him. Fuyi played hide and seek with his

  younger brother and younger sister, and he was

  very happy from playing it.

        (Liu Lianli, Chen Zhuo, Li Weiji

        & Yan Shuqin 1988b: 21)

c. *... ke ta renran **kunao** buzhi,   rang-zhe*

   ... but he still   cry   not-stop, shout-DUR

 "wo bu zai   zher, wo yao hui   jia!"

  I NEG be-at here, I want return home!

 Guanyuanmen you jinzhang you zhaoji,

  officials   both nervous and worried,

225

dan you   bu   hao   tingzhi zhuhe,

but again not good stop   congratulate,

zhide an   lao guiju meiwanmeiliaode

only follow old custom without-stopping

kebai xiaqu. Zhe shi   xiao   huangdi

kowtow on   this moment little king

ku   han   *de* geng lihai   le.

cry shout DE more severe RTM

...but he still cried without stopping, shouting:

"I don't want to be here. I want to go home!"

The officials were both nervous and worried, but

it was not appropriate for them to stop

congratulating. Therefore, they just followed

the old custom and kept kowtowing and kowtowing.

At this time, the little emperor cried more

intensely.

<div align="center">

(Liu Lianli, Chen Zhuo, Li Weiji

& Yan Shuqin 1988b: 22)

</div>

There are two highlighted places in each example. They
display the two mentions of the same activity expressed by the
same verb. Note that the *de* construction is used in the
second mention in all three examples. This indicates that the
first junct in a *de* construction represents given information,
providing a grounding for the introduction of the information
expressed in the second junct. In other words, the two juncts

in the *de* construction are not equal in their information status. The first junct, which carries the presupposed information, is grammatically subordinate to the second junct, which carries the foregrounded information.

6.4.2.2.1.2.2 Negation Test

According to Haiman (1985b), the typical characteristic of presupposed information is that the clause that contains such information is not subject to challenge. Therefore, the negation test (cf. Haiman 1985b) may be adopted here to further examine whether the embedded juncts in examples like (60) do encode presupposed information or not. Note (65):

(65) a. *Na   ge ren   pao de hen kuai.*

    that CL person run DE very fast

    'That person ran very fast.'

b. *Ta   pao de bu   kuai.*

    3sg run DE NEG fast

    'S/he did not run fast.'

c. **Ta   mei pao.*

    3sg NEG pao

    'S/he did not run.'

The denial of the matrix junct is acceptable, as in (65b), whereas the denial of the subordinate junct is not, as in (65c). Therefore it can be concluded that the embedded juncts in (60) contain presupposed information, while the matrix juncts contain the new information. This unequal information

227

structure constitutes the second piece of evidence supporting the claim that (60) represents core subordination.

6.4.2.2.1.3 Scope of Operators

The third piece of evidence for the analysis of core subordination for (60) is revealed by the fact that operators, whether peripheral or core, must be shared by both juncts in the *de* construction, in which a bare core is embedded. Note (66):

(66) a. *Na ge ren pao de* **kuai-bu-kuai**?

that CL person run DE fast-not-fast?

'Does that person run fast?'

b. **Na ge ren* **pao-bu-pao** *de kuai*?

that CL person run-not-run DE fast

c. *Na ge ren* **keyi** *pao de hen kuai*.

that CL people may run DE very fast

'That person may run very fast.'

d. *Na ge ren pao de* **keyi** *hen kuai*.

that CL person run DE may very fast

'That person may be very fast if running.'

e. **Na ge ren pao-le de hen kuai*.

that CL person run-PERF DE very fast

It is seen that the illocutionary force marker *kuai-bu-kuai* may only appear in the matrix junct, as is shown by the ungrammaticality of (66b). Nevertheless it has scope over the entire construction, as the whole sentence is in a question

228

form. The modality marker *keyi* 'may' may appear either in the embedded junct, as in (66c), or in the matrix junct, as in (66d). However, as the translation shows, the scope of the modality marker is different, depending on where it occurs. When it appears in the matrix junct, it affects the higher predicate only. However, when it appears in the embedded junct, it has scope over both the matrix and the embedded juncts. For example, *keyi* in (66d) qualifies *hen kuai* 'very fast', whereas *keyi* in (66c) qualifies *pao de hen kuai* 'run very fast', rather than just *hen kuai* 'very fast'. This situation is different from what is found in a core coordinate construction, such as those discussed in 6.4.1.1.3, where a modality marker has scope over the junct in which it occurs, but not over the entire sentence. Example (66e) shows that the verb of the embedded junct cannot be modified by nuclear operators. This provides further evidence suggesting that the embedded junct in examples like (60) is a bare core.

6.4.2.2.2 Juncture Characteristics
6.4.2.2.2.1 Phonological Evidence-Intonational Break Test

There are three properties, namely intonational break, incorporation, and diminished ability to encode a discrete event, that reveal that (60) is a core juncture, rather than a peripheral or nuclear juncture. Phonologically, no pause is allowed between the linked juncts. Each complex structure of (60) constitutes an intonational unit by itself. Although

229

this is also typical of peripheral cosubordination, as is discussed in 6.3.3.2.1, structural sharing evidence favouring the analysis of core juncture for (60) that will be provided in 6.4.2.2.2 will show that the examples in (60) represent relatively tighter linkage than that of peripheral cosubordination in (30).

6.4.2.2.2 Incorporation and Peripheral Arguments

What concerns core subordination is not whether there is core argument sharing or not but that the embedded junct is incorporated into, and functions as a core argument of, the matrix junct with which it is linked. The incorporation manifested by the embedded juncts in (60) suggests that they are subordinate to the matrix juncts (cf. Haiman 1985b). The fact that they function as core arguments suggests that the linkage in (60) occurs at the core level (Foley & Van Valin 1984).

Forming core junctures, the linked juncts in (60) must share the same peripheral arguments (Foley & Van Valin 1984). Compare (67a) with (67b):

(67) a. (*Zuotian*) na ge ren (*zuotian*) *pao de hen*

       yesterday that CL person yesterday run DE very

          lei.

          tired

       'Yesterday that person was tired from running.'

b. (*Zuotian*)   *na*   *ge ren*   (*zuotian*) *hen* *lei*.

yesterday that CL person yesterday very tired

'That person was tired yesterday.'

The sentence element *zuotian* 'yesterday' must have scope over both the embedded and the matrix juncts when it occurs either before or right after the first subordinate core argument in the *de* construction, in the same way that it appears before or after a core argument in a simple sentence, as is shown in (67a-b). The obligatory sharing of peripheral arguments thus identifies the examples in (60) to be core junctures and distinguishes them from the peripheral cosubordinate constructions in (30), where the linked juncts may have their own peripheral arguments.

6.4.2.2.2.3 Overall Situation of Structural Tightness

To determine whether core junctures like (60) are capable of encoding a discrete event, the overall picture of structural tightness must be considered. It can be seen from the above discussion that the linked juncts in (60) must share peripheral operators, as in (66a), and peripheral arguments, as in (67a). It is seen that the embedded junct in (60) is incorporated into the matrix junct as a core argument. In addition, there is no intonational break between the linked juncts. All these properties suggest the lack of capacity to encode a single discrete event by the individual juncts, and reflect the conceptual closeness of this linkage type.

231

Further, comparing these constructions with the examples of core coordination discussed in 6.4.1, the examples of core subordination illustrate a tighter linkage, the reason being that in the latter case, the two juncts simply overlap by sharing a common core argument; while in the former, the whole junct is embedded under the complex construction as a core argument rather than just overlapping with another core by sharing a core argument.

6.4.2.3 Marked Types

The marked type of core subordination, where a periphery is embedded in a core as a core argument, is examined in this section. As noted above, Foley and Van Valin (1984:251-256) did not appear to be entirely satisfied with their own analysis of this type of clause linkage, and were careful to point out the many peculiarities common to constructions of this type. They specifically noted the following:

1). These constructions are unique in that the linked clauses are not of the same level; i.e., in all other linkage types, periphery is linked with periphery, core with core, or nucleus with nucleus. By linking a periphery with a core, this type of construction violates what would otherwise be a plausible universal of clause linkage: that only juncts of the same level can be linked.

2). Unlike the other linkage types, this kind of construction shows clear correlations with other structural

232

properties of natural language. In particular, these constructions are found <u>only</u> in languages which allow indirect quotation of speech. Many languages (e.g., Dyirbal) have no constructions of this type, and also lack indirect reporting of speech. Of the languages which do allow this construction type, many restrict the higher predicate to the verb 'say', and the construction functions <u>only</u> to indirectly report speech. In languages like English the construction has spread to other higher predicates, namely verbs of cognition (e.g., 'think', 'believe', 'recognize', etc.). From such observations it is clear that the prototypical function of this type of embedding is to indirectly report speech.

3). Constructions of this type present a unique situation, in that the subordinate junct has almost as much structural freedom as the matrix to which it is embedded. The embedded peripheral clause typically may possess its own peripheral arguments, and has considerable freedom of operator selection (e.g., tense). It would appear that only illocutionary force is obligatorily shared by the linked juncts.

4). Finally, although Foley and Van Valin do not offer firm statistical evidence, they state that this type of construction (in those languages which allow it) probably occurs with greater frequency both cross-linguistically and language-specifically than the 'unmarked' type of core subordination discussed above. This statement suggests that

their conception of 'markedness' deserves some further attention, as it has raised the question of how the values of markedness should be determined. For example, what does it mean to be a marked or unmarked element of an opposition? Concerns like these will be discussed in 6.4.2.3.3.

6.4.2.3.1 Features Shared with the Unmarked Type

Mandarin examples that represent this 'marked' type are given in (68). The examples of this type share two features with the unmarked constructions in (60), syntactic embedding and unequal information structure. Note (68):

(68) a. *Zhang laoshi neng lai tai hao le.*

Zhang teacher be-able-to come very good RTM

'That teacher Zhang can come is really great.'

b. *Wo zhidao ta zou le.*

I know 3sg leave PERF/RTM

'I knew that he had left.'

Unlike English, Mandarin sentences do not have overt complementizers that link the two juncts, which makes it difficult to tell where the junct boundary is, at least at first glance. The passivization test cannot be applied to (68), as neither the stative verb *hao* 'good' in (68a) nor the verb of cognition *zhidao* 'know' in (68b) can be passivized in Mandarin, although the verb *know* in English can. With no other verbs that may be passivized found in the data relevant to the marked type of construction, the two constituent tests

234

applied to the constructions of the unmarked type in 6.4.2.2.1 are utilized here. They will show 1) where the boundary of each junct is; and 2) that the embedded junct functions as a core argument, with the embedded junct in (68a) functioning as an actor argument, and the embedded junct in (68b) functioning as an undergoer argument.

(69) Syntactic position test

a. *Zhang laoshi neng   lai tai hao le.*

Zhang teacher be-able-to come very good RTM

'That teacher Zhang can come is really great.'

a'. *Zhang laoshi tai hao le.*

Zhang teacher very good RTM

'Teacher Zhang was really great.'

b. *Wo zhidao ta zou   le.*

I know   3sg leave PERF/RTM

'I knew that he had left.'

b'. *Wo zhidao zhe jian shi.*

I know   this CL   matter

'I knew this matter.'

In (69) both the highlighted junct and the highlighted single NP occupy the same syntactic position, with those in (69a-a') occupying an actor position and those in (69b-b') occupying an undergoer position. The formation of an afterthought test in (70) supports this observation by showing that elements that belong to the same junct must stay together in this process.

(70) Formation of an afterthought

    a. *Zhang laoshi neng   lai tai hao le.*

       Zhang teacher be-able-to come very good RTM

       'That teacher Zhang can come is really great.'

    b. *Tai hao le, Zhang laoshi neng   lai.*

       very good RTM, Zhang teacher able-to come

       'It is really great that teacher Zhang will be

           able to come.'

    c. **Zhang laoshi tai hao le, neng   lai.*

       Zhang teacher very well RTM, able-to come

      **Zhang laoshi neng   tai hao le, lai.*

       Zhang teacher able-to very well RTM come

      **Zhang laoshi lai   tai hao le, neng.*

       Zhang teacher come very well RTM, able-to

The syntactic position test and the formation of afterthought test in (69-70) suggest that there exists syntactic embedding in (68), just as there exists syntactic embedding in (60). The negation test in (71) reinforces the observation by showing that the content of the embedded junct is not open to challenge:

(71) Negation test

    a. *Ming zhidao ta zou   le.*

       Ming know   3sg leave PERF/RTM

       'Ming knew that he had left.'

236

b. *Ta   bu   zhidao.*

   3sg NEG know

   'S/he did not know.'

c. **Ta   mei   zou.*

   3sg NEG leave

   'S/he did not leave.'

The denial in (87b) where the higher predicate is challenged is acceptable, while the denial in (71c) where the embedded predicate is challenged is not. The reason, of course, is that the embedded junct encodes background information, which is known to both the speaker and the hearer at the time when (71a) is uttered.

6.4.2.3.2 Peculiarities

The syntactic embedding shown in (69-70) and unequal informational structure shown in (71), however, appear to be the only two features that the examples in (68) share with those in (60). Other properties that (68) has, such as scope of operators, intonational break, scope of peripheral argument, and overall situation of argument sharing, are peculiar, and distinguish it from unmarked constructions. First, the embedded juncts in (68) differ from those in (60) in that the former are peripheral juncts, and thus possess almost all the qualities that a full clause has. For example, the A-not-A illocutionary force marker may occur in either the matrix or the embedded junct in the marked type, as in

(72a-b), while it may only appear in the matrix junct in the unmarked type, as in (72c-d):

(72) a. Marked

*Ni   renwei tamen **hui-bu-hui**   lai?*

you think they will-not-will come

'Do you think that they will come or do you

think that they won't?'

(C-T Huang, 1988:279)

b. *Ni   **renwei-bu-renwei** tamen hui lai?*

you think-not-think they will come

'Do you think that they will come?'

c. Unmarked

*Na   ge ren   pao de **kuai-bu-kuai**?*

that CL person run DE fast-not-fast?

'Does that person run fast?'

d. **Na   ge ren   pao-bu-pao de kuai*?*

that CL person run-not-run DE fast

Although in (72) the illocutionary force is shared by both juncts regardless of whether it appears in the matrix junct or the embedded junct, in the sense that it is the whole sentence that is in the interrogative form, the fact that the embedded junct in (72a) may carry such a marker suggests that it is virtually a full sentence.

Further, if a core operator appears in the embedded junct of a marked construction, it has scope over that junct only, rather than qualifying the whole sentence as it does in an

238

unmarked construction.   Compare (73a) with (66c), repeated
here in (73b):

(73) a. Marked

Ni renwei tamen **keyi** lai ma?

you think they may come Q

'Do you think that they may come?'

'*May you think that they may come?'

b. Unmarked

Na   ge ren   **keyi** pao de hen kuai.

that CL people may run DE very fast

'That person may run very fast.'

'*That person may run and is very fast.'

Note that *keyi* appears in the embedded junct in both examples.
However, in (73a) it affects only the junct in which it
occurs, while in (73b) it affects the whole construction.
This again points to the fact that the embedded junct in the
marked type possesses properties of a full sentence.

The freedom to specify independent peripheral arguments,
as well as the peripheral operator of tense, in the embedded
junct of the marked type reinforces its full-sentence
properties. Compare (74a) and (74b) with (74c):

(74) a. Marked

Wo zhidao ta **zuotian**   zou   le.

I know   3sg yesterday leave PERF/RTM

'I know that he left yesterday.'

b. Unmarked

    Na   ge ren   zuotian   pao de hen   lei.

    that CL person yesterday run DE very tired

    'Yesterday that person was tired from running.'

c. **Na   ge ren   zuotian   pao le   de hen*

    that CL person yesterday run PERF/RTM DE very

        lei.

        tired

In the marked construction of (74a), both the peripheral argument *zuotian* 'yesterday' and the perfective/relative tense marker *le* exhibit semantic scope over the embedded junct only, without affecting the matrix junct, thus allowing the embedded junct to assume the status of a nearly full sentence. The unmarked construction of (74b), however, shows that the peripheral argument *zuotian* 'yesterday', although appearing in the embedded junct, must be shared by both juncts. The example (74c) demonstrates that the perfective/relative tense marker *le* cannot appear in the embedded junct of the unmarked type.

Additional evidence for such full-sentence properties may also be provided by the freedom to insert a negator into the embedded junct of the marked type. See (75):

(75) Marked

a. *Wo **bu** zhidao ta zou   le.*

    I NEG know   3sg leave PERF/RTM

    'I don't know that s/he has left.'

240

b. *Wo zhidao ta **bu** zou le.*

　　I　know　3sg NEG leave PERF/RTM

　　'I know that s/he will not leave now.'

c. Unmarked

　　*Na ge ren pao de **bu** hen kuai.*

　　that CL person run DE NEG very fast

　　'That person did not run very fast.'

d. **Na ge ren **bu** pao de hen kuai.*

　　that CL person NEG run DE very fast

It is possible for the juncts of the marked type to be independently negated, as is shown in (75a-b), while this is not the case with the juncts of the unmarked type, as is shown in (75c-d).

Apart from the syntactic evidence mentioned above, phonological evidence exhibited by the marked type also appears to point to a full-sentence analysis for the embedded junct. It is clear that there sometimes exists a very short pause between the juncts of the marked type in the data collected. The pause is not long enough to be registered by a comma, as it is when occurring between juncts in a peripheral coordinate or peripheral subordinate construction, but it is noticeable occasionally. When it appears, it seems to function as a "silent" complementizer, linking related juncts in Mandarin. This situation contrasts with what is presented by juncts of the unmarked type, where no intonational break between them is possible.

Applying the criteria discussed in 6.3.1.2.3 to constructions of the marked type, in order to assess the capacity of individual juncts to encode a discrete event, one may conclude that each individual junct possesses such capacity. For example, except for the sharing of illocutionary force, each junct is free to have its own peripheral and core operators, such as tense and modality, and each junct may have its own peripheral argument, as in (74). Further, a pause, although relatively shorter than the one between peripheral juncts in a coordinate or subordinate construction, is sometimes noticeable. Due to these features, it is clear that juncts of the marked type are more loosely linked than those of the unmarked, even though both types consist of a junct embedded as a core argument.

6.4.2.3.3 Analytical Problems

The treatment of the marked type of core subordination in RRG presents several analytical problems. The fact that juncts in the marked type may encode separate events brings forth an immediate question regarding whether the marked construction type is syntactically tighter than the peripheral cosubordinate construction. According to RRG, it should be. However, the Mandarin data seem to indicate otherwise. Even though, like marked core subordinate juncts, peripheral cosubordinate juncts may have their own peripheral arguments, they have to share not only illocutionary force but also other

peripheral operators, such as tense, as in (38), whereas juncts in the marked core subordination in Mandarin may have their own tense operator, as in (74a).

In addition, there exists no intonational break between such peripheral juncts, while a slight pause is frequently noticeable between marked core subordinate juncts. These structural differences suggest that juncts of a marked core subordinate construction are relatively more loosely linked than those of a peripheral cosubordinate construction. This possibility presented by the Mandarin data violates the syntactic boundedness hierarchy. Held in RRG as a plausible universal of clause linkage in languages (Foley & Van Valin 1984: 267), the hierarchy suggests that the three nexus types may be ranked in terms of the degree of syntactic tightness, with coordination at any given level representing the loosest nexus type, subordination at any given level standing in the middle and cosubordination at any given level representing the tightest nexus type (see Chapter Three for the discussion). Indication of syntactic tightness includes the sharing or non-sharing of elements, and the presence or absence of intonational break. The fact that a slight pause is sometimes noticeable between linked juncts of the marked core subordination would place it over core coordination on the hierarchy, showing a relatively looser link. It is predicted in RRG that a periphery is a more loosely formed juncture than a core. The fact that juncts in the marked core subordination

have more freedom than those in peripheral cosubordination in having their own peripheral operators, such as tense, puts the former higher on the hierarchy towards the loosely linked end. These possibilities are a violation of the hierarchy predicted in RRG.

Although Foley and Van Valin (1984) have carefully pointed out the peculiarities of the marked type in comparison to the unmarked one, their treatment is still problematic in that the difficulties mentioned above are not addressed by the theory. Therefore, it would appear that the utilization of the notion of markedness in RRG in the treatment of this construction type is rather superficial. Without addressing the problems directly, RRG appears to use the notion of markedness to get around the problems intrinsically embedded in the theory that may possibly cause difficulty in the establishment of the syntactic hierarchy, which is the real backbone of the theory.

Further, their notion of markedness itself appears to generate some problems. Foley and Van Valin (1984) have used the notion of structural complexity in determining the marked status of sentences like (58b), as a periphery is structurally more complex than a core; the embedding of a periphery under a core, therefore, is structurally more complex than the embedding of a bare core under another core. Such a traditional notion of structural complexity is often used in approaching markedness in grammar (Givon 1991). However,

244

Foley and Van Valin also mentioned that the 'marked' type occurs more frequently cross-linguistically. In addition, it appears to be more common than the unmarked within any given language that allows such a construction type. What is more, languages like English may only have the marked type without the existence of the unmarked type. These statements regarding the structural complexity and frequency distribution of the marked type appear to be contradictory with one another on two grounds. First, many scholars working on markedness have pointed out the use of both criteria, structural complexity and frequency distribution, in determining markedness values. For example, Lyons (1968), Moravcsik and Wirth (1986), and Givon (1991) have pointed out that the marked member of an opposition tends to be more complex in form and more restricted in distribution than the unmarked member. Givon (1991) carried out a study in four domains: discourse types, clause types, nominal modalities, and verb modalities. Results in all these four areas showed that categories that are structurally complex are used less frequently in communication than those that are relatively simple in structure.

Second, the fact that the marked type occurs more frequently both cross-linguistically and language-specifically suggests that its being viewed as a marked type is problematic. Gundel et al.'s (1986) study discovered that there is a correlation between distributional patterns and

typological markedness relations in both phonology and syntax. The unmarked category has wider distribution across languages than the marked category. The fact that the marked core subordination in RRG has greater optimality across languages suggests that it is an unmarked type on the basis of Gundel et al.'s findings. Distribution within a language plays an important role in determining language-particular markedness values as well. Battistella (1990) argued that unmarked forms are distinguished from marked forms by having a greater frequency of occurrence within a given language. Judging by this language-internal criterion, Foley and Van Valin's (1984) claim that the unmarked type of core subordination is less common than the marked (in a language that allows it) raises further questions regarding their determination of the latter as a marked category.

Foley and Van Valin (1984) did try to explain the social and linguistic functions that are associated with the 'marked' construction type (reasoning that the markedness is directly related to the basic function of that construction type, i.e., reporting indirect discourse). However, they did not account for the mismatch between the structural complexity and distribution frequency for the marked type, nor did they try to explain the differences in distribution shown by both the marked and the unmarked types in their findings. Such a lack in RRG appears to be a problem that must be addressed, as the RRG notion of markedness runs counter to the notion of

markedness in general. To conclude, it would appear that the treatment of the marked type of core subordination in RRG is incomplete and inconsistent. Modification of the theory in this area appears clearly in order.

6.4.2.3.4 The Advantage of the RRG Analysis

Although the mechanisms provided by RRG in the treatment of the marked type of core subordination require some modification, they have one advantage over more traditional approaches to such linkage types, which were reviewed in Chapter Two. The RRG theory makes it possible to account for both the similarities and differences between the unmarked type of core subordination, represented by the *de* construction, and the marked type of core subordination in Mandarin. The theory allows one to demonstrate that, although both construction types exhibit syntactic embedding, there exist other structural differences that call for separate treatments of the two types. The traditional approaches, on the other hand, address the similarities between the two types only by lumping them into the same category, subordination, without examining other crucial differences. For example, C-T Huang (1988), an advocate of the Secondary Predicate Hypothesis, has compared the marked construction with the *de* construction on the basis of the shared feature of syntactic embedding only. He has argued that the claim made by the Primary Predicate Hypothesis that the A-not-A question form

cannot appear in a subordinate clause of a *de* construction is invalid. This is due to the possible occurrence of the A-not-A form in an embedded junct of the 'marked' core subordinate construction (see Chapter Two for discussion). According to the RRG theory, the question here is not the syntactic position of the illocutionary force marker, but its semantic scope. It has been shown in 6.4.2.3.2 that the illocutionary force marker must have the whole construction under its scope in both the marked and the unmarked construction types, regardless of whether it appears in the subordinate junct or the matrix junct. Thus, the decades of controversy in the treatment of the *de* constructions in relation to what RRG calls marked core subordinate constructions appears to result from the inability of scholars adopting traditional approaches to further examine the structural differences between the two construction types. The RRG theory has provided the means to do so. However, as discussed above, further modification of the theory is still required in order to solve the problems raised by the examination of the Mandarin examples.

6.5 Nuclear Juncture-nexus Combinations

Nuclear juncture-nexus combinations refer to constructions in which the linkage between juncts occurs at the nuclear level. Among the three structural levels of periphery, core, and nucleus, nuclear juncture represents the tightest linkage type. This structural tightness is revealed

by the total sharing of arguments, be they core or peripheral. Like constructions at the peripheral and core levels, constructions at the nuclear level may also manifest three nexus types, namely, coordination, subordination, and cosubordination, with coordination being the loosest linkage type, subordination standing in the middle, and cosubordination being the tightest.

In the 1984 version of RRG (Foley & Van Valin 1984), nuclear subordination was considered to be theoretically impossible, as it was not thought possible to embed a bare nucleus under another bare nucleus in natural language. In the 1993 version, however, Van Valin (1993) modified the theory by claiming that nuclear subordination is possible if cases are considered in which a verb may be viewed as embedded when functioning as an aspect marker modifying another verb. Nuclear subordination was described in the following terms: 'the subordinate verb functions as a modifier of the matrix verb, analogous to the relation between the modifying adverbial subordinate clause and the matrix clause in certain types of peripheral subordination' (Van Valin 1993:115). Thus the feature of embedding characterizes subordination at all three structural levels, and separates it from the other two linkage types (Van Valin 1993:118).

Examples provided in the revised RRG theory that represent these three nexus types at the nuclear level are given in (76) (Van Valin 1993: 113):

(76) Barai

    a. Nuclear coordination/nuclear subordination

      Fu vazai ufu furi   numu akoe.

      3sg grass cut finish pile throw-away

      'He finished cutting, piled, and threw away the

          grass.'

    b. Nuclear cosubordination/nuclear subordination

      Fu kai   fu-one   kume-fie   va.

      3sg friend 3sg-POSS call-listen continue

      'He continued calling and listening for his

          friend.'

Van Valin (1993:114) has pointed out (without much discussion) that sentence (76a) exemplifies two of the three types of nuclear juncture, nuclear coordination and nuclear subordination. In this example there are four predicates: *ufu* 'cut', *furi* 'finish', *numu* 'pile', and *akoe* 'throw away'. The verb root *furi* 'finish' is here serving as an aspect marker, and Van Valin suggests that it is therefore part of a nuclear subordinate construction. The other three predicates are coordinated at the nuclear level, because the aspect marker modifies only *ufu* 'cut', and not *numu* 'pile' and *akoe* 'throw away'. If these three predicates were in a cosubordinate relationship, then they would have to share aspect, the universal nuclear operator. Since only the verb *ufu* 'cut' is within the scope of *furi* 'finish', it is clear that the linkage of *ufu* 'cut' with the other two predicates is one of

250

nuclear coordination, while *furi* 'finish' is subordinate to *ufu* 'cut'. This example shows nicely how RRG uses the scope of operators to probe the type of linkage exhibited by a complex construction.

Example (76b) again reveals two types of nuclear juncture, nuclear cosubordination and nuclear subordination. There are three predicates in this complex sentence: *kume* 'call', *fie* 'listen', and *va* 'continue'. In this case, however, the aspectual verb *va* 'continue' modifies both *kume* 'call' and *fie* 'listen. Since the verbs *kume* 'call' and *fie* (listen) must share the aspect marker *va* 'continue', it shows that the linkage between them is one of nuclear cosubordination. Again, it is the scope relation between the 'aspectual' verb and the other two verbs which reveals the type of nexus. As in example (76a), the 'aspectual' verb is claimed to be part of a nuclear subordinate construction; in this case, however, the 'matrix' is the complex cosubordinate nucleus *kume-fie* 'call-listen'.

Example (76a) might be abstractly diagrammed in the following way:

(77) { [CUT] (FINISH) } AND [PILE] AND [THROW AWAY]

and (76b) might be similarly diagrammed as:

(78) { [CALL LISTEN] (CONTINUE) }

where { ( ) } represents a two-predicate complex with subordination, coordination is marked with an abstract AND, and cosubordination is marked by simple juxtaposition. Van

251

Valin's (1993) notation, hyphenating the first two predicates of (76b) into a single complex, appears to suggest that he sees the first two predicates in (76b), 'call' and 'listen', as being more closely linked to each other than either is to 'continue'.   He   appears   to   claim   that   'continue'   is subordinated to the whole complex. This would also imply that the cosubordinate complex is the 'main verb' in (76b). It is known   that   subordinate   predicates,   such   as   'finish'   and 'continue'   in   (76),   are   quickly   reanalysed   as   synchronic aspect markers (cf. Givon 1975, Hopper & Traugott 1993). It might therefore be predicted that nuclear subordination is rare in natural language, since it leads so quickly to full grammaticalization.

Examples of nuclear subordination have not been found in the Mandarin data. Following Van Valin (1993), who claimed that nuclear subordination signifies a linkage where one verb assumes an aspectual function modifying another verb, two situations are investigated with the Mandarin data: 1) various aspect markers in relation to the verb they modify, and 2) verbs that have aspectual functions modifying another verb.

Aspect markers, such as -le 'perfective aspect marker', -zhe 'durative aspect marker, and -guo 'experiential aspect marker', have their origins in verbs (cf. Chao 1968). All these   three   may   still   occur   as   independent   verbs synchronically. However, when functioning as aspect markers, they have been fully grammaticalized in Mandarin. Such an

252

indication comes from the fact that when they are suffixed to a verb, they are no longer content words describing events or actions, but function words that signal the internal temporal structure of the action expressed by the verb they modify. According to Hopper and Traugott (1993), such words are said to be 'grammaticalized' (p.4). As is typically the case, these forms have been semantically 'bleached' of their former content, and now serve as purely 'formal' markers.

Verbs that have aspectual functions modifying other verbs, on the other hand, occur in constructions that do not appear to be nuclear junctures. For example,

(79) a. *Wo zai   xi   wan.*

I be-at wash bowl

'I was washing dishes.'

b. *Wo zai   chufang xi wan.*

I be-at kitchen wash bowl

'I was washing dishes in the kitchen.'

c. *Ming jixu   xuexi fayu.*

Ming continue learn French

'Ming continued learning French.'

d. *Ming jixu   butingde   xuexi fayu.*

Ming continue without-stop learn French

'Ming continued learning French without

stopping.'

It can be seen that both verbs, *zai* in (79a-b), and *jixu* in (79c-d) have aspectual functions. It can also be seen that

253

other elements, *chufang* 'kitchen' in (79b) and *butingde* 'without stopping' in (79d), may be inserted between the aspectual verbs and the verbs they modify. Following Foley and Van Valin (1984), the examples in (79) may not therefore be viewed as nuclear junctures. They are treated as peripheral cosubordinate constructions in this study (see the discussion in 6.3.3).

Mandarin constructions that represent nuclear junctures are given in (80):

(80) a. *Na   ge ren   pao-de-kuai.*

         that CL person run-DE-fast

         'That person is able to run fast.'

     b. *Ta   fang-qi-le   na   ge jihui.*

         3sg loosen-abandon-PERF that CL opportunity

         'S/he abandoned that opportunity.'

The Mandarin examples in (80) differ from the examples provided by Van Valin (1993) in that each example in (80) has only two predicates, whereas Van Valin's examples have more than two predicates entering into linkage relations. This implies that only one linkage relation may be found in each example in (80). Further, the perfective aspect marker -*le* in (80b), is understood to be fully grammaticalized (see the discussion above). Therefore, it does not form a subordinate relation with the verb or verbs it modifies.

Example (80a) has been traditionally referred to as a potential complement construction, and (80b) is considered to

contain a verb compound (cf. Chao 1968, Chen 1979, Li & Thompson 1981, Chu 1983, Li & Cheng 1988, etc.). Research on the linkage phenomena of construction types like (80) has never been attempted. Once again, this is presumably due to the limited mechanisms provided by the more traditional approaches, as reviewed in Chapter Two. This study fills the gap by making a first attempt at offering a detailed investigation of the linkage situation in constructions like (80), through the utilization of the RRG theory.

6.5.1 Nuclear Coordination and Nuclear Cosubordination

For the sake of convenience in comparison, the properties of these two linkage types are presented simultaneously. Based on the criteria of RRG, nuclear coordinate constructions have these characteristics:

(81) a. the absence of a modifying relation between
the linked nuclei;

b. the equality displayed by the linked juncts
in their information structure;

c. no obligatory sharing of operators at the
nuclear level;

d. the linked juncts belong to one intonation
unit;

e. the obligatory sharing of all core arguments;

f. lack of capacity for an individual junct to
encode a discrete single event.

Nuclear cosubordinate constructions, on the other hand, should be characterized by these features:

(82) a. neither junct is in a modifying relation vis-a-vis the other;

b. the linked juncts have equal informational status;

c. nuclear operators are obligatorily shared;

d. the linked juncts belong to one intonation unit;

e. all core arguments are obligatorily shared;

f. an individual junct cannot encode a discrete single event.

Note that (81) differs from (82) in feature (c) only.

Here are some examples:

(83) Potential complement constructions

a. *Na   ge ren   pao-de-kuai.*

that CL person run-DE-fast

'That person is able to run fast.'

b. *Wo na-de-dong   na   ge xiangzi.*

I carry-DE-move that CL suitcase

'I am able to carry that suitcase.'

c. *Tamen ting-bu-dong   zhongwen.*

they listen-not-understand Chinese

'They are unable to understand Chinese (by way

of listening).'

d. *Ta chi-bu-xia   zheme duo dongxi.*

3sg eat-not-down so   many thing

'S/he is unable to eat so many things.'

(84) Verb compound constructions

a. *Na   ge gongsi zuijin   gou-mai-le*

that CL company recently purchase-buy-PERF

yi   tai xin shebei.

one CL new equipment

'That company purchased an item of new

equipment recently.'

b. *na   ge pang nanren sha-si-le   zijide*

that CL fat   man   kill-die-PERF self

laopo.

wife

'That fat man killed his own wife.'

c. *Ta qiao-sui-le   na   ge huaping.*

3sg knock-broken-PERF that CL vase

'S/he broke the vase to pieces (by knocking

it).'

d. *Wo zhongyu kan-dong-le   zhe pian*

I finally read-understand-PERF this CL

wenzhang.

article

'I finally understood this article (by

reading it).'

The diagnostics utilized to identify these linkage types are: co-occurrence restrictions, the negation test, the scope of operators, intonational break, and structural sharing.

There are several observations to be made concerning (83) and (84). Note that between the two nuclei in each example in (83), there is another element, with *de* in (83a-b) and *bu* in (83c-d). These two elements have been analyzed as infixes inserted between the two verbs to express either possibility or impossibility of the event occurring (see Chao 1968, Chen 1979, Li & Thompson 1981, Chu 1983, Li & Cheng 1988, etc.). The original meaning of *de* is 'to obtain'. The *de* in (83a-b), however, is somewhat bleached in meaning. It roughly means 'able to'.

Recall that the same phonological form occurs in the unmarked type of core subordination as well, as in (60), which means 'to the extent that'. Apart from the difference in meaning, these two *des* also differ from one another on other grounds. Compare (60a) with (83a), both repeated here in (85):

    (85) a. Core subordination

        Na   ge ren   pao de hen   kuai.

        that CL person run DE very fast

        'That person runs very fast.'

        Literally: 'That person's running is very

            fast.'

b. Nuclear construction

Na   ge ren   pao-de-kuai.

that CL person run-DE-fast

'That person can run fast.'

First, the *de* in (85a) is pronounced with no stress and no tone, but the one in (85b) can be pronounced with stress and a tone (Chen 1979: 48). Second, the event described by the construction type in (85a) can be either actual or non-actual, depending on the circumstances under which the utterance is produced. For example, it may also be translated as 'That person ran fast'. The event described by the construction type in (85b), on the other hand, can only be non-actual or potential, and cannot have the reading 'That person ran fast'. Based on the actuality of the realization of the events described in (85), (85a) may therefore be considered as a potentially realis construction, while (85b) must be an irrealis construction. Third, other elements such as adverbs like *hen* 'very' are optionally inserted after *de* in constructions like (85a), but no such elements are ever allowed in that position in constructions like (85b). Apart from these differences with regard to *de*, (85a) and (85b) differ from one another in linkage type as well. It appears that the *de* in (85a) is an element linking two cores, whereas the one in (85b) is an element linking two nuclei. The discussion regarding this statement is carried out in 6.5.1.1 and 6.5.1.2.

The predicates in the examples in (84) are traditionally called verb compounds. The one in (84a) is called a parallel or coordinate verb compound, and those in (84b-d) are called resultative verb compounds (Chao 1968, Li & Thompson 1981). The term 'synonymous compound' has also been used by some scholars to describe the former category, as the parts in such a compound are often synonyms, as in (84a) (cf. Chao 1968). Both kinds can be freely created, when required conditions are met (cf. Li & Thompson 1981). For parallel compounds, the verbs forming them must be near-synonyms. For resultative compounds, verbs often show a cause-effect relation, with the first verb, often an action verb, showing the cause or action of the event, while the second verb, often a stative verb, shows the result of the action.

An immediate observation concerning the linked nuclei in (84), compared to those in (83), is that there is no linking element between them. In fact, insertion of any element into such a compound is not possible (Chao 1968). Given the principles of iconicity and economy that natural languages normally exhibit (Haiman 1985b), this simple fact, in RRG terms, suggests that the nuclei in (84) have a tighter relation between them than the nuclei in (83), which allow *de* and *bu* to occur between them.

This tightness is also shown by the fact that the linked nuclei in (84) sometimes can be taken in an idiomatic sense, while those in (83) can only be taken in a literal sense. For

example, Chao (1968) has mentioned that *la-dao* 'pull-down' may mean 'pull down' or 'give up the idea'. However, *la-de-dao* (pull-DE-down) can only mean 'able to pull down'.

6.5.1.1 Nexus Characteristics

6.5.1.1.1 Co-occurrence Restrictions

Examination shows that there does not appear to exist a modifying relation between the linked juncts in (83) and (84). Rather, the linked nuclei are equally important, both syntactically and pragmatically. This equal importance may be demonstrated by a co-occurrence restriction placed on the nuclei in (83) and (84). Such a restriction requires the nuclear complex to always occur as a unit in forming a short answer. Recall that it was mentioned in Chapter Five that in Mandarin the verb alone can serve as a short answer to a yes-no question. For example,

(86) A: *Ta zai jia ma?*

　　3sg be-at home Q

　　'Is s/he home?'

B: *Zai.*

　　be-at.

　　'(Yes, s/he) is.'

In the case of potential complement constructions like those in (83) and of verb compound constructions like those in (84), the short answer to a yes-no question involves the whole nuclear complex, as in (87) and (88). The answer is

ungrammatical if it involves only one verb of the complex in both potential complement and verb compound constructions, or involves only the verbs without *de* in a potential complement construction:

    (87) Potential complement construction

        Q: *Na   ge ren   pao-de-kuai ma*?

           that CL person run-DE-fast Q

           'Is that person able to run fast?'

        A: *Pao-de-kuai.*

           run-DE-fast

           '(Yes, that person is) able to run fast.'

        A: **Pao.*

           run

        A: **Kuai.*

           fast

        B: *Pao-kuai

           run-fast

    (88) Verb compound construction

        Q: *Ta qiao-sui-le   na   ge huaping ma*?

           3sg knock-broken-PERF that CL vase   Q

           'Did s/he break a vase to pieces (by

                 knocking it)?'

        A: *Qiao-sui-le.*

           knock-broken-PERF

           '(Yes,s/he) broke (it by knocking it).'

A: *Qiao-le.

knock-PERF

A: *Sui-le.

broken-PERF

The argument may be further strengthened by the comparison of nuclear constructions like those in (83) and (84) with the core subordinate construction. Observe (89):

(89) a. Core subordination

Q: *Na   ge ren   pao de hen   kuai ma?*

that CL person run DE very fast Q

'Did that person run very fast?'

A: *Hen   kuai.*

very fast

'(Yes, that person ran) very fast.'

Note that the second predicate *hen kuai* 'very fast' in (89a) can serve as a short answer all by itself, contrary to the situation found in (87) and (88), where the whole nuclear complex must be repeated.

Two conclusions may be drawn from the situation of co-occurrence restrictions in (83) and (84). First, the linked juncts in (83) and (84) form a unit, and neither verb modifies the other by assuming a secondary role. They share the same syntactic status. Second, the whole nuclear unit is the focus where the new information resides. The linked nuclei have equal information status, i.e., they both encode foregrounded information. These are the crucial pieces of evidence that

help to identify the examples of (83) and (84) as being either nuclear coordinate or nuclear cosubordinate constructions.

6.5.1.1.2 Negation Test

RRG proposes that when juncts are coordinately or cosubordinately linked, they are equally open to challenge. When they are subordinately linked, only the matrix junct may be open to challenge; the subordinate junct, on the other hand, being accepted as given by both speaker and hearer, may not. To determine whether the content of each individual junct in (83-84) is open to challenge or not, the negation test developed by Haiman (1985b) will be borrowed here. Now note (90) and (91):

    (90) Potential complement construction

        a. *Na ge ren pao-de-kuai.*

           that CL person run-DE-fast

           'That person is able to run fast.'

        b. *Bu, ta pao-bu-kuai, ta tiao-de-gao.*

           not, 3sg run-DE-fast, 3sg jump-DE-high

           'No, s/he cannot run fast, s/he can jump high.'

    (91) Verb compound construction

        a. *Ta qiao-sui-le na ge huaping.*

           3sg knock-broken-PERF that CL vase

           'S/he broke that vase to pieces (by

                knocking it).'

b. *Bu,   ta   mei qiao-sui,   ta*

not, 3sg NEG knock-sui, 3sg

za-lie-le   na   ge huaping.

smash-crack-PERF that CL vase

'No, s/he did not break it to pieces (by

knocking it), s/he cracked it (by smashing

it).'

Both nuclei of the first complex structure may be denied, as
shown in (90b) and (91b). This would suggest that they both
encode foregrounded information, with no presupposition on the
part of speaker and hearer, and this would eliminate a
subordinate analysis.

6.5.1.1.3 Scope of Operators

Analysis shows that the examples in (83) and (84) must
share operators above the nuclear level. Note (92):

(92) a. Potential complement construction

Tamen neng   ting-de-dong

they able-to listen-DE-understand

zhongwen ma?

Chinese Q

'Are they able to understand Chinese (by way

of listening)?'

b. Verb compound construction

    Ta   neng   qiao-sui   na   ge huaping ma?

    3sg able-to knock-broken one   CL vase   Q

    'Can s/he break that vase (by knocking it)?'

It can be seen that with the entire sentence in the question form, both (92a) and (92b) are within the scope of the illocutionary force marker *ma*. It can also be seen that the modality marker *neng* 'able to' in (92a) and (92b) has the whole nuclear complex under its scope, not just the verb that immediately follows *neng*. For example, *neng* in (92a) does not express the ability to listen but rather the ability to both listen and understand. Similarly, *neng* in (92b) signals her/his ability to knock and to break, not simply to knock. For the moment, the difference between nuclear constructions like those in (83) and (84) and unmarked core subordinate constructions like those in (60) is not clear, as both of them require the sharing of peripheral and core operators. It will become clear, however, when the other dimension of structural sharing, the sharing of arguments, is examined in 6.5.1.2.

For the moment (83) and (84) are assumed to be nuclear junctures. To find out whether they bear coordinate or cosubordinate relations, the scope of nuclear operators must be tested. The application of such a test, however, produces two outcomes, and allows some ambiguity in identification. It has been pointed out that constructions like those in (83) are irrealis constructions, employed to describe a state of

266

affairs happening in an irrealis world. The nature of this construction type is thus incompatible with the use of different aspect morphemes found in Mandarin, such as the perfective aspect marker -*le*, the experiential aspect marker -*guo* and the durative aspect marker -*zhe*, which were discussed in Chapter Five. See (93):

(93) a. *Wo na-de-dong-le   *na*   *ge xiangzi.*

     I   carry-DE-move-PERF that CL suitcase

   b. **Wo na-de-dong-guo*   *na*   *ge xiangzi.*

     I   carry-DE-move-EXP that CL suitcase

   c. **Wo na-de-dong-zhe*   *na*   *ge xiangzi.*

     I   carry-DE-move-DUR that CL suitcase

None of the examples with an overt aspect marker is grammatical. Because of this, the direct use of the nuclear operator aspect as a device to identify the nexus type at this level for (83) is not possible. Since the sharing of nuclear operators is the only test that differentiates nuclear coordination from nuclear cosubordination, the impossibility of using such a test thus makes it difficult to determine whether the juncts in (83) are coordinately linked or cosubordinately linked. Such an analytical problem presented by Mandarin examples like (83) cannot be solved by the current theory, as RRG does not provide mechanisms that deal with examples like (83) where the use of nuclear operators is not possible. This points to another weak area of the theory that needs to be re-examined and modified.

The application of the test of nuclear operators produces a clear picture in (84), however. See (94):

    (94) a. *Ta   qiao-sui-le*   *na*   *ge huaping.*

           3sg knock-broken-PERF one CL vase

           'S/he broke that vase (by knocking it)?'

      b. **Ta qiao-le-sui*   *na*   *ge huaping.*

           3sg knock-PERF-broken that CL vase

The aspect marker *-le* in (94a) marks the completion of an action. Even though it is suffixed to the verb *sui* 'broken', its meaning affects both *qiao* 'knock' and *sui* 'broken', as the occurrence of the result expressed by *sui* 'broken' follows directly from the execution of the action expressed by *qiao* 'knock'. If *-le* tries to qualify *qiao* 'knock' only, the result is ungrammatical, as shown in (94b). Since the nuclear operator must be shared in (94), it may be concluded that it exemplifies nuclear cosubordination.

6.5.1.2 Juncture Characteristics

Several pieces of evidence support the nuclear juncture analysis for (83) and (84). The formation of a short answer with the examples in (83) and (84) has already shown that the linked verbs comprise a syntactic unit. Added to this is phonological evidence; i.e., the complex nucleus forms a single intonation unit, without the possibility of any intonational break between the parts. Another piece of evidence comes from the fact that the linked nuclei in (83)

and (84) must share all core arguments. This situation is different from what is found in core coordination, where only one core argument is obligatorily shared by the linked juncts, or in core subordination, where the subordinate junct is embedded as a core argument under the matrix junct. This total sharing of arguments, together with the phonological evidence regarding pause, suggests the maximum degree of structural sharing found among the three syntactic levels. It suggests that the individual junct, in this case the nucleus, does not have the capacity to encode a single discrete event but a distinct phase of a single event, and that the nuclear juncture is the tightest juncture type among all three juncture categories. Further, with no linking element between the linked nuclei, such as *de*, the examples of nuclear cosubordination in (84) appear to be even tighter that those in (83).

6.5.2 Summary of Nuclear Junctures

To conclude, the examples in (84) are identified as nuclear cosubordinate constructions. The examples in (83) can only be identified as nuclear junctures. Whether they contain coordinate or cosubordinate relations, however, cannot be determined due to impossibility of applying the nuclear operator test to these examples. This analytical problem in Mandarin reflects an inadequacy in the theory itself, and calls for further modification of RRG in this area.

269

6.6 Summary of the Chapter

This chapter has examined clause linkage in Mandarin Chinese by addressing the two research questions mentioned in Chapter One. The chapter revealed that complex sentences in Mandarin have two types of surface forms, those whose linkage relations are morphologically signalled and those whose juncts are simply juxtaposed. Although an intonational break is present in some construction types, it is absent in many others. It has been demonstrated that the syntactic properties of these complex sentences with various surface forms can be explained through the use of the RRG concepts nexus and level.

The analysis has shown that Mandarin complex sentences exhibit three linkage relations, coordination, subordination and cosubordination. All three syntactic levels, periphery, core and nucleus are involved in the establishment of these linkage relations. However, none of the relations is found to occur at all three levels. Coordination and subordination, for example, are found only at the peripheral and core levels, and cosubordination at the peripheral and nuclear levels. Therefore, there are altogether six juncture-nexus combinations in Mandarin complex sentences. The six linkage types which result from the interaction of nexus and syntactic level exhibit a continuum in terms of their degree of syntactic bondedness, with one end of the continuum being the loosest and the other end the tightest, as shown in (95).

270

This continuum supports the hierarchy of syntactic bondedness proposed by Foley and Van Valin (1984).

(95)   Loosest

                    Peripheral coordination

                    Peripheral subordination

                    Peripheral cosubordination

                    Core coordination

                    Core subordination

                    Nuclear cosubordination

                         Tightest

The identification of these linkage types is accomplished through the application of the fourteen tests, developed using the six criteria derived from RRG. These fourteen tests fall into two groups, with one group of tests identifying nexus features, and another group identifying juncture characteristics. Common features may be found among the juncture-nexus combinations, especially when they are of the same level; however, each linkage type has been demonstrated to possess its own unique features that separate it from other types. The following table summarizes the results of the application of the major criteria to each linkage type in this chapter.

Table 6.1 *Application results of major criteria*
===

	embedd- ing	presup- position	operator sharing at a given level	pause	peri- argument sharing	one core argument sharing	all core arguments sharing
Peri coor	-	-	-	+	-	-	-
Peri subor	+	+	+	+	-	-	-
Peri cosub	-	-	+	-	-	+	-
Core coor	-	-	-	-	+	+	-
Core subor	+	+	+	-	+	+	-
Nucl cosub	-	-	+	-	+	+	+

===

It can be seen from the table that as the level of juncture moves down from the peripheral level to the nuclear level, the degree of argument sharing between linked juncts increases. The more arguments that need to be shared, the more tightly bonded the resulting juncture becomes.   Peripheral junctures represent the loosest linkage type, and nuclear junctures the tightest linkage type, as the former demonstrates the minimum degree of sharing, and the latter the maximum degree of sharing.   Core junctures stand in the middle, with the degree of sharing higher than that demonstrated by peripheral junctures, but lower than that shown by nuclear junctures. With the degree of bonding between the juncts increasing, the capability for an individual junct to encode a single, discrete event automatically decreases.   It has been shown

that only peripheral juncts may encode a single event, while core and nuclear juncts may only encode a distinct phase of a single event. Compared with core juncts, the ability for nuclear juncts to encode single, discrete events is further reduced.

The results of the diagnostics application to the 'marked' type of core subordination and potential complement constructions in Mandarin, on the other hand, are not entered in the table, as they present challenges to the criteria listed. The former has violated the principles of the syntactic hierarchy proposed in RRG on several grounds, and this violation does not appear to be accounted for by the RRG notion of markedness. The latter can only be identified as a nuclear juncture. Its nexus status cannot be determined due to inability to apply the relevant criterion to such construction types. Both of these constructions represent problematic cases, and their solution demands re-examination and modification of the RRG theory.

In summary, the interaction between nexus relations and the degree of syntactic tightness is found to be characteristic of Mandarin complex sentences. The intertwining between these two aspects accounts for the complex situation exhibited in Mandarin clause linkage. The diagnostic results, as outlined in this chapter, suggest that the RRG theory as used in this research served well, but has limitations in its application to Mandarin Chinese.

Chapter 7

Conclusion

This dissertation has presented a case study of Mandarin complex sentences. As an empirical study, it has served two purposes. It has examined how clauses are syntactically combined to form complex sentences in Mandarin, using the theory of Role and Reference Grammar (RRG). This application of the theory has, in turn, tested the universality of RRG by extending its use to the analysis of Mandarin. The research is designed to answer two fundamental questions in Mandarin grammar: 1) what kind of linkage relations are there in Mandarin complex sentences, and 2) how are the syntactic properties of these linkage relations to be explained?

7.0 Development of Syntactic Diagnostics

This study has selected RRG as the theory to be applied and tested in the analytical and empirical research carried out in the study. For control of the study, the author has developed six analytical criteria after careful study of the theoretical concepts provided by RRG. They are:

(1) a. presence or absence of syntactic embedding;

b. information structure of the linked juncts;

c. the scope of operators at a given level;

274

d. presence or absence of an intonational break;

e. the degree of argument-sharing between the linked juncts, if any;

f. the degree of semantic cohesion reflected in the capability of encoding a discrete event by an individual junct.

For a specific application of these criteria, the author has further developed fourteen syntactic tests for application to Mandarin. Criteria (1a-c) were used to develop diagnostics to identify nexus characteristics, and criteria (1d-f) were applied to derive tests to diagnose level characteristics. These criteria thus formed the theoretical basis for the selection and development of fourteen diagnostic tests. RRG theory provided four of these, and additional tests were developed to realize the theory. Of the ten supplementary tests used in this study, six were adapted from well-established principles found in the linguistic literature, and four were constructed by the author specifically for this study.

7.1 Dissertation Development

The main development of this thesis is found in Chapter Two to Chapter Five. The literature review in Chapter Two revealed that there has been a consistent lack of clarity, control, and comprehensiveness throughout the previous treatment of Mandarin complex sentences. The review showed

that none of the previous studies has offered an adequate account, whether they have used the traditional, descriptive, or RRG approaches (Tiee 1986, Lin 1989, Henne et al. 1977, Li & Thompson 1973, 1981, C-T Huang 1988, C-R Huang 1990, Chao 1968, Chu 1983, Liang 1986, Hansell 1993 etc.). The need for a comprehensive and more revealing account of Mandarin clause linkage was clearly indicated.

The discussion of RRG in Chapter Three revealed that the RRG approach to clause linkage distinguishes itself from other approaches by two characteristics, i.e., its flexibility and richness, and its success record with a variety of languages. For example, in proposing nine linkage types, RRG has offered a flexibility that is lacking in theories adopting a dichotomous approach in dealing with clause linkage. Its position on nexus distinctions are specific and unambiguous, with each nexus type specified by at least one critical feature. RRG concepts regarding the interaction between nexus types and syntactic levels are unique and rich in content. The richness of RRG is also reflected in its proposals regarding the logical structures of event types and macroroles, discussed in Chapter Four. Further, the use of the different scope of operators as a tool for the investigation of clause linkage represents another unique characteristic of RRG, as discussed in both Chapter Three and Chapter Five. These characteristics of RRG laid the theoretical foundation for this comprehensive study of complex

sentences in Mandarin.

The discussion of RRG in Chapter Three has, on the other hand, found two limitations that relate to the levels of linkage provided by the theory. The first of these concerns the scope relations of aspect, the universal nuclear operator. The RRG view regarding the scope of aspect over the predicate generates some confusion if cases are considered in which the choice of aspect affects surface case-marking of core arguments. This study reveals this weakness in RRG by pointing out that the effect of aspect on a predicate is semantic in nature. Situations where aspect choice affects surface case-marking may be viewed as morphological properties of case marking deriving from a pragmatic effect. Such a pragmatic effect can be seen as a product of the constant struggle to express simultaneously the semantic case role of an argument and its pragmatic case role as subject (cf. Givon 1984).

The second limitation lies in the definition of core operators presented in RRG. This study argued that an inconsistency exists in the conceptualization of the scope of core operators in RRG. Although Foley and Van Valin (1984) claim that core operators have both the nuclear layer and the core arguments within their scope, both the RRG treatment of these operators (as discussed in Chapter Three) and the empirical analysis of Mandarin clause linkage (conducted in Chapter Five) suggest that there exists an asymmetry in the

effect of these operators on the arguments of a transitive clause. Specifically, core operators mark relationships between a predicate and its actor; no core operator is concerned with the relationship between a predicate and its undergoer.

These two limitations raise some questions about the specific claims made by Foley and Van Valin (1984). Formal asymmetries between actor and undergoer arguments, for example, must be dealt with by RRG, or any adequate theory of natural language. These two limitations of current RRG theory therefore require attention.

The author's application of RRG logical structures to Mandarin in Chapter Four revealed that, like verbal systems studied in other languages (cf. Walton 1986, Watters 1988, Wilkins 1989, inter alia) , the Mandarin verbal system is seen to be organized around four event types, rather than the three proposed in Tai (1984). Similarly, the author's application of the concept of macroroles to Mandarin demonstrated that semantic relations in Mandarin form precisely the kind of hierarchy predicted in RRG for access to macroroles. The findings of the present study have, in turn, added empirical support to the validity of Foley and Van Valin's proposals with regard to the logical structure of event types, and their claims regarding macroroles.

Chapter Five's application of RRG scope concepts to the Mandarin operator system supports the universal scope

relations of various operators claimed by Foley and Van Valin (1984) and Bybee (1985). Chapter Five has also made a specific contribution to Mandarin grammar by providing evidence substantiating Liang's (1986) view that the sentence final particle *le* is a relative tense marker, rather than an aspect marker.

7.2 Application of the Diagnostics

Chapter Six presents the author's investigation of clause linkage in Mandarin, which is the major focus of this dissertation. The chapter provides answers to the two empirical questions mentioned above, and contains an examination of various construction types in Mandarin through the application of the fourteen diagnostics established in this chapter. The author demonstrated that construction types that encode Mandarin linkage relations have two types of syntactic forms: those which are morphologically linked, and those which are not. The linkage of the latter is expressed by 1) the use of a phonological cue, such as an intonation break, and 2) simple juxtaposition. The meaning of some overt linking elements often provides some clue to the identification of a nexus relation. For example, as in other languages, a coordinator *danshi* 'but' signals a coordinate relation in Mandarin, whereas a subordinator *yinwei* 'because' expresses a subordinate relation. However, identification becomes difficult when the meaning of a linking element is

'bleached' as *de* in the *de* construction. It becomes even more difficult when two juncts are juxtaposed without an overt linking element. Various serial verb constructions which are common in Mandarin represent such a case.

The application of the fourteen syntactic tests was conducted to deal with this complex situation in Mandarin. Each construction type investigated was put through a series of tests for the analysis of two syntactic aspects of linkage. They are: 1) the type of linkage involved, and 2) the syntactic level at which linkage occurs.

7.2.1 Findings Based on Application of Diagnostics

The author's analysis revealed that in order to explain linkage relations exhibited in Mandarin complex sentences, all three linkage categories proposed in RRG are required. These are: coordination, subordination and cosubordination. The author demonstrated that each linkage category in Mandarin distinguishes itself from the other two by at least one feature. Coordination and cosubordination, for example, differ from subordination by being free of syntactic embedding and equal in their informational structure. Cosubordination distinguishes itself from coordination by its characteristic of being dependent. The author's examination revealed that none of these relations may occur at all three levels, periphery, core and nucleus. Coordination and subordination occur at the peripheral and core levels, and cosubordination

at the peripheral and nuclear levels. Therefore, only six of the nine possible linkage types have been found in Mandarin, with each type being identified by a series of relevant tests. These types form a continuum in terms of their syntactic bondedness, with peripheral coordination occurring at the loosest end of the continuum and nuclear cosubordination at the tightest end of the continuum, as shown in (2). This continuum provides empirical evidence from Mandarin in support of the syntactic bondedness hierarchy proposed in RRG.

(2)   Loosest

                Peripheral coordination

                Peripheral subordination

                Peripheral cosubordination

                Core coordination

                Core subordination

                Nuclear cosubordination

                       Tightest

Facts such as presence or absence of an intonational break between the linked juncts, as mentioned above, have been ignored in previous accounts. However, they become significant when judged with the RRG concept regarding levels. The author demonstrated that three levels, periphery, core and nucleus are required to analyze the degree of syntactic tightness in Mandarin complex sentences. The degree of tightness is revealed by facts such as intonational break and argument sharing between linked juncts. The more tightly the

juncts are linked, the less likely they are to allow a pause, and the more likely they are to require argument sharing between them. For example, a pause is often present between juncts forming a peripheral juncture, but is impossible between juncts forming a nuclear juncture. The syntactic tightness was found to be tied directly with the degree of semantic cohesion; i.e., the tighter the syntactic bond there is between the two linked clauses, the more reduced the possibility for a junct to encode a single discrete event. For instance, peripheral juncts in Mandarin are different from core juncts in their capability of expressing a single discrete event, whereas such an ability has been reduced in the latter. This ability was completely eliminated in linkages formed at the nuclear level.

However, two construction types in Mandarin have been recognized as problematic. They are the 'marked type' of core subordination and potential constructions. The research presented in Chapter Six reveals that the marked type of core subordination in Mandarin violates the RRG syntactic bondedness hierarchy on several grounds, and poses a problem for that hierarchy. The author has demonstrated that this problem cannot be solved by the RRG notion of markedness, as the latter is contrary to the theory of markedness in general. Potential constructions pose a problem of a different nature. Their nexus type cannot be clearly identified, although the level at which the linkage occurs can. The author has

suggested that the above problems are intrinsic to the theory, and that they require some further theoretical development in these particular areas.

7.2.2 Further Findings

Addressing the two specific and technical questions has, in turn, achieved two more general purposes in this dissertation. The first and principal purpose is the application of RRG to problems in our understanding of Mandarin clause linkage, and the secondary but associated purpose is examination of the strengths and limitations of RRG. The contributions of this thesis to our understanding of Mandarin grammar in particular, and linguistic theory in general, lie in the following facts. Compared to previous approaches to Mandarin clause linkage, the present study has offered an account which is more controlled, more comprehensive, and more insightful. With the help of the application of the fourteen diagnostics derived from the theory of RRG, the thesis has provided clear criteria for each linkage type identified. The author has also analyzed construction types that have never been analyzed by earlier investigators of linkage relations. For example, linkage relations formed at the nuclear level have been previously ignored. Further, the present study has addressed some of the residual problems that permeate past works. For example, the previous confusion and disagreement among scholars with regard

to the linkage relation exhibited by certain serial verb constructions can be resolved by the RRG approach. The decades of controversy over the *de* construction is in part brought to light when a distinction is made between it and the 'marked type' of core subordination, as demonstrated in this thesis.

The application of RRG to Mandarin clause linkage presented in this study has, in turn, provided empirical evidence for the assessment of the theory itself. With what has been achieved in the investigation of Mandarin clause linkage using RRG, it would not be unreasonable to claim that RRG has proven to be an appropriate and sufficient theory for the task undertaken in this dissertation. Although certain parts of the theory mentioned above have raised some questions and call for a re-examination, it on the whole proves to possess more conceptual and descriptive power than other approaches in dealing with the facts of Mandarin clause linkage.

7.3 Prospects for Future Research

It was mentioned in Chapter Three that there are two types of linkage relations between linked juncts in a complex sentence: syntactic relations and semantic relations. This study has achieved its goal of analyzing how the clauses of complex sentences in Mandarin are syntactically linked. However, due to the scope of this thesis, semantic relations

between linked juncts have only been partially examined. The author has investigated the correlation between syntactic tightness and semantic closeness in Mandarin complex sentences. However, future research needs to be undertaken in analysing the specific semantic relations exhibited between linked units; e.g., whether juncts are linked to express a causative relation, a jussive relation, an unspecified relation, or an action-action relation, to name only a few. A second area of investigation that needs to be pursued is the question of how a specific syntactic structure is matched with a specific semantic relation. Foley and Van Valin (1984) claim that the matching is not on a one-to-one basis, and that the closer the semantic relation, the tighter the syntactic structure. Research needs to be conducted to investigate whether a particular kind of syntactic relation in Mandarin can have several semantic realizations (and vice versa), and whether the closest semantic relation is expressed by the tightest syntactic structure identified in Mandarin.

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