

ABSTRACT

The term *serial verb construction*(SVC) refers to a construction in which more than one verb are not connected by any lexical device such as conjunction and punctuation, etc.. This construction is quite popular in Chinese, Caribbean creoles, West African languages, and Dravidian languages. Structurally, the SVCs may be compounds, clauses or phrases. The clausal SVCs have been attested in all the serialized languages. The compound SVCs are reported in Chinese and Edo. Only a few instances of phrasal SVCs have been found in Dravidian languages.

The compound SVCs in Chinese can consist of two verbs or a verb plus an adjective. The productive compound can only have the following structures: $V_{trans.} + V_{intrans.}$, $V_{trans.} + A$ and $V_{intrans.} + A$. Among the three compounds, the head of the compound must link to both the external and the internal arguments when it is transitive. The nonhead adjective can link to either the external argument or the internal argument, while the nonhead verb can only link to the internal argument, and in most cases, this intransitive verb must be unaccusative. Feature Percolation Convention and the Case requirements generate all the grammatical compound SVCs and rule out all the ungrammatical ones. These rules also can well account for the differences between the VV compound and the VA compound. A three-place verb cannot be used to form verb compounds except for the reduplicated construction. This conforms to what the Feature Percolation Convention and the Case requirement predict.

It is suggested that the syntactic SVCs under discussion are clausal because of facts concerning their binding properties. This analysis is first proposed by Bickerton & Iatridou(1989) in their study of the Caribbean creoles. With this analysis, if the first verb in an SVC is in the matrix clause, the second verb is in an adjunct clause attached to the V' position of the matrix clause. This analysis obtains support from Chinese. In this respect, the only difference between Chinese and the Caribbean creoles is that the adjunct clause has two adjoining positions. Furthermore it is proposed in this thesis that the adjunct clause is a CP rather than an IP.

ON SERIAL VERB CONSTRUCTIONS

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DEDICATION

To those who are struggling for human rights in my motherland.

ACKNOWLEDGEMENT

I am fortunate to have studied in this Department, which not only has a faculty of high academic reputation, but also provides me with atmosphere of a happy family. In fact, all faculty members of this Department have helped complete this thesis. Therefore I owe so much to so many people that this short acknowledgement can hardly be a complete one.

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List of Symbols and Abbreviations

A	Adjective, Agent
Acc.	Accusative
adnp	Adnominal Participle
Adj.	Adjective
Arg.	Agreement, argument
Adv.	Adverb
Asp.	Aspect
C	Complementizer
CL.	Classifier
Conj.	Conjunction
CP	Complementizer phrase
CV	Compound verb
DE	Chinese particle
EC	Empty category
extl.	External
f	Feminine
fut.	Future tense
iff	if and only if
INFL	Inflection
IP	Inflection Phrase
int	Interrogative
intl.	Internal
Loc.	Locative
m.	Masculine

MA	Chinese question particle
MSVC	Morphological serial verb construction
n	Neutral
N	Noun
NCV	Non-Productive verb compound
Neg.	Negative
Nom.	Nominative
NP	Noun phrase
Obj.	Object
p.	Page, Plural
P	Patient
PCV	Productive compound verb
pl	Plural(noun)
PP	Prepositional phrase
Pred.	Predicate
RC	resultative clause
s	Singular
SVC	Serial verb construction
SSVC	Syntactic serial verb construction
Subj.	Subject
Top.	Topic
Ten.	Tense
Tpe.	Truncated personal ending
V	Verb
VP	Verb phrase
1	First person

- 2 Second person
- 3 Third person
- # Not equal
- € Member
- ⊄ Not Member

The Tao that can be told of is not the Absolute Tao;
The Names that can be given are not Absolute Names.

Laotse

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
Abstract	
Dedication	
Acknowledgement	ii
List of symbols	iii
Chapter 1. Introduction	v
1.0. Introduction	1
1.1. Introduction to the Framework	2
1.1.1. Bounding Theory	7
1.1.2. Government Theory	7
1.1.3. θ -Theory	10
1.1.4. Binding Theory	12
1.1.5. Case Theory	13
1.1.6. Control Theory	15
1.2. Introduction to the Chapters	17
1.2.1. Introduction to Chapter 2	17
1.2.2. Introduction to Chapter 3	20
1.2.3. Introduction to Chapter 4	22
Notes	24
Chapter 2. The Distribution and the Properties of Serial Verb Constructions	26
2.0. Introduction	26
2.1. Distribution of Serial Verb Construction	28
2.1.1. Chinese	28
2.1.1.1. On PP + V and V + PP	29
2.1.2. West African Languages	31
2.1.3. Caribbean Creoles	32
2.1.4. Dravidian Languages	34
2.1.5. SVCs and English	36
2.2. Classifications of Serial Verb Construction	37
2.2.1. Classification of SVC Structures	37
2.2.1.1. SVC with clausal Structure	38
2.2.1.2. SVC as Verb Compound	40
2.2.1.3. SVC with Phrasal Structure	41
2.2.2. Finite vs. Non-Finite clause	42
2.2.3. VV Compound and VA Compound	42
2.2.4. Transitive Verb vs. Intransitive Verb	44
2.2.5. Fixed vs. Free Combinations	45
2.2.6. Some Typical SVCs	49
2.2.6.1. Take Construction	49
2.2.6.2. Go Construction	50
2.2.6.3. Double Go Construction	52
2.2.6.4. Give Construction	53
2.2.6.5. Comparative Construction	56
2.3. Properties of Serial Verb Constructions	59
2.3.1. Multiple Verbs	59
2.3.2. Lexical Connection	60
2.3.2.1. Complementizer-Like Forms in Saramaccan	64

2.3.3. Tense or Aspect Markedness	65
2.3.4. Control in SVC	69
2.3.5. Extraction of Object of V ₂	72
2.3.6. Reduplication of Verb	72
2.3.7. SVC and Argument Position	73
2.4. Definition of Serial Verb Construction	76
2.4.1. Does SVC Exist in English?	78
2.5. Previous Literature on SVCs: A General Survey	79
2.5.1. Christaller (1985): <i>A Grammar of the Asante and Fante Language Called Tshi (Twi)</i>	79
2.5.2. Steward(1963): "Some Restrictions on Objects in Twi"	79
2.5.3. Li & Thompson (1973): "Serial Verb Construction in Mandarin Chinese: Subordination or Coordination?"	80
Mandarin Chinese"; (1974a): "Co-Verb in Mandarin Chinese"	
2.5.4. Bamgbose (1974): "On Serial Verbs and Verbal Status"	82
2.5.5. Williams, W.(1976): <i>Linguistic Change in the Syntax and Semantics of Serra Leone Krio</i>	83
2.5.6. Jansen, Koopman & Muysken (1978): "Serial Verbs in the Creole Languages"	84
2.5.7. Sebba (1978): <i>The Syntax of Serial Verbs: An Investigation into Serialization in Sranan and Other Languages</i>	85
2.5.8. Byrne (1987): <i>Grammatical Relations in a Radical Creoles: Verb Complementation in Saramaccan</i>	85
2.5.9. Steever (1988): <i>The Serial Verb Formation in Dravidian Languages</i>	86
2.5.10. Baker (1989): "Object sharing and Projection in Serial Verb Construction"	86
2.5.11. Bickerton & Iatridou (1990): "Serial Verb Constructions and Empty Categories"	87
2.5.12. Li(1990a): "On V-V Compound in Chinese";	88
2.6. Conclusion	89
Notes	90
Chapter 3. Serial Verb Construction as Compound	92
3.0. Introduction	92
3.1. Compounding : the Major Device of Word-formation in Chinese	95
3.1.1. Illustration of Compound in Chinese (I)	95
3.1.2. Illustration of Compound in Chinese (II)	97
3.2. Classification and Properties of Compound Verbs in Chinese	97
3.2.1. Productive Compound Verb (PCV) vs. Non-Productive Compound Verb (NCV)	98
3.2.2. Scope of Modification	102
3.2.3. Head of CV	105
3.2.3.1. Williams (1978, 1981); Di Sciullo & Williams (1987)	105
3.2.3.2. Baker (1989)	106
3.2.4. Compound or Phrase?	110
3.2.4.1. Insertability	110

3.2.4.2. Questionability	112
3.2.5. Reduplication of V ₁	116
3.2.6. Ba Construction	118
3.2.7. Argument-Linking	120
3.2.7.1. Cases of Argument-Linking of PCV	122
3.2.8. Two Issues Related to Argument-Linking	125
3.3. Formation of CV in Chinese	129
3.4. Argument-Linking of CVs	131
3.4.1. Feature Percolation	131
3.4.2. θ -position Licensing	134
3.4.3. Case Requirement and Argument-Linking	138
3.4.4. θ -Criterion: A Revisit	143
3.4.5. Analyses of Grammatical and Ungrammatical PCVs	146
3.5. Reduplicated Construction	155
3.6. Alternative Solutions	160
3.6.1. Bao (1986)	160
3.6.2. Li (1990a)	161
3.7. Conclusion	163
Notes	165
Chapter 4. Syntactic Serial Verb Constructions	168
4.0. Introduction	168
4.0.0. Syntactic Serial Verb Construction (SSVC)	168
4.0.1. Some Examples of SSVC	170
4.0.2. Some Issues of Clausal SVCs	171
4.1. Structure of SSVC	178
4.1.1. Phrasal Structure Analyses	179
4.1.1.1. Explanation of Schachter(1974)	179
4.1.1.2. Analysis of Williams(1976)	181
4.1.1.3. Jansen, Koopman & Muysken (1978)	183
4.1.1.4. Sebba(1978)'s Explanation	186
4.1.1.5. Object-Sharing Approach:Baker(1989)	191
4.1.2. Clausal Structure Approach	198
4.1.2.1. From Stahlke(1970) to Lu(1977)	198
4.1.2.2. Complex Predicate Analysis:Huang(1989)	199
4.1.2.3. SVC and the Binding Theory: the Analysis of Bickerton & Iatridou(1989)	209
4.2. Structure of SSVCs in Chinese	212
4.2.1. Binding in Chinese	212
4.2.2. Contrastive ziji and Structure of SSVCs in Chinese	216
4.2.3. Some Complexity	219
4.3. Generation of Clausal SVCs	222
4.3.1. Lexical Approach	223
4.3.2. Adjunction and Formation of SSVCs in Chinese	224
4.4. Conclusion	229
Notes	229
Chapter 5. Conclusion	231
Bibliography	235

CHAPTER 1

Introduction

1.0. Introduction

The *Serial verb construction* (SVC) is a linguistic phenomenon which has drawn the attention of linguists for more than a century. In the last two decades, dozens of works on this topic have appeared in literature. They contain discussions of the distribution, formation, and structure of SVCs in several languages. Over time these studies have shifted from pure description to explanation. While Christaller (1875) just wanted to report that in some African languages, there existed SVCs which were not attested in English or French, from Steward (1963) to Li (1990b), almost all the studies of SVCs pursue explanations of their structure and formation. Another important change is reflected in the attitudes to linguistic universals. While traditional descriptions were only concerned with the phenomena of one particular language, the explanatory studies have tried to generalize their results, and pursue theories which are universal to all the human languages. This trend is clearly due to the emergence of linguistic theory since 1950, especially the establishment and development of the Generative-Transformational Grammar first sketched in Chomsky (1957).

The ultimate goal of Generative-Transformational Grammar is to discover the psychological and the biological basis for the language faculty of human beings. Along this line, a linguistic theory ultimately is expected to answer the following question: How is it that human beings, whose contacts with the linguistic data are so brief, personal and limited, are nevertheless able to know so much as they do know about language? This question is analogical to the question first raised by Bertrand Russell about knowledge in general, and cited by Chomsky (1986a). Chomsky termed it as "Plato's Problem". Although we still have long way to go before we can provide a full account of Plato's Problem, explanatory study of a specific natural language can serve to expand our understanding.

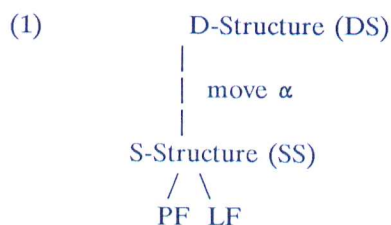
I hope that this study will make a contribution to the enterprise, although neither psychological nor biological issues are discussed directly in this thesis.

This thesis studies SVCs in several languages, but concentrates mainly on Chinese. The SVCs in other languages will also be discussed in pursuing linguistic universals. The discussions involve the distribution, properties, origin, structures, formation and constraints, argument-linking, reference of empty categories of SVCs, etc., which are supposed to be controlled by linguistic principles. I also want to discuss briefly why such a construction does not appear in languages like English. Of course, to discuss so many issues in a short thesis like this risks the danger of a shallow and simplified account. To avoid that, I shall focus on some more interesting issues which are expected to be more concerned with linguistic universals and will leave other issues open.

In this chapter, a brief introduction of the framework and the contents of the chapters which will follow will be given. This study assumes the framework of a recent version of Generative-Transformational Grammar, the Government and Binding Theory proposed by Chomsky (1981b). Although this thesis only discusses one type of construction, the *serial verb construction*, the explanations of the facts exposed by this construction involve almost all the principles of this theory, which signifies how complex those linguistic phenomena are. In order to lay the base for the substantive discussion, the Government and Binding Theory is introduced in 1.1.. Other proposals such as the theory of argument-structure proposed by Williams (1981a), and feature percolation suggested by Lieber (1983) will also be mentioned as they are important in what follows. In section 2, a short introduction of the contents of the following chapters will be presented.

1.1. Introduction to the Framework

Generative - Transformational Grammar is a linguistic theory of universal grammar (UG) which aims to reveal the principles underlying natural languages. The most recent version Government and Binding (GB) Theory, is organized as (1):



DS is the level at which all the lexical items are arranged according to the specifications indicated in the lexicon. Applying move- α to DS results in SS. PF, the phonological form, gives a phonological interpretation of SS; LF, the logical form, gives a semantic interpretation of SS.

DS has two sub-components: the lexicon and the categorial component. In the lexicon, all the lexical items are listed and specified. In this thesis, I claim that punctuation is also listed in the lexicon. For details, see chapter 2. The specification of a lexical item includes its morphological, phonological, and syntactic features. The categorial component consists of the X-bar system, which is shown in (2):

$$(2)a. X' = X Y^{n*}$$

$$b. X'' = Z^{n*} X'$$

The Y^n in (2a) refers to complement of X , and Z^n in (2b) is the specifier of X . Y^{n*} and Z^{n*} stand for zero or more occurrences of some maximal projection (Chomsky 1986b). The relative orders of X and Y^n in (2a), X' and Z^n in (2b) are determined by the parameters of a particular language. For example, while (2a) in English and Chinese has the form like (2a), in Japanese it is like (3)

$$(3) X' = Y^n X$$

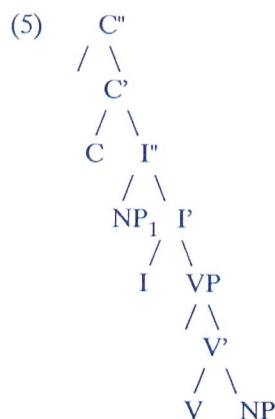
In Chomsky (1986b), the X-bar system is extended to nonlexical categories. In Chomsky (1981b), a clause is labelled as S , and a clause with its complementizer is labelled as S' . With the new treatment, INFL is assumed as the head of a clause, and complementizer is considered as the head of S' . Therefore we have schema (4):

$$(4)a. S = I'' = [NP [I' [VP V \dots]]]$$

$$b. S' = C'' = [\dots [C I'']]$$

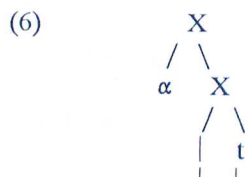
[Chomsky (1986b, p.3)]

Accordingly, a language like English has the X-bar structure as (5):



It will be seen in Chapter 4 that the X-bar structure of Chinese in substance is the same as (5).

There will be a discussion of the X-bar system in this thesis. Chomsky (1986b) proposes a mechanism of adjunction. Adjunction, as Chomsky says, is either the result of the operation of move- α , or can be base generated. The former is illustrated as (6):



Chomsky (1986b) stipulates that such an adjunction is only possible to a maximal projection that is a nonargument. This requirement has been relaxed by Fiengo & Higginbotham (1981) and Chomsky himself. However, adjunction as an operation of movement has to be constrained by the principles and rules governing movement. Following Lightfoot & Weinberg (1988), I disallow with VP-adjunction. For details, see the later part of this chapter and the discussion in chapter 4.

Base-generated adjunction is important in what follows. Following Bickerton & Iatridou (1989), it is assumed that some *serial verb constructions* contain adjoined clauses. Such a treatment has its advantages: It simplifies X-bar syntax and distinguishes the complement and the adjunct. We will discuss this in greater detail below.

DS is interpreted as a pure representation of thematic relations. DS, especially the lexicon,

is the base of a grammar in the following sense: the specification of the lexical items must be represented at other levels of the syntax. This principle is stated in (7):

(7) Projection Principle

Representations at each syntactic level (i.e., LF & D- & S- structure) are projected from the lexicon, in that they observe the subcategorization properties of lexical items.

[Chomsky (1981b, p.29)]

For example, the verb *hit* is specified in the lexicon as assigning a θ -role AGENT(A) to its subject, and RECIPIENT(R) to its object. According to (7), such a relationship must be realized in each of the levels of the syntax. In the sentence (8)

(8) I didn't want [to *hit* him]

the verb *hit* does not have an overt subject. If (7) is correct, it is expected that it must have a non-overt subject, which is termed as *empty category* indicated by *e* in (9):

(9) I didn't want [*e* to hit him]

Suppose we construct a passive sentence with verb *hit*:

(10) I was *hit* by him.

According to the Projection Principle and the specification of the verb, the DS of (10) is

(11) [was *hit* I by him]

In the mapping from the DS to SS, the transformation "move α " applies. Move- α leaves traces (one type of empty category). For example, to apply move- α to (11) results in SS (12):

(12) [I was hit *t* by him]

PF is the phonological interpretation of a string, and LF is its semantic interpretation. Some phonological rules, such as deletion rules, and stylistic transformation rules, are applied at the PF, while semantic rules such as Wh-raising, Quantifier Raising in the sense of May (1977) are applied at LF. One of the generally accepted explanations of Chinese says that in Chinese, there is no syntactic Wh-movement, and Wh-movement applies at LF (Huang 1982; Chomsky 1986b). For example, sentence (13) has different representations as shown in (14):

(13) Zhangsan¹ xuan le *shenme ke*?

Zhangsan select Asp. what course

"What courses have Zhangsan selected?"

(14)a. DS

[_{CP} [_{IP} Zhangsan [_{VP} xuan le *shenme ke*]]]

b. SS

[_{CP} [_{IP} Zhangsan [_{VP} xuan le *shenme ke*]]]

c. LF

[_{CP} *shenme ke* [_{IP} Zhangsan [_{VP} xuan le *t*]]]

One of the recent developments of GB proposes some constraints on PF and LF. Aoun et al (1987) requires an empty category to be lexically governed at PF, while bound at LF in the sense of *generalized binding* proposed by Aoun (1986). With the theory of Chomsky (1981b), PF and LF do not interact with each other. This development is not directly related to the discussion of this thesis, but the principles under Aoun et al's proposal --- the definition of government and the theories of ECP and Bounding, are adopted here, and are the basis of some of the discussions. For details, see Aoun et al (1987), Lightfoot & Weinberg (1988) and Chapter 4 of this thesis.

Chomsky (1981b) proposes that Universal Grammar consists of several interacting subsystems, which are both the various subcomponents of the rule system of grammar as stated in (1) and subsystem of principles. The subsystems of principles include the following:

(15)a. bounding theory

b. government theory

c. θ -theory

d. binding theory

e. Case theory

f. control theory

In the following sections, a brief introduction to these theories will be given. Focus will be made on

the theories which are most relevant to the investigation of SVCs such as government theory, Case theory, and binding theory.

1.1.1. Bounding Theory

Bounding theory poses locality conditions on certain processes and related items, especially the locality condition on movement. Such locality conditions may differ at different levels of a grammar and in different languages. Chomsky (1981b) proposes that NP and S are two bounding nodes for syntactic movement in English, and any movement in the syntax cannot cross more than one bounding node. In Chomsky (1986b), bounding theory and government theory are generalized into one principle: barrier theory,² which stipulates that movement is optimal when it crosses no barriers, and it degrades sharply with crossing of more than one barrier; a barrier will block the government relationship among constituents.

As stated in the later part of this thesis, the theory of barriers still has many difficulties in explaining the behaviors of movement and government (cf. Lightfoot & Weinberg (1988)), the theory suggested in Chomsky (1981b) is adopted which states that movement must observe the Subjacency Condition and thus cannot cross more than one bounding node.

1.1.2. Government Theory

Government is the relation between the head of a construction and the categories dependent on it. Other theories, such as Case theory and θ -theory exploit this relation. There are several different definitions of government. In this paper, three of them will be discussed: the definitions given by Chomsky (1981b), (1986b) and by Belletti & Rizzi (1982).

Chomsky (1981b) defines government in the following way:

(16) α governs β if and only if

(i) $\alpha = X^0$

(ii) α c-commands β and if γ c-commands β then γ either c-commands α or is c-commanded by β .

[Chomsky (1981b, p.163)]

α is a $[\pm N, \pm V]$ category. C-command is a relation between constituents defined by (17):

(17) C- command

A c-commands B if and only if the first branching node dominating A also dominates B, and A does not itself dominate B.

[van Riemsdijk & Williams (1986, p.142)]

Accordingly, we have following examples of government:

- (18)a. $[_{VP} V NP (NP')]$
- b. $[_{PP} P NP]$
- c. $[_{CP} \text{for } [_{IP} NP_1 \text{to } [_{VP} NP_2]]]$
- d. $[_{XP} X [_{IP} NP \text{to } VP]]$
- e. $[_{VP} V [_{CP} COMP [_{IP} NP INFL VP]]]$
- f. $[_{VP} V [_{NP1} NP_2'S N]]$
- g. $[_{VP} V [_{AP} A (\text{of}) NP]]$
- h. $[_{VP} V [_{PP} P NP]]$ ³

[Chomsky (1981b, p.162)]

These are the basic cases of government. Chomsky explains that in a., V governs NP and NP'. In b., P governs NP. In c., the prepositional complementizer *for* governs NP₁ but not NP₂ which is governed by V. In d., X governs NP. In e., V does not govern NP, but CP; if INFL is tensed, it governs NP. In f., V governs NP₁ but not NP₂. In g., V does not govern NP; NP is governed by A. In h., NP is governed by P but not by V; PP is governed by V (Chomsky (1981b, p.162)).

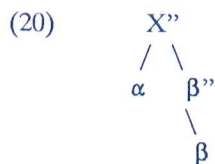
Belletti & Rizzi (1982) suggest another definition of government, which enables a head not only to govern its complement, but also the head of it complement:

(19) Government

α (X^0) governs β iff all maximal projections dominate α also dominate β , and α is also dominated either by all maximal projections dominating β or by all maximal projections

dominating the maximal projection of β .

With this definition, in configuration (20), α governs β :



We will see in Chapter 3 that definition (19) is crucial in explaining the properties of verb compounds in Chinese. Therefore this definition has been adopted throughout this thesis.

Along the line suggested in the Government and Binding Theory, movement is not constrained by any specific rule. Instead, it is constrained by principles such as the Adjacency Condition. One of the well-formedness condition is the Empty Category Principle (ECP), which constrains the distribution of empty categories(ECs):

(21) Empty Category Principle

[e] must be properly governed.

ECP constrains the ecs left by movement, thus restricting the application of movement. Proper government is defined in (22)

(22) α properly governs β if and only if α governs β and $\alpha \neq \text{AGR}$.

[Chomsky (1981b, p.250)]

However, this condition is changed in Chomsky (1986b). In the framework of barriers, the definition of proper government is divided into two parts:

(23) α properly governs β iff α θ -governs or antecedent-governs β .

[Chomsky (1986b, p.17)]

θ -government is defined as follows:

(24) α θ -governs β iff α is a zero-level category that θ -marks β , and α , β are sisters.

[Chomsky (1986b, p.15)]

Antecedent government is the relation between elements in a link of a chain, in which the governor

is conindexed with the governee. In other words, there is no barrier between the governor and the governee which blocks the relation between the two elements.

Chomsky claims that the two parts of proper government work disjunctively, meaning fulfillment of any part of the condition yields a well-formed string. Obviously, the first part of definition (23) is entailed by definition (19). The second part of definition (23) accounts for the adjunct movement:

(25)a. the meat is [_{AP} cooked [how well]]

b. [how well] is the meat cooked t

[Chomsky (1986b, p.79)]

(25a) is the DS of (25b). In (25b), the adjunct *how well* is moved into COMP position. The trace of the moved constituent is not governed by a X^0 element since no constituent θ -marks it. It is governed by its antecedent *how well* through coindexing.

The revision of the definition of proper government brings extensive consequences. Based on this notion, Chomsky (1986b) suggests a kind of new operation of move- α : VP adjunction. Baker(1988) develops a theory of incorporation which is a type of head movement constrained by antecedent government.

However, it has been found that the antecedent-government is not sufficient to guarantee the well-formedness of movement. As pointed out in Lightfoot & Weinberg (1988), in the following sentence, the trace of the moved element is governed by its antecedent, but the sentence proper is still ungrammatical:

(26) *What_i did John talk yesterday [_{PP} about e_i]?

It means that the theory of barriers still has serious problems. Therefore, in this thesis, I will not employ the new definition of proper government. For the details of discussion, see Chapter 4.

It is suggested that the ECP is one of the locality conditions which constrain the well-formedness of a sentence. It is no longer a condition applied at SS or LF as suggested by Chomsky (1981b), but at PF. For the details, see Aoun et al (1987).

1.1.3. θ -Theory

θ -theory, as stated by Chomsky(1981b), is concerned with the assignment of thematic roles such as agent-of-action, goal-of-action, etc., to an NP in the argument position. The central notion of the θ -theory is the θ -Criterion:

(27) θ -Criterion

Each argument is assigned one and only one θ -role and each θ -role is assigned to one and only one argument.

[Chomsky (1981b, p.36)]

θ -assignment is constrained by government. A position to which θ -role is assigned is a θ -position:

- (28)a. [they] persuade [John][that [he] should leave]
b. [we] hold [that [these truths] are [self-evident]]
c. [we] hold [[these truths] are [self-evident]]
d. it is held [that [these truths] are [self-evident]]
e. these truths are held [[t] to be [self-evident]]
f. [these truths] are [self-evident]
g. [we] put [the books] [on [the table]]
h. the books were put [t] [on [the table]]
i. advantage was taken t of [Bill]

[Chomsky (1981b, p.36)]

All the bracketed positions are θ -positions.

In regard to θ -theory, there are several issues discussed in this thesis. First, some other studies and this study have found, in some circumstances, one θ -position may receive more than one θ -role. Several revisions of the θ -Criterion have been suggested, and they are all the same in substance. This paper adopts a more comprehensive well-formedness condition proposed by Chomsky(1986a), the Full Interpretation Principle, which allows one θ -position to receive more than one θ -role. Detailed discussion of this theory will be given in Chapter 3.

This paper also proposes that the Full Interpretation Principle is not only a well-formedness condition of phrases, but also constrains the formations of compounds. In chapter 3, it will be argued that some combinations of verbs are not grammatical because they cannot meet the requirement of the Full Interpretation Principle in the syntax.

1.1.4. Binding Theory

Binding theory is concerned with relations of NPs to possible antecedents. In Chomsky (1981b), it is basically the relation that holds for elements in argument positions (A-positions). In Chomsky (1981b), binding theory is stated as follows:

(29) Binding Theory

- a. An anaphor is bound in its governing category.
- b. A pronominal is free in its governing category.
- c. An R-expression is free.

(30) Governing Category

α is the governing category for β if and only if α is the minimal category containing and a governor of β , where $\alpha = \text{NP or S}$.

[Chomsky (1981b, p.188)]

There are several important modifications of the binding theory since Chomsky (1981b). Aoun(1981) extends the binding relation between A-positions to A'-position (non-argument positions), thus proposes his theory of generalized binding:

(31) Generalized Binding Theory

- a. An anaphor must be X-bound in its governing category.
- b. A pronominal must be X-free in its governing category.
- c. An R-expression must be A-free.

$X = A \text{ or } A'$.

The governing category for Chinese is defined as follows:

(32) Governing Category for Chinese

- a. α is a governing category for an anaphor iff α is the minimal category containing a SUBJECT accessible for this anaphor.
- b. α is a governing category for a pronominal iff α is the minimal category containing this pronominal.

SUBJECT is the most salient nominal constituent in a maximal category. It can be the subject or INFL of a clause, the specifier of the head of an NP. The notion *accessible* is defined in (33):

(33) α is *accessible to* β if and only if β is in the c-commanded domain of α and assignment to β of the index of α would not violate (34)

(34) * [γ ... δ ...], where γ and δ bear the same index.

[Chomsky (1981b, p.211)]

In Aoun et al, generalized binding is one of the locality conditions exercised at LF.

This paper does not discuss the binding theory directly, and the difference between different versions of binding theory does not affect the discussion and conclusion in the relevant chapters. Therefore I will not go into details of the binding theory in this thesis. However, we will see that the binding theory does play an important role in the analyses of the structure of SVCs. For the details, see Chapter 4.

1.1.5. Case Theory

Case theory deals with the assignment of abstract Case to an NP and its morphological realization. Government and Binding theory claims that any NP in a phrase must have an abstract Case, no matter whether the Case is morphologically realized or not.

As regards Case theory, although there are several controversies which we will not go into, generally linguists agree on the following points:

First, any lexical argument NP must have a Case. This principle can be stated as follows:

(35) * $[_{NP} \alpha]$ if α has no Case and α contains a phonetic matrix or is a variable.

For example, the following sentence is ungrammatical:

(36) *who does it seem [t to see Mary]

for *who* in (36) cannot inherit Case from its trace, since *t* is not assigned a Case from the verb *seem*.

Second, Case assignment can only be done under government. In other words, only if a Case assigner governs a Case assignee can the former assign a Case to the latter.

Third, there is an adjacency condition for Case assignment in some languages, e.g. English and Chinese. In other words, the Case assignee must be adjacent to the Case assigner. We have a great deal of evidence from English and Chinese to support this condition. For example, in both English and Chinese, there must not be anything intervening between the verb and its complement, because the intervening element will block Case assignment.

On the issue of adjacency for Case assignment, there is a seeming "exception" --- three-place verbs which assign Case to each of its complements. Assignment of Case to the second complement seems to violate the adjacency condition since one NP has to be crossed. To pursue a unified solution to this problem, Stowell(1981) proposes that after a three-place verb assigns a Case to the first complement, it incorporates with the NP to form a new V, and then the new V assigns Case to the second NP under adjacency. We will see in the Chapter 3 that there is supporting evidence for this solution in Chinese. Fourth, it has been accepted that in a chain, only one Case is assigned, and the unaccusative verb such as *lai*(come), *qu*(go), *zou* (walk), *pao*(run) in Chinese, is the optional Case assigner. If an unaccusative verb does not assign a Case to its complement, the complement NP lacks Case, and therefore NP movement applies so that it can meet the Case requirement.

This thesis does not study Case theory. However, from the investigation of SVCs, positive evidence has been found to support this theory. Chinese, and many other languages mentioned in this thesis, such as Sranan, Yoruba, etc., do not have concrete cases. But it has been attested that in forming an SVC, the Case requirement must be met, otherwise the SVC will be ungrammatical. We will see in Chapter 3 that this is why only an unaccusative verb can act as V₂ in forming a VV compound, and why three-place verbs in Chinese cannot form verb compounds. In fact, the Case requirement is one of the two morpho-syntactic conditions of verb compound formation in Chinese.

Koopman(1984), Travis(1984) and Li(1985) propose that the direction of Case assignment and θ -assignment in some languages such as Chinese may be different. Huang(1989) generally accepts this assumption. However, up until now, we have found no evidence to support this hypothesis. Because this is not only indirectly related to the topic of this thesis, only a few points will be discussed mention here: Chinese is not an SOV language as some linguists claim, and the function of *ba* construction is merely to raise the object preverbally. This will be discussed in Chapter 4. If these views are correct, we need not assume different directions for Case and θ -assignment in Chinese.

1.1.6.Control Theory

The last subsystem which will be discussed is control theory. Control determines the potential for reference of the element PRO. The Government and Binding theory divides empty categories into four types:

1. NP trace: the trace left by NP movement, e.g.:

(37) [_{IP} this book_i was published *t_i* by the Academic Press]

NP *this book* is moved from V complement position, leaving the trace *t*.

2. Wh-trace, also called variable because it is always bound by an Wh-element in A'-position:

(38) [_{CP} what₁ [have you seen *t₁*]

3. PRO: a pronominal acting as the subject of a non-finite clause:

(39) [_{IP} he used a knife [_{IP} PRO to cut the bread]]

4. pro: a pronominal whose contents is determined by INFL:

(40) [_{IP} pro arriva Giovanni] --- Italian

arrive Giovanni

"Giovanni is coming."

In (40), the inflection of the verb *arriva* (arrive) determines the number, person, etc. of the

subject. Control theory is concerned with the reference of PRO.

One type of SVC is analyzed as a type of clause, and empty categories are therefore involved. In Bickerton & Iatridou (1989), the reference of the empty categories, including those in the finite and the non-finite clauses are treated under control theory. It has been reported that in most cases, the pronominal in a clausal SVC is controlled by the subject of the matrix clause, which is termed Subject Control in control theory.

However, in determining the nature of the pronominal in SVCs in Chinese, there is a difficulty. Since Chinese sentences does not have tense and subject-predicate agreement, it is hard to determine whether a clause is finite or not. Consequently, we do not know if the pronominal in the subject position of a clause is PRO or pro. There have been several studies on the issue of finiteness of clauses in Chinese. Chinese does not have tense. But it does have aspect, and aspect plays an important role in the well-formedness of clauses (that is, some constructions and operations are limited for non-finite clause. For the details, see the relevant sections of Chapter 4).

However, the properties and features of subjects are never determined by the aspect of the verb. Several proposals have been advanced to avoid the embarrassment. Since this paper does not focus on this issue, this problem is left open for further investigation. Following Bickerton & Iatridou (1990), a compromise stance is taken in this thesis: whether a clause has aspect or not, its empty subject is studied along the line of control theory, since its properties and features cannot be determined by the aspect.

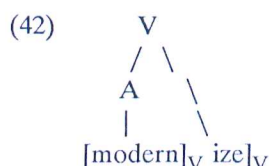
Before concluding the discussion of the framework of the theory, two other theories should also be mentioned. One of them is the theory of argument structure proposed by Williams (1981), which is defined as a *labelled list* of the arguments that a lexical item can have. Here labelling means *thematic relations*. For example, the verb *chase* has the following argument structure in the lexicon:

(41) *chase* (Agent, Theme)

which means that the verb *chase* can take two arguments, and its external argument (subject) will

receive a θ -role Agent, while the internal argument will receive a θ -role Theme. In this thesis, argument structure is considered to be one of the specifications of verbs, or in other words, the features of verbs. It is not assumed that there is an independent syntactic structure to specify this property of verbs.

The other theory is the Feature Percolation suggested by Lieber(1983). She claims that in forming compounds in English, stems and affixes percolate their features upward according to some rules:



in (42), it is stipulated that all the features of stem morpheme percolate to the first nonbranching node dominating that morpheme, and that all the features of an affix morpheme percolate to the first branching node dominating that morpheme. Therefore node A receives all the features from *modern*, while V receives all the feature from *-ize*. This explains why the word should be labelled [+V, -N] in the lexicon. This has proved a useful theory in explaining some interesting phenomena in verb compound formation in Chinese: In Chinese, to construct a VA compound is much easier than to construct a VV compound, and the rules of argument-linking of the two compound are quite different. These are accounted for by different feature percolation rules of the two categories. For the details, see Chapter 3.

1.2.Introduction to the Chapters

In addition to this introduction, this thesis consists of four other chapters. In the following sections, I will survey each of them.

1.2.1. Introduction to Chapter 2

Chapter 2 deals with the distribution, classification and properties of the *serial verb constructions* (SVCs). SVCs have been attested in Chinese, West African languages such as Yoruba, and Edo. Caribbean creoles as Sranan, Seselwa, etc., and Dravidian languages. After giving a short

introduction to each of the languages or language groups, the SVCs in these languages are presented with a variety of types and structures. Furthermore, SVCs in these languages are classified by several criteria as follows: It has been found that SVCs in different language may have different structures. We have found three types of structures: clausal structure, phrasal structure and compound. Examples of all three types of SVCs will be given in Chapter 2. As regards SVCs of clausal structures, the non-matrix clause in an SVC may be either finite or non-finite; if the SVCs are of compound structure, they may consist of two verbs or one verb plus an adjective. As regards the transitivity of verbs which form SVCs, they can be either transitive or intransitive. The more important criterion to classify SVCs is the fixity of the combination. In fact, all the SVCs can be divided into two types: the fixed combination and the free combination. The fixed combination means that if an SVC is of clausal or phrasal structure, certain verbs appear again and again in the same position; if it is a compound, it is not productive.

Many examples will be shown to illustrate the stability of the combination. While the structural analyses and the properties of clausal and phrasal SVCs do not depend on the stability of the combination, the properties of the productive compound and the non-productive compound have fundamental differences. For the productive compound, change of its elements is always possible if no linguistic principles or rules are violated, while for the non-productive form, such change is impossible. The meaning of the non-productive form is always compositional, while that of the non-productive form is not always compositional. There are more possible ways of argument-linking for the non-productive forms, while those for the productive forms are more restricted. It is stated that because the non-productive compounds are more strictly constrained, thus more interesting, this study therefore will concentrate on this type of verb compound. It has been found that there exist some typical SVCs in the sense that the frequency of some verbs appearing is much higher than that of other verbs in SVCs, and the high frequency of use of such verbs is found in most serialized languages. In section 2.2.6 of Chapter 2, four typical SVCs are presented. They are the

take, *go*, *double go*, and *give* constructions. In this section, another construction, the *comparative* construction is also discussed. Evidence will be given that such constructions cannot be analyzed as SVCs in Chinese. Contrary to the genuine SVCs, the object of the comparative construction is not extractable, which shows it is a PP construction rather than a verb construction.

Section 3 of this chapter deals with the properties of SVCs. The first one mentioned in this section is that any SVC must consist of more than one verb, which seems straightforward, but still worth discussing. Some of the studies define other marginal categories, such as *verb-like*, *coverb*, but fail to define by what standard a marginal category can act as the constituent of SVC. In this section, I claim that a verb-like can become a part of SVC only if it has all the functions a verb has in that language (not necessarily vice versa). This thesis also proposes the notion *lexical connection* which means two or more constituents are connected by any lexical device, including conjunctions, punctuation, etc.. Two verbs or one verb and one verb-like element is considered as *serialized* if and only if they are not lexically connected. By this definition, we can exclude some sentences like (43):

(43) John *picked up* his book, *read* a few lines and threw it away.

Several other properties are revealed in this section. It has been found that in most cases the object of the V_2 is always extractable, which indicates that two parts of an SVC can hardly be in coordinate relation. Neither V_1 nor V_2 can be in the argument position, which not only excludes V + object clause construction from the discussion, but also means that for the clausal SVCs, its non-matrix clause must not be subcategorized by the matrix verb, thus it must be in adjunct position. This fact is helpful for the structural analyses of SVCs.

Based on the properties discussed in section 3, a formal definition of SVCs is worked out. Here three subdefinitions are involved: the definition of SVCs, the definition of verb-like and the definition of lexical connection. With these definitions, the scope of the study of this paper is clarified.

There is a short discussion on whether English has SVCs. It is claimed that although some

constructions (such as the *make construction*) is somewhat similar to SVCs, they do not have all the diagnostics of SVCs in other languages. Therefore by any standard English is not a serialized language.

Section 5 of Chapter 2 is a general survey of previous literature, which includes studies of SVCs from Christaller (1875) to Li(1990a). More than a dozen books or papers are mentioned. However, although I give short comments to each of them in this section, no detail is gone into until the relevant sections of later chapters.

1.2.2. Introduction to Chapter 3

Chapter 3 discusses one type of the SVC---productive compound verbs(PCV) in Chinese. To show the importance of compounding in Chinese, I present some examples in section 1, illustrating that in Chinese, words of all the categories can be formed by compounding, and the structures of compounds are parallel to the structures of phrases.

Section 2 deals with classification and properties of compound verbs in Chinese. In this section, the fundamental distinction between the productive compound verbs and the non-productive compound verbs(NCV) is discussed, claiming that some structural "exceptions"of the compounds mentioned in other studies actually are non-productive in nature. In discussing the scope of modification of PCVs, one property of the PCV is mentioned: if the compound has a modifier, it either modifies the whole compound, or the head of it. The non-head of the compound is never solely modified. To explain this, it is assumed that the scope of modification is constrained by government: a constituent is modified by another if it is governed by the modifier. The definition of government given by Belletti & Rizzi (1982) is adopted which enable an X^0 governs not only the maximal projection, but the head of it as well.

This raises question of the head condition: what is the head of a compound? On this issue, Williams (1978, 1981), Di Sciullo & Williams (1987) and Baker(1989) make different proposals. After showing the inadequacy of their proposals, I give new definitions of the Head Licensing Condition(HLC) and Projection Licensing Condition(PLC), which results in the following points:

1. A maximal projection may have the same bar level as its head, which accounts for the fact of verb compound, in which both the maximal projection and the head are of X^0 -bar.
2. The category with minimal bar and identical features with the maximal projection is the head.
3. If there is no category which has identical features with the maximal projection, the category of minimal bar and with identical categorial feature is the head. It explains why in Chinese, an intransitive verb and an adjective can constitute a transitive verb compound.

On the status of the phenomena discussed in this chapter, one may argue that they are in fact verb phrases rather than verb compounds. Some tests are used to show they cannot be phrases: In Chinese, a phrase can be inserted by other constituents, the constructions under discussion cannot; if two phrases are coordinate, each of them can be questioned, but no part of the construction under discussion can; if two verb phrases are coordinate, we can reduplicate a verb in one of the phrases, but for the VV construction under discussion, no verb can be reduplicated. In conclusion, the construction under discussion does not have the typical properties of verb phrases.

In discussing argument-linking of PCVs, some examples are given to show that if a PCV consists of two verbs, V_2 can only link to the internal argument; if it consists of one verb and one adjective, the adjective can link to either internal or external argument. Furthermore, three-place verbs cannot be part of compounds, and a compound cannot consist of more than two verbs. These phenomena raise several questions about well-formedness conditions and θ -theory.

Section 3 deals with formation of CVs in Chinese, and discusses the conditions for constructing verb compounds with respect to selectional features and subcategorizations. Section 4 discusses further conditions of well-formedness of PCVs. It is claimed that a PCV is constrained not only in the lexicon, but in syntax as well. A PCV must link all the θ -roles of its argument structure to the argument in a proper way, otherwise the form must be ruled out.

To explain the syntactic constraints of PCVs, I divide the process of argument-linking into two parts: argument position licensing and argument-linking. Argument position licensing is done

by the Feature Percolation Convention in the sense of Lieber(1983), which stipulates in a PCV, the non-head V can only percolate its features upward to V^0 , thus can only license an internal argument position, while a non-head adjective can percolate its features up to VP, thus can license either the internal or the external argument position. It explains why in Chinese, $V_{intrans.} + V$, $V_{trans.} + V_{trans.}$ combinations are ungrammatical.

It is also claimed in this section that a compound must meet the Case requirement in the syntax ---- the arguments it links to must have proper Case assigned by it --- ,otherwise it is ungrammatical. The evidence to support it is the fact that generally only unaccusative verbs can act as V_2 in a compound, because using an accusative assigning verb will cause Case conflict. This explains why three-place verbs cannot be used to construct PCVs: in such cases, because the second constituent of the compound blocks the incorporation of the first constituent of the compound and the first internal argument, the second internal argument cannot receive a Case since the Case assignment must observe an adjacency condition. To explain that in some cases, a compound assigns more than one θ -role to an argument, the Full Interpretation Principle, a more general principle than the θ -criterion, is adopted by this study. This principle allows one θ -position receives more than one θ -role, or in other words, a compound θ -role.

In analyses of all the grammatical and the ungrammatical compounds in section 3.4.6, I illustrate that all the grammatical combinations can be generated by the Feature Percolation Convention, while all the ungrammatical combinations can be excluded by the linking convention and Case theory.

Section 5 discusses alternative solutions, especially that proposed by Li(1990a). By comparing the solution proposed in this thesis and Li's, it is shown that Li's solution cannot exclude all the ungrammatical combinations, e.g., $V_{intrans.} + V_{trans.}$ and $V_{trans.} + V_{trans.}$. Therefore the theory of compound formation worked out by this study is a more constrained than Li(1990a).

1.3. Introduction to Chapter 4

Chapter 4 discusses syntactic serial verb construction(SSVC), mainly clausal SVCs.

Clausal SVCs have been attested in all the four languages and language groups mentioned in this thesis. There are several issues concerning the study of this type of SVCs. Section 1 of this chapter deals with the structure of SSVCs. Generally, there are two types of analyses of this construction. Some linguists prefer all the SSVCs to have clausal structure. Some of their analyses are discussed in this section. Schachter (1974) assumes that SSVCs are of coordinate verb phrase structure. He provides evidence to argue against the transformational approach, but fails to demonstrate that SSVCs must have coordinate phrase structure. Williams(1976) employs the notion of thematic relations to explain the relations between verbs in SSVCs. In his detailed discussion on Sranan, Sebba does not agree with the theory that all the SSVCs must have one possible structure. He prefers some of them to be of coordinate phrase structure, while others are of subordinate structure. In discussing the object sharing approach given by Baker(1989), it is pointed out that the approach needs radical revision of the X-bar theory proposed by Chomsky (1981b). The trouble is that his revision cannot be supported by constructions other than a few sentences he cites, and object sharing is not always necessary for SSVCs.

Some other linguists suggest clausal structure for SSVCs. Among them, Stahlke(1970), Bamgboṣe (1974) adopt the Generative Semantics and Standard Theory of the Generative - Transformational Grammar to explain SSVCs, the framework of which are generally considered inappropriate. Li & Thompson (1974) give two possible clausal structures for SSVCs, but the two structures do not conform to either the linguistic principles or the general rules of Chinese grammar.

Bickerton & Iatridou (1989) give very convincing evidence that SSVCs under discussion must be of clausal structure with respect to binding theory, which is based on the following observation: V_2 of SSVCs in some languages can have an anaphor as object which cannot be coindexed with the object of V_1 . They explain that this phenomenon means there must be a governing category which does not include V_1 and its object. Such a governing category cannot be VP, but IP or CP.

It also has been found that in Chinese, only an anaphor can be inserted before V_2 , which implies that there is a preverbal empty subject. It indicates that V_2 must be in a non-maximal

clause. However I do not agree with Bickerton & Iatridou (1989) that the clause is an IP.

Considering the extractability of the object of V_2 , and the invalidity of VP-adjunction outlined by Chomsky (1986b), it is suggested that the clause is a CP. I also claim that unlike SSVCs in the Caribbean creoles, SSVCs in Chinese have three subtypes of structures.

Section 3 of this chapter deals with generation of clausal SVCs. Several proposals have been advanced in the previous literature. For example, Schachter (1974), Williams (1976), and Baker (1989) suggest that SSVCs are generated by phrase structure rules, Stewart (1963) suggests a transformational approach, Dechaine(1986) and Lefebvre(1988) agree that SSVCs are formed in the lexicon a discontinuous complex predicates. In this section, it is suggested that all these proposals will have difficulties in some respects. For instance, the approach that SSVCs are generated by phrase structure rules always needs specific rules for SSVCs, which not only loses the unification of the theory, but often creates ungrammatical sentences as well; the lexical approach will complicate the lexicon in a way which can hardly be accepted by linguists, and we do not have any motivation to assume such a complex theory; the transformational approach will not be considered as a appropriate model because recent theory no longer contains any specific transformation rules.

On this issue, the approach proposed by Bickerton & Iatridou (1989) is partially adopted. SSVCs are generated by base-adjunction of a clause to V' , which is based on the theory that a controller must m-command its controllee. While in other languages, the non-matrix clause can only adjoin to a postverbal position, in Chinese, both preverbal and postverbal positions are the possible landing sites for adjunction.

Notes:

- 1 . For unknown reason, in the discussion of Chinese, names *Zhangsan* and *Lisi* are often employed in literature. However, these two names, literally mean "Zhangsan the third" "Li the fourth" are seldom found in modern Chinese society. In this thesis, I, following others, use these names just for releasing the burden of learning new Chinese names, which are neither easy to remember nor easy to pronounce, since the two names have been familiar to many linguists.
- 2 . Because this thesis is not a study under the framework of barriers theory, I will not introduce the barrier theory proposed by Chomsky (1986b). The related aspect of that theory is discussed in relevant sections of the thesis.
- 3 . For consistency, I changed a S' into CP, S into IP.

CHAPTER 2

The Distribution and the Properties of Serial Verb Construction

2.0. Introduction

The scientific study of the *serial verb construction* (SVC) began in 1875.¹ Since then, dozens of studies have appeared. Although, before Sebba (1987) and Bickerton & Iatridou (1989), the definition of the notion was seldom discussed in the literature, the term *serial verb construction* has been generally used to refer to a surface string of verbs, or verb plus verb-like, or verb phrase-like items which are not linked by any functional words and occur within a single matrix clause.

Serial verb constructions are widely used in the following languages:

1. Chinese
2. West African Languages
3. Caribbean creoles
4. Dravidian languages

Among these languages or language groups, Chinese is a relatively well-studied language in the sense that it is rich in historical written records and its grammar has been studied descriptively for several decades. There has also been detailed discussion of the SVC in the Dravidian languages². As regards other languages and language groups, there have been several studies, but historical records are not sufficient. Considering the availability of the linguistic data and the reliability of linguistic intuition, this study mainly focuses on data from Chinese.

In this chapter, a general survey of SVCs will be made so as to lay a base for further discussion. In section 2.1., SVCs from several languages are surveyed with brief introductions and explanations of the languages. From the discussion in this section, we will end up with a simple

picture of the distribution of SVCs. Section 2.2. will discuss the classification of SVCs. In this section, SVCs are classified by the following properties and criteria:

1. Structures of SVC

SVCs usually have three types of structure: clausal structure, phrasal structure and compound structure.

2. Finite vs. non-finite clause in SVCs

If an SVC has clausal structure, the clause in it can be either finite or non-finite.

3. Different inner structures of compound SVCs

A compound SVC in Chinese may consist of two verbs, or a verb plus an adjective which is analyzed functionally as a verb-like category. We also discuss why this classification is crucial in this study.

4. Transitivity of the verbs which constitute SVCs

5. Fixed and free combinations

Some verbs always occur in SVCs in fixed positions, and have the same function and meaning in different environments. They are called *fixed combination SVCs*. This type of SVC also includes the non-productive verb compounds. All other SVCs are termed *free combination SVCs*.

Section 2.3. deals with the properties of SVCs. In addition to the properties mentioned in the previous literature, especially those in Bickerton and Iatridou (1989), I will introduce one important property of the languages which may have SVC: In all these languages, many of the linking devices, for example conjunctions, lexical complementizer or infinitival clause introducer the *to* in English are unnecessary for connecting two clauses or phrases. This property provides evidence for the structural analysis of this study. A formal definition of SVCs is given in 2.4..

Section 2.5. discusses the previous literature on SVCs, from Christaller (1875) to Li(1990b) with brief comments. We will provide a fuller discussion of Jansen et al(1978), Sebba(1987), Steever

(1987), Baker (1989), Bickerton & Iatridou (1989), Li (1990a) as they are of special importance due to their elaborate analyses.

2.1. The Distribution of Serial Verb Construction

Serial verb constructions have been attested in *Chinese*, West African languages (the *Kwa languages group* and other languages), *Caribbean creoles* and *Dravidian languages*. In the following subsections, we will give a brief introduction to these languages and the SVCs in them.

2.1.1. Chinese

Chinese is now spoken in mainland China, Taiwan, Hong kong and Singapore. Chinese has eight major dialects and hundreds of minor dialects. Although phonologically they are so different that some dialects e.g. Cantonese, are hardly comprehensible to people from other dialect areas, syntactically, Chinese manifests a high homogeneity. The syntactic rules of standard Chinese, usually termed Mandarin or Common Speech (*Putonghua*), are applicable in all these dialects³. So in this thesis, only Mandarin is discussed and it is assumed that the syntactic rules discussed in this thesis apply to all the Chinese dialects.

Serial verb constructions in Chinese have been investigated in Chao (1968), Thompson (1973b), Li & Thompson (1973, 1974a, 1974b), Bao (1985), Wu (1989) and Li (1990a), although the proper term was not employed in all these works. They provide many examples of SVCs:

- (1) Gou *gan-pao* le mao⁴.

dog chase-run Asp. cat

"The dog chased the cat and the cat has run away."

- (2) Zhangsan *chi-bao* le fan.

Zhangsan eat-full Asp. meal

"Zhangsan has eaten his meal and he has been full."

- (3) Zhangsan *chi-wan* le fan.

Zhangsan eat-complete Asp. meal

"Zhangsan has eaten his meal and nothing left."

(4) Zhangsan *qi-lei* le ma.

Zhangsan ride-tired Asp. horse

"Zhangsan rode his horse (too much) that he was tired." or

"Zhangsan rode his horse (too much) that the horse was tired."

(5) Zhangsan *qi* ma *qi-lei* le.

Zhangsan ride horse ride-tired Asp.

"Zhangsan rode his horse (too much) that he was tired."

(6) Zhangsan *zou-lei* le tui.

Zhangsan walk-tired Asp. leg

"Zhangsan walked (too much) so that his legs were tired."

(7) Zhangsan *xi-ganjing* le yifu.

Zhangsan wash-clean Asp. clothes

"Zhangsan washed his clothes clean."

(8) Zhangsan *kai* men *yingjie* keren.

Zhangsan open door welcome guest

"Zhangsan opened the door to welcome his guests."

(9) Zhangsan *yong* dao *qie* rou.

Zhangsan use knife cut meat

"Zhangsan used knife to cut meat."

(10) Zhangsan *jie* luxiangdai *kan*.

Zhangsan borrow video tape watch

"Zhangsan borrowed video tapes to watch."

2.1.1.1. On PP + V and V + PP

Sebba(1987) included (11) in SVCs by showing the contrast between (11) and (12):

(11) Wo *zhu zai* Shanghai.

I live in Shanghai

"I live in Shanghai."

(12) Wo *zai* Shanghai *zhu*.

I in Shanghai live

"I live in Shanghai."

He argues that sentence (12) is not an SVC, while (11) is, since *zai*(in) in (11) is preceded by a verb and becomes a verb. Consequently, sentence (13) is also included in this class:

(13) Ta *jie yi* *kuai* *qian* *gei* wo.

s/he lend one CL money give me

"S/he lent me a dollar."

[Sebba (1987, pp.31,180)]

Along this line, he also classifies comparative sentences as instances of SVCs:

(14) Zhang *bi* ni *xihuan* *juzi*.

Zhang compare you like orange

"Zhang likes oranges more than you."

(15) Zhang *bi* ni *gao*.

Zhang compare you tall

"Zhang is taller than you are."

[Sebba (1987, p.207)]

These sentences show that Sebba(1987) analyses some cases of Prep.+ V or V + Prep. structures as SVCs. However we have evidence to argue that *zai*(in) and *bi* (compare), etc. are not verbs, but prepositions. In Chinese, prepositions and verbs are historically closely related, and they do share certain common properties. However, considering the formal definition which will be given in 2.4., these sentences are not classified with SVCs. We will go into details of this issue in sections 2.2.6.4.

and 2.2.6.5..

2.1.2. West African Languages

The *Serial verb construction* is very popular in the *Kwa* languages and other west African languages. Moreover, it was the SVC in the *Kwa* languages that first attracted the attention of linguists in the 19th century (Christaller, 1875). *Kwa* is a group of Niger-Congo languages spoken by the inhabitants in West Africa, extending along the Atlantic coast from Western Liberia into Nigeria, Ghana, Togo and Benin. The most important languages in this group are Yoruba which is spoken in Western and Southwestern Nigeria, Igbo (or Ibo) spoken in Southern Nigeria, Akan subgroup, including Twi, Anyi, Beale, Guang, Metyibo which are spoken in Ghana, Ewe, Bini, and Igala (Lightfoot, 1979). Besides the initial study by Christaller (1875), the SVCs in these languages have been investigated in the literature by Westermann (1930), Stewart (1963), Awobuluyi (1973), Bamgbose (1974), Williams (1976), Jansen et al (1978), Lightfoot (1979), and Baker (1989). The following are examples of SVCs from these languages:

- (16) O *mu iwe wa.* ---- Yoruba

he take book come

"He brought the book."

[Bamgboṣe (1974)]

- (17) Olu *sare wa ile.* ---- Yoruba

Olu ran came home

"Olu ran and came home." or "Olu came home quickly."

[Sebba (1987, p.12)]

- (18) U *la ebi ba naka.* ---- Nupe

he took knife cut meat

"He cut the meat with knife."

[Lightfoot (1979, p.217)]

- (19) Dada *gbe akoti lo ile ni ana.* ---- Akan

Dada took box went home on yesterday

"Dada took the box home yesterday."

[Schachter(1974)]

(20) Ozo *rele le evate re.* ----Edo

Ozo ran cook food eat

"Ozo quickly cooked and ate."

(21) Lagos *tye Ozo re.*

Lagos called Ozo come

"Lagos summoned Ozo."

(22) Lagos *tye-re Ozo.*

Lagos called-come Ozo.

"Lagos summoned Ozo."

[Agheyisi(1987)]

The SVC in Edo is very interesting in that it may be a compound verb as in (22), or a clause as in (21).

In addition to the languages mentioned here, SVC is also found in Efik, Jukun, Fanti, Yatye, Kru, Anyi, Ewe, Ga and Fon.

2.1.3. Caribbean Creoles

The *Serial verb construction* has been attested in several Caribbean creoles: Saramaccan, Sranan, Aucaans (Djuka), Seselwa and Morisyen. Saramaccan, Sranan and Aucaans are English-related creoles which are spoken in Surinam. Seselwa and Morisyen are French-related and spoken in islands of the Indian Ocean. These languages are originally related to the West African languages. The studies of SVCs in Caribbean creoles include Bendix (1972), Déchaine & Lefebvre (1986) and Sebba (1987). They contain rich linguistic data from Sranan; Byrne (1986, 1987), Bickerton (1989) and Bickerton & Iatridou (1989). The following are examples from Sranan:

(23) *Lon go teki a buku tyari go gi a leriman.*

ran go take the book carry go give the teacher

"Run and fetch the book and take it to the teacher."

(24) *De fon owrukuku kiri.*

they beat owl kill

"They beat owl to death. "

[Sebba(1987,p.40)]

In Aucaans:

(25) *A kai a dataa kon luku a pikin.*

he call the doctor come look the child

"He called the doctor to come to look at the child."

[Bickerton & Iatridou (1989)]

In Saramaccan:

(26) *A tei goni suti di pingo.*

he take gun shoot the pig

"He shot the pig with a gun."

(27) *Tei a tei goni suti di pingo.*

take he take gun shoot the pig

"He shot the pig with a gu."

[Byrne (1987,pp. 166-167)]

In Seselwa:

(28) *Mon ti pran balye koko ti bat li.*

I Ten. take broom coconut Ten. hit him

"I hit him with a coconut broom."

(29) *Zot ti amas li ti al amenen lopital.*

they Ten.gather him Ten. go bring hospital

"They took him to hospital."

[Bickerton & Iatridou(1990)]

2.1.4. Dravidian Languages

One of the salient features of the Dravidian languages is that the *serial verb construction* exists or has existed in all the languages of this language group. Moreover, the possible syntactic types of SVCs are similar in all these languages.

Dravidian is a language group of non-Indo-European languages spoken in Southern India and Southern Ceylon. It is generally divided into four language sub-groups: South Dravidian, South-central Dravidian, Central Dravidian and North Dravidian. The SVC has been reported in all these sub-groups.

South Dravidian includes Tamil, Kota, Tada, Kannada and Kodagu. Among these languages, evidence has been found to confirm the presence of SVC. However, in this language group, while languages such as Old Tamil shows both clausal or compound SVCs, the modern languages in this group only display compound form, mainly in form of *ki-echo compound*. The *ki-echo compound* is a structure in which a noun or a verb is duplicated to form a distributive compound. Consider the following examples from modern Tamil:

- (30)a. Matu Varum.
 oxen-Nom. come-Ten.-3sn
 "Some oxen will come."
- b. Matu-Kitu varum.
 ox-ki-echo-Nom. come-fut-3rn
 "Some oxen or stuff like it will come."

Steever (1988) explains that when *ki-echo* formation applies to the noun *matu*(ox) in (30), it creates the echo compound noun *matu-kitu* (oxen and the like) in (30b). In the resulting compound noun *kitu*

partially reduplicates the form of the echoed word *matu* (ox). The first syllable of the echoed word is replaced in the echo word by a standard syllable *ki*, which is short or long depending on whether the initial syllable of the echoed word is short or long (Steever, 1988, p.48). The verb echo-compound is formed in a similar way as will be shown later. First let us observe some examples from Old Tamil:

(31)a. *kan-an-en vary-v-al.*

see-Ten.Asp.-1s come-Ten.-1s

"I will see and come."

b. *Tank-in-ir cen-mo.*

stay-Ten.-2p go-Asp.-(2p)

"Stay, (then) go."

[*Purananuru* 23.17; 233.7; Steever (1988, p.45)]

The SVC in (31) has disappeared from the language by the early modern period. In modern Tamil, instead of such SVC, the *ki-echo Formation* is used to create compound verbs:

(32) Contrast:

a. *Avan-ukkup paci-kkir-atu.*

he-Dat. hunger-Ten.3sn

"He is hungry."

b. *Avan-ukkup paci-kkir-atu kici-kkir-atu.*

he-Dat. hunger-Ten.-3sn *ki*-Ten.-3sn

"He is always hungry, or some damn thing!"

[Steever (1988, p.49)]

Sentence (32b) is analyzed with containing an SVC in the sense that the matrix verb and its reduplicated form (echo-compound) are not connected by any conjunction. SVCs in Toda also presents a form of the *ki-echo* compound:

(33) *Al θid-xid-fi-c-a?*

there eat-*ki*- Adv.-Ten.-2s-Int.

"Did you eat there or do any such (polluting) thing?"

[Steever (1988, p.54)]

Structurally, these languages are of most interest for their varieties of forms, which include balance, iterative and echo compound verbs and co-ordinate verb constructions.(Steever,1988). Here are some examples:

(34) *Cus-t-amu cus-t-amu.* ---- Modern Telugu

see-Ten.-1s see-t-1s

"I shall continue seeing for sometime."

[Steever (1988, p.63)]

(35) Contrast

a. *Va-t-ider e sur-t-ider.* ----Kovi

come-Ten.-2p and see-Ten.-2p

"You came and saw."

b. *Va-t-ti sur-ider.*

come-Ten.-Tpe. see-Ten.-2p

"You came and saw."

[Steever (1988, p.73)]

(36) *Baral-in en-mote-d caruk-mote-d.* --- Pariji

bullock-Acc. speak-Ten.-3sm drive-Ten.-3sm

"He drove the bullocks (by) speaking to them."

[Steever(1988, p.89)]

2.1.5. SVCs and English

The sentences shown above provide almost all the possible types of SVCs in modern languages. The survey shows that SVCs exists extensively in several major language families or groups in Asia, Africa and America. The languages having SVCs include uninflected language such as

Chinese, or inflectional languages such as the Dravidian languages. The distribution of SVCs indicates that the presence of SVC is not related to language type. This may raise a question: Does the SVC exist in an Indo-European language like English? Can English sentences (38), (39) and (40) be analyzed as SVCs? In discussing the properties and definition of SVC in 2.4., this question will be answered:

(37) John painted the house red.

(38) John went to bed hungry.

(39) John made Bill paint the house.

2.2. Classifications of Serial Verb Construction

Serial Verb Constructions are not only popular in many languages and language groups, they themselves are syntactically and semantically varied as well. Theoretically, the notion *serial verb construction*, as pointed out in Sebba(1987), is not used consistently in the literature, although the constructions that the authors refer to share common properties. The deficiency of consistency can be partially attributed to the lack of a definition, partially to the fact that one author generally can only study the SVCs in a few languages or language groups, thus failing to recognize the variety of the phenomena. Furthermore, some authors assume that the rules of SVCs that they discovered in one language, which may have been supported by strong evidence, are potentially applicable to other languages. It sometimes over-generalizes and simplifies the phenomena under discussion. Actually, as will be shown in following chapters, although the evidence from SVCs provides strong support for the linguistic universals assumed by the present linguistic theories, the phenomena themselves are by no means syntactically and semantically as simple as some works assumed.

In 2.1., the varieties of SVCs have been presented. However, the proper picture is far from being clear and is not sufficient for a theoretical investigation. In this section, I will classify the phenomena shown in the last section from different angles and with different criteria, so that the phenomena become better organized.

2.2.1. Classification of SVC Structures

Most studies of SVC, except Steever (1988), have assumed that all the SVCs in languages have only one possible structure. For example, Bickerton & Iatridou (1990) proposes an IP structure. Baker (1989) proposes a V+V' structure, etc.. However, if we expand the investigation into all the languages which have reported SVCs, we find that at least three structures are possible, and each of them can be analyzed into several subtypes: There are clausal structures, compound structures and phrasal structures.

2.2.1.1. SVC with Clausal Structure

SVCs with clausal structure are common to many languages. In Chinese, there is evidence that the sentences (40) and (41) have structure (42):

(40) Zhangsan *kai* che *song* xing.

Zhangsan drive car deliver letter

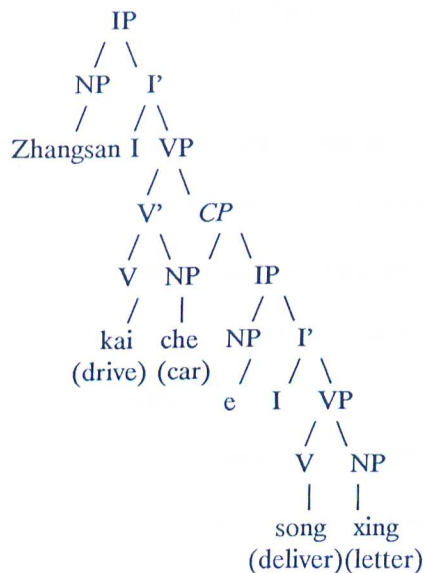
"Zhangsan drives a car to deliver letters."

(41) Zhangsan *yong* kuaizi *chi* fan.

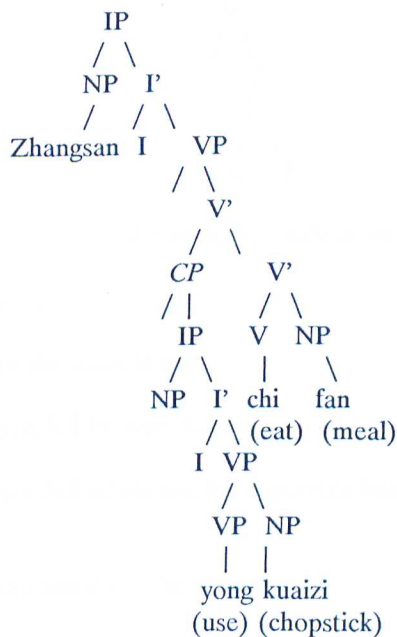
Zhangsan use chopstick eat meal

"Zhangsan uses chopsticks to eat."

(42)a.



b.



Evidence and arguments to support the structure (42) is given in Chapter 4. Bickerton & Iatridou

(1989) argues convincingly that the SVC in the Aucaans sentence (43) is a clause:

(43) A pikin gi mi a sopu wasi en/misefi.

the child give me the soap wash him/myself

"The child gave me the soap to wash him/myself with.

This type of SVC is also popular in other languages:

(44) In Seselwa

Zot ti anvoy mwai al apel doker vin get tifi

they Ten.send me go call doctor come look girl

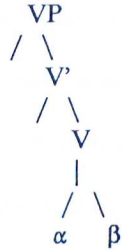
"They send me to call a doctor to come and look at the girl."

[Bickerton & Iatridou (1989)]

2.2.1.2. SVCs as Verb Compounds

Another type of SVC is the compound verb: Two verbs or one verb and one verb-like combine together to form a new word. This type of SVC is attested in Chinese and Edo:

(45)



α = verb, β = verb or verb-like

(46) In Chinese:

Zhangsan *die-duan* le tui.

Zhangsan fall-broken Asp. leg

"Zhangsan fell down and his legs were broken."

(47) Zhangsan *kan-lei* le dianshi.

Zhangsan watch-tired Asp.TV

"Zhangsan watched the TV (too much), so he was tired."

(48) In Edo:

Lagos *tye-re* ozo.

he called-come Ozo

"He summoned Ozo."

This example is from Agheyisi (1987). Although it only gives (48) as example of the sentence of which the predicate consists of a compound verb, it also lists other compound verbs as follows:

(49)a. *mu-hee* carry-begin "start; begin"

b. *fyɑ-τ* cut-eat "bite"

2.2.1.3. SVCs with Phrasal Structure

In addition to clausal structure and compounding structure, another possible structure for SVCs is phrasal structure. Much previous literature, such as Schachter (1974), Williams (1976), Jansen et al (1978) and Baker (1989) have proposed phrasal structures for *all* SVCs. The varieties of structures of SVCs surveyed in the previous section show that this is probably not correct. In Chapter 4, we give evidence show that their claim is not correct.

However, we do find that there is at least one type of SVC which can only be analyzed as having phrasal structure. Observe the Koda sentences (50). These two sentences have exactly the same interpretation. In (50a), two clauses are coordinated by a conjunction *e* (and); in (50b), the conjunction disappears, but two parts of the sentence are still in a coordinate relation:

(50)a. *Va-t-ider* e *sur-t-ider*.

come-Ten.-2p and see-Ten.-2p

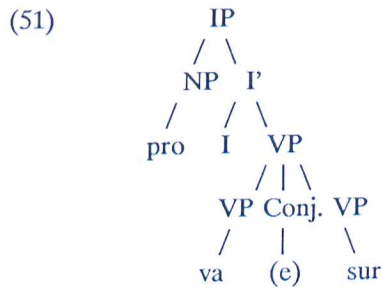
"You came and saw."

b. *Va-t-i* *sur-ider*.

come-Ten.-Tpe. see-Ten.-2p

"You came and saw."

In (50b), the first verb only has a truncated personal ending. If here there are two coordinate clauses, we do not expect V_1 (*Va-t-i*) to have a truncated ending. This would follow that both verbs must share one INFL, thus being in one clause rather than in two coordinate clauses. If the approach to (50) is correct, (50b) should have a D-structure (51):



From the discussion above, it appears that SVCs can have three possible inner structures: clause, phrase and compound. Furthermore, we are going to see in the following sections that the clausal structure and the compounding structure should be analyzed into several sub-classes.

2.2.2. Finite vs. Non-finite Clause

Bickerton and Iatridou (1989) divides the structures of all the SVC into two classes: finite clause and non-finite clause. The following are the examples:

(52) In Seselwa ---- Finite clause:

Nui ti sorti proi ti al laps.
 we Ten. leave Ten. go fishing
 "We set out to fish."

(53) In Saramaccan ----Non-finite clause:

Mi tei faka koti beee.
 I take knife cut bread
 "I cut bread with a knife."

In Chapter 4., we will see that the distinction between the finite clause and the non-finite clause plays a role in determining the structures of some SVCs in Chinese.

2.2.3. VV Compounds and VA Compounds

In Chinese, if an SVC is a verb compound, it can consist of two verbs, or a verb and an adjective which shares many important properties with the verb (we will return to this topic in Chapter 3):

(54) In Chinese ---VV compound

Zhangsan *song-zou* le Lisi.

Zhangsan send-go Asp.Lisi

"Zhangsan sent Lisi off."

(55) In Chinese ---VA compound

Zhangsan *qi-lei* le ma.

Zhangsan ride-tired Asp. horse

"Zhangsan rode the horse (too much) so he was tired."

"Zhangsan rode the horse (too much) so the horse was tired. "

(56) Zhangsan *die-duan* le tui.

Zhangsan fall-broken Asp. leg

"Zhangsan fell down and broke his leg."

From examples (54)-(56), we have found that the VA structure is syntactically more complex than that of the VV structure. In VV structures, the first V must be transitive, while in VA structure, it may either transitive (as in (55)) or intransitive(as in (56)); in VV structures, the argument of the second V must be the internal argument of the VP ((54)),--- the person who has gone can only be *Lisi*, not *Zhangsan* in (55). In VA structures, the second element can be linked either to the internal or external argument of the VP (as shown in (56)). Consequently only VA structures can be ambiguous. One aim of the work is to explain these differences between VV structure and VA structures.

To sum up, SVCs can have the following possible structures:

(57) Classification of SVCs

Clause: Finite clause

Non-Finite Clause

Phrase

Compound:

V + V

2.2.4. Transitive Verb vs. Intransitive Verb

As regards transitivity of verbs, verbs that form a *serial verb construction* can be either transitive or intransitive:

(58) In Yoruba

Bola *se* *eran* *ta*.

Bola cook meat sell

"Bola cooked some meat and sold it."

[Lord(1974),; Baker (1989)]

(59) In Chinese

Zhangsan changchang *kao* *ji* *chi*.

Zhangsan often roast chicken eat

"Zhangsan often roasts chicken to eat."

It is not unusual to find an SVC consisting of a transitive verb and an intransitive verb as in (60) and (61):

(60) SVC with one intransitive verb ---In Yoruba

Olu *ti* *omo* *naa* *subu*.

Olu push child the fall

"Olu pushed the child down."

[Bamgboṣe (1974); Baker (1989)]

(61) In Sranan

Kofi *tyari* *a* *Amba* *gwe*.

Kofi throw the book fall

"Kofi threw the book down."

[Baker (1989)]

An SVC can consist of two intransitive verbs:

(62) In Yoruba

Titi *rin lo* ni, ko *sare lo*.

Titi walk go is not run go

"Titi left walking, not running."

[Baker (1989)]

(63) In Sranan

A *watra dropu fadon*.

the water drop fall

"The water drips down."

[Sebba (1987, p.71)]

A most interesting case is the VA structure of the Chinese SVC. In this structure, the verb can be either transitive or intransitive. Moreover, even if it is intransitive, the whole structure will still be transitive and thus take an object:

(64) Zhangsan *zou-lei le* tui.

Zhangsan walk-tired Asp. leg

"Zhangsan walked (too much) so he was tired."

(65) Zhangsan *die-shang le* yao.

Zhangsan fall-wounded Asp. waist

"Zhangsan fell down and hurt his waist."

However, what is the mechanism that makes the combination of two intransitive elements transitive? It is proposed that the mechanism involves feature percolation and argument-linking in the sense of Lieber (1983). We will return to the issue in Chapter 3.

2.2.5. Fixed vs. Free Combinations

Considering structural stability, *serial verb constructions* can be classified into two types: the fixed combination and the free combination. Here *fixed* means

1. in clausal or phrasal structures, certain verbs appear again and again in the same position, or
2. in a compounding structure, certain VV or VA combinations are *non-productive*.

In other words, we cannot replace one of the elements to form a new compound freely.

If an SVC is not in the cases 1. or 2., it is *free*. Some Sranan examples from Sebba (1987) will be presented to illustrate the classification.

In Sranan either the V_1 or the V_2 may be *fixed*:

(66) *Fixed V_2*

You dyompo *tanapu* leki wan bubrompki.

you jump stand like one bushflower

"You spring up like a windflower."

Tanapu (stand up) in Sranan always follows a verb of motion or change of position, to indicate that the object which changes position ends up in a vertical plane. Other possible combinations include *opo...tanapu* (get up ...stand, "stand up"), *dyompo tanapu* (jump...stand up, "stand up") (Sebba 1987, p.42).

(67) Den fon owrukuru *kiri*.

they beat owl kill

"They beat owl to death."

This is a typical example of the fixed combination, in which the V_2 *kiri* (kill) does not have its own object, and follows V_1 which yields to an action which may be used as a means of killing or extinguishing. Other combinations in this language as *sutu kiri* (shoot...kill, "shoot and kill"), *anga kiri* (hang ... kill, "hang and kill"), *bro a kangera kiri* (blow the candle kill, "blow out the candle"), (Sebba, 1987, p.43).

V_1 in Sranan SVCs also can be *fixed*:

(68) Fixed V₁

Gorogoro sa *bari* singi.

throat Ten./Asp. shout sing

"Throats will sing out loud."

In this sentence, the intransitive verb *bari* may be followed by a V which refers to a vocal activity, such as *krey* (cry), *lafu* (laugh), *kari* (call) to add information that the action of V₂ is particularly loud or intense (Sebba, 1987, p.56).

(69) No *teki* baskita tyari watra.

Neg. take basket carry water

"Don't carry water with a basket."

In (69), both verbs have their own objects respectively, *teki* (take) + NP serves as the instrument of the action of V₂. Other examples of this type include *teki... go* (take...go, "take...to..."), *teki...kosi* (take...curse, "curse...by..."). *Teki* can also be used in other structures as a fixed verb:

(70) A *teki* a fish seri.

S/he take the fish sell

"S/he sold the fish."

In (70), *teki* (take) has an object, but the second verb does not have overt complement. To explain (70), Sebba states that the semantic contribution of *teki* is negligible, and the verb in this position seems to serve mainly the syntactic purpose of moving the direct object of V₂ further to the left (Sebba, 1987, pp.59-60).

The distinction between the fixed and free combination is even more crucial to compounding structures. In Chinese, if a VV verb compound is productive, the first verb must not be intransitive, and the second verb must not be transitive:

(71) Zhangsan *ma-zou* le Lisi.

Zhangsan scold-go Asp. Lisi

"Zhangsan scolded Lisi so that he left."

In contrast, the following combinations are not grammatical:

(72) $V_{trans.} + V_{trans.}$

a.* *gan-ma* : chase- scold

b.* *da-gong*: fight-attack

(73) $V_{intrans.} + V_{intrans.}$

a.* *pao-duo*: run-hide

b.* *zuo-shui*:sit-sleep

(74) $V_{intrans.} + V_{trans.}$

a.* *zuo-kan*: sit - watch

b.* *zhan-mai*: stand-buy

However, with the non-productive combinations, $V_{trans.} + V_{trans.}$, $V_{intrans.} + V_{intrans.}$ and $V_{intrans.}$

+ $V_{trans.}$ are possible:

(75) $V_{intrans.} + V_{intrans.}$

Tamen jingchang *lai-wang*.

they often come-go

"They often visit each other." or

"They often get in touch to each other."

(76) $V_{trans.} + trans.$

Tamen *zhan-bai* le diren.

they fight-defeat Asp. enemy

"They defeated the enemy."

(77) $V_{intrans.} + V_{trans.}$

Tamen *zuo-shi* le liangji.

they sit-lose Asp. golden-opportunity

"They lost the golden opportunity."

Fixed combination compounds (non-productive verb compound) and the free combination

compounds (productive verb compound) have different rules of formation, constraints, feature percolation and argument linking. Chapter 3 discusses the grammar of productive compounds.

2.2.6. Some Typical SVCs

Although it is not yet clear that how many verbs are frequently used to form SVCs in languages, we do have find that certain verbs are widely used in different languages in forming SVCs. Here two facts are worth noting: the frequency of appearance of these verbs is much higher than that of other verbs in SVCs, and the high frequency of use of such verbs is unexceptionably found in most languages which can have SVCs.

2.2.6.1. The Take Constructions

As Sebba (1987) points out, the *take* construction is one of the commonest type of SVCs. *Take* can be used as a V_1 or V_2 denoting instrument. Sometimes, this verb lacks semantic specificity in a given construction:

(78) In Yoruba

Mo *fí* ada ge *iqí*.

I take machete cut tree

"I cut the tree with a machete."

[Stahlke (1970); (Sebba (1987, p.168)]

(79) In Ijo

Eri ogidi *aki-ni* indi *pei-mi*.

he machete take-L. fish cut-up-SP.

"He cut up a fish with a machete."

[Sebba (1987, p.169)]

(80) Eri, *edein-bi* *aku* bo-mi.

he knife-the take come-SP.

"He brought the knife."

[Williamson (1963); Sebba (1987, p.169)]

Williamson notes an interesting fact about *aku* in (80): When *aki* (take) immediately precedes *bo* (come), its final vowel becomes unrounded. Such a change takes place in a few other common set phrases. Therefore he assumes that *aku-bo* (take-come) is a compound.

(81) In Saramaccan

Hen *tei* di faka koti di bee.

he take the knife cut the bread

"He took the knife (to) cut the bread, but didn't cut it."⁵

(82) In Chinese

Zhangsan *na* bi xie zi.

Zhangsan take pen write character

"Zhangsan took a pen to write."

Bennett (1981) argues that in Chinese the *ba* (and its variant *jiang*) structure is parallel to the *take* construction in the sense that historically *ba* was a verb meaning "take, hold use", for example:

(83) Wo *ba* juzi bo le pi.

I BA orange peel Asp. skin

"I peeled the orange."

[Li & Thompson (1981, p.471)]

We will argue in later sections that this classification is not correct, even though in Old Chinese *ba* or *jiang* were both verbs.

2.2.6.2. The Go Constructions

Another common construction is the *go* construction. We include not only *go*, but also *come* and other motion verbs in this construction. One of the salient features of this construction is that these verbs work almost in the same way in different languages. They always occur after V_1 to distinguish the motion of V_1 towards or away from the speaker:

(84) In Akan

Miguaree *mebaa* mpono.

I-swim-Ten. I-come-Ten. shore

"I swam to the shore."

[Christaller (1875, p.131); Sebba (1987,P.184)]

(85) In Yoruba

Olu gbe aga *wa*.

Olu take chair come

"Olu brought a chair."

[Sebba (1987, p.186)]

(86) In Ijo --- three verb combination

Eri bani *mu* weni-mi.

he run go walk-Sp.

"He went running and walked."⁶

[Williamson (1963, p.153 fn.); Sebba (1987, p.187)]

(87) In Saramaccan

Di womi subi *go* a liba.

the man go up go LOC river

"The man went up to the river."

(88) In Chinese---contrast

a. Zhangsan na *lai* le diannao.

Zhangsan take come Asp. computer

"Zhangsan brought the computer."

b. Zhangsan na *zou* le diannao.

Zhangsan take go Asp. computer

"Zhangsan took the computer away."

The two examples above show that *lai* (come) and *zou* (go), like their equivalents in other languages, indicate the direction of the motion done by the first verb.

2.2.6.3. Double Go Constructions

As reported by Sebba (1987), *double - go* construction exists in some languages. The form of it is [go PP go VP]. In this construction, the first *go* is usually interpreted as a motion verb, followed by a locative directional complement; the second *go* is the so called *purpose go* (Sebba, 1987, p.192):

(89) In Sranan

Mi *go* na wowoyo *go* bay krosi.

I *go* Loc. market *go* buy clothes

"I went to the market to buy cloth."

[Sebba (1987, p.194)]

In Twi the exact counterpart has been found:

(90) *Mek Niere k t ntama.*

I-go-Ten. Accra *go* buy cloth

"I went to Accra and bought cloth."

[Sebba (1987, p.194)]

Sebba (1987) proposes that such constructions also exist in Chinese:

(91) Tamen dao Beijing *qu* nian shu *qu* le.

they to Beijing *go* read book *go* Asp.

"They went to Beijing to study."

[Sebba (1987, p.196)]

However, there is an important difference between the case of Chinese and that of Sranan or Twi:

In Chinese, either the first or the second *qu* (*go*) can be dropped:

(92) Tamen dao Beijing *qu* nian shu le.

they to Beijing *go* read book Asp.

"They went to Beijing to study."

(93) Tamen dao Beijing nian shu *qu* le.

they to Beijing read book go Asp.

"They went to Beijing to study."

Furthermore, stylistically, (92) is standard Chinese, while (91) and (93) are a little colloquial. It seems that semantically *qu* (go) contributes little to the sentence that it is in. As in the single *go* construction, the second *qu* (go) only indicates the direction of the motion performed by the first *qu* (go). Since the meaning of first *qu* (go) has contained an interpretation "leaving away", the second one consequently will be optional. This raises another question: What is the function of *qu* (go) in (93)? In this sentence, there is no verb denoting a motion. The fact is that the PP *dao Beijing*, which means *to Beijing* or *towards Beijing*, also implies a motion. Therefore the function of *qu* (go) will not change. Consider the following sentence, if we replace *qu* (go) with *lai* (come), the meaning of the sentence changes as we expect:

(94) Tamen dao Beijing nian shu *lai* le.

they to Beijing read book come Asp.

"They have come to Beijing to study."

For (93), the speaker must not be in Beijing, while for (94), the speaker must be in Beijing. The change of meaning is triggered by replacing *qu* (go) with *lai* (come). Therefore in all these sentence, the function of *qu* (go) as V₂ remains the same. This is different from the function of second *go* in Sranan or Twi, but as same as that in the single *go* construction.

2.2.6.4. Give Constructions

Another popular construction is the *give* construction. This construction is very interesting for the verb *give* is a three-place verb, which takes two objects in a sentence. Evidence has shown that such constructions do not exist in Chinese. Sebba (1987) has found its existence in other languages:

(95) In Sranan

Mi tyari en *gi* Kofi.

I carry it give Kofi

"I brought it to Kofi (as a gift)." or "I carried it for Kofi."

[Sebba (1987, p.174)]

The ambiguity of the sentence comes from the different interpretations of the verb *gi* (give): it may be interpreted as *dative*, or *benefactive*. As pointed out by Sebba (1987), such ambiguity is not unusual in some languages:

(96) In Akan

Ogyaw ne sika *māā* me.

he-take knife the give-Ten. me

"He left me his money."

[Christaller (1895, p.118); Sebba (1987, p.174)]

(97) In Yoruba

O fi owo naa *fun* me.

He put money the give me

"He gave me the money."

[Sebba (1987, P.176)]

Sebba (1987) also considers that Chinese has an extensive range of such construction using *give* to mark either an indirect object or a benefactive. The following are the examples:

(98) Ta jie yi kuai qian *gei* wo.

s/he borrow one CL. money give me

"S/he lend me a dollar."

(99) Ta *gei* wo xie le xin.

s/he give me write Asp. letter

"He wrote letter to me."

[Sebba (1987, p.180)]

However, sentences (98) and (99) are not well accounted for in Sebba (1987). *Gei* in Chinese belongs

to two categories and has two different functions. Let me label the two different *gei*s as *gei*₁ and *gei*₂ respectively. *Gei*₁ is a verb which takes two objects, meaning "give":

(100) Zhangsan *gei* le Lisi yi ben shu.

Zhangsan give Asp. Lisi one CL. book

"Zhangsan gave Lisi one book."

This *gei* is categorially and functionally very similar to the English word *give*. *Gei*₂, on the other hand, is a preposition, meaning "to, for":

(101) Zhangsan mai le yi ben shu *gei* Lisi.

Zhangsan buy Asp. one CL. book for Lisi

"Zhangsan bought a book for Lisi."

These two *gei*s are not difficult to distinguish: In Chinese, there is an important grammatical rule: the object of a verb can be moved, while the object of a preposition cannot. For example, from (100) we can form (102)a.,b. by virtue of movement:

(102)a. Yi ben shu, Zhangsan *gei* le Lisi.

one CL. book Zhangsan give Asp. Lisi

b. Lisi, Zhangsan *gei* le yi ben shu.

Lisi Zhangsan give Asp. one CL. book

"Zhangsan gave Lisi one book."

For (101), the object of *gei* must not be moved:

(103) *Lisi, Zhangsan mai le yi ben shu *gei*.

Lisi Zhangsan buy Asp. one book for

So *gei* *Lisi* in (101) is a prepositional phrase rather than a VP. We have further evidence to support the analysis: In Chinese, some prepositional phrases can appear before or after the verb that they modifying. Therefore we have a variant of (101):

(104) Zhangsan *gei* Lisi mai le yi ben shu.

Zhangsan for Lisi buy Asp. one CL. book

"Zhangsan bought a book for Lisi."

Now let us return to (98) and (99): in these two sentences, *gei* + NP is obviously prepositional phrase, functioning as an adverbial, because it can either be preverbal or postverbal, and the object of *gei*, no matter whether in preverbal position or postverbal position, cannot be moved:

(105)a. *Lisi, Zhangsan mai le yi ben shu *gei*.

Lisi Zhangsan buy Asp. one book for

b. *Lisi, Zhangsan *gei* mai le yi ben shu.

Lisi Zhangsan for buy Asp. one book

It is interesting that Sranan verb *gi* (give) can also be a preposition. However, Voorhoeve (1975), Sebba (1978) and Jansen et al (1978) have concluded that *gi* is a verb rather than a preposition. They provide strong evidence to support their conclusion: In Sranan, a prepositional phrase never appears in final position of the sentence, but in (95), it does; the object of *gi* can be moved left, while the object of prepositions cannot. Therefore while sentences like (95) are of SVCs, (98),(99) should not be analyzed as an SVC.

2.2.6.5. Comparative Constructions

Sebba (1987) classifies another type of SVC: the comparative construction. In Twi and Yoruba, the comparative construction is formed with the aid of a verb meaning "pass" or "surpass":

(106) In Twi

a. *Mese* wo ad w.

I-surpass you tilling

b. Med w *mese* wo.

I-till I-surpass you

"I outdo you in tilling the ground."

[Christaller (1930, p.440); Sebba (1987, P.204)]

(107) In Yoruba

Omo naa gbon *ju* asarun.

child the clever surpass tsetse fly

"The child is cleverer than the tsetse fly."

[Sebba (1987, p.205)]

(108) In Saramaccan

Data kei *moo* sostu.

doctor learn surpass sister

"Doctor has studied more than sister."

[Sebba (1987, p.206)]

These examples show that, in these languages, the comparative construction is formed by using a verb meaning *surpass* instead of an adjective plus a preposition like *than* in English. However, like the case of treating the *give* construction in Chinese, Sebba (1987) also considers the following sentences in Chinese, each of which contains a comparative construction, as embedded SVCs:

(109) Zhang *bi* ni xihuan juzi.

Zhang compare you like orange

"Zhang likes oranges more than you."

(110) Zhang *bi* ni gao.

Zhang compare you tall

"Zhang is taller than you."

[Sebba(1987, p.207)]

Although *bi* in Chinese can be a verb as in (111):

(111) Contrast:

a. Zhangsan changchang he Lisi *bi* tizhong.

Zhangsan often with Lisi compare body-weight

b. Tizhong, Zhangsan changchang he Lisi *bi*.

body-weight Zhangsan often with Lisi compare

"Zhangsan often compares his body-weight with Lisi."

In (111), *bi* is obviously a verb since its object is movable. However, in (109) and (110), the objects of *bi* can never be moved:

(112) *Ni, Zhang *bi* xihuan juzi.

you Zhang compare like orange

(113) *Ni, Zhang *bi* gao.

you Zhang compare tall

So the *bi* constructions in these two sentences must be prepositional phrases rather than SVCs.

The discussion of *bi* (compare) and *gei* (give) constructions reveals the fundamental distinction between a verb and a preposition in Chinese. It follows that in Chinese, a V+P construction should not be classified as one instance of SVCs. Along this line, I do not think sentences (11) and (12) are of SVCs, because the objects of *zai* (in), either in the preverbal or postverbal position, cannot be extracted:

(114) *Shanghai, wo zhu *zai*.

Shanghai, I live in

(115) *Shanghai, wo *zai* zhu.

Shanghai I in live

Considering the properties of SVCs which will be discussed in the following sections, we do not have any reasons to include V+P construction in the class of SVCs.

Although there are other constructions discussed in previous literature, those shown above are the ones that frequently appear in different languages. This division, however, is not an exact classification. This also concludes the discussion on classifications of SVCs. Since we have shown comparatively sufficient data of various languages, in the next section, we are going to investigate what

properties all these sentences have, and with what criterion and in what way can we say that a sentence contains a *serial verb construction*.

2.3. Properties of Serial Verb Construction

Some of the literature has noted that not all the linguists uses the term *serial verb construction* in the same sense (Sebba, 1987; Bickerton & Iatridou, 1989). Because up till now a formal definition of SVCs has not yet been worked out. The notion of *serial verb construction* is often used descriptively rather than theoretically. Consequently, the discussion of the phenomena is not always homogeneous. For example, Sebba(1987) includes the following sentences as an SVC:

(116) Kofi *opo* Amba, *tyari* en gwe.

Kofi lift Amba carry her away

"Kofi lifted Amba and carried her off."

In this sentence, a slight pause or "comma intonation" is possible after the object of the first verb (Sebba, 1987,p.111). Bickerton & Iatridou, on the contrary, exclude such sentence from their discussion. Another example is verb compounds. According to the most often noted properties of SVC, verb compounds should not be excluded from SVCs. However, only Agheyisi (1987) classified them as one type of SVC. In the following sub-sections, the properties of SVCs proposed in the previous literature will be discussed to see which properties are substantive and significant, and what criteria we need to judge whether a construction is an SVC.

2.3.1. Multiple Verbs

Sebba (1987) and Bickerton & Iatridou (1990) investigate the properties of SVCs. As proposed by Bickerton & Iatridou (1987), the first and most important property of an SVC is that the construction contains more than one verb but only one overt subject. This property seems to be non-controversial and obvious. However, there are some issues worth discussing.

The first issue is the notion of verb: On the one hand, Baker (1989) and Bickerton & Iatridou (1989), take for granted that here *verb* means the category specified [+V, -N], on the other hand, Li & Thompson (1973, 1974a) proposes that the construction formed by a verb and other

categories (preposition, for example) should be included into SVCs. They even give these categories a new term: *coverb*.

As regards this issue, it seems that the key to determining if a category should be treated as a verb depends on whether it behaves like a verb in the particular language. For example, adjectives in verb + adjective compounds in Chinese have been treated as verbs in all the previous works on this topic, because adjectives in Chinese behave like verbs, e.g. they can take an object, and can have aspect. Except the different rules of argument linking, a VA compound does not differ fundamentally from a VV compound. We will return to this issue in Chapter 3. However, the preposition in Chinese is another case: historically, it had the same origin as the verb. But in modern Chinese, its behavior differs from that of verbs. It cannot be used as a sole predicate, cannot have aspect, and its object cannot be moved.

It follows that in Chinese while it is necessary to include VA compounds as one type of SVC, we do not have reason to treat PP+V as a subclass of it.

Therefore, *verb* used here is in a broad sense: it should include other [+V] categories which behave like verbs in the construction.

2.3.2. Lexical Connection

In a *serial verb construction*, there are no overt markers of conjunction or subordination. This means that although the relationship between verbs, verbal phrases or clauses may either coordinate or subordinate, there are no function words to indicate such a relationship. For example, in English, two verbs or verbal phrases are usually coordinated by conjunction *and*, *or*, *as well as* etc., two clauses have to be related by a complementizer *that*, *what*, *when*, *where*, *why*, *how*, etc., and a non-finite clause must be indicated by *to* or *-ing*. In an SVC, the equivalents of the function words above never appear. This is why the phenomena under discussion seem to be *serial*: no functional words intervene. Two issues about this issue are worth discussing.

In many languages, there is another device that functionally indicates a coordinating relationship between two phrases or clauses. Phonologically, it is a pause; in writing, it is a comma:

(117) In Chinese

Zhangsan *jie le shu, hui jia* go read

Zhangsan borrow Asp. book, go back home go read

"Zhangsan borrowed a book and went back home to read."

(118) In English

John *borrowed a book, picked up his bag* and went back home.

Each of the sentences contains a comma that relates two phrases. However, although these phrases are not related by any function *words*, no one will take them as SVCs. In these sentences the comma functions as both a marker of pause and a marker of conjunction. Otherwise the English sentence (118) would be analyzed as containing an SVC. Therefore, Bickerton & Iatridou (1989) point out that SVCs "are uttered under a single intonation contour, without any pause longer than that which normally occurs between two free morphemes" (Bickerton & Iatridou, 1989). This is why the following sentences from Sebba (1987) are not properly analyzed:

(119) In Sranan

Basya *dray a wipi, naki* en.

overseer turn the whip hit him

"The overseer flicks the whip and strikes him."

[Sebba (1987, p.61)]

(120) Kofi *opo Amba, tyari en gwe*.

Kofi lift Amba carry him/her go away

"Kofi lifted Amba up and carried her off."

[Sebba (1987, p.62)]

Sebba (1987) says:

"The use of the comma in this position seems to indicate the possibility of a pause. Such a pause is not obligatory but permissible in general between two 'free' verbs in combination

where each verb has an associated object or prepositional phrase of its own.... The rule about 'comma intonation' can be expressed most generally as follows: if the sentence contains two verbs, each of which has a complement associated with itself alone, then a 'comma intonation' may occur immediately before V_2 . This means that sentence where V_2 share an object with V_1 which appears after V_1 **only** may not have 'comma intonation.'

[Sebba (1987, p.62)]

This is an observation of the phenomenon in Sranan. However, if we include sentences (119), (120) in SVCs, why don't we think that sentences like (118) also belong to the same class? Sebba (1987) does not raise such a question. Furthermore, Sebba (1987) admits that (121a), which does not contain a "comma intonation", describes only one action, sentence (121b) which contains a construction with a comma, may be conceived of as separate actions:

(121) Contrast:

a. *Kofi naki Amba (*,) Kiri.*

Kofi hit Amba Kiri

"Kofi struck Amba dead."

b. *Kofi naki Amba(,) kiri en.*

Kofi hit Amba kill him

"Kofi hit and killed Amba."

[Sebba (1987, p.62)]

Semantically and syntactically, these two sentences are different. In order to keep consistency and to use the same criterion to treat different languages, we treat comma as one of the markers of conjunction, thus excluding sentences like (119), (120) from the category of SVCs. Moreover, since punctuation markers are listed as items in the lexicon, we can use the term *lexical connection* to denote the relationship among some constituents that are related by a lexical item. Considering the fact that verbs in SVCs are in the coordinate or subordinate relationship, and any overt markers of such a relationship may not appear, it is concluded that a language that can have SVCs must have

the following properties:

(122) Condition on the Existence of SVC:

A language can have SVCs if:

- a. it lacks some of the markers denoting coordinate or subordinate relationship which are common to other languages, or
- b. it has such markers, but the application of the markers is not obligatory everywhere.

Empirically, these two conditions are true. In the following sub-sections, some examples, especially those that do not contain SVCs, will be presented to verify (122). First let us take Chinese examples: In Chinese, there are no overt markers for a clause such as complementizers *what*, *which*, etc. in English, nor does it have marker for non-finite clauses as *to* in English:

(123) Zhangsan xihuan *Lisi xie de xiaoshuo*.

Zhangsan like Lisi write DE novel

"Zhangsan likes the novels written by Lisi."

(124) Zhangsan renwei *Lisi zuotian que le*.

Zhangsan consider Lisi yesterday go Asp.

"Zhangsan thought that Lisi went there yesterday."

These sentences obviously contain embedded clauses. In (123), it is a relative clause modifying the head *xiaoshuo* (novel); in (124), it is an object clause. There are no markers in the places where complementizers are expected in English. So is the case for the sentence containing an SVC:

(125) Zhangsan yong *dao qie rou*.

Zhangsan use knife cut meat

"Zhangsan used a knife to cut the meat."

Evidence will be given in Chapter 4. to show *qie rou* (cut meat) in (125) is a clause. This clause is also not connected to the matrix clause by any marker. However, in syntax, the coordinate phrases or clauses must be overtly marked by a conjunctive marker (including comma):

(126) Contrast:

- a. Zhangsan qu xuexiao jiaoshu le, mei you lai wo jia.
Zhangsan go school teach Asp. not come my home
"Zhangsan went to school to teach. He did not come to my home."
- b. *Zhangsan qu xuexiao jiaoshu le mei you lai wo jia.
Zhangsan go school teach Asp. not come my home
"Zhangsan go to school to teach. He did not come to my home."

In (126), if the conjunctive maker "comma" does not appear, the sentence will be ungrammatical. This property determines the following constraints of SVC formation in Chinese:

(127) Constraint of Formation of SVC in Chinese:

$*[\alpha [\beta \dots V \dots][\gamma \dots V \dots]]$

in which α is not X^0 , and β and γ are in a coordinate relationship.

Other languages which have SVCs also observe Condition (122):

(128) Sranan

- Kofi taygi Amba taki a ben de na a wowoyo.
Kofi tell Amba say he Ten./Asp.be Loc.the market
"Kofi told Amba he was at the market."

[Sebba (1987, p.5)]

In this sentence, the object clause after verb *taki* (say) is not introduced by an overt complementizer.

The phenomenon in Saramaccan is a little complicated. As pointed in Byrne(1987), in Saramaccan, there are some so called "complementizer-like forms":

2.3.2.1. Complementizer-Like Forms in Saramaccan

1. **Fu** and its reduced form **u**

Byrne (1987) claims *fu* is the equivalent to English word *for*. It can be used as preposition introducing locative, possessive or Secondary Theme role, or quasi-modal, as well as complementizer-like form. The last case is shown in (129):

(129) A lobi (*fu*) haika di ladio.

he love for hear the radio

"He loves to listen to the radio."

(130) A ke *fu* e bi-wooko a foto.

he want for Ten.-work Loc. Paramaribo

"He wanted to work in Paramaribo."

[Byrne (1987, pp.123-124)]

However, Byrne (1987) argues that this *fu* is the main verb within a finite S introduced by a COMP node and subcategorizes for a finite S' complement, and in fact, quasi-modal *fu* and complementizer-like *fu* are most probably one and same formative (Byrne, 1987, p.124). Therefore the existence of *fu* cannot affect the formation of SVCs in this languages.

2. Taa

Another complementizer-like form is *taa* (say, that), which is a reduced version of *taki* (say) and the equivalent of *taki* in Sranan:

(131) contrast

a. A *taa* di mujee bi-go a di keiki.

he say the women Ten.-go Loc. the church

"He said the women had gone to the church."

b. A *taki taa* di mujee bi-go a di keiki.

he say say the women Ten.-go Loc. the church

"He said that the women had gone to the church."

This form also does not affect the formation of SVCs in this language for its multi-functional property and limited use: it can only be used in "say - sentential complement" constructions. For details, see Byrne(1987, p.146-158).

2.3.3. Tense or Aspect Markedness

Another salient property of SVCs concerns the tense-marker: in a *serial verb construction*,

either only one verb is tensed or marked with aspect, or all verbs carry the same tense or aspect. If there is only one verb tensed or marked with aspect, in most case, that verb is V_1 . It is not accidental that for some languages that can have SVCs, an overt tense or aspect marker is not an obligatory element:

(132) Contrast ---Chinese

a. Zhangsan qi *zhe* ma shang shan.

Zhangsan ride Asp. horse climb mountain

"Zhangsan was riding a horse to climb the mountain."

b. Zhangsan qi ma shang shan.

Zhangsan ride horse climb mountain

"Zhangsan rode a horse to climb the mountain."

(133) In Sranan

Den fon owrukuku kiri.

they beat owl kill

"They beat owl to death."

[Sebba (1987, p.430)]

(134) In Yoruba

Olu gbe aga wa.

Olu take chair come

"Olu brought a chair."

[Sebba (1987,p.186)]

(135) In Saramaccan

Di womi subi go a liba.

the man go up go Loc. river

"The man went up to the river."

[Glock (1972,p.30); Sebba (1987, p.190)]

Chinese does not have tense, but it has aspect. However, the aspect marker is not the obligatory element ---- it appears only if it is semantically necessary. This property can be shown in (132). We have not found any tense or aspect markers in Sranan. Saramaccan does have tense and modal, but their presence is not obligatory everywhere. Yoruba also has aspect markers, but they are not obligatory elements.

If an SVC is tensed or marked with aspect, the attachment of the tense marker or aspect marker always follows the observation mentioned above: either only one verb is marked, or all the verbs have the same marker:

(136) In Chinese

Zhangsan yong dao qie le rou.

Zhangsan use knife cut Asp. meat

"Zhangsan used a knife to cut the meat."

(137) In Saramaccan

Hen *a* taki da hen taa.

s/he Ten./Asp. say give him say

"Then she said to him."

[Sebba (1987,p.178)]

(138) In Akan

Kofi tow bo no *b* Amma

Kofi throw stone the hit-Ten. Amma

"Kofi throw the stone and it hit Amma."

(139) In Pengo

Biba injo o-*t*-i sangiri u-*t*-ar ti-*c*-ar.

marriage house-Loc. take-Ten.-adnp provisions drink-Ten.-3pm eat-Ten.-3pm

"They consumed the provisions brought to the marriage house."

[Steever (1988, p.77)]

Observe the sentences above. In (136) - (138), each of the sentences has only one verb tensed or marked with aspect; in (139), all the three tense markers express past tense. We have not found cases where verbs in a SVC are tensed differently.

Bickerton & Iatridou (1990) claim that in an SVC, if only one verb is tensed, this verb must be V_1 rather than V_2 , which means that it is always the first verb in a SVC that determines the tense or aspect of the construction, thus the first verb must be the matrix verb.

However, at least in Chinese, in an SVC, *either* of the verbs can be marked with aspect:

(140) Contrast:

a. Zhangsan yong *le* dao qie rou.

Zhangsan use Asp. knife cut meat

"Zhangsan used a knife to cut the meat."

b. Zhangsan yong dao qie *le* rou.

Zhangsan use knife cut Asp. meat

"Using knife, Zhangsan cut the meat."

Semantically, the difference between (140)a. and b. lies on where the main message is that the speaker wants to express. For (140a), the speaker wants to emphasize that Zhangsan used a knife, not any other instrument to cut the meat, while in (140b), what the speaker wants to emphasize is that Zhangsan used a knife to cut the meat, not other things. In other word, (140a) is discussing an action of using an instrument, while (140b) is talking about the action of cutting meat. In the two verb case, if there is one aspect marker, the marker is usually attached to the matrix verb.

Therefore, in Chinese generally the aspect position in an SVC indicates where the matrix verb is. It follows that (140a) and (140b) must have different structures. There are a few exceptions. We will return to this issue in Chapter 4.

Could both verbs in an SVC in Chinese be marked with aspect? It is an important question, for the answer to it will provide evidence to support or refute the claim that in Chinese, except for verb compounds, no other SVC can have a coordinate structure.

The fact is that in Chinese, if two verbs in a construction are both aspect-marked, these verbs must be linked by an overt marker:

(141)a. Zhangsan *yong le dao bin qie le* rou.

Zhangsan use Asp. knife and cut Asp. meat

b. Zhangsan *yong le dao, qie le* rou.

Zhangsan use Asp. cut Asp. meat

c.*Zhangsan *yong le dao, qie* rou.

Zhangsan use Asp. knife cut meat

d.*Zhangsan *yong dao, qie le* rou.

Zhangsan use knife cut Asp. meat

e.*Zhangsan *yong le dao qie le* rou.

Zhangsan use Asp. knife cut Asp. meat

"Zhangsan used a knife and cut the meat."

If both verbs are aspect-marked, the actions indicated by the two verbs are equally emphasized, and the sentence expresses two independent actions rather than a consecutive action. In this case, the two verbs must be in coordinate relationship. However, verbs in such a relationship must be linked by an overt marker: a conjunction or a comma, and if a conjunction or a comma is used, the construction is no longer an SVC. Therefore, in Chinese, since the conjunctive marker is obligatory in coordinate structures, there cannot be an SVC with coordinate structure. On the contrary, (141)c., d. show that if a conjunctive device is used, the two parts must both be aspect-marked. Otherwise the sentence will be ungrammatical. This sentence provides further evidence to support the claim that sentences like (8) -(10) cannot have coordinate verbal structures.

2.3.4. Control in SVCs

Bickerton & Iatridou (1989) point out that in an SVC, the subject of the lower verb corefers with the subject of the highest verb. However they also offer an exception: in Aucaans, there are SVCs in which the subject of the lower verb has to corefer with the object of the higher verb:

(142) A kai a dataa_i e_i kon luku a pikin.

he call the doctor come look the child

"He called the doctor to come and look at the child."

(143) Mi haii mi buuku_i e₁ go na mi knee.

I pull my trousers up to my knee

"I rolled my trousers up to my knees."

[Bickerton & Iatridou (1989)]

We have found a similar phenomenon in Yoruba:

(144) Femi ti Akin_i e_i subu.

Femi push Akin fall

"Femi push Akin down."

[Lord (1974); Baker (1989)]

In Chinese, if we extend the investigation in the morpho-syntactic level, most verb compounds are in the same case as (145):

(145) Gou gan-pao le mao.

dog chase-run Asp. cat

"The dog chased the cat and the cat ran away."

In (145), although *mao* (cat) is in the object position of the verb compound, it is the cat that has done the action *pao* (run). Furthermore, for SVCs, not only must the subject of the lower verb corefer with the argument of higher verb, if the object of the lower verb is empty, this empty object usually corefers to the object of the higher verb as well⁷:

(146) In Sranan

Kofi naki Amba_i kiri e_i.

Kofi hit Amba kill

"Kofi struck Amba dead."

[Baker (1989)]

(147) In Chinese

Zhangsan jie luxiangdai_i kan e_i.

Zhangsan borrow video tape watch

Zhangsan borrow video tape to watch."

However, as regards the argument of SVCs, the most important property is that the lower verbs cannot have independent subjects:

(148) In Chinese

a.Zhangsan jie luxiangdai kan.

Zhangsan borrow video tape watch

"Zhangsan borrowed video tapes to watch."

b.Zhangsan jie luxiangdai gei Lisi kan.

Zhangsan borrow video tape to Lisi watch

"Zhangsan borrowed video tapes for Lisi to watch."

c.Zhangsan jie luxiangdai, dan Lisi kan.

Zhangsan borrow video tape, but Lisi watch

"Zhangsan borrowed video tapes, but Lisi watched them."

d.*Zhangsan jie luxiangdai Lisi kan.

Zhangsan borrow video tape Lisi watch

"Zhangsan borrowed video tapes , but Lisi watch them."

The paradigm shows that if the lower verb has an independent subject, it must be linked with the higher verb with an overt conjunctive marker, and it cannot remain an SVC in the sentence. In other languages, SVC with independent lower subjects have never been reported.

Therefore, considering the examples shown above, the generalization made by Bickerton & Iatridou (1989) is not entirely accurate. It seems that there is the following condition:

(149)a. The lower verb must not have an independent subject

b. If the object of the lower verb is empty, it must corefer with the object of the matrix

clause.

2.3.5. Extraction of the Object of V₂

If the lower verb has an independent object, Bickerton & Iatridou(1989) claims that it freely allows extraction. This is true for Chinese:

(150)a. Zhangsan kai men yingjie *keren*.

Zhangsan open door welcome guest

b. *Keren*, Zhangsan kai men yingjie.

guest Zhangsan open door welcome

"Zhangsan opened the door to welcome the guests."

(151)a. Zhangsan chi-bao le *fan*.

Zhangsan eat-full Asp. meal

b. *Fan*, Zhangsan chi-bao le.

meal Zhangsan eat-full Asp.

"Zhangsan ate his meal and he was full."

Although Bickerton & Iatridou (1989) do not give any examples to show this property, since the data are mainly from the Caribbean creoles, we can reasonably believe that this property is popular in these creoles. However we lack evidence that it is true for other languages that have SVCs. Therefore we cannot conclude that this property is general in all the languages under discussion. This conclusion by no means diminishes its significance. In the discussion of the structures of SVCs, we have shown that because of such a property in Chinese, excepting the more complex cases of verb compounds, the V₁ and the V₂ cannot be in a coordinate relationship. Otherwise some general constraint such as the Coordinate Structure Constraint, or the more general principle Subjacency Condition, will be violated.

2.3. Reduplication of Verb

It has been reported that in Saramaccan and Chinese, the V₁ of SVCs may be reduplicated. In Saramaccan, the reduplication is only applicable for the verb *tei* (take) and in such cases one *tei*

must appear S-initially:

(152)a. A *tei* goni suti di pingo.

he take gun shoot the pig

b. *Tei* a *tei* goni suti di pingo.

take he take gun shoot the pig

"He shot the pig with a gun."

(153)a. A *tei* goni.

he take gun

b. *Tei* a *tei* goni.

take he take a gun

"He took a gun."

[Byrne (1987, pp.160-161)]

In Chinese, duplication of the verb can apply to verb compounds:

(154)a. Zhangsan *chi-bao* le fan.

Zhangsan eat-full Asp. meal

b. Zhangsan *chi* fan *chi-bao* le.

Zhangsan eat meal eat-full Asp.

"Zhangsan ate his meal and he was full."

(155)a. Zhangsan *xi-ganjing* le yifu.

Zhangsan wash-clean Asp. clothes

b. Zhangsan *xi* yifu *xi-ganjing* le.

Zhangsan wash clothes wash-clean Asp.

"Zhangsan washed his clothes clean."

In Chapter 3, I will discuss the function of this construction, arguing that repetition of the verb serves to raise the object of an SVC, rather than to create another argument as Li(1990a) suggested.

2.3.7. SVC and Argument Position

Bickerton & Iatridou (1989) propose another property of SVCs: for an SVC, no maximal projection containing a verb is a subcategorized argument of the matrix verb. In other words, in an SVC, if one of the verbs is in a clause, this clause must not be a subcategorized argument.

Schematically, it means

(156)

Structure a. or b. is not an SVC if V_x is matrix verb and IP_2/CP is in an A-position

a. $[_{IP} [_{IP_2/CP} \dots V \dots] [_{VP} V_x \dots]]$

b. $[_{IP} \dots [_{VP} \dots V_x [_{IP_2/CP} \dots V \dots]]]$

This is a significant property of SVCs which distinguishes them from clausal argument constructions. Because in some languages (e.g. Chinese), there are no lexical complementizers, clausal argument constructions look similar to SVCs:

(157) Zhangsan turan dasheng *changge xia* le haizi.

Zhangsan suddenly loudly sing surprise child

"Suddenly Zhangsan sang loudly, which surprised the child."

(158) Zhangsan *xihuan* zai he li *youyong*.

Zhangsan like at river in swim

"Zhangsan likes to swim in the river."

Observe (157) and (158). Suppose we do not have condition (156), (157) can also be excluded, because the matrix clause and the subject clause both have an independent subject respectively. However, sentence (158) cannot be excluded by any condition proposed in the previous sub-sections. But why should we exclude sentence like (158) from SVCs? We have several reasons to exclude sentences like (158) from SVCs.

As mentioned in 2.4.4., syntactically, the lower verb in an SVC cannot have an independent subject. However, although the lower verb in (158) does not have an independent subject either, it potentially can have one:

(159) Zhangsan xihuan *Lisi* zai he li youyong.

Zhangsan like Lisi at river in swim

"Zhangsan likes that Lisi swims at the river."

As a contrast, the sentence with an SVC never violates this constraint:

(160)a. *Zhangsan kai men Lisi yingjie keren.

Zhangsan open door Lisi welcome guest

b. Zhangsan kai men, Lisi yingjie keren.

Zhangsan open door Lisi welcome guest

"Zhangsan opened the door, but Lisi welcomed guests."

So one of the differences between a V + object construction and an SVC lies on the potentiality of assigning an independent subject to the lower verb. Therefore an SVC is always an obligatory control structure.

Syntactically, if an SVC is of V+clause structure, the clause can be dropped:

(161)a. Zhangsan kai le men [_{CP} e *yingjie keren*].

Zhangsan open Asp. door welcome guest

"Zhangsan opened the door to welcome the guests."

b. Zhangsan kai men.

Zhangsan open door.

"Zhangsan opened the door."

while for V+ clausal object construction, the dropping of the object clause is not possible:

(162)a. Zhangsan xiwang [_{CP} Lisi neng zhichi Zhongguo de minzhu yundong].

Zhangsan hope Lisi can support China DE democratic movement

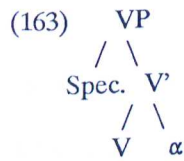
"Zhangsan hopes that Lisi can supports the democratic movement in China."

b. *Zhangsan xiwang.

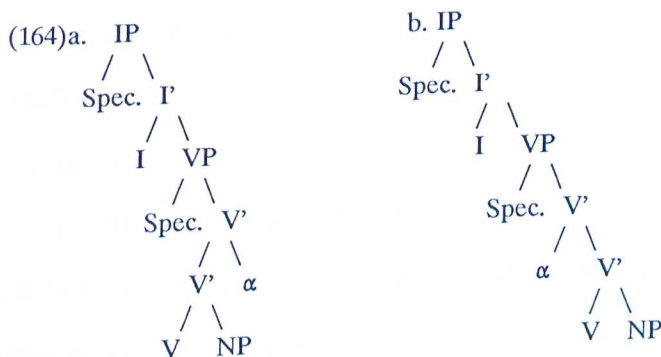
Zhangsan hope

*"Zhangsan hopes."

This property shows that the object clause is selected by the matrix verb, so it cannot be dropped, while the clause in the SVC is *not* selected by the matrix verb, so it must in the adjunct position, so it can be dropped. The position of the object clause α is shown in (163):



otherwise it cannot get a θ -role from V. We will argue in Chapter 4 that the clause in an SVC can only be adjoined to a V':



Semantically, in an SVC, there is always some semantic relationship between the two verbs: either they express consecutive actions, two simultaneous actions, or the action or the circumstance expressed by the second verb is the result of the action of the first verb. However for a V+Object clause construction, there are no such direct relationships between the two verbs.

Therefore V+ object clause constructions should not be included in SVCs, although in some cases, they look alike.

2.4. A Definition of Serial Verb Constructions

Having discussed the properties of SVCs, we need a formal definition for the further discussions. It is odd that previous literature has not provided one. Some linguists even cautiously avoid using the term *serial verb construction* (e.g. Li(1990a,b)). The reason probably is that the substantive properties have not yet been clear and the phenomena discussed in literature are not always homogeneous. Before a formal definition is given, we have to recapitulate what properties are

the ones which will distinguish SVCs from other constructions. It seems that the following are crucial:

1. SVCs are formed by two or more verbs or a verb plus any [+V] category which in the language has the same function as V.
2. There are no overt coordinating or subordinating device between two verbs or a verb and a verb-like element.
3. The non-matrix verb cannot have an independent subject.
4. No projection containing a verb is a subcategorized argument of the matrix verb.

Property 3. and 4. may in some cases be overlapping. Property 3. is presented here because in some languages there may exist structures like (165):

(165) [...V₁ (NP) [IP NP V₂]]

(i) V does not θ mark IP

(ii) NP is the independent subject of IP

In (165), if the IP does not have an overt complementizer, and 3. is not listed as a property of SVCs,

(165) will be incorrectly taken as an SVC.

Based on the properties stated above, a formal definition of (176) is given:

(166) Definition of *Serial Verb Construction*:

in [IP ... α ... [γ ... β ...]] or [IP [γ ... β ...] ... α ...]

Verb α and verb or verb-like β form a *serial verb construction* iff:

(i) β does not have independent subject if γ = IP/CP

(ii) α does not θ mark γ or vice versa.

(iii) α and β are not lexically connected

(167) Definition of *Verb-like*:

A *verb-like* is any category which is marked [+V] and has all the functions that a verb has in that language.

(168) Definition of *Lexical Connection*:

Two constituents are *lexically connected* if they are connected by any overt coordinate

or subordinate devices including conjunctions and punctuation.

With these definitions, we can exclude all the constructions which do not have properties of typical SVCs.

2.4.1. Do SVCs Exist in English?

However, definitions (166)- (168) raise a question: do the English sentences (169), (170) contain SVCs?

(169) John made Bill paint the house.

(170) John painted the house red.

Sentence (169) obviously follows definition (166), for the small clause *paint the house* does not have independent subject, *paint* is not lexically connected with *made*, and the clause may be analyzed as not in a θ -position.

However, I am reluctant to include (169) in SVC for several reasons.

Firstly, such constructions are definitely restricted to a few verbs like *make*, *help*, etc., so it is a word-specific phenomenon .

Secondly, even the verb *make* itself does not always behave in the same way: when (170) is transformed into passive sentence, the SVC-like construction is not allowed any longer:

(171)

a. Bill was made to paint the house by John.

b.*Bill was made paint the house by John.

Sentence (170) is often analyzed as small clause structure (e.g. Williams (1980)). I also do not think it belongs to SVCs. The reason is that adjectives in English do not have all the functions the verb has, in contrast to Chinese. In Chinese, we will see in the next chapter, adjectives can be marked with aspect, can have an object, can function as independent predicates, while in English, they cannot. So in English, adjectives do not conform to the definition of *verb-like*.

Therefore it is concluded that sentences (169), (170) do not belong to SVCs.

This is the end of discussion on properties of SVCs. In the next section, we are going to

survey what has been said about SVCs by previous literature.

2.5. Previous Literatures on SVCs: A General Survey

As mentioned above, the studies on SVCs started from Christaller (1875), and recently this topic has drawn more and more attention of linguists. In this section, we will make a general survey of some of the literature. Brief comments will be given to some of them, but detailed discussion will only be presented in Chapter 3. and 4.

2.5.1. Christaller (1875): *A Grammar of the Asante and Fante Language called Tshi (Twi)*

Although the studies of Christaller (1887), which applied traditional categories to classify so called "verbal combinations" in Twi, is far from explanatory, it is unfair not to mention the first scientific research on this topic. Christaller (1875) not only studies what we now call *serial verb constructions*, but in discussing coordinate parts of simple sentences, it distinguishes two types of verb combinations as well. One of them is termed "essential combination" in which one principal verb is combined with an auxiliary verb. The other is "accidental combination" in which two or more predicates (verbs with or without complement or adjunct) combine together to express a successive action, or a state simultaneous with another state or action. It points out the essential properties of this construction: two predicates are jointed together without a conjunction, and share a common subject, which conform to the definition given in the previous section. Therefore although the term *serial verb construction* is not used (actually this term had not been coined at that time), it is the first attempt to distinguish this construction from other linguistic phenomena and to make it an independent object of linguistic studies.

2.5.2. Steward (1963): "Some Restrictions on Objects in Twi"

This is the first Generative-Transformational approach of SVCs in Twi. In this paper, Steward observes several types of SVCs, and analyzes such constructions in the light of an obligatory transformation. For example, sentences (172) is analyzed as the result of transforming (173)a. and b.:

(172) de no efmm me.

he take it lend Asp. me

"He lend me it."

(173)a. faa no.

he take it

b. femm me.

he lend Asp. me

[Stewart (1963); Sebba (1987, p.7)]

The transformation, as Stewart (1963) proposes, combines (173)a. and b., deletes the subject of (173)b. to form (172). Stewart (1963) is the first one that tries to pursue an explanatory theory of SVCs.

2.5.3. Li & Thompson (1973): "Serial Verb Construction in Mandarin Chinese: Subordination or Coordination?"; **(1974a):** "Co-verb in Mandarin Chinese"

Although there were many linguists in China that had been paid attention to SVCs before Li & Thompson (1973) and (1974a), it is their studies that started the systemic investigation of SVCs in Chinese, and attracted attention from outside China. They divide SVCs in Chinese into four types:

1. Type I: the actions of the two predicates occur simultaneously:

(174) Zhangsan *qi jiaotache zou* le.

Zhangsan ride bike go Asp.

"Zhangsan left by riding bike."

2. Type II: the action of the first predicate precedes that of the second verb:

(175) Zhangsan *chuanshang yifu tiao zai* dishang.

Zhangsan put on clothes jump on floor

"Zhangsan put on his clothes and then jumped on the floor."

3. Type III: the action of the two predicates alternate:

(176) Zhangsan *tiantian hui ke xie* xin.

Zhangsan everyday receive guest write letter

"Everyday Zhangsan receives guests and writes letters."

4. Type IV: the first verb denotes an action" done for the purpose accomplishing the second action":

(177) Women *kai hui taolun* neige wenti.

we hold meeting discuss that problem

"We are holding a meeting to discuss that problem."

[Li & Thompson (1973); Sebba (1987, pp.2, 29)]

In Li & Thompson (1974a), they propose that a v + co-verb combination should always be treated as SVCs:

(178) Wo *zhu zai* Shanghai.

I live in Shanghai

"I live in Shanghai."

The structures they propose for Type IV is (179a), while others are with (179b):



There are several issues worth mentioning here:

1. As have illustrated above, (178) cannot be analyzed as an SVC because the fundamental distinctions between preposition (here, *coverb*) and verb.
2. In Type I, the first VP denotes the means or instrument to do the action done by the second verb. Therefore it is dubious to analyze it as "two simultaneous actions".
3. Structure (179b) is impossible in Chinese for the reason we have pointed out in previous sections: In Chinese syntax, two coordinate constituents must be lexically linked. Therefore a comma or conjunction *huozhe* (or) is needed between *hui ke* (receive guest) and *xie xin* (write letter) in (176).

Li & Thompson (1974) also has an interesting discussion of "resultative verbs", which are analyzed as verb compounds in this study. We will return to it in Chapter 3.

2.5.4. Bamgboṣe (1974): "On Serial Verbs and Verbal Status"

Bamgboṣe (1974) studies SVCs within the framework of Standard Theory of Generative Grammar proposed in Chomsky (1965). It distinguishes two types of SVCs in Yoruba: the *linking type*, which is derived from two underlying sentences, and the *modifying type*, which is formed by combining the VP and a so called "modifying verb". It also discusses the structure of SVCs. It has several interesting arguments which provide enlightenment for further studies. For example, it points out that the object of the lower verb in an SVC can be topicalized, while one in a coordinate structure cannot be:

(180) SVC

a. Mo mu iwe wa ile.

I took book came home

"I brought a book home."

b. Ile ni mo mu iwe wa.

house Top. I took book come

"It was to the house that I brought a book."

(181) Coordinate Structure

a. Mo mu iwe, mo si wa ile.

I took book I and came home

b. *Ile ni mo mu iwe ti mo si wa.

house Top. I took book that I and come

"It was to the house that I bought a book."

[Bamgboṣe (1974); Sebba (1987, pp.9,13)]

It also points out that in an SVC, using conjunction will create an ungrammatical sentence:

(182) a. Mo mu iwe wa ile.

I took book came home

b. *Mo mu iwe si wa ile.

I took book and came home

"I brought a book home."

[Bamgboṣe(1974); Sebba 1987, pp.9,12)]

Although the explanation is not correct,⁸ the contrasts between (180) and (181), as well as (182)a. and b. are helpful for defining SVCs and in analyzing their structures. As regards the distinction between the linking SVC and modifying SVC, Bamgboṣe claims that it can account for the ambiguity of (183):

(183) Olu sare wa ile.

Olu ran came home

"Olu ran and came home" (linking type)

"Olu came home quickly." (modifying type)

[Bamgboṣe (1974); Sebba (1987, p.12)]

He points out several facts to support this distinction, which provide abundant material for later discussions.

2.5.5. Williams, W. (1976): *Linguistic Change in the Syntax and Semantics of Serra Leone Krio*

Williams (1976) studies Krio spoken in Serra Leone. It recognizes that relationships of some SVCs must be handled in the lexicon. For example, in (184):

(184) Modupe de waka go na makit.

Modupe Asp. walk go Loc. market

"Modupe is walking to the market."

[Williams (1976); Sebba (1987, p.22)]

the verb *waka* (walk), as proposed by Williams (1976), should be specified in the lexicon as follows: it subcategorizes the following VP which would carry the thematic relation GOAL in relation to

waka. The verb *go* (go) would be specified as being followed by PP which bears the thematic relation GOAL. Therefore *go* can fit into the available VP position after *waka*.

This raises a question: as regards the formation of SVCs, to what levels do the constraints of SVC formation apply? The answer provided by Williams (1976) is at least, some constraints should be applied in the lexicon. In general, this answer is acceptable, since in this study we have distinguished one type of SVCs: verb compounds, which are formed in the lexicon and in the process of word-formation, some constraints must be applied. However, specifically, this answer is dubious: Does the higher verb subcategorize a VP? In syntax, is the lower verb as Williams (1976) proposed a sister of the higher verb? As we will see in the later chapters, it may not be the case. Furthermore, we will argue in Chapter 4 that the availability of SVCs in a language does not depend only on the lexicon of that language. Another problem for Williams (1976), as has been pointed out by Sebba (1987): the structure it proposes will produce many strings which cannot occur in SS:

(185) Structure of SVCs proposed by Williams (1976)

VP ---> V (NP) (PP) (VP)

This indicates more constraints are needed.

2.5.6. Jansen, Koopman and Muysken (1978): "Serial Verbs in the Creole Languages"

This is a paper that studies SVCs in several Caribbean creoles under the framework of Extended Standard Theory of the Generative - Transformational Grammar. In this paper, Jansen et al discussed several possible structures of SVCs, arguing that the multi-sentential structure, and all the structures in (186) should be ruled out:

(186)a. S --- NP V VP VP*

b. VP--- VP VP*

c. VP--- V (NP) V (NP)

while structure (187) is suggested by them:

(187) S --- V NP VP

However, their arguments in favor of (187) are not so convincing, and as the structures proposed by

Williams (1976), (1987) will also produce many strings which actually never occur. The detailed discussion on their arguments will be given in Chapter 4.

2.5.7. Sebba (1987) :*The syntax of Serial Verbs: An Investigation into Serialization in Sranan and Other Languages*

Sebba (1987) is an excellent descriptive work which provides us with abundant materials of SVCs in several languages and an overall introduction of the previous literature. In addition, it also has a detailed discussion on the SVCs in Sranan, listing and classifying various types of SVCs which have been found in that language. Based on the analysis of Sranan, it investigate the SVCs in other languages, and has found a similarity in SVCs across a wide variety languages, including Akan, Anyi, Ijo, Yoruba, Saramaccan and Chinese. It also gives an account of semantics of SVC. A working definition is proposed in this work, although it is more like a discussion on properties than a formal definition.

2.5.8. Byrne (1987) :*Grammatical Relations in a Radical Creole: Verb Complementation in Saramaccan*

This is a study of SVCs within the framework of the Government and Binding Theory proposed by Chomsky (1981b), (1982). Although it is not entirely devoted to SVCs, one of the goals of the study, as the author states in the book, is to deal with the nature of serialization in Saramaccan and in general. The author raises questions in this book: As compared with West African languages and other languages, what motivated *serial verb constructions* in this language? Is the Saramaccan core grammar, particularly serialization, different from or similar to West African languages? Does the phenomenon of SVCs represent unmarked aspects of a single universal grammatical system?

To answer the first question, Byrne says that the *serial verb construction* is necessary, and an inescapable by-product of these language structures (Byrne, 1987, p.251) because of the strict adjacency requirement to Case assignment and the necessity of expressing the GF- θ of a verb. Questions two and three are actually related to each other. The answer provided by the author says that the SVC in Saramaccan have several features not found in the SVCs in West African languages, which are basis of the equivalent constructions of Saramaccan. Since SVC of West African languages

is not the origin of the SVC of Saramaccan, these features cannot be traced to West African Languages. Therefore the phenomenon of SVC has to be accounted for by the a universal grammar, rather by the supposed relationship between Saramaccan and West African languages.

The logic of the argument is clear. The problem with the argument lies with the definition of SVC: In his study, he permits SVCs to include constructions in which verbs have different tenses and subjects, which lead us to doubt if what he is studying are *all* real SVCs.

2.5.9. Steever (1988) : *The Serial Verb Formation in Dravidian Languages*

This book is somewhat similar to Sebba (1987) in that it also provides very detailed descriptions of SVCs in the languages it discusses. However, it does not pay much attention to the structures of SVCs. This book is valuable for its abundant linguistic data, in which several types of SVCs which never occur in other languages are presented. This in turn makes later studies which attempt to pursue a general approach to the phenomena across languages more difficult and more attractive.

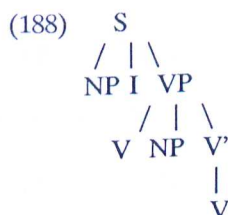
Steever (1988) unfortunately has not drawn much attention from linguists who are studying SVCs. Recent studies of SVCs are unexceptionably under the GB framework, among which, Baker (1989), Bickerton & Iatridou (1990), and Li (1990a) are the most prominent.

2.5.10. Baker (1989): "Object Sharing and Projection in Serial Verb Constructions"

Baker (1989) discusses SVCs in general. The data of this paper cover several languages: Sranan, Yoruba and Akan, among others. In this paper, Baker proposes a Head-Licensing Condition (HLC), which requires that every head be traced up to a single maximal projection, while the X-bar convention proposed by Chomsky (1981b, 1986a), on the contrary, requires that every head be traced down to a single head.

Based on this revision, he states that the possibility for a language to have SVC depends on whether this language permits VPs to count as the projection of more than one distinct head. He also adopts the Principles of Word Order given by Travis (1984), which proposes that an X^0 may Case-mark and θ -mark a phrases in different directions.

With these theories, Baker analyzes SVCs as (188):



the salient properties of this structure are: two verbs share one object, and a V' is the sister of the first verb and object NP. He also uses the evidence from inflectional morphology and secondary predicates to support his analysis.

However, this analysis leaves several questions open to discussion: First, are the revisions on X-bar theory, Case-marking and θ -marking universally applicable or only specific to SVCs? If the answer is the latter, these revisions are meaningless; if the answer is the former, these revisions need evidence from other constructions to support them.

Secondly, even at SS, object-sharing is not necessary and possible in many SVCs, for example, sentence (8), (9) and (26), let alone verb compounds not discussed in his paper. These issues will be discussed in the later chapters.

2.5.11. Bickerton & Iatridou(1990): "Serial Verb Constructions and Empty Categories"

This paper tries to solve two crucial issues: the structure and the formation of SVCs. The data are from Caribbean creoles, but the solutions given by the authors are expected to be applicable to all SVCs.

The insight of the paper is impressive. In discussing the structure of SVC, the authors examine several suggested structures with several principles of GB, including X-bar Theory, Theta Theory, Binding Theory and Control Theory and convincingly conclude for the SVCs under discussion that the only possible structure for the constituent in which the second verb lies is a clause. Other analyses would inevitably violate some principles. The paper also discusses the formation of SVCs. It rejects the claim that SVCs are formed with phrase structure rules and proposes an

adjunction approach.

By any standard, the solution given in this paper is convincing. However, it implies all the SVCs in different languages should have same or similar structures, which we will see in Chapter 4, may not be true. They also claim that the clause in an SVC is an IP. We will see later that, considering the invalidity of antecedent - government and the extractability of the object of V_2 , the clause must be a CP rather than an IP.

2.5.12. Li (1990a): "On V-V Compounds in Chinese"

Li is very cautiously not using term *serial verb construction*, although by the definition of SVC given by this paper, or by the scope of SVCs accepted by most previous literature, the phenomena under discussion in Li (1990a), and some of constructions discussed in Li (1990b) are *serial verb constructions*.

There are two issues worth investigating as regards VV compounds in Chinese: θ -role assignment and the constraints on VV compound formation. For θ -assignment, it adopts Higginbotham's proposal which distinguishes θ -identification and θ -assignment. Take (1) as example, in case of VV compound like *gan-pao* (chase-run), three θ -roles are identified, two of which will be linked to the internal argument *mao* (cat). When two θ -roles are identified for one argument position, neither of them will be assigned, rather they will be tied together for further assignment. By using the notion of compound θ -role, it avoids violating the Theta-Criterion proposed in Chomsky (1981). This solution is similar to that proposed by Bao (1985) and Wu (1989).

As regards VV formation, it introduces the notion of θ -role prominence. θ -role assignment will follow a strict order: the least prominent one will be assigned first, then less prominent ones. The most prominent one will be assigned last. θ -role assignments which follow the order are permitted. In this way, several types of ungrammatical sentences are ruled out.

The trouble for this solution is that although some of the ungrammatical combinations of VV can be excluded by using the notion θ -prominency, many other illicit combinations are not, which means the constraints based on θ -prominency are not sufficient for VV formation.

2.6. Conclusion

In this chapter, we have shown a variety of SVCs in different languages. The distribution and classification of SVCs have shown that the phenomena of SVCs are not as simple as some of the literature has suggested. They may have different structures and be formed at different levels of grammar. However, this does not mean that SVCs are not a phenomenon worth investigating. The discussion of the properties and definition of SVC show that the languages share common properties in different languages, and they can be put under a fairly simple definition. In the later chapters, we can see that how the general principles govern these SVCs which seem to be different from each other.

In discussing the definition of SVC, the notion of *lexical connection* is introduced to replace the informal notion concerning the relationship between verbs. By using this notion, we at last have a clear scope of discussion.

The important previous literature has been mentioned briefly in this chapter. From this, we can see how hard linguists have been working to reveal the secret of this construction. Although, just as this study surely will, every work leaves some questions open for further study.

Notes:

1. Christaller, Rev. J. G. (1987) *A Grammar of the Ansate and Fante Language Called Tshi*, Basel, reprinted 1964 by Gregg, Rigewood.
2. *The Serial Verb Formation in the Dravidian Languages* by Steever, Sanford B., Motilal Banarsidass, 1988, Delhi.
3. There are some exceptions. For example, in Mandarin Chinese and other major dialects, the modifiers of NPs and VPs usually precede their heads:

(1) gong ji : male chicken "cock, rooster"

(2) Wo xian zou.
I first go "I go first."

But in Cantonese, we can find some cases of head-initial structures:

(3) ji gong : chicken male "cock, rooster"

(4) Wo xian zou.
I first go "I go first."
4. Here following Anderson (1985), the hyphen (-) is employed between the two elements of a verb compound to show its inner structure, although such a hyphen is not used in the romanized Chinese writing system. Therefore instead of (1), we use format (2) to represent verb compounds:

(1) ganpao (chase ...run) (2) gan-pao (chase ... run)
kanlei (watch ...tired) kan-kei (chase ... tired)
5. In Sebba (1987), there is no *to* between *knife* and *cut*.
6. In Sebba (1987), the translation is misprinted as "The man when up to the river."
7. There are few exceptions in Chinese pivotal structures which will be shown in the later part of the thesis.

8. Bamgboṣe's explanation claims that the NP in a coordinate structure can be moved in general, and the ungrammaticality of (181b) originates from the fact that the moved NP was dominated by two Ss. He also explains that a conjunction cannot be present in an SVC because it must be obligatorily deleted by a transformation. His explanations have been rejected by recent linguistic theories.

CHAPTER 3

Serial Verb Construction as Compound

3.0. Introduction

As I have illustrated in the previous chapter, structurally *serial verb constructions* vary across languages. An SVC can be a matrix verb plus a clause, two verb phrases, or a verb compound. Compound SVCs are not as popular as the V + clause SVC structure. It has only been reported in Chinese and Edo. For convenience, I repeat some sentences in which verb compounds appear:

- (1) Gou *gan-pao* le mao. ---- Chinese
dog chase-run Asp. cat
"The dog chased the cat and the cat has run away."
- (2) Zhangsan *chi-bao* le fan. ---- Chinese
Zhangsan eat-full Asp. meal
"Zhangsan has eaten his meal and he has been full."
- (3) Zhangsan *chi-wan* le fan. ---- Chinese
Zhangsan eat-complete Asp. meal
"Zhangsan has eaten his meal and nothing left."

- (4) Zhangsan *qi* ma *qi-lei* le. ---- Chinese
 Zhangsan ride horse ride-tire Asp.
 "Zhangsan rode his horse (too much) that he was tired."
- (5) Zhangsan *zou-lei* le tui. ---- Chinese
 Zhangsan walk-tired Asp. leg
 "Zhangsan walked (too much) that his legs were tired."
- (6) Zhangsan he Lisi changchang *lai-wang*. ---- Chinese
 Zhangsan and Lisi often come-go
 "Zhangsan and Lisi often visit each other."
- (7) Zhangsan *da-bai* le tade duishou. ---- Chinese
 Zhangsan fight-defeat Asp. his rivals
 "Zhangsan defeated his rivals."
- (8) Zhangsan *zuo-shi* liang ji. ---- Chinese
 Zhangsan sit-loss golden opportunity
 "Zhangsan lost the golden opportunity."
- (9) Lagos *tye-re* Ozo. ---- Edo
 Lagos called-come Ozo
 "Lagos summoned Ozo."¹

These examples show a variety of verb compounds. Sentence (1) - (8) are from Chinese, among which (1) - (5) each contains a productive verb compound, while (6) - (8) contain a non-productive one. Sentence (9) is from Edo. The compound in (1) consists of a transitive verb and an intransitive one. In (2), (3), compounds are formed by a transitive verb and an adjective. In (4), the compound is still of verb-plus-adjective form, but it is preceded by a reduplicated verb-NP construction. The compound in (5) consists of an intransitive verb and an adjective, but the whole compound proper is transitive. In (6), the compound is non-productive which consists of two intransitive verbs. The non-productive form in (7) is formed by two transitive verbs. In (8), the compound, which has the

structure of an intransitive a verb plus transitive verb, in fact is embedded in an idiom *zuo-shi-liang-ji* (sit-lose-golden-opportunity "lose the golden opportunity"). In the Edo sentence, the structure of the compound is like that in (1). To sum up, as regards the structure of verb compounds, we have (10):

(10) The Structure of Verb Compounds

(a) Productive Form

$$(i) \text{ VV} : V_{\text{trans.}} + V_{\text{intrans.}} \quad (1)(9)$$

$$(ii) \text{ VA} : V_{\text{trans.}} + A \quad (2)(3)$$

$$V_{\text{intrans.}} + A \quad (5)$$

(b) Non-Productive

$$(i) \text{ VV} : V_{\text{trans.}} + V_{\text{trans.}} \quad (6)$$

$$V_{\text{intrans.}} + V_{\text{intrans.}} \quad (7)$$

$$V_{\text{intrans.}} + V_{\text{trans.}} \quad (8)$$

$$(ii) \text{ VA} : V + A$$

In this chapter, we are going to discuss the productive compound verbs (CVs) shown in table (10), including its classification, properties, formation, constraints, and argument-linking. In 3.1., the phenomena of compounding as the most important device of word-formation in Chinese will be introduced into the discussion. CVs as a subclass of compounds play an important role in Chinese grammar. In 3.2., the classification and the properties of CVs will be investigated in detail. In this section, the evidence that supports the CV analysis will be given. In addition, we are going to show the significance of the distinction between the productive form and the non-productive form, the VV compound and the VA Compound. In order to account for the peculiarity of CVs in Chinese, we adopt the definition of Government given by Belletti & Rizzi (1982) to explain the scope of modification in CVs. This section also contains a detailed discussion of the notion of head. Section 3.3. deals with the formation of and the constraints on the formation of CVs. We will claim

that CVs are formed in the lexicon. Because of its morpho-syntactic nature, the grammaticality of a CV is constrained both in the lexicon and in the syntax. In the lexicon, its formation is constrained by the specifications of the verbs or adjectives that constitute it. Section 3.4 discusses argument-linking of CVs in Chinese. Argument-linking is closely related to the grammaticality of CVs, thus its properties constitute constraints on CV formation. Before putting forward my solution, we will first introduce two theories into: one relates to argument-linking in compounds discussed by Di Sciullo & Williams (1987), and the other is the Feature Percolation Convention discussed in Lieber(1983). We will argue that what have been found by Di Sciullo & Williams (1987) about the properties of compounds are not universally correct. As regards argument-linking proper, two separate processes are distinguished in this study. One of them is argument licensing, which determines where and in what way an argument position is licensed. This process, as suggested in 3.4., is determined by a language specific Feature Percolation Convention. Lexical Integrity is also discussed in this section. We also discuss the solutions given by Bao (1985) and Li(1990a), showing that they are insufficient to exclude the ungrammatical combinations. It is claimed in this section that because Old Chinese was a monosyllabic language, the CVs in Modern Chinese originated from the phrase structure of Old Chinese. Evidence will be given to support the claim. CVs of Edo are not discussed in details in this section, for there are no sufficient data to illustrate all their possible types and structures.

3.1. Compounding: the Major Device of Word-formation in Chinese

As Anderson (1985) and others have pointed out, compounding is the major device by which the lexical stock of Chinese is formed and augmented. Although in forming new words in Chinese, several devices such as affixation, conversion, shortening, borrowing, etc. are employed, these devices are relatively less important than compounding in Chinese. First, words of almost all categories may be formed by compounding. Second, the structures of compounds are analogical to all the possible phrase structures.

3.1.1. Illustration of Compounds in Chinese (I):

In Chinese, most of the lexicon consists of combinations of formatives produced by compounding. These compounds cover all the existent categories of Chinese:

(11)a. Noun

guo-jia : state-family "country, state, nation"

mao-dun : spear-shield "contradiction"

b. Verb

she-qi : desert-desert "desert"

ti- gao : raise-high "raise, enhance"

c. Adjective

qing-jie: neat-clean "clean, neat"

mei-li : beautiful-charming "beautiful, pretty"

d. Adv.

jing-chang : through-often "often, frequently"

fan-zheng : positive-negative "all in all"

e. Prep.

gen-ju : root-occupy "according to"

an-zhao : according-according "according to"

f. Conj.

you-yu : from - at "because"

yin-wei : because -for "because"

g. Det:

zhe-ge : this-CL. "this"

nei-ge : that -CL. "that"

h. Num

shi-si : ten-four "fourteen"

si-shi : four-ten "forty"

3.1.2. Illustration of Compounds in Chinese (II):

In Chinese, the structures of compounds are "copied" from the structures of phrases. In other words, there is a correspondence between compound structures and phrase structures. Any possible phrase structure has an equivalent compound structure:

(12) Types of compound structures in Chinese

a. Coordinate

shou-zu : hand-foot "siblings"

jin-gong: advance-attack "attack"

b. Mod.- head

huo-che : fire-vehicle "train"

cao -tu : draft-picture "sketch"

c. Subj.-pred.

nian-qing: age-young "young"

dan -xiao: gallbladder-small "timid, cowardly"

d. Verb- obj.

si-ling :issue-command "commander"

shi-wei : show -power "demonstration"

e. Verb-complement

ti-gao : raise-high "raise"

bian-cheng : change-become "become"

In the later section of this chapter, I will explain why compounds are prevalent in Chinese. I will present evidence arguing that this property comes from the origin and development of Chinese morphological structures.

3.2. Classification and Properties of Compound Verbs in Chinese

This section discusses the classification and properties of CVs in Chinese. These two issues are related to each other. In other words, we classify CVs into several types as shown in (10) just

to reflect their different properties. In the following sections, a detailed discussion of them will be presented.

3.2.1. Productive Compound Verb (PCV) vs. Non-productive Compound Verb (NCV)

Some of the previous literature has observed structural varieties among CVs. However, in discussing the classification and properties of CVs in Chinese, many fail to distinguish the productive form from the non-productive form. For example, Bao (1985) asserts that the possible structures of CV in Chinese are $V_{trans.} + V_{intrans.}$, $V_{trans.} + A$ and $V_{intrans.} + A$, while there are a few exceptions as $V_{intrans.} + V_{trans.}$, and $V_{trans.} + V_{trans.}$. Li (1990a), on the contrary, is in favor of a solution that in principle all the structures are permissible for CVs in Chinese, the constraints on them are mainly from argument linking rules. However, these alone produce many ungrammatical surface strings.

Therefore, it is claimed in this thesis that a most important property of CVs is the distinction between the productive form and the non-productive form. The importance and significance of this distinction lies in the following aspects.

With productive forms, the word formation rules can apply to make new words. The non-productive class is far more limited and somewhat similar to idioms. For example, the constituents of PCV *da-pao* can be replaced by other words of the same category to form new words:

(13) Productivity of PCV: *da-pao*

- a. *da -*
da-pao (beat - run)
da-zou (beat -go)
da-pa (beat - be afraid of)
da-teng (beat - ache)
da-ku (beat -cry)
 ...

- b. *-pao*
da-pao (beat-run)

ma-pao (scold -run)
qi-pao (anger -run)
xia-pao (threaten -run)

...

(13) shows that each of the two elements of PCV *da-pao* can be replaced with another word if the new word is semantically acceptable. This is not the case for non-productive compound verbs (NCV). For example, although semantically replacement of its constituents is possible, morphologically, such replacement will produce non-grammatical combinations:

(14) Non-productivity of NCV: *jìn-gōng*

a. *jìn-gōng* (advance -attack)

**jìn-da* (advance -beat)

**jìn-jī* (advance -attack)

b. *jìn-gōng* (advance -attack)

**chōng-gōng* (dash - attack)

**dá-gōng* (beat -attack)

**tūi-gōng* (retreat - attack)

Other examples of "exceptions" mentioned in Bao (1985), *xia-sheng* (play-triumph over), etc., are also non-productive in nature. This word describes chess playing, in which one defeats the other. Presumably, we can analogize it, forming some new words with the same meaning to describe other sports, such as *da-sheng* (play-triumph over) for basket-ball, *tī-sheng* (kick-triumph over) for football, *yú-sheng* (swim-triumph over) for swimming, *qí-sheng* (ride-triumph over) for bicycle, *tiào-sheng* (jump-triumph over) for high jump, *pǎo-sheng* (run-triumph over) for race, etc. Actually, only *da-sheng* (play - triumph over) is generally acceptable by everyone, and *tī-sheng* (kick-triumph over) is accepted by some native speakers. Other combinations are unacceptable.

Further evidence to support the distinction between PCV and NCV comes from

lexicography. In Chinese, generally, NCVs are listed in dictionaries as lexical items, while PCVs are not. The reason for this is straightforward: since PCV is an open subcategory, anyone can form a new PCV by using word-formation rules when necessary, it is impossible for the editors of dictionaries to figure out how many such words there would be in Chinese. Since coinage of such words are unpredictable, the best strategy is not to include them in dictionaries.

The occurrence of some NCV even has more restrictions. For example, an NCV exemplified by Bao (1985) as an exception "*zuo-shi*" (sit-lose) can only occur in an idiom *zuo-shi-liang-ji* (sit-lose-golden-opportunity), meaning "lose golden opportunity". It is never used elsewhere, although presumably we may substitute some elements to change its meaning. For example we cannot replace *ji* (opportunity) into *peng* (friend) to form a new idiom * *zuo-shi-liang-peng* (sit-lose-good-friend), although the meaning of the expression is comprehensible. This indicates the distinction between PCV and NCV is one of the substantive properties of Chinese morphology.

As regards meanings of CVs, the distinction between PCV and NCV is also crucial. The meanings of PCVs are always compositional. For example, *da-pao* (beat-run) denotes two actions: that of beating and that of running. In this respect, there are no exceptions. However, as regards NCVs, many of them are semantically non-compositional. For example, the $V_{\text{intrans.}} + V_{\text{intrans.}}$ *lai-wang* (come-go) actually does not really mean the actions of coming and going:

(15) Zhangsan geng Lisi jingchang *lai-wang*.

Zhangsan and Lisi often come-go

"Zhangsan has a close relationship with Lisi."

It signifies a close relationship between two persons, which is demonstrated by the fact that they often visit each other. Another interesting example of non-compositionality is NCV *zhan-sheng* (play-triumph over or fight-triumph over), which denotes one's defeating another in fighting, or playing basket-ball or football. For this word, one of the elements *sheng* (triumph over) can be replaced by another element with opposite meaning: *bai*(fail), but the meaning of the whole word remains the same:

(16)a. Zoutian, Hongren dui *zhan-sheng* le Jinniu dui.
 yesterday Redskin team play- triumph over Asp. Taurus team

b. Zoutian, Hongren dui *zhan-bai* le Jinniu dui.
 yesterday Redskin team play-fail Asp. Taurus team
 "Yesterday Redskin defeated Taurus."

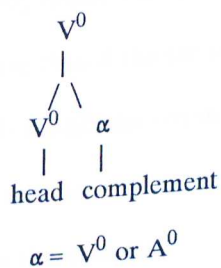
Semantically, there is no difference between (16) a. and b., which demonstrates that either *zhai sheng*(play-triumph) or *zhan-bai* (play-lose) is interpreted as "defeat", although they have one element with opposite meanings. It indicates that semantically such an NCV is more like an independent unit, rather than the combination of two units.

In a PCV, no matter if it is a VV compound or VA compound, the first verb expresses the action done by the subject of sentence, while the second element denotes the action or state caused by the first verb. For example:

(17) Ta *xi-ganjing* le yifu.
 he wash-clean Asp. clothes
 "He washed the clothes clean."

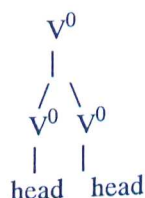
Consequently, in a PCV, there is only one verb that should be analyzed as the head, the other element is similar to verb complement in syntax:

(18) X-bar Structure of PCV



However, as regards NCVs, it has been found that there are cases in which both elements are heads. For example, in sentence (15), *lai-wang* (come-go) are both heads of the NCV, and there is no relationship of complement or modification between the two elements:

(19) X-bar Structure of *Lai-wang*



A PCV cannot have an X-bar structure as (19). In the following sections, we are going to show that (18) and (19) differ with respect to the scope of modifiability and the possibility of duplicating V_1 , presenting more evidence of the distinction between PCV and NCV. Comparatively, PCVs have more characteristics of compounds, thus they are more interesting for the study of SVCs. Therefore in this thesis, focus will be placed on the investigation of PCVs.

3.2.2. Scope of Modification

One of the salient properties of PCV in Chinese is its scope of modifiability: while only the NCV as a whole can be modified by modifiers, with PCVs either the entire PCV or its head can be modified by modifiers. However, the second element, either V or A, may not be modified by an element outside of the combination. The following is an example:

(20) *Gou henhen de gan-pao le mao.*

dog furious DE chase-run Asp. cat

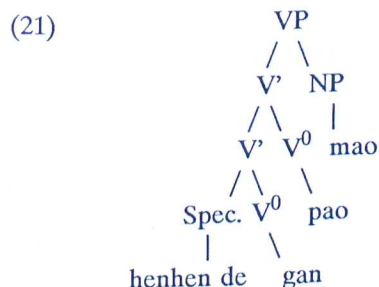
"The dog chased the cat furiously and the cat ran away."

*"The dog chased the cat furiously and the cat ran furiously away."

*"The dog chased the cat and the cat ran furiously away."

Here *furiously* can only modify the action *chase*, which means that it is not the case that the cat also run away in the same manner. This raises a question: according to the correct reading, what is the structure of the VP in this sentence?

One may assume a structure as (21):



Nevertheless tree (21) should be ruled out because on the one hand, it violates the X-bar structure in Chinese, since Chinese has the X-bar structure (22), on the other hand, (21) implies that *gan-pao* are two independent verbs rather than a compound, which will be proved wrong in the latter sections of this chapter.

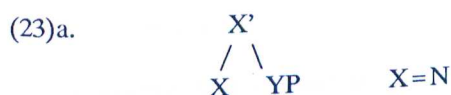
Huang (1982) proposes the following X-bar structure for Chinese:

(22) The X-bar structure of Chinese is of the form

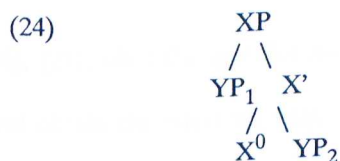
a. $[X^n X^{n-1} YP^*]$ iff $n=1$ and $X = N$

b. $[X^n YP^* X^{n-1}]$ otherwise

which means in Chinese we have structure (23)



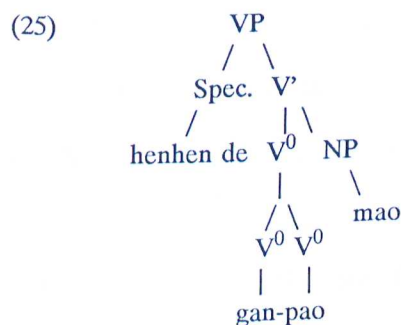
To generalize (23) a., b., it should be



here YP_1 can be taken as the specifier, and YP_2 the complement. Considering recursion and the base-generated adjunction which will be discussed in chapter 4, (24) is not different from the X-bar structure of English in substance. Let us go back to (21), it is obvious that (21) does not match (24)

in that a V' cannot be a sister of a V^0 .

So it is concluded that structure (21) is incorrect. Since (24) is the only possible X-bar structure of Chinese syntax, it must capture the fact exposed in sentence (20). Therefore we have the VP structure (25) for (20):



As regards (25), the effect we want to get is that the specifier can only modify the head of V^0 *gan*, not the non-head *pao*. We may assume there is a Convention of Modifiability in Chinese:

(26) Convention of Modifiability

X is in the scope of a modifier Y if X is governed by Y.

However, with the classic definition of government, we still cannot get the effect we want:

(27) Government

α governs β if and only if

(i) $\alpha = X^0$

(ii) α c-commands β and if γ c-commands β then γ either c-commands α or is c-commanded by β .

[Chomsky (1981,p.163)]

With (26), (27), what the specifier modifies is the whole compound, not the head. Consequently, we cannot obtain the effect we want.

Just as Aoun et al (1987) has pointed out, the definition of government given by Chomsky (1981) is not sufficient to account for some phenomena in languages. Instead, they propose Belletti & Rizzi (1982)'s definition:

(28) Government

$\alpha(X^0)$ governs β iff all maximal projections dominate α also dominate β , and α is also dominated either by all maximal projections dominating β or by all maximal projections dominating the maximal projection of β .

Definition (28) means an X^0 category not only governs the maximal projection it c-commands, but also the head of that maximal projection. With (26) and (28), the modifier in (20) can not only modify the whole VP, but also the head of VP.

However, we still have problem: the modifier can not only modify the head of a maximal projection and its head, but also the head of the head, which, for the phenomenon under discussion, is the head of verb compound. So I propose another convention for Chinese:

(29) Recursion of Government

In Chinese, if $\alpha(X^0)$ governs β which is the head of a maximal projection, it also governs the head of it.

With (26), (28) and (29), the VP in (20) is well represented since the specifier can modify both the whole compound and the head of it.² It is crucial here that the non-head of the compound is not modified. However, this treatment raises a question: Does the Lexical Integrity Principle hold in Chinese? Convention (29) allows a constituent of a lexical item to have relationship with a constituent outside it, which seems a violation of that principle. We will return to this question later.

3.2.3. Head of CV

The discussion above involved the head of a compound. In the discussion, we assumed that apart from the double headed NCV like *lai-wang* (come-go), the left element is the head of the compound. This assumption is different from the theories proposed by Williams (1978, 1981), Di Sciullo & Williams (1987), and Baker (1989). The following is a discussion of their theories.

3.2.3.1. Williams (1978, 1981); Di Sciullo & Williams (1987)

Williams (1978, 1981), Di Sciullo & Williams (1987) propose the following definition of head in a word:

(30) Definition of "Head_F" (read: head with respect to feature F):

The head of a word is the rightmost element of the word marked for feature F.

With (30), the heads of the following compounds are those in the right column:

(31) English Compound

[bar_Ntend_V]_V ---- tend

[apple_Npie_N]_N ---- pie

[jet_Nblack_A]_A ----black

[parts_{pl}.supplier_{sg.}]_{sg.} ----supplier

[part_{sg.}suppliers_{pl.}]_{pl.} ---- suppliers

[Di Sciullo & Williams (1987, pp.24)]

With this definition, the head of word *defined* is not the stem *define*, but the inflectional morpheme *-ed*.

The definition given by this literature is by no means only a stipulation. It points out that in an English word, it is the rightmost element that determines the category, plurality and other general features of the word.

However, this definition is not applicable in Chinese, since we have seen above that for CVs, apart from the double-headed NCVs, it is the leftmost element that determines the general features of the word. We will return to this issue later.

3.2.3.2. Baker (1989)

Baker (1989) proposes another theory for heads in general:

(32) The Head-Licensing Condition (HLC)

A category β is licensed if there is a set of categories $\{\alpha_1 \dots \alpha_n\}$ such that :

a. $\beta = \alpha_1$

b. α_n is a (properly licensed) maximal projection

c. for all i , $1 < i < n$, α_i immediately dominates α_{i-1} , and is a projection of α_{i-1} of

the same or one greater bar-level.

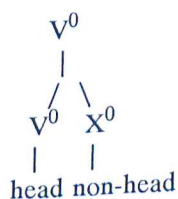
This definition is not solely applicable for words, it is a general one which is expected to be applicable to all the linguistic categories. Baker (1989) explains:

Here α is a projection of β only if α and β are identical in relevant features, including category. ... The HLC is in a sense the inverse of the standard formulation of the X' -Convention: the HLC requires that every head be traced up to a (single) maximal projection, whereas the X' -Convention require that every maximal projection be traced down to a (single) head. The HLC thus opens the possibility that a single maximal projection could license more than one head.

So Baker (1989)'s theory has two noticeable properties: It is the inverse of standard formulations of the X' -Convention; it allows more than one head for a maximal projection. Let us try to apply HLC to CVs in Chinese.

As regards the head of CVs in Chinese, we have two cases (32)a., b.:

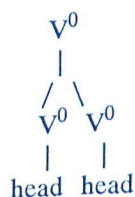
(33)a.



$X^0 = V^0$ or A^0

e.g.: *gan-pao* (chase-run)

b.



e.g.: *lai-wang* (come-go)

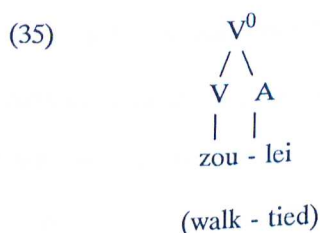
The HLC requires that every head be traced up to a (single) maximal projection. There are several issues worth investigating here.

First, the HLC requires that a maximal projection have a greater bar than its head or heads. As regards compound words, this requirement is not applicable, since in this case both the compound and its constituents are of X^0 .

Second, HLC implies that in (34)



both X^0 and Y^0 can be licensed as heads if they have identical relevant features with XP. There will be no problem for (32b), since both V^0 have identical features with the upper V^0 . However, consider the case of $\text{V}_{\text{trans.}}$ $\text{V}_{\text{intrans.}}$ in Chinese such as *gan-pao* (chase-run). This has been treated above with the first verb as the head, and the second as a complement-like element. Can the relevant feature of *pao* (run), which is an intransitive verb, be taken as being identical with the upper V ? The HLC does not indicate under what conditions two categories are considered as feature-identical. This puts us in dilemma: if we take the *relevant* features of an intransitive verb as being identical with its transitive V^0 , both verbs in (32)a. become heads of the compound. If we don't identify them, PCV consisting of an intransitive verb and an adjective like that in (35), which appeared in example (5), will not have heads, since one of the important properties of V^0 , [+transitive], is not possessed by the lower intransitive V^0 :



Therefore, a new definition should take into consideration the case of compounds, and the meaning of feature - identical:

(36) The Head Licensing Condition:

A category β is licensed if there is a set categories $\{\alpha_1 \dots \alpha_n\}$ such that

- a. $\beta = \alpha^1$
- b. α_n is a properly licensed maximal projection
- c. for all i , $1 < i < n$, otherwise $n=1$

(37) Projection Licensing Condition (PLC)

a category α_i is licensed if there is a set of categories $\{\alpha_1 \dots \alpha_n\}$ such that

a. $1 < i < n$

b. if α_n has set of features f_n , in which f_c is the categorial feature, and α_1 has set of features f_1 , in which f_{1c} is the categorial feature, then $f_1 = f_n$

c. if in $\{\alpha_1 \dots \alpha_n\}$, $f_1 = f_n$, then $f_c = f_{ic}$

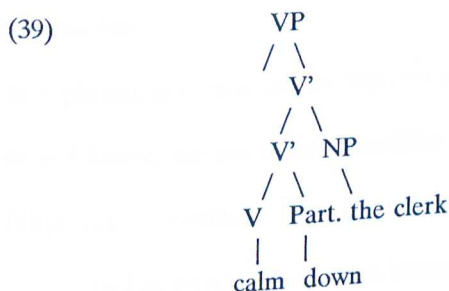
Here PLC has the following implications:

1. A maximal element may have the same bar level as its head.
2. The category with minimal bars and identical features with the maximal projection is the head.
3. If there is no category which has identical features with the maximal projection, the category of minimal bar and with identical categorial features is the head.

Some independent evidence is presented here to support their definition. In English, there are many intransitive verbs which are often used with particles. When they are used with particles together, the whole combination is transitive in nature:

(38) John calmed down the clerk.

In (37), *calm* is an intransitive verb, but *calm down* is transitive, taking an object *the clerk*. Suppose we have VP structure as (39):



With this structure, the head V *calm* does not have identical features with its projections V' and VP. In this case, the PLC can account for the relationship between V', VP and its head *calm*, since the PLC only requires the categorial feature of *calm* be identical with that of V' and VP, while with the more strict condition of the HLC, which requires feature-identity between the head and its maximal

projection, the VP would not have a head since the features of *calm* are not identical with those of VP.

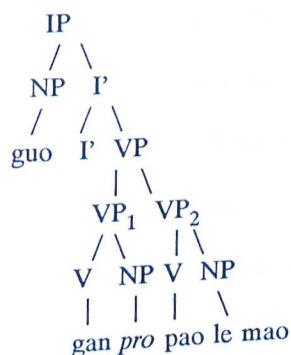
3.2.4. Compound or Phrase?

The discussion of the head of CV might lead one to argue that the CV under discussion is in fact not a compound, but a verb phrase with structure:

(40) Guo *gan-pao* le mao. ---- repeat

dog chase-run Asp. cat

"The dog chased the cat and the cat has run away."



This analysis has one advantage: it simplifies head licensing. With (40), the HLC proposed by Baker (1989), probably with a little modification, will work well, although English cases like (39) still cannot be saved. However, (40) is problematic for several reasons.

3.2.4.1. Insertability

In a phrase, elements can be inserted between the constituents. For example, either in English or in Chinese, we can insert a modifier before the NP in (41):

(41)a. discuss problems ----- discuss difficult problems

b. taolun wenti ----- taolun kunnan wenti

discuss problem discuss difficult problem

"discuss problems" "discuss difficult problems"

As regards CVs, no matter whether they are PCV or NCV, nothing can be inserted between the VV or VA except the morpheme of negation "bu" (not) and morpheme of possibility "de" (meaning "be

able to, can"), although semantically the compound resulting from insertion would be meaningful (Anderson 1985):

(42) Grammatical PCVs: VV structure

gan-pao --- gan-*bu*-pao "chase sth. but cannot make it run away"
chase-run chase-not-run
--- gan-*de* -pao "chase sth. and can make it run away"
chase-DE-run

(43) Grammatical PCVs: VA structure:

gua-zheng ---gua-*bu*- zheng "hang sth. but cannot make it straight"
hang-straight hang-not-straight
---gua-*de* -zheng "hang sth. and can make straight"
hang-DE-straight

(44) Ungrammatical PCVs: VV structure

gan-pao ---*gan-*kuai*-pao "chase sth. and make it run away quickly"
chase-run chase-quickly -run
--- *gan-*jiu*-pao "chase sth. and make it run immediately"
chase-immediately -run

(45) Ungrammatical PCVs: VA structure

gua-zheng ---*gua-*hen*-zheng "hang sth. and make it very straight"
hang-straight hang-very-straight
---*gua-*tai*-zheng "hang sth. and make it too straight"
hang-too-straight

Some NCVs cannot even have *de* or *bu* inserted:

(46) Ungrammatical NCVs:

lai-wang --- * lai-*he*-wang "come and go"
come-go come-and-go

--- * *Lai-de-wang* *"come and can go"

come-de-go

--- * *lai-bu-wang* *"come but cannot go"

In fact, not only adjuncts, even aspect markers cannot be inserted between the two elements of a CV. They have to be attached to the second element (the end of the whole CV), although the second element may be an adjective:

(47) VV structure:

gan-pao : gan-pao *le* (perfect aspect)

chase-run gan-pao *guo* (experienced aspect)

*gan-*le*- pao

*gan-*le* - guo *le*

*gan-*guo*-pao

*gan-*guo*-pao-*guo*

(48) VA structure:

chi-bao: chi-bao *le* (perfect aspect)

eat-full chi-bao *guo* (experienced aspect)

*chi-*le*-bao

*chi-*le*-bao-*le*

*chi-*guo*-bao

*chi-*guo* -bao-*guo*

3.2.4.2. Questionability

If we accept (40) as the correct structure, the two verb phrases are coordinate. In Chinese, any part of a coordinate structure may be questioned:

(49) Zhangsan chuanshang xie jiu qu da lanqiu le.

Zhangsan put on shoe then go play basketball Asp.

"Zhangsan put on his shoes and went to play basketball."

(50) Zhangsan chuanshang xie jiu *zenme* le?

Zhangsan put on shoe then how Asp.

"What did Zhangsan after he put on his shoes?"

(51) Zhangsan *zuo le shenme* jiu qu da lanqiu le ?

Zhangsan do Asp. what then go play basketball.

"What did Zhangsan do before he went play basketball?"

The possibility of questioning one part of a coordinate structure is one of the properties of Chinese syntax: In Chinese, as Huang (1982) has pointed out that there is no syntactic Wh-movement.

Consider the following contrast:

(52)a. John likes football and swimming.

b.*What does John like football and ?

c.*What does John like and swimming ?

d.?John likes what and swimming?

e.?John likes football and what?

(53)a. Zhangsan xihuan ganlanqiu he youyong.

Zhangsan like olive ball and swimming

"Zhangsan likes football and swimming."

b. Zhangsan xihuan ganlanqiu he *shenme*?

Zhangsan like olive-ball and what

"In addition to football, what does Zhangsan like?"

c. Zhangsan xihuan *shenme* he youyong?

Zhangsan like what and swimming

"In addition to swimming, what does Zhangsan like?"

Since the questioned part need not to be syntactically raised to the COMP position of the sentence in Chinese, we can freely question any part of a coordinate structure. Constrained by the Coordinate Structure Constraint (Ross, 1967) or more generally, the Subjacency Condition, questioning one part

in English is impossible because of the involvement of syntactic Wh-movement.

In contrast, in a CV, the whole combination can be questioned, but neither of its constituents can:

(54) NCV

a. Zhangsan he Lisi bu *lai-wang* le.

Zhangsan and Lisi not come-go Asp.

"Zhangsan and Lisi do not have close relationship any longer."

b. Raise question to the whole NCV:

Zhangsan he Lisi *zenme* le?

Zhangsan and Lisi how Asp

"How is the relationship between Zhangsan and Lisi?"

c. Raise question to V₁

* Zhangsan he Lisi bu *zenme* wang le?

Zhangsan and Lisi not how go Asp.

"How did Zhangsan and Lisi not visit each other?"

d. Raise question to V₂

* Zhangsan he Lisi bu *lei zenme* le?

Zhangsan and Lisi not Asp. how Asp.

"How did Zhangsan and Lisi not visit each other?"

(55) PCV --- VV structure

a. Guo *gan-pao* le mao.

dog chase-run Asp. cat

"The dog chased the cat and the cat ran away."

b. Raise question to the whole PCV

Gou dui mao *zenyang* le?

dog to cat how Asp.

"How did the dog do to the cat?"

c. Raise question to V_1

*Gou *zenyang* pao le mao?

dog how run Asp. cat

"How did the dog do and made it run away?"

d. Raise question to V_2

*Guo gan *zenyang* mao?

dog chase how cat

"The dog chased the cat and how did it do?"

(56) PCV --- VA structure

a. Zhangsan *gua-zhen* le hua.

Zhangsan hang-straight Asp. picture

"Zhangsan hung the picture straight"

b. Raise question to the whole PCV

Zhangsan ba hua *zenyang* le?

Zhangsan BA picture how Asp.

"How did Zhangsan do to the picture?"

c. Raise question to V

*Zhangsan *zenyang* zhen le hua?

Zhangsan how straight Asp. picture

"How did Zhangsan do and make the picture straight?"

d. Raise question to A:

*Zhangsan *gua* hua *zenyang* le?

Zhangsan hang picture how Asp.

"Zhangsan hung the picture and how is it?"

These examples demonstrate that both PCV and NCV can only be questioned as a whole

compound, which indicates that its parts are not separable.

3.2.5. Reduplication of V_1

CVs in Chinese have another salient property which also further supports the distinction between PCV and NCV: for all the PCVs with $V_{trans.} + A$ structure, the V can be repeated, and the repeated verb plus the object of CV raises to pre-CV position:

(57)a. Zhangsan *da-tong* le dianhua.

Zhangsan dial-through Asp. telephone

"Zhangsan got the telephone through."

b. Zhangsan *da dianhua* *da-tong* le.

Zhangsan dial telephone dial-through Asp.

"Zhangsan got the telephone through."

(58)a. Zhangsan *he-zui* le jiu.

Zhangsan drink-drunk Asp. wine

"Zhangsan drank (too much) wine that he was drunk."

b. Zhangsan *he jiu* *he-zui* le.

Zhangsan drink wine drink-drunk Asp.

"Zhangsan drank (too much) wine that he was drunk."

However, there are several restrictions on this construction. First, this construction is not possible for VV structures, be they productive or non-productive:

(59) Non-productive CV

a. Tamen *zhan-sheng* le diren.

they fight-triumph Asp. enemy

"They defeated the enemy."

b. *Tamen *zhan diren zhan-sheng* le.

They fight enemy fight-triumph Asp.

"They defeated the enemy."

(60) Productive CV

a. Tamen *gan-pao* le *diren*.

they drive-run Asp. enemy

"They drove the enemy away."

b. *Tamen *gan* *diren* *gan-pao* le.

they drive enemy drive-run Asp.

"They drove the enemy away."

In addition to the VV structures, the $V_{\text{intrans.}} + A$ structure cannot have such constructions either:

(61)a. Zhangsan *ku-zhong* le *yanjing*.

Zhangsan cry-swollen Asp. eye

"Zhangsan cried (too much) that his eyes were swollen."

b. *Zhangsan *ku* *yanjing* *ku-zhong* le.

Zhangsan cry eye cry-swollen Asp.

"Zhangsan cried (too much) that his eyes were swollen."

These examples show that the reduplication of the verb is only available for the transitive verb plus adjective structure.

The question here is why only Vs in $V_{\text{trans.}} + A$ structures can be reduplicated. In a $V_{\text{intrans.}} + A$ structure, the verb is intransitive, and an intransitive verb cannot take an object. But as regards the reduplicated construction (RC), the reduplicated verb must take an object. The $V_{\text{trans.}} + A$ structure thereby is excluded from RCs.

The VV case is more complicated. The impossibility of reduplicating a verb is closely related to the rules of argument linking, which will be discussed in section 4. In discussing argument linking of CVs, we will return to this issue, explaining why in a VV structure V_1 cannot be reduplicated.

The discussion in this subsection provides us with further evidence for rejecting the coordinate VP analysis. In Chinese, reduplication of a verb is never applicable to CVs with VV structures. Suppose we have sentence (62), in which there is a coordinate structure, and both its

parts are verbs. If CV consisting of VV is a coordinate VP structure, we would expect that the reduplication of the verb is not applicable to (62):

(62) Zhangsan *xie le yi feng xin bing da le dianhua*.

Zhangsan write Asp. one CL. letter and dial Asp. telephone

"Zhangsan has written a letter and made a telephone call."

However, reduplication of V_1 is applicable to (62):

(63) Zhangsan *xie xin xie le yi feng bing da le dianhua*.

Zhangsan write letter write Asp. one CL and dial Asp. telephone

"Zhangsan has written a letter and made a telephone call."

It is shown therefore that CV and coordinate VP structures have quite different properties.

3.2.6. Ba Construction

In Chinese, there is a popular construction --- the *ba* construction, which raises the object of the sentence to preverbal position:

(64)a. Zhangsan wang le tade mingzi.

Zhangsan forget Asp. his name

"Zhangsan forgot his name."

b. Zhangsan *ba tade mingzi* wang le.

Zhangsan BA his name forget Asp.

"Zhangsan forgot his name."

As regards CVs, if a CV is transitive, no matter if it is PCV or NCV, the object can always be raised by *ba*:

(65) NCV

a. Zhangsan *xia-bai le* Lisi.

Zhangsan play-defeat Asp. Lisi

"(In playing chess), Zhangsan defeated Lisi."

b. Zhangsan *ba Lisi xia-bai le*.

Zhangsan BA Lisi play-defeat

"(In Playing chess), Zhangsan defeated Lisi."

(66) PCV --- VV

a. Zhangsan *gan-pao* le diren.

Zhangsan drive-run Asp. enemy

"Zhangsan drove the enemy away."

b. Zhangsan *ba diren* gan-pao le.

Zhangsan BA enemy drive-run Asp.

"Zhangsan drove the enemy away."

(67) PCV --- VA

a. Zhangsan *ti-huai* le qiu.

Zhangsan kick-broken Asp. ball

"Zhangsan kicked the ball broken"

b. Zhangsan *ba qiu* ti huai le.

Zhangsan BA ball kick broken Asp.

"Zhangsan kicked the ball broken."

There are two issues worth mentioning here. The first is that in a coordinate phrasal structure, *ba* structure is not applicable:

(68)a. Zai bangongshi, Zhangsan *xie xin da dianhua*.

in office Zhangsan write letter call telephone

"In his office, Zhangsan wrote letters and made telephone calls."

b.* Zai bangongshi, Zhangsan *ba xin xie da dianhua*.

in office Zhangsan BA letter write call telephone

"In his office, Zhangsan wrote letters and made telephone calls."

Therefore, since the object can be raised from both VV and VA compounds, they must not be coordinate VPs. The second, since raising the objects with *ba* applies to any V + object

construction(except those constrained by other rules such as coordinate VPs), we can use it to test phrase structure. For example, one may claim that (69) is sentence with a PCV:

(69) Zhangsan *zou jin* jiaoshi.

Zhangsan walk into/enter classroom

"Zhangsan entered the classroom."

because the word *jin* has two functions: it can be a verb, meaning "enter", or a preposition, meaning "into". To make a judgement, we can try to raise its object with *ba*:

(70)*Zhangsan *ba jiaoshi* zou jin.

Zhangsan BA classroom walk into/enter

"Zhangsan entered the classroom."

Since raising the object with *ba* is impossible, *jin* in (70) must be a preposition. Therefore *zou jin*(walk into) is a V + preposition construction, rather than a PCV.

3.2.7. Argument-Linking

Argument-linking is a process by which a predicate assigns θ -role to arguments by the way of linking to them. Argument linking of CVs has several salient properties. First, PCVs and NCVs have different linking rules. Second, the argument linking is related to the constraints of CV formation. Third, argument linking is directional for CVs, and among PCVs, the VV structures and the VA structures have different directions in linking.

In this subsection, we want to illustrate all the differences of argument linking of different Cvs. The relationship between argument linking and constraints of CV formation will not be discussed until section 4.

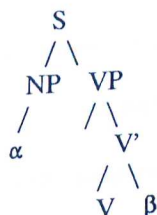
Before we turn to argument linking proper, we have to first have a brief discussion on the notions of *argument* and *argument structure*.

The notion of *argument*, as Chomsky (1981) points out, has several different meanings. For example, the positions in a sentence in which grammatical functions (GFs) are assigned are sometimes called "argument positions". Thus element occupying these positions are *arguments*.

Chomsky (1981) used this notion in a slightly different way. In GB theory, *argument position* refers to the one in which an NP such as a name or a variable may appear in the D-structure, and a potential θ -position. In order to avoid confusion, Chomsky (1981) proposes to use *A-position* instead of argument position. Thus an NP that occupies an A-position is an *argument*. The new definition of *argument* indicates that an argument must be assigned a θ -role, which is generalized as the θ -Criterion in Chomsky (1981) or *The Full Interpretation Principle* in Chomsky (1986a). These two principles, which will be discussed in section 4., are substantively identical for our purpose, although the latter might be more general.

According to the θ -Criterion, an NP in a sentence is an argument if and only if it receives a θ -role. Moreover, instead of using functional notions to define an NP, Williams (1981) proposes two new terms: *external argument* and *internal argument*, which indicate the argument not dominated by VP and dominated by VP respectively:

(71) Argument Positions:



α = external argument position

β = internal argument position

Argument structure is a morphological term. Williams (1981) defines this term simply as a *labelled list of the arguments that a lexical item can have*. Here labelling actually means *thematic relations*. For example, the verb *hit* has the following argument structure in the lexicon:

(72) Argument Structure of *hit*

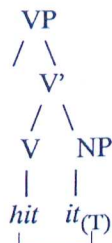
hit (Actor, Theme)

(72) means that the verb *hit* can take two arguments, the external argument will be assigned the θ -role Actor, which is underlined in (72), and the internal argument will be assigned the θ -role

Theme (Williams, 1981).

Based on the discussion above, the VP *hit it* has argument-linking as follows:

(73) Argument Linking of *hit it*



hit assigns a θ -role Theme to the internal argument *it* and thereby links to it.

The discussion on argument linking of CVs in Chinese is based on these notions.

3.2.7.1. Cases of Argument-Linking of PCVs

As observed above, if a PCV consists of two verbs, the first one must be transitive, and the second verb must be intransitive. In this case, V_1 has to link to both external and internal arguments, and V_2 can only link to the internal argument. Therefore we have (74):

(74) Argument linking of VV structure

$[\text{NP}_{\text{extl.arg.,i}} \text{V}_i \text{V}_j \text{NP}_{\text{intl.arg.,ij}}]$

e.g.: Zhangsan *song-zou* le keren.

Zhangsan see off-go Asp. guest

"Zhangsan saw the guest off and the guest went away."

In (74), no argument can remain unlinked and V_2 cannot link to the external argument. This is consistent with the discussion in Di Sciullo & Williams (1987), to which will be returned to later. Therefore all structures and the linking rules in (75) are ungrammatical:

(75) Ungrammatical Linking for VV structure

a. * $[\text{NP}_{\text{extl.arg.,ij}} \text{V}_{\text{trans.i}} \text{V}_{\text{intrans.j}} \text{NP}_{\text{intl.arg.,i}}]$

e.g.: Zhangsan *song-zuo* le keren.

Zhangsan see off-go Asp. guest

*"Zhangsan saw the guest off and went away."

b. * [NP_{extl.arg.,i,j} V_{intrans.,i} V_{trans.,j} NP_{intl.arg.,j}]

e.g.: * Zhangsan *zuo-jian* le keren.

Zhangsan sit-meet Asp. guest

"Zhangsan sat and met the guest."

c. * [NP_{extl.arg.,i,j} V_{trans.,i} V_{trans.,j} NP_{intl.arg.,i,j}]

e.g.: * Zhangsan *gan-jian* le keren.

Zhangsan chase-meet Asp. guest

"Zhangsan chased the guest and (finally) met him."

d. * [NP_{extl.arg.,i,j} V_{intrans.,i} V_{intrans.,j}]

e.g.: * Zhangsan *zuo-shui* le yihuir.

Zhangsan sit-sleep Asp. a moment

"Zhangsan sat and slept a moment."

However, if the second element in a PCV is an adjective, the first element can be either a transitive verb or an intransitive verb. Moreover, if the verb is transitive, the adjective can link to either the external argument or the internal argument (never both, of course):

(76) Argument linking of VA structures

a. [NP_{extl.arg.,i,j} V_{trans.,i} A_j NP_{intl.arg.,j}]

e.g.: Zhangsan *kan-lei* le dianshi.

Zhangsan watch-tired Asp. TV

"Zhangsan watched the TV (too much) so he was tired."

*"Zhangsan watched the TV (too much) so the TV was tired."

b. [NP_{extl.arg.,i} V_{trans.,i} A_j NP_{intl.arg.,i,j}]

e.g.: Zhangsan *xie-wan* le wenzhang.

Zhangsan write-complete Asp. article

"Zhangsan finished writing the article."

*"Zhangsan wrote an article and he was finished."

c. [NP_{extl. arg.,i} V_{intrans.,i} A_j NP_{intl.arg.,j}]

e.g.: Zhangsan *ku-zhong* le yanjing.

Zhangsan cry-swollen Asp. eye

"Zhangsan cried (too much) that his eyes became swollen."

Could a CV consist of more than two elements? In Chinese, such a combination is prohibited, no matter whether the second element or the third element is a verb or an adjective:

(77) Ungrammatical combinations of CVs with more than two elements:

a. VVA

*Gou *gan-pao-guang* le mao.

dog chase-run-complete Asp. cat

"The dog chased cats and all the cats ran away."

b. VVV

*Guo *gan-pao-duo* le mao.

dog chase-run-hide Asp. cat

"The dog chased the cat. The cat ran away and hid itself."

c. VAA

*Zhangsan *chi-wan-bao* le fan.

Zhangsan eat-complete-full Asp. meal

"Zhangsan ate his meal completely and was full."

d. VAV

*Zhangsan *xie-wan-shui* le wenzhang.

Zhangsan write-complete-sleep Asp. article

"Zhangsan finished writing the article and slept."

The sentences above illustrate all the possible and impossible combinations of CVs in Chinese. The data raise several significant issues:

1. Lieber (1983) suggests an asymmetry between internal and external arguments by stating that only internal arguments must be satisfied; the external argument or subject somehow has different status, and it is never linked to a compound. However, in (74) and (76), all the compounds are linked to external arguments.
2. Chomsky (1981) proposes an important principle: the θ -Criterion:

(78) θ -Criterion

Each argument bears one and only one θ -role and each θ -role is assigned to one and only one argument.

However, in (74), (76)a, b., each of them has an argument which seems to be assigned more than one θ -role.

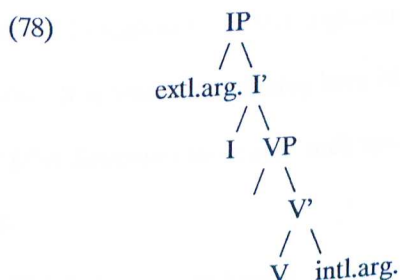
3. Why are some combinations of VV and VA possible, others ungrammatical as shown in (74) - (77)? Why are some argument-linkings possible, while others are illicit?

In the following sections, these issues are going to be discussed. Subsection 3.2.8. will deal with the first and second issue. The third issue will not be discussed until the section 4., in which θ assignment of CVs is investigated.

3.2.8. Two Issues Related to Argument-Linking

In this section, we are going to investigate two issues related to argument linking raised above. It seems that in illustrating the rules of argument-linking, several principles have been violated, one of which is the asymmetry between external arguments and internal arguments with respect to linking, the other is Lexical Integrity.

Consider the structure of (78):



Lieber (1983) claims that an external argument is never linked to a compound, because an external argument is not an argument of the verb, but an argument of the VP. So in Lieber (1983), external argument-linking is not mentioned.

Marantz (1984) further illustrates the subject-object asymmetries. Consider (79)a. and b.:

(79)a. Elmer gave the porcupine to Hortense.

b. Elmer gave Horace two aardvarks.

In (78), the object receives a θ -role Theme, while that in (79) receives a θ -role Goal, which produces two different predicates. Consequently, the logical subject of the two predicates will bear a distinct role in each. Therefore choice of the object of a verb can affect the semantic role assigned to the subject (Marantz, 1984, p.24).

This argument is convincing. However, the suggestion put forward by Lieber (1983) is not so clear: Does it mean that the external argument remains un-linked or is it linked to VP?

The answer must not be the former, because argument-linking is no more than a process by which θ -roles are assigned to arguments. If an argument remains un-linked, it cannot receive a θ -role, which leads to violation of the θ -Criterion.

Suppose the answer is the latter, another question is raised: According to the Projection Principle, a V can be linked to an internal argument because it is so specified in the lexicon. The specification of the verb in this respect is its argument structure. However VP is not a lexical item of the lexicon, where does its ability of linking come from?

The most plausible answer to this question is that it receives the ability from V by some process, which, I propose, is the Feature Percolation Convention proposed in Lieber (1983). We will go into detail in section 4. In fact, argument structure is one part of the specifications of a verb in the lexicon. It is worth mentioning here Marantz (1984) uses another term *predicate-argument structure* (*P-A Structure*) to denote such specification. For example, the P-A structure of verb *hit* is like (80):

(80) 'hit' (*patient*); logical subject = agent

which means verb *hit* takes an object with Patient role. This indicates that although the external argument may not be linked to the verb, what type of subject a verb can take must be specified in the lexicon.

So it is not accurate to say that a compound is never linked to external argument. Rather, a compound, or any other verb, is not *directly* linked to external argument. In the discussion on argument-linking in section 4., we will see exactly the same fact: a compound must be linked to the external argument, but cannot do so directly.

Another issue is Lexical Integrity, which says no syntactic or semantic phrasal rules are applicable to the inner structure of a lexical item. Huang (1988) claims that as a universal principle, Lexical Integrity holds in Chinese. Consider the following sentences:

(81)a. Ta mei *mai shu*.

he not buy book

"He has not bought a book."

b. *Shu*, ta mei *mai*.

book he not buy

"He has not bought a book."

(82)a. Ta mei *zhu-yi*.

he not pay-attention

"He has not paid attention (to something)."

b. **Yi*, ta mei *zhu-*.

attention he not pay

"No attention has paid (to something) by him."

[Huang (1988)]

For (81), subject-raising is possible because *mai shu* (buy book) is a verb phrase and the object of a verb is extractable in Chinese. For (82), *zhu-yi* (pay attention to) is a compound verb with V-NP structure, the NP cannot be moved out of verb because of the effect of the Lexical Integrity.

Does argument-linking of a compound violate this principle?

We are going to argue that the Lexical Integrity only has a limited application in Chinese. Furthermore, it is not clear what the exact definition of a syntactic or a semantic phrasal rule is.

A peculiar phenomenon has been reported in Wu (1987). There exists a mismatch between a lexical item and its projection in syntax. For example, there are a great number of verb compounds in Chinese consisting of a verb and an NP, and many phrasal rules sometimes are applicable to them. Consider the following examples: *ge-ming* (change-fate, "revolution") is such a compound. The meaning of the compound actually is not compositional, which means that it is a word rather than a phrase. However some phrasal rules can be applied to its inner element. For example, it can be expanded into *ge-tade-ming* (change-his-fate "wage revolution against him"). Even sentences like (83) are sometimes found in literature:

(83) Tamen yao *ge-sheide-ming*?

they want change-whose-fate

"Whom do they want to wage revolution against?" or

"Whom is the object of their revolution?"

As Huang (1982) proposed, although there is no syntactic Wh-movement in Chinese which will raise *whose-fate* ahead, such movement is necessary at LF. Otherwise a correct interpretation is not attainable. With this explanation, a syntactic rule does involve the inner element of a compound in the sense of one constituent embedded into a word, then is raised at LF. Other examples such as verb *shui-jiao* (sleep (v.)-sleep (n.), "sleep"), the noun in the compound can be topicalized, but a sentence with this verb cannot be passivized:

(84)a. Zhangsan zaoshang bu *shui-jiao* .

Zhangsan morning not sleep-sleep

b. *Jiao*, Zhangsan zaoshang bu *shui*.

sleep Zhangsan morning not sleep

c. **Jiao* bu bei Zhangsan zaoshang *shui*.

sleep not Pass. Zhangsan morning sleep

"Zhangsan does not sleep in the morning."

(84) shows that the behavior of verb *shui-jiao* in the syntax is somewhat like that of phrase in the sense that one NP can be moved out of it, but not completely the same as a phrase since passivization is impossible.

Huang (1988) argues that the phenomena indicate these verbs have a double status: in some cases it is a verb, in some cases it is a phrase. But he does not go into details by what criterion it is considered as a verb or phrase, since no surface distinction can be traced. It indicates that more studies are necessary to account for the phenomena.

3.3 Formation of CVs in Chinese

In the last section, all the possible inner structures of CVs are illustrated. However, the grammatical inner structure is only one of the requirements of the a grammatical compound. A grammatical compound should be constrained in other respects. Consider the following ill-formed compounds:

(85)a. **he-zou* (drink-run)

b. **shuo-zuo* (speak-sit)

These two compounds are formed by one transitive verb and one intransitive verb, so structurally they are well-formed. However they are doubtlessly bad forms. My explanation is that the formation of these compound violates the constraints of word formation in Chinese.

Take (86a) as example, two verbs in the compound should have the following features respectively:

(86)a. he (drink):

[-N] [+V]

[--- NP]

[+Animate ---- + Liquid]

[A, T]

b. *pao* (run) :

[-N] [+V]

[--- 0]

[+ Animate ---]

[A]

(86)a,b. are the specifications of the two verbs, including their category, subcategory, selected features and argument structure. As pointed out above, both verbs in this compound should link to the second argument of the V_1 , which in (86) is specified as +Liquid. However, (86b) indicates *pao* (run) can only link to an NP marked as [+Animate], never to an NP with feature [+Liquid]. Therefore this combination must be ruled out. It follows that in compound formation in the lexicon, we have the following constraints:

(87) Constraints of verb compound formation

Suppose L, M, N, ..., are sets of selectional features of NP, and

$l \in L$

$m \in M$

$n \in N$

In a CV with VV structure, V_1 can take two arguments labelled m, n ($V_{1,m,n}$), V_2

takes one argument labelled l ($V_{2,l}$), $V_1 + V_2$ is grammatical if $l = n$.

(87) will rule out all the ungrammatical combinations of $V_{trans.} + V_{intrans.}$. Considering VA cases,

(87) should be generalized as (88):

(88) Constraints of verb compound formation

L, M, N, ..., are sets of selectional features of NPs, and

$l \in L$

$m \in M$

$n \in N$

a verb compound XY is grammatical iff

a. X is $[-N][+V]$ and takes two arguments marked m, n

b. Y is $[-N][+V]$ and takes one argument marked l

$l = n$ or

c. Y is $[+N][+V]$, $l = m$ or n .

(88) is a constraint on CV formation. It excludes some of the ill-formed CVs. There are other constraints which will rule out the structurally ill-formed forms as those shown above. We will illustrate that some structural CVs are illicit because their argument structures cannot be satisfied in the syntax.

3.4. Argument-Linking of CVs

This section discusses argument-linking of CVs in Chinese. This issue is significant, because it is related to some constraints of CV formation. Argument-linking, as mentioned above, is the process by which a predicate assigns θ -role to arguments by the way of linking them. However, not all the NPs can be arguments in a sentence. Therefore, before an NP position receives a θ -role, it must first be licensed as an argument position, or in other word, θ -position.³ All the arguments specified by the argument structure of a CV in the lexicon must be satisfied in the syntax. If there is any argument unsatisfied in syntax, this CV must be ill-formed. Some alternative solutions, especially Li (1990a) will be discussed, and a comparison will be made among the different solutions.

3.4.1. Feature Percolation

To account for compounds and argument-linking in English, Lieber (1983) proposes some feature percolation conventions. It states that in a compound, all morphemes, stems and affixes alike, have their category, subcategory, semantic representation, argument structure, and diacritic specifications specified in the lexicon. The information is their features. Morphemes are inserted into unlabeled binary-branching trees, subject to their subcategorization restrictions, and trees are then labeled by means of four *Feature Percolation Conventions*:

(89) Feature Percolation Conventions

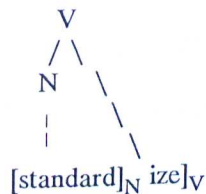
a. Convention I

All features of a stem morpheme, including category features, percolate to the first nonbranching node dominating that morpheme. For example:



b. Convention II

All features of an affix morpheme, including category features, percolate to the first branching node dominating that morpheme. For example:



c. Convention III

If a branching node fails to obtain features by Convention II, features from the next lower labeled node automatically percolate up to the unlabeled branching node. For example:



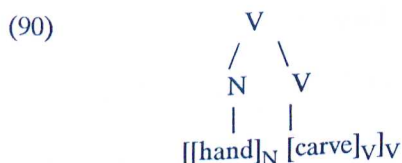
(where *counter-* lacks category feature)

d. Convention IV

If two stems are sisters (i.e. they form a compound), features from the right-hand stem percolate up to the branching node dominating the stems



Lieber (1983) says Convention I - III are assumed to be universal principles of word formation. Convention IV is language particular since some languages label compounds on the basis of the leftmost stem. The argument linking of a verb or a preposition is done by means of feature percolation. For example, the compound *handcarve* is formed by a noun and a verb. According to Convention IV, only the rightmost stem percolates its feature upward, so only verb stem *carve* can link to an argument:



However, as regards Lieber(1980, 1983)'s solution, there are several issues worth investigating:

1. Lieber (1980, 1983) use Feature Percolation to account for word formation and argument linking. Here the *features* include all the category, subcategory features and argument structure features. This thesis generally follows Lieber(1980,1983). We use the following formal definition:

(91) Definition of a Feature:

f_α is a feature of α iff it is specified for α in the lexicon

F_α is the set of features of α and

$F = \{f_1, f_2, \dots, f_n\}$

By (91), anything specified in the lexicon for a lexical item is termed a feature. This definition is not different from the usage of the term of Lieber(1980), (1983).

Convention IV implies that in a compound, only the head percolates its feature to the dominating branching node. However, in Chinese, we have cases of $V_{\text{intrans.}} + A$, which may take an object. Since the head V cannot take an object, where is the argument structure of the CV from? This question will be discussed in the next subsection.

2. Lieber (1983) does not include linking of external arguments in the discussion. However, as mentioned above, since VPs are not specified in the lexicon, how is it related to the

internal and external arguments? Further, since the argument structure of a verb is specified in the lexicon, how is the external argument realized in syntax? This issue will be discussed in 3.4.2. and 3.4.3..

3.4.2. θ - Position Licensing

θ -position licensing is a syntactic process. It determined whether an NP position is an argument position or not. An NP can be assigned θ -role if and only if it is in the position which has been licensed as θ -position. In regard to this process, there are several issues remain unsolved:

1. Why is the behavior of VV compounds and VA compounds different?
2. Why can an intransitive verb and an adjective form a transitive compound?
3. In what way will an external argument position be licensed?

It is proposed in the following discussion that all these issues can be easily accommodated with the different rules for feature percolation of VV and VA compounds.

My assumption is as follows: a θ -position is licensed by a verb or its projection only when the verb or its projection has ability to do so, in other words only when it has a proper argument structure. Contrary to Feature Percolation Convention IV, not only heads, but also nonheads percolate their features upward under certain conditions.

Chomsky (1981b) and Marantz (1981, 1983) point out that in a sentence V assigns a θ -role to its complement, which is the internal argument of the sentence; VP assigns a θ -role to the specifier position of I', which is the external argument of the sentence. However, if V^0 is a compound, it does not have features before it receives them from its constituents, nor does any projection have features unless it receives features from the constituents of V^0 . If a V^0 or its projection does not have features which provide it with ability to assign a θ -role to positions in a configuration, the θ -positions cannot be licensed. Therefore, as regards the ability of licensing a θ -position of an X^0 and its projection, we have the following principle:

(92) θ -Position Licensing:

In a configuration [$x \dots \alpha \dots y$], α licenses y and/or x as a θ -position iff

- (i) α is an X^0 or its projection
- (ii) α has θ -structure $[\theta_1, (\theta_2)]$
- (iii) α governs y and / or x .

The way that a compound V^0 or its projection receives features is feature percolation. Consider the $V_{\text{intrans.}} + A$ case, if only the head of the compound percolates its features to the branching node dominating it, we cannot explain why the intransitive head can create a transitive compound. It follows that the compound must obtain the feature $[_\text{NP}]$ from another source. Here the only possible source is the adjective. Travis (1984) has suggested that adjectives in Chinese can take complements:

(93) Ta hen gaoxing zhe jian shi.

he very happy this CL matter

"He is very happy about the matter."

[Travis (1984)]⁴

Therefore it is suggested that the nonhead of the compound can percolate its features to the branching node dominating it. On this issue, it seems that the following facts are relevant: two verbs in VV structure share the same category features in common, while in VA structure, two elements have different categorial features. For the VV structure, the features of a compound are solely determined by the head, while in VA case, the features of the compound are determined by both of the elements. To guarantee that a compound acquires sufficient features and at the same time gets rid of redundancy, we need a revised Feature Percolation Convention as (94)

(94) Feature Percolation Convention

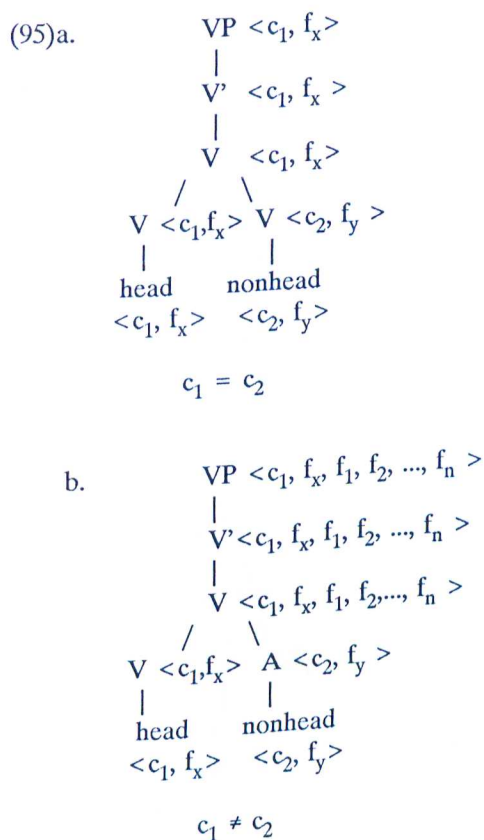
In a CV, the first element has category and other features $\langle c_1, f_x \rangle$, in which c_1 is the category feature, any feature of the first element percolates to the first non-branching and first branching nodes dominating it; the second element has the category features and other features $\langle c_2, f_y \rangle$, in which c_2 is the category feature, c_2 and f_y percolate to the first non-branching node, But f_y percolates to the first branching node

and other projections of the first branching node iff

a. $c_1 \neq c_2$

b. $f_1, f_2, \dots, f_n \in f_y \ \& \ \notin f_x$

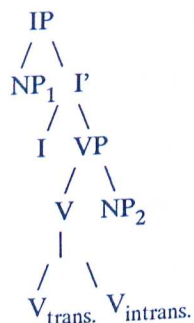
(93) is illustrated in (94):



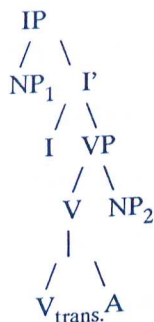
Convention (94), (95) mean that if a compound consists of two verbs, only the head can percolate its feature to the projections of the compound; if it consists of a verb and an adjective, the head can percolate all the feature to the projections of the compound, and the adjective can percolate all features except category feature and the features already included in the features of the head, to the projections of the compound. I must point out here that this convention is not universal in the sense that not all the languages are leftheaded and adjectives in other languages do not necessarily have the same properties as the those in Chinese.

Consider the following θ -licensing:

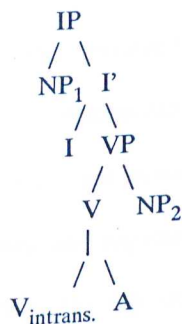
(96)a.



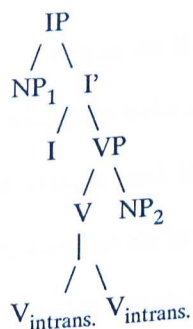
b.



c.



d. *



(96a) is grammatical, because $V_{trans.}$ as a head can percolates all its features upward to VP, thus can license NP_1 and NP_2 as θ -positions. The nonhead cannot percolate its features to V since it has the same categorial feature with the head. Therefore the nonhead cannot license any argument

position. In (96b), the transitive verb head can do as that in (96a). Although the nonhead adjective has different categorial feature with the head, its feature[___NP] cannot percolate to V since the head also has such a feature. Therefore the adjective cannot license any θ -position. (96c) is another case. In (96b), the head can license only one position since it is intransitive. The nonhead has different categorial feature with the head, and its feature[___NP] is not possessed by the head. Therefore it percolates feature [___NP] upward to VP. Under condition (92), it can license an internal argument position. (96d) is ungrammatical. In this structure, the intransitive head can only license an external argument position. The nonhead has the same categorial feature with the head, so it cannot percolate its features upward to V and cannot license any argument position. It follows NP₂ in (96b) must be a non-argument. However, the X-bar syntax in Chinese says that in Chinese, the complement position of a verb must be an argument position. This structure therefore must be ruled out.

3.4.3. Case Requirement and Argument-Linking

After an argument position has been licensed, the next step is to link the predicate to it. The linking of an argument is not unconditional. The constraints imposed on CV formation by argument position licensing and argument-linking will exclude all the ungrammatical CVs.

Before investigating the argument-linking of CVs, let us first take a look at the following paradigm:

(97)a. *Qiannian* Zhangsan xie le yi ben shu.

last year Zhangsan write Asp. one CL. book

"Zhangsan wrote a book last year."

b. Zhangsan *qiannian* xie le yi ben shu.

Zhangsan last year wrote Asp. one CL. book

"Zhangsan wrote a book last year."

c.*Zhangsan xie le *qiannian* yi ben shu.

Zhangsan write Asp. last year one CL. book

"Zhangsan wrote a book last year."

(98)a. Last year John wrote a book.

b. John wrote a book last year.

c. John last year wrote a book.

d. ?John wrote last year a book.

(96) and (97) show that in Chinese an adverbial can intervene between the external argument and the verb, but not between the internal argument and the verb; in English, having expressions between verb and an internal argument creates less acceptable sentences. This remains true no matter what type of expression the intervening element is:

(98)a. Adverbial of manner

*Zhangsan xie le *chenggong de* yi ben book."

Zhangsan write Asp. successfully one CL. book

"Zhangsan wrote a book successfully."

b. Adverbial of place

*Zhangsan xie le *zai Meiguo* yi ben shu.

Zhangsan write Asp. in America one CL. book

"In America Zhangsan wrote a book."

c. Adverbial of instrument

*Zhangsan xie le *yong maobi* yi ben shu.

Zhangsan write Asp. by brush one CL. book

"Zhangsan wrote a book with a brush."

(99)a. Adverbial of manner

? John wrote successfully a book.

b. Adverbial of place

? John wrote in America a book.

c. Adverbial of instrument

? John wrote with a brush a book.

It appears from the observation above that there is an adjacency condition relating the predicate and the internal argument at least in Chinese. We will see that actually the adjacency requirement is due to the conditions of Case assignment.

As regards the VV compound, one may raise a question: It is illustrated that in a VV PCV, V_2 must be intransitive, and V_1 must be transitive. However, an intransitive verb can take only one argument, in most cases an external argument. Therefore in the lexicon, they must be specified as [0] rather than [$\emptyset$]. Why in a PCV does it always link to the *internal argument*, not the *external argument*? Is the specification changed by some mechanism in forming a PCV? Or do the intransitive verbs in a PCV have different specifications?

In observing the VV cases, an interesting fact arises. The intransitive verbs which can act as V_2 in a PCV are rather limited. In most cases, they are *pao* (run), *zou* (walk), *lai* (come), *si* (die), etc.. All of these verbs in Chinese can take an unaccusative internal argument:

(100)a. He bian *pao* zhe yi pi ma.

river side run Asp. one CL horse

b. Yi pi ma yan he bian *pao*.

one CL horse along river side run

"A horse is running along the river."

(101)a. Men wai *zou* jinlai liang ge ren.

door outside walk into two CL man

b. Liang ge ren cong men wai *zou* jinlai

two CL man from door outside walk into

"Two men walked into the house."

(102)a. Wangmian qi sui shang *si* le fuqin.

Wangmian seven year old at die Asp. father

b. Wangmian qi sui shang tade fuqin *si* le

Wangmian seven year old at his father die Asp.

"When Wangmian seven years old, his father died."

(103) Zhangsan *ma-zou* le Lisi.

Zhangsan scold-go Asp. Lisi

"Zhangsan scolded Lisi and Lisi went away."

(104) Zhangsan *da-si* le Lisi.

Zhangsan hit-die Asp. Lisi

"Zhangsan hit Lisi to death."

Examples (100) - (102) show that in Chinese, if a predicate contains an unaccusative verb, the argument can be either preverbal or postverbal. This raises a question: Where does the argument get its Case? If we suggest that the Case is from the unaccusative verb, which is supposed to assign unaccusative Case to its complement, what motivates its complement to move to the external argument position as shown in (100b), (101b) and (102b)? If the NP gets its Case from tensed VP rather than from the verb, why are (100a), (101a) and (102a) grammatical since in these sentences, the internal arguments do not have Cases?

My suggestion is that the unaccusative verbs in Chinese, like adjectives, are optional Case-assigners. In other words, in a structure, they can either assign a Case to its complement or not. In the former Case, a sentence like (100b) is formed and it contains an internal argument; in the latter case, the Case requirement forces the internal argument to move to preverbal position to obtain a Case from VP. With this proposal, both a. cases and b. cases in (100)-(102) can be well accounted for. Moreover, this explains why only unaccusative verbs can be used as V_2 to form a PVC in Chinese and other intransitive verbs cannot:

(105) *Mama *hong-shui* le haizi.

mother coax-sleep Asp. kid

"Mother has coaxed the kid to sleep."

(106) *Zhangsan *qing-zuo* le Lisi.

Zhangsan ask-sit Asp. Lisi

"Zhangsan asked Lisi to sit down."

The reason for the ungrammaticality of (105) (106) is from the Case requirement: since both head and nonhead will percolate their features to V^0 , if both verbs are Case assigners, the internal argument will receive two Cases through it. For example, in (105), the internal argument *haizi* receives an Accusative Case from verb *hong*(coax) and a Nominative Case from verb *sui* (sleep). Now since the unaccusative verb is an optional Case assigner, the internal argument of PVC does not receive a Case from it, and such a conflict does not occur. This is why only unaccusative verbs can be used in the PCV. It indicates that the intransitive verbs of PVCs are specified as taking an unaccusative internal argument in the lexicon, and the specification is the same no matter whether the verbs are used independently as in (100) - (102) or in the PVCs as in (1), (103), and (104).⁵ More importantly, it indicates that Case assignment also plays an important role in the grammaticality of a compound.

Furthermore, considering the Adjacency Condition mentioned above: We may ask why such a condition must hold between a predicate and its argument? It is very reasonable to assume that since Case assignment in Chinese observes the Adjacency Condition, the effect of adjacency mentioned above is in fact the effect of Case requirement: a verbal Case assigner in Chinese can only assign Case to an NP which is adjacent to it. In (97c), the condition is violated and the sentence is ungrammatical. Actually, other studies have observed the same effect. Li (1985) claims that Case assignment in Chinese observes the Adjacency Condition and a left-to-right directionality requirement. The examples given by her are just like what I have given in the previous subsection: nothing can be inserted between a Case assigner and its complement (see Li (1985, p.65-68)). It seems that we reached the same conclusion from different angles. We will see in the following subsections that the Case requirement can explain why three-place verbs cannot be used to form a PCV.⁶

Now that we have given the condition for θ -position licensing and Case-assignment, the condition for argument-linking can be stated as follows:

(107) Argument-Linking

Link a predicate to an argument which is adjacent to it.

We will see in 3.4.5. that with (94), (107) and Case requirements, all the grammatical PCVs can be generated, and all the ungrammatical ones will be ruled out.

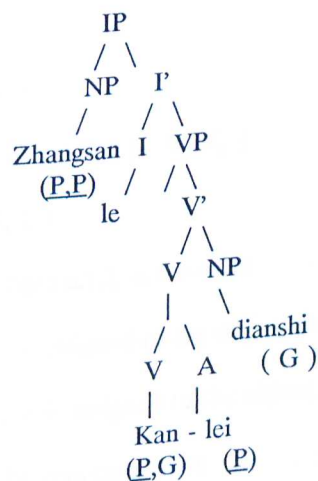
3.4.4. The θ -Criterion Revisited

It is claimed that with (94) and the Case requirements, all the grammatical compounds will be generated, while all ungrammatical forms will be excluded. However, we have to answer the question raised in 3.2.7.. By these conditions, there may be cases where one argument will receive more than one θ -role. For example, in sentence (108), the external argument will receive two θ -roles: one from the verb *kan*(watch), the other is from adjective *lei* (tired):

(108) Zhangsan *kan-lei* le dianshi.

Zhangsan watch-tired Asp. TV

"Zhangsan watched the TV (too much) that he was tired."



P=Patient, G =Goal

This is a violation of the θ -Criterion in the sense of Chomsky (1981). This is not a problem only

for Chinese CVs. Some other cases have been reported from other languages. In discussing Choctaw, a Muskogean Language spoken in Oklahoma and Mississippi, Broadwell (1988) argues that in that language, verbal agreement is sensitive to the θ -role that an argument bears and allows us to identify the arguments as Agents, Themes, and so on. Two processes in that language --- number suppletion and auxiliary selection identify the argument bearing the Theme role. There is a class of intransitive verbs in which the single argument is identified as an Agent by the verb agreement test but as a Theme by the tests of number suppletion and auxiliary selection:

(109) *Iya-t ii-tahah.*

go-t 1pl-complete

"We all went."

Because only verbs whose subject bears the θ -role Theme select the auxiliary *tahah*, the subject of (109) should bear the θ -role Theme. But by the test of verbal agreement, the subject should bear the θ -role Agent. Therefore the subject of the sentence receives two θ -roles.

To solve this problem, several linguists have proposed different solutions. Bao (1986) proposes the following solution. He gives a θ -Algorithm that determines which position will receive what θ -role:

(110) θ -Algorithm

In the configuration [_V V_a V_b]

If V_a : {1, 2 }

V_b : {a}, here a,1,2, are θ -roles

- a. If <2> is assigned to the object, then <1,a> is assigned to the subject;
- b. If <2, a> is assigned to the object, then <1> is assigned to the subject.

Schematically, (110) will be represented by

(111)a. <1, a > <2>

b. <1><2,a>

In fact, this solution introduces into the theory the notion of compound θ -roles. If an argument can

gave a compound θ -role instead of multiple θ -roles, there will be no violation of the θ -Criterion for CVs.

Chomsky (1986a) proposes another version of the θ -Criterion, which is substantively the same as the original one. Although he does not intend to solve the problem of multiple θ -roles, it provides a way out of the trouble:

(112) The θ -Criterion :

Each argument α appears in a chain containing a unique visible θ -position P, and each θ -position P is visible in a chain containing a unique argument α .

(112) makes distinction between two notions: θ -position and θ -role. Chomsky points out that this formulation of the θ -Criterion permits a θ -position to receive multiple θ -roles.

Jackendoff(1987) points out that semantically, an NP may have more than one θ -role. For example:

(113) X buy Y From Z.

Here at least two actions are involved:

(114)a. Y changes possession (from Z) to X;

b. Money changes possession from X to Z.

Here semantically X and Z have two θ -roles apiece. However, the verb *buy* as a two place verb, can only have two argument positions. Therefore it seems a sentences like (115) can be analyzed in the following way:

(115)a. Syntactically, the subcategorization of a verb will determine how many argument positions it can have. These positions will be assigned θ -roles.

b. Semantically, it will determine what the content of these θ -roles will be.

Li (1990a) adopts Higginbotham (1985)'s proposal to distinguish θ -identification and θ -assignment. With this solution, in a case like *kan-lei* (watch-tired) in (108), three θ -roles are identified, two of which will be linked to the external argument position. When two θ -roles are identified for one argument position, neither of them will be assigned, rather, they will be "tied"

together for further assignment. This means in this case, the external argument will receive a compound θ -role $T + T$ rather than an two independent ones.

Broadwell(1988) suggests that θ -Criterion be revised into (116) :

(116) θ -Criterion

Each argument bears one and only one complex θ -role and each complex θ -role is assigned to one and only one argument.

the term *complex* θ -role in (116) means merger of several θ -roles.

The solutions shown above are similar in substance. All of them permit one argument to receive more than one θ -role. This study adopts both Chomsky (1986a)'s solution which distinguishes θ -position and θ -role, and the notion of compound θ -role. It assumes that one θ -position can receive a compound θ -role.

3.4.5. Analyses of Grammatical and Ungrammatical PCVs

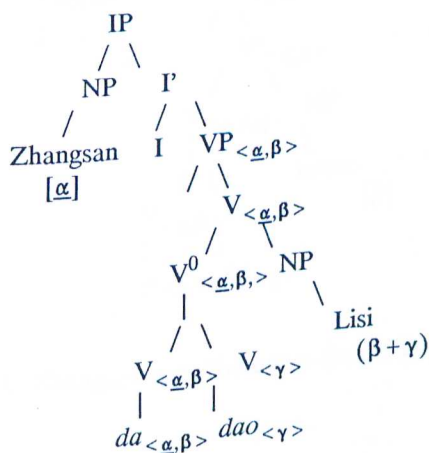
With (94),(107) and the Case requirement, all the grammatical CVs can be generated and all the ungrammatical CVs will be excluded. The following is an illustration of these principles.

(117) $V_{trans.} + V_{intrans.}$

Zhangsan *da-dao* le Lisi.

Zhangsan hit-fall Asp. Lisi

"Zhangsan hit Lisi to fall down."



In (117), the verb head *da*(hit) percolates all the features upward to V^0 and the VP, so they can license two θ -positions. The VP assigns θ -role $\underline{\alpha}$ to the external argument, and the V^0 assigns β to the internal argument; the nonhead *dao* (fall), on the other hand, can only percolate its features to the internal argument; the nonbranching node dominating it. Therefore it cannot license any argument position since it does not c-command any NP. However, according to (107), it can link to the argument adjacent to it, thus assigns a θ -role to the internal argument. In this structure, V^0 assigns Case to the internal argument, while INFL assigns Case to the external argument. The unaccusative verb *dao* (fall) does not assign Case to the internal argument. The argument structures of both elements of the compound are realized. So the compound is grammatical.⁷

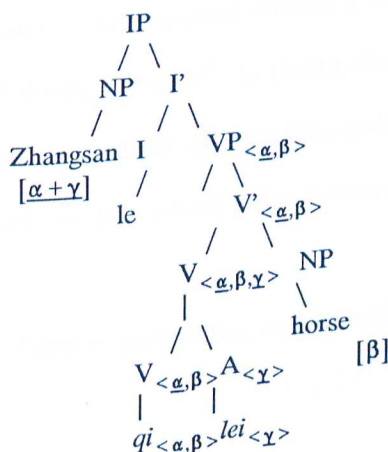
As we have discussed, there are two ways for the compound formed by a transitive verb and an adjective to link to arguments:

(118) $V_{trans.} + A$

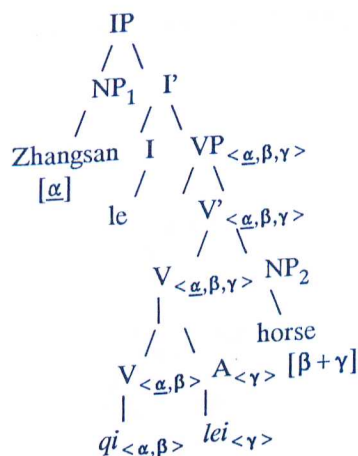
Zhangsan *qi-lei* le ma.

Zhangsan ride-tired Asp. horse

a. "Zhangsan rode the horse (too much) that he was tired."



b. "Zhangsan rode the horse (too much) that the horse was tired."



Sentence in (118) has two readings a. and b.. The head verb in (118) percolates all its features upward to V^0 and VP, thus can license two θ -positions. Then VP assigns θ -role α to the external argument and β to the internal argument; the nonhead A, according to (94), can also percolate some of its features upward as the head does. However, it cannot license any θ -position because its subcategorization features $[NP_]$ and $[_NP]$ cannot percolate up to V (because the head has the same features). However, its features $\langle \gamma \rangle$ is not included in the features of the head, according to (107), it can thus percolate to any projections of the nonhead. Therefore it can link to either the external or the internal argument by percolation, since NP_1 is adjacent to VP' and NP_2 is adjacent to A. In (118a), the external argument receives a compound θ -role $\alpha + \gamma$. The internal argument receives Case and θ -role β from V^0 . In (118b), the head also links to both the external and the internal arguments, the nonhead adjective links to the internal argument, assigning a θ -role to it. Since both the head and the nonhead assign θ -roles to the internal argument, it has a compound θ -role.

Because of feature percolation, an intransitive verb and an adjective can form a transitive verb compound:

(119) $V_{\text{intrans.}} + A$

Zhangsan *die-duan* le tui.

Zhangsan fall-broken Asp. leg

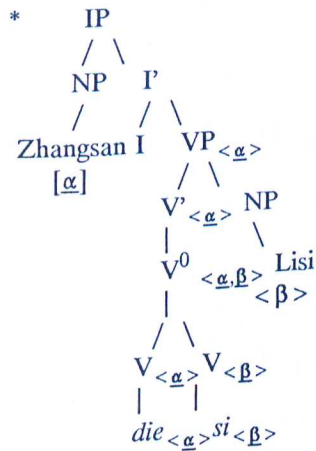
IP
 / \
 NP I' $\text{VP}_{\langle \underline{\alpha}, \beta \rangle}$
 / / \
 Zhangsan I VP $\text{V}'_{\langle \underline{\alpha}, \beta \rangle}$
 [$\underline{\alpha}$] / / \
 lc V⁰ $\text{NP}_{\langle \underline{\alpha}, \beta \rangle}$
 / \
 V $\text{A}_{\langle \beta \rangle}$ tui [β]
 | |
 die $\langle \underline{\alpha} \rangle$ duan $\langle \underline{\beta} \rangle$

From (117) to (119), all the grammatical structures of CVs have been illustrated. The following is the discussion of ungrammatical forms, which covers several different structures.

*Zhangsan *gan-jian* le keren.

Zhangsan chase-meet Asp. guest

"Zhangsan chased the guest and (finally) met him."



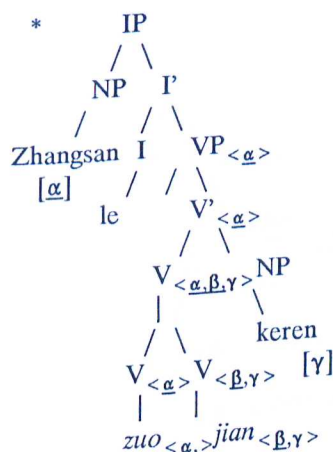
In this structure, the head is an intransitive verb, and the nonhead is an unaccusative verb. The head percolates all its features up to VP, thus can license an external argument position. The nonhead, however, cannot percolate its features up to V⁰, because its categorial feature is the same as that of the head. Therefore in this structure, nothing can license an internal argument structure and the θ -role of the nonhead cannot be assigned to any argument. Since the θ -Criterion or the Full Interpretation Principle do not allow any unsatisfied θ -roles, this type of combination must be ruled out. Furthermore, even if there is no internal argument position in (121), the structure is still ungrammatical, because in that case, the θ -role of the nonhead still remains unlinked.

(122) *V_{intrans.} + V_{trans.}

* Zhangsan *zuo-jian* le keren.

Zhangsan sit-meet Asp. guest

"Zhangsan sat to meet his guest."



Structure (122) is ungrammatical. In (122), the head V licenses an external argument position. The nonhead cannot percolate its features to V^0 , thus cannot license any argument position. Therefore nothing in this structure can license the internal argument position. Furthermore, the nonhead of the compound has argument structure $\langle \underline{\beta}, \gamma \rangle$, in which $\underline{\beta}$ cannot be satisfied in syntax since it must link to the external argument, thus there is a violation to the θ -Criterion or the Full Interpretation Principle. So although what the sentence would mean is clear, it is still ungrammatical.

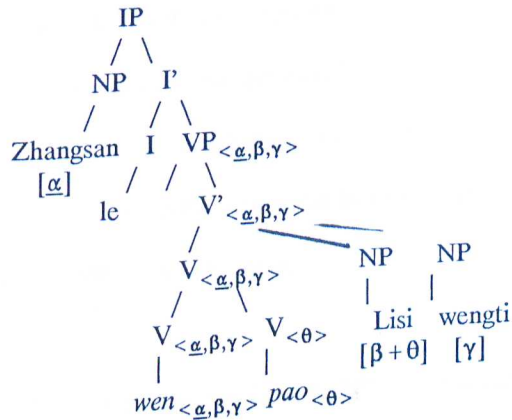
Convention (94),(107) and the Case requirement predict that three-place verbs cannot form CVs except in reduplicated constructions:

(123) $*V_{\text{three-place}} + V_{\text{intrans.}}$

*Zhangsan *wen-pao* le Lisi nai ge wengti.

Zhangsan ask-run Asp. Lisi that CL. question

"Zhangsan asked Lisi(an embarrassing) question so Lisi ran away."

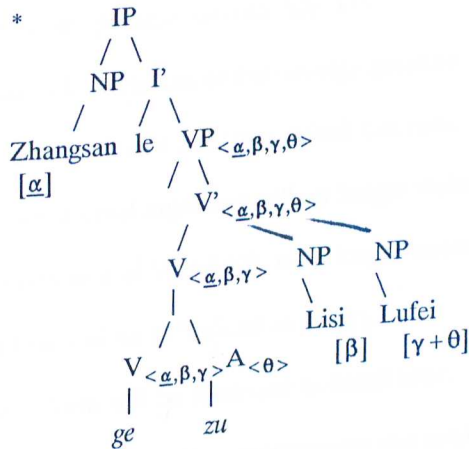


(124) *V_{three-place} + A

*Zhangsan *gei-zu* le Lisi lufei.

Zhangsan give-enough Asp. Lisi travelling fee

"Zhangsan gave enough money for Lisi's travelling."



The verb heads in these two sentences are three-place verbs. According to Stowell (1981), three place verb like the English word *give* takes two objects in the following way:

(125) [[V NP₂ NP₁]

V assigns structural Case to both NP₁ and NP₂. V first assigns Case to NP₂, then NP₂ incorporates into the head V to form a new V and this new V assigns structural Case to NP₁.⁸ Thus Chinese sentence like (129) can meet the requirement of Case theory:

(126) Zhangsan *wen* Lisi nai *ge* wengti.

Zhangsan ask Lisi that CL. question.

"Zhangsan asked Lisi that question."

However, in (123) and (124), such a mechanism is not possible: because of the intervening nonhead between the verbal head and the NP₂, verb-noun incorporation is not possible:

(127) [V₁ X NP₂ NP₁] X = V₂ or A

└─x─┐

Therefore the verbal head cannot assign Case to NP₁. Consequently the compound is not grammatical. The meaning of these sentences is comprehensible, the ungrammaticality is only related to syntactic reasons. Actually, for three-place verbs, we have a device to avoid violation of syntactic principles and that allows us to express the same meaning:

(128) Zhangsan *wen wenti wen-pao* le Lisi.

Zhangsan ask question ask-run Asp. Lisi

"Zhangsan asked Lisi (an embarrassing) question so that Lisi ran away."

This sentences involve a reduplicated structure, which can raise one of the internal arguments.

In this way, linking of the internal argument will no longer violate the requirement of Case Assignment, since incorporation of V and NP₁ is no longer necessary. Therefore three-place verbs can occur in a PVC but only when reduplication occurs.

The reduplicated form will be discussed in detail later.

Convention (94),(107) and the Case requirement also predict a very interesting phenomenon.

In Chinese, there is a *Ba* structure which is analyzed as raising the object of the sentence ahead of verb. For example, the internal argument in (128a) can be raised to form (128b):

(129)a. Guo *gan-pao* le mao.

dog chase-ran Asp. cat

b. Guo *ba mao* *gan-pao* le .

go BA cat chase-run Asp.

"The dog chased the cat and the cat ran away."

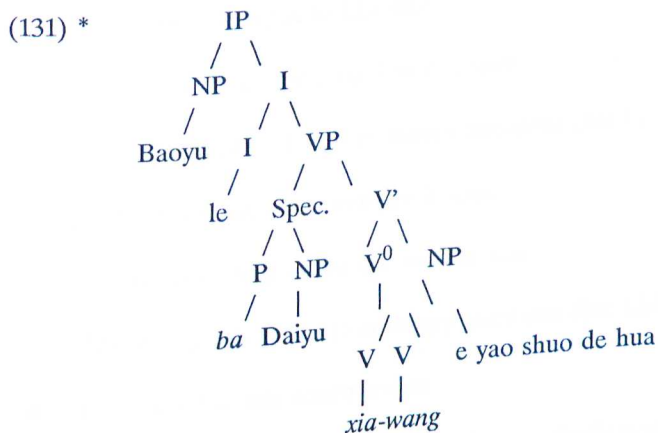
Li(1990a) proposes another approach to the *ba* structure. He claims that *ba* does not raise the internal argument ahead, instead, it creates another argument position. Along this line, he suggests the following sentences:

(130) Baoyu *ba* Daiyu xia-wang le yao shuo de hua.

Baoyu BA Daiyu frighten-forget Asp. want say Poss. speech

"Baoyu frightened Daiyu (so much that Daiyu) forget what she wanted to say."

Semantically, whom Baoyu frightened is Daiyu, and who forgot what she wanted to say is also Daiyu. However, such a reading cannot be obtained:



(131) is ungrammatical because verb *wang* (forget) has argument structure $[\gamma, \theta]$, in which two θ -roles are supposed to be assigned, one to Daiyu and one to the complement of V^0 . However, since it as a nonhead cannot percolate its features up to VP. Since a predicate can only link to an argument adjacent to it, the θ -role $[\gamma]$ which has to be assigned to Daiyu, cannot link to Daiyu through VP, there will be one θ -role that remains unlinked. Therefore the sentence is ungrammatical. Actually most native speakers being consulted have ruled this sentence out.⁹

Therefore it is concluded that *ba* structure does not create another argument position.⁹

3.5.Reduplicated Construction

We have pointed out that if V_1 in a VA compound is transitive, no matter if it is a three-place verb or two-place verb, it is possible to form a reduplicated construction:

(132) $V_{2\text{-place}} + A$

a. Zhangsan *chi-wan* le fan.

Zhangsan eat-complete Asp. meal

"Zhangsan ate his meal completely."

b. Zhangsan *chi fan chi-wan* le.

Zhangsan eat meal eat-complete Asp.

"Zhangsan ate his meal completely."

(133) $V_{3\text{-place}} + A$

a.*Zhangsan *wen-fan* le Lisi wenti.

Zhangsan ask-tired Asp. Lisi question

"Zhangsan asked Lisi (too many) questions that Lisi was tired."

b. Zhangsan *wen wenti wen-fan* le Lisi.

Zhangsan ask question ask-tired le Lisi.

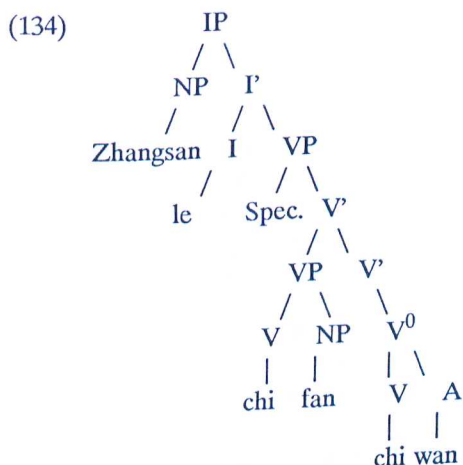
"Zhangsan asked Lisi (too many) questions that Lisi was tired."

Several issues are involved in this construction:

1. Why can only $V_{\text{trans.}} + A$ compounds have reduplicated forms and others cannot?
2. Why does the ungrammatical structure $V_{3\text{-place}} + A$ or $V_{3\text{-place}} + V_{\text{intrans.}}$ become grammatical when the verb is reduplicated?

We claim that these facts provide further evidence to support the solution given in this thesis. The following is a discussion.

Let us first take a look at the tree structure of (132):



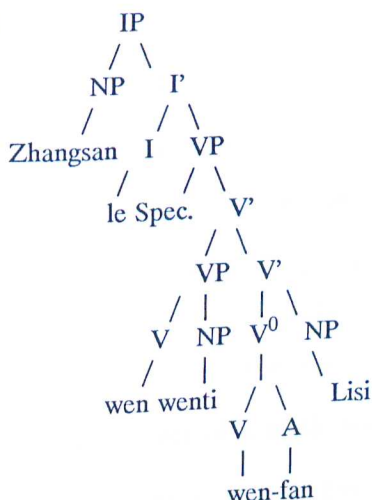
In (134), the head of compound *chi*(eat) has argument structure $\langle \underline{\alpha}, \beta \rangle$, and the nonhead *wan* has $\langle \gamma \rangle$. In addition to the Feature Percolation Convention, it also assumes a θ -role allotment process which stipulates that when a verb is reduplicated, the θ -roles in its argument structure will be allotted to each of them:

(135) In verb reduplication

$$V_{\langle \underline{\alpha}, \beta \rangle} \text{ --- } V_{\langle \underline{\alpha} \rangle} \text{ ... } V_{\langle \beta \rangle}$$

In (134) the verb *chi*(eat) must link to the external argument *Zhangsan*, and the adjective *wan*(complete) must link to the internal argument *fan*(meal). They can be satisfied in the following way: After allotment of argument structure of the head, the verb head has feature $\langle \underline{\alpha} \rangle$, which can percolate to VP. Since VP is adjacent to *Zhangsan*, it can link to *Zhangsan*, thus assigning θ -role to it. The reduplicated verb has argument structure $\langle \beta \rangle$, which can be assigned to the internal argument *fan* since the reduplicated verb is adjacent to it and can thus link to it. The feature $\langle \gamma \rangle$ of the nonhead can be percolated to V^0 since it is not one of the features of the head. Furthermore, since the internal argument is also adjacent to V^0 , V^0 can link to it and assign θ -role $\langle \gamma \rangle$ to it. Therefore in this structure, all the argument structures are satisfied, and none of the predicate remains unlinked, the sentence is grammatical. It demonstrates why 3-place verb + A with reduplicated structure is grammatical. Also we assume that the reduplicated VP is adjoined to V' . Consider the tree diagram (136):

(136)



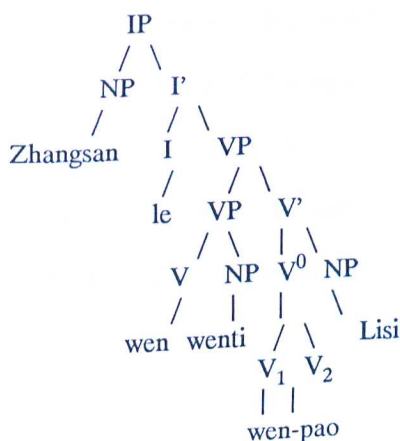
In (136), the θ -role in the argument structure of the verb *wen* (ask) is allotted into the verb and its reduplicated form. Through percolation, *Zhangsan* receives a θ -role from verb *wen*(ask), NP *wenti*(question) receives a θ -role from the reduplicated verb, *Lisi* receives a compound θ -role from *wen*(ask) and *fan* (tired). Thus in this sentence, all the θ -roles are satisfied, and each argument position is assigned a θ -role. Therefore the sentence is grammatical. Furthermore, if we change the adjective in (133b) into an unaccusative verb, it is predicted that the sentence will be accepted:

(137) *Zhangsan wen wenti wen-pao le Lisi.*

Zhangsan ask question ask-run Asp. Lisi

"Zhangsan asked Lisi (an embarrassing) question that Lisi ran away."

*"Zhangsan asked Lisi (an embarrassing) question that the question ran away."



In (137), the verb head can percolate all the features up to VP, thus can link to the external argument since *Zhangsan* is adjacent to it. The reduplicated verb can link to the internal argument *wenti*(question), since they are in sisterhood and nothing intervenes them. The nonhead unaccusative verb *pao*(run), however, cannot percolate its feature to any of its projection above V_2 , since it has the same categorial feature with the head. It can only percolate its features to V_2 . The second internal argument *Lisi* is adjacent to V_2 , so verb *pao*(run) can link to *Lisi* and assign a θ -role to it. It cannot link to *wenti*(question) since *wenti*(question) is not adjacent to V_2 . This result is just what we want: if the nonhead can link to the first internal argument, it will result in a wrong reading.

With (94) and (107), all the ungrammatical reduplicated structures are ruled out. They predict that intransitive verbs cannot form reduplicated constructions:

(138) *Zhangsan *die tui die-duan* le.

Zhangsan fall leg fall-broken Asp.

"Zhangsan fell down and broke his legs."

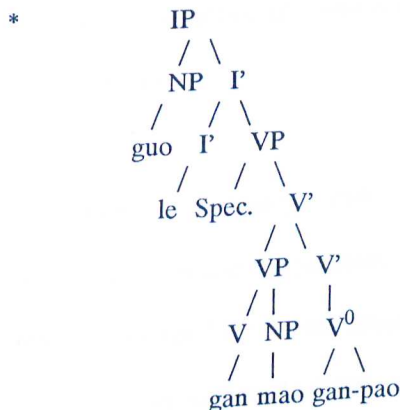
Since the argument structure of verb *die*(fall) has only one θ -role, so in the process of reduplicating, it cannot allot a θ -role to its reduplicated form. In (138), the NP *tui*(leg) is in a complement position which should be a θ -position. However, since the intransitive verb *die* (fall) cannot allot its θ -roles to its reduplicated form, its complement position cannot be licensed as a θ -position. Therefore this sentence is ungrammatical.

It follows that VV compounds cannot form a reduplicated construction unless the first verb is three-place verb. Consider the following sentence:

(139) *Gou *gan* mao *gan-pao* le.

dog chase cat chase-run Asp.

"The dog chased the cat and the cat ran away."



In this structure, there is no problem for θ -allotment since V_1 is a transitive verb. Verb *gan*(chase) as the head can percolate its features to V^0 and VP, thus link to the external argument. However, the nonhead *pao* (run) cannot percolate its features up to V^0 , and since a predicate can only link to an argument adjacent to it, it can link to neither the external argument nor the internal argument since neither of them is in its projection. So it must remain unlinked, the sentence therefore is ungrammatical.

3.6. Alternative Solutions

3.6.1. Bao (1986)

Bao (1986) first discusses the phenomena within Government and Binding Theory. This study focuses on two issues: the possible structures of CVs and θ -role assignment. He observes that in Chinese the possible structures of CV are $V_{trans.} + V_{intrans.}$, $V_{trans.} + A$ and $V_{intrans.} + A$. However, in dealing with other structures, he lists $V_{intrans.} + V_{intrans.}$, $V_{trans.} + V_{trans.}$, $V_{intrans.} + V_{trans.}$, taking them as exceptions.

Although in the beginning of the paper, Bao (1986) has pointed out that one of the

properties of CVs is its productivity, he fails to apply this property to judge each of the CVs he discusses. Actually, all the exceptions mentioned in it are non-productive in substance. Therefore Bao (1986) has difficulty in providing a unified solution.

In dealing with the θ -Criterion, Bao (1986)'s solution is not different from that of Higginbotham(1985). Its θ -Algorithm predicts correct argument-linking rules for the CVs. This thesis generally accepts its notion of compound θ -roles, but relates argument-linking to the grammaticality of the forms.

3.6.2. Li (1990a)

This is a more comprehensive study on CVs in Chinese. It is also concerned with the constraints on forming CVs and the problem of multiple θ -roles. Since we have introduced its solution on multiple θ -roles, here we introduce the constraints it proposes on CV formation.

To treat CV compounding, Li (1990a) introduces the notion of θ -role prominencies. Whole numbers indicate θ -role prominencies, with <1> standing for the most prominent one, and <2> the second, etc.. Thus verbs *da* (hit) and *da-pao* (hit-run) takes the forms of (140) a., b.:

(140)a. *da* <1, 2>

b. *da-pao* <1> <1', 2>

θ -roles will be assigned to arguments with strict order: the least prominent one is supposed to be assigned first, then the more prominent one. The most prominent one will be assigned last.

This solution predicts that for $V_{trans.} + V_{intrans.}$ or $V_{trans.} + A$ combinations, only θ -identification (141)a., b. are grammatical:

(141)a. <1, 2-1'>

b. <1-1, 2 >

c.*<2-1', 1>

d.*<2, 1-1>

For example:

(142)a. Baoyu *qi-lei* le ma. ---- <1, 2-1'>

Baoyu ride-tired Asp. horse

"Baoyu rode the horse (and as a result the horse got) tired."

b. Baoyu *qi-lei* le ma. ---- <1-1', 2>

Baoyu ride-tired Asp. horse

"Baoyu rode the horse (and as a result he got) tired."

c. *Baoyu *qi-lei* le ma. ---- <2, 1-1'>

Baoyu ride-tired Asp.horse

"The horse rode Baoyu (and as a result he got) tired."

d. *Baoyu *qi-lei* le ma. ----- <2-1', 1>

Baoyu ride-tired Asp. horse

"The horse rode Baoyu (and as a result the horse got) tired."

However, the θ -role prominencies are too weak to exclude all the ungrammatical combinations. For example, with (141), we cannot explain why the following reading is bad:

(143) Gou *gan-pao* le mao.

dog chase-run Asp. cat

*"The dog chased the cat and ran away."

Furthermore, using only the notion of θ -role prominencies, many ungrammatical sentences can be generated. For example, Li(1990a) predicts $V_{\text{intrans.}} + V_{\text{trans.}}$ is good:

(144) *Ta *wan-wang* le zijid zhize.

he play-forget Asp. own duty

"He played (in such an absorbed way that he) forgot his duty."

(145) *Ni *ku-bu-dong* zheidao ti.

you cry-not understand this question

"That you cry won't make you understand this question."

Both these sentences are ruled out by Chinese speakers. Sentence (144) is semantically understandable, sentence (145) even cannot be understood.

Interestingly, for the case of the three-place verbs, this thesis has shown that no such verb can form CVs without reduplicating a verb. Li (1990a) reaches the same conclusion, due to the ungrammaticality of such structure to lack of Case of some argument. However, Li (1990a)'s solution cannot exclude such sentences:

(146) *Baoyu wen Daiyu wenti *wen-hui* le yingyu.

Baoyu ask Daiyu question ask-know Asp. English

"Baoyu asked Daiyu question (and as a result Baoyu came to) know English."

In this sentence, verb *wen* (ask) has to assign Case to the external argument *yingyu* (English). Such an assignment is a violation of the Adjacency Condition as V_2 blocks the V - N incorporation. In fact, no Chinese speaker has been found that accepts this sentence, although it is marked as grammatical in Li(1990a).

In summary, the solution given by Li (1990a) can exclude some of the wrong readings, but cannot exclude ungrammatical morphological and syntactic structures. This suggests that the well-formedness conditions on CVs in Chinese does not only depend on the order of argument-linking. The following is a summary of the two approaches:

(147) Constructions Permitted by

Li (1990a) (94),(107) and Case Requirement
 $V + A$ $V + A$

$V_{trans.} + V_{intrans.}$ $V_{trans.} + V_{intrans.}$

$V_{intrans.} + V_{intrans.}$

$V_{trans.} + V_{trans.} : V_{2-place} + V_{2-place}$

$V_{3-place} + V_{3-place}(\text{reduplicated})$

$V_{2-place} + V_{3-place}(\text{reduplicated})$

3.7. Conclusion

By investigating the behavior of CVs in Chinese, it is concluded that the head of a word

could not be determined solely by positions. We have attributed this phenomenon to the origin of morphological structures of Modern Chinese. The two rules proposed in this chapter, the Feature Percolation Convention (94), (107) and the Adjacency Condition for Case Assignment generate all the grammatical CVs and excluded all the ungrammatical forms.

Note:

1. compound SVCs in Edo are quite similar to those in Chinese structurally. For example, the following are reported in Edo:

(1)a. *fya - ye* : cut-eat "bite"

b. *tye -re* : call-come "summon"

However, because we do not have sufficient data of this language, it is rather difficult for us to do analyses in detail. For example, we do not know if compound SVCs in Edo should be divided into PVC and NCV, whether there is reduplicated forms, etc.. Therefore we do not discuss Edo in this thesis.

2. Here we leave a problem open: (26) and (28) stipulate that the whole compound and the head of it are the scope of modification, but in (20), *only* the head of the compound should be modified. Of course we can give examples that only the whole compound is modifiable:

(1) Wo yijing ding-yan le xuanchuan.

I already hear-tired Asp. propaganda

"I have heard to much propaganda and been tired of it."

In this sentence, the modifier *yijing* (already) modifies the whole compound rather than the head of it, because the interpretation of the sentence cannot be "since I have already heard so much of it, because the interpretation of the sentence cannot be " since I have already heard so much propaganda that and I am (or was) tired of it." No ambiguity occurs. It signifies that although both the whole compound and the head of it are in the scope of modification, only one of them are modifiable, which means (26) and (28) are necessary conditions, not sufficient conditions for modification. This is why I changed the *iff* clause in (26) in Wu(1989) into an *if* clause in this thesis. To give a sufficient condition, further investigation is needed.

3. Thanks to Norbert Hornstein for the suggestion for dividing argument-linking of CVs into argument position licensing and argument-linking.
4. Travis does not mention the Case requirement for the object in this example. However, since adjective in Chinese can take an object, we can assume that it is an optional Case assigner and in this example, it assigns a Case to its complement.
5. There are a few exceptions: intransitive verbs as *ku* (cry), *xiao* (laugh) etc., which are not unaccusative verbs, are sometimes used in PVCs:

(1) Zhangsan *ma-ku* le Lisi.

Zhangsan scold-cry Asp. Lisi

"Zhangsan scolded Lisi so that Lisi cried."

(2) Zhangsan *dou-xiao* le Lisi.

Zhangsan amuse-laugh Asp. kid

"Zhangsan amused the kid to laugh."

It seems to me that these exceptions are the result of incorrect analogy from the unaccusative verbs to accusative verbs, since most accusative verbs cannot be used in this way.

6. In addition to Chinese and English, we have further evidence to support the Case requirement. In discussing the origin of SVCs in Saramaccan, Byrne(1987) points out that in that language and some other Caribbean creoles, preposition is a marginal category because there are only two or three words belonging to the category. Byrne (1987) suggests that preposition is best viewed as within the marked periphery of the core grammar. However, the Case-assignment in that language also observes strict Adjacency Condition, and a verb can Case-mark only one NP(p.251). Consequently, if a sentence contains two NPs which

should have Dative and Benefactive Cases respectively, they would require separate Case assigners. In such situation, the language was forced to serialize in the sense that more than one verb must be used to assign Case to each of the NPs.

7. Considering incorporation of verb and INFL, it is assumed that INFL does not block the c-commanding relation between VP and the external argument.
8. We should be careful that the concept of incorporation here is not the same as that of Baker (1988) in the sense it is not a movement, thus no trace will be left and ECP requirement is met.
9. There is one exception: In spoken Chinese, we have found the following sentence:

(1) Zhangsan *ba* Lisi da-duan le tui.

Zhangsan BA Lisi hit-broken Asp. leg

"Zhangsan hit Lisi's leg and the leg was broken."

However, such a sentence is usually only used colloquially and there must be an inalienable relationship between NP₂ and NP₃. For example, we can never say

(2) *Zhangsan *ba* Lisi tou-zou le shoubiao.

Zhangsan BA Lisi steal-go Asp. watch

"Zhangsan stole Zhangsan's watch."

CHAPTER 4.

Syntactic Serial Verb Construction

4.0. Introduction

4.0.0. The Syntactic Serial Verb Construction (SSVC)

I illustrated in Chapter 1. that *serial verb constructions* vary structurally from language to language. Verb compounds are only found in a few languages, e.g. Chinese, Edo, Dravidian, etc.. Phrasal SVCs are only found in Dravidian languages. In contrast, clausal SVCs exist extensively in almost all the serialized languages. This indicates that clausal structure is the major form of SVC. For convenience, we may term the *compound verb* investigated in Chapter 3 the *Morphological Serial Verb Construction(MSVC)*, and SVCs with phrasal and clausal structures as *Syntactic Serial Verb Constructions(SSVC)*.

To lay a base for further discussion, we will present examples of varieties of SSVCs again in section one and discuss their properties in detail. As regards SSVCs, several issues are crucial for investigation. First of all, since as discussed in Chapter 2, an SVC is defined as a construction in which several verbs are not lexically connected, which means there is no overt structural marker such as complementizer, conjunction, etc. to indicate its structure, in what way can we know that a certain SVC is of phrasal or clausal structure? In fact, in the previous literature, it is not unusual to see that the same SVC sentence has been given three or four different structures by different linguists. This issue will be handled in section 1. Apart from detailed discussions on different analyses in the previous literature, we are going to show that the evidence to support the analysis of Bickerton & Iatridou (1989) is convincing, and the same conclusion has been reached by investigating SVCs in Chinese. Section 2 deals with the generation of SVCs. This is another

important topic discussed in the previous literature. There are several proposals on this issue. For example, Bamgboṣe (1974) proposes a transformational approach which deletes parts of strings in D-structure. Schachter (1974) suggests that SVCs are generated by phrase structure rules rather than via transformation. Baker (1989)'s analysis requires revision of X-bar conventions of the Government and Binding Theory. The structure of SVCs given by Bickerton & Iatridou (1989) claims that the only way of generating SVCs is via adjunction. Huang (1989) studies the complex predicate construction in Chinese and proposes a new approach to it. Although it does not mention SVCs in Chinese, the structure it provides are supposed to be general to all similar constructions in Chinese. Therefore we will include a discussion of his proposal in this section. In Section 4., we study control in SSVCs. Since all the clausal SVCs must have at least one empty category, this issue actually is reduced to the investigation of the empty category: how it is licensed, how it can get a reference, etc.. It has been reported that in most cases, the empty external argument of a non-maximal clause is subject-controlled, but we have found several object-controlled cases, which in Chinese is traditionally not analyzed as an SVC, but as a *pivotal construction* or *jianyu construction*. Therefore, one of the tasks of this section is to show the different behaviors of these two constructions.

However, to explain the structure and generation of SSVCs is not the only aim of this study. What we are concerned with are the rules and principles governing the phenomena under discussion. We will see in this section that almost all the principles of the Government and Binding Theory are involved. In discussing the structure, generation and argument-linking of SSVCs, we have to consider *X-bar Theory*, *Government Theory*, *Binding Theory*, *Control Theory*, and *θ-Theory*. The facts concerning SSVCs provide evidence to support or refute several proposals concerning these theories given in the previous literature.

The data used in this section are from Chinese and other well-studied languages such as Yoruba, Sranan and Akaans, etc.. We focus mainly on Chinese.

4.0.1. Some Examples of SSVC

In all the four language groups we are studying, clausal SVCs have been attested:

(1) In Chinese

a. Zhangsan *yong dao qie rou*.

Zhangsan use knife cut meat

"Zhangsan used knife to cut meat."

b. Zhangsan *jie yifu chuan*.

Zhangsan borrow clothes wear

"Zhangsan borrowed clothes to wear."

c. Wo *zhao-bu-zhao xiansheng jiao*.

I find-not-Part. teacher teach

"I cannot find a teacher to teach me."

[Chao (1962)]

(2) In Western African Languages

a. Aje *gbe aso wo*. ----- Yoruba

they took dress wear

"They put on some clothes."

[Awobuluyi (1973)]

b. U *la ebi ba naka*. ----- Nupe

he took knife cut meat

"He cut the meat with knife."

[Hyman, (1971); Lightfoot (1979, p.217)]

c. Òzo *rele le eya re*. ---- Edo

Òzo ran cook food eat

"Òzo quickly cooked and ate."

d. *Dada gbe akoti lo ile ni ana.* ---- Akan

Dada took box went home on yesterday

"Dada took the book home yesterday."

[Schachter (1974); Sebba (1978, p.18)]

(3) In Caribbean Creoles

a. *A kai a dataa kon luku a pikin.* ---- Aucaans

he call the doctor come look at the child

"He called the doctor to come to look at the child."

b. *A da di moni da di mujee.* ----- Saramaccan

he give the money give the woman

"He gave the money for the woman."

[Byrne (1987, p.177)]

c. *Mon ti pran balye koko ti bat li.* ---- Seselwa

I Ten. take broom coconut Ten. hit him

"I hit him with a coconut broom."

[Bickerton & Iatridou (1989)]

(4) In Dravidian Languages

Accodahk parhk anm'oR. --- Muria Godi

then-Abl. look-Bvb. go-Neg.-3sm

"Since then he hasn't gone to look (for a wife)."

[Steever (1988, p.68)]

4.0.2. Some Issues of Clausal SVCs

The clausal SVC is a construction in which the matrix clause has attached to it a small clause. This attachment is not indicated by any lexical device. Moreover, since the external argument ---subject--- of the small clause must remain empty, at S-structure the verb of the matrix clause and that of small clause seem to appear serially. As regards this type of SVC, there are several issues

worth discussing.

Many linguists (e.g. Bickerton & Iatridou) have reported that if an SVC is of clausal structure, the non-matrix clause may be either finite or non-finite. For example, in Seselwa, sentence (5) has been reported:

(5) *Nui ti sorti proi ti al lapas.*

we Ten. leave Ten. go fishing

"We set out to fish."

[Bickerton & Iatridou (1989)]

In this sentence, the tense marker *ti* is attached to both matrix and non-matrix verbs, indicating that the non-matrix clause is finite. It has been found that if both verbs in a SVC are tensed or marked with aspect, the verbs must have the same tense or aspect.

There are also cases in which only the matrix clause is tensed or aspect-marked. For example, in Yoruba, the non-matrix verb in a SVC can be non-finite:

(6) *Olu le omo naa wa ile.*

Olu drove child the come home

"Olu drove the child home."

[Bamgboṣe (1974)]

In this sentence, the matrix verb *le* (drove) is marked with past tense, while the non-matrix verb *wa* (come) is not tensed.

However, there are some complicated cases. First, there are a great number of sentences of which both verbs are not tensed or marked with aspect, although the language proper has tense or aspect. For example, from (6) we know that Yoruba is a language with tense, but in most cases, Yoruba sentences with SVCs are not tensed-marked:

(7)a. O *mu iwe wa*.

he take book come

"He brought the book."

[Bamgboṣe (1974)]

b. Bola *se eran ta*.

Bola cook meat sell

"Bola cooked meat sell"

[Lord (1974)]

We also have found examples from other languages:

(8) In Sranan

De *fon owrukuru kiri*.

they beat owl kill

"They beat owl to death."

[Sebba (1987, p.40)]

(9) In Saramaccan

A *tei goni suti di pingo*.

he take gun shoot the pig

"He shot the pig with a gun."

[Byrne (1987, p.166)]

Sranan is a language with tense and Sramaccan is a language with aspect, but no tense or aspect marker appears in these sentences. In fact, for all these languages, INFL is not obligatorily overt. Consequently it is rather difficult for us to make a judgement whether the non-matrix clause is finite or not.

On this issue, Chinese presents more troubles. A well-known fact is that Chinese is a language with aspect, but without tense or subject-predicate agreement. On the one hand, it has not been clear what element labels finiteness of a Chinese sentence, on the other hand, considering

aspect markers can be attached to either the first or second verb, in spite of finiteness, we even have difficulty in determining which clause is the matrix clause in an SVC sentence.

As regards the first problem, Huang (1982) claims that the finite/non-finite distinction lies in the difference in INFL, the content of which is the aspect marker. Li(1985) keeps up the distinction, but her criterion for distinguishing finite clauses from non-finite clauses is the occurrence of future tense markers. On the contrary, Xu (1987) erases the distinction between finite and non-finite clauses.

The question here is to what extent does the distinction affect the analyses of SSVCs. This issue will be discussed in section 4.

To reveal the second problem, look at the following paradigm:

(10)a. Zhangsan *qi* ma *shang* shan.

Zhangsan ride horse climb mountain

"Zhangsan rode a horse to climb the mountain."

b. Zhangsan *qi zhe* ma *shang* shan.

Zhangsan ride Asp. horse climb mountain

"Zhangsan was riding a horse to climb the mountain."

c. Zhangsan *qi* ma *shang le* shan.

Zhangsan ride horse climb Asp. mountain

"Zhangsan has climbed the mountain by riding a horse."

d.?Zhangsan *qi le* ma *shang le* shan.

Zhangsan ride Asp. horse climb Asp. mountain

"Zhangsan rode a horse and climbed the mountain."

e.?Zhangsan *qi zhe* ma *shang le* shan.

Zhangsan ride Asp. horse Asp. mountain

"Riding a horse, Zhangsan has climbed mountain."

f.*Zhangsan *qi zhe* ma, *shang* shan.

Zhangsan ride Asp. horse climb mountain

"Zhangsan rode a horse to climb the mountain."

g. *Zhangsan *qi* ma, *shang le* shan.

Zhangsan ride horse climb Asp. mountain

"Zhangsan rode a horse to climb the mountain."

h. Zhangsan *qi le* ma, *shang le* shan.

Zhangsan ride Asp. horse climb Asp. mountain

"Zhangsan rode a horse and climbed the mountain."

i. Zhangsan *qi zhe* ma, *shang le* shan.

Zhangsan ride Asp. horse climb Asp. mountain.

"Zhangsan is riding Asp. horse and has climbed the mountain."

From (10), we have seen that aspect maker can attach to either first verb or second verb, and different places of attachment will result in different meanings of the sentences: In (10)b., the aspect marker is attached to the first verb, the reading of the sentence is that "Zhangsan is riding a horse. The purpose of his action is to climb the mountain"; in (10)c., the aspect marker is attached to the second verb, the reading becomes "Zhangsan has climbed the mountain. The way of his climbing is riding a horse." The difference of readings must be tracked back to the difference of their syntactic structures. This issue is discussed in section 1.

Furthermore, (10) shows that in Chinese, both verbs in a SVC can be un-marked by aspect. If both verbs are aspect-marked, usually there should be a pause between the two verb phrases, which means in such case the construction is not SVC.

All the sentences in (10) have a significant property: no matter what structure they have, the second verb does not have an independent subject. It always shares the subject with the first verb. If these sentences are of clausal structure, we may classify them as *subject control* case. As has been mentioned before, in the West African languages, Caribbean creoles and Dravidian languages, subject control is the prevailing structure for SVCs. In Chinese, the situation is more complex. *Jianyu*

sentences are all object-controlled:

(11)a. Zhangsan *yaoqing* Lisi *changan* Tienanmen Square.

Zhangsan invite Lisi visit Tienanmen Square

"Zhangsan invited Lisi to visit Tienanmen Square."

b. Women *xuanju* Zhangsan *zuo* zhuxi.

we elect Zhangsan do chairman

"We elected Zhangsan as Chairman."

c. Zhangsan *gei* Lisi *gongzuo* *zuo*.

Zhangsan give Lisi work do

"Zhangsan gave works for Lisi to do."

d. Wo *zhao-bu-dao* xiansheng *jiao*.

I find-not teacher teach

"I cannot find a teacher to teach me."

[Chao (1962)]

e. Wo *zhao-bu-dao* xuesheng *jiao*.

I find-not student teach

"I cannot find students to teach."

[Chao (1962)]

Each of the sentences in (11) has two verbs, and the object of the first verb is always the subject of the second verb. Traditionally, the NP between two verbs are considered having two functions --- the object of the first verb and the subject of the second verb,---thus being termed a concurrent functional construction.

Observe (11)d., e. We can find an interesting contrast: although these two sentences superficially have same structure, the NP between the two verbs in (11)d. syntactically and semantically is the subject of the second verb, while in (11)e., semantically it is the object of the

second verb. That means that actually in (11)e., the two verbs share both subject and object. These issues will be dealt with in section 3 on argument-linking of SSVCs.

As regards the lexical properties of verbs which construct SSVCs, it seems to me that some verbs can only form subject-control constructions. For example:

(12)a. Zhangsan *qi* ma *shang* shan.

Zhangsan ride horse climb mountain

"Zhangsan rode a horse to climb the mountain."

b. Zhangsan *jie* luxiangdai *kan*.

Zhangsan borrow video tape watch

"Zhangsan borrowed video tapes to watch."

c. Zhangsan *dao* yi bei cha *he*.

Zhangsan pour one cup tea drink

"Zhangsan poured a cup of tea to drink."

We can hardly form object-control SVCs with verb *qi*(ride), *jie*(borrow) or *dao* (pour). Some other verbs can only form object-control SVCs. For example, three-place verb can only be used in this way:

(13) Zhangsan *gei* Lisi shu *du*.

Zhangsan give Lisi book read

"Zhangsan gave Lisi books to read."

Other object-control verbs are like *song* (send), *dailing*(lead), *jinzhi*(prohibit), *qing*(ask, invite), *quan* (persuade) and *xuan* (elect, select). Comparatively speaking, object-control verbs are more limited in quantity.

A few verbs can be used in both ways. For example:

(14)a. Zhangsan *yong* dao *qie* rou.

Zhangsan use knife cut meat

"Zhangsan used the knife to cut meat."

b. Zhangsan *yong* Lisi *zuo* *mishu*.

Zhangsan use Lisi do secretary."

"Zhangsan employed Lisi as his secretary."

Bickerton & Iatridou (1989) point out that the object of the sentence which contains an SVC is extractable. This is true in Chinese. The object of either a subject-control or an object-control structure can be moved in front:

(15)a. Zhangsan *yong* *bi* *xie* *zi*.

Zhangsan use pen write character

"Zhangsan used pen to write."

b. *Zi*, Zhangsan *yong* *bi* *xie*.

character Zhangsan use pen write

"Zhangsan used pen to write."

(16)a. Zhangsan *qing* Lisi *jiao* *shuxue*.

Zhangsan ask Lisi teach mathematics

"Zhangsan asked Lisi to teach mathematics."

b. *Shuxue*, Zhangsan *qing* Lisi *jiao*.

mathematics Zhangsan ask Lisi teach

"Zhangsan asked Lisi to teach mathematics."

Jansen et al (1978) point out that in one dialect of Sranan, the elements of the second clause are inaccessible to extraction and Predicate Cleft. These properties have been used as evidence to support their conclusion in discussing structures of SVCs. We will return to these issues in section 1.

4.1. Structures of SSVCs

What is the structure of an SSVC? As regards this issue, several analyses have been presented:

1. All the SVCs have phrasal structure

Schachter (1974), Williams (1976), Voorhoeve (1975), Jansen et al (1978), Oyelaran (1982), Lu(1977), Bebauer (1980), Sebba (1987), Baker (1989), Li(1990b) propose that SVCs have phrasal structures, although the structures they have given vary.

2. All the SVCs have clausal structures

Bamgboṣe (1974), Byrne (1987), Bickerton & Iatridou (1989) suggest a clausal structure for the SVCs they studied. The suggestion given by Graig & Hale (1988) is similar to them.

3. All the SVCs are verb complex predicates formed in the lexicon. Déchaine (1986), Lefebvre (1988) propose that two verbs combined in the lexicon to form a single, discontinuous predicate.

The classification here is very rough one. Actually almost every linguist has his own particular analysis.

This thesis studies the phenomena of four language groups defined by the definition in chapter 2. We have found that it is not necessary that all the SVCs in different languages have only one type of structure. Even in one language, SVCs may be structurally varied. It has been found that in most cases, SSVCs are of clausal structures, although a few cases of phrasal structures have been attested. In the following sections, we are going to investigate several analyses in the previous literature, including the analyses of Schachter (1974), Williams (1976), Jansen et al (1978), Sebba (1987), Baker (1989), Bickerton & Iatridou (1989) and Li (1990b) to see if their analyses are valid, or to what extent these analyses are applicable.

4.1.1. Phrasal Structure Analyses

In this subsection, we are going to investigate several phrasal approaches to the structure of SSVCs. We are going to show that every approach has difficulties in explaining some phenomena.

4.1.1.1. Explanation of Schachter (1974)

Schachter(1974) first gives a phrasal structure analysis in 1974. He proposes that all the

SVCs are derived from a phrase structure rule (17):

(17) S ----> NP AUX VP VP*

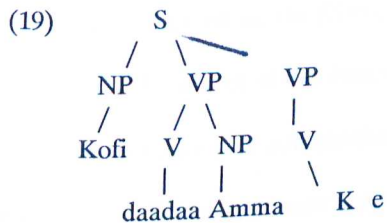
here VP* can be zero or more occurrences of VP. Based on (17), sentence (18) should have structure (19):

(18) Kofi daadaa Amma k e.

Kofi trick Amma go-Ten.

"Kofi tricked Amma and went."

"Kofi tricked Amma into going."



He presents several arguments to support his analysis. However, his arguments are mainly to argue against a transformational approach. His main idea is as follows:

SVCs always have only one subject and that subject always appears with the first verb. Even in some language where both verbs must have agreement, each verb must agree with the subject of the first verb. Rule (17) explains this property and why there is no independent choice of tense or aspect for each VP in an SVC. SVCs show a total absence of the usual signs of either S conjunction or S embedding. In order to derive SVCs from underlying conjoined S's, we have to delete the conjunctions, while to embed them, we would have to suppress all of the complementizer-insertion rules that apply to other embedded Ss.

These arguments are very strong against a transformational approach as proposed by Bamgboṣe (1974). However, they are not sufficient for a phrase structure analysis.

The first argument is subject-sharing: because the second verb never has an independent subject, it is likely that the structure is two verb phrases under one subject.

But even if SSVs are always subject-sharing, it is not necessary to have coordinate phrasal

structure, because this condition does not exclude other structures such as a subject-control structure. Moreover, it cannot explain the following sentences in which the SSVC does not share subject:

(20) Zhangsan qing *Lisi* cangan xiaoyuan. ---Chinese

Zhangsan invite Lisi visit campus

"Zhangsan asked Lisi to visit the campus."

(21) Mi hail mi buuku go na mi kini. --- Aucaans

I pull my trousers up Loc. to my knee

"I rolled my trousers up to my knee."

In these two sentences, the SSVCs are not subject-sharing. Instead, the subject of the second verb is as same as the object of the first verb. Although the structure of SSVCs is still open to discussion, these two examples indicate that we cannot use subject-sharing as the evidence to support the phrasal analysis. There have been several explanations on the phenomenon revealed by (20) and (21), which we return to in the latter part of this chapter.

The second argument is an explanation of why there is no independent choice of tense or aspect for each verb in SSVC. This argument still cannot exclude other possible structures for SSVC, e.g. a control structure in which the second verb is tenseless. It also cannot explain why in Chinese, the aspect marker can follow either the first verb or the second verb with the different position of the aspect marker resulting in different readings of the sentence.

The third argument is a postulation rather than an argument. In fact, it implies that the lexical connecting device should always be overt. However, this postulation cannot be true: In Chinese, there is no overt complementizer. So in most cases the COMP position is empty except in topicalized sentences in which COMP position is filled by a moved NP. Therefore, absence or presence of lexical connecting devices cannot be used as a criterion for excluding a clausal analysis.

4.1.1.2. Analysis of Williams (1976)

Williams (1976) also proposes a phrase structure analysis. In his analysis, he employs the notion of thematic relations which were discussed in Gruber (1965) and Fillmore (1968) to explain

the relations between verbs in SSVCs. The phrase structure he adopts is as follows:

(22) VP → V (NP) (PP) (VP)

For example:

(23) Modupe de *waka* go na makit. ---- Krio

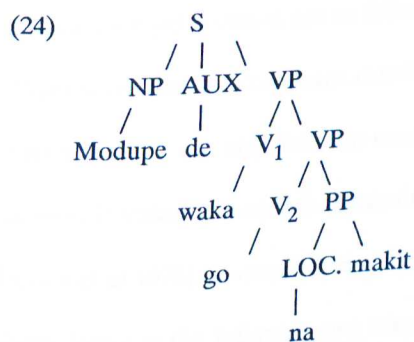
Modupe Asp. walk go Loc. market

"Modupe is walking to the market."

[Williams (1976)]

In this sentence, the verb *waka*(walk) subcategorizes the following verb in the lexicon as carrying the thematic relation GOAL in relation to *waka*(walk), while verb *go* (go) is specified as followed by a prepositional phrase bearing the thematic relation GOAL. In this case, verb *go* (go) can fit into the available position after *waka* (walk). Other SSVCs are treated in the lexicon in the same way.

As the structure of SSVCs, Williams (1978) assigns (24) to (23):



It is Williams (1978) that first uses thematic relation to explain the behavior of SSVCs. Considering this work appears before Chomsky (1981), it is unfair to criticize its restricting the application of the notion of thematic relation in the lexicon, failing to use it as a necessary condition to account for the structure of SSVCs. However, his analysis has other problems worth discussing.

First, Sebba (1987) points out that the phrase structure proposed by Williams (1978) will generate many strings which cannot occur in a language. For example, sentence (25) is ungrammatical in Krio, but (22) cannot exclude it:

(25)* Modupe bought fish at the market loaded meat on the truck.

----Krio, in English gloss

[Sebba (1987, p.23)]

To exclude this sentence, we have to use other devices. Furthermore, this analysis cannot solve a series of issues related to SSVCs: why sometimes V_1 , sometimes V_2 , is tense or aspect marked; why the subject of V_2 is either the subject or the object of V_1 . In short, this analysis does not give evidence that SSVCs must have phrasal structure, it only gives a possible explanation of them.

4.1.1.3. Jansen, Koopman & Muysken (1978)

Unlike the previous studies mentioned in this Chapter, this is a study that aims to give evidence that the SSVCs under investigation *must* have phrasal structures.

The language they study is Sranan. They do not agree with the clausal structure approach and prefer a phrase structure of (26):

(26) VP $\rightarrow$ V NP VP

The arguments they put forward are as follows:

Multi-sentential structures are ruled out because of several subcategorization restrictions, e.g., verb *go* and *come* can only follow a movement verb. Such restrictions are not statable in a multi-S analysis if lexical insertion is constrained by Subjacency, the Tensed-S condition, etc., i.e. is "local" (Jansen et al 1978). In one dialect of Sranan, the elements in VP_2 cannot be extracted. There is a similarity between the following two sentences:

(27)a. Mi teki a nefi koti a brede.

I take the knife cut the bread

"I took a knife to cut the bread."

b. Mi teki a nefi fu koti a brade.

I take the knife for cut the bread

"I took a knife to cut the meat."

The difference between the two sentences can be accounted for by the following test: (27b) can be expanded by (28):

(28) ... ma no koti en.

but not cut it

"... but not cut it."

while (27a) cannot. Since (27b) is obviously with clausal structure *teki(take) NP S'*, (27)a. should have parallel structure *teki(take) NP V NP* rather than other phrasal structures as proposed by Schachter (1974) or Williams (1978).

They also give other explanations. Grammatical relations (subject -of, object-of, verb) are defined in terms of c-command configuration, Schachter (1974)'s analysis cannot explain why in some cases the subject of V_2 is the object of V_1 , since in this case, NP_2 does not c-command V_2 .

The four arguments can be divided into two groups: the former two are against a clausal structure approach, and the latter two are against the structures proposed by Schachter(1974) and Williams (1978). Argument 4. is very strong, since all agree that grammatical relations must be defined by some structural configurations. Argument 1. is also very strong for its logical force: since there exist some constraints on the occurrence of verbs in forming SSVCs, such constraints must be stated in some ways. But if these two verbs are in different clauses, it is very difficult to state them in a grammar. Therefore they are likely to be in a same clause.

However, the problem of this argument is that their observation is not true: As Sebba(1987) points out, there exist instances in Sranan that verb *go(go)* and *kon* (come) follow a verb other than a movement verb. Actually, Sebba(1987) investigates these two verbs in detail. According to Sebba(1987), the two verbs have the following functions:

1. Following a movement verb to indicate direction, e.g.:

(29) A *waka go* na wowoyo.

he walk go to market

"He walks to the market."

[Sebba (1987, p.46)]

2. Marking a directional goal:

(30) A *fingi* wan baskita nanga preyti *fadon* kon na gron.

he throw one basket with plates fall come Loc. ground

"He threw a basket of plates down on the ground."

[Sebba (1987, p.46)]

3. Denoting no-movement direction

(31) Brudu *lasi* fu *opo* mi ay *go* na a fri.

blood lose for open/raise my eyes look go Loc. the free

"Blood was shed to open my eyes up to freedom."

[Sebba (1987, p.46)]

4. Used in idiomatic expressions:

(32) A *prakseri* go, a *prakseri* kon.

he think go he think come

"He thought and thought; he pondered."

[Sebba (1987, p.46)]

5. Followed by a purpose complement:

(33) Wan man *go luku* wan dance.

a man go look a dance

"A man went to watch a dance."

[Sebba (1987, p.53)]

6. Double *go* constructions. In this construction, the first *go* (go) or *kon* (come) is the motion-verb followed by a PP or a directional adverb, and the second *go* (go) or *kon* (come) indicates purpose:

(34) Ala dey a e *go* saafri *go* nyan.

all day T/A T/A go softly go eat

"Every day he went quietly to eat."

The phenomenon of *go* (go) or *kon* (come) therefore is far more complicated than Jansen et al (1978) have described. So the argument based on the observation of the two verbs does not hold.

The argument about the movement of elements in VP_2 is also not convincing in determining the structure of SSVCs. First, as the authors have stated, it is only in one dialect that the observation is true. It is not necessary that a particular rules of one dialect be expandable to other languages. Second, even if the rule is expandable, it can only demonstrate that because of the Coordinate Structure Constraint, which we will discuss later, the two or more constituents which the verbs are in may be in a coordinate relation, but it cannot determine whether these constituents are phrases or clauses.

Furthermore, as Sebba (1987) has pointed out, with phrase structure rule (26), many strings which never occur in Sranan will be generated.

It is concluded that although Jansen et al (1978) try to give evidence to support a phrasal structure approach, their arguments are not strong enough to reach the conclusion.

4.1.1.4. Sebba (1987)'s Explanation

Sebba(1987)'s study is mainly based on the observation and investigation of Sranan. He does not agree with other studies that all the SSVCs have only one possible structure. Even in one language, SSVCs may be varied structurally. He claims that SSVCs have phrasal structure and classifies all the SSVCs into two types: those of coordinate phrasal structure and those of subordinate structure. His explanation is as follows. Consider sentence (35):

(35)a. Kori naki Amba kiri en.

Kori hit Amba kill him/her

"Kori struck Amba and killed her."

b. Kori naki Amba kiri.

Kofi hit Amba kill

"Kofi struck Amba dead."

[Sebba (1987, p.109)]

These two sentences are structurally and semantically different: while (35b) describes a single action, (35a) describes a series of events: Kofi struck Amba, possibly several times, killing her eventually.

He observes a fact: in (35a), the pronoun *en* (him/her) refers to the object of the first verb Amba. This violates a general condition of anaphora in Sranan (and in English) that a non-reflexive pronoun cannot refer to a preceding NP in the same clause, except under certain conditions where coordination is involved (Sebba (1987, p.109)). For example:

(36)a. Mi benn taki nanga Rudy abra en.

I Ten./Asp. talk with Rudy about him

"I talked to Rudy about him (*him = Rudy)."

b. Mi benn taki nanga Rudy en abra en.

I Ten./Asp. talk with Rudy about him

"I talked to Rudy about him (him = Rudy or a third person)."

[Sebba (1987, pp.109-110)]

Since in (36)a., *en* (him/her) can refer to a preceding NP, the sentence should be explained as a coordinate structure.

He put forward other evidence to support his conclusion. For example, an NP after either

V_1 or V_2 cannot be moved:

(37)a. Kofi sutu Amba kiri Kwaku.

Kofi shoot Amba kill Kwaku

"Kofi shot Amba and (?but) kill Kwaku."

b. *Suma Kofi sutu _ Kiri Kwaku?

who Kofi shoot kill Kwaku

"Kofi shot who but kill Kwaku?"

c. *Suma Kofi sutu Amba kiri _?

who Kofi shoot Amba kiri

"Kofi shot Amba bu kill who?"

[Sebba (1987, p.110)]

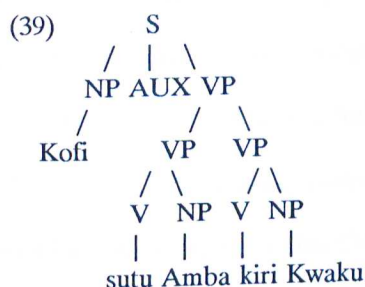
This fact can be explained by the Coordinate Structure Constraint (Ross, 1968):

(38) Coordinate Structure Constraint

In a coordinate structure, no conjunction may be moved, or may any element contained in a conjunction be moved out of that conjunction.

[Ross (1968); van Riemsdijk (1968,p.27)]

He also points out that a tense or aspect marker in these sentences must be external to both verbs and their complements. Based on the analysis above, he gives (39) as the structure of these sentences:



The evidence Sebba gives is quite strong. However, although (38) is basically correct, the analysis is misleading.

First, the anaphora fact need not be explained by a coordinate structure assumption. Suppose that the two VPs in (36) are not in the same clause, we still can obtain the correct interpretation of the sentence, because in that case, VP *kiri en* (kill him/her) should have an empty subject, and NP *Amba* is not in the scope of the clause. Nothing will prevent the pronoun *en* (him/her) from having *Amba* as its antecedent.

The fact concerning the Coordinate Structure Constraint has been discussed in 4.1.1.3.. This fact only involves one dialect of Sranan. We cannot neglect a more general fact: In other languages and other dialects of Sranan, the object of V₂ of SVCs is always extractable. This is why some

linguists take it as one of the criteria to judge whether a construction is SVC.

The externality of the tense or aspect marker also does not mean they are coordinate phrases. In most cases, an SSVVC can have only one tense or aspect, which usually attaches to the first verb, or both verbs have the same tense or aspect. Sebba's observation does not exclude the possibility that the sentences under discussion have a structure of V + infinitive clause.

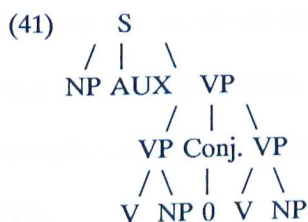
Therefore we still do not need to assume that the sentences under discussion must have structure (39).

However, Sebba (1987) gives another bit of evidence which does indicate that sentences like (35) are of coordinate phrasal structure, therefore (39) is correct in general. The evidence is that a slight pause or "comma intonation" is possible after the object (if any) of V₁. But in this case, according to the definition given in Chapter 2, or the properties of SVC stated by Bickerton & Iatridou (1989), the sentence is no longer an SVC since a comma is considered as a lexical device, and any constituents connected by a lexical device are not SVCs.

We strongly object to any relaxation of this condition, because doing so will *serialize* many languages which do not have genuine SVCs. For example, if we allow two VPs connected by comma to be included into SVCs, English is no doubt a serialized language, for the following sentence is grammatical in English:

(40) John stood up, picked up his bag and went away.

Therefore it is concluded that what Sebba (1987) takes as SVCs with coordinate phrase structure are actually *not* SVCs. Structure (39) is generally acceptable, but a slight modification is needed:



Sebba (1987) classifies another type of SSVVCs: *subordinating serial construction*. e.g.:

(42) Kofi fringi a tiki naki Amba.

Kofi throw the stick hit Amba

"Kofi hit Amba by throwing the stick."

(43) Kofi fringi a tiki naki en.

Kofi throw the stick hit him

"Kofi threw the stick and hit him."

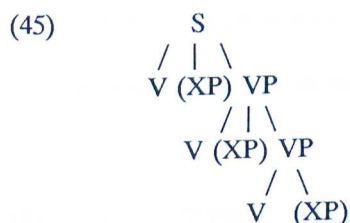
(44) Kofi fringi a nyan trowe.

Kofi throw the food eject

"Kofi threw the food away."

[Sebba (1987, p.113)]

The proposed structure for (42)-(44) is (45):



where X = N or P

[Sebba (1987, p.114)]

The arguments for structure (45) are as follows:

The sentence is interpreted as referring to a single action rather than a series of related actions; there is a strict ordering relationship between the verbs; the first verb in a series may subcategorize for a particular verb or class of verb to follow it; in some cases, each transitive verb in the series has its own object; a series-internal non-reflexive pronoun may not be an anaphor of any the arguments of the verbs in the string; it is not possible to move a verb together with its complement; in certain cases the object of V_1 may be interpreted as subject of V_2 (Sebba, 1987, pp.112-115).

Sebba (1987) gives many arguments to support his conclusion. Generally speaking, many

arguments convince us that the sentences under discussion cannot have coordinate structure. The problems is that none of these arguments convince us that the SSVCs must have a subordinate *VP* structure. Among his arguments, the most significant one is if the object of V_2 is a pronoun, it must not be a reflexive pronoun. However, the explanation given in Sebba (1987) is not correct. We will go into details in the next section. Before we go into details, let us first examine another interesting proposal by Baker (1989): the object sharing approach.

4.1.1.5. Object Sharing Approach: Baker(1989)

Baker(1989) actually studies some of the SSVCs which he terms the *serial verb construction proper*. In this type of construction, SSVCs are formed out of two transitive verbs, and no object NP can generally appear after the second verb in the chain:

(46) Ikan je iwe Adio ran. ----Yoruba

termite eat book Adio destroy

"Termites completely devoured Adio's book."

[Baker (1989)]

(47) Kownu seni wan boskopu gi Tigri. ----Sranan

King send a message give Tiger

"King sent a message to Tiger."

[Baker (1989)]

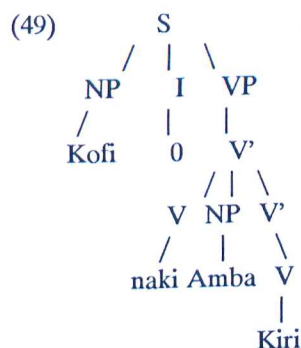
(48) Kofi naki Amba kiri. ----Sranan

Kofi hit Amba kill

"Kofi struck Amba dead."

[Baker (1989)]

He proposes the following structure for these sentences:



His explanation and arguments are as follows:

Examples (46)-(48) seem to challenge the Projection Principle:

(50) The Projection Principle

Suppose α is a lexical category and β is a position of argument type.

a. If β is an immediate constituent of a one-bar level projection at some syntactic level,
then α θ -marks β in α' .

b. If α θ -marks β as a lexical property, then α θ -marks β at all syntactic levels.

[Baker(1989) based on Chomsky (1981)]

He explains that in (49), *kiri* (kill) is a transitive verb that assigns a patient role to an internal argument. Nevertheless, no overt NP follows it. Thus, it seems that its complementation properties are systematically not represented in SVCs (Baker,1989).

To solve this problem, he makes a series of proposals. He allows one maximal projection to have more than one head by offering the Head-Licensing Condition (HLC) which was discussed in Chapter 3. Then he classifies all the languages into two classes --- the languages that can have SVCs and the languages that cannot have SVCs --- by a Generalized Serialization Parameter¹. Most importantly, he adopts the Principles of Word Order proposed by Travis (1984) and Koopman (1984) to account for θ -assignment in SVCs:

(51) Principle of word order:

a. X^0 θ -marks phrase to its right {left}.

b. X^0 Case-marks phrase to its right {left}.

- c. If X^0 is in direct relationship R with Y , and Z is between X and Y , then X and Y must also be in R with Z . (R = Case-marking or θ -marking)
- d. For $m > 0$, X^m is predicated of an NP to its left {right?}.

[Baker (1989)]

The underlined parts of (51) are parameterized, with the other value of the parameter indicated in the braces. This principle allows a predicate to assign θ -role and Case in different directions. For example, in (49) the verb *naki* (hit) assigns a θ -role to its right to Amba, and the verb *kiri* (kill) assigns a θ -role to its left to Amba, too. Thus the object NP Amba receives a compound θ -role.

In Akan, the same tense/aspect and subject agreement morphology appear on every verb in the SVC:

(52) Me-yɛɛ adwuma me maa Amma. ---- Akan

1sS -do work 1sS-give Amma

"I work for Amma."

This indicates that both verbs are heads.

Semantically, some SVCs are quite similar to resultative AP or PP predicates in English:

(53)a. Kofi hari a ston [puru (na ini a olo)]. ---- Sranan

Kofi pull the stone remove Loc. in the hole

"Kofi pulled the stone out (of the hole)."

b. Linda pulled the book [pp out (of the drawer)]. ---- English

[Baker(1989)]

But there is a crucial difference between the SVCs and English resultative predicates: the bracketed phrase in (53a) assign an internal θ -role to the shared NP, whereas the PP in (53b) assign the external θ -role to the parallel NP. To account for this, he claims that the bracketed phrase in (53a) is nonmaximal V' projection, rather than maximal one.

In Ijo, which is an SOV language, the order of SVC is exactly the same as in Yoruba, an SVO language:

(54) *duma tun-ni a-piri. ----Ijo*

song sing-0 her-give

"sing a song for her."

[Baker (1989)]

while the supposed word order should be "her-give song sing". This peculiarity can be explained by object-sharing.

In Sranan, if a VP is a "modifying" one, its NP object must be deleted:

(55)* *Kofi sutu Amba kiri Kwaku.*

Kofi shoot Amba kill Kwaku

"Kofi shot Amba and killed Kwaku."

[Baker (1989)]

This problem can be solved by claiming that is V' rather than a VP: V' can only assign one internal argument to Amba, so *Kwaku* will not receive a θ -role.

V + V_{intrans.} case:

(56) *Olu ti omo naa subu. ----Yoruba*

Olu push child the fall

"Olu push the child fall."

[Baker (1989)]

In this type of sentence, V₂ is of the unaccusative class of intransitive. Thus V₂ θ -marks the object of the first verb, not its subject.

Only unaccusative-type intransitive verbs can follow an unaccusative V₁, otherwise, the shared object will not have Case since V₁ cannot assign Case to the object and V₂ assigns Case to its left.

Baker(1989)'s approach involves several aspects of grammar. Let us sum up his revisions of the Government and Binding Theory worked out by Chomsky (1981). On X-bar theory, he proposes that one maximal projection can have more than one head. On Case theory and θ -theory,

he proposes that the assignments of Case and θ -role may have different directions. For example, in Sranan, he proposes that V assigns both Case and θ -role to the NP on its right, while V' assigns θ -roles to its left.

The problem here is that if these revisions are correct, they are expected to be universal to all the languages, not specific to a few language as Sranan; they are expected in other constructions in a language, not specific to one particular construction as SSVCs. Unfortunately, Baker (1989) fails to give evidence for either of these expectations.

For example, the Head-Licensing Condition (HLC) allows multiple-headed structures. Although such structures are quite popular in morphology², we have not obtained evidence from other constructions, such as NP, I or PP, to support the existence of such structures.

The directionality of θ -assignment and Case-assignment is in a similar situation. Although Travis (1984) and Koopman(1984) propose the Principle of Word Order to account for some phenomena in different languages, at least Koopman(1984)'s explanation of Chinese is not correct: She considers that in Chinese the verb assigns Case to its right, and θ -role to its left. We will show in late sections that this explanation cannot be correct.

Therefore, what we want from Baker(1989)'s explanation is more evidence to support his revisions. Otherwise these revisions lack strong motivation.

Lack of strong motivation does not necessarily mean that his explanation is not correct if it can account for all the homogenous phenomena. However just in this respect, Baker(1989)'s approach leaves one problem: it only deals with one subtype of SSVCs, that is SSVCs with linear structure V NP V. His explanation on other types of SSVCs is not convincing. For example, in all the serialized languages, there are V NP V NP constructions:

(57) *Zhangsan yong maobi xie zi.* ----Chinese

Zhangsan use brush write character

"Zhangsan used brushes to write characters."

(58) *Mi e teki a nefi koti a brede.* ----Sranan

I Asp. take the knife cut the bread

"I cut the bread with the knife."

These sentences obviously cannot be explained by structure (49). Baker(1989)'s explanation is as follows: Suppose that the relevant class of V_2 have an optional (internal) instrument θ -role that they may assign to an appropriate NP:

(59) I [_V take knife [_V cut bread]]

(Ag, The) (Aug, (Ins.), The)

He gives two arguments for (59): one is about noun incorporation, the other is that in Yoruba, some verbs can take an instrumental NP in nonserial constructions where there is no other θ -role assigned:

(60) Ole gun oba *ni obe*. ----Yoruba

thief stab chief Prt knife

"The thief stabbed the chief with a knife."

[George (1985); Baker (1989)]

But a more reasonable account for (60) is that *obe* (knife) is in a non- θ position since it follows a particle --- probably a preposition--- *ni*. With such an explanation, English verbs can also assign an instrumental θ -role to an NP since the translation of (60) is a grammatical sentence, and before the NP *a knife* there is only a preposition.

Furthermore, he expands this explanation to other adjuncts: adjuncts of manner, benefactives, comitatives etc.. A verb can thus assign these θ -roles to NPs. He concludes that it seems to show that language handles instruments, benefactives, comitatives and manners in essentially the same way as themes, goals, and locations. This suggests that the standard bifurcation between arguments and adjuncts in GB theory is misleading (Baker,1989). We will show in the latter part of this chapter that the distinction between argument and adjunct is crucial.

As regards other reasons for the object-sharing proposal, we also think that object-sharing is not necessarily the only solution. For example, the argument about aspect/tense is not always

true. In Chinese, the real SSVCs never have more than one aspect-marked verb. In Sranan, since aspect/tense is in the preverbal position, and there is no subject-verb agreement, without independent evidence, we cannot claim that the aspect/tense belongs to all the verbs. Even for Akan, although there are cases where both verbs are aspect-marked, we still cannot exclude other solutions, e.g. assigning them a structures of conjoining or adjoining IPs.

Arguments about semantic similarity between SVCs and resultative constructions is actually irrelevant, because all other approaches have noticed this salient property. In other words, it is neutral to all the explanations we know of.

As regards the question raised about the word order Baker(1989) himself has pointed out that there may be other explanations. In fact, his explanation claims for a SOV language, both V and V' assigns θ -role to the NP on its left, which is actually a stipulation.

We agree that sentence (55) is not a real SSVC, which is mentioned in the previous section. However, to account for this sentence, it is unnecessary to presuppose object-sharing. Moreover, in many cases, an object after V_2 is possible as discussed earlier. Baker(1989) fails to give a unified explanation to (55) and sentences like (58), (59).

Also the observation and explanation of $V + V_{intrans.}$ cases is not valid. First it is not clear that if the second verb is intransitive, it must be unaccusative. For example, in Chinese, we have the following sentence:

(61) Zhangsan bi Lisi *shuijiao*.

Zhangsan force Lisi sleep

"Zhangsan forced Lisi to sleep."

here *shuijiao*(sleep) is not an unaccusative. Furthermore, In Chinese, a transitive verb can follow an unaccusative verb:

(62) Neige daxue lai le yi ge wenmang zuo xiaozhang .

that college come Asp.a CL. illiterate-person do president

"An illiterate person came to that college to be the president."

Therefore discussion of the unaccusative verb cannot be the evidence to support the object-sharing approach.

This explanation implies that when V_2 does not have an independent object, it always shares the object with V_1 . In fact, even if we do not consider the cases where V_2 has an independent object, which is one major subclass of SSVcs, the observations of Baker (1989) are not always correct. Consider the following sentence which have appeared earlier:

(63)a. Zhangsan zhao-bu-dao xuesheng *jiao*.

Zhangsan find-not-Part. student teach

"Zhangsan cannot find students to teach."

b. Zhangsan zhao-bu-dao laoshi *jiao*.

Zhangsan find-not-Part. teacher teach

"Zhangsan cannot find a teacher to teach himself."

These two sentences are of the same linear structure of V NP V. However, in (63a) the object of *jiao* (teach) is the object of the V_1 , while in (63b), it is the subject of V_1 , which cannot be explained by object-sharing.

In summary, the explanation suggested by Baker(1989) gives one of the possible structures to one type of SSVcs with some stipulation at the cost of neglecting other SSVcs. For the convenience of discussion, we have not mentioned some grammatical issues which it fails to solve. We will return to them in the latter part of this chapter.

4.1.2. Clausal structure approach

4.1.2.1. From Stahlke (1970) to Lu(1977)

In addition to the phrasal structure approach, many linguists propose that SSVcs have clausal structures. In this subsection, we will discuss some of their proposals, including that of Stahlke(1970) Bamgboṣe(1974), Li & Thompson (1973),(1974a), Thompson(1973) and Lu (1974).

Stahlke (1970)'s analysis is based on the theory of Generative Semantics. He proposes that SSVcs are formed by subordinating an S to V. He rejects a coordinate structure by arguing that

conjunction reduction in Yoruba is restricted to delete identical VPs, and Wh-fronting can apply to the object of V_2 of an SSVC. These points are quite convincing. However, few will accept the underlying structure of a SSVC he gives: derivation from the underlying structure to the surface structure involves complex operations such as deletion of VP.

Bamgboṣe(1974) studies Yoruba with the framework of Standard Theory of the Generative - Transformational Grammar (Chomsky, 1966). He distinguishes two types of SSVCs: the *linking type* and *modifying type*. The former is derived from two coordinate sentences. As has been discussed in the previous sections, since in most cases the object of V_2 can be extracted, the coordinate clausal analysis cannot be correct.

Li & Thompson (1973), Thompson(1973) and Lu (1977) all study SVCs in Chinese. Li & Thompson (1973) claim that there are two possible structures for SSVCs in Chinese. One of the structures accounts for the sentence in which V_1 denotes an action done for the purpose of accomplishing the second action:

(64) Women *kai hui taolun neige wenti*.

we hold meeting discuss that problem

"We are holding a meeting to discuss that problem."

(65)

$$\begin{array}{c} \text{S} \\ / \quad | \quad \backslash \\ \text{NP} \quad \text{VP} \quad \text{S} \end{array}$$

The other structure is a coordinate S structure which accounts for all other SSVCs. The coordinate structure should be ruled out for the reasons pointed out above. Structure (65) is more interesting. With this analysis, Li & Thompson(1973) treat the purpose clause as an adjunct clause. In the following subsection we will give independent evidence in favor of this treatment.

4.1.2.2. Complex Predicate Analysis: Huang(1989)

Huang (1989) studies a complex predicate construction in Chinese which is traditionally termed the *De construction*:

(66) Zhangsan *pao-de hen lei* .

Zhangsan run-DE very tired

"Zhangsan ran till he got tired."

(67) Zhangsan *ku-de* Lisi *hen shangxin*.

Zhangsan cried- DE Lisi very sad

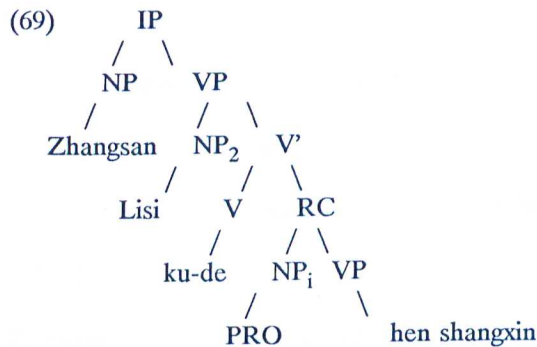
"Zhangsan cried till Lisi got very sad."

He analyzes the second predicate in these sentences as a clause:

(68) Zhangsan *ku-de* [Lisi *hen shangxin*]

Zhangsan cry-De very sad

which has D-structure (69):



In (69), the subject of the object of the main verb is in a preverbal position. There are two possible derivations from D-structure to S-structure: either the verb raises ahead of NP₂, or a preposition *Ba* is inserted before the object. The latter means that the *Ba*-construction in Chinese is not formed by raising the object, but by preposition insertion.

Superficially, this analysis does not have much to do with the discussion here since we are studying different constructions. However, Huang's discussion is relevant to this study for the following reason: Huang assumes that structure (69) is universal to all Chinese clausal structures, that is, in Chinese, the object is always before the verb in DS, then raising of verb yields an SS in which the object follows the verb.

His arguments in favor of this analysis is as follows:

1. There is one well-known syntactic principle of control which can well account for the

following contrast of control:

(70)a. John tried [PRO to leave]

b. John persuaded Bill [PRO to leave]

in (70a), Pro is controlled by *John*, while in (70b), it is controlled by *Bill*. To explain the contrast,

Rosenbaum(1970) proposes the following principle:

(71) Minimal Distance Principle(MDP) (Larson (1988a)'s version))

An infinitival complement of a predicate P selects as its controller the minimal c-commanding noun phrase in the functional complex of P.

Here c-command means:

(72) C-Command

A c-commands B iff the first branching node dominating A also dominates B, and A does not itself dominate B.

With (71) and (72), we can predict that in (66), it is *Zhangsan* who was very tired, while in (67), it is *Lisi* who was very sad.

2. Visser(1973) proposes a rule for passivization that only object-control predicates may undergo passivization, subject-control predicates cannot. This is termed Visser's Generalization:

(73)a.Bill is persuaded [PRO to leave]

b.Bill is promised [PRO to leave]

The same contrast is true in Chinese. Huang(1989) notes:

(74)a.Ta *qi ma qi de* hen lei.

he ride horse ride DE very tired

"He rode the horse until the horse was tired."

b. *Ma bei ta qi de* hen lei.

Horse BEI he ride-DE very tired

"The horse was ridden by him until it got very tired."

(75)a.Zhangsan *chi fan chi-de* he bao.

Zhangsan eat rice eat-DE very full

"Zhangsan ate rice until he was very full."

b.**Fan bei Zhangsan chi-de* hen bao.

meal BEI Zhangsan eat-DE very full³

3. The complex construction also exhibits properties that fall under *Bach's Generalization* (Bach 1979) which says that only subject control verbs can omit their objects:

(76)a. John promised [PRO to leave].

b.*John persuaded [PRO to leave]

(77)a. Zhangsan *chi-fan* chi-de hen bao.

Zhangsan eat-rice eat-DE very full

"Zhangsan ate rice until he was very full."

b. Zhangsan *chi-de* hen bao.

Zhangsan eat-DE very full

"Zhangsan was full."

(78)a. Wo *da-de* Lisi hao-tao-da-ku.

I hit-DE Lisi cry-loudly

"I hit Lisi until he cried loudly."

b.*Wo *da-de* hao-tao-da-ku.

I hit-DE cry-loudly

*"I hit cry loudly."

4. Goodall (1989) argues in favor of a raising analysis of the Ba-construction with the following example:

(79)a. Ta ku-de [*tieshu kai le hua*].

he cry-DE iron-tree open Asp. flower

"He cried so much that even iron tree blossomed."

b. Ta *ba tieshu* ku-de [*e kai-le hua*]

he BA iron-tree cry-DE open Asp. flower

"He cried so much as to get iron tree blossomed."

With Huang(1989)'s analysis, the empty subject (79b) is a Pro controlled by *tieshu* (iron-tree). This analysis requires that Pro have an independent θ -role received from the V' compositionally. This analysis does not work if *tieshu*(iron-tree) is part of an idiom. Goodall explains that since *Ba* raises *tieshu* (iron-tree) ahead, it need not assign a θ -role to it, and no problem arises.

This is a strong argument against Huang(1989)'s analysis. However, Huang(1989) argues that the expression *tieshu*(iron-tree), although in the idiom, does not mean *an iron tree* literally. It has to be fully referential. For example, (79) might be said of someone's father, who was known to be an iron-hearted person, therefore it is fully referential. For example, *tieshu* (iron-tree) in the following sentence must receive an independent θ -role:

(80) Ta quan le *tieshu* ban tian, ke *tieshu* jiushi bu kai hua.

he urge Asp. iron-tree half day but iron-tree just not blossom.

"He made a lot of efforts to persuade the iron tree, but the tree just not blossom."

[Huang (1989)]

However, Huang(1989)'s analysis has the following problems:

First, both Visser's Generalization and Bach's Generalization are not strict laws governing the control structure. We can find many examples which do not conform to them:

(81)a. John opened the door to welcome his guests.

b. The door was opened by John to welcome his guests.

d.*John open to welcome his guests.

(82)a. John borrowed a video tape to watch.

b. A video tape was borrowed by John to watch.

c.*John borrowed to watch.

(81) and (82) are both a subject-control constructions. However, the first predicate of each can undergo passivization and their objects cannot be dropped. Therefore both Visser's Generalization

and Bach's generalization are not reliable indications of a control construction.

Second, the explanation of *tieshu* (iron tree) case is not correct. Sentence (80), in which the NP *tieshu* (iron tree) must have an independent θ -role and a reference, is obviously a figurative use of language. This does not imply that *tieshu* (iron tree) in (79) has the same status. The particular example of (80) should be accounted for with some pragmatic principles, which are not in the scope of this study. As regards (79), NP *tieshu* (iron tree) must not have reference. For example, Chinese speakers do not accept a question like (83) to (79):

(83) *Shei shi na tieshu?*

who be that iron tree

"Who is that iron tree?"

although this question is quite natural to (80). This question shows sentence (80) is not evidence to the analysis given to (79).

Moreover, even if someone does accept (83) as a question to (79), ---- I doubt there is such possibility, ---- there will be further problems with the analysis: here what is crucial is not if there is a *referential reading*, but if there is a *nonreferential reading*. If there exists one instance of a nonreferential reading, the analysis and structure (69) collapse. Of course we have no doubt about the existence of the nonreferential reading.

More importantly, Huang (1989)'s analysis strongly presupposes a well-known approach to Chinese syntax: In Chinese, the directions of θ -role assignment and Case assignment are different. While V in Chinese assigns a θ -role leftward to the NP, a Case assigner assigns Case rightward to the NP.

This approach is first proposed by Koopman (1983). She claims that word order facts are due to a parameterization of directionality requirements on Case and θ -role assignment. Both Case and θ -role assignment must be directional. A particular language takes a specific direction. Chinese is a language in which Case assignment is from left to right, θ -role assignment is from right to left. For example:

(84) Ta pian le wo.

he cheat Asp. I

"He cheated me."

(85) Ta zai huaping li cha le hua.

he at vase inside put Asp. flower

"He put flowers in the vase."

It is claimed that in (84), *wo* (I) gets a θ -role and a Case from verb *pian* (cheat); the word-order will be *ta wo pian le* (he I cheat Asp.) at D-structure. In (85), the prepositional phrase gets a θ -role but not a Case from the verb, *hua* (flower) receives both Case and θ -role from the verb, and so it will be preverbal at D-structure (see Li (1985)). Therefore directions of Case and θ -assignment are the two parameters determining the word-order of a language. Travis (1984) generally accepts the approach by adding another parameter: Is the head initial or final? It is quite clear that Huang(1989)'s theory is based on the two parameters proposed by Koopman(1983). One of the motivations of this proposal is to make Chinese a strict head-final language since NP in Chinese is always head-final.

However, this proposal is dubious for the following reasons. First, as mentioned in the previous chapter, there is a salient contrast between the formation of the *ba* construction and reduplicated constructions: while the *ba* construction is always possible for both VA and VV compounds, reduplicated constructions can only appear in $V_{trans.} + A$ compounds:

(86) $V_{trans.} + A$ compound

a. Zhangsan *xie-wan* le xin.

Zhangsan write-complete Asp. letter

"Zhangsan completed writing the letter."

b. Zhangsan *ba xin xie-wan* le.

Zhangsan BA letter write complete Asp.

"Zhangsan completed writing the letter."

c. Zhangsan *xie xin xie-wan* le."

Zhangsan write letter write-complete Asp.

"Zhangsan completed writing the letter."

(87) $V_{\text{intrans.}} + A$

a. Zhangsan *zou-lei* le tui.

Zhangsan walk-tired Asp. leg

"Zhangsan walked so much that his legs were tired."

b. Zhangsan *ba tui zou-lei* le.

Zhangsan BA leg walk-tired Asp.

"Zhangsan walked so much that his legs were tired."

c. *Zhangsan *zou tui zou-lei* le.

Zhangsan walk leg walk-tired Asp.

"Zhangsan walked so much that his legs were tired."

(88) VV compound

a. Zhangsan *da-pao* le xiaotou.

Zhangsan hit-run Asp. thief

"Zhangsan hit the thief and the thief ran away."

b. Zhangsan *ba xiaotou da-pao* le.

Zhangsan BA thief hit-run Asp.

"Zhangsan hit the thief and the thief ran away."

c. *Zhangsan *da xiaotou da-pao* le.

Zhangsan hit thief hit-run Asp.

"Zhangsan hit the thief and the thief ran away."

Suppose we adopt Koopman (1983)'s approach that in Chinese a θ -assigner assigns a θ -role leftward, and a Case-assigner assigns Case rightward as (89):

$$\begin{array}{ccccc}
 (89) & \dots x & & \alpha & & y \dots \\
 & & & | & & \\
 & \theta & \text{-----} & & \text{Case} & x,y = \text{argument position} \\
 & & & & & \alpha = \text{predicate}
 \end{array}$$

we cannot account for the contrast illustrated by (86)-(88). According to (89), there will be no problem for the *ba* construction since the main verb will assign a θ -role to the NP in the preposition complement position, and *ba* will assign Case to the same NP. However, the formation of reduplicated constructions will have troubles. The reduplicated verb will assign θ -role to its left NP, but what is to the left is the subject of the sentence which is supposed to receive θ -role from the VP rather than the verb. To account for it, we have to assign the D-structure (90) to the VP in a sentence like (86)a:

$$\begin{array}{c}
 (90) \quad \text{VP} \\
 \quad / \quad \backslash \\
 \quad \text{NP} \quad \text{V}' \\
 \quad \quad / \quad \backslash \\
 \quad \quad \text{V}_1 \quad \text{V}' \\
 \quad \quad \quad | \\
 \quad \quad \quad \text{V} \\
 \quad \quad \quad / \quad \backslash \\
 \quad \quad \quad \text{V} \quad \alpha \\
 \alpha = \text{V or A}
 \end{array}$$

In the derivation from D-structure to S-structure, V_1 raises to precede NP. But even in this way, we still cannot explain why VV compounds cannot form reduplicated constructions.

Consider the following structure which is used to explain reduplicated constructions in this thesis:

$$\begin{array}{c}
 (91) \quad \text{VP} \\
 \quad / \quad \backslash \\
 \quad \text{Spec.} \quad \text{V}' \\
 \quad \quad / \quad \backslash \\
 \quad \quad \text{VP} \quad \text{V} \\
 \quad \quad / \quad \backslash \quad | \\
 \quad \quad \text{V}_1 \quad \text{NP} \quad \text{V}_2 \quad \alpha \\
 \alpha = \text{V or A}
 \end{array}$$

As we have discussed above, in Chinese, if we analyze an SSVC as having clausal structure, the empty subject of V_2 may get reference from either subject or object of the main verb. With Huang (1989)'s approach, it should be either a subject or an object control case:

(93) Zhangsan qu xuexiao zuo shiyan.

Zhangsan go school do experiment

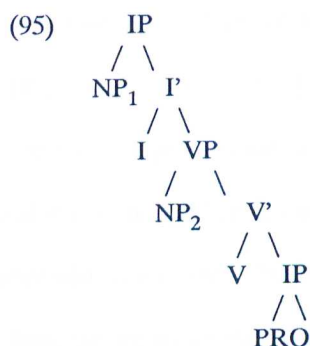
"Zhangsan went to school to do experiment."

(94) Zhangsan qing Lisi bang ta xiu che.

Zhangsan ask Lisi help he repair car

"Zhangsan asked Lisi to help him repair his car."

Suppose these sentences have structure (95)



V will raise to precede NP_2 in the derivation. This structure is good for the control in (94) since in that sentence it is NP_2 that controls the PRO, and we can get the reading which is expected.

As regards (93), what we want is NP_1 to be the controller. However, with (95), it is impossible since we are constrained by the Minimal Distance Principle.

In conclusion, Huang (1989)'s solution is not appropriate to account for complex predicate constructions in Chinese, including SSVCs. We also lack strong motivation to assume different directions for θ -role and Case assignment in Chinese since it has been quite clear that the complement position of *ba* is not a θ -position.

4.1.2.3. SVC and the Binding Theory: the analysis of Bickerton & Iatridou (1989)

Bickerton & Iatridou (1989) strongly prefer a clausal structure analysis for SVCs. They put

forward several arguments to support their analysis. But the most convincing one involves the Binding Theory.

Many linguists have observed that SVCs in some languages have a salient property: V_2 in a SVC can have a pronoun object which is coindexed with the object of V_1 , and they explain that there is potentially a conjunction between the two VPs (Sebba, 1987). In fact, in this respect, the phenomenon is far more complex than they have observed. Bickerton & Iatridou (1989) give the following example:

- (96) A pikin gi mi a sopu wasi *ensefi /en /misefi/*mi. ---- Aucaans
 the child give me the soap wash himself/him/myself/me
 "The child gave me the soap to wash him/myself with."

They explain that if we adopt VP analysis, (96) should have structure (97):

- (97) NP_i V NP_j NP_k [$_{VP}$ V x]

x stands for a either pronominal or an anaphor. In this case, the governing category is the whole clause, and if x is an anaphor, it can coindex with any of the NPs in it; if x is a pronominal, it must not coindex with any of the NPs. We can see from (96) that this is not the case.

Suppose we adopt the following structure:

- (98) NP_i V NP_j NP_k [$_{IP/CP}$ Pro $_j$ V x]

the governing category is IP/CP. In that case, if x is an anaphor, it must coindex with Pro; if it is pronominal, it cannot coindex with Pro. This is just what (96) has shown. Therefore the second part of the SSVC must be a clause rather than a phrase.

This argument is very strong. We can see in the following section that a similar phenomenon appears in Chinese.

Bickerton & Iatridou (1989) also discuss the invalidity of VP analysis with respect to X-bar theory, θ -theory and control theory. As regards the control theory, the most difficult problem for the VP analysis is what have been mentioned above: the potential subject of V_2 may be either the subject or object of V_1 . Although in languages other than Chinese, the former case is prevalent, we

have observed the latter case:

(99) A kai a dataa kon luku a pikin. ---- Aucaans

he call the doctor come look the child

"He called the doctor come and look at the child."

(100) Mi hali mi buuku go na mi knee. ---- Aucaans

I pull my trousers to Loc. my knee

"I rolled my trousers up to my knees."

To account for sentence (99), (100), or Chinese sentence (63b), as Bickerton & Iatridou (1989) have mentioned, one has to either deny all object-control cases of SVCs, or has to classify them as the "abnormal case" if one insists on a VP analysis.

Bickerton & Iatridou (1989) also raise questions about whether the clause in an SSVC is an IP or a CP. Byrne (1987) prefers the CP analysis. He argues that the object of a subordinate SVC verb can be extracted to head the sentence:

(101)a.Mi tei faka koti beee. ---- Saramaccan

I take knife cut bread

"I cut bread with knife."

b.Beee mi tei faka koti?

bread I take knife cut

"It was bread that I cut with a knife."

c.Andi mi tei faka koti?

what I take knife cut

"What did I cut with a knife?"

[Bickerton & Iatridou (1989)]

This is also true in Chinese: As we have shown that in Chinese, if V_2 has an object, that object is always extractable. The same phenomenon is also observed in other languages which have SSVCs. Therefore extractability of an object is considered one of the properties of SVCs.

Bickerton & Iatridou (1989) claim that extractability of the object does not mean that the clause in an SSVC is a CP. The argument put forward by Byrne (1987) is that movement of an NP from a subordinate clause to the head of the sentence needs an "escape hatch" ---a COMP position, otherwise the movement will cross more than one bounding node, thus we will have a violation of Bounding Theory. But, under the framework of Chomsky (1986), the requirement of an "escape hatch" has disappeared by way of VP adjunction.

However, the notion of VP adjunction itself is problematic. See Aoun et al (1987), Lightfoot & Weinberg (1988) which point out that Chomsky's notion of *adjunction* is too stipulative. If VP-adjunction does not work, we still need an "escape hatch" for the object-movement in SSVC. Therefore it seems that Byrne (1987)'s claim that the clause in SVC is CP is correct. We will return to this issue later.

4.2. Structures of SSVCs in Chinese

It has been demonstrated that in Chinese, SSVC is a very popular construction. In the past several decades, there was a great deal of discussion on this construction. But it is surprising that except for Li & Thompson (1973, 1974), Lu (1973), their structures are seldom discussed. The SSVCs in Chinese are traditionally divided into two subclasses: those analyzed as subject control in this paper are termed *serial verb constructions*, while those analyzed as object control are termed *pivotal constructions* (Chao, 1968).

It has been suggested that the analyses of Li & Thompson (1973, 1974) and Lu (1973) on the structures of SSVCs in Chinese are not all correct. In pursuing a better solution to this issue, it has been found that the binding theory can act as a good test to determine the structure. However, binding in Chinese, which has been studied by several linguists for recent years (Battistella, 1989; Cole & Sung, 1989; Huang & Tang 1988; Tang, 1989; Xu, 1986, 1989), is rather complicated, and so needs an introductory discussion.

4.2.1. Binding in Chinese

We all agree that binding in Chinese mainly involves the behavior of a word *ziji* (self), the

distribution of which is as follows:

(102) As the subject of clause:

Wo dasuan *ziji* qu.

I plan self go

"I plan to go myself."

(103) As the object of clause

Lao nainai zhecai mingbai maiyude pian *ziji*.

old granny now realize fishmonger cheat Asp. self

"The old granny didn't realize that the fishmonger had cheated her/himself until this moment."

(104) After an R-expression

Zhangsan *ziji* jiu shi huajia.

Zhangsan self do be painter

"Zhangsan himself is a painter."

(105) After a pronominal

Zhangsan zongshi bu xiangxin ta *ziji*.

Zhangsan always not believe he self

"Zhangsan always doesn't believe himself."

The complexity of binding in Chinese can be seen clearly from these examples. In (102), *ziji*(self) is the subject of clause, which superficially is a violation to binding theory since it as an anaphor is not bound in the clause; in (103), it is the object of clause, but it either coindexes with the subject of the embedded clause or the matrix clause, which is an apparent violation of the binding theory. If *ziji*(self) is after an R-expression or a pronominal, it does not change the status of the R-expression or the pronominal (Xu, personal communication).

Many efforts have been made to account for the peculiarity of these facts. Xu (1986, 1989)'s explanation divides *ziji* (self) into two subclasses: *contrastive ziji* and *noncontrastive ziji*. The former

has the following properties:

1. It is always stressed in a sentence.
2. It cannot be used alone. In other words, it is always used with an R-expression, a pronominal or an empty category.
3. Sometimes it does not have an antecedent in the clause it is in:

(106) "Zhangsan pai ren lai le ma?" "Bu, ta *ziji* lai le."

Zhangsan send men come Asp. MA no he self come Asp.

"Did Zhangsan send anyone here?" "No, he himself comes."

4. If there is an antecedent, it is not necessarily a subject:

(107) Zhangsan gaoshu Lisi_i *ziji*_i yao xiaoxin.

Zhangsan tell Lisi self should careful

"Zhangsan told Lisi that he himself should be careful."

5. If there is an antecedent, this antecedent does not necessarily c-command *ziji*(self):

(108) Zhangsan_i de gege_j shuo ta *ziji*_{i,j} bu dui.

Zhangsan DE brother say self not correct

"Zhangsan's brother said that he himself is not correct."

6. Long distance binding is possible:

(109) Zhangsan_i zhidao Lisi_j renwei ta *ziji*_{i,j} bu dui.

Zhangsan realize Lisi consider he self not correct

"Zhangsan realized that Lisi thought he himself was not correct."

These properties are not surprising. Actually the behavior of $x + ziji$ (x stands for R-expression, empty category or pronominal) is the same as personal pronoun + self in English:

(110) They themselves will come tomorrow.

(111) John_i told Bill_j that he himself_{i,j} should be responsible for the accident.

(112) John_i's brother_j said that he himself_{i,j} should be responsible for the accident.

(113) John_i knew that Bill_j would say that he himself_{i,j} was wrong.

Without considering the pronoun it modifies, *themselves* does not have another antecedent in the clause; *himself* in (111) may coindex with either subject or object of the matrix clause; *himself* in (112) can coindex with an NP that does not c-command it; *himself* in (113) can have a long distance binding relationship with an NP. These facts indicate that anaphors in these sentences are not independent arguments, but modifiers of arguments. In this sense, it is not appropriate to discuss its long distance antecedent, non-c-commanding antecedent, etc.. They simply coindex with the arguments that they modify, thus are bound in their governing categories and no violations of the binding theory occur.

The contrast between two subclasses of *ziji* (self) in Chinese is illustrated by the following sentences:

(114)a. **Ziji_i de fumu yuanliang ta_{*1,j}.*

self DE parents forgive he

"His_i parents forgive him_{i,j}."

b. *Zhiyou ziji_{i,j} de fumu yuanliang ta_{i,j}.*

only self DE parent forgive him

"Only his_i parents forgive him_{i,j}."

(115)a. **Ziji de fumu bu yuanliang ta_{*1,j}.*

self DE parent not forgive he

"His_i parent do not forgive him_{i,j}."

b. *Lian ziji_i de fumu dou bu yuanliang ta_{i,j}.*

even self DE parent all not forgive him

"Even his_i parents do not forgive him_{i,j}."

(114a), (115a) are not accepted because *ziji* (self) here is non-contrastive and cannot coindex with an NP which does not c-command them. To make them contrastive, we can add other emphatic adverbs. Then, the coindexing with a non-c-commanding NP is grammatical.

From the properties of the non-contrastive *ziji* (self), it is concluded that it cannot be used

solely as an argument, but modifies a genuine argument, which may be an R-expression, pronominal or empty category. In (116) we describe a crucial property of contrastive anaphors in Chinese:

(116) Condition for Contrastive Anaphors

A contrastive anaphor must be locally bound by an NP c-commanding it.

4.2.2. Contrastive *ziji* and Structure of SSVC in Chinese

We have observed that in an SSVC in Chinese, *ziji* (self) can appear before either V_1 or V_2 :

(117)a. Zhangsan *ziji* kai men yingjie keren.

Zhangsan self open door welcome guest

"Zhangsan himself opened the door to welcome his guests."

b. Zhangsan kai men *ziji* yingjie keren.

Zhangsan open door self welcome guest

"Zhangsan opened the door to welcome his guests himself."

In (117a), *ziji* (self) modifies Zhangsan and coindexes with it; in (117b) it coindexes with Zhangsan, but does not modify it, because in Chinese, *ziji* cannot modify a NP across a predicate:

(118)a. Zhangsan wancheng le nei ge jihua.

Zhangsan complete Asp.that CL project

"Zhangsan has completed that project."

b. Zhangsan *ziji* wancheng le nei ge jihua.

Zhangsan self complete Asp.that CL project

"Zhangsan himself completed that project."

c. *Zhangsan wancheng le *ziji* nei ge jihua.

Zhangsan complete Asp.self that CL. project

"Zhangsan completed that project by himself."

d. *Zhangsan wancheng le nei ge jihua *ziji*.

Zhangsan complete Asp. that CL project self

"Zhangsan completed that project by himself."

This paradigm shows that as an modifier, it follows the head it modifies. The relationship of head-modifier cannot be separated by a predicate. In other words, *ziji* (self) in (117) must satisfy condition (118), and the locality condition of (116) may be stated in the following way:

(119) Locality Condition for Local Binding:

in ... α ... x ... β ...

α locally binds β iff

(i) α c-commands and coindexes with β

(ii) x is not an NP or predicate that c-commands β .

Therefore *ziji* (self) in (117b) cannot be locally bound by *Zhangsan*.

Furthermore, *ziji* (self) in (117) is not an independent argument in the following sense. First, phonologically, it must be stressed in the clause, otherwise it is out. Second, if it is in an argument position, *ziji* (self) should to be replaceable by other NPs. However, such replacement is impossible:

(120) *Zhangsan kai men ziji yingjie keren.*

Zhangsan open door self welcome guest

"*Zhangsan opened the door to welcome his guests himself.*"

(121)**Zhangsan kai men ta yingjie keren.*

Zhangsan open door he welcome guest

"*Zhangsan opened the door, he welcomed his guests.*"

(122)**Zhangsan kai men Zhangsan yingjie keren.*

Zhangsan open door Zhangsan welcome guest

"*Zhangsan opened the door, he welcomed his guests.*"

These sentences illustrate that the position is not an argument position. Third, *ziji* (self) in (117) can coindex with an object in the matrix clause:

(123) *Zhangsan qing Lisi ziji lai xuexiao.*

Zhangsan invite Lisi self come school

"Zhangsan invited Lisi to come to the school himself."

Since *ziji* (self) in this position is not an argument, and it is contrastive, and thus must satisfy condition (116), we can postulate that there must be an empty category before it. Considering that V_2 has an empty category as its subject, it must be in a clause rather than in a phrase. Therefore the linear structure of (117b) is

(124) [_{IP} Zhangsan kai men [_{CP} [_{IP} e *ziji* yingjie keren]]

Zhangsan open door self welcome guest

Also the clause is analyzed as a CP since extraction of *keren* (guest) in (124) is always grammatical and an "escape hatch" is needed for the extraction. Consider the following structures:

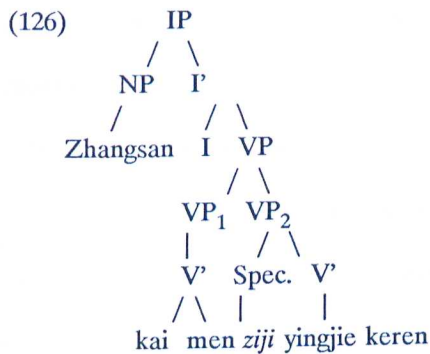
(125)a. [_{CP} C [_{IP1} NP₁ V₁ [_{IP2} V₂ NP₂]]

b. [_{CP} C₁ [_{IP1} NP₁ V [_{CP} C₂ [_{IP1} V₂ NP₂]]]

in (125a), extraction of the NP₂ to C position must across four barriers: V₂ is a barrier to NP₂, and IP₂ inherits its barrierhood; V₁ is also a barrier to it, and IP₁ inherits the barrierhood. Therefore, if NP₂ is moved directly to C, the Subjacency Condition must be violated. To solve this problem, Chomsky(1986b) proposes a VP-adjunction which allows NP to adjoin to VP, thus release its barrierhood(see Chomsky(186b)). However, VP-adjunction is based on the notion of antecedent-government, which has been challenged by several studies as mentioned above. Therefore I do not adopt this approach. If we follow the classic approach of the bounding theory, the structure under discussion should be (125b), in which two IPs are bounding node of extraction of NP₂. The NP₂ can first move into C₂ position , then to C₁ position, thus each movement only across one bounding node. In this sense, an "escape hatch" is necessary.

With (124), there will be no any violation of the binding theory in Chinese, since the anaphor in it is coindexed, thus bound by the empty category. It is quite clear that if we analyze a

sentence like (117) as of phrasal structure, many difficulties will occur. Suppose its structure is like (126):



a problem occurs: In (126) *ziji* (self) is not locally bound by an NP, thus we have a violation of condition (116). Consider another sentence which contains an empty object:

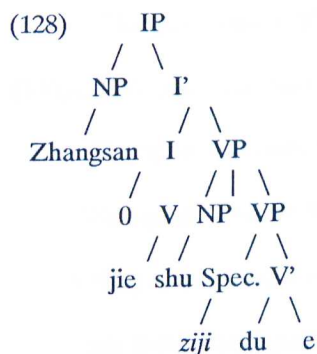
(127) Zhangsan jie shu *ziji* du.

Zhangsan borrow book self read

"Zhangsan borrows book to read himself"

With the structure (126), the empty object of *du* (read) cannot be coindexed with NP *shu* (book) since the latter does not c-command the former.

Another proposal may be (128):



In this diagram, the empty category *e* is c-commanded by NP *shu*(book), thus can coindex with it. However, the anaphor *ziji* (self) cannot be locally bound by any NP since coindexing with NP *shu* (book) is impossible. Therefore (128) is not a correct structure for a sentence like (117) or (127).

4.2.3. Some Complexity

We have illustrated that SSVCs in the languages under discussion contain a clausal construction, which follows V_1 . However, in Chinese, the case is more complex than those in the Caribbean creole and West African languages. We have observed that in Chinese, the clause does not necessarily follow V_1 .

We have mentioned that in the SVCs in Chinese, either verb can be aspect-marked. As regards this property, one fact has been observed: In Chinese, one part in the SVC can topicalized. The raised constituent must not be the matrix clause, otherwise the ECP will be violated.⁴ The condition on the topicalization is that the clause must not be aspect-marked:

(129)a. Zhangsan yong *le* dao qie rou.

Zhangsan use Asp. knife cut meat

"Zhangsan used the knife to cut meat."

b. *Qie rou*, Zhangsan yong *le* dao.

cut meat Zhangsan used Asp. knife

"Zhangsan used the knife to cut the meat."

c. **Yong le dao*, Zhangsan qie rou.

use Asp. knife, Zhangsan cut meat

"Zhangsan used knife to cut the meat."⁵

(130)a. Zhangsan yong dao qie *le* rou.

Zhangsan use knife cut Asp. meat

"Zhangsan used the knife to cut the meat."

b. *Yong dao*, Zhangsan qie *le* rou.

use knife Zhangsan cut Asp. meat

"Zhangsan used knife to cut the meat."

c. **Qie le rou*, Zhangsan yong dao.

cut Asp. meat Zhangsan use knife

"Zhangsan used knife to cut the meat."

Therefore if an SVC is extractable, it must be an adjunct rather than a matrix clause. So there are two possible structures for SSVCS in Chinese: a verb may be followed by a CP, or precede a CP. This conclusion is not surprising. In Chinese, adjuncts of instrument, time, method, etc, usually precede the verb, while adjuncts of purpose, direction, duration, frequency, etc, usually follow the verb. Adjuncts of place can be either in preverbal or postverbal position. This explains why sentences in (131) have a gap:

(131)a. Wo qie rou yong dao.

I cut meat use knife

"I used knife to cut meat."

b. Wo qie rou yong *le* dao.

I cut meat use Asp. knife

"In cutting meat, I used knife."

c. *Wo qie *le* rou yong dao.

I cut Asp. meat use knife

"I used the knife to cut the meat."

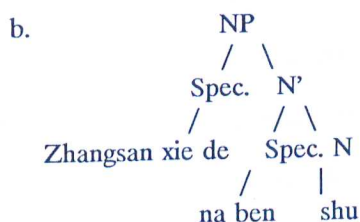
In (131c), *yong dao* (use knife) can only be explained as the instrument to do the action *qie rou* (cut meat). But this adjunct is adjoined to a wrong position, so the sentence should be ruled out.

Another question is whether a clause can act as a prehead modifier. In fact, clausal prehead modifiers are quite common in Chinese. For example, NP is left-branching in the sense that even a clausal modifier must precede it:

(132)a. Zhangsan xie de nai ben shu

Zhangsan write DE that CL. book

"the book written by Zhangsan"



The fact of VP is parallel to the NP modifier. Consider that the object of V_1 can also be raised, an "escape hatch" is also needed, so the adjunct clause is also CP rather than IP.

Nevertheless, what we said about the structure of SSVCs in Chinese is not the whole story: we have not made clear where the exact position is that the adjunct clause adjoins to. Since this issue involves the generation of SSVCs, we will revisit it after discussion of the formation of SSVCs in the next section.

4.3. Generation of Clausal SVCs

Several proposals have been put forward to account for the generation of SSVCs, some of which have been discussed briefly in previous sections. Generally speaking, we can sum up these proposals as follows:

1. SSVCs are generated through phrase structure rules. This is suggested by Schachter (1974), Williams (1976), Jansen et al (1978), Baker (1989), etc.
2. SSVCs are generated by transformation. Stewart (1963), Stahlke (1970) use the early transformational analysis to account for the generation of SSVCs.
3. SSVCs are generated in the lexicon as discontinuous complex predicates, which is suggested by Déchaine (1986) and Lefebvre (1988).
4. SSVCs are generated by IP conjunction, which is Bickerton & Iatridou (1989)'s proposal.

In this section, we want to investigate this issue along the line we have proposed in previous sections. What we are pursuing in this discussion is a unified approach to the issue in the sense that there will be no particular rules or principles to the generation of SSVCs. In other words, a set of rules that can generate a SSVC should be universally good for generating other constructions in a

language. This requires us to restrict the modifications of the rules and principles which have been demonstrated to be reasonable in a language to a minimum, and any such modifications should be supported by sufficient and independent reasons.

We have sufficient reasons to take the requirement of a unified approach as a criterion to evaluate the approaches proposed in the previous literature. In the following subsections, some of the approaches will be discussed. Since in the discussion on structures of SSVCs, the transformational approach and some proposals claiming generation of SVCs by phrase structure rules have been proved invalid, the discussion will be focus on an incorporation approach and an adjunction approach.

We have pointed out that the phrase structure rules proposed by Schachter (1974), Williams (1976) and Jansen et al (1978) will generate ungrammatical strings, which indicates that these rules can only be applicable to some of the SSVCs. Actually the structure given by Baker (1989) has the same disadvantage. Therefore, no phrasal structure approach can provide a unified solution to SSVCs.

4.3.1. Lexical approach

Among all the previous studies, only Déchaine (1986) and Lefebvre (1988) propose the lexical approach to the formation of SSVCs. They claim that SSVCs are discontinuous predicates formed in the lexicon. In the formation procedure, two verb roots form one monotransitive predicate, therefore two overt NPs in the syntax represent the selection properties of this predicate.

Just as Baker (1989)'s comment, their proposals need a theory of lexical rules defined over rather sophisticated lexical-semantic representations. Baker (1989) does not give any concrete examples to illustrate it. But we have strong evidence to show the disadvantage of this proposal.

Consider the subject-control case and the object-control case mentioned above. For the typical control structure in English, the distinction between subject-control and object-control can generally be handled in the lexicon. The well known examples areas follows:

(133) John promised Bill [PRO to leave].

(134) John persuaded Bill [PRO to leave].

(133) is subject-control case in which who will leave is John the promise; (134) is object-control case in which the person who will leave is Bill. The distinction can be made clear in the lexicon by labelling the verb *promise* as subject-control verb and *persuade* an object-control verb. One may expect such labelling to be applicable to SSVCs.

However, we have strong evidence to negate such an expectation. In Chinese, we have the following sentence which was first cited by Chao (1968) and has shown above in this thesis:

(135) Zhangsan *zhao-bu-dao* xuesheng [PRO jiao e].

Zhangsan find-not-Part.student teach e

"Zhangsan cannot find students to teach."

(136) Zhangsan *zhao-bu-dao* laoshi [PRO jiao e]

Zhangsan find-not-Part. teacher teach e

"Zhangsan cannot find a teacher to teach him."

In (135), the PRO must be coindexed with the subject of the matrix sentence *Zhangsan*, while in (136), it must be coindexed with the object of the matrix sentence *laoshi* (teacher). Such a distinction cannot be handled in the lexicon, because the verbs of both sentences are the same, thus some context-sensitive rules are needed. In other words, to treat the distinction like (135) and (136), operations and conditions other than those in the lexicon is needed.

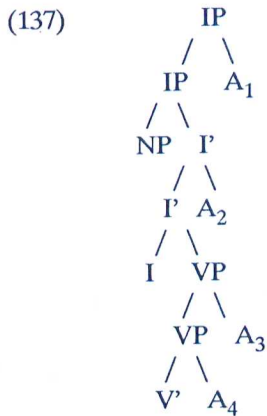
Therefore the lexical approach cannot explain the most interesting aspect of SSVCs.

4.3.2. Adjunction and formation of SSVCs in Chinese

Bickerton & Iatridou (1989) suggest that SSVCs are formed by IP adjunction. They argue that the clause in an SVC is an IP, not CP for by adjoining to VP, the "escape hatch" is no longer necessary for movement. However, the VP adjunction also involves antecedent-government which is still open to discussion. Therefore the "escape hatch" is still needed and the clause is a CP rather than an IP.

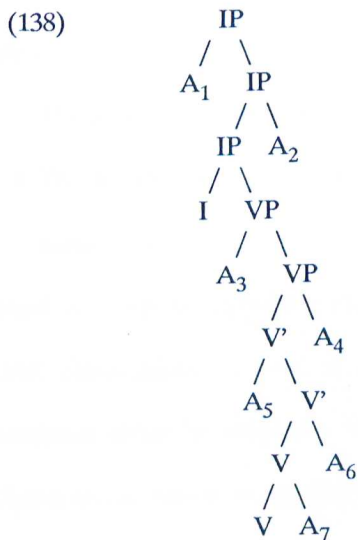
As regards the notion of adjunction, we have found this term has been used in different

senses. Chomsky (1986b) mentions two types of adjunction: One is the base-generated adjunction, the other is one type of movement. Bickerton & Iatridou(1989) use this notion in the first sense. Bickerton & Iatridou (1989) give the following diagram in which possible adjunction sites are indicated by *A*:



Attachment to the V^0 node is excluded because the subordinate clause must be an adjunct.

The Chinese case is more complicated. Since, as discussed above, in Chinese, a CP adjunct can be either preverbal or postverbal, the CP adjunction can either be left-branching or right-branching. Therefore the possible adjunction sites are more than Bickerton & Iatridou (1989) have suggested:



Of course A_x s in Fig.18 are only potential adjunction sites. In a language only a few will be applicable. In the next section, we will see which sites are used in Chinese for CP adjunction.

Based on the discussion above let us sum up the conditions for the structure of SSVCs in Chinese:

1. The subject in SSVCs must be obligatorily controlled by either the subject or object of the main clause. If the adjunct clause has an empty object, it must be controlled by the object of the matrix clause.
2. For subject-control SSVC, the adjunct CP can always be raised.
3. For object-control SSVC, raising of CP is not possible.

In discussing adjunction, Bickerton & Iatridou (1989) introduces the notion of m-command which was first put forward by Aoun & Sportiche (1981):

(139) M-command

X m-commands y iff all maximal projections that command x command y.

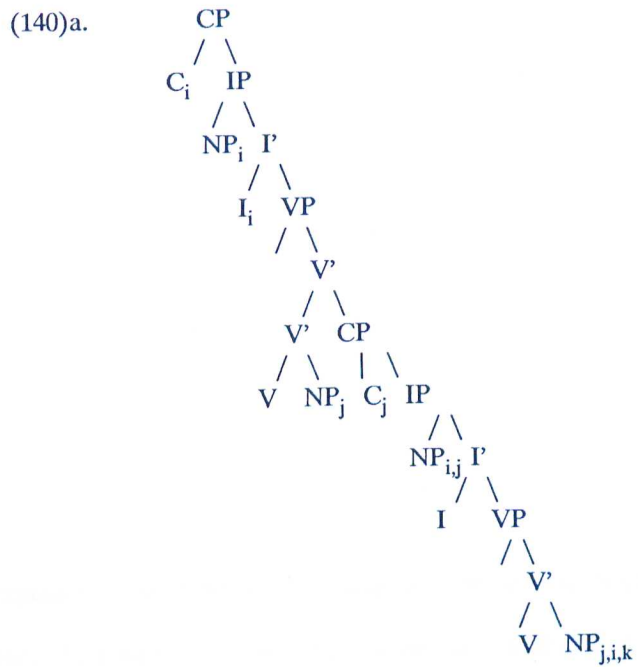
They claim that it is reasonable to suppose that the controller must m-command ECs in the subordinate clause.

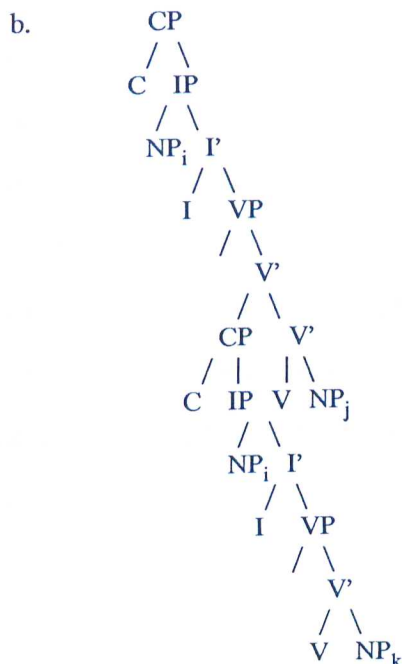
To determine the adjunction site of the adjunct clause, the following conditions must be taken into consideration:

1. The controller must m-command ECs in the adjunct clause.
2. The adjunct clause is not in a θ -position, which means that it is not selected by the matrix verb.

This limited the possible adjunction sites of CP. Consider the tree diagram shown in (138), if the lower SSVC clause adjoin to VP or above, that is, adjoin to A_1, A_2, A_3 or A_4 , the matrix object does not m-command either the subject or the object of the adjunct clause, which is a violation of (139); if the adjunct clause adjoins to A_8 , which is a θ -position, the adjunct clause must be selected by the matrix clause. Therefore the only adjunction site for subject-control CP is V' . This conclusion is the same one that Bickerton & Iatridou (1989) reached. However, SSVCs in Chinese are different from

these in the languages discussed by Bickerton & Iatridou in one respect: In Chinese, the adjunct CP can appear before the matrix verb. Therefore there are two possible structures for the sentence containing SSVC in Chinese:





Some explanations of these two tree diagrams are needed. In (140a), the adjunct CP is base-generated, adjoining to V' of the matrix clause; its subject (NP_{i,j}) is coindexed with the subject (NP_i) or the object (NP_j) of the matrix clause, and its object (NP_{j,k}) coindexes with the subject or the object of the matrix clause (NP_j) when it is an empty category, otherwise it takes free reference. Such coindexing is realized through m-commanding relationship between two NPs. If it is the subject-control, INFL in the adjunct clause must null and the adjunct is always extractable. Extraction of the adjunct CP is grammatical under the framework of Chomsky(1981) in the sense that movement will across only one bounding node, here is the matrix IP. The object of the adjunct (NP_{j,k}) clause can be moved to head the sentence: The NP is first moved to C_j, then to C_i.

(140b) is different from (140a) in the different adjunction position: although it also adjoins to V' of the matrix verb, it is left-branching rather than right-branching. Here we catch the symmetry between two types of adjunction. The subject of the adjunct is also coindexed with the subject of the matrix clause, but the object never coindexes with the object of the matrix clause since the latter does not m-command the former; while the matrix subject m-commands the subject of adjunct, the

matrix object does not hold such relationship with the object of the adjunct. Movement of the adjunct CP is always possible. INFL in the adjunct CP is always null.

4.5. Conclusion

In this chapter, we discussed structure, generation and empty category of SSVCs. After investigating several proposals, it is concluded that most SSVCs have clausal structure. This analysis is based the binding theory. Furthermore, we argue that the adjunct clause in SSVC is CP rather than IP, because extractability of the object of the adjunct clause needs an "escape hatch" and VP-adjunction has not yet been proved valid. It has also shown that in Chinese, SSVCs may have two different structures.

Note:

1. Generalized Serialization Parameter: VPs {can/cannot} count as the projection of more than on distinct head.

CAN: Yoruba, Sranan, Ijo

CANNOT: English, French

2. Of course, even in morphology HLC does not work well since in the lexical structure, head(s) should have the same bar-level with its maximal projection. See the discussion in Chapter 3.
3. These sentences are cited from Huang(1989) with a little revision in transcription: after the verb, he uses the accusative form of the pronoun, while I use nominative, because I want to show that there is no distinction between these Cases in form in Chinese.
4. Consider the following structure:

$[_C C [_{IP} NP [[_{Matrix} VP V NP] [_{Adj} V NP]]]$

If we want to extract matrix VP to C, the trace left by the movement is not governed by anything,

therefore construct a violation of the ECP. On the contrary, extraction of an adjunct does not have such requirement.

5. With other interpretation, this sentence can be correct. For example, if the interpretation is that "After using knife, Zhangsan cut the meat." However, with this interpretation, the structure of sentence should be (1):

- (1) [_{CP} [_{Adj} *yong le dao* [_{IP} Zhangsan *qie le rou*]]
use Asp. knife Zhangsan cut Asp. knife

We have evidence to support this analysis: after *yong le dao* (use Asp. knife), we can add a postposition *yihou* (after), the meaning of the sentence will not change. This denotes the subordinate clause is not formed by transformation. The confusing point here is the omission of the conjunction *yihou* (after). However, the fact is in Chinese, such omission is always possible.

CHAPTER 5

Conclusion

In the previous chapters, we investigate the properties, distribution, definition, formation, argument-linking, and structure of *serial verb constructions*. Several conclusions have been reached and we finally obtain a unified solution to the problems involving this construction.

As some of the previous studies have pointed out that the "serial verb construction" is not used homogeneously in the literature. Therefore this study starts with discussion of the notion. As regards this issue, this study proposes that in order to make the scope of the notion clear, we have to first clarify some confusions. For example, some linguists allow V plus coverb or verb-like to be included in SVCs. This requires us to give theories under what conditions a category can be seen as a coverb or verb-like. This thesis proposes that a category in a particular language is considered as a coverb or verb-like if and only if it has the major functions of the verb in that language. Along this line, we cannot agree that V + PP or PP + V in Chinese are instances of SVCs, since the preposition in Chinese has saliently different properties from those of the verb. For example, the object of the verb in Chinese is extractable under certain conditions in Chinese, thus the object of V₂ of an SVC in Chinese is always extractable. On the contrary, the object of a preposition is never moved or dropped. Therefore, we cannot classify prepositions as coverb or verb like. In contrast, we have every reason to claim that adjectives in Chinese are verb-like, since they have all the major functions of the verb in this language: it can act as predicate solely, can take an object and even can have aspect. Therefore it is not surprising that almost all the linguists studying verb compounds in Chinese include VA compounds into their studies. Another issue is about the linking of the verbs. Generally speaking, linguists studying SVCs all agree that verbs in an SVC should not be linked by any conjunction. However, Sebba (1987) neglects the linking function of punctuation, and proposes that two verbs linked by a comma should be considered as an SVC. With

this view, many languages including English should be classified as serialized languages since two verbs linked by a comma is a popular construction in these languages. Therefore this study gives a strict criterion to judge an SVC: In an SVC, two verbs must not be linked by any lexical device, including conjunctions and punctuation, in short, verb must not be linked by any *lexical connection*.

Although it is pointed out that SVCs may have three different structures, limited by data and linguistic intuition, we only discuss two of them: the verb compound and the clausal SVCs.

In discussing verb compounds, we have shown that the distinction of the productive form and the non-productive form is crucial in explaining their behavior. It is demonstrated that the productive form is more interesting in its rules of formation and argument-linking, and the nonproductive compound is more like a frozen form. In studying productive verb compound, we distinguish two types: the VV compound and VA compound. Comparatively speaking, VV compounds have more restrictions on its structure, formation and argument-linking. It can only consist of a transitive verb and an intransitive verb, the intransitive verb in most cases must be unaccusative, and it can only be linked to the internal argument. On the contrary, in a VA compound, the verb can be either transitive or intransitive, and the adjective can link to either the external argument or internal argument.

To explain the distinction, it is proposed that we can use the notion feature-percolation to catch the different behaviors. Since the external argument is the argument of a predicate, while the internal argument is that of verb, it is suggested in this thesis that adjectives in a compound can percolate its features up to VP, while a nonhead verb in a compound can only percolate features to V^0 . Furthermore, in discussing the well-formedness condition of verb compounds, it is clear that the Case requirement plays an important role: In any instance that the Case requirement is not met, the compound is ruled out. As Chinese is a language that does not have concrete a case system, this fact is supportive evidence for the universal nature of Case. Furthermore, with the feature percolation convention proposed in this thesis and the Case requirement, all the grammatical verb compounds can be generated, while all the ungrammatical can be ruled out. Moreover, we have independent

evidence to support the solution. In discussing the reduplicated construction and Ba construction, these theories can well account for why the ba construction is neutral to both VV and VA compound, while the reduplication is applicable only to $V_{trans.} + A$ compound. This in turn demonstrates that the function of ba construction is to raise the object of the sentence, rather than to create another argument position, or to meet the Case requirement. The object position of the preposition Ba is not a θ -position. We also have supporting evidence from the behavior of the three-place verbs.

In discussing the violation of the θ -Criterion, this thesis suggests that a θ -position can be assigned a compound θ -role. In fact, this suggestion is not different from the recent approaches to this principle given by Chomsky, Higginbotham, Jackendoff, among others.

The clausal SVCs are more popular than the phrasal SVCs and the verb compounds. This thesis uses one chapter to discuss this type of SVCs. In discussing its structure, we introduce the explanation given by Bickerton & Iatridou (1989), which mainly uses the binding theory to prove that the construction under discussion is of clausal structure. The idea is very clear: in Aucaans and Sranan, V_2 in an SVC can have a pronoun object which is coindexed with the object of V_1 . It indicates that the matrix clause must not be the governing category of the pronoun, otherwise the binding theory is violated. It follows that this pronoun must be in a clause which contains the V_2 .

The facts of Chinese supports this analysis. In Chinese, the anaphor *ziji* (self) can be divided into two types: the contrastive *ziji* and non-contrastive *ziji*. The former must be locally bound by an NP, including an R-expression, a pronominal or an empty category. It is observed that before V_2 of an SVC in Chinese, a contrastive *ziji* is always insertable, which is not locally bound by an R-expression or a pronominal. It follows that it must be bound by an empty category. This indicates that the syntactic serial verb constructions in Chinese is of clausal structure.

As regard the generation of SSVCs, we also adopt the idea put forward by Bickerton & Iatridou(1989): The V_2 is in an adjunct clause, the clause is base-generated by the grammar. adjoining to V' . Therefore the generation of the adjunct clause of an SSVC is not different from

that of other adjuncts

This thesis proposes two different points. First, considering the VP-adjunction is also dependent on the antecedent government, we do not use this notion in the discussion. This in turn makes the 'escape hatch' necessary for extracting the object of V_2 . Therefore we claim that the adjunct clause is CP rather than an IP.

The other is about the site of adjunction. Bickerton & Iatridou (1989) claims that the adjunct clause is always attached to a postverbal position. I claim that in Chinese in addition to the postverbal position, it also can be attached to the preverbal position. Evidence has been given to illustrate that in Chinese, adjunction can be either left-branching or right-branching.

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