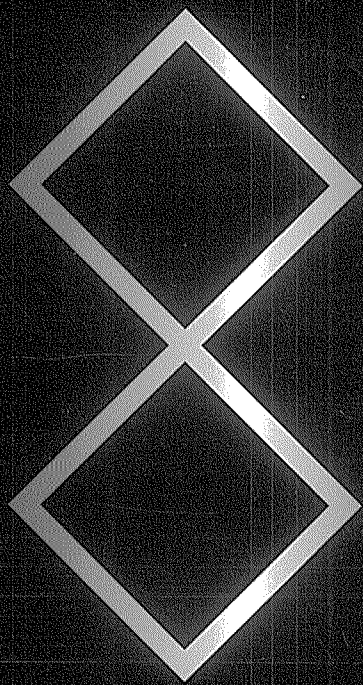


STUDIES IN
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II



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Edited by

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PREFACE

As a continued effort to promote linguistics research on the Chinese languages in Hong Kong, the Linguistic Society of Hong Kong is happy to present to you the second volume of the research series of *Studies in Chinese Linguistics*. This collection of ten articles reports research findings by local Chinese linguists. Most of the articles were derived from the presentations given at the Annual Research Forums held in 1997 and 1998, organized by the Society. The majority of the authors have been teaching and conducting research in Hong Kong. A couple of them were based in Hong Kong when their research published in this volume was being conducted.

The topics of these articles range over various aspects of Mandarin Chinese: six (Chapters 1, 3, 6, 7, 9 & 10) on the syntactic aspects of Chinese, two (Chapters 2 & 8) on discourse, one each on pragmatics (Chapter 4) and semantics (Chapter 5). **Yang GU** and **Haihua Pan** (Chapter 1) attempt to examine the internal structure of the *V-de* resultative/causative constructions in Mandarin Chinese, and show that they reveal more complex structural properties. In addition to the control structure, as suggested in Huang (1992), with the NP after *V-de* analyzed as a matrix object controlling a *Pro* in the embedded clause, Gu and Pan argue that the *V-de* construction can have either a Small Clause structure or an Exceptional Case Marking (ECM) structure, with the NP after *V-de* analyzed as an embedded subject. **Yuanjian HE** (Chapter 3) examines the Chinese relative clause construction. He argues that the lack of *wh*-relatives in Chinese weakens the case of construing an operator-variable structure for its non-*wh* relatives, and claims that Chinese relatives should be treated as N-initial rather than N-final, thus achieving a uniformed way of deriving Chinese relatives under Kayne's (1994) relative-clause stranding analysis. **Dingxu SHI** (Chapter 6) aims to provide a comprehensive description of Chinese comparatives associated with *bi* 'than' and to establish an accurate generalization about their properties. He claims that *bi* is a connective on a par with *yin* 'because of' and *wei* 'for the sake of' and the *bi* phrase functions as a degree adverbial and has a scope on things to its left on a par with some other scope adverbials such as *dou* 'all.' **Lidi WANG** (Chapter 7)

tries to demonstrate how argument structure constrains the formation and interpretation of deverbal nominal compounds marked by the nominal suffix *-de* in Chinese. He argues that such nominals are lexically derived from the argument structure of the base verb, and shows that the well-formedness of this type of nominals is subject to constraints intrinsic to the argument structure of the verb in question. **Suying YANG** and **Haihua PAN** (Chapter 9) focus on the existential construction, and argue that the residue problems of various analyses can be solved if one distinguishes proto-existentials from quasi-existentials and takes a constructional approach to the latter. With a set of newly proposed constraints on the existential construction, YANG and PAN provide us with a new explanation of the Definiteness Effect and a better account of both the universal and special properties of the existential construction in Chinese. **Liejiong XU** (Chapter 10) aims to recast the properties of topic-prominent languages and their differences from subject-prominent languages into the framework of the Principles-and-Parameters approach. He proposes the Topic-Prominence Parameter to distinguish the former from the latter, and analyzes the topic construction as containing a functional category called Topic Phrase (TP), with the topic marker as its head. He suggests that typically, a topic prominent language has a larger number and variety of highly grammaticalized topic markers in the Lexicon and permits a variety of syntactic categories to occur in the specifier position and the complement position of TP.

The two articles on discourse investigate the changing orders of discourse and NP reiteration in Chinese texts, respectively. **Yueguo GU** (Chapter 2) attempts to explore the interaction between social change and discourse. He focuses on the change of political ideology from that of *Mao Zedong* to that of *Deng Xiaoping*. He offers a detailed contrastive analysis of the changing orders of discourse between the Great Cultural Revolution (1966-1976) and *Deng Xiaoping's* reform era onwards in terms of "systems of rules" with regard to six analytic dimensions. **Dingying WU** (Chapter 8) attempts to give a cognitive account of the use of anaphoric lexical reiteration in staging the different participants in Chinese texts. She suggests that the alternation among NP reiteration forms in referent tracking is largely triggered by two major mechanisms: the Accessibility Condition (AC) and the Variability Condition (VC). While AC defines the ease with which a given entity can be retrieved from the mental representation of the discourse, VC supplements it in explaining the alternation between same NP repetition and alternative NPs. The pragmatics article by **Yan JIANG** (Chapter 4) explores the nature and range of abductive reasoning in pragmatic inference. After reviewing logic in pragmatics and introducing the notion of abduction in logic, the article

discusses the constraining principles of abduction from logical and computational perspectives, and examines abduction in natural language understanding, with special reference to the LDS_{NL} . It demonstrates that pragmatic principles and pragmatic inference, due to their abductive nature, are just special cases of abductive reasoning. The semantics article by **David C.S. LI** (Chapter 5) examines the nature and functions of the so-called aspectual marker *-guo* in Mandarin Chinese. It shows that the ‘experiential’ function of *-guo* is only one of its three attested partial functions: experiential, deresultative, and no longer in a state of X. By comparing with other languages such as Russian, German and French, the article argues that, cross-linguistically speaking, *-guo* does not behave like a typical perfective marker because it (a) is not used in discourse to carry the narration forward; and (b) does not figure in what Pollak (1988) calls ‘the incidence schema.’

It is hoped that the publication of this volume can add to the existing richness of Chinese linguistics and Chinese language study, and help facilitate scholarly exchanges between local and overseas researchers, as has been intended in the Society’s endeavor to publish this research series.

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A FURTHER INVESTIGATION INTO THE COMPLEMENT STRUCTURE OF MANDARIN V-DE RESULTATIVE CONSTRUCTION

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1. INTRODUCTION

This chapter attempts to examine the internal structure of the *V-de* resultative/causative construction in Mandarin Chinese. On the basis of Huang's (1992) proposal that the NP after *V-de* in the *V-de* construction is a matrix object that controls a covert pronominal in the subject position of an embedded clause, we will provide evidence to show that the *V-de* construction reveals more complex structural properties. We will discuss a number of *V-de* sentences with respect to their complement structures and argue that they either involve a Small Clause structure or an Exceptional Case Marking (ECM) structure, namely, the *V-de* construction does not contain a matrix object but an embedded subject. Our analysis is supported by evidence in the different distributions of embedded subjects and matrix objects in *dou* quantification and focus structures like *lian...dou* and *zhiyou*, and in the possibility of allowing reflexives in the embedded subject position in the relevant sentences. In all these structures, only an object is not

permitted to stay in situ when targeted by the above operators. We will show that our analysis --- treating the NP following the matrix predicate *V-de* not as a matrix object but as an embedded subject --- fares better than Huang's control analysis of the *V-de* construction. Before concluding the chapter by briefly discussing two properties of control in English and their relationship to Chinese, we mention a related construction, the descriptive/extent *V-de* construction, and show that it has a similar structure to the resultative *V-de* construction.

2. THE STRUCTURE OF THE *V-DE* RESULTATIVE CONSTRUCTION

Resultative constructions in Mandarin Chinese in general fall into three types according to the distinction of the matrix predicate, (i) the single verb type; (ii) the compound verb type, and (iii) the *V-de* type, which are exemplified in (1), (2) and (3), respectively.

- (1) *Xiao Ming xia-le Yin Yin yi da tiao.*
 Xiao Ming frighten-asp Yin Yin one big jump
 (Lit.) 'Xiao Ming greatly frightened Yin Yin.'
- (2) *Xiao Ming xia-ku-le Yin Yin.*
 Xiao Ming frighten-cry-asp Yin Yin
 'Xiao Ming frightened Yin Yin so that Yin Yin cried.'
- (3) *Xiao Ming xia-de Yin Yin ku-le qilai.*
 Xiao Ming frighten-DE Yin Yin cry-asp start
 'Xiao Ming frightened Yin Yin so that Yin Yin started to cry.'

In this chapter, we shall focus on the internal structure of the third type, i.e., the *V-de* resultative construction. Examples in Mandarin Chinese are abundant. The following are some additional ones:

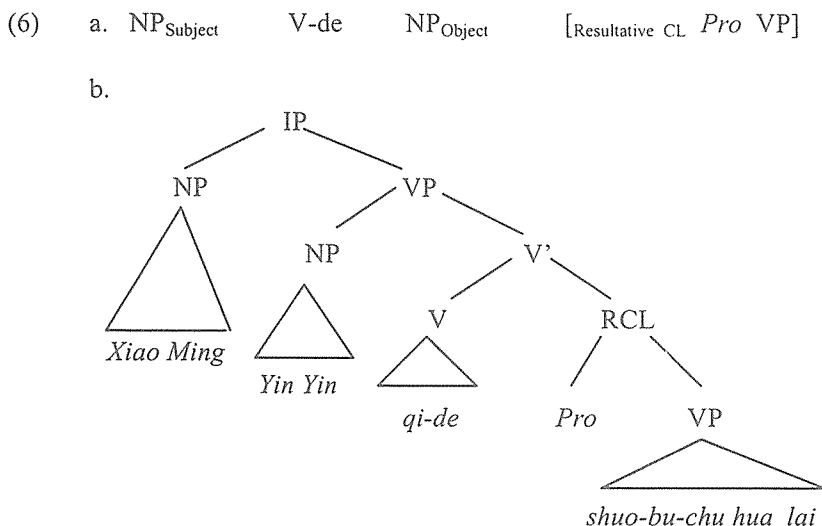
- (4) *Xiao Ming qi-de Yin Yin shuo-bu-chu hua lai.*
 Xiao Ming enrage-DE Yin Yin speak-not-out words come
 'Xiao Ming enraged Yin Yin so much that Yin Yin could hardly utter a word.'
- (5) *Yin Yin ku-de dajia dou hen shang xin.*
 Yin Yin cry-DE everyone all very hurt heart
 'Yin Yin cried so much that everybody got very sad.'

As reflected in the gloss of (5), the lexical verb in the *V-de* complex is not necessarily a transitive verb. What is involved in this construction is a complex predicate, formed by the matrix predicate *V-de* and what follows in

the secondary predication, e.g. *shuo-bu-chu hua lai* ‘couldn’t utter a word’ in (4) and *dou hen shang xin* ‘all very sad’ in (5).

2.1. The Control Account

Previous analyses like Huang (1992) hold the view that the sentences seen in (4)–(5) have an internal bi-clausal structure, as shown in (6a), with its corresponding tree diagram in (6b):



As indicated in (6b), the matrix clause contains a subject NP and a direct object NP, which are base-generated in the Spec positions of IP and VP, respectively. The matrix *V-de* predicate starts out as a complex verb which is base-generated in the V-zero position and presumably raised into the I position in syntax,¹ to derive the surface matrix *S V-de O RCL* order, as indicated in (6a). Notice that (6a) and (6b) contain an embedded resultative clause (RCL in 6b), whose subject is a covert pronominal element *Pro*.

Under Huang's *Generalized Control Theory* (1989), the *Pro* in the embedded clause can be designated either as a PRO or a *pro* (also followed by Li 1997 & 1999). Huang's analysis attempts to overcome problems arising from a number of conflicting properties that PRO and *pro* can have. For easy exposition, we briefly mention the relevant aspects of the analysis concerning the dual status of the covert pronominal element under discussion.

The first aspect has to do with the structural status of the clause in which PRO or *pro* occurs. As standardly assumed in the pre-Minimalist syntax, if the embedded subject NP is a PRO, the sentence involves a canonical control

structure following the Control Theory (Chomsky 1981). (7a) and (7b) exemplify Subject Control and Object Control structures, respectively:

- (7) a. John_i tried [_{CP} [_{IP} PRO_i to leave early]].
 b. John persuaded Sally_i [_{CP} [_{IP} PRO_i to leave early]].

The nature of PRO requires, under the pre-minimalist framework, that the embedded clause be a CP. As PRO can only occur in an ungoverned position, the projection of CP in the embedded clause forms a barrier which prohibits the matrix verb from governing into the embedded subject position. This condition on the clause containing PRO will require the clause be tenseless (agreementless as well), which means the Infl of the embedded clause fails to assign nominative Case to the subject position, so that only a covert pronominal, which does not need morphological Case, can take presence in that position.

But this requirement will run counter to the possibility that the embedded subject be a *pro*, as a *pro* results from a dropped lexical NP in the present context. By permitting a lexical subject NP, the embedded clause must be a tensed clause which allows its Infl to assign nominative Case to its subject NP. The essential difference between PRO and *pro* is that, while the former is not, the latter is Case-marked, as is shown in (8a), and can be lexically recovered, as reflected in (8b):

- (8) Question: --- *Yin Yin zai naier?*
 Yin Yin at where
 ‘Where is Yin Yin?’
 Answer: a. --- *pro hui jia le.*
 return home asp
 ‘(Yin Yin/She)’s gone home.’
 b. --- *ta hui jia le.*
 she return home asp
 ‘She’s gone home.’

It was pointed out in Huang (1992) that since there lacks explicit standard criterion to distinguish “finite” from “non-finite” clauses in Mandarin Chinese, it is more advantageous to assume a Generalized Control Theory that can treat a controlled PRO and lexically dropped *pro* with unity.

The second aspect concerns the thematic properties of the *V-de* complex predicate. Huang’s structural analysis, as illustrated in (6), implies that there are at most three different theta-roles available, which are identified respectively with the matrix subject NP, the matrix object NP and the embedded subject *Pro*. Specifically, under Huang’s analysis, the embedded subject *Pro* can be identified either with the matrix subject, to constitute a

Subject Control structure, or with the matrix object, to yield an Object Control structure, as shown in (9) below:

- (9) a. *Xiao Ming_i qi-de [Pro_i shuo-bu-chu hua lai].*
 Xiao Ming enrage-DE speak-not-out words come
 'Xiao Ming got so angry that he could hardly utter a word.'
- b. *Xiao Ming qi-de Yin Yin_i [Pro_i shuo-bu-chu*
Xiao Ming enrage-DE Yin Yin speak-not-out
hua lai].
 words come
 'Xiao Ming enraged Yin Yin so much that Yin Yin could hardly utter a word.'

By unifying PRO and *pro* into one controlled *Pro*, Huang's analysis predicts that *Pro* can only be co-indexed with either the Subject NP or the Object NP.

In the following we investigate a number of *V-de* resultative sentences which do not fall under Huang's analysis.

2.2. Some Inquires

Although Huang's analysis can account for the relationship between the embedded covert nominal subject and the matrix subject and object NPs in (9), we have found that there are many contexts where the structural status of the Chinese *V-de* construction does not correspond to the English control construction.

First, lexically recovering the embedded covert nominal subject, which can be possibly analyzed as *pro* under Huang's analysis, leads to unacceptable result. For instance, as reflected in (10) below, the embedded subject position cannot be taken by an overt NP. In other words, the embedded subject is not a *pro*.

- (10) a. *Xiao Ming qi-de Yin Yin_i [?*ta_i shuo-bu-chu*
Xiao Ming enrage-DE Yin Yin she speak-not-out
hua lai].
 words come
 (Int. reading) 'Xiao Ming enraged Yin Yin so much that Yin Yin could hardly utter a word.'
- b. *Xiao Ming ba Yin Yin_i qi-de [*ta_i*
Xiao Ming BA Yin Yin enrage-DE she
shuo-bu-chi hua lai].
 speak-not-out words come

(Int. reading) 'Xiao Ming enraged Yin Yin so much that Yin Yin could hardly utter a word.'

- c. *Xiao Ming_i qi-de* [*?* ta_i shuo-bu-chu hua lai*].
 Xiao Ming enrage-DE he speak-not-out words come
 (Int. reading) 'Xiao Ming got so angry that he could hardly utter a word.'

Given the evidence in (10), one wonders if the element in the embedded subject position can be subsumed under Huang's *Generalized Control Theory*, which attempts to treat the Mandarin Chinese *Pro* on a par with the English controlled PROs and their lexical counterparts.

Second, the complement clause in a three-place control predicate in general exhibits structural alternation between a nonfinite clause to a full clause. For instance, in (11) below, the sentences are known to contain three-place predicates, with a subject NP, an object NP (in 11a) or a dative NP (in 11b) (Larson 1991), and a complement clause. (11a) is standardly analyzed as involving an Object Control structure, while (11b) is known to have a Subject Control structure. The infinitive complement clauses in these sentences have corresponding full clause counterparts, as shown in (12).

- (11) a. John persuaded Sally_i [*PRO_i to leave early*].
 b. John_i promised (Sally) [*PRO_i to leave early*].
 (12) a. John persuaded Sally [that she should leave early].
 b. John promised Sally [that he would leave early].

The Chinese sentences in (10) reject an overt NP in the embedded subject position, which shows that the structural parallel observed in the English three-place predicates in (11) and (12) does not exist in the Chinese three-place *V-de* predicates. It is therefore problematic to say that (4), (5) and (9) can pair with the English sentences in (11) and (12).²

A further query on the Generalized Control analysis comes from the presence of reflexives in some *V-de* sentences, as reflected in (13):

- (13) a. *Xiao Ming wen-de ziji dou geng-zhe xin qilai.*
 Xiao Ming smell-DE self also follow-asp sick start
 'Xiao Ming smelled (something) to such an extent that he himself started feeling sick.'
 b. *Yin Yin ting-de ziji dou geng-zhe chang-le qilai.*
 Yin Yin listen-DE self also follow-aspsing-asp start
 'Yin Yin listened to such an extent that she herself started to sing.'

One may argue for the Control analysis by saying that, with the right context, a reflexive can indeed show up in a Control structure, including both Subject and Object Control structures. For instance, in English, one can have the following (See Pollard & Sag 1994 for possible interpretations):

- (14) a. John persuaded himself to do the job.
 b. John promised himself to finish the work early.

The reason for the grammaticality of (14) is straightforward. Given that *persuade* is a three-place predicate, it follows that in (14a) the reflexive *himself* is the object of *persuade*, which controls a PRO in the nonfinite complement clause. Similarly, in (14b) *promise* takes *himself* as a dative object, and the PRO in the nonfinite complement clause is controlled by the matrix subject *John*.

But the same explanation does not readily apply to the Chinese data in (13). If (13) does contain a Control clause like (14), we should expect it to have the configurations in (15):

- (15) a. *Xiao Ming wen-de ziji* [*Pro dou geng-zhe xin qilai*].
 Xiao Ming smell-DE self also follow-asp sick
 start
 b. *Yin Yin ting-de ziji* [*Pro dou geng-zhe chang-le qilai*].
 Yin Yin listen-DE self also follow-asp sing-asp
 start

However, semantically, such configurations seem problematic. This is because, strictly speaking, the predicates in (13) should be interpreted as resultative, rather than causative. Causativity entails resultativity, but not vice versa. The difference is one of argument structure: the former has a Cause(r)-Causee relation: at least two arguments are projected,³ whereas the latter concerns only the Causee, so the Cause(r) argument is not projected. The former can be illustrated by (9b), and the latter by (9a), as seen earlier.

The predicate *qi-de* in (9) is ambiguous in this regard. On one reading, it means literally 'get angry', which is resultative, as shown in (9a). On the other reading, it means literally 'enrage', which is causative, as reflected in (9b). The use of a reflexive with a predicate like *qi-de* only yields a causative reading:

- (16) *YinYin qi-de ziji shuo-bu-chu hua lai*.
 YinYin enrage-DE self speech-not-out word come
 'Yin Yin angered herself so much that she couldn't utter a word.'

A ready diagnostic for the reflexive *ziji* in (16) is to resort to the *ba*-phrase in Chinese, which, details aside, unarguably marks the direct object of verbs of “affectedness” (Anderson 1977). The causative *V-de* predicates are instances of affected predicates and they can readily admit a *ba*-phrase.⁴

- (17) *Yin Yin ba ziji qi-de shuo-bu-chu hua lai.*
 Yin Yin BA self enrage-DE speak-not-out word come
 ‘Yin Yin angered herself so much that she couldn’t utter a word.’

The *V-de* predicate in (16) hence patterns with the English three-place Object Control predicate in (14a).

Let us now compare (13) with (16). As shown in (18), (13) does not admit a *ba*-phase. This may indicate that the reflexives in (13) do not have the same structural status as those in (16):

- (18) a. * *Xiao Ming ba ziji wen-de dou geng-zhe*
 Xiao Ming BA self smell-DE also follow-asp
 exin qilai.
 sick start
 b. * *Yin Yin ba ziji ting-de dou geng-zhe*
 Yin Yin BA self listen-DE also follow-asp
 chang-le qilai.
 sing-asp start

It should be noted at this juncture that the possibility for a reflexive to occur in a two-place Subject Control structure such as **John tried himself to win the race* is ruled out entirely by principles like Theta Theory, Control Theory and some version of the Case Theory. First, it is not consistent with the thematic properties of verbs like *try*, because they do not subcategorize for a complement clause that takes a reflexive subject (Pollard & Sag 1994). Second, as stated earlier, PRO can only be present in an environment where it is free from being Case marked in terms of the pre-minimalist framework. In the current Minimalist framework, PRO is marked for null Case, checked under Spec-head agreement with a [+tense, -finite] Infl (Chomsky and Lasnik 1993, and see Bošković 1997b for more detailed discussions). Even so, it remains constant that no lexical NPs can take presence in the embedded subject position of a Subject Control Clause, a position for checking a null Case but not an overt Case. The appearance of an overt pronominal “himself” in (13) hence calls for clarification.

Based on these observations, we think it is important to reconsider the internal structure of the *V-de* resultative complement clauses in question. In the next section, we argue that these clauses contain an ECM complement structure, and the NP after *V-de* is not a matrix object but an embedded

3. AN ADDITIONAL ACCOUNT

(19) *Xiao Ming qi-de Yin Yin* [_{IP} *Pro* [_{VP} *shuo-bu-chu*
Xiao Ming enrage-DE Yin Yin speak-not-out
hua lai]].
words come
'Xiao Ming enraged Yin Yin so much that Yin Yin could
hardly utter a word.'

As mentioned in Section 1, under the Generalized Control analysis, a transitive *V-de* complex predicate has three argument positions, identified respectively with the matrix subject, the matrix object, and the embedded subject Pro. This account therefore has to commit itself to the fact that under normal circumstances, the third argument position must refer to an entity which is identical to the entity in the object position. In the same vein, in a Subject Control structure, the meaning of the *Pro* is restricted only to the entity in the subject position. Recall the examples in (10). The embedded subject position in the *V-de* sentence cannot be taken by an overt lexical NP regardless of its status as a possible *pro*. If this is an across-board phenomenon, we would never expect to see a structure in (20) where an overt NP occupies the embedded subject position:

- (20) * *Xiao Ming qi-de [IP Yin Yin [VP shuo-bu-chu*
Xiao Ming enrage-DE Yin Yin speak-not-out
hua lai]].
 words come

In other words, such a structure would yield a semantically anomalous sentence **Xiao Ming got so angry that Yin Yin could hardly utter a word*, as there is no logical or causal relation between the matrix clause and the embedded clause. The semantics of the *V-de* construction in question is that it involves a causal relation in which the Cause(r) argument instigates an event by affecting the Causee argument that leads the latter to a certain result. Let us call this second part of the entire causative event *the resulting event*. The resulting event is depicted by the constellation of [Causee + Result], i.e. a subject plus the resultative VP. The syntactic projection of this semantic constellation is to contain it in an embedded clause. Example (20) is indicative of the fact that in a causative structure there should be a Causee argument, which, given the Generalized Control analysis, controls a *Pro* in the resulting event configuration. *Yin Yin*, not being an object of the matrix sentence, cannot be identified as the Causee. Hence the configuration in (20) is ruled out semantically as well as syntactically.

While the generalization captured above is basically true, there are some *V-de* sentences where the lexical NP following the complex *V-de* exhibits properties of an embedded subject. Consider the example below:

- (21) *Xiao Ming ma-de lian Yin Yin dou shuo-bu-chu*
Xiao Ming scold-DE even Yin Yin also speak-not-out
hua lai.
 word come
 (Lit.) 'Xiao Ming scolded (somebody) so much that even Yin Yin could hardly utter a word.'

From the gloss, it is clear that *Yin Yin* was not the actual target for *Xiao Ming* to scold, but somehow she was affected by the scolding. We shall have a more detailed discussion on the structure of (21) in the next subsection.

3.1. Structural Diagnostics

There is evidence that the NP following *V-de* in (21) typically does not behave like a matrix object. In the following we employ several diagnostics to demonstrate that the NP in question exhibits properties pertaining to subject rather than object.

3.1.1. LIAN...DOU

The first diagnostic has to do with the focus constituent *lian...dou* surrounding the NP *Yin Yin* in (21). In Chinese, an argument can be focused by *lian...dou*, and the whole constituent [*lian NP dou*] has to be placed in a preverbal position, as exemplified below:

- (22) *Lao Wang ma-de* [*lian gebi linju dou*]
 Lao Wang scolded-DE even next door neighbor also
chulai kan renao le.
 come out see bustle asp
 'Lao Wang scolded (someone) so much that even the
 neighbors also came out to watch the scene.'

It has been argued in the literature on the Chinese *lian...dou* construction that the argument being focused on by *lian...dou* must be placed in a preverbal position of its head verb (Lee 1986, Liu 1990, Cheng 1995, among many others). This is evidenced in (23) and (24) below, which respectively contain a simplex and a complex structure:

- (23) a. *Lao Wang bu gan piping ziji-de zhushou.*
 Lao Wang not dare criticize self's assistant
 'Lao Wang dare not criticize his own assistant.'
 b. *Lao Wang [lian ziji-de zhushou dou] bu gan piping.*
 Lao Wang even self's assistant also not dare criticize
 'Lao Wang didn't even dare to criticize his own assistant.'
 c. [*lian ziji-de zhushou*]_i *Lao Wang dou bu gan piping t_i.*
 even self's assistant Lao Wang also not dare criticize
 'Lao Wang didn't dare to criticize even his own assistant.'
 d. * *Lao Wang bu gan piping [lian ziji-de zhushou dou].*
 Lao Wang not dare criticize even self's assistant also

The sentences in (23) suggest that, when an object is focused by *lian...dou*, it cannot stay in-situ, and has to move to a preverbal position. Also notice that, when *lian...dou* focuses on a constituent in an embedded clause, it occurs preceding its head verb within its own clause. This is reflected in (24) and (25).

- (24) a. *Lao Wang gaosu Yin Yin [Xiao Ming hui hua hua].*
 Lao Wang tell Yin Yin Xiao Ming can draw pictures
 'Lao Wang told Yin Yin that Xiao Ming could draw
 pictures.'

- b. *Lao Wang gaosu Yin Yin* [[*lian Xiao Ming dou*] *hui*
 Lao Wang tell Yin Yin even Xiao Ming also can
hua hua].
 draw pictures
 'Lao Wang told Yin Yin that even Xiao Ming could draw pictures.'
- c. * *Lao Wang* [*lian XiaoMing dou*]_i *gaosu Yin Yin*
 Lao Wang even XiaoMing also tell Yin Yin
 [*t_i hui hua hua*].
 can draw pictures
- d. * [*lian Xiao Ming*]_i *Lao Wang dou gaosu Yin Yin*
 even Xiao Ming Lao Wang also tell-asp Yin Yin
 [*t_i hui hua hua*].
 can draw pictures
- (25) a. *Lao Wang gaosu-guo Yin Yin* [*shi XiaoMing da-si-le*
 Lao Wang tell-asp Yin Yin be XiaoMing beat-die-asp
nei-tiao gou].
 that-CL dog
 'Lao Wang told Yin Yin it was Xiao Ming who had beaten the dog to death.'
- b. *Lao Wang* [*lian Yin Yin dou*]_i *gaosu-guo t_i* [*shi*
 Lao Wang even Yin Yin also tell-asp be
Xiao Ming da-si-le nei-tiao gou].
 Xiao Ming beat-die-asp that-CL dog
 'Lao Wang even told Yin Yin that it was Xiao Ming who had beaten the dog to death.'
- c. [*lian Yin Yin*]_i *Lao Wang dou gaosu-guo t_i* [*shi*
 even Yin Yin Lao Wang also tell-asp be
Xiao Ming da-si-le nei-tiao gou].
 Xiao Ming beat-die-asp that-CL dog
 'Lao Wang told even Yin Yin that it was Xiao Ming who had beaten the dog to death.'
- d. * *Lao Wang gaosu-guo* [*lian Yin Yin dou*]_i [*shi*
 Lao Wang tell-asp even Yin Yin also be
Xiao Ming da-si-le nei-tiao gou].
 Xiao Ming beat-die-asp that-CL dog

From the discussion above, we can see that the NP *gebi linju* 'next door neighbor' in (22) must be an element belonging to the complement clause rather than an object in the matrix clause. Otherwise, we would expect the constituent *lian gebi linju dou* 'even the next door neighbor also' to be able to occur preceding the matrix verb, which is at odds with the fact, as shown in (26).

- (26) a. * *Lao Wang [lian gebi linju dou] ma-de*
 Lao Wang even next-door neighbor also scolded-DE
chulai kan renao le.
 come out see bustle asp
- b. * [*lian gebi linju*] *Lao Wang dou ma-de*
 even next-door neighbor Lao Wang also scolded-DE
chulai kan renao le.
 come out see bustle asp

The fact that the constituent *lian gebi linju dou* ‘even the neighbors also’ in (22) and (26) can only occur following the matrix predicate *ma-de* but not preceding it reveals that the NP *gebi linju* ‘next door neighbor’ is not the object of the matrix clause. Our analysis is that the NP in question is the subject of the embedded clause, as represented in (27):

- (27) *Lao Wang ma-de [IP lian gebi linju dou*
 Lao Wang scold-DE even next-door neighbor also
chulai kan renao le].
 come out see bustle asp
 ‘Lao Wang scolded (someone) so much that even the
 neighbors also came out to watch the scene.’

A subject NP, whether a matrix one or an embedded one, can be focused on by *lian ... dou*, as evidenced in (28b):

- (28) a. *Lao Wang bu gan piping ziji-de zhushou.*
 Lao Wang not dare criticize self's assistant
 ‘Lao Wang dare not criticize his own assistant.’
- b. [*lian Lao Wang dou*] *bu gan piping ziji-de zhushou.*
 even Lao Wang also not dare criticize self's assistant
 ‘Even Lao Wang dare not criticize his own assistant.’

The above discussion surrounding the distribution of *lian...dou* supports our claim that the NP immediately following the *V-de* predicate in (22) must be analyzed as the subject of the embedded clause. The interesting property of the *V-de* sentences examined in this section is that they do not have an overt Causee argument. Instead they contain an overt subject in the complement clause. This calls for additional analysis of the structural status of the *V-de* complement clause.

3.1.2. ZHIYOU

Another piece of evidence comes from the diagnosis involving the focus operator *zhiyou* ‘only-have.’ When it is targeted by *zhiyou*, an object has to appear preverbally, as shown below, and any forms other than (29b) are not grammatical.

- (29) a. *Lao Wang bu gan piping ziji-de zhushou.*
 Lao Wang not dare criticize self's assistant
 ‘Lao Wang dare not criticize his own assistant.’
 b. [*zhiyou ziji-de zhushou*]_i *Lao Wang bu gan piping t_i.*
 only self's assistant Lao Wang not dare criticize
 ‘Only his own assistant that Lao Wang dare not criticize.’
 c. * *Lao Wang zhiyou bu gan piping ziji-de hushou.*
 d. * *Lao Wang bu zhiyou gan piping ziji-de zhushou.*
 e. * *Lao Wang bu gan zhovou piping ziji-de zhushou.*
 f. * *Lao Wang bu gan piping zhiyou ziji-de zhushou.*

When we apply the *zhiyou* test, we see that the NP following *V-de* has to appear after *V-de*, which suggests that this NP is not a matrix object, but an embedded subject, as there is only one argument in the embedded clause.

- (30) a. *Lao Wang ma-de [_{IP} zhiyou gebi linju gan*
 Lao Wang scold-DE only next-door neighbor dare
chulai kan renao].
 come-out see bustle
 ‘Lao Wang scolded (someone) so much that only the neighbors dare come out to watch the scene.’
 b. * [*zhiyou gebi linju*]_i *Lao Wang ma-de*
 only next-door neighbor Lao Wang scold-DE
 [_{IP} *t_i gan chulai kan renao].*
 dare come-out see bustle

Hence, sentences like (30) suggest that the NP after *V-de* is not a matrix object but an embedded subject.

3.1.3. DOU QUANTIFICATION

Dou ‘all’ quantification is one more piece of evidence that supports our claim that the NP after *V-de* is not an object but a subject. Although an object, when targeted by *dou*, has to appear preverbally, the NP after *V-de* has to stay in-situ even when it is targeted by *dou*, as shown below.

- (31) a. *Lao Wang ku-de* [_{IP} *meige ren dou hen haipa*].
 Lao Wang cry-DE every-CL person all very scared
 ‘Lao Wang cried so hard that everyone present is scared.’
- b. * *Meige ren Lao Wang ku-de dou hen haipa*.
 every-CL person Lao Wang cry-DE all very scared
- c. * *Lao Wang meige ren ku-de dou hen haipa*.
 Lao Wang every-CL person cry-DE all very scared
- d. * *Meige ren Lao Wang dou ku-de hen haipa*.
 every-CL person Lao Wang all cry-DE very scared
- e. * *Lao Wang meige ren dou ku-de hen haipa*.
 Lao Wang every-CL person all cry-DE very scared

The sentences in (31) indicate that the NP *meige ren* ‘every person’ in (30a) is not a matrix object but an embedded subject, as it cannot appear before the matrix predicate when targeted by *dou*, and there is only one argument in the embedded clause.

3.1.4. REFLEXIVES

Let us see if the embedded subjecthood of the NP immediately following *V-de* would allow us to recapture the fact observed in (13), where a reflexive is involved. We have found that the reflexive there can readily be placed in the *lian...dou* frame. The fact that the reflexive *ziji* need not appear before *V-de* when focused by *lian ... dou* suggests that *ziji* cannot be an object of the matrix clause, instead it has to be an embedded subject. We start with some familiar examples.

- (32) a. *Xiao Ming wen-de* [*lian ziji dou*] *exin qilai*.⁶
 Xiao Ming smell-DE even self also sick start
 ‘Xiao Ming smelled (something) to such an extent that even he himself got sick.’
- b. *Yin Yin ting-de* [*lian ziji dou*] *geng-zhe chang-le qilai*.
 YinYin listen-DE even self also follow-asp sing-asp start
 ‘Yin Yin listened to such an extent that even she herself started to sing.’

But the picture may be complicated by the fact that in certain context, the *lian...dou* constituent seems to occur preceding the matrix verb, as reflected in (33):

- (33) a. [*lian Xiao Ming ziji dou*] *wen-de exin qilai.*
 even Xiao Ming self also smell-DE sick start
 (Lit.) 'Even Xiao Ming himself got sick as a result of
 smelling (something).'
- b. [*lian YinYin ziji dou*] *ting-de geng-zhe chang-leqilai.*
 even YinYin self also listen-DE follow-asp sing-asp start
 (Lit.) 'Even Yin Yin herself started to sing as a result of
 listening (to something).'

One way to explain this is to say that the reflexive in (33) is an appositive NP to the matrix subject, which occurs immediately following the target NP and has an emphatic meaning, as exemplified in (34):

- (34) *Xiao Ming ziji zu-le yi-liang che.*
 Xiao Ming himself rent-asp one-CL car
 (Lit.) 'Xiao Ming he himself rented a car./Xiao Ming
 rented a car by himself.'

The sentences in (33), therefore, could be analyzed as having the initial structure in (35) without *lian... dou* quantification:

- (35) a. *Xiao Ming ziji wen-de exin qilai.*
 Xiao Ming self smell-DE sick start
 'Xiao Ming he himself smelled to such an extent that he
 started feeling sick.'
- b. *Yin Yin ziji ting-de geng-zhe chang-le qilai.*
 Yin Yin self listen-DE follow-asp sing-asp start
 'Yin Yin she herself listened so much that she started to
 sing.'

There is clear evidence showing that the NP and the reflexive in these two sentences form a single unit. In the following examples, separating the two by *lian...dou* yields ungrammatical results:

- (36) a. * *lian Xiao Ming dou ziji wen-de exin qilai.*
 even Xiao Ming also self smell-DE sick start
- b. * *lian Yin Yin dou ziji ting-de geng-zhe chang-le qilai.*
 even Yin Yin also self listen-asp follow-asp
change-le qilai.
 sing-asp start
- (37) a. * *Xiao Ming lian ziji dou wen-de exin qilai.*
 Xiao Ming even self also smell-DE sick start

- b. * *Yin Yin* *lian* *ziji* *dou* *ting-de* *geng-zhe* *chang-le* *qilai*.
 YinYin even self also listen-DE follow-asp sing-asp start

The example in (38b) further supports our view that the NP and its adjacent reflexive cannot be separated by *lian...dou*:

- (38) a. *lian* *XiaoMing* *ziji* *dou* *zu-le* *yi-liang* *che*.
 even XiaoMing self also rent-asp one-CL car
 ‘Even Xiao Ming himself rented a car.’
 b. * *XiaoMing* *lian* *ziji* *dou* *zu-le* *yi-liang* *che*.
 XiaoMing even self also rent-asp one-CL car

Notice, however, that the picture seems to be blurred by the following fact in (39b) where *lian...dou* can exclude the reflexive, contra (36):

- (39) a. *Xiao Ming* *ziji* *zu-le* *yi-liang* *che*.
 Xiao Ming self rent-asp one-CL car
 (Lit.) ‘XiaoMing he himself rented a car./Xiao Ming rented a car by himself.’
 b. *lian* *XiaoMing* *dou* *ziji* *zu-le* *yi-liang* *che*.
 even XiaoMing also self rent-asp one-CL car
 (Lit.) ‘Even Xiao Ming rented a car by himself.’

It must be pointed out that (38a) and (39b) are different in meaning. For the former, besides the meaning in the gloss, it could also mean ‘Even Xiao Ming rented a car for himself.’ In the latter, the reflexive has a strong interpretation of adverbials of manner, i.e. *by himself*. It is interesting to note here that adverbials of manner are incompatible with the *V-de* constructions under discussion, as shown in (40), which further explains why the sentences in (36) are out.⁷

- (40) a. *Lao Wang* *piping-de* *YinYin* *shuo-bu-chu* *hua* *lai*.
 Lao Wang criticize-DE YinYin speak-not-out word come
 (Lit.) ‘Lao Wang criticized Yin Yin to such an extent that Yin Yin couldn’t utter a word.’
 b. * *XiaoMing* *yanlide* *piping-de* *Yin Yin* *shuo-bu-chu*
 XiaoMing severely criticize-DE Yin Yin speak-not-out
hua lai.
 word come

Hence, we can conclude that the reflexive in (13) is not a matrix object but an embedded subject.

3.2. An ECM Account

So far we have identified the structural differences between a reflexive appositive to a subject NP and a reflexive in the matrix object position. We now return to the questions raised in Section 1.2, concerning the examples in (18), repeated below as (41). Without employing the *ba* phrase, the reflexive stays in situ, as shown in (42).

- (41) a. * *Xiao Ming ba ziji wen-de dou geng-zhe xin qilai.*
 Xiao Ming BA self smell-DE also follow-asp sick start
 b. * *YinYin ba ziji ting-de dou geng-zhe chang-le qilai.*
 YinYin BA self listen-DE also follow-asp sing-asp start
- (42) a. *Xiao Ming wen-de [lian ziji dou] xin qilai.*
 Xiao Ming smell-DE even self also sick start
 'Xiao Ming smelled (something) to such an extent that even he himself got sick.'
 b. *Yin Yin ting-de [lian ziji dou] geng-zhe chang-le qilai.*
 Yin Yin listen-DE even self also follow-asp sing-asp start
 'Yin Yin listened to such an extent that even she herself started to sing.'

Unlike the sentences in (16) which allow *ba* to mark a Causee argument in the matrix object position, the sentences in (42) are shown to be incompatible with *ba*, as exemplified by (41). We take this contrast as a starting point to argue that the type of *V-de* sentences in (42) has the following base structure: the reflexive starts out not as the matrix object but as an embedded subject. In other words, these sentences do not have a Generalized Control structure. As an approximation, we think that they have a structure which is analogous to the English Exceptional Case Marking (ECM) structure.⁸

- (43) NP₁ V-de [CL NP₂...]

NP₂ in the embedded clause CL is where we locate the reflexive. While we do not intend here to include a comprehensive discussion about why a *ba* phrase cannot mark an ECM subject which is a reflexive, as shown in (43), we have supporting evidence to show that a bare reflexive in Chinese can be located in the subject position of an embedded clause (See more discussion on this issue in Pan 1997)⁹:

- (44) a. *wo_i bu mingbai [ziji_i dangshi wei shenme bu wen qingchu].*
 I not clear self then for what not ask clearly
 'I don't know why I didn't find out the truth at that time.'

- b. *ta_i bu chengren [ziji_i ye you zeren].*
 he not admit self also have responsibility
 ‘He wouldn’t admit that he also had self-responsibility.’
- (45) a. *Xiao Ming_i bu yuanyi [ziji_i ye bei bieren chaoxiao].*
 Xiao Ming not willing self also BEI others laugh at
 ‘Xiao Ming doesn’t like to be laughed at also by others.’
- b. *Yin Yin_i gaoao-de [ziji_i zuihou fandao bei dajia qiao-bu-qi].*
 Yin Yin arrogant-DE self finally instead BEI all
 look not up
 ‘Yin Yin was so arrogant that in the end she was looked down upon by all.’

Notice that the occurrences of *ziji* in (44) and (45) are followed by sentential adverbs like *dangshi* ‘on the spot’, *ye* ‘also’, and *zuihou* ‘finally’, which indicates that *ziji* cannot be analyzed as an adverbial, and thus has to be analyzed as a subject.

One may argue that most of the reflexives above can be interpreted logophorically, as they can be replaced by pronouns in co-reference with the matrix subject, as exemplified below:

- (46) a. *wo_i bu mingbai [wo_i dangshi wei shenme bu wen qingchu].*
 I not clear I then for what not ask
 clearly
- b. *ta_i bu chengren [ta_i you zeren].*
 he not admit he have responsibility

However, (47a), which is based on (45b), and (47a) below are not to be understood as a logophorical reflexive, as the reflexive cannot escape Conditions on anaphora (Reinhart and Reuland 1993). This is why it fails to be replaced by a pronoun, as shown in (47b), and (48b) as well.

- (47) a. *Yin Yin gaoao-de [ziji zuihou fandao bei dajia qiao-bu-qi].*
 Yin Yin arrogant-DE self finally instead BEI all
 look not up
 ‘Yin Yin was so arrogant that in the end she was looked down upon by all.’
- b. * *Yin Yin_i gaoao-de [ta_i zuihou fandao bei dajia qiao-bu-qi].*
 Yin Yin arrogant-DE self finally instead BEI all
 look not up

‘Yin Yin was so arrogant that in the end she was looked down upon by all.’

- (48) a. *XiaoMing wen-de [ziji ye erxin qilai].*
 XiaoMing smell-DE self also sick start
 b. * *Xiao Ming_i wen-de [ta_i ye erxin qilai].*
 Xiao Ming smell-DE he/him also sick start

With regard to the ECM type of *V-de* sentences under discussion, it is easy to see why a reflexive subject can occur in the embedded clause in these sentences. As noted by Reinhart and Reuland, a reflexive in an embedded subject position reflexive-marks the matrix predicate. Accordingly, in the following examples, the reflexive and the matrix subject NP can be considered the co-arguments of the matrix *V-de* predicate, though the former --- the embedded subject --- is not a matrix object.

- (49) a. *Xiao Ming wen-de ziji ye exin qilai.*
 Xiao Ming smell-DE self also sick start
 (Lit.) ‘Xiao Ming smelled (something) to such an extent that he started feeling sick.’
 b. *YinYin ting-de ziji ye geng-zhe chang-le qilai.*
 YinYin listen-DEself also follow-aspsing-asp start
 ‘Yin Yin listened to such an extent that she started singing.’

The lexical verbs in the matrix *V-de* predicates, *wen* ‘smell’ and *ting* ‘listen’, denote the causing event. These verbs have to do with one’s perception, so they can be said to be centripetal verbs denoting processes exerting an afferent force on the person who smells or listens. This is why these verbs can be used in the *V-de* complex predicates to make the predicates reflexive. The reflexive *V-de* predicates only take a reflexive NP, but not an NP denoting an entity which is totally differentiated from the argument in the matrix subject position, a situation found in a canonical causative *V-de* construction involving a Causee argument in the matrix object position, as seen in (4) and (5).

Recall that in the earlier discussion, we entertained the possibility that a reflexive immediately following the matrix subject NP is appositive to that NP (cf. (35)). We would like to point out that the reflexive in (35) has a different structural status from the one in (49) and the difference lies in semantics; the two should not be equated. The one appositive to the matrix subject NP places an emphasis on the subject, whereas the one in the embedded subject position is truly reflexive. Given the right context, the two may co-occur in the same sentence, as shown below.

- (50) *YinYin ziji qi-de ziji shuo-bu-chu hua lai.*
 YinYin self enrage-DE self speak-not-out word come
 (Lit.) 'Yin Yin (she herself) enraged herself ...'

Although the predicate *qi-de* in (50) has a causative meaning,¹⁰ the example at least shows that the appositive reflexive has an independent structural status.

So far, we have identified a second type of *V-de* construction that is not accountable by the Generalized Control Theory. This type of *V-de* construction involves an ECM structure. In our ensuing discussion, we will refer to this type of constructions as the ECM *V-de* construction. In an ECM structure, as captured in the pre-minimalist framework, the subject of the embedded clause receives accusative Case from the matrix verb either by raising to the matrix object position (Postal 1974),¹¹ or by staying in situ while the matrix verb "transparently" governs into the embedded clause and assigns accusative Case to the subject position (Chomsky 1981, among others).¹² Recaptured in the minimalist framework (Chomsky 1993, 1995a&b), the embedded subject of an ECM construction starts within the projection of the embedded predicate, i.e. Spec of VP. It subsequently rises to the subject position to check off the strong EPP (Extended Projection Principle) feature, i.e. the D feature of the embedded tense projection (Chomsky 1995b).

Our analysis of the *V-de* constructions as having an ECM complement structure finds support in the Economy Principles of the Minimalist Program. We assume that the *V-de* constructions exemplified in (49) contain a complement clause that lacks a Case-marking Complementizer.¹³ This is in line with the recent syntactic analysis of nonfinite complement structure proposed in Bošković (1997b). Following Bošković, we further assume that ECM infinitives have no independent Tense value, specified as [-tense], and their subjects must rise to a Case checking position. If the *V-de* constructions in (49) contain a Generalized Control complement, the reflexive in the subject position would be analyzed as *Pro*, which, be it PRO or *pro*, would be defined as a Case-checking position (overt or covert) under the minimalist analysis. Then raising the embedded subject to check for the accusative object Case would be impossible, as it would violate one of the Economy Principles, the Last Resort Condition (Chomsky and Lasnik 1993) which prohibits superfluous movement.

4. THE *V-DE* EXTENT CONSTRUCTION

In addition to the ECM *V-de* construction, there is still another type of *V-de* construction which is not readily accountable by the Generalized Control Theory. Our data show that the predicates in this construction denote not an activity leading to a result but rather a stance leading to a degree or an extent. Very often, in the complement clause of the construction, there is a focus element *zhiyou* 'only,' as mentioned in Section 2.1.2. Literally speaking, *zhiyou* means 'only have', in which *you* can be used as a verb and *zhi* as a focus adverb. Let us first look at the following examples on the general use of *zhiyou*:

- (51) a. *Xiao Ming zhi you yi-ge jiejie.*
 Xiao Ming only has one-CL sister
 'Xiao Ming only has one sister.'
 b. *Yin Yin na shi zhi you wu-sui.*
 YinYin that time only have five-years-old
 'At that time, Yin Yin was only five years old.'

When used non-predicatively as a focus element, *zhiyou* occurs immediately preceding the focused constituent, as reflected in (52), with *zhiyou* focusing on the subject NP.

- (52) *zhiyou Xiao Ming zhidao Yin Yin jia-de dizhi.*
 only Xiao Ming know Yin Yin home's address
 'Only Xiao Ming knows Yin Yin's home address.'

When an object NP is the target of focus by *zhiyou*, it must be placed preverbally, as mentioned in previous sections, namely, it cannot stay in-situ.

- (53) a. *zhiyou YinYin-de wenti XiaoMing cai keng huida.*¹⁴
 only YinYin's question XiaoMing then willing answer
 'Xiao Ming is willing to answer only Yin Yin's questions.'
 b. * *XiaoMing cai keng huida zhiyou YinYin-de*
 XiaoMing then willing answer only YinYin's
wenti.
 question

Bearing these facts in mind, let us consider the following *V-de* sentences:

- (54) a. *ta-de shenyin di-de wo genben ting-bu-jian.*
 his voice low-DE I at all not hear
 'His voice was so low that I could not hear (him) at all.'

- b. *ta-de shenyin di-de zhiyou wo cai neng*
 his voice low-DE only I then can
 tingjian.
 hear
 ‘His voice was so low that only I could hear (him).’

The NP immediately following *zhiyou* in (54b) is *wo* ‘I’, which cannot be an object of the matrix clause introduced by *V-de*, as it need not move to the left of the matrix verb *di-de* ‘low-DE.’ This piece of data manifests that the NP immediately following the *V-de* predicate in (54a) is not a matrix object. Since it cannot be the object of the embedded clause, it has to be the embedded subject. The structure of (54b) is therefore (55):

- (55) NP₁ V-de [CL NP₂ ...]

We refer to the complement clause in (55) as that of a *V-de* Extent construction to distinguish it from the *V-de* constructions seen earlier and we regard the distinction to be real. Crucially, the complement clause in (55) does not have a Control relation with the matrix subject; rather, it is independent of the former. It is neither the case that (55) has an ECM structure, despite the surface similarity it has with (43), for the embedded NP does not exhibit any ECM object properties. Due to space limit, we will not go into details of the arguments we have made in 3.2.

5. A FINAL NOTE

We have demonstrated that in Mandarin Chinese, the *V-de* resultative constructions can have the following three different structure types: the Generalized Control type, the ECM type, and the independent complement type. We would like to add a final comment to a range of properties that Huang discussed as the defining properties for his Generalized Control analysis, i.e. the effects of *Visser’s Generalization* (1973), and *Bach’s Generalization* (1979).

In brief, Visser’s Generalization basically captures the fact that the subject controlled NP cannot be passivized:

- (56) a. John promised Sally to leave early.
 b. * Sally was promised to leave early.

Huang’s evidence from Mandarin Chinese for the phenomenon is as follows (Huang’s (15)&(23)):

- (57) a. *Zhangsan* *chi* *fan* *chi-de* *hen* *bao*.
 Zhangsan eat rice eat-DE very full
 ‘Zhangsan ate rice and got very full.’
- b. * *fan* *bei* *Zhangsan* *chi-de* *hen* *bao*.
 rice BEI Zhangsan eat-DE very full

In (57a) there is a *Pro* in the embedded clause, i.e. *Pro chi-de he bao*, which is controlled by the matrix subject NP. The NP *fan* ‘rice’ is taken to be the matrix object which is shown to fail to be the matrix subject in the purported passive sentence in (57b).

The essential problem of this set of examples, as we perceive it, is that the NP *fan* ‘rice’ is not an argument of the *V-de* complex predicate at all. Rather, it is only an internal argument of the first single verb *chi* ‘eat’. A crucial point made by linguists working on resultative constructions in different languages is that a resultative predicate cannot be viewed as a single verb alone, for otherwise, no principled account will be arrived at in explaining the English sentences such as (59) where in isolation the verbs “eat” and “drink” cannot take a reflexive object in the literal sense.

- (58) a. John ate himself sick.
 b. Sally drank herself into the grave.
- (59) a. *John ate himself.
 b. *Sally drank herself.

In a similar vein, the following argument structure will simply not be possible:

- (60) The baby cried her eyes out.

Hence, (57b) cannot support Visser’s Generalization.

Bach’s Generalization aims to capture the detransitivization possibility of Control sentences, i.e. an object control verb cannot drop its object, while a subject control verb can.

- (61) a. John promised (Sally) to leave early.
 b.* John persuaded (Sally) to leave early.

Huang’s supporting evidence from Mandarin Chinese is given in (62) (Huang’s (15) & (27) and (28)&(29)):

- (62) a. *wo* *ba* *Lisi* *da-de* *hao-tao-da-ku*.
 I BA Lisi hit-DE cry-loudly
 ‘I hit Lisi until he cried loudly.’

- b. * *wo* *da-de* *hao-tao-da-ku*.
 I hit-DE cry-loudly
- (63) a. *Zhangsan* *chi* *fan* *chi-de* *hen* *bao*.
 Zhangsan eat rice eat-DE very full
 ‘Zhangsan ate rice and got very full.’
- b. *Zhangsan* *chi-de* *hen* *bao*.
 Zhangsan eat-DE very full
 ‘Zhangsan ate and got very full.’

But here again, the dropped NP *fan* ‘rice’ in (63b) is not an object of the *V-de* construction *per se*. Hence, the generalizations pertaining to Control structures in English do not invoke supporting evidence in the Chinese *V-de* constructions analyzed under the Generalized Control Theory.

6. CONCLUSION

In this chapter we have examined the internal structure of the *V-de* resultative/causative construction in Mandarin Chinese. On the basis of the different distributions of the embedded subject and matrix object in the *lian...dou* and *zhiyou* focus structures, *dou* quantification, and the possibility of reflexives in the embedded subject position, we have shown that the *V-de* resultative construction in Mandarin Chinese can have an Exceptional Case Marking (ECM) structure besides the analysis proposed in Huang (1992) that the *V-de* construction contains a matrix object that controls a covert pronominal in the embedded subject position, and argued that the NP following the matrix predicate *V-de* is not a matrix object but an embedded subject. We have also shown that our analysis fares better than Huang’s control analysis of the *V-de* construction for the resultative and extent *V-de* constructions.

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NOTES

¹ In his work, Huang does not explicitly discuss how verb raising to I is implemented in syntax. Following the most recent spirit in the Minimalist Program (Chomsky, to appear), verb raising to a higher functional head is necessitated by PF requirement. We leave the issue open here.

² The string in (10a) receives one possible reading when the matrix object NP *Yin Yin* and the following pronominal *ta* are analyzed as one complex constituent, i.e., an NP plus its appositive expression, [*Yin Yin ta*], referring to the same individual *Yin Yin*. But this is not the intended internal structure of (10a).

³ There might be other arguments in a causative structure if complex predication is involved. Some of the Chinese *V-de* causative structures reflect such cases.

⁴ Other diagnostics for direct objecthood would include passivization. See our discussion on (42) and (43) in Section 3.

⁵ A relevant question arises here: Is the structure in (13) identical to that in (16)? We will discuss this question in Section 3.2.

⁶ Note that the reflexive is not to be understood as a logophorical reflexive, which can escape Conditions on anaphora (Reinhart and Reuland 1993), as it fails to be replaced by a pronoun:

- i. * [*Xiao Ming*]_i *wen-de* *lian* *ta*_i *ye* *erxin* *qilai*.
 Xiao Ming smell-DE even he/himalso sick start

We will return to this issue in 3.2.

⁷ Psych-verbs pattern with *V-de* predicates in this regard:

- i. a. *Xiao Ming ziji hen tongqin YinYin.*
 Xiao Ming self very sympathize YinYin
 ‘Xiao Ming himself is sympathetic with Yin Yin.’
 b. *lian Xiao Ming ziji dou hen tongqin YinYin.*
 even Xiao Ming self also very sympathize YinYin
 ‘Even Xiao Ming himself is sympathetic with Yin Yin.’
 c. * *lian Xiao Ming dou ziji hen tongqin YinYin.*
 even Xiao Ming also self very sympathize YinYin
 d. * *XiaoMing lian ziji dou hen tongqin YinYin*
 XiaoMing even self also very sympathize YinYin

⁸ Our analysis can also find support in the consensus by linguists working on the resultative constructions that these constructions in general involve a small clause (SC) structure, the analysis of which stems from the extension of the ECM, as is well documented in the literature (Chomsky 1981, Stowell 1981, Hoekstra 1988 & 1992, Bowers 1993, among others). A SC structure has a number of characteristics that are shared by the ECM structure, one of which is that both can accommodate a reflexive NP:

- i. a. John expects himself to win.
- b. Mary believes herself to be a genius.
- ii. John ate himself sick.

⁹ This may be in contrast with English, where a reflexive does not appear in the finite-clause subject position (Hornstein 1999, among others).

¹⁰ As discussed in (17), a causative *V-de* sentence admits a *ba* phrase.

This applies to (47):

- i. *Yin Yin ziji ba ziji qi-de shuo-bu-chu hua lai.*
 Yin Yin self BA self enrage-DE speak-not-out word come

¹¹ Bowers (1993), Bošković (1997a, and the references cited there) and Zidani-Eroglu (1997) argue, following Postal, that the embedded subject NP raises to the matrix object position rather than receiving accusative Case in-situ from the matrix *V-de* verb. For instance, in Bowers (1993), it was pointed out that the passivizability of subjects in three types of complement clauses reflects the fact of Object Raising, as exemplified below (Bowers, p. 621, (74)- (76)):

- i. a. I expect the men to leave at noon.
- b. The men are expected to leave at noon.
- c. * (For) the men to leave at noon is expected.
- ii. a. Everyone would prefer (for) the men to leave at noon.
- b. * The men would be preferred to leave at noon.
- c. For the men to leave at noon would be preferred by everyone.
- iii. a. I wanted/got the men to leave at noon.
- b. * The men were wanted/gotten to leave at noon.
- c. * The men to leave at noon was wanted/gotten.

According to Bowers, it is the possibility of raising the embedded subject NP to the matrix object position that makes the difference in the above examples. The passivizable NP in (ib) has undergone object raising (OR) while the others in (ii) and (iii) have not, hence the contrast. (ib) contains a canonical ECM structure, in which the NP “the men” doesn’t just stay in situ and receive Case from the matrix verb; rather, it raises overtly to the matrix object position. We are not, however, following this line of thinking. While in general we admit that such a distinction does exist, we do not take it to be true that raising to object position is the only solution to this issue. It could well be the case that (ii) and (iii) involve a nonfinite CP whose head is lexicalized as “for” which can be optionally dropped at the P(honetic)F(orm). Due to the existence of the intervening CP, the embedded NPs cannot be directly case-marked by the matrix verb; hence they are not ECM subjects.

¹² The approach of raising an ECM subject to the matrix object position is shown to be problematic with regard to the superiority effect. Interested readers are referred to Tanaka (1999).

¹³ Bošković proposes eliminating CP/IP distinction in Control complement and ECM complement. He argues that it is the s-selection of the

higher predicates that licenses PRO and NP trace in the respective subject position of the embedded clauses, whereas c-selection is irrelevant; both can take either CP or IP; the presence of tense does not require a CP projection. By virtual of the Economy Principle on representation, infinitive complements not introduced by overt Complementizers must be IPs.

¹⁴ The word *cai* is a focus scalar particle which marks exclusive focusing by denying all the other variables except for the asserted element in its focusing domain (Yang 1999).

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THE CHANGING ORDERS OF DISCOURSE IN A CHANGING CHINA

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1. PRELIMINARY REMARKS: SOCIAL CHANGE AND DISCOURSE

China has been changing at such a speed that it proves to be bewildering even to “insiders”, still less to say “outsiders”. This chapter attempts to come to grips with the change from a discourse analyst’s perspective. In other words, it explores the interaction between social change and discourse. In the western scholarship, this investigation falls under the rubric of critical linguistics (e.g. Hodge and Kress 1993), and critical discourse analysis (e.g. Fairclough, 1992, 1995). It shares with them the assumption that discourse actively constitutes or constructs society on various dimensions, and that changes in language use reflect the underlying wider social and cultural processes.

In the last thirty years or so China witnessed two major social and political changes with the death of *Mao Zedong* as an unequivocal landmark. The years from 1966 to 1976 were the period known as the Great Proletarian Cultural Revolution, and in 1978 *Deng Xiaoping* launched his epoch-making reform. The changes in every walk of life were drastic and profound, far beyond ordinary citizens’ and even politicians’ imagination. This chapter, however, will focus on the change of political ideology from that of *Mao Zedong* to that of *Deng Xiaoping*, which was partially constituted and maintained by the changing orders of discourse. For the ease of reference, the terms “revolution discourse” and

“reform discourse” will be used to refer to the two orders of discourse, respectively.

Benefiting from Foucault’s analysis of “discursive formations”, i.e. “systems of rules which make it possible for certain statements but not others to occur at particular times, places and institutional locations” (Fairclough, 1992:40), this chapter will talk about “systems of rules” with regard to six analytic dimensions: (1) ideological ontology; (2) political socialization; (3) individual integrity; (4) social conformity; (5) discourse efficacy; and (6) social identity. Both revolution and reform discourses will be subject to this 6-dimensional analysis, as outlined in Table 1:

Table 1: an outline of the analytic scheme

<i>Analytic Dimensions</i>	<i>Revolution Discourse</i>	<i>Reform Discourse</i>
Ideological ontology	Matching the world to political discourse	Matching political discourse to the world
Political socialization	Politicalizing	Economizing
Individual integrity	Dualism	Monism
Social conformity	Uniformity	Diversity
Discourse efficacy	Coercion	Persuasion
Social identity	Group Identity (Self-denial)	Individual Identity (Self-assertion)

Like Fairclough (1992), we have amended Foucault’s abstract approach with a textual and pragmatic analysis of some actual texts, which are summarized in Table 2.

Table 2: textual resources

<i>Types of Data</i>	<i>Revolution Discourse</i>	<i>Reform Discourse</i>
Political works	Selections of <i>Mao Zedong’s</i> works, published resolutions or documents by CCP	Selections of <i>Deng Xiaoping’s</i> works, published resolutions or documents by CCP
Newspapers	People’s Daily, PLA Daily, Beijing Daily	People’s Daily, Beijing Evening
CPC journals	Red Flag	Seek the Truth
Personal Diaries	Diaries written by red guards	Diaries written by a college student

Miscellaneous	Published big character posters, self criticism,	Recorded data bank on discourse in the workplace, advertisements, etc.
Indirect source	Works on the Cultural Revolution	

In what follows, we first present a snapshot of the major landmarks in contemporary Chinese political life since the founding of the People’s Republic of China in 1949. This is meant to serve as a background introduction for those who are not familiar with contemporary Chinese history. Section 3 offers a detailed contrastive analysis of the changing orders of discourse between the Great Cultural Revolution (1966-1976) and *Deng Xiaoping’s* reform era onwards. Finally section 4 examines the latest trends in discourse development in the last few years.

A word about the research methodology is in order here. Since this chapter shares the assumption held by critical discourse analysts that discourse is socially constrained and at the same time socially constitutive, it is, broadly speaking, a study of both ideological change and the changing orders of discourse. We follow Giddens (1984:244) that “all social life is episodic”, and that the study of social change can be made by looking for “identifiable sequences of change affecting the main institutions within a societal totality, or involving transitions between types of societal totality”. The Great Cultural Revolution period and the reform era are, in Giddens’ words, two “large-scale episodes” having a specifiable beginning and end with a particular sequence. Instead of investigating the two separately one by one, we have adopted a contrastive method by applying the same scheme of analysis to both, thus examining the social changes in terms of differences between the two.

The differences between the two periods are of course many, and no one can reasonably be expected to exhaust all of them. We have chosen to focus on the changing orders of discourse. One of the issues I was kindly reminded of by those who have read the manuscript was the way the data were collected, which seems to be sporadic rather than systematic. This is unavoidable as no corpus of such data is available yet. To draw conclusions inductively from a large corpus is infeasible and remains an ideal at the present stage. Commenting on the research methodology of social sciences, Douglas (1971, re-quoted from Haralambos 1985:520) writes: “Given the early stage of the work, it seems inevitable that we shall have great problems in making our work objective and shall, consequently, have to make use of our own partially unexplicated commonsense understandings of everyday life”. Similarly, this chapter makes use of the

author's discourse intuition and commonsense understandings of the two periods, qua an actual participant and insider. The data listed in Table 2 are used as analytic tools ---following the practice of ordinary language analytic philosophers such as Austin (1979) --- rather than as inductive evidence.

2. LANDMARKS IN CHINESE POLITICAL AREA: FROM 1949 TO 1999

2.1. Three Phases

Over fifty years have elapsed since 1949. In view of political ideology, this period of history can be divided into three phases: the Pre-Cultural Revolution (1949-1965); the Cultural Revolution (1966-1976); and the Post-Cultural Revolution (1977-1999). The first witnessed a constant decline of *Mao Zedong's* thought as the sole governing ideology. If we have to capture *Mao's* thought during this period in one phrase, it is a theory of class struggle. The second was a period of *Mao's* reprisals of competing ideologies. *Mao's* thought at this period is described by his followers as a theory of continued revolution under the Proletarian Dictatorship.¹ It is a further extension of his class struggle theory. The third period marks the emergence of *Deng Xiaoping's* theory of Chinese-style socialism as the dominating ideology.

2.2. The Great Proletarian Cultural Revolution

The term Cultural Revolution is a short form of the Great Proletarian Cultural Revolution, which lasted for 10 years, from May 1966 to October 1976, to be exact. According to the official assessment by the Chinese Communist Party (CCP), "[p]ractice has shown that the 'Great Cultural Revolution' did not in fact institute a revolution or social progress in any sense, nor could it possibly have done so." Instead, it has "caused the most devastating setback and heavy losses to the party, the state, and the people in the history of the People's Republic".² In the eye of some historians (e.g. Jin, Huang, and Chang, 1989:1), it was a violent eruption of long pent-up intra-party conflicts and power struggle among CCP top leaders. The devastation started with *Mao's* mobilization, through personality cult, of the masses, even including teenagers known as "little red guards", to take

his side in destroying all the existing institutions, party, governmental, legislative and military alike, thus yielding a great social turmoil, in *Mao's* own words, "great disorder under heaven", which he believed would "result in great order under heaven."³

2.3. "The Great Disorder" and "Four Great Forms of Discoursal Behaviour"

Interestingly enough, *Mao's* "great disorder under heaven" was ignited and sustained through what is known in Chinese as *si da* (meaning "4 greats" i.e. four great forms of discoursal behaviour): (1) *da ming* (大鳴, air your view openly and loudly), (2) *da fang* (大放, speak out freely), (3) *da zibao* (大字報, write big character posters), and (4) *da bianlun* (大辯論, engage in great debates). *Mao* praised them as "revolutionary forms created by the masses". The order of the four as listed above is that found in popular parlance. According to the *Resolutions on the Great Proletarian Cultural Revolution* (passed by the 11th Plenum of the 8th CCP Congress on 8th August 1966), the masses were urged to "make full use of the forms like *da zibao* and *da bianlun* to carry out *da ming* and *da fang*". *Da zibao* and *da bianlun* are thus means to the ends of *da ming* and *da fang*.

With regard to *da zibao*, the first big character poster, entitled "What has been done by *Song Shi*, *Lu Ping* and *Peng Peiyun* in the Great Cultural Revolution?", was put out on the 25th May 1966 by a group of six, headed by *Ni Yuanzi*, the party secretary of the Philosophy Department of Peking University. *Mao* endorsed it as "the first Marxist-Leninist big character poster in China" (Jin, Huang and Change, 1987:155). It was broadcast nationwide on the 1st June, and published in full on the mastheads of *People's Daily* the next day. However it failed to ignite the "fire" *Mao* expected. On the 5th August *Mao* launched his own big character poster: "Bomb the Headquarters -- My First Big Character Poster."⁴ This time the response generated was beyond imagination. Big character posters were pasted almost on any place that could host a piece of paper, even on the bodies of those who were publicly being humiliated and criticized. Makeshift walls were specially set up for the purpose.

Da bianlun, on the other hand, was materialized in numerous and endless gatherings, demonstrations, criticising meetings and so on.

In theory anyone could write big character posters (i.e. *da zibao*) or organize a debate (i.e. *da bianlun*) to air his/her view openly and loudly (i.e. *da ming*), or to speak out freely (i.e. *da fang*). In practice only so-called revolutionaries, i.e.

Mao's followers were entitled to have access to the four great forms, of which non-followers and dissidents were made victims.⁵

3. THE CHANGING ORDERS OF DISCOURSE: A CONTRASTIVE STUDY

3.1. Working Definitions

Discourse is language use, and the term is used to emphasise the viewpoint that the latter is a form of social practice, thus a form of action. *Order of discourse* is used to refer to the way people interpret and talk about things concerning a certain aspect of social life, a way that becomes dominant within a speech community at a certain period of time. It captures the general features (or in other words, a fashion or style) shown by the discourse community in question. Thus, political discourse, racist discourse, legal discourse and so on are various orders of discourse, the ways people interpret and talk about things under the influence of a particular political ideology, or a set of racist views or a given legal system.

As pointed out in 1 above, we shall use "revolution discourse" and "reform discourse" to talk about the orders of discourse during the Cultural Revolution and the Reform era respectively.

3.2. Ideological Ontology: From Matching the World to Political Discourse to Matching Political Discourse to the World

Political discourse is the symbolic signification of a political ideology. At the time of a social change or upheaval, it fulfils dual functions. This is true of both revolution discourse and reform discourse. The dual functions of revolution discourse can be neatly captured by the pair phrases *po* (破 meaning "abolish") and *li* (立 meaning "establish"). It became a catchword in the early years of the Cultural Revolution. The dual functions of reform discourse, on the hand, are known as *bo luan* (撥亂, meaning "rectify what is wrong") and *fan zheng* (反正, meaning "reverse to what is correct"). *Po* or *bo luan* consists of a critical exposure of the evils that a political system, in its present, past or future form, is

perceived to have. *Li* or *fan zheng* on the other hand projects what is believed to be a vision of a bright future state.

As pointed out above, the years 1966 and 1977⁶ were two critical moments in contemporary Chinese history witnessing drastic social changes. In 1966 *Mao* leached his political discourse of continued revolution under the Proletarian Dictatorship, whereas in 1977 *Deng Xiaoping* commenced to initiate his political discourse of Chinese-style socialism. The ways they launched their political campaign differ. *Po* and *li*, i.e. *Mao's* way, capture two actions, whose actors are militant and offensive, whereas *bo luan* and *fan zheng*, i.e. *Deng's* way, two actions whose actors are counter-offensive and corrective.

<i>Mao's Political Discourse</i>	<i>Deng's Political Discourse</i>
<i>What's to be abolished (i.e. po):</i>	<i>What's to be rectified, i.e. bo lun</i>
<ul style="list-style-type: none">● Liu Shaoqi and Deng Xiaoping's capitalist and revisionist lines● Any counterrevolutionary feudalist ideology such as Confucianism	<ul style="list-style-type: none">● The rectification of the appalling errors made by Mao and his followers● The emancipation of all the victims and dissidents
<i>What's to be established (i.e. li):</i>	<i>What's to be put to right, i.e. fan zheng</i>
<ul style="list-style-type: none">● Class struggle exists and is the primary motor force of social progress.● Any social activity must be evaluated in terms of class struggle in order to make sure that the proletarian revolutionary course will win.	<ul style="list-style-type: none">● Economic development is the primary concern of CCP.● The country's door must be open to the outside world in order to learn from others and invite investment.

The sharp contrast between the two, i.e. the difference in the way the cognitive structure of the Chinese mind is moulded, is this: *Mao urged people to match the world to his discourse, whereas Deng to match his discourse to the world.*⁷

Mao believed that there was a large cohort of undercover counterrevolutionaries, whose ringleaders were “sleeping” (*Mao's* word, see later) beside him, waiting for the right moment to strike. Thus he warns:

There are undercover bourgeois representatives in our party, government, army and cultural departments. They are counterrevolutionary

revisionists. Once they are ready, they will overtake power, transforming proletarian dictatorship into bourgeois dictatorship. ... Characters like Khrushchev, are now sleeping beside us, ...⁸ (translation mine)

In his letter to his wife *Jiang Qing*, *Mao* writes:

Cows, ghosts, snakes and spirits will jump out by themselves. They are destined by the nature of their class to do so. They have no other way but to jump out. ... They will knock the whole party down, including myself.⁹ (translation mine)

Cows, ghosts, snakes and spirits were originally a figurative set phrase describing anything imaginative and exotic. It was extensively used during the Cultural Revolution to refer to any so-called “counterrevolutionary elements”. In his *Bomb the Headquarters* (see 2.3 above, also footnote 5), *Mao* asserted:

Some cadre comrades of both central and provincial governments, taking the counterrevolutionary bourgeois line, exercise bourgeois dictatorship in order to suppress the vigorous Great Cultural Revolution. They reverse the right and the wrong, mix up the black and the white, round up revolutionaries, gag different views, and spread white terror. They thought that they had got their way. The bourgeois is in high spirit, whereas the proletarian is in low morale. How malicious they are! (translation mine)

The whole country was then mobilized to “dig deep” (*shen wa*, 深挖) in search of “cows, ghosts, snakes and spirits”, that is, to match the world to *Mao*’s discourse. As a result, thousands of innocent people were literally sent to inhabit over years in cow shelters, or were put on snakelike or ghostly masks to be humiliated in public.

Mao’s discourse was rendered ontologically more real than the reality by his followers, who held it as representation of absolute truth. Should any mismatches occur, it is the world that is wrong, and must be corrected. *Deng Xiaoping* sees only too well that he must first desanctify *Mao*’s discourse before he can advance his own. He observes (Deng, 1993:10):

I did not resume my work until July 1977. ... After I returned to my post, I argued that the essence of *Mao Zedong*’s thought was to seek truth from facts.¹⁰ This has initiated a discussion on practice being the sole criterion of truth.

In other words, Deng urges Chinese to match discourse to the world. This has struck a deadly blow at the myth of *Mao's* thought being infallible and invincible. Chinese people became disillusioned, and have withdrawn their faith in political discourse. A fundamental change in the discourse of men in the street is a shift from empty idealism to down-to-earth pragmatism.

3.3. Political Socialization: From Politicalizing to Economizing

Political socialization (Lawson 1985:180) refers to the process of inculcating ideological values. As early as 1962, at the 10th Plenum of the 8th Congress of CCP, *Mao* warned the party: "Socialism will last a long period of time. During such time exist class differences, class contradictions, and class struggle." He urged all the party members to "never forget class struggle." He requested that "class struggle be talked about every year, every month and every day." *Lin Biao*, *Mao's* nominated successor before his violent death in 1972, went even further: "Class struggle must be remembered at every moment of one's consciousness." As a result there was no single aspect of Chinese life that was not being politicalized ("politics takes command of everything"). Whatever was being talked about and whenever would be conducted in terms of politics, and class struggle in particular (i.e. *shang gang shang xian* 上綱上線).

Reform discourse, on the other hand, is more economized than politicalized. In place of remembering class struggle at every moment of one's consciousness, *Deng* (1993:9) instructs the Chinese to "pursue construction heart and soul". He (ibid, p.22) further points out: "All walks of life must be conducted in such a way that they contribute to the development of Chinese-style socialism." In other words, *Deng* does not like to economize China in a western capitalist way. In his own words, "Both hands must be tough". One hand pushes economic development, and the other advances "spiritual refinement".¹¹ As pointed out above, Chinese people become down-to-earth pragmatic after the Cultural Revolution. They are more concerned with whether their economic hand is full or not.

The following two columns capture the contrast between revolution and reform discourse in the domains of naming, word usage and match-making, as three sample cases showing the shift from politicalizing to economizing in discourse.

<i>Revolution Discourse</i>	<i>Reform Discourse</i>
<i>Naming</i>	
<i>Personal Names</i>	<i>Personal Names</i>
male -- with revolutionary associations: <i>hong bing</i> : red soldier <i>wen ge</i> : cultural revolution <i>zhi gang</i> : determined to be like iron <i>zhi yong</i> : determined to be brave <i>xiang yang</i> : towards the sun <i>bao chun</i> : defend spring	male -- associations with traditional male values such as fortune, status, happiness, fame, success, strength <i>ming</i> : brightness <i>kefu</i> : can get rich <i>zhong long</i> : be a dragon <i>zhong hu</i> : <i>be a tiger</i>
female -- with revolutionary associations: <i>guo hong</i> : redden the country <i>ji hong</i> : redden the world	female -- associations with female charm, traditional values <i>hui</i> : virtuous <i>ling</i> : beautiful jade <i>fang</i> : fragrant
<i>Commodity Names</i>	<i>Commodity Names</i>
--- revolutionary associations The East-Is-Red tractor Red Flag car Chairman Mao train	--- associations with foreign sources or antiquity 1. foreign brand names 2. foreign brand names + Chinese translation 克力架, 朱古力, 可口可 口可乐, 威娜宝 (Wella Balsam) 3. Chinese names + foreign translation 蜂花 (bee & Flower) 4. Chinese Pinying + characters = sounds foreign 5. ancient origin: <i>Kong Fu Jia Jiu</i> (孔府家酒 Confucius Family Wine) Du Kang (杜康) ¹²
<i>Word Usage</i>	
The word "sun" is exclusively associated with <i>Mao</i> , and "red" is a symbol of revolution (traditionally it is a colour of happiness)	A popular advertisement on household electric apparatus: "The most crimson is the sun, The most up to date is <i>Chang Hong</i> . " ¹³

Marriage	
Match-making	(based on marriage ads)
Preferred are those with such backgrounds: poverty-stricken parents, PLA armies, revolutionary martyrs.	In the countryside favoured men have: 1. house; 2. skill and income; 3. home electric apparatuses In the city favoured men have: 1. education; 2. power/status; 3. flat; 4. Income; 5. overseas connections

3.4. Individual Integrity: From Dualism to Monism

As far as discourse order is concerned, dualism itself has two dimensions. One is intrapersonal: the Chinese mind makes a distinction between *kou* (口 mouth [talk]) and *xin* (心 heart [talk]). That is, what is voiced from one's mouth does not necessarily match what is held as true or appropriate at heart (in folk terminology, the phenomenon is called *kou bu ying xin* 口不應心, or *shuo wei xin hua* 說違心話). The other dimension is interpersonal: A distinction is made between *sixia* (私下 private [talk]) and *gongkai* (公開 public [talk]). Those interlocutors who believe that they will not betray one another can be engaged in a *sixia* talk. Otherwise, they are doing a *gongkai* talk. An individual who lives in such a dualistic state, i.e. constantly switching from mouth talk to heart talk, and from private talk to public talk in order to protect him/herself from pending political pitfalls has no integrity, or a split integrity. Monism refers to the collapse of the dichotomies found in dualism. Revolution discourse is typically dualistic, whereas reform discourse is becoming increasingly monistic.

During the Cultural Revolution, people adopted a dualistic mode of discourse primarily as self-protection measure. There were however even days when only intra-personal dualism was the only safe mode of discourse. At the peak of witch hunting, offspring or couples were encouraged or forced to inform the revolutionary leaders of the talks they had with their parents or with their partners, should anything have been said off the revolutionary lines.

In reform discourse, on the other hand, dualism is rapidly declining in general, except for those occasions where sensitive political issues are under discussion. It is however found among business circles that no longer adopt it as a self-protection measure, but as an unfair means of gaining commercial advantage.¹⁴

3.5. Social Conformity: From Uniformity to Diversity

During the Cultural Revolution, people, although split inwards, showed great uniformity in the *gongkai* discourse. Millions of Chinese spoke as if it came from one mouth with one piece of mind. There was a special kind of speech activity wide-spread during this period which was known as *pidou* meeting (批鬥會), i.e. a meeting held to publicly criticise and fight against someone not in line with *Mao's* thought. (It was sometimes held by some revolutionaries to settle personal scores.) *Liu Shaoqi*, the PRC President when the Cultural Revolution started, was ordered to do self-criticism on 23 Oct, make confession in summer 1967, and submit self-examination in July 1967. Here is a part of the beginning paragraph of *Liu Shaoqi's* self-criticism:

Comrades,
I persist in observing Chairman *Mao's* and Comrade *Lin Biao's* directives. ... I have read the reports of various group meetings and feel that in the directive given to a number of local and central departments concerning the great proletarian Cultural Revolution, I committed deviations and mistakes of varying degrees. (quoted from Hsu, Immanuel C.Y., 1971:659)

Thousands of people, like *Liu Shaoqi*, were exposed to public *pidou*, and almost everyone was made to do self-criticism of any selfish ideas, even those only staying in mind for a flick of a second.

Reform discourse, on the other hand, have shown considerable diversity. This is a promising sign indicating a fundamental social change of from totalitarian collectivism to democratic individualism. This can be borne out by the specialization of TV channels and newspapers, and the diversity of mass media programmes gaining increasing popularity. Take China Central TV. There are eight channels that provide specialized services to meet the needs of the public, as well as of politics.

CCTV1: news service	CCTV2: economics
CCTV3: drama and music	CCTV4: international service
CCTV5: sports	CCTV6: films
CCTV7: children, army, science and agriculture	CCTV8: arts

Newspapers are more diverse than TV channels. The following are found available in Beijing street newspaper stalls.

General:

People’s Daily	Beijing Evening	Beijing Youth Daily
Reference Abstracts	Youth Reference Abstracts	

Specialized:

Area	Newspapers		
Computer	China Computer	Family Computer Education	
TV guide	China TV	Beijing TV	
Sports	Olympic Express	Sports Market	Sports Digest
Weekends	China Weekends	South China Weekends	
English newspaper	China Daily	21st Century	Weekends
Commercial	Folk Estate Reference	At Your Service	
Law	Democracy and Legislation	Legislation Abstracts	
Costumes	Chinese Costumes	Fashion Times	
Arts	New Platform Film Times	Global Literary Abstracts	Chinese Arts

The following are some of the programmes found in China Central Radio, Beijing Radio, China Central TV, Beijing TV and Beijing Youth Daily. These programmes were either banned or inconceivable during the Cultural Revolution.

Tradition and nationalism:

中華大地	Across China
九州神韻	The Charm of Nine Lands
養生文化	Health Preservation Culture
神州風采	The Beauty of Sacred Land
閑話京城	Beijing Talk
華夏神韻	Chinese Charm

樂話神州	Music Talk on Sacred Land
悠悠故鄉情	Nostalgic Romance

Western Style Clubs and Fans

發燒門診部	Music Fans' Clinic
球迷沙龍	Saloon of Football Fans
戲迷園地	Opera Freaks' Garden

Romance

相約在子時	Appointment at Midnight
歌聲傳情	Love by Singing
浪漫夜曲	Evening Romance
今晚咱們相會	Let's have a Date This Evening
空中鵲橋	Love Bridge in the Air

Commercialized by Foreign Enterprises

麥當勞歡樂時光	Good Time at MacDonald
雀巢咖啡音樂時間	Nescafe Music
燕莎之夜	Lufthansa's Night
相約賽特	A Date at Scitech Plaza

Health, Entertainment and Leisure

佐餐音樂	Appetising Music
娛樂空間	Entertainment Space
空中笑林	Laughter in the Air
健康心聲	Health Talk
健美五分鐘	Five Minute Beauty-Building
國際健身術	International Health Art
運動休閒	Sports and Leisure
健康城	Health City

Outside World Eye-opener

美國鄉村音樂	American Countryside Music
香港風景線	Hong Kong Horizon
北歐之旅	A Trip to North Europe

3.6. Discourse Efficacy: From Coercion to Persuasion

This is another fundamental change in view of the efficacy of discourse. By “efficacy of discourse” is meant the power of discourse on the participants. Revolution discourse was a coercive discourse. During the Cultural Revolution, whatever Chairman *Mao* said would constitute the last word. To quote him would silence anyone. Inconformities were ironed out through *pidou* meetings and punishment. Now things are drastically different. In the world of private business sector, it is money and money only that talks. In the commodity markets, foreign things speak louder than domestic ones. Even some domestic products are falsely labeled with exotic romanized alphabets to make them sound foreign. Among intellectuals, the talking of academic achievement is regarded by those “Confucian merchants” (i.e. those who have left universities to do business) as an empty discourse, that is, discourse that cannot improve one’s income. Reform discourse, in contrast with revolution discourse, is a persuasive discourse: The efficacy is achieved by appeal to economic, professional, academic and other personal awards. Figure 1 graphically summarizes the efficacy of revolution discourse.

The coercive force of revolution discourse is derived from the personality cult speech activities (see Figure 2 for details below), which generate the myth of *Mao*’s thought being omnipotent, infallible and invincible. The followers of his thought embarked upon matching his discourse to the world (see 3.2 above) by polarising (see details below) the nation into revolutionaries against counter-revolutionaries. Revolutionaries suppressed the counter-revolutionaries by 4 great forms of discourse (see Figure 3 below for details) to iron out any inconformities with revolutionary lines.

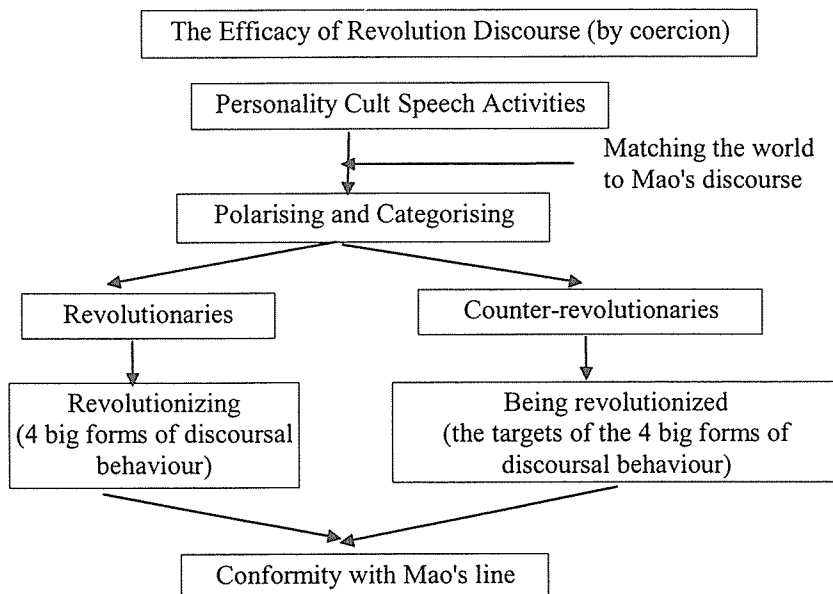


Figure 1 The efficacy of revolution discourse

Personality cult (i.e. 個人崇拜) speech activities fall into two kinds: those performed in person worshipping, and those in thought worshipping. *Mao* was idolized as great saviour, as life source functioning like the sun, etc. Followers of his thought were engaged in commissives and implementatives to carry out his words to the letter. Figure 2 below graphically captures the whole range of activities.

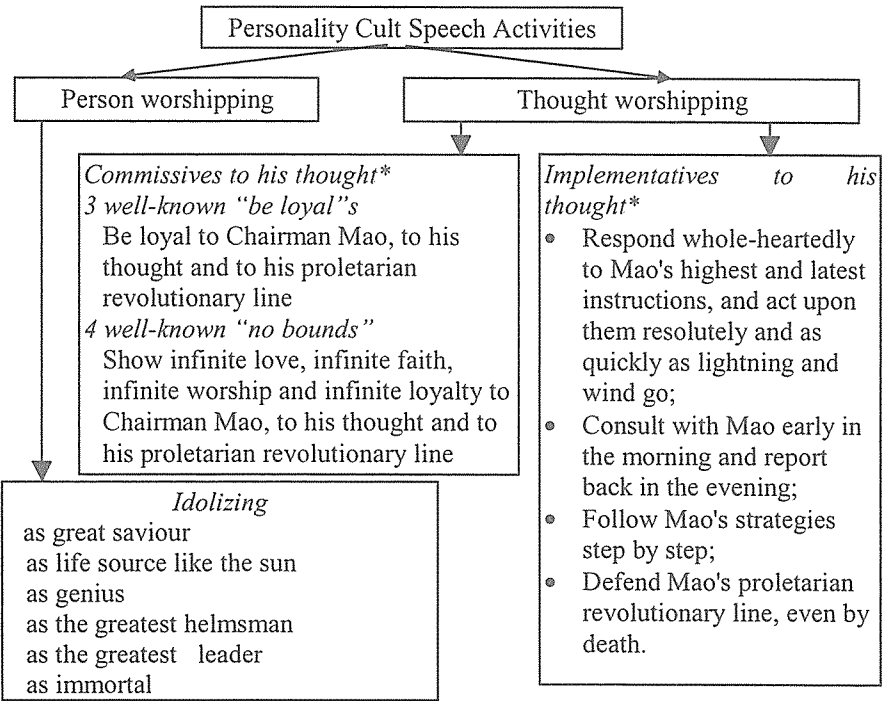


Figure 2 Cult speech activities

* *Commissives* are speech acts such as promising, pledging, vowing, etc., and *implementatives* are such acts as obeying, acting upon, following, etc. These two classes of acts are performed in worshipping Mao’s thought.

The polarization of the nation is an effective way to single out the non-followers of *Mao’s* thought (i.e. counter-revolutionaries). The binary opposites include:

<i>Polarizing and Categorizing</i>	
<i>Revolutionaries</i>	<i>Counter-revolutionaries</i>
I (我)	enemy (敵)
revolutionary 革命	counter-revolutionary 反革命

proletarian 無產階級	bourgeois 資產階級
socialism 社會主義	capitalism 資本主義
revolutionaries 革命派	capitalist roaders 走資派
rebels 造反派	conservatives 保守派
red 紅	black 黑
red 紅	white 白
patriots 愛國的	traitors 賣國的
4 news “四新”	4 olds “四舊”
Marxists, Leninists 馬列主義者	revisionists 修正主義者

Those being categorized into the left column would survive, whereas those into the right were doomed to “die”.

The four great forms of discursal behaviour are “revolutionizing activities” (革命行動). They include both speech acts proper and non-verbal acts, which were also performed verbally, as summarized in Figure 3.

The efficacy of reform discourse, on the other hand, relies on multiple values and awards for its persuasive power. Figure 4 captures the process from persuasive discourse to behaviour.

The change to multiple persuasive values can be demonstrated by some national and city dwellers’ values (based on the People’s Congress bulletin and Beijing Radio programmes).

<i>Systems of Persuasive Values</i> (to be continued)	
<i>National Values</i>	<i>City Dwellers’ Values</i>
A well-off society by the end of this century	Good housing
social stability	Good income
modernize industry	Good household facilities
modernize agriculture	

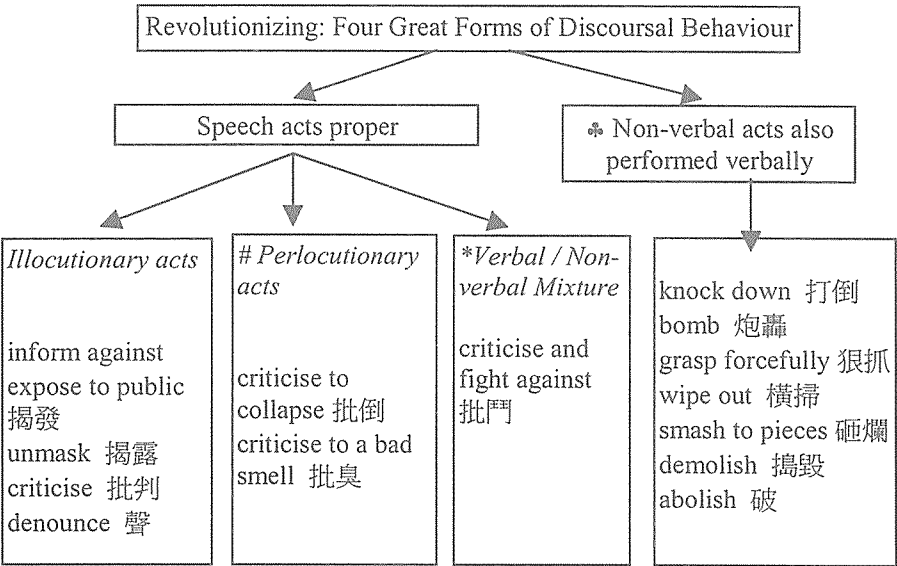


Figure 3 Revolutionizing activities

- ♣ It is one of the distinctive features of the Cultural Revolution that the normal nonverbal acts were transformed into primarily verbal activities.
- # The two verbs listed are perlocutionary verbs in contrast with the illocutionary verbs in the first box. They were extensively applied to so-called counter-revolutionaries.
- * The act was verbal, but implemented both verbally and non-verbally, as those nonverbal acts were performed the other way round.

Systems of Persuasive Values (continued)	
National Values	City Dwellers' Values
modernize defense	Good medical care
modernize science and technology	stable grocery market
clean government	traffic improvement
wipe out corruption	sufficient power supply
improve public security	
tax reduction on peasants	

Captured below are the idealized qualities the opposite sex wants in seeking marriage (based on match-making advertisement discourse published in the following magazines: *Chinese Women*, *Family*, and *Zhi Yin* (i.e. understanding mind)).

<i>Idealized Wife Qualities</i>	<i>Idealized Husband Qualities (to be continued)</i>
with education educated	educated cultivated intelligent

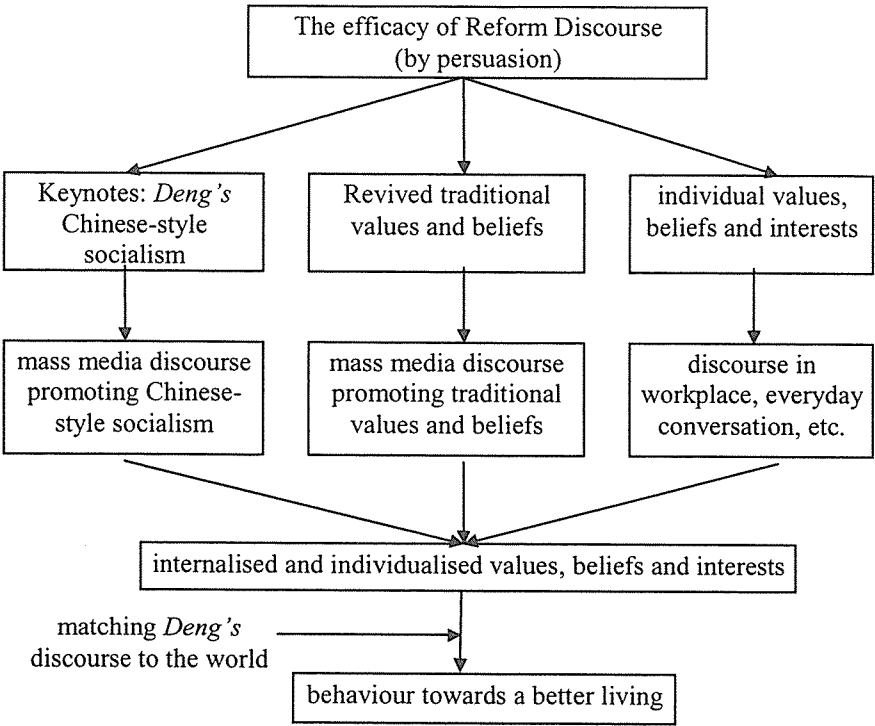


Figure 4 Efficacy of reform discourse

<i>Idealized Wife Qualities</i>	<i>Idealized Husband Qualities (continued)</i>
beautiful good-looking presentable	morally sound honest
faithful virtuous	enterprising
healthy plump	healthy appearance presentable square-shouldered
enterprising	good income
gentle kind-hearted	sanguine, frank good disposition
tranquil industrious prudent	good at decision-making good at planning responsible
understanding broad-minded	respect feelings
caring good at housework	understanding
child-bearing	

Note: the grouping of quality clusters are based on the preliminary data-base search. By the time of finalising this chapter, the data processing is not completed yet. So the table is intended to be suggestive.

The individualised personal values can be demonstrated by our study of suicide intervention discourse (see Gao and Gu forthcoming for details). A 30-year-old man made a hotline phone call to a counsellor about his intention to commit suicide. He gave two reasons for it. One is that his wife has left him and a 5-year-old son for Shenzheng to be a “three company” waitress. The other is that his business went bankrupt. He claimed that he had lost his face completely (i.e. his crashed value). As a result he could not see anyone, hence his life was no

longer worth living. The two female counsellors advised him to seek divorce and marry another instead of committing suicide. That is, they urged him to give up the traditional value, namely marriage bondage, once established, should be life-long. Then they appeal to him to

- ◆ be a persevering man
learn from your first fall
pull yourself up to join the race
the first prizewinner does not mean he is always the first during the course.
an American entrepreneur, now very successful, ran bankrupt 6 times.
- ◆ and be reborn
be tenacious
be adventurous
and recover the lost face

3.7. Social Identity: From Group Identity (self-denial) to Individual Identity (self-assertion)

In revolution discourse, “I” does not have a single referent, but stands for a token of group identity. When “I” speak, s/he does not speak in his/her own voice, but in the voice of the class or the party s/he belongs to. The following were some commonplace expressions in revolution discourse.

我們無產階級要革資產階級的命	We proletarian revolutionaries will combat ...
我們造反派就是要捨得一身剮	We rebels are ready to be torn to pieces...
我們工人階級是國家的主人	We working class are the masters of the country
我們紅衛兵是毛主席的衛士	We Red Guards are Chairman Mao’s fighters
我們井岡山戰鬥隊要血戰到底	We Jinggangshan ¹⁵ Squad will fight to the last drop of blood
我們貧下中農就是不答應，一千個不答應，一萬個不答應	We poor peasants will say “No”, a thousand times, ten thousand times

An individual who had achieved something would not claim credit. The credit went to Chairman *Mao*’s leadership, to the party, to the proletarian class.

If a sportsman won the first prize, he did it, but it was not his achievement: It was the victory of Chairman *Mao*'s revolutionary line. Even small achievement earned credit to Chairman *Mao*. Here is evidence quoted from a student's diary taken on 1st Oct. 1971.

Today, the University leaders entertained us with the peanuts they grew with their own hands. Students said with pride: "What universities are they that can welcome their freshmen with the fruit of their own labour? It is only the new-type socialist university fostered by Chairman *Mao* himself that can do so." While we were enjoying the fragrant peanuts, we studied Chairman *Mao*' May 7th Instruction, envisaging a distant future of a new-type university marching along Chairman *Mao*' May 7th Instruction Line.

今天，學校領導用他們雙手種的花生招待了我們，同學們豪邁的說："有什麼樣的大學能用自己勞動的果實來接待自己的新學員呢？只有毛主席親手培育的新型社會主義大學才能這樣。"我們吃著香噴噴的花生米學習毛主席光輝的"五•七"指示，設想著新型大學（抗大校風）沿著毛主席《五•七指示》創辦的遠景，

Hospitals saved patients' lives, not because they were human beings, but because they were members of a certain class. Here is an instance reported in a newspaper of 1969:

The captain instructed: This is an offspring of a revolutionary. It depends on them to conquer the world. His life must be saved. (這是革命的後代，以後要靠他們打天下，一定要救活他。)

In reform discourse, in contrast, individuals gain greater self-identity. "I" has a single referent. When "I" speaks, s/he speaks in his/her own voice. S/he can claim credit to his/her own achievement. Here is a passage quoted from an BTV interview with *Wang Tao*, a table-tennis world champion, and his father.

Interviewer: *Wang Tao*, how did it become that you won the world championship?

Wang Tao: First I must thank my father, then my coaches...

Wang Tao's attribution of his achievement first to his father would have got him into a serious trouble, to say the least, should he have had said so during the Cultural Revolution.

4. REFORM DISCOURSE AT CROSS ROADS

4.1. Diversity: A Blessing or Threat?

So far we have discussed the six pairs of contrast between revolution and reform discourses in terms of ideological ontology, political socialization, individual integrity, social conformity, discourse efficacy and social identity. The above analysis suffices to show that some and perhaps even profound changes have taken place in these dimensions.

As it has become clear now, diversity is a feature of reform discourse. This may undermine *Deng's* political discourse of Chinese-Style socialism as the dominating order of discourse. In the last few years, the mass media were urged to "extol the keynote rhythm", and government officials and civil servants to "talk about politics" (cf. "politics takes command of everything"). This reveals the underlying fear that discourse diversity may go off hand. The dicto that Chinese minds are a pool of loose sands seems to be always at the back of the leaders' mind. It seems to be borne out by the age-old story of three monks over who should fetch water.

One monk will shoulder water;
Two monks will carry water;
Three monks will have no water.

Nowadays a contrast between Chinese and Japanese is well noted in folk parlance:

One should remain alert working with a Chinese,
but relax with a Japanese;
One should relax working with three Chinese,
but remain alert with three Japanese.

Whether those folk stories are valid or invalid is not our concern here. The point is that the potential lack of co-operative spirit and the danger of nationwide disintegration seem to pose perennial fears in the Chinese mind.

4.2. Legal Discourse vs. Political Discourse

Given a dispute, on what basis is a pro- or con- argument to be constructed -- by appeal to law or to politics? In other words, it involves an issue of governing by law or by man? Legal discourse, in comparison with political discourse, is still at its formative stage in China. But whether it will eventually be allowed to override political discourse in dispute settlement remains an open question.

4.3. Ideal Mode of Discourse: Discourse of Means

Anyone who is conversant with contemporary Chinese history will tell you stories about the constant tugs of war between the leftist and the rightist. *Mao* launched his revolution discourse in order to combat those whom he labeled the "rightist," "capitalist roaders." *Deng's* reform discourse is set up to rectify *Mao's* leftist lines. Now one may wonder whether the pendulum of Chinese political discourse will constantly swing from left to right, and vice versa. In other words, how long will reform discourse maintain its reform spirit?

More than two thousand years' ago, Confucius advocated a discourse of means. This has proved to be an ideal, a mode of discourse that is desirable but difficult to reach. Talking about governing by law or by man, *Deng* observes (1993:177): "Further reform should be made in order to handle the relation between governing by law and governing by man,..." This shows that *Deng* wants a balance of some kind. We still have to wait and see how and when!

ACKNOWLEDGMENTS

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NOTES

¹ e.g. the editorial of *People's Daily*.

² 'Resolution on Certain Questions in the History of Our Party since the Founding of the People's Republic', 35,000 in words, adopted by the Sixth Plenary Session of the Eleventh Central Committee of CCP held between June 27 and 29, 1981.

³ *Mao Zedong's* letter to *Jiang Qing*. It was written on 8th July 1966. It was not made public or circulated until Lin Biao's death in 1972.

⁴ It was in fact not a big character poster in the normal sense of the term. It was based on *Mao Zedong's* comments on the June 2nd Beijing Daily. *Xu Yefu*, *Mao's* secretary, copied them on two pieces of letterheads. *Mao* made a few changes and added a title to it. It was then distributed to the 8th Plenum of the Eighth CCP Conference, and to all the institutions nationwide as CCP document.

⁵ The disorder brought about by the misuse of these four great forms of discursal behaviour was so damaging that they were dismissed as illegitimate rights and removed from the 45th Article of the Constitution by the Third Plenum of the Fifth People's Congress in 1980.

⁶ The Cultural Revolution officially ended in 1976, but *Deng Xiaoping* was not rehabilitated until July 1977.

⁷ This contrast is based on Searle's notion of "direction of fit" in his analysis of illocutionary acts. It is used to capture the relation between speech acts and the world (see Searle 1979:4). It is extended here to cover the relation between discourse and the world at large.

⁸ This is a passage written by *Mao* himself, which was included in the official Bulletin of the Central Committee of CCP on 16th May 1966, the first open document that let loose the Cultural Revolution, drafted by *Kang Shen* and *Chen Boda*, revised several times by *Mao Zedong*, see Jin, Huang and Chang, 1987:117.

⁹ See note 4.

¹⁰ After the downfall of the gang of four, an attempt was made to redefine *Mao Zedong's* thought. The essential point was that the notion of *Mao Zedong's* thought did not refer to *Mao's* own thought, but to the collective wisdom of CCP. What all this manoeuvre attempted to achieve was that *Mao's* own thought may be wrong, but not *Mao Zedong's* thought. There is an internal contradiction that is irremovable.

¹¹ This reminds us of the argument for the combination of Chinese "*dao*" (i.e. the Way) with western "*qi*" (i.e. western technology) during the New Culture Movement of the late *Qing*.

¹² This is derived from a famous poem by *Cao Cao* (155-220 A.D.), one of the three kings after the late *Han*.

¹³ It is a play of words on the popular song lines: "The most crimson is the sun, And the dearest is Chairman *Mao*." Should such an association like this have occurred during the Cultural Revolution, the advertiser would be given a death sentence.

¹⁴ Historically the Chinese mind has shown consistent contempt at merchants for their allegedly habitual cheating behaviour, so much so that the association of merchants with cheating is even fairly or unfairly lexicalized.

¹⁵ Jinggangshan is a mountain range where *Mao Zedong* led his rebellion troops there.

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A MODIFIED N-INITIAL RELATIVE-CLAUSE STRANDING ANALYSIS FOR CHINESE RELATIVE CONSTRUCTIONS

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1. INTRODUCTION

In this chapter I argue that lack of *wh*-relatives in Chinese weakens the case of construing an operator-variable structure for its non-*wh* relatives. Instead, Kayne's (1994) relative-clause stranding structure seems more appropriate. However, unlike previous treatments adopting Kayne's or other analyses, the current study treats Chinese relatives, *crucially*, as N-initial rather than N-final as previously thought. For instance, "*na ben*" – a Determiner-Classifier phrase – acts as the head-noun in "*na ben [ta xihuan de]*" in (1a), and when the relative clause precedes the head-noun, the relative clause is raised up, as in (1b):¹

- (1) a. *[na ben [ta xihuan de]]*
that CL 3sg like DE
b. *[[ta xihuan de]_i [na ben t_i]]*
3sg like DE that CL
a&b: 'the volume that he likes'

Both (1a) and (1b) can occur independently as arguments in sentences, or be used to modify a noun. In the latter case, we have, for example:

- 2) a. *[na ben [ta xihuan de]] shu*
 that CL 3sg like DE book
 b. *[[ta xihuan de]_i [na ben t_i]] shu*
 3sg like DE that CL book
 a&b: 'the (volume of) book that he likes'

In case the head-noun is a bare noun instead of a Determiner-Classifier phrase, the relative clause is also raised to precede the head-noun, as in (3):

- (3) *[[ta xihuan de]_i [shu t_i]]*
 3sg like DE book
 'the book that he likes'

Favourable consequences of the analysis are, firstly, it derives Chinese relative constructions in a unified fashion that was not reported before. Secondly, it conforms to the typology of relativization (Kayne 1994). Thirdly, previously unresolved and otherwise mysterious word order contrasts in and between Chinese and English such as asymmetrical displays of lexical complementizers and of appositives and relatives that share a head-noun are now accounted for.

Section 2 reviews previous treatments of Chinese relative constructions in the context of typology of relativization. Section 3 presents, under the DP Hypothesis (Abney 1987), a modified version for Kayne's (1994) N-initial relative-clause stranding analysis and demonstrates how the modified analysis works for Chinese. Section 4 extends the analysis to resolving asymmetrical displays of lexical complementizers in Chinese and English. Section 5 examines appositives and relatives that share a head-noun and that display an asymmetrical word order between Chinese and English. Conclusion is in Section 6.

2. PREVIOUS TREATMENTS

In the generative tradition, a system of two binaries is used to describe the cross-linguistic typology of relativization. One is *wh* vs. *non-wh*, where *wh* stands for relative-pronoun, and the other *N-initial* vs. *N-final*, where *N* stands for head-noun (Bach 1965; Thompson 1969, 1971; Andrews 1975; Grimshaw 1977, von Stechow 1983, 1987; Cole 1987 and Kayne 1994 amongst others). The first binary characterizes the internal structure of a relative clause: whether it contains a relative pronoun, and the second its external structure: whether it

precedes or follows the head-noun. English, for instance, has both *wh* and non-*wh* relatives, and they are N-initial, as shown in²:

- (4) the volume [which he likes]
- (5) the volume [(that) he likes]

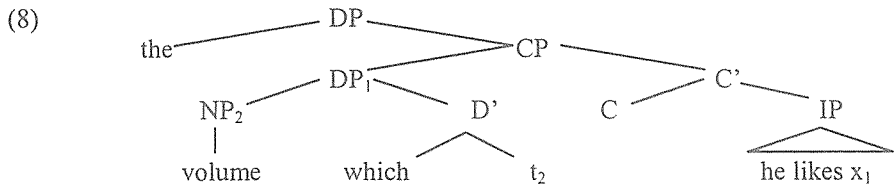
Chinese relatives are, on the other hand, non-*wh*, and they are often said to be N-final. The difficulty with this view is that it offers no satisfactory solution as to how the relative clause may alternate its position with the Determiner-Classifier phrase as we see in (1) and (2). The issue has been long-standing in the study of Chinese syntax, particularly under the notion that relativization across languages should essentially be derived from the same structure (Kayne 1994). I will return to this point later.

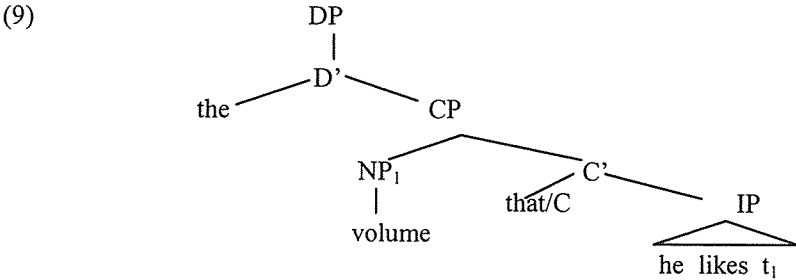
Also in the generative tradition, all types of relatives used to be treated as operator-variable structures (Chomsky 1977, Radford 1981, 1988; von Breman 1983, 1987; He 1990, Ning 1993, Cole & Hermon 1994 and Tsai 1994 amongst others). For instance, under an operator-variable structure, (4) and (5) in English above are construed respectively as follows:

- (6) the volume_i [which_i he likes x_i]
- (7) the volume_i [*wh-pro*_i that he likes x_i]

The non-*wh* relative clause in (7) is treated on a par with *wh*-relatives by hypothesizing that a null relative pronoun undergoes movement in place of a lexical one (e.g. Radford 1981, 1988).

Recently, Kayne (1994) departs from the operator-variable tradition by separating *wh*-relatives from their non-*wh* counterparts. That is, while *wh*-relatives may still be conceived as an operator-variable structure, non-*wh* relatives are nothing of the sort. To illustrate, (4) and (5) in English above would be re-analyzed as follows under Kayne (1994):





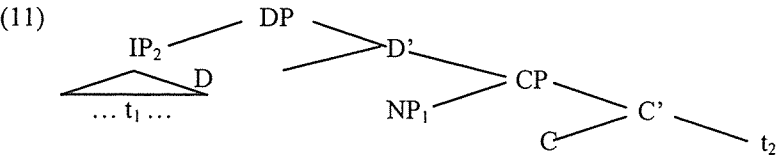
(8)-(9) are framed within the “determiner theory” (Bresnan 1972, Stockwell, Schachter & Partee 1973, Kayne 1994),³ where the relative construction is a D-CP system in which the relative clause (= CP) is a complement to a determiner (= D). Crucially, the head-noun (= N) is extracted from the relative clause itself, an analysis that was first discussed in Andrews (1975) and has come to be known as the Relative Clause Stranding Analysis, as the relative clause is stranded by the extracted head-noun.

Because non-wh relatives are *no longer* conceived as an operator-variable structure, the implication is enormous for N-final relatives, which are without exception non-wh. It seems only appropriate (more so than it is in English) to apply the Relative Clause Stranding Analysis to languages other than English where there are no wh-relatives but non-wh relatives.

Indeed, the analysis should apply, Kayne (1994) claims, to N-final relatives, which differ, schematically, from N-initial relatives in this way:

- (10) a. D [N + C + IP]_{CP} N-initial Relatives e.g. English
 b. IP_i D [N + C + *t*₁]_{CP} N-final Relatives e.g. Amharic

D is lexical in both (a) and (b). But while C may be either lexical or null in (a), it is invariably null in (b), which is also known as *headless* relatives. (a) is represented as (9) above, and (b) as (11) below (Kayne 1994: 94 who did not supply Amharic data based on Gragg 1972):



The main concern for Kayne (1994) is to devise a sufficiently constrained derivation theory that requires the linear constituent order to be in strict compliance with the X-bar format of the Spec-Head-Complement ordering. He calls it the Linear Correspondence Axiom (LCA). Relativization is a case at hand to demonstrate how LCA operates cross-linguistically. As we see, under LCA, the surface word orders in (10) essentially reflect the structural asymmetries regarding the IP position in these constructions, as shown in (9) and (11). In other words, relativization across languages is derived from the same structure.

Returning to Chinese in the light of this, we face a challenge in respect to the relative constructions. As is observed, Chinese relative constructions display the following linear orders:

- (12) a. Relative Clause + N (consult Example (3))
 b. Relative Clause + D-CL (+ N) (consult Examples (1b)&(2b))
 c. D-CL + Relative Clause (+ N) (consult Examples (1a)&(2a))

Derivational syntax of these constructions is seldom discussed by non-generative grammarians (Wang 1944, Lü 1953, J. Li 1954, Chao 1968, Zhu 1981, Lü et al 1981, C. Li & Thompson 1981, Chu 1983). Generative grammarians who pursue the operator-variable analysis go back a long way, from the 1960's (e.g. Hashimoto 1966, 1971; Paris 1976, 1979; Teng 1979, T-C Tang 1972, 1973, 1977, 1978, 1979) through the 1980's to early 1990's (e.g. Huang 1980, 1982, 1984; Cheng 1986, Henry 1988, A. Li 1990, He 1990, Chiu 1993, Ning 1993). Formulation of the relative-clause stranding analysis is more recent (Xu 1997, He 1998).

In most of these investigations, Chinese relatives are taken simply as N-final. With reference to the above (12), where N, D-CL, or D-CL-N is taken as the head-noun, the construction is N-final. (a) and (b) are core cases, and derivational variants are those in (c).

Cross-linguistically, however, describing Chinese relatives as N-final does not fit into the typological picture. Crucially, N-final relatives never display a lexical complementizer (Kayne 1994:93). Or, C is invariably null, as is in Amharic (Gragg 1972) and Ancash (Cole 1987, Cole & Hermon 1994). In contrast, non-wh N-initial relatives, such as in English, may require a lexical C, as in (13). In this respect, Chinese relatives are more like N-initial than N-final, as Chinese relatives may also require a lexical complementizer, i.e. the item *de*, as in (14).

- (13) the man [**(that)* [likes her]]

- (14) *[[ta xihuan] *(de)] ne ga (nan ren)*
 3sg like DE that CL male person
 'the one (-man) she likes'

We will return to the asymmetries in (13) and (14) in Section 4.0. For the moment, if we accept the typology of Kayne (1994) that N-final relatives contain a null C, but their N-initial counterparts may do with a lexical one, then there are only two ways in which to categorize Chinese relatives. One way is to maintain that they are N-final, but a sub-type of N-final relatives. Xu (1997), for instance, has taken this route, though, as I will show below, it did not, unfortunately, seem to work. The other option is to consider Chinese relatives to be N-initial, or typologically a sub-type of N-initial relatives. This is the approach I shall take (Section 3.0).

Let us first consider certain technical details of previous representative analyses under the N-final approach. (15) is the operator-variable analysis by Ning (1993:67):

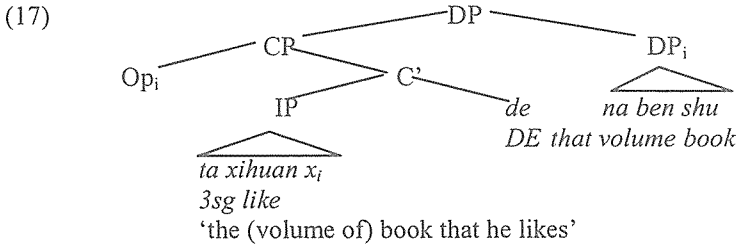
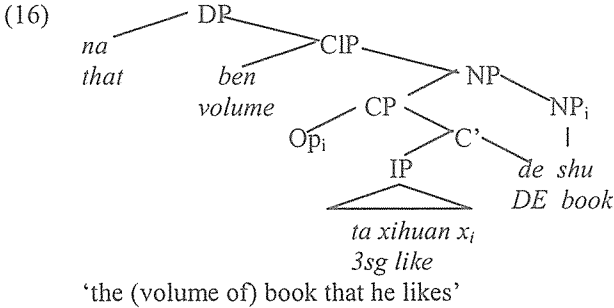
- (15)
-
- ```

 NP
 / \
 CP NPi
 / \ |
 Opi C' de
 / \ DE
 IP shu
 / \ book
 / \
 ta xihuan xi
 3sg like
 'the book that he likes'

```

Typical of Ross's (1967) adjunction analysis, the relative clause Chomsky-adjoints to the head NP (see note 3). It has its advantage as well as its drawbacks.

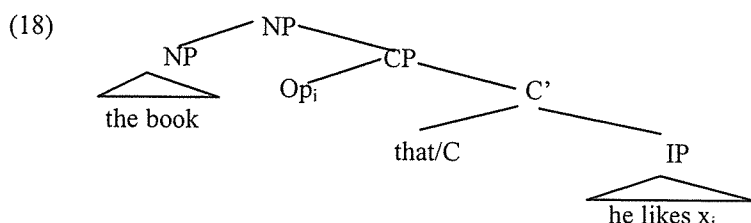
Its advantage lies, to certain extent, in its relative ease of extending itself to constructions containing a Determiner-Classifier phrase that may either precede or follow the relative clause. Either way, the phrase may represent a DP in which the structure (15) enters. Two possibilities are:



Potential problems with derivations like (16)-(17) are that to many native speakers, there is no difference in meaning between the Determiner-Classifier phrase preceding and following the relative clause. This suggests that both constructions should share the same structure from which word order differences are derived at little semantic cost.

Derivationally, adjunction within complex NP's weakens the X-bar format (Jackendoff 1977). Under LCA of Kayne (1994), X-bar format must comply with the Spec-Head-Complement order. (15), as we see, flatly violates this order. Of course it is only fair to view this violation in an evolutionary perspective since theories of derivation have evolved considerably from Ross (1967) through Jackendoff (1977) to Kayne (1994). But, if we accept that the pursuit of a sufficiently constrained derivation theory (LCA a candidate) is to ensure that the typological variants of a prototypical construction are derived essentially from the same prototypical structure, e.g. relativization across languages should share the same structure as Kayne suggested, then (15) seems to have missed the point. In (15), we have a Spec-Complement-Head order matching the order of the constituents. Under the same adjunction analysis, the English equivalent to

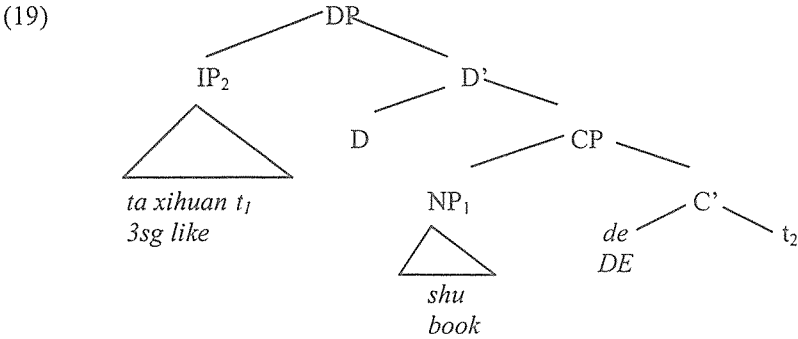
Chinese (15) would be (18), where a Spec-Head-Complement order matches the order of the constituents:



Question is, as Kayne (1994) asked in comparable cases, Should the order of constituents determine the structural relationships that derivationally hold them, or is it rather the opposite? Kayne (1994) reckons it is the latter, and thinks the choices for any structural relationship are rather limited. For instance, IP follows C in (18), but precedes C in (15). Thus, two perfectly asymmetrical relations emerge: Spec-Head-Complement and Complement-Head-Spec. But Kayne (1994) considers only Spec-Head-Complement is viable, for reasons of notionally eliminating the possibility that these two relations both exist in natural languages, and of thus composing a sufficiently constrained derivation theory.

Moreover, it is debatable whether Chinese relatives are of an operator-variable structure, for lack of relative pronoun. If they are, they must contain a null relative pronoun, which is in turn to be determined over whether it is an operator or a variable. Radford (1981) proposes it to be an operator, just like those in English non-wh relatives. But, extending Tsai's (1994) analysis of Chinese wh-words for questions to relatives, we would have a variable-like null relative pronoun.<sup>4</sup> Perhaps exactly for this undetermined status, Ning (1993), though adopting an operator-variable analysis, avoided committing himself either way. Here, we take a different approach. As is well known, one may hypothesize that English has null relative pronouns for the fact that it has lexical counterparts of those. In the same token, we should say that Chinese may not have null relative pronouns since it possesses no lexical counterparts. Furthermore, as mentioned earlier, Kayne (1994) argues against the null relative pronoun analysis even for languages like English where there *are* relative pronouns. For Chinese with no relative pronouns, Kayne's approach seems more appropriate than it is for English.

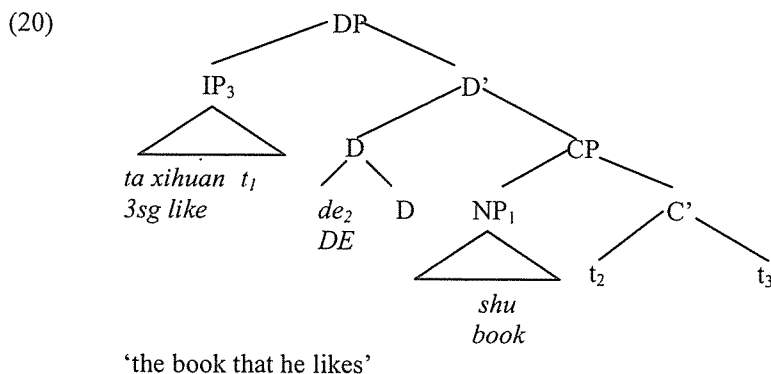
Abandoning the operator-variable structure, Xu (1997:90-94) is quick to apply Kayne's (1994) analysis to Chinese. Consider (19) based on Kayne's analysis in (11):



Unless C moves to D, the analysis is unable to generate the correct word order for Chinese. So, Xu (1997: 90-94) proposes just that, a C-to-D movement.

Such movement is, as we already know, not in Kayne's (1994) original proposal. N-final relatives according to Kayne contain a lexical D and a null C, such as in Amharic or Ancash. Chinese relatives on the other hand may or may not contain a lexical D, and do in most cases require a lexical C, i.e. the item *de*, which many have argued is a proper complementizer (T-C Tang 1979, Huang 1982, C. Ross 1983, Cheng 1986, Henry 1988, A. Li 1990, Chiu 1993, Ning 1993, Xu 1997, Shi 1998). This means that if Chinese relatives are N-final, they would have to be a sub-type of the sort. Only from this point of view, is the C-to-D movement in (19) logical, because the presence of this movement would distinguish lexical-Comp N-final relatives (so to speak) from their null-Comp counterparts where the movement is absent. Question is: Does such C-to-D movement apply in any other languages than Chinese? An answer to this question has to be left to future studies since Xu (1997) did not mention any and I know of none.<sup>5</sup> Furthermore, does the C-to-D movement work for Chinese as well as Xu (1997) believes it does?

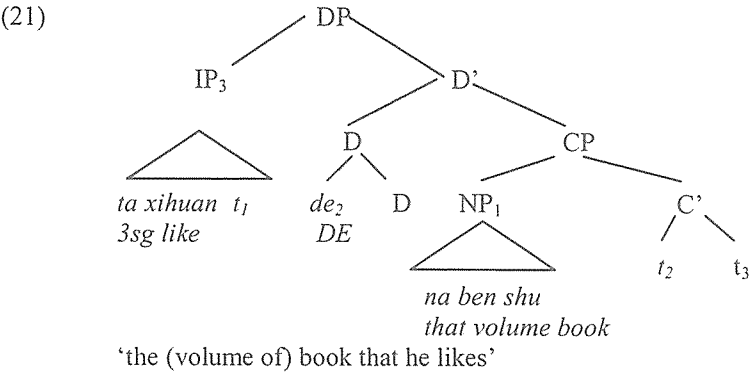
In (19) where D is null, it is crucial to determine the condition under which the C-to-D movement operates. According to Xu (1997), this movement is by substitution. But, as far as I am aware, to substitute a null functional head by movement is impossible, because null functional categories are not empty (Grimshaw 1993, Speas 1994, Koopman 1996, S-W Tang 1998). So, even if there is C-to-D movement, it has to be by adjunction, as remedied in:



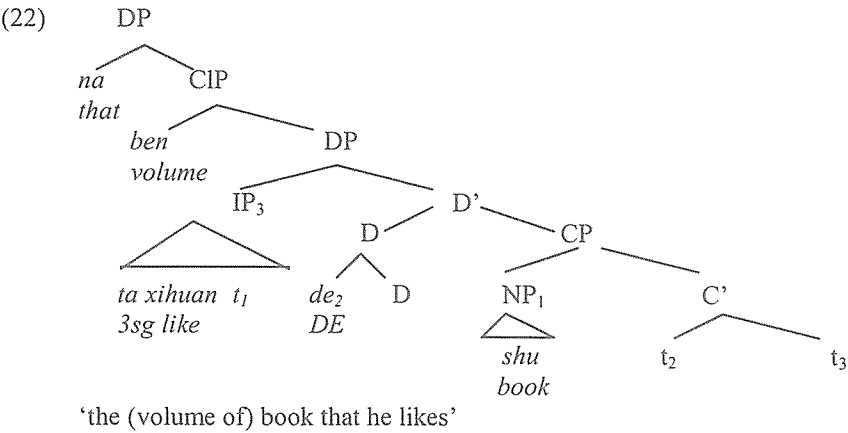
(20) now generates the correct word order, and also satisfies the Shortest Movement Principle that requires  $\bar{A}$ -movement to land at the nearest  $\bar{A}$ -position (each time such movement applies) (Chomsky 1991, 1993, 1995).<sup>6</sup> In (20), Spec-CP is already occupied. Thus, moving IP to Spec-DP without moving C to D would violate the Shortest Movement Principle. But, with C moving into D, the IP movement would still count as a shortest, Xu (1997) argues (in terms of relativity of the Principle).

Yet, there is another issue central to the C-to-D movement in (20). As we see, the movement is overt, suggesting that D is *strongly* affixal.<sup>7</sup> In other words, D is an affix, and *de* as a free word moves to adjoin to it. There are only two ways in which D can be an affix. One is that D is such per se, and the other that D is an extended projection of *de*. But there is a lack of evidence either way. Firstly, lexical determiners (e.g. demonstratives and pronouns) are all free words in Chinese. Even if we assume null D's in Chinese to be a version of English articles (A. Li 1998, 1999; He 2000), there is still no reason for believing that they are affixes. Secondly, only items with an affix-taking ability may have an extended projection (Grimshaw 1991). For instance, verbs in Chinese take aspect marker(s), so Aspect is presumably an extended projection of V in Chinese. In contrast, the relative *de* in Chinese does not take any other item to co-occur with it, suggesting it has no affix-taking ability. Hence, D is unlikely to be an extended projection of *de*. Based on the above, D is not affixal, casting serious doubt on the C-to-D movement in (20). Or the movement does not seem to work as well as Xu (1997) believes it does.

In addition, Xu (1997) did not treat constructions containing a Determiner-Classifier phrase. Putting this phrase within the constituent of the head-noun as before (see (17)), we may have:



However, in cases where the Determiner-Classifier phrase precedes the relative clause, the structure in question would be presumably different. For instance:

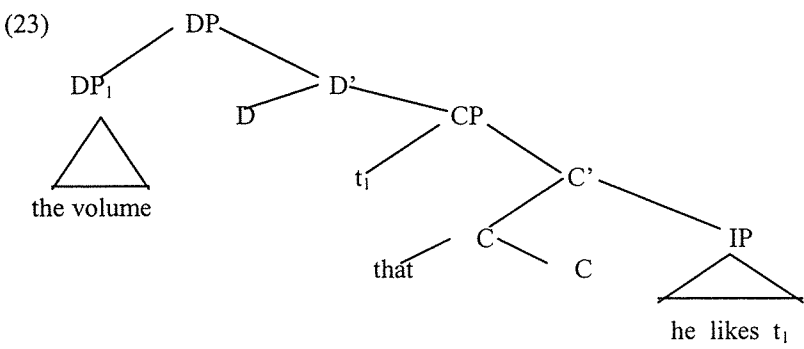


Problems with derivations like (22)-(23) are, again, that they seem to put constructions of little meaning difference under different structures. The issue of maintaining the same structure for relativization, central to Kayne (1994), is missed.

The problems arising from previous application of Kayne’s (1994) analysis to Chinese, such as Xu’s (1997), have nothing to do, in my view, with the applicability of that analysis or the principles behind it, but rather with the probability or fact, as I will argue, that Chinese relatives are not N-final as previously thought, but rather N-initial. So, instead of treating them as a sub-type of N-final relatives, I shall propose the opposite, namely, to treat them as a sub-type of N-initial relatives (one other sub-type being English non-wh relatives). I will demonstrate how this proposal works below.

3. A MODIFIED N-INITIAL RELATIVE CLAUSE STRANDING ANALYSIS

Return to the analysis in (9) for non-wh N-initial relatives. It brews on a syntax-semantics mismatch, under the DP Hypothesis that argument-bearing nominal constituents are DP’s (or CP’s) (Abney 1987). Namely, the extracted head-noun is an argument and therefore a DP instead of a NP. To remedy it, we may either treat the N as a complement to a null D, or more conventionally, take the sequence “D-N” (*the volume* for instance) as a single constituent. The latter analysis we take as appropriate, because singular bare (ordinary) nouns in English are not referential, hence unlikely to be DP’s. As a result, we treat D in the D-CP system as null instead, as illustrated in:



In addition to revising (9) under the DP Hypothesis, (23) posits that a relative clause complements a null C, to which a lexical complementizer may be merged

(Radford 1997a:307).<sup>8</sup> The head-noun is extracted to Spec-DP via Spec-CP, checking (relevant non-interpretable features off) the null D as well as C.<sup>9</sup>

Suppose, instead of extracting the head-noun to Spec-CP, IP moves into this position. This is allowed, assuming C is Predicative-Referential and can be checked either by IP or DP.<sup>10</sup> Then, the head-noun will be extracted from IP to Spec-DP. But, of course, this will result in a wrong word order in English. What bars it is the Shortest Movement Principle. Although moving either the head-noun or the IP to Spec-CP is to the nearest  $\bar{A}$ -position, thus equal distance, the next move, i.e. moving the head-noun to Spec-DP will make a difference. The choice is between moving it from Spec-CP as in (23) and moving it from IP now in Spec-CP as we are supposing. The move shown in (23) is to next Spec position and hence shorter. I shall call (23) the Modified N-initial Relative Clause Stranding Analysis, as opposed to Kayne's (1994) original version in (9).

We now turn to Chinese. The issues concerned are, to briefly reiterate, Chinese relative constructions were often broken into constituencies as follows:

- (24) a. [[Relative Clause] N] (consult Example (3))  
 b. [D-CL [Relative Clause] N] (consult Example (2a))  
 c. [[Relative Clause] D-CL-N] (consult Example (2b))  
 d. [[Relative Clause] D-CL] (consult Example (1b))  
 e. [D-CL [Relative Clause]] (consult Example (1a))

Taking N, D-CL or D-CL-N as head-noun, these constructions are said to be N-final, with (e) being a derivational variant. The difficulty with this treatment is that a principled way in which to derive all these constructions has yet to come by.

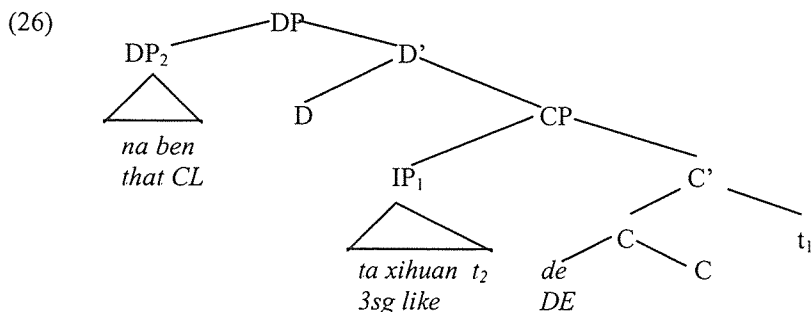
In a rather reversed manner, I take (24e) as the core case that evidences Chinese being N-initial rather than N-final, and regroup the constructions as follows:

- (25) a. [D-CL [Relative Clause]] (consult Example (1a))  
 b. [[Relative Clause] D-CL] (consult Example (1b))  
 c. [[Relative Clause] N] (consult Example (3))  
 d. [D-CL [Relative Clause]] N (consult Example (2a))  
 e. [[Relative Clause] D-CL] N (consult Example (2b))

N or D-CL acts as head-noun and they are in complementary distribution. Where both appear in a word string, as in (d) and (e), N is an independent constituent separate from the relative construction. Where the relative clause precedes its head-noun, as in (b), (c) and (e), the relative clause is raised up. By

treating the constructions this way, we are thus able to derive them in a unified fashion.

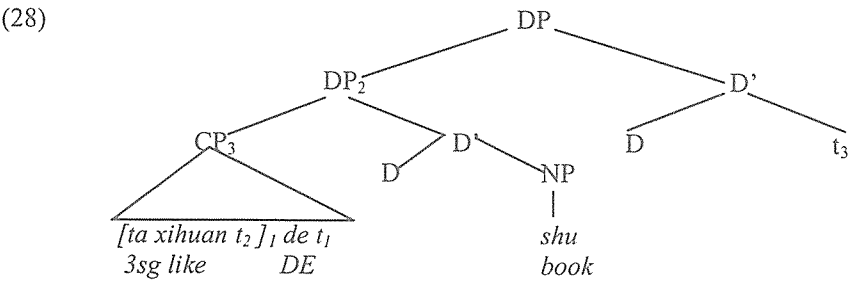
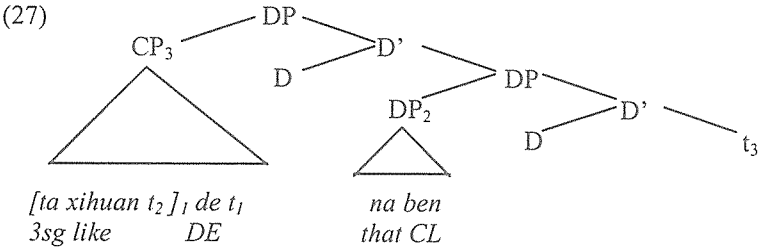
We now examine how these constructions are derived. Start with (25a). It is represented in:



(26) shares the same structure with (23) for English, except for the order of derivation of certain constituents. In (23), the head-noun moves to Spec-DP via Spec-CP. In (26), IP moves to Spec-CP and then the head-noun is extracted from IP to Spec-DP. This latter derivation is, as we discussed earlier, not possible for English. But why should it apply in Chinese? Or, why is it not possible to move the head-noun to Spec-DP via Spec-CP in Chinese?

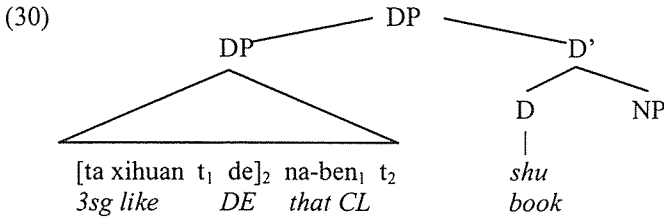
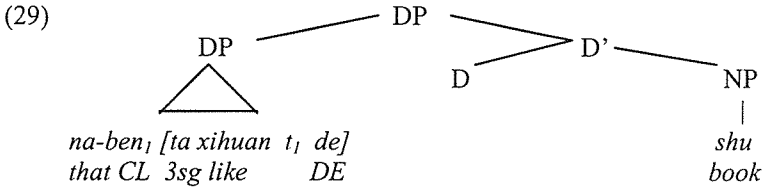
The difference is due to a parametrical variation concerning C and I in these languages: C and I are both affixal in English (Chomsky 1991, 1993) but neither is so in Chinese (Zhang 1997, S-W Tang 1998). As a result, C is V-related in English but not so in Chinese.<sup>11</sup> C becomes V-related when V moves to C via I in LF if a lexical complementizer is not merged to C, or to I if a lexical complementizer is merged to C.<sup>12</sup> In Chinese, there will be no such movements, irrespective of whether or not a lexical complementizer is merged to C. Because C is V-related, extracting an argument (= the head-noun) to Spec-CP counts as a shortest move in English. In comparison, this is not so in Chinese, where, because C is not V-related, moving IP to Spec-CP is in fact shorter than extracting an argument from IP to Spec-CP. Thus, IP must move to Spec-CP before extracting an argument in Chinese.<sup>13</sup>

Consider now (b) and (c) of (25). On the basis of (26), they are derived as in (27) and (28) (NB: The indexes follow derivational steps and should facilitate viewing.):



In the way the grammar works, the speaker has [D-CL/N [Relative Clause]] as the core structure of relativization. If a Determiner-Classifier phrase acts as head-noun, there is no null D to check and the relative clause is stranded by the extracted head-noun, as shown in (26). But if a bare noun acts as head-noun, i.e. a DP headed by a null D,<sup>14</sup> the relative clause will have to move to check the null D in that DP, as shown in (28).<sup>15</sup> There is, however, another option for the speaker, namely, he may wish to form the structure [[Relative Clause] D-CL]. In which case, a null D is drawn from the Lexicon and takes the structure [D-CL [Relative Clause]] as its complement, forcing the relative clause to move, again, to check the null D, as shown in (27).

Now consider (d) and (e) of (25). Here, the speaker uses, as it were, (26) and (27) each to modify a NP. For this purpose, a null D is again drawn from the Lexicon and takes the NP a complement to the null D, into whose Spec position the structure in (26) or (27) is merged, checking the null D, as illustrated in:



Finally, evidence for all these structures being represented as a DP is from the fact that they all function as arguments in sentences, e.g.

- (31) a. [na-ben [ta xihuan de]] bei ren jie-zou-le. See (26)  
that CL 3sg like DE by person borrow-go-asp
- b. [[ta xihuan de] na-ben]] bei ren jie-zou-le. See (27)  
3sg like DE that CL by person borrow-go-asp  
a&b: 'The volume that he likes is already loaned to other people.'
- c. [[ta xihuan de] shu]] bei ren jie-zou-le. See (28)  
3sg like DE book by person borrow-go-asp  
'The book(s) that he likes is already loaned to other people.'
- d. [[na-ben [ta xihuan de]] shu bei ren jie-zou-le. See (29)  
that CL 3sg like DE book by person borrow-go-asp
- e. [[ta xihuan de] na-ben]] shu bei ren jie-zou-le. See (30)  
3sg like DE that CL book by person borrow-go-asp  
d&e: 'The (volume of) book that he likes is already loaned to other people.'

To summarize, Chinese relative constructions can be derived as N-initial under Kayne's (1994) relative-clause stranding analysis, like non-wh relatives in English. Such was not reported before.

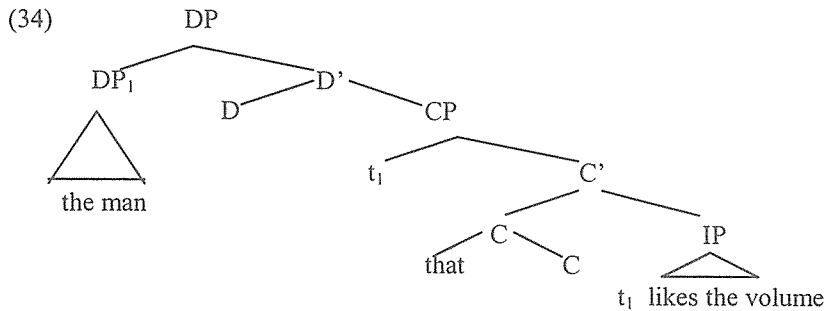
4. ASYMMETRICAL DISPLAYS OF COMPLEMENTIZERS

I now extend the current analysis to a comparative context. Consider:

- (32) a. the man [*\*(that)* [likes her]] (= (13))  
b. the man [(*that*) [she likes]]
- (33) a. [[*ta xihuan*] *\*(de)*] *na ge (nan ren)* (= (14))  
3sg like DE that CL male person  
'the one (-man) she likes'  
b. [[*xihuan ta*] (*de*)] *na ge (nan ren)*  
like 3sg (DE) that CL male person  
'the one (-man) who likes her'

A complementizer is required in English when subject is relativized, but may be absent when an object is relativized. In Chinese, a complementizer is required when object is relativized, but may be absent when a subject is relativized.<sup>16</sup>

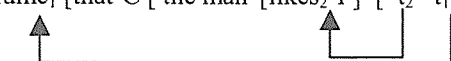
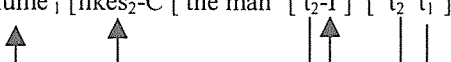
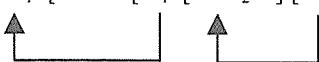
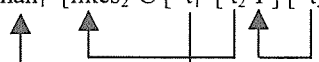
Such asymmetrical displays of complementizers are resulted again from the parametrical variation concerning C and I in these languages. Being affixal in English, C needs to combine with a free word. This may be done by merging the item *that* to C, as illustrated in (23). Further observe (34) where the subject is relativized:



In case no *that* being merged to C, the verb will have to move to C via I in LF, so that C will be combined with a free word, i.e. the verb. But, as is well known, a disparity between subject and object relativization emerges here for English:

- (35) a. \*the man<sub>1</sub> [ C [ t<sub>1</sub> likes the volume]] cf. (34)  
 b. the volume<sub>1</sub> [ C [ the man likes t<sub>1</sub> ]] cf. (23)

The reason is that V-to-C movement will produce two different patterns in (a) and (b) respectively. To see this, compare object relativization in (36), and subject relativization in (37), both being LF representations:

- (36) a. the volume<sub>1</sub> [that-C [ the man [likes<sub>2</sub>-I ] [ t<sub>2</sub> t<sub>1</sub> ]]  
  
 b. the volume<sub>1</sub> [likes<sub>2</sub>-C [ the man [ t<sub>2</sub>-I ] [ t<sub>2</sub> t<sub>1</sub> ]]  
  
 (37) a. the man<sub>1</sub> [that-C [ t<sub>1</sub> [likes<sub>2</sub>-I ] [ t<sub>2</sub> the volume]]  
  
 b. \*the man<sub>1</sub> [likes<sub>2</sub>-C [ t<sub>1</sub> [ t<sub>2</sub>-I ] [ t<sub>2</sub> the volume]]  


The interaction of  $\bar{A}$ -movement and head-movement produces nest movements in (36) and (a) of (37), but cross movements in (b) of (37).<sup>17</sup> Under the Shortest Movement Principle, both (a) and (b) of (36) contain movements of equal distance, so that both are appropriate derivations. In contrast, as cross movement is more costly (Chomsky 1991, 1993), (b) of (37) is ruled out against (a) of (37) with shorter and hence more economic movements.<sup>18</sup>

In Chinese, neither C nor I is affixal and therefore there is no V-to-C/I movement. But depending on whether or not the item *de* is merged to C, the economy of derivation will produce different results.<sup>19</sup> As shown in (26), when *de* is merged to C, IP that contains the constituent to be relativized – object or subject – will move to Spec-CP, rather than the relativized constituent itself moving to this position. But, if there is no *de* merged to C, i.e. C remains null, the economy of aforementioned two types of movement will be reversed. Namely, moving the relativized constituent to Spec-CP will be shorter than moving IP to this position. The reason is that when CP is lexically headed, its Spec and Complement positions are both L-related. Thus, moving an item within a L-related domain constitute a shorter movement than otherwise. But, when CP

is not lexically headed, moving IP to Spec-CP is no longer shorter than movement to Spec-CP from a L-related position. The evidence from Chinese we will see below supports this.

Consider (38) and (39). (a) is before subject relativization, and (b)/(c) after:

- (38) a.  $[_{CP} [_{C'} de-C [_{IP} na-ge \ xihuan \ ta]]]$  (you lai-le).  
           DE       that-CL like   3sg   again come-asp  
       b.  $na-ge_2 [_{CP} [_{IP} t_2 \ xihuan \ ta]_1 [_{C'} de-C \ t_1 ]]]$  (you lai-le).  
           that-CL       like 3sg       DE       again come-asp  
           'the one that likes him (came again)'
- (39) a.  $[_{CP} [_{C'} C [_{IP} na-ge \ xihuan \ ta]]]$  (you lai-le).  
           that-CL like   3sg   again come-asp  
       b.  $*na-ge_2 [_{CP} [_{IP} t_2 \ xihuan \ ta]_1 [_{C'} C \ t_1 ]]]$  (you lai-le).  
           that-CL       like   3sg               again come-asp  
       c.  $[_{IP} t_1 \ xihuan \ ta]_2 [_{CP} na-ge_1 [_{C'} C \ t_2 ]]]$  (you lai-le).  
           like   3sg       that-CL               again come-asp  
           'the one that likes him (came again)'

There are two disparities: between (38b) and (39b), and between (b) and (c) of (39). In the first case, even though the movements are the same, (39b) with a null C is ruled out, but (39b) with *de* merged to C is in. In the second case, though both containing a null C, (39b) is ruled out, but (39c) is in, with a reversed order of movements. Under this reversed order, the item that moves to Spec-CP is no longer IP from a non-L-related position (Complement of CP), but rather the relativized subject, which is L-related. The fact that (39b) is barred but (39c) is allowed supports the economy of derivation we stated earlier.

Now consider (40)-(41):

- (40) a.  $[_{CP} [_{C'} de-C [_{IP} ta \ xihuan \ na-ge]]]$   
           DE               3sg like   that-CL  
       b.  $[_{CP} [_{C'} C [_{IP} ta \ xihuan \ na-ge]]]$   
           3sg like   that-CL
- (41) a.  $na-ge_2 [_{CP} [_{IP} ta \ xihuan \ t_2]_1 [_{C'} de-C \ t_1 ]]]$  See (26)  
           that-CL       3sg like               DE  
           'the one that he likes'  
       b.  $*na-ge_2 [_{CP} [_{IP} ta \ xihuan \ t_2]_1 [_{C'} C \ t_1 ]]]$   
           that-CL       3sg like  
       c.  $*[_{IP} ta \ xihuan \ t_1]_2 [_{CP} na-ge_1 [_{C'} C \ t_2 ]]]$   
           3sg like               that-CL

The situation is comparable to (38)-(39), except that object is extracted. But (41c) is ruled out that would otherwise be grammatical if the subject is extracted (see (39c)).

The reason is predictable. Given the pre-relativization structure in (b) of (38)/(40), the economy plays out on whether subject or object is extracted. All other conditions being equal, object loses out because while subject extraction is to Spec-CP via Spec-VP and then Spec-IP (under the VP-internal Subject Hypothesis), object has to move to Spec-CP in one go, hence more costly (see note 6).

Thus, the economy of derivation has provided a principled account for the asymmetrical displays of lexical complementizers in non-wh relative clauses of both English and Chinese. In brief, in both languages, whether or not a lexical complementizer is displayed has to do with whether such is merged to C. In English, V-to-C/I movement is responsible for ruling out a non-merge in subject relativization, but in Chinese, it is ruled out in object relativization by competing derivations from subject relativization.

## 5. APPOSITIVES AND RELATIVES SHARING A HEAD-NOUN

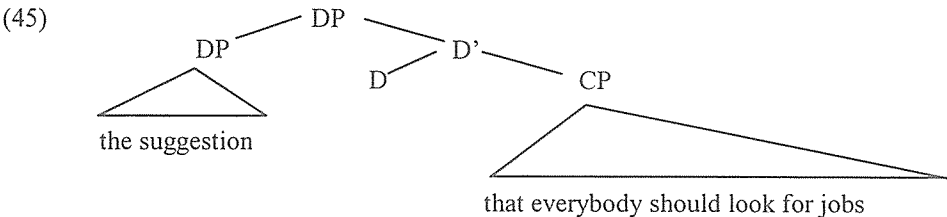
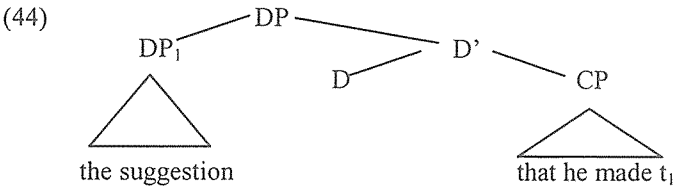
Consider (42)-(43) which are equivalents of each other:

- (42) [*ta ti de*] [*dajia yinggai zhao gongzuo de*] *jianyi*  
       3sg raise DE everyone should find job DE suggestion  
 (43) the suggestion [that he made] [that everybody should look for jobs]

While Chinese dictates the word order of “Relative Clause + Appositive Clause + Head-noun”, English that of “Head-noun + Relative Clause + Appositive Clause”.

A “standard” assumption for English complex NPs used to be that while relatives are adjuncts to the head-noun, appositives are complements (e.g. Emonds 1976, Jackendoff 1977, Radford 1988). The same assumption was adopted for Chinese complex NPs as well (e.g. T-C Tang 1979, A. Li 1990, He 1990, Chiu 1993). The exact problem with this assumption is, however, that it cannot explain such asymmetrical word orders in (42)-(43). In the following, I will demonstrate that these asymmetrical word orders in fact follow our current analysis for relative constructions.

Under current analysis, both a relative and an appositive clause complement a null D, as in:

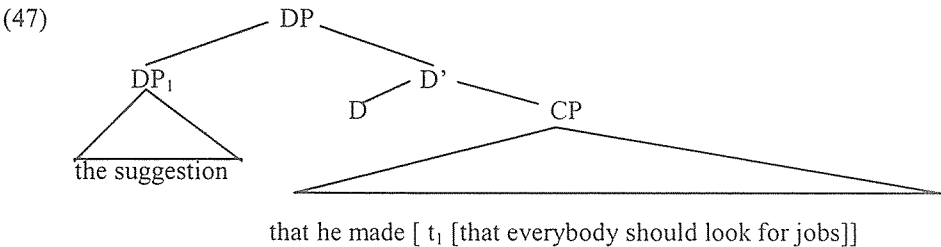


The DP in Spec position is extracted out of the relative clause in (44), but is merged independently into its position in (45).

An appositive construction, such as (45), may serve as an argument of a would-be relative clause:

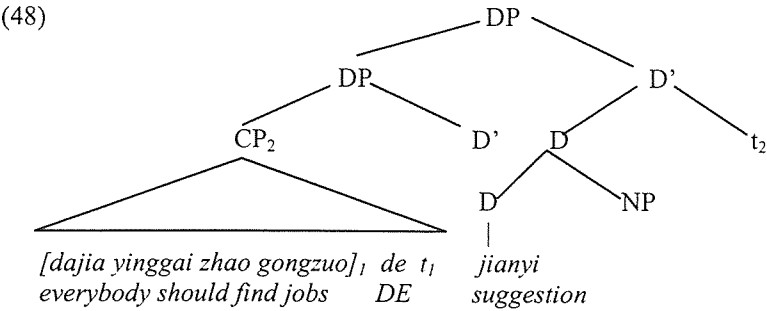
(46) that he made [the suggestion [that everyone should look for jobs]]

Then, the extraction of the head-noun takes place:



(47) thus represents (43) above, showing exactly how an appositive clause and a relative clause appear to share the same head-noun in English.

In (47), the appositive clause is stranded. In contrast, its Chinese equivalent will be pied-piped with the head-noun, as we will see below. Consider the forming of an appositive construction (= Appositive-clause + Head-noun) in Chinese:

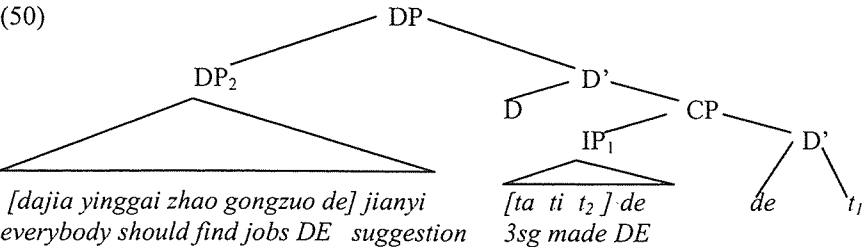


(48) shares the same structure with a relative construction of a bare head-noun in (28). But instead of the head-noun being extracted, it is merged independently to the Spec-DP of the D-CP system in (48). The appositive clause moves to Spec-DP of the head-noun in order to check its null D.

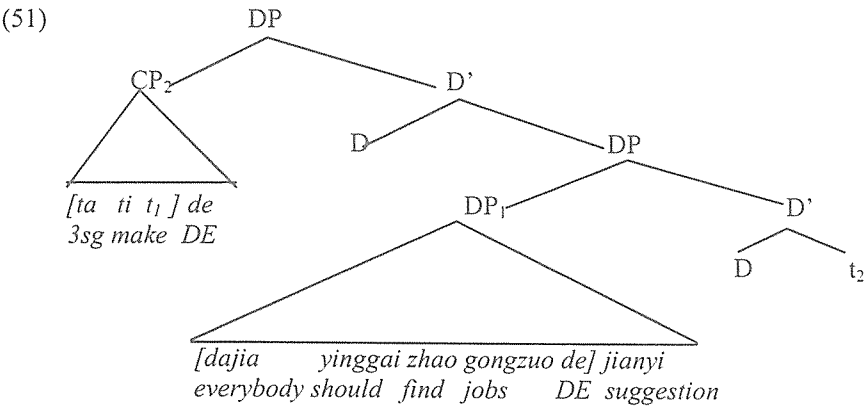
Using the appositive construction in (48) as the object of a would-be relative clause, we have the Chinese equivalent to the English (46) in:

- (49) *ta ti [[dajia yinggai zhao gongzuo de] jianyi] de*  
3sg make [[everybody should find jobs DE] suggestion] DE

To extract the object as head-noun requires the extraction of the whole appositive construction, i.e. pied-piping, in order to arrive at an appropriate derivation:



Then, the relative clause is raised to the front of its head-noun (= the whole appositive construction), as in:



(51) is the same structure as (27), where a null D is drawn from the Lexicon and takes the structure (50) as its complement, forcing the relative clause to move, checking the null D.

Thus, by application of our current analysis of relativization to appositive clauses and to constructions in which an appositive clause and a relative clause share a head-noun, we have successfully explained the asymmetrical word orders displayed by Chinese and English involving these constructions.

Finally, before concluding, further consider:

- (52) a. there came out [the news [that he had resigned]]  
b. [the news]<sub>i</sub> came out [ t<sub>i</sub> [that he had resigned]]  
c. [the news [that he had resigned]]<sub>i</sub> came out t<sub>i</sub>
- (53) a. (you) zhuan-chu-lai [[ta cizhi de] xiaoxi]  
have pass-out-come 3sg resign DE news  
b. \*[xiaoxi]<sub>i</sub> zhuan-chu-lai [[ta cizhi de] t<sub>i</sub> ]  
news pass-out-come 3sg resign DE  
c. [[ta cizhi de] xiaoxi]<sub>i</sub> zhuan-chu-lai t<sub>i</sub>  
3sg resign DE news pass-out-come

(52) and (53) are counterparts to each other, both involving, I take, unaccustive verbs. But, when the Theme argument – an appositive construction – is raised, the appositive clause may be stranded by its head-noun in English, but

has to be pied-piped in Chinese, similar to the contrast we saw between (47) and (50). I do not have an explanation as to why while pied-piping is required in Chinese, it is not in English and leave it for future research.<sup>20</sup>

## 6. CONCLUSION

I have argued in this chapter that Chinese relatives are in fact N-initial, even though they may appear to be N-final. This superficial asymmetry explains why previous attempts to treat them as N-final relatives were not so successful. The crux hard to crack has been how to devise a treatment that derives bare head-noun relatives and those taking a Determiner-Classifier phrase under a unified structure that in turn benefits from the natural language typology of relativization. I have thus argued that a Determiner-Classifier phrase itself acts as head-noun, and that a relative clause with such as head-noun can further modify an independent NP (previously mistaken as a head-noun). By categorizing Chinese relatives this way, we have indeed achieved a uniformed way of deriving Chinese relatives under Kayne's (1994) relative-clause stranding analysis. A direct result of such treatment is that we have also been able to account for previously unresolved word order contrasts in and across Chinese and English such as the asymmetrical displays of lexical complementizers in non-wh relatives, and the contrastive word orders where an appositive clause and a relative clause share a head-noun.

## ACKNOWLEDGMENTS

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## NOTES

<sup>1</sup> In glossing Chinese, “CL” stands for classifier, “asp” for aspect marker, “3sg” for third person singular pronoun, and “DE” for complementizer.

<sup>2</sup> Free relatives are not the concern of this chapter and the reader may refer to Kuroda 1968, Schwartz 1971, Schachter 1973, Grimshaw 1977, Bresnan & Grimshaw 1978, von Bremen 1983 and Radford 1981, 1988 for discussions there.

<sup>3</sup> Two other theories are the “adjunction theory” (Ross 1967) and the “complement theory” (Jackendoff 1977). The former identifies relativization as a complex NP, in which the relative clause is an adjunct to the head-noun NP, and the latter takes the relative clause as a complement to N, the head of the head-noun NP.

<sup>4</sup> Tsai (1994) argues that Chinese wh-words for questions are simply variables (except “*why*”) bound by a null operator. Ning (1993:65ff) identifies the gap in a relative clause as a variable, but left it unspecified whether it is a trace or null relative pronoun. In fact, the structure (15) already predicts the latter. This is because, were the variable a trace, it would have been left behind by an operator-like relative pronoun. But this is impossible, because Binding Condition B (Chomsky 1981) would be violated. In (15), the operator is c-commanded by and co-indexed with the head-noun. As such, the operator has to be in its governing category, i.e. IP, in order to be free as a relative pronoun. But it is not in IP, and hence not a relative pronoun. As a result, the variable is not a trace. Instead, the variable is in IP, where it is free, though c-commanded by and co-indexed with the head-noun. In other words, the variable is a null relative pronoun.

<sup>5</sup> According to Kuroda (1974, 1975-6), Japanese has the so-called internal headed relatives. If they are the same as those in Ancash (Cole & Hermon 1994), then they would fit into the Ni-final relatives of Kanye’s (1994) typology.

<sup>6</sup> In the sense of the Minimal Link Condition of Chomsky (1995), at a given stage of derivation, a longer move from  $\alpha$  to K is barred if there is a shorter move from  $\beta$  to K. “Barred” in the sense that there is no such move.

<sup>7</sup> According to S-W Tang (1998), overt movement is triggered by affix features only.

<sup>8</sup> According to Radford (1997a), languages vary from one another in assigning affixal features to their lexical items. C and v are, for example, affixal in English, but D in the language is not.

<sup>9</sup> Since D is a free word, its checkable features are presumably of the phrasal type (Radford 1997a,b). Thus, the checking is through the Spec-Head relation only. According to Radford (1997a,b), null functional categories are either

affixal or free. Free ones are checked by spec-head configuration, and affixal ones by head adjunction. It is further captured by the Overt Parametrization Hypothesis of S-W Tang (1998) claiming that only affixal features that play a role in computation are subject to parametrization within and across languages.

<sup>10</sup> IP's/NP's are predicates and CP's/DP's arguments (Abney 1987, Stowell 1989).

<sup>11</sup> Chomsky (1993) defines A-positions as L-related,  $\bar{A}$ -positions as not L-related, Spec positions of checking domains as narrowly L-related, and adjoined positions broadly L-related.

<sup>12</sup> In the framework of Chomsky (1995), there is always V-to-v movement, which I am not concerned here. According to S-W Tang (1998), the difference between Chinese and English is that there is only V-to-v movement in Chinese, but this movement may be extended to I in English.

<sup>13</sup> As stated earlier, though moving IP to Spec-CP in English is equal-distant to extracting an argument, the reason for not allowing it is that if IP moves first in English, a costlier move will result later when the extraction takes place.

<sup>14</sup> Bare nouns are referential in Chinese and hence DP's headed by a null D (Cheng & Sybesma 1996, A. Li 1998, 1999; He 2000).

<sup>15</sup> Being arguments, CP's possess D-features (Radford 1997a,b), so that they may check a null D.

<sup>16</sup> The optional presence of a lexical complementizer we see in (33) is not limited to Mandarin. It exists in Cantonese as well as the Wu dialect (He & Wei 1996).

<sup>17</sup> Patterns of cross or nest movements would be clearer with a tree diagram. But I did not use trees in order to save space, since the principle concerning these patterns of movement is already documented in the literature.

<sup>18</sup> It is irrelevant here whether subjects are originated in VP's (under the VP-internal Subject Hypothesis; Kuroda 1988, Sportiche 1988, Koopman & Sportiche 1991 and Huang 1993 amongst others). Since subject-raising from VP (or vp) to IP applies across the board, it would produce movements of equal costs in all derivations, regardless of whether it is crossing or nesting. But, in the case of (37), there is still one more cross movement from IP to CP in (b) than there is in (a). So, (a) is still more economical than (b).

<sup>19</sup> Similar to the sort of local rather than global derivational economy Collins (1997) discussed.

<sup>20</sup> It is speculated in He (1998) that the contrast may be due to agreement and lack of it between English and Chinese. But this needs to be better understood in future researches.

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# ABDUCTIVE REASONING AS PRAGMATIC INFERENCE -- TOWARDS A FORMAL THEORY OF PRAGMATICS

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## ABSTRACT

This chapter explores the nature and range of abductive reasoning in pragmatic inference. The first section reviews logic in pragmatics. The second section introduces the notion of abduction in logic and compares it with deduction and induction. Section 3 discusses the constraining principles of abduction from logical and computational perspectives. Section 4 examines abduction in natural language understanding, with special reference to the LDS<sub>NL</sub>. Section 5 demonstrates the abductive nature of pragmatic principles and pragmatic inference, which are shown to be just special cases of abductive reasoning. Section 6 outlines further issues in the light of probability theory. The last section briefly discusses examples related to Chinese syntax-pragmatics interface that have bearings to the issue of abduction.

## 1. LOGIC IN PRAGMATICS

Ever since Grice (1975), utterance interpretation has been generally understood to be inferential in nature. In the terms of relevance-theoretic

pragmatics, through implicit inferential mechanisms, the hearer derives the explicature, i.e. full propositional content expressed by an utterance, on the basis of the underdetermined semantic content gleaned directly from what is encoded by rules of grammar and the lexicon. Additional inferences yield propositions that are implicated by the utterance as well as the higher-order explicature, i.e. the propositional attitude related to the utterance. Inferences thus made form the content of the study of pragmatic reasoning. Given this general picture, it would seem that the key to the understanding of pragmatic reasoning is the characterization of the relevant types of inference in terms of formal logic. However, works towards this direction have been rather scarce. For the few that have been carried out (mostly within computational linguistics), they are not much known in the circle of linguistic pragmaticians.<sup>1</sup> In the eyes of many, pragmatic inference has often been seen as a subject that defies formal characterizations and is describable only in non-formal, sometimes metaphorical terms. The study of pragmatics, including the study of pragmatic inference, has received much less formalization than formal semantics and syntax.

This lack of formalization (or even a general resistance to formalization) in pragmatics has its roots in claims made by philosophers of language at the "dawn" of pragmatics.<sup>2</sup> Strawson was probably the most insistent in attempting to draw a line between formal logic and the logic of language use:

... [M]any features of the use of ordinary speech which are sufficiently general to deserve consideration under such a title as 'The Logic of Language' are necessarily omitted from consideration under the narrower title 'Formal Logic'.

[The] fluidity in our rules, and [the] impression in the distinctions they involve, are things we must be aware of if we aim at a realistic study of the logic of ordinary speech. But though they make such a study more complicated and less tidy than the study of formal systems, they do not make it impossible.

The most important general lesson to be learnt ... is that simple deductive relationships are not the only kind we have to consider if we wish to understand the logical workings of language. We have to think in many more dimensions than that of entailment and contradiction, and use many tools of analysis besides those which belong to formal logic... [W]e may find ourselves able to frame classifications or disclose differences broad and deep enough to satisfy the strongest appetite for generality. What we shall not find in our results is that character of elegance and system which belongs to the constructions of formal logic.

(Strawson 1952: Chapter 8)<sup>3</sup>

What Strawson meant by *formal logic* was first-order predicate logic, which is capable only of studying the entailment aspects of statement-making sentences. What he conceived of as *the logic of natural language* waiting to be discovered involves not just *entailment-rules* but also *rules of reference* which, according to Strawson, should take account of the contextual aspects of meaning such as reference to person, place and time, as well as the accompanying problem of existential presupposition.

In arguing against the formalist attitude, represented by the Logical Positivists, that attempted to solve all problems in philosophy, including the analysis of meaning and use, in terms of entailment relations[hence verification of truth values], Strawson represented the stance of Ordinary Language Philosophers at Oxford.<sup>4</sup> These two positions are well depicted at the beginning of Grice (1989b) and in Grice (1989c).<sup>5</sup>

In addition to Strawson's study of reference-rules, Austin and Grice also made pioneering studies on language use. Austin (1962), reporting thoughts on speech acts that had been formed in 1939 and delivered as the William James Lectures in 1955, discovered the performative aspect of language with his proposal that distinctions be made on the locution, the illocutionary force, and the perlocutionary effects of an utterance. The illocutionary force cannot be evaluated truth-conditionally, but should be evaluated in terms of felicity conditions, which form a subset of the contextual information of language use, some of which extra-linguistic. Grice (1989) includes his William James Lectures on Logic and Conversation delivered in 1967 that proposed the notion of conversational implicature, together with the Cooperative Principle and the maxims of conversation, all embedded in an integrated theory of the logic of conversation and of language use in general. For Grice, *what is implicated* was to be derived with reference to the Cooperative Principle and the conversational maxims, not with reference to the entailment relations, the latter giving rise only to *what is said*.

To the Ordinary Language Philosophers, then, besides the deductive system of first-order logic, there was some new type of logic for natural language use that went beyond the study of entailment relations and truth-values. This alternative logic was not conceived of as inductive logic either, which had not received much formal treatment at the time. We might loosely term such a logic as the logic of pragmatic inference, or *pragmatic logic* for short.

It is evident that the Ordinary Language Philosophers were not finding fault with logic in general. Otherwise, they would not have proposed the need to study the logic of natural language. What they were against was the use of a system of logic inadequate in its expressive power to cope with the description of the richness of natural language use. This could only be ascribed to the limitations of formal logic at the time.

However, things have greatly changed over the past fifty or so years. Formal logic now is no longer coextensive with first-order predicate logic. So many new logics have been formulated that match the rigours of first-order logic while having much more expressive power. Logic, after all, is the study of human reasoning, the latter being heavily reliant on natural language. Even if formal logic turned out to be inadequate at certain stages of its development, it is always worthwhile for us to check whether it has developed more sophisticated mechanisms that can meet the challenges offered by natural language pragmatics.<sup>6</sup>

With the advent of Montague semantics at the beginning of the seventies, Strawson's reference-rules have received competent characterizations in formal semantics. Now the context-dependent nature of deictic reference to person, place and time can be well represented and interpreted in terms of functions from world-time indices to the extension of the expression, in a higher-order modal logic (Montague 1974). Presuppositions have received varied formal treatments, from classical model-theoretic semantics to current versions of discourse representation theory.<sup>7</sup> Speech acts have also received rigorous treatments in formal logic, notably by Vanderveken (1990, 1991).

However, Grice's theory of conversation, especially the mechanisms of inference from sentence meaning to conversational implicature, has not received a principled formal account. Likewise, only a few works have been carried out on the formalization of relevance theory, being developed as a post-Gricean theory of pragmatics.<sup>8</sup> Much more work needs to be carried out in order to reveal the exact nature of logical inference in pragmatics.

In Section 5 of this chapter, I argue that the essence of pragmatic inference is abductive reasoning, of which Grice's theory and Relevance theory are only special delivery forms. But first, I explain what abduction is.

## 2. ABDUCTION: A GENERAL INTRODUCTION

Logic is understood as the study of valid inference. Inference means forming a conclusion from premises. Differences in the manner of inference distinguish different systems of logic. Most studies identify three modes of inference: *deduction, induction and abduction*. Deduction comes with a host of patterns, which can be conveniently summarized as introduction schemata and elimination ones. Its characteristics is its truth-preserving nature, i.e., given the premises as true, the conclusion will also be true, if the inference is made correctly. But it also has nothing to offer as new — all the conclusions are there in the premises already, even if hidden.

An inductive inference goes from some observed properties of individual facts to a generalization of a larger set or to the whole kind. Its pattern goes like this:

- (1)   a. All observed A's are B's  
      b. Therefore All A's are B's

As the third type, and least studied, *abduction* is a form of inference that starts from some observed consequence and tries to establish its relevant explanation. That is why it is also referred to as inference to the best explanation. Its general pattern is as follows:

- |                                                                   |       |
|-------------------------------------------------------------------|-------|
| (2)   a. C is a collection of data (facts, observations, givens). | C     |
| b. A explains C (would, if true, explain C).                      | A→C   |
| c. <u>No other hypothesis can explain C as well as A does.</u>    | <hr/> |
| d. Therefore, A is probably true.                                 | A     |

In fact, abduction is so powerful that anything bearing some causal relations to the observed phenomenon seems to be abducible, given the pattern of inference. So the question is not what to abduce but rather, what not to abduce, given the large number of candidates for explanation. And the emphasis is on “the best explanation.” In the views of Josephson & Josephson (1994), the judgment of likelihood associated with an abductive conclusion should depend on the following considerations:

- (3)   a. How decisively A surpasses the alternatives.
- b. How good A is by itself, independently of considering the alternatives.
- c. Judgments of the reliability of the data.
- d. How much confidence there is that all plausible explanations have been considered.

Josephson & Josephson (1994) also pointed out that, besides the judgment of its likelihood, willingness to accept the conclusion should depend on:

- (4)   a. Pragmatic considerations, including the costs of being wrong and the benefits of being right.
- b. How strong the need is to come to a conclusion at all, especially considering the possibility of seeking further evidence before deciding.

As shown by many works on the subject, abductive reasoning can be found in many places: in ordinary life, in scientific reasoning, in language understanding, in diagnosis, in detective reasoning, etc. In fact, it has been under continuous study by people interested in doctor's reasoning in diagnosis, which predated many similar investigations in other fields. Here is a simple example taken from Aliseda-Llera (1997).

- (5) *All you know is that the lawn gets wet either when it rains, or when the sprinklers are on.  $[A \vee B \rightarrow C]$  You wake up in the morning and notice that the lawn is wet.  $[C]$  Therefore you hypothesize that it rained during the night or that the sprinklers had been on.  $[A \vee B]$*

In contrast to deduction, induction and abduction can be said to be *truth producing*.<sup>9</sup> The differences among the latter two is that induction tries to generalize but abduction merely tries to provide an explanation to a single case. Both induction and abduction are fallible inferences. But in many circumstances, human reasoning has to search for an immediate conclusion, even at the risk of being proved wrong later, when equipped with more evidence. Utterance understanding is a typical case.

### 3. ABDUCTIVE PRINCIPLES

The notion of a “best explanation” in abduction necessarily involves examining and evaluating contextual factors. But the set of contextual factors vary from application to application, depending on the nature of the topic. So, too, are the screening methods. We sample some abduction cases in logic and computation first, which have provided more rigorous characterizations of possible principles of abduction, with the hope that they would shed light on our study of pragmatic reasoning.

From Aliseda-Llera (1997), we can learn about some logical considerations to constrain the abducibles. According to her, given a theory  $\Theta$  (a set of formulae) and a formula  $\phi$  (an atomic formula),  $\alpha$  is an explanation if

- (6)    a.  $\Theta \cup \alpha \models \phi$   
          b.  $\alpha$  is consistent with  $\Theta$   
          c.  $\alpha$  is 'minimal'

- d.  $\alpha$  has some restricted syntactical form (usually an atomic formula or a conjunction of them)
- e.  $\Theta \models \varphi$

Aliseda-Llera gave an actual example, which has already been quoted in this chapter as (5). In (7),  $R$  = raining,  $W$  = grass is wet,  $S$  = sprinkler on. Other letters do not carry prescribed meaning. It should be noted that what we are interested in here primarily concerns the form, not so much the content.<sup>10</sup>

- (7) a.  $\Theta : R \rightarrow W, S \rightarrow W$
- b.  $\varphi : W$
- c. Inference:  $\Theta, \alpha \models \varphi$
- d. Available  $\alpha$ 's:  
 $R, S, R \wedge S, R \wedge Z, R \wedge \sim W, S \wedge \sim W, W, [C, C \rightarrow W], \Theta \rightarrow W.$
- e. Consistency  
 $\Theta, \alpha$  is consistent.
- f.  $\alpha$ 's reduced:  
 $R, S, R \wedge S, R \wedge Z, W, [C, C \rightarrow W], \Theta \rightarrow W.$
- g. Explanation:  $\Theta \models \varphi, \alpha \models \varphi$   
 $\alpha$ 's reduced:  $R, S, R \wedge S, R \wedge Z, \Theta \rightarrow W.$
- h. Weakest Explanation  
 $\alpha$ 's reduced:  $R, S, \Theta \rightarrow W.$
- i. Non-Trivial Explanation  
Final  $\alpha$ 's:  $R, S$

**Explanation:** *[a, b] are the premises; [c], the goal. [d] is a list of nine abducibles for the value of  $\alpha$ . Applying the principle of consistency [e], we reduce the number of abducibles to seven at [f].  $[R \wedge \sim W]$  is ruled out because, by two applications of  $\wedge$ -Elimination, we can obtain  $\sim W$  as well as  $R$ . But coupling  $\sim W$  with  $[R \rightarrow W]$  in [a], we get  $\sim R$  as a result of contraposition. Joining this  $\sim R$  with the  $R$  obtained from  $[R \wedge \sim W]$ , we have a contradiction. Likewise,  $[S \wedge \sim W]$  is ruled out, as it creates contradiction in connection to  $[S \rightarrow W]$  in [a]. As the value of  $\alpha$  ought to be an explanation [g], i.e.  $\Theta \cup \alpha \models \varphi$ , neither  $\Theta$  nor  $\alpha$  should single-handedly lead to  $\varphi$ . Hence  $W$  is ruled out, so is  $[C, C \rightarrow W]$ , each being self-sufficient in yielding  $\varphi$  just by the mere fact of its presence, hence not an explanation. Thus we have five abducibles left. By the principle of minimal explanation [h], we rule out  $[R \wedge S]$  and  $[R \wedge Z]$ , since a*

*single  $R$  or  $S$  can already yield  $W$  when combined with the relevant premise in  $[a]$ , through a step of  $\rightarrow$ -Elimination. Now there are three remaining abducibles. But  $[\Theta \rightarrow W]$  is not substantive. It simply says that given the premises in  $\Theta$ ,  $W$  will obtain. So finally at  $[i]$ , we conclude with just two abducibles.*

We can see here that given some general principles from a logical point of view, only two abducibles survive out of nine candidates. If a specific logical system is under consideration, theory-internal reasons can make suggestions on more constraining principles of abduction. That is exactly what is happening in the study of abduction in labelled deductive systems (henceforth LDS).<sup>11</sup>

Gabbay (1991) made important observations on abduction from the point of view of LDS and logic for computation:

- (8) a. Abduction depends on proof procedures.
- b. Abductive principles can be part of the data. In other words, a declarative item of data can be either a formula or a principle of abduction.
- c. An inductive principle is a special case of abductive principle which learns a rule  $A \rightarrow B$  as opposed to a fact. Mathematically, there is no difference.

(9) is an example provided in Gabbay (1991):

|     |                           |       |
|-----|---------------------------|-------|
| (9) | Data                      | Query |
| a.  | $D \leftarrow I \wedge T$ | ?D    |
| b.  | $I \leftarrow L$          |       |
| c.  | $T \leftarrow L \wedge S$ |       |
| d.  | $T \leftarrow O \wedge P$ |       |
| e.  | $L$                       |       |

**Explanation:** For the query ?D, we can list several possible abductive principles, which will determine the form of computation, which adopts the style of Prolog, where the pointer always starts at the top clause. One possible principle can be (i) Abduce on anything as soon as needed. This would impose no integrity constraints and every literal is abducible, e.g. at ?D, abduce  $D$ .<sup>12</sup> The second alternative can be (ii) Abduce on literals which are not heads of (Horn) clauses. Although abducting  $I$  and  $T$  will provide the direct consequence of  $[I \wedge T]$  by  $\wedge$ -Introduction which, when

*coupled with [a], will yield D by  $\rightarrow$ -Elimination, I and T cannot be abducted because both are heads. So we try to obtain them by deduction. As L is given as a fact at [e], by coupling it with [b], we can obtain I by  $\rightarrow$ -Elimination.<sup>13</sup> Now we still need T to obtain D, but T cannot be abducted either. To obtain T, we can abduce S which, as a non-head abducible, is the first literal encountered in the top down order of execution.<sup>14</sup> Then we have  $[L \wedge S]$  by  $\wedge$ -Introduction which, coupling with [c], yields T by  $\rightarrow$ -Elimination. Here the structure of the database determines what we add. If, as a third possibility (iii), we adopt some resource logic instead of classical logic, then we cannot add S to the database because that would require using L twice to yield D. Then we have to abduce O and P respectively so as to produce  $[O \wedge P]$  which, coupling with [d], can also yield T. Introducing other constraints will bring forth further changes.*

#### 4. ABDUCTION IN LINGUISTIC STUDIES: LDS<sub>NL</sub>

Gabbay's remarks on abduction, especially (8a,b), provided theoretical grounds for the development of a new theory of language: Labelled Deductive Systems for Natural Language Understanding, shortened as LDS<sub>NL</sub>, with Kempson, Meyer-Viol and Gabbay (2001) as the most recent version.<sup>15</sup> This is no place to give a thorough introduction to the theory. What we are interested in is some claims in the theory that makes direct reference to abductive reasoning.

Very briefly, LDS<sub>NL</sub> has the following major assumptions and features:

- (10) a. Taking the assumption of underdeterminacy and context-dependence of natural language understanding,
- b. Taking a parsing as deduction stance, embedded in an LDS-based, proof-theoretic framework,
- c. Adopting a procedural perspective in modeling the process of language understanding, including structure-building and utterance interpretation.

LDS<sub>NL</sub> makes explicit use of the notion of abduction, which is divided into two kinds: abduction on structure and abduction on databases. Structural abduction makes use of the idea that abduction principles are data. To use the words of Kempson et al. (2001), "Structural properties of natural language

expressions are not to be given in terms of a single fixed structure defined over a string. To the contrary, syntactic phenomena are explained in terms of a sequence of transitions from some very weak initial specification (matching what is taken to be the parser's starting point in the interpretation process) to a tree structure establishing a propositional interpretation, using the individual update specifications provided by the words in sequence. The syntactic analysis of a string thus involves the concept of growth across increasingly rich tree structures." Thus structural abduction includes both the standard syntactic concerns of structure building as well as recent pragmatic concerns of establishing explicature through pragmatic enrichment. In order to establish a propositional interpretation through enrichment, a powerful mechanism called *the choice function* is employed and frequently resorted to in the theory. The second type, abduction on databases, exemplified by the study of Gabbay et al. (1994), is concerned with calculating extra propositions, given the proposition initially carried by the sentence. Thus pragmatic inferences for presupposition, implicature, and propositional attitudes would fall into this type of abduction, even though only implicature-calculation was attempted in Gabbay et al. (1994). This type of abduction makes heavy use of two theoretical constructs: the Rule of Relevant Assumptions (RRA) and computational formalisms on queries and answers. RRA is a formalized statement of a simplified version of the principle of relevance in relevance theory (Sperber & Wilson 1986/1995). Queries and answers have no direct linguistic relevance but are formulated in procedural terms, in the general spirit of LDS<sub>NL</sub>.

So LDS<sub>NL</sub> takes the principle of relevance as a principle of abduction for abduction on databases. In fact, even for structural abduction, relevance is already playing an important role, because the choice function does not act purely on the basis of the structure of the data. Especially, if the structure allows more than one option, the modeling of on-line interpretation makes an implicit use of relevance in reaching a definite choice. Examples are anaphora resolution, representation of scope, interpretation of elliptical structures, etc. In the case of structure building, relevance can be left out from the standpoint of many syntactic theories. After all, it is trivial to try to make a unique choice beyond the constraints of the structure. However, if structure building is carried out simultaneously with semantic representation and utterance interpretation (as in LDS<sub>NL</sub>), explicit choices have to be made. Otherwise, without the explicit assignment of values, the procedure of utterance interpretation will halt. That accounts for why relevance has to be assumed even in structural abduction.

Summing up, LDS<sub>NL</sub> builds up a theory of language addressing syntax, semantics, pragmatics, parsing and computation at one go, making use of the notion of structural abduction and database abduction. Thus abduction in language understanding acquires its unique features. The theory also presupposes

the principle of relevance as a principle of abduction in language understanding. However, although  $LDS_{NL}$  presents a formalized statement of the principle of relevance, it has not yet presented formalizations on the processes modeling the principle at work. That means  $LDS_{NL}$  simply takes the principle for granted. Before exploring possible extension works in Section 6, I want first to examine the relationship between abductive reasoning and the informal mechanisms of Grice's theory of conversation and relevance theory.

## 5. PRAGMATIC INFERENCE AS ABDUCTIVE REASONING

Grice's conversational implicatures are derived from the Cooperative Principle (CP) and the maxims of conversation, i.e. from the hearer's realization of whether a maxim is being adhered to or violated while assuming that the CP is being observed. But that is still not sufficient enough to guarantee the derivation of implicatures. Grice made that up by proposing the following procedure of inference:

- (11) a. The speaker S has said the proposition p [that violates a certain maxim].
- b. There is no reason to believe that S is not obeying the CP.
- c. S could not be co-operative unless he believes q.
- d. S and H mutually believe that q is required for co-operation.
- e. S had done nothing to suggest  $\sim q$  to H.
- f. S therefore intends H to believe q.
- g. p has implicated q in this context.

At this stage of our discussion, it is easy to see that (11) bears a lot of similarities to abductive inference. I now try to rephrase the above inferential procedure in abductive terms.<sup>16</sup> In doing so, we will certainly run the risk of deviating from Grice's original conception of the nature of the CP and the maxims of conversation.

- (12) a. The goal: Given the background  $\theta$  relative to the speaker s and the hearer h, written as  $\theta_{s,h}$ , as well as the utterance p of s, written as  $p_s$ , abduce  $\alpha$  in the formula  $\Theta \cup \alpha \models \varphi$ , in which the value of  $\Theta$  is  $\theta_{s,h}$ , and the value of  $\varphi$  is  $p_s$ . The goal is fulfilled if a proposition, say q, is abduced, so that  $\alpha = q$ .

- b. Principle One: CP and the maxims. Both the CP and the maxims of conversation can be viewed as principles of abduction. Maxim-violation in conjunction with the belief that CP is observed not only motivates the abduction goal but also constrains the range of the value for  $\alpha$ . Moreover, the value of  $\alpha$  is also likely to be further subject to the constraints of the maxims. That is to say, if p violates one or more maxims and if the belief is that the CP is still observed, then we may derive the implicature q, which may still be under the constraints of the maxims.
- c. Principle Two: Consistency. S had done nothing to suggest  $\sim q$  to h.
- d. Principle Three: Mutual Belief of q. The value of  $\alpha$  should be a member of the common ground of s and h.

Much of (12b) is my elaboration of Grice's ideas and deserves further clarifications. CP and the maxims not only activate abduction but also constrain the range of abducibles. So they can be taken as a principle of abduction in verbal communication, based on Grice's theory of conversation. Take the familiar example of speaker A saying "Mrs. X is an old bag" and speaker B replying "The weather today is horrible indeed." B's utterance violates the maxim of relevance and carries the implicature "Let us change the topic" (or its likes, e.g. I don't want to talk about this/ I find this remark offending/ I wish you had not said such a thing/Watch your mouth, Mrs.X's friend is there listening, etc). This implicature is inferred with the assumption that B was observing the CP. It won't do to abduce an implicature "I was beyond myself and don't know what I said", because that would entail that B did not observe the CP. It won't do either to abduce an implicature like "Let's talk more about this topic" because this proposition q (not the original p) would violate the maxim of relevance and possibly also the maxim of truthfulness. The third possibility is to abduce an implicature which is a paraphrase of p, e.g. q = "The weather is very bad today." Unless p violates the manner maxim, this q is not acceptable because it is no more informative than p and is hence equally irrelevant. But think of a fourth possibility. Can we abduce the implicature q that "Mr. A is on very bad terms with Mrs.X?" Given the particular situation containing the remarks of speakers A and B, this implicature ought to be derivable as well, since it is informative, very likely to be true, relevant to speaker A's utterance and, like the q originally attributed by Grice to speaker B's utterance, does not have to bear any resemblance to p in logical form. But most listeners would rule out this possibility by intuition. This seems to show that the abductive principles formulated out of Grice's informal inferential mechanism are still too weak, i.e., they are not constraining enough.<sup>17</sup> This shortcoming is avoided in relevance

theory, because for the latter, to derive such an implicature would cost too much processing effort for no justifiable contextual effect, hence less relevant. The three principles in (12) cannot cover one more possibility, that is, why it is usually not possible for a hearer to derive more than one implicature from B's utterance at once and entertain all of them in her mind, either in a list form or a multiply conjoined form. Empirical evidence shows that we do not usually do this in instantaneous verbal communication. Relevance theory noted this fact by stating that the first relevant enough interpretation that comes to the mind of a hearer is the only interpretation she gets. She needs to look no further for other possible interpretations. It seems to show that the principle of minimality, presented above in Section 3 as (6c), is also at work here.

By now, we can see that besides the CP and the maxims, there is nothing special to Grice's account of pragmatic inference, once we realize that it involves abductive reasoning of a most general kind. But the CP and the maxims themselves cannot be taken as the heart of pragmatic reasoning, providing justifications for the independence of the latter. Instead, they are no more than particular abductive principles. In fact, there are theories that do not make use of these two constructs.<sup>18</sup> In the current literature of relevance theoretic pragmatics, pragmatic reasoning is seen to be governed by the search for optimal relevance. At the heart of Relevance Theory is the principle of relevance, which is given below:

- (13) *The First Principle of Relevance*: Human cognition tends to be geared to the maximization of relevance.

*The Second Principle of Relevance*: Every act of ostensive communication communicates a presumption of its own optimal relevance.

*Presumption of optimal relevance*:

- a. The set of assumptions *I* which the communicator intends to make manifest to the addressee is relevant enough to make it worth the addressee's while to process the ostensive stimulus;
- b. The ostensive stimulus is the most relevant one the communicator could have used to communicate *I*.

We now try to decompose the inferential mechanism of the theory.

- (14) As a theory of cognition  
Establish the relevance of a stimulus by
- a. Searching for maximal cognitive effects while
  - b. Minimizing cognitive efforts

- (15) As a theory of verbal communication  
 Establish the relevance of an utterance by
- a. Searching for maximal contextual effects that can be justifiably communicated by the speaker while
  - b. Minimizing processing efforts.

The combined force of the second principle of relevance and the details of the presumption of optimal relevance would also bring forth

- c. Minimality of interpretation, i.e. as soon as the hearer obtains an interpretation that achieves some degree of relevance, she needs to look no further.

The definition of contextual effects and their manners of derivation in Sperber & Wilson (1986/1995) will also ensure

- d. Consistency (in the sense discussed in (6) and (7)).

What we can see from the above details is that the kind of logical inference in relevance theory involves abduction as well as deduction. Especially, the heart of the principle of relevance is abductive reasoning. The principle of relevance implies a host of principles of abduction for cognition and communication. In spirit, it is on accord with all the general features of abductive principles formulated for logic, computation and everyday explanation.<sup>19</sup>

Two points reached at this stage are:

- (16) a. There is nothing mysterious about pragmatic inference. It is just abductive inference. There is no need to search for a logic of language use.
- b. Both in Grice's theory of conversation and in relevance-theoretic pragmatics, the governing principles are by nature principles of abduction as applied to verbal communication.

The above conclusions, if correct, will certainly not tarnish the great contributions made by Grice's theory and relevance theory. These two theories can be viewed as having proposed the first principles of abduction in language use. What I hope to reveal is the abductive nature of such principles and of pragmatic inference in general so that pragmaticians will realize that progress made in the study of general abductive theory is always likely to shed some light

on our understanding of pragmatic inference. It is time we paid serious attention to developments in this area.

## 6. ABDUCTION AND PROBABILITY

From the above discussions, we can see that abductive principles can take various forms to suit tasks of different nature. While sharing the general nature of abductive inference, their content depends on the nature (including the structures) of the data, factors affecting the choices on the data, and the goal of the human subject in performing the inference. Each type of abductive principle needs to be spelt out as precisely as possible, so should each individual principle. The pragmatic principles proposed in the current literature are certainly not the ultimate truth. They are subject to empirical tests, revisions and expansions. We can examine more pragmatic phenomena to see whether there are cases that falsify a theory. We should explore means to quantify over pragmatic processes, so that terms such as contextual effect and processing effort can be captured more precisely, even if the two concepts are relative in nature and exact quantification may often be overridden by other psychological factors.<sup>20</sup> We should always endeavour to present the principles in formal terms so that logical implications can be revealed and computational implementation and simulation can be developed. In these respects, especially the latter two, abductive principles for language use have certainly not been studied thorough enough.

We have also seen, from discussions in the previous sections, that abduction in linguistic studies does not only concern inference over propositional meaning. It also concerns inference over structural properties of a sentence. In fact, there are studies on phonetic, morphological, and graphic recognition from an abductive point of view.<sup>21</sup> This again shows that principles of abduction for linguistic studies can be data-dependent, structure-dependent, and object-oriented. There are no uniform abductive principles for linguistic studies but principles that are layered, in the sense of Fox (1992), in which one abductive conclusion is made at the lower linguistic level and passed up to the next level, and so on until the final conclusion is reached.

The question, then, is how to formulate the details of abductive principles in formal as well as quantitatively informative terms. Initial answers have been provided by works such as Hobbs et al. (1993) and Merin (1999). Both refer to probability theory as a promising provider of techniques to deal with abductive/pragmatic inference. In fact, probability theory has been widely applied to the study of abduction in computing (e.g. Lin, 1992), in natural language processing (e.g. Jurafsky & Martin, 2000), and in philosophical studies

of conditionals (e.g. Sanford, 1992). Probability provides ways to quantify amounts of information related to the establishment of the interpretation. It is also computable as well as highly formal. What would be crucial here is the inclusion of relevant variables and the determining factors, before composing axioms related to types of abduction. A full-fledged theory thus designed is expected to provide cogent means to calculate the weight and the cost of language understanding, or the contextual effects and the processing costs. It should also be able to provide procedural guidance to language understanding. This would require the use of relative and compound probability calculus. Thus, as structure-building goes on, probability values for certain results are adjusted on-line. The same goes for database abduction. The ultimate goal is that for each structure and each possible interpretation, we can figure out the relevant factors and how each factor influences the probability value of a certain interpretation, in the dynamic process of utterance interpretation. Existing works have not been able to meet these aims. Hobbs et al. (1993) only lightly touches the subject, whereas Merin (1999) is mainly concerned with formalizing Carnap's concept of relevance in terms of decision semantics. More detailed discussion on prototypes as well as critiques of initial literature in this direction will have to wait for another occasion, since it requires a fair amount of preparatory knowledge.<sup>22</sup> But already, we can see ways to develop a formal theory of pragmatics that exploits the insights of  $LDS_{NL}$  and relevance theory while providing more computable details.<sup>23</sup>

A related question is the division of labour in linguistics. Matters of abduction are closely related to pragmatic inference. Whether it is related to structure abduction or abduction over propositions, we are in the realm of context-dependent interpretation. The exceptions are abductions in speech and graphic recognition, which are not meaning-related. However, the use of pragmatic inference in structural abduction should not bring up the debate on the autonomy of syntax. Pragmatic inference as abduction over structure is called for only when we are dealing with simulations of on-line utterance understanding, as a parsing-as-deduction or interpretation-as-abduction process, as a consequence of the underdeterminacy of logical forms of syntax. To my understanding, pure structural investigations, not involving definite choice over available interpretations all in conformity with syntactic analysis, can still stand alone as syntax proper. Of course, it leads to the question of what syntax should be, which depends on the ontological assumptions on the nature of language structure and language processes of individual theories.

## 7. RELEVANCE TO THE ANALYSIS OF CHINESE

The discussions in the above section should help clarify some important representational and interpretive problems in Chinese pertaining to the interactions between syntax and pragmatics, which are often subject to heated debates in Chinese linguistics. I want to present a series of cases that involve the interface between syntax and pragmatics. They call for more detailed descriptive and explanatory mechanisms which, I believe, can be designed using probability calculus for abductive reasoning.

### 7.1. Interpretation of Indefinite NPs

Indefinite NPs in Chinese has the usual form of “一個 + N” and can have various readings with no morphological distinctions: attributive [(17) - (19)], specific [(20) - (22)], non-specific [(23) - (24)], generic [(25) - (26)], arbitrary [(27) - (28)], existential [(29) - (30)], anaphoric [(31)], universal [(32) - (35)], numeric [(36)] and identifiable [(37) - (39)]. Jiang, Pan and Zou (1997) gave formalized definitions to each of the readings. But they did not address the dynamic process of interpretation, which can lead to particular readings. Such a process needs to abduce the reading which is available in a particular utterance, given the contextual information, the structural positions of the NP, the semantic nature of the structures, and the probability calculus which computes the likelihood of an interpretation on the basis of the accumulated information.

- (17) 一個禁錮科學自由的國家一定會滅亡。
- (18) 一個基礎厚實，又正在重振雄風的大城市確實是格外引人注目的。
- (19) 據現場勘查，一個身材較小、會撬門鎖、熟悉公司業務情況、懂得電腦解密技術的人昨天晚上潛入辦公室盜走了公司的絕密數據。
- (20) 一個同事給我送來了剛發表的文章。
- (21) 昨天一個學生來找你，我也沒問他的姓名，反正我叫他明天再來。
- (22) 上午我去市場買了條桂花魚。
- (23) 張三想讓人給他介紹個女朋友。
- (24) 下午你下班後去市場買條桂花魚。
- (25) 一輛的士最多只能坐五個人，我們還是分開去吧。
- (26) 一天只有 24 小時，我就是不吃不睡也干不完你派的活！

- (27) 如果一個人中了六合彩，他就可以一輩子不工作了。
- (28) 一個人長年在外，免不了思念家鄉，常常把平淡的往事也當成了美好的記憶。
- (29) 多年以前，一位有大智慧的長老出了一道難題，到現在還沒人解得出來。
- (30) 小小一間麻屋子，裡邊掛著紅帳子。麻屋子，紅帳子，裡邊睡個白胖子。
- (31) 這兩個強盜，一個身高馬大，一個骨瘦如柴。
- (32) 錦瑟無端五十弦，一弦一柱思華年。
- (33) 你的稿費是一個字兩分錢。
- (34) 這種窗簾布七十塊一米，包窗軌和安裝，但不包花邊。你要存心買可以再便宜一點。
- (35) 一個人有一個人的命運。
- (36) 一個人去可能不行，三個人都去又怕驚動別人，兩個人去正好。
- (37) 一個外國人，不遠萬里，來到中國。
- (38) (我)一個有家有小的人，當然知道錢的重要性啦。
- (39) 一個博導教授，竟然還說出這麼沒有水平的話，簡直讓人無法相信。

## 7.2. Ambiguity in Quantification

Similar processes apply to interpretation of dependency relations in multiply-quantified structures in utterance understanding. Specifically, which reading is chosen in which context.<sup>24</sup> Here are some basic examples:

- (40) 兩個老師改了六份考卷。
- a. 'Each of the two teachers marked six different scripts. So twelve scripts were marked by two teachers in all.'

- b. 'Two teachers marked six scripts together. E.g. One teacher went through all the scripts. Then the other one went through them again. Or they looked at each page together. Or they were each responsible for certain parts of each script.'
- c. 'Altogether, six scripts were marked by two teachers. One teacher marked five scripts. The other only marked one. [Or other conceivable combinations.]'

### 7.3. 都-Quantification

Abduction over utterances containing 都, an adverb of quantification, involves making a choice on the target of 都 and determining the presupposition carried by the utterance<sup>25</sup>:

- (41) 他們在夏威夷海邊都留了影。[都 ⇒ 他們; 都 ⇒ 夏威夷海邊]
- (42) 小李都買呢子的衣服。[都 ⇒ 小李在某時段買的衣服]
- (43) 你都喜歡吃什麼？[都 ⇒ 你喜歡吃的(不止一種的)東西]
- (44) 你都搬不動，我更不行了。[都 = 連……都, presupposition: '你是最可能搬動這件東西的']

### 7.4. Conditionals

Abduction over conditionals in Chinese involves examining non-distinct linguistic forms for factual or counterfactual interpretations<sup>26</sup>:

- (45) 如果巴治奧踢進了那個點球，義大利隊就可以進入半決賽。  
 違實解：在點球踢飛之後講這句話。  
 事實解：在罰點球之前講這句話。  
 他要是能當博導，我就能當美國總統。[違實解]  
 我們在院子裏下棋。如果晚飯弄好了，就叫我們一聲。[事實解]  
 操辦此事的高德公司總經理劉宏偉事成之後戲稱，這次兩位國腳轉

會成功純屬巧合，他表示，如果沒有去年十強賽前到英國去集訓，如果沒有巴克斯頓到中國當國家隊顧問，如果現在國家隊的主教練不是霍頓，如果不是駐倫敦分公司這幾年在英國足球圈內良好的信譽，轉會就不可能成功。[違實解]

Examining the above phenomena in Chinese does not provide much support to the alleged uniqueness of Chinese, which has too often been over-emphasized without carrying much substance. No language can afford to assign interpretations to distinct linguistic forms. Hence all languages involve abduction over structures to establish particular representations of meaning. The more we spell out the details in this direction, the more we can see the interaction among syntax, semantics, and pragmatics in a language as well as its real difference from other languages.

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## NOTES

<sup>1</sup> Cf. Bunt (1995) for a brief overview.

<sup>2</sup> Kasher (1998) used this term to title the first part of the mammoth collection of pragmatic works he edited. This first part includes works published in the 1940s and 50s. Here, I extend this term to apply to theories or ideas formed from late 1930s to the end of 1960s, some of which being published in later years.

<sup>3</sup> See also Strawson (1974).

<sup>4</sup> Others include John Austin, Paul Grice, Gilbert Ryle, J.O. Urmson, and G. J. Warnock.

<sup>5</sup> See also Turner (1999b).

<sup>6</sup> Cf. Gabbay (1994), in which he made the strong claim “I am a system of logic”, meaning that he as an applied logician could try to create any formal systems of logic to suit the needs of other disciplines, so long as the facts and the needs were spelt out to him.

<sup>7</sup> Notably, Gadzdar (1981), Beaver (1995), Geurts (1999) and Kadmon (2000).

<sup>8</sup> Notably Poznanski (1990) and Gabbay et al.(1994). It needs to be pointed out, however, that relevance theory is as much a theory of cognition as a theory of verbal communication.

<sup>9</sup> Originally used by Josephson & Josephson (1994).

<sup>10</sup> Slightly revised, explanation mine.

<sup>11</sup> This chapter presumes some knowledge of Labelled Deductive Systems, as thoroughly formulated in Gabbay (1996).

<sup>12</sup> A literal is an atomic formula or the negation of an atomic formula.

<sup>13</sup> Facts are Horn clauses without a right-hand side.

<sup>14</sup> L is already given as a fact, hence not an abducible.

<sup>15</sup> Kempson (1996) is an introduction to an earlier version of the theory.

<sup>16</sup> While it is possible to formulate the content in (12) in a formalized language containing belief predicates and quantification over propositional variables, to present such a language in detail would be rather side-tracking for the exposition of the main theme of this chapter. Hence I only use informal terms in (12).

<sup>17</sup> Wilson and Sperber (1981) also queried the adequacy of Grice's inferential mechanism when it comes to the processing of figures of speech such as metaphor, irony, and so on. To quote: “Given that there are figures based on contradiction and comparison, for example, why not also a figure based on reversal of subject and object roles, so that where Peter loves Mary is patently false it is taken as implicating Mary loves Peter? There is a vast range of similar logical relationships among propositions which are never called on in the

interpretation of utterances. This strongly suggests that it is not logical factors alone, but also other psychological factors, that govern our perception of relationships among propositions. Certain such relationships spring immediately to mind, while others, just as obvious from the logical point of view, are simply never noticed.” As an alternative, Wilson and Sperber advocated the theory of relevance. From our point of view, these “other psychological factors” are abductive principles which our minds unconsciously follow in thinking and communication.

<sup>18</sup> In fact, proponents of relevance theory believe that neither the CP nor the maxims are correct.

<sup>19</sup> Bach (1997) found fault with relevance theory by saying that “... relevance theory seems to assume that in the context of communication everyone is an applied relevance theorist. That is, people are supposed to gear their utterances to their listeners' inherent propensity to discover maximal contextual effects at a minimum of processing cost.” In the light of our present discussion, there is nothing wrong about that. If the theory had a lot of idiosyncrasies that were not externally justifiable, then Bach's remarks would have stung.

<sup>20</sup> Instead of providing evidence for the claim that quantification is not important in pragmatic reasoning, this only shows the complexity of the issue, calling for studies on how exact measurements are subject to other factors in language use.

<sup>21</sup> Cf. Fox (1992) and Josephson & Josephson (1994).

<sup>22</sup> Cf. also Thomason (1997) for pointing out new logical methods that provide treatments to issues related to our concerns here.

<sup>23</sup> Merin (1999) documents some general suspicion to the use of probability theory for characterizing pragmatic inference and tries to dispel such doubts.

<sup>24</sup> Cf. Jiang (1998a, b) and 蔣嚴、潘海華 (1998) for discussions on more controversial examples.

<sup>25</sup> Cf. 蔣嚴 (1998) for details.

<sup>26</sup> Cf. 蔣嚴、潘海華 (1998) and 蔣嚴 (2000) for details.

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THE 'DERESULTATIVE' AND 'NO LONGER IN  
A STATE OF X': ON THE TYPOLOGICAL  
STATUS OF *-GUO* IN CONTRASTIVE  
ASPECTOLOGY

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ABSTRACT

This chapter shows that the ‘experiential’ function of *-guo* in Mandarin Chinese (Li and Thompson 1981, Iljic 1990, Smith 1991, Yue-Hashimoto 1993, Yeh 1996) is only one of the three attested partial functions of this aspect marker. Which of these partial functions prevails in a particular linguistic context depends primarily on verb semantics, subject to the influence of other aspect-sensitive sentence constituents present, for example, adverbials and theme-rheme structure. The three partial functions of *-guo* are:

| Verb semantics (with <i>-guo</i> ) | Partial function            |
|------------------------------------|-----------------------------|
| Actional meaning                   | ‘Experiential’              |
| Resultative meaning                | ‘Deresultative’             |
| Stative meaning X                  | ‘No longer in a state of X’ |

Comparison and contrast with other languages such as Russian, German and French have shown that, cross-linguistically speaking, *-guo* does not behave like a typical perfective marker for two main reasons: (a) *-guo* is not used in discourse to carry the narration forward (neither is *-le*), and (b) *-guo* does not figure in what Pollak (1988) calls ‘the incidence schema’. Instead, there is room to argue that *-guo* behaves more like an ‘imperfective’ marker

(cf. Man's 1999 study of Cantonese *-gwo3*). In order to better understand the local functions of individual aspect markers, it is argued that the research focus of *-guo* and its cognates in other Chinese varieties should not be limited to 'aspectual antonymy', as is customary in current research, but should be expanded to include 'aspectual synonymy' supported by fine-grained contextual analysis (Maslov 1974).

## 1. INTRODUCTION

In her comparative Chinese dialectal grammar, Yue-Hashimoto (1993) points out that "[t]he marker for the experiential aspect seems to be the most uniform among the dialects, all of which use some form of the suffix 過" (p. 72). The function of the marker *-guo* in Mandarin (and its cognate *-gwo3* in Cantonese) has been traditionally analyzed as 'indefinite past' (Chao 1968) or 'experiential aspect' (Li and Thompson 1981). This 'basic' meaning was arrived at out of the observation that when suffixed to activity verbs (Vendler 1967) such as *hok6* ('learn') and *sik6* ('eat'), *-guo* may be glossed as 'having the experience of X' where X denotes the verbal meaning as expressed in the clause, with the additional implication 'at least once', as is shown in (1) and (2) below:

- (1) 我 吃過 日本菜  
*wo chi-guo riben cai*  
 I eat-GUO Japanese cuisine  
 'I have eaten Japanese food before.'
- (2) 我 學過 柔道  
*wo xue-guo roudao*  
 I learn-GUO judo  
 'I have learned judo before.'

Research in general has shown that the proper use of *-guo* is subject to a number of constraints, namely, (a) despite being analyzed as a perfective marker (e.g., Smith 1991, Yeh 1996), *-guo* is not used to mark a sequence of events in a narration (Li and Thompson 1981), (b) there is 'discontinuity' between the situation and the point of reference, the latter usually coincides with the moment of speaking (Iljic 1990, cf. Chao 1968, Smith 1991, Yeh 1996), although there is as yet no consensus whether discontinuity is inherent to the function of *-guo* (Smith 1991) or is best analyzed as an inference (Iljic 1990, Yeh 1996), (c) *-guo* marks a class or type of event rather than an individual or specific one (Chao 1968, Iljic 1990, Yeh 1996), and (d) *-guo* tends to be incompatible with non-repeatable situations, hence the putative semantic constraint bearing on verbs suffixed by *-guo*: 'recurrence' (Ma

1977, Yeh 1996). With the exception of (a), all the other constraints have been called into question by at least one scholar. In addition, even the term 'experiential' and the traditional status of *-guo* as an aspectual marker have been challenged by Iljic (1990) and Yeh (1996), respectively. All this gives the impression that there is at present little consensus regarding how best to characterize the linguistic function of this verbal suffix.

Iljic (1990) raises doubts about the appropriacy of the term 'experiential' which he finds misleading, in that it does not reflect the primary linguistic function (or 'operation' according to the enunciative theory pioneered by Antoine Culioli, 1982, at Université Paris VII) of *-guo*. Iljic illustrates his point with an instructive question: *Ta xie-guo shenme?*, which "does not focus on the 'experiences' of the subject, but is a simple request for a listing of the works of the person in question, that is, a listing of the past events which satisfy the formula <he-write-something>" (Iljic 1990: 318).

Yeh (1996) gives a unified account of *-guo*, not as an aspectual marker, but as a 'temporal quantifier' analyzed within the framework of Discourse Representation Theory, on the grounds that there are common properties shared by *-guo* and other temporal quantifiers, especially Q-adverbs (quantifying adverbs) such as *sometimes*, *usually* and *always*. In Yeh's view, analysing *-guo* as a temporal quantifier "unifies the properties of a *guo<sub>EXP</sub>*-sentence" (p. 151) and has the advantage that "all the properties and constraints of *guo<sub>EXP</sub>* follow naturally from the core meaning" (p. 152). Yeh (1996) argues that *-guo* has two properties in common with Q-adverbs. First, the use of *-guo* in discourse is similar to that of Q-adverbs in that "the event entities in both types of sentences are not directly accessible to those in the succeeding sentences", and so a sentence containing *-guo* "is not related temporally to successive events in a discourse" (p. 152). Yeh calls this property 'the characteristic of inaccessibility', which in turn explains why *-guo* cannot be used to mark a sequence of foregrounded events and carry the narration forward. Second, the event marked by *-guo* must be repeatable – a property shared by Q-adverbs which, according to Yeh, may be accounted for by the 'Plurality Condition on Quantification' at work. What it means is that *-guo* "does not quantify over a situation with a unique spatio-temporal location" (p. 162), such as a 'once-only' predicate as follows:

- (3) \*哥倫布 發現過 美洲  
*Columbus faxian-guo meizhou*  
 Columbus discover-GUO America  
 \*'Columbus discovered America (before).' (Yeh 1996: 153, 162)

Yeh's (1996) analysis as summarized above begs a number of questions. First, granted the accuracy of the analysis, "the characteristic of inaccessibility" appears more like an incidental linguistic property shared by Q-adverbs than a defining characteristic of *-guo*, for it does little to alter its

basic linguistic function as an aspectual marker rather than a temporal quantifier. Since *-guo* is clearly in opposition, in the form of binary contrast, to other aspectual markers such as *-le* and *-zhe* (see, e.g., Li 1991a: 43-47), analyzing it as a temporal quantifier begs the question how this analysis may be extended to other members of the aspectual system in Mandarin Chinese. Second, perhaps more importantly, Iljic (1990) has clearly demonstrated that the notion of recurrence as a constraint is misguided, as is shown in the compatibility between *-guo* and the stative verbs *nianqing* ('be young') and *xiao* ('be small', 'be young'), both being used in the context of 'young-*guo*' (Iljic 1990: 302). It has yet to be shown how this "puzzle" or "exception" (Yeh 1996: 180) can be explained away and how the insistence on the constraint of recurrence may be justified.

In terms of compatibility with *-guo*, the antonyms *nianqing* ('be young') and *lao* ('be old') behave very differently. Li and Thompson (1981) argue that *-guo* is incompatible with *lao* 'be old' and *si* 'die' because the processes denoted by these verbs are 'non-repeatable', that is, a person cannot die or become old again (cf. Inoue 1975, 1979, Dahl 1985, Iljic 1990). This is apparently the reason why (4) and (5) are both ungrammatical and unacceptable:

- (4) \*他死過  
       *ta si-guo*  
       he die-GUO  
       ?? 'He died before.'
- (5) \*他老過  
       *ta lao-guo*  
       he old-GUO  
       ?? 'He was old before.'

Examples such as these appear to lend support to Yeh's (1996) claim that *-guo* is incompatible with a 'once-only' spatio-temporal location. But this analysis meets with difficulties in the following example (6):

- (6) 耶穌 死過  
       *Yesu si-guo*  
       Jesus die-GUO  
       'Jesus died (before, but resurrected).'

Incidentally, the fact that (6) referring to a specific individual and event in history is felicitous further casts doubt over another general observation that *-guo*, behaving syntactically akin to a quantified sentence, consistently "describes a type of events, rather than a specific one" (Yeh 1996: 179). Instead, this constraint may only apply to the 'experiential' partial function

when the verb in question denotes an actional meaning such as examples (1) and (2), but not 'deresultative' or 'no longer in a state of X' (see below).

Smith (1991) echoes Chao (1968) and Iljic's (1990) observation and points out that, what distinguishes *-guo* from *-le* is that "it presents a discontinuity with the present or other Reference Time" (p. 348), and that it is exactly this feature which opposes *-guo* to *-le*. One instructive illustration she gives is the following (Smith 1991: 348):

- (7) 他們 上個月 去了 香港  
*tamen shang ge yue qu-le Xiang Gang*  
 they last CL month go-LE Hong Kong  
 'Last month they went to Hong Kong (they may still be there)'
- (8) 他們 上個月 去過 香港  
*tamen shang ge yue qu-guo Xiang Gang*  
 they last CL month go-GUO Hong Kong  
 'Last month they went to Hong Kong (& they are no longer there)'

Commenting on example 8 (her 9), Smith notes that the past tense does not translate the meaning conveyed by *-guo* adequately. In her view, the perfect is in fact more appropriate. The only problem is that, unlike *-guo*, "the English perfect does not require discontinuity" (p. 349; cf. Chao 1968: 439).

The notion of 'discontinuity' may be traced back to Chao (1968), but as Yeh (1996: 154) has pointed out, we owe the term itself to Iljic (1990) in his analysis of the linguistic operation marked by *-guo*. Iljic (1990) shows that the verbal suffix *-guo* manifests some aoristic properties in that "[t]he event is not viewed in its internal development, but globally as something compact, as a fact" (p. 317). Further, *-guo* marks a genuine assertion of existence of the predicative relation (or event) taken as a whole in the relative past, and that the event is necessarily absent at the point of reference. Typical examples used to illustrate the notion of discontinuity are those in which *-guo* is suffixed to a verb whose denotatum includes a resultative meaning (e.g., *dapo*, 'to break'):

- (9) 這個瓶子 打破過  
*zhege pingzi dapo-guo*  
 this CL vase break-GUO  
 'This vase was once broken (but it has been repaired).'
- (10) 張三 打破過 這個瓶子  
*Zhang San dapo-guo zhe ge pingzi*  
 Zhang San break-GUO this CL vase  
 'Zhang San broke this vase before (but it has been repaired).'

Li (1991a) characterizes this partial function as the ‘deresultative function’ of *-guo*. This partial function explains why *-guo* tends to be incompatible with verbs whose denotata include irreversible or permanent states. In other words, when the neutralization of the resultant state is not conceivable, as is the case of examples (4) – (5) above, the use of *-guo* tends to be infelicitous.

Notice that the deresultative meaning in (9) and (10) may give way to the experiential function if (a) what is thematized is the agent instead of the patient, and (b) the patient refers to some indeterminate object(s). Compare:

- (11) 張三           打破過    很多瓶子  
       *Zhang San dapo-guo    hen do pingzi*  
       Zhang San break-GUO many vase  
       ‘It occurred to Zhang San that he has broken many vases.’

At the same time, compared with the ‘non-repeatability’ constraint as proposed by Inoue (1975, 1979) and Li and Thompson (1981), the deresultative function characterized by discontinuity of the resultant state is a much more adequate explanation. This can be demonstrated by contrastive examples involving two processes: *si* (‘to die’) and *biye* (‘to graduate’). Consider the example (6) again (cited as 12 below), where the subject is Jesus Christ who, according to the Bible, has overcome death and resurrected:

- (12) 耶穌 死過  
       *Yesu   si-guo*  
       Jesus die-GUO  
       ‘Jesus died (before, but resurrected).’

If (12) is felicitous, it is clearly for a reason other than because the process *si* (‘to die’) is repeatable, for, as is well-known, Jesus does not, and will not, die the second time! What *-guo* in (12) conveys is the deresultative meaning, that is, the resultant state after dying has been neutralized, which, on the basis of the universal privative contrast between ‘alive’ and ‘dead’ implies that Jesus is alive again (‘no longer in a state of being dead’). On the other hand, when suffixed to a resultative verb *biye* whose denotatum is repeatable (e.g., graduated twice in the sense of possessing two bachelor degrees), the use of *-guo* remains infelicitous:<sup>1</sup>

- (13) \*張三       大學       畢業過  
       *Zhang San daxue       biye-guo*  
       Zhang San university graduate-GUO  
       ?? ‘Zhang San has graduated from university (before).’

Here the incompatibility may be explained by the fact that by virtue of its meaning, *biye* gives rise to a resultant state which under no circumstances can be neutralized. Unlike a resurrected human being, a healed patient, or the restoration of a broken vase, when a person has graduated from any program or school, the status of being a graduate from that program or school normally cannot be reversed, no matter how often that may happen. I believe a very similar explanation underlies the low acceptability of the normally irreversible verb meanings such as 'to die' in the Japanese expression *koto ga aru*:

- (14) \*Dan wa, sensoo de shinda koto ga aru  
'Dan died in the war.' (Cited in Dahl 1985: 141)

If the above analysis is correct, then there is a strong likelihood that the translation of example (12) into Japanese will result in a well-formed sentence using the construction *koto ga aru*. Finally, one interesting fact about the constraints governing the proper use of the verbal suffix *-guo* is that they all seem to be relaxed once the predicative relation is negated (Iljic 1990). Thus, for example, the use of *-guo* in (4a) and (13a) below is perfectly acceptable:

- (4) a. 他 沒有 死過  
       *ta meiyou si-guo*  
       he not die-GUO  
       'He has never died.'
- (13) a. 張三 大學 從來 沒有 畢業過  
       *Zhang San daxue conglai meiyou biye-guo*  
       Zhang San university ever not graduate-GUO  
       'Zhang San has never graduated from university before.'

This is because, as Iljic has pointed out, the negative form of a predicative relation tends to neutralize the constraint (Iljic 1990: 320).

## 2. *-GUO* WITH STATIVE PROCESSES: 'NO LONGER IN A STATE OF X'

Up to now we have mainly examined action processes or situation types which include a resultative meaning in their denotata. Smith (1991) follows essentially Vendler (1967) in her classification of situation types, and claims that *-guo* "is available for all situation types" (p. 349, cf. Iljic 1990). Thus another type of temporal discontinuity occurs when *-guo* is suffixed to verbs denoting stative meanings such as *nianqing* and *xiao* discussed above. Smith

(1991) gives a very instructive example using the verb *qian* ('to owe') as follows:

- (15) 王平      欠過      我      一筆賬  
*Wangping qian-guo wo yi-bi zhang*  
 Wangping owe-GUO me one-CL debt  
 'Wangping has owed me a debt (and no longer does).' (Smith 1991: 349)

Similar examples can easily be multiplied. Thus *ai-guo* / *xihuan-guo* *Wang xiaojie* would mean 'once loved / liked Ms. Wang, but not any more'. Even a verb like *xing*, 'to be called by one's family name', can be discontinued in time when suffixed by *-guo*. Hence the famous rock singer in the 1970s, Cat Stevens, who at one point in his life decided to adopt another name Mohamad, could very well say in Mandarin: *wo xing-guo Stevens*, literally 'I used to have Stevens as my last name', or more idiomatically 'I used to be called Stevens'.

Iljic (1990) and Smith's (1991) observations about discontinuity as a key notion that sets *-guo* apart from *-le* are largely valid. There is, however, one detail which needs to be clarified: while discontinuity tends to invite the interpretation that the present state of the subject or object at the point of reference, regardless of whether the verb meaning is resultative or stative, must be the opposite of the previous state X, it does not mean that the subject or object affected by the verb meaning cannot be in the state of X at the moment of speaking. Consider the following example, where a married man professes to have loved (stative process) and gotten married (resultative process) to several women before he found his true love and became a married man again (cf.: Li 1991a: 232):

- (16) 我 跟 你 結 婚      以 前 也 愛 過      三 個 女 人,  
*wo gen ni jiehun yiqian ye ai-guo san ge nuren,*  
 I with you get married before also love-GUO three CL woman  
 跟 她 們 結 過 婚  
*gen tamen jie-guo-hun*  
 with them get-GUO-married  
 'Before I married you, I had loved and been married to three women.'

This example (16) shows that, notwithstanding the deresultative function of *-guo* when infixed to *jiehun* ('get married') and the meaning 'no longer' when suffixed to the verb *ai* denoting 'love', the speaker of (16) still loves someone and continues to be in the state of a married man. A further example to a similar effect may be demonstrated by using the verb with deictic meaning *lai* ('come'):

- (17) 我 三年 以前 也 來過 這裏  
 wo san nian yiqian ye lai-guo zheli  
 I three years before also come-GUO here  
 'I was also here three years ago.'

What (16) and (17) have in common is that the resultant or previous state X has been neutralized or discontinued in time. This discontinuity, however, should not be taken to mean that the present state of the affected subject or object is necessarily the opposite of X (cf. Comrie's 1976 characterization of *used to* in English, see below). In other words, what is demonstrated in examples like (16) and (17) is that, despite the partial function discontinuity, the point of reference may well be X, provided such an interpretation is supported by, or deducible from, the linguistic context at large. In the case of (16), the resultative meaning of X ('in a state of being married after getting married') is only assured by the first clause denoting the speaker's fourth marriage (*Wo gen ni jiehun yiqian...*), which explains why he remains a married man at the point of reference (i.e. moment of speaking). This, however, does not contradict the core function of *-guo*, discontinuity, for the resultant state of all the three occurrences of *jiehun* ('to get married') which took place prior to the point of reference had been neutralized before the fourth occurrence (assuming that the speaker was telling the truth). The above analysis therefore supports the view that discontinuity is indeed an inherent aspectual meaning of *-guo* (Smith 1991), rather than a mere inference (Iljic 1990, Yeh 1996) in all of its partial functions: 'deresultative', 'no longer in a state of X' and 'experiential'. In the latter case, discontinuity may be glossed in terms of an aoristic property of *-guo*, namely, asserting the existence of a predicative relation before the point of reference (Iljic 1990).

To summarize, apart from the widely attested experiential function of *-guo* when suffixed to a verb group denoting an activity (Vendler 1967), this verbal suffix has two other partial functions depending on other aspect-sensitive constituents present in the linguistic context at large. First, when a verb includes a resultative meaning in its denotatum, *-guo* signals that the resultant state X has been neutralized, implying that the present state of the affected subject or object is not X unless contextually denied. This partial function of *-guo* has been described as 'deresultative' (Li 1991a), which helps explain why "any verb denoting an action the result of which is a complete disappearance of the object is incompatible with *-guo*" (Iljic 1990: 320), e.g., *diao* 'fall, be missing'. But such an incompatibility is not absolute: "if there is the slightest chance of interpreting the state attained by the action as non-permanent, it is that value that will be filtered out by *-guo*" (Iljic 1990: 321), e.g., *Ta de toufa diao-guo*, 'he (once) lost his hair' or 'his fair fell out', both implying that 'now his hair has grown again' (ibid.). Second, the interaction between a stative verb meaning and the inherent property of -

*guo* – discontinuity – gives rise to another partial function, which may be glossed as ‘no longer in a state of X’. Here again, the unmarked interpretation ‘no longer’ dominates if not contradicted by the context at large (cf. Iljic 1990).

### 3. *-GUO*: PERFECTIVE OR PERFECT?

Smith (1991) considers *-guo* as one of the two perfective markers in Mandarin, with *-guo* exhibiting some characteristics of the perfect. The ‘perfect’ character of *-guo* is also attested in Dahl’s (1985) large-scale cross-linguistic investigation, in which *-guo* is accorded the status of an experiential marker. For the sake of further cross-linguistic research in contrastive aspectology, however, I find it somewhat unfortunate that the metalinguistic label ‘perfective’ is used to characterize the most typical aspectual function of *-guo* (the same may be said of *-le* as well). For one thing, researchers on contrastive aspectology are likely to be misled into believing that *-guo* and *-le* behaved in ways which would make them comparable to, say, the prototypical perfective in Slavic languages such as Russian. That this is not the case may be demonstrated with regard to two features of the prototypical perfective (cf. Man 1999). Thus unlike the perfective in Russian, (a) *-guo* and *-le* are not used in discourse to carry the narration forward, and (b) neither *-guo* nor *-le* would figure in what Pollak (1988) calls ‘the incidence schema’ which has been shown to be a most revealing type of linguistic context triggering the appearance of both the perfective and the imperfective so long as this grammatical contrast exists in the language in question. Comrie (1976:3), for instance, uses this schema (though he does not call it by that name) as prototypical examples to contrast the meanings of the perfective and the imperfective:

- |      |         |   |                                  |
|------|---------|---|----------------------------------|
| (18) | English | : | John was reading when I entered. |
|      | Russian | : | Ivan čital, kogda ja vošel.      |
|      | French  | : | Jean lisait quand j’entrai.      |
|      | Spanish | : | Juan leía cuando entré.          |
|      | Italian | : | Gianni leggeva quando entrai.    |

To extend this series to include Mandarin Chinese, we will see that neither *-le* nor *-guo* may appear in the clause requiring the Perfective marked in the (simple) past tense of the above Indo-European languages:

- (19) Mandarin: 我進來 (\*了/\*過) 的時候, 張三 在 看書  
*wo jinlai (\*-le/\*-guo) de shihou, Zhang San zai kan shu*  
 I enter (\*-LE/\*-GUO)when, Zhang San PROG-read book  
 'Zhang San was reading when I entered.'

In my own investigation over the conceptual evolution of 'aspect' from classical Greek over Russian and French to English (Li 1991a), I have traced the source of confusion between the perfective and the perfect as the result of confounding two semantically distinct grammatical phenomena in the long historical process of translation and transference from one language into another: on the one hand, the perfective as part of a privative member of a morphologically realized grammatical category which views the event as a complete whole, and on the other, the perfect which indicates that the event in question has reached completion. This is not the place to go into the arguments in favour of calling *-le* anything but perfective (see Chapter 6, Li 1991a). Our immediate concern here is to call into question the alleged perfective character of *-guo* as shown above, and to establish its functional status through contrastive examples in other languages with regard to the known partial functions of *-guo*.

#### 4. CROSS-LINGUISTIC REALIZATION OF THE DERESULTATIVE

It is interesting to note that the deresultative meaning may or may not be grammaticalized, partially or fully, across languages. In Russian this function is realized through the co-articulation of the imperfective (!) and past tense. The following examples are adapted from Forsyth (1970:79; slightly modified, with the imperfective verb in past tense highlighted):

- (20) *Etu knigu ja daval ŋtat svoemu soŋedu po komnate.*  
 'I *lent* this book to my room-mate (and have got it back).'
- (21) *Pocemu kniga takaja grjaznaja? Kto ee bral?*  
 'Why is the book so dirty? Who *has had* it?'

In both (20) and (21), the imperfective verbs "are in each case 'two-way' or 'done and undone'" (Forsyth 1970: 79), which is why this meaning is characterized as 'two-way action'. Maslov (1974) obviously had a similar idea in mind when coining the term 'Handlung mit rückgängig gemachtem Resultat' ('action with reversed result'). Typologically speaking, I think the realization of the deresultative function in Russian using imperfective verbs should cast some doubt on the characterization of *-guo* as a perfective marker.

In German, the deresultative may be expressed using the Perfekt expression *gewesen sein* (as opposed to *worden sein*). Compare:

- (22) Wir sind eingekreist gewesen.  
 we SIND surrounded GEWESEN  
 we have been surrounded (but we have subsequently been liberated).  
 (23) Wir sind eingekreist worden.  
 we SIND surrounded WORDEN  
 we have been surrounded (and we still are).

But more typically, this function is realized in German using lexical means, especially the adverb *einmal* ('once'). Compare:

- (24) Diese Brücke ist einmal durch Bombardierung zerstört worden.  
 this bridge IST once by bombardment destroyed WORDEN  
 'This bridge has once been destroyed by bombardment.'  
 (but it has subsequently been reconstructed). (Li 1991a: 220)

As one would expect, this example can be rendered into Chinese using *-guo* (*zha-duan-guo*):

- (25) 這橋 被 炸斷過  
*zhe qiao bei zha-duan-guo*  
 this bridge BEI bombard-break-GUO  
 'This bridge has once been destroyed by bombardment.'  
 (but it has subsequently been reconstructed). (Li 1991a: 220)

As is indicated in the English translation, the English perfect does not usually allow the deresultative reading (cf. Smith 1991: 349). To do this, the perfect requires the lexical support of an adverb, especially *once*, unless in those cases where the deresultative meaning is contextually clear, as in the following example:

- (26) I see that the envelope *is sealed* but I am sure that it *has been opened*.  
 (Li 1991a: 228, cited from Kozinskij 1988: 500)

French behaves more like English, so that to render the equivalent of (22) and (25), one has to resort to lexical means such as *une fois* ('once') or *autrefois* ('before'), in the absence of which the default reading would be that the resultant state after the action process continues to be valid at the point of reference, especially at the moment of speaking. Compare:

- (27) Nous avons été encerclés.  
 'We have been surrounded.'

- (28) Une fois, nous avons été encerclés.  
'We have once been surrounded (but subsequently liberated).'
- (29) Ce pont là a été détruit pendant la guerre.  
'This bridge was destroyed during the war.'
- (30) Autrefois, ce pont là a été détruit pendant la guerre.  
'Before, this bridge was destroyed during the war (but it has subsequently been reconstructed).'

To summarize, the deresultative function in all the languages discussed above is realized in rather different ways, depending on linguistic resources and the 'design' of the particular language in question. In general, to express the deresultative meaning, both English and French rely on the perfect supported by an adverb or the linguistic context at large. The same function in German is partly built into the grammatical contrast between *gewesen sein* and *worden sein* within the category perfect using the auxiliary verb-to-be (*sein*), sometimes reinforced by an adverb as well. Russian, on the other hand, does not possess a formal category perfect (Isačenko 1960); instead, the deresultative meaning is realized through the co-articulation between two categories: tense (preterite) and aspect (imperfective). As for Mandarin Chinese, and Chinese varieties in general, this function is analytically expressed by the verbal suffix *-guo* (Yue-Hashimoto 1993).

## 5. CROSS-LINGUISTIC REALIZATION OF 'NO LONGER IN A STATE OF X'

We have seen that *-guo*, when suffixed to stative verbs such as *ai* ('love'), is capable of marking a contrast between a previous state and the current state. It would be interesting to see how the same aspectual meaning is realized cross-linguistically.

As is well-known, English possesses a formal expression *used to* — commonly analyzed as 'habitual aspect' — which serves exactly this purpose. Comrie (1976) argues that *used to* carries an implicature (instead of implication) 'no longer so at the moment of speaking'. In this sense, aspectually speaking *used to* may be seen as the antithesis of the English perfect. This contrast is clearly indicated in the following example involving a breakthrough in medical research as reported in *Time* magazine [90/11/12/51]:

- (31) The cancer cell *used to be* a black box.... But the lid of the black box *has been opened*, and we can see the wheels turning inside.

Thanks to the researcher(s) in question, the cancer cell is no longer a black box, and the lid will remain open ever since. In addition to *used to*, there is a less conspicuous device in English, namely the use of the simple past tense and stative verbs or adjectives to signal a contrast between a previous state and the current state. For example, in the following extract of the interview between the *Time* correspondent and the ex-General McNamara, the reader does not need to read any further to appreciate that his wife lives no more:

(32) Reporter: Who is McNamara? The real man who is McNamara emotionally?

McNamara: Very few people know.

Reporter: Who knows?

McNamara: Well, Mary *knew*, my wife *knew*.

[*Time* magazine 91/02/11/60, emphasis added]

Such a contrast may be seen as one consequence of having developed tense as a grammatical category. Should the ex-General's wife be still alive at the time of the interview, he would have to use simple present tense. Conversely, simple present was not used exactly because this would have implied that his wife was still alive, hence the need to use simple past.

Similarly, in some cases the interlocutor's choice of the simple past is a significant clue as to whether a conversation topic ought to be further pursued:

(33) A - Tell me something about your father.

B - Well, he was a great man...

When translated into French, German, or Russian, the two examples (32) and (33) would require the functional counterpart of the verbs 'to know' and 'to be', e.g., *savait* and *était*; *wusste* and *war*. This leads me to think that all Indo-European languages (e.g., French: imparfait; German: Präteritum; Russian: past tense) which have developed tense as a grammatical category may resort to this means, that is, marking stative verbs with the preterite (e.g., *knew*) or co-articulating an adjective and the verb-to-be (e.g., *was beautiful*) to signal the meaning 'no longer in a state of X', which is derived from the linguistic contrast between a previous state and the current state.

In light of the evidence presented above, it should be clear that 'experiential aspect' is only one of the partial functions of *-guo*, typically when the verb in the predicate denotes an actional meaning. In contrast, the interaction between *-guo* and a verb whose denotatum carries resultative or stative meaning will give rise to the partial function 'deresultative' or 'no longer in the state of X', respectively. The three partial functions of *-guo* may be summarized as follows:

| <u>Verb semantics (with -guo)</u> | <u>Partial function</u>     |
|-----------------------------------|-----------------------------|
| Actional meaning                  | 'Experiential'              |
| Resultative meaning               | 'Deresultative'             |
| Stative meaning X                 | 'No longer in a state of X' |

6. IMPLICATION FOR FURTHER RESEARCH:  
ASPECTUAL SYNONYMY AND ASPECTUAL  
ANTONYMY

Cross-linguistic research on aspect since Comrie (1976) has been rich and fruitful to some extent. I think what remains problematical is not so much difficulties caused by different linguistic models and approaches (e.g., Universal Grammar, Smith 1991) as the lack of a fine network of partial functions of aspectual grammemes within and across languages. As Maslov (1974) has pointed out, such a network of context-specific partial functions should not be limited to 'Aspektantonymie' (aspectual antonymy), such as the contrast between *-le* and *-guo* in Mandarin (see, e.g., Iljic 1990, Li 1991a, 1991b), but also 'Aspektsynonymie' (aspectual synonymy) in those cases where the aspectual grammemes appear to be very similar in meaning. In the latter case, careful scrutiny of the kind of context which helps disambiguate the apparently synonymous examples can be very instructive in illuminating the respective functions of the grammemes in question. This point may be illustrated by one contrastive example below.

In two separate sections, Li and Thompson (1981: 190, 215) make use of the same example to illustrate the aspectual function of *-le*:

- (34) 牆上            掛了        一幅 畫  
         *qiang-shang guo-le      yi fu hua*  
         wall-on            hang-LE one-CL painting  
         'A painting was hung/had been hung on the wall.'

On page 190, this example is given the gloss "A painting was hung/had been hung on the wall." In another section on page 215, where the authors want to demonstrate that *-le* does not necessarily mean completion, the same example is glossed as "On the wall hangs a painting", which makes (34) functionally indistinguishable from (35) below involving a different aspect marker *-zhe*:

- (35) 牆上            掛著            一幅畫  
       *qiang-shang guo-zhe        yi fu hua*  
       wall-on        hang-ZHE one-CL painting  
       ‘On the wall hangs a painting.’

It is true that out of context, it is very difficult to tell the semantic difference between (34) and (35). This is probably one reason behind the slight inaccuracy in the gloss on page 215, which suggests implicitly that *-le* in (34) and *-zhe* in (35) are functionally indistinguishable. This is not true. By specifying the context, it will become apparent that one is acceptable, but not the other. For example, if the context is such that a speaker visits a place for the first time, say, when stepping into a professor’s private residence (‘at that time I discovered that...’), then clearly it is the example with *-zhe* (35) which is allowed, for the aspectual suffix *-zhe* marks an absolute state (Li 1991a, 1991b). On the other hand, if the kind of context in question involves some change of state, as in the case of a housewife returning home after shopping, then only the example with *-le* is appropriate (34), for it is *-le* which allows for an implicit contrast between the wall without a painting before the housewife went shopping, and the same wall now adorned with a painting upon her homecoming.

To facilitate cross-linguistic comparison in such a context-sensitive grammatical category as aspect, therefore, much remains to be done in regard to the fine network of aspectual antonymy and aspectual synonymy, both within and across languages (Maslov 1974). In a sense, this chapter is one way of answering Maslov’s appeal, and it is hoped that this appeal will be heeded by some other scholars and researchers in the field.

## 7. CONCLUSION

The dominant view that *-guo* is an ‘experiential marker’ (Li and Thompson 1981, Dahl 1985, Yue-Hashimoto 1993) or a kind of ‘perfective marker’ (Smith 1991, Yeh 1996) is inaccurate. First, labelling *-guo* as a perfective marker seems dubious given that one of its partial functions, the deresultative, is realized in Russian by the co-articulation between the imperfective and past tense. Second, unlike the primary function of the perfective in Russian and its functional equivalent in other languages such as French (Comrie 1976), *-guo* figures neither in extended discourse to carry the main story line forward, nor in what Pollak (1988) calls ‘incidence schema’ (cf. Comrie’s 1976), where both the perfective and imperfective must be present.

Finally, the experiential function is best analyzed as a partial function along with two other partial functions — the 'deresultative' and 'no longer in a state of X' — depending on the linguistic context, that is, the presence of other aspect-sensitive constituents such as adverbials, the theme-rheme structure, whether the noun group refers to a determinate or indeterminate entity, and above all, the verb meaning or situation type. While all these partial aspectual functions of *-guo* may be characterized as local forms of discontinuity (Iljic 1990, Smith 1991), it would be better to keep them separate so as to make possible a fine network of intra- and cross-linguistic comparison — along the lines of aspectual antonymy and aspectual synonymy as laid out by Maslov (1974).

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## NOTES

<sup>1</sup> Compare Yeh's (1996: 162-63) examples (29) and (31): \**Columbus faxian-guo meizou* '\*Columbus discovered America (before)' is infelicitous; whereas *Columbus faxian-guo yi ge xiao dao* 'Columbus discovered a small island (before)' is acceptable.

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# THE NATURE OF CHINESE COMPARATIVES

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## 1. INTRODUCTION

It is quite common for language teachers to tell their students that the Chinese comparative sentence in (1) is the equivalent of the English sentence in (2). It is also not unusual for syntacticians to use similar structures to describe Chinese and English comparatives and to use the same process to derive both.

- (1) *Xiao Hua bi Xiao Ming congming.*  
Xiao Hua than Xiao Ming smart  
'Xiao Hua is smarter than Xiao Ming.'  
(lit. 'Xiao Hua is smart in comparison with Xiao Ming.')
- (2) John is smarter than Joe.

However, if the semantic content and pragmatic function of Chinese comparatives is examined carefully, it can be shown that there is no simple correspondence between Chinese and English comparatives. It is commonly agreed that the English comparative sentence in (2) has the same interpretation as (3) does (e.g., Chomsky 1965, Ross 1967, Bresnan 1973, Quirk et al. 1985). The presupposition of sentence (3), which is given as (4), should therefore be the presupposition of sentence (2) as well.

- (3) John is smarter than Joe is.  
(4) Joe is smart.

The Chinese comparative sentence in (1), on the other hand, does not require any pre-established degree of smartness on the part of *Xiao Ming*. No matter how retarded or smart *Xiao Ming* is, sentence (1) will be true as long as *Xiao Hua's* IQ is higher. If a statement comparable to (4) is made about *Xiao Ming's* IQ, as in (5), sentence (1) can no longer be used to compare *Xiao Hua* with *Xiao Ming*. A sentence like (6) would be the proper way to make the comparison.

- (5) *Xiao Ming* (hen) *congming*.  
 Xiao Ming (very) smart  
 'Xiao Hua is (very) smart.'
- (6) *Xiao Hua bi Xiao Ming geng congming*.  
 Xiao Hua than Xiao Ming more smart  
 'Xiao Hua is even smarter than Xiao Ming.'

In other words, the closest Chinese equivalent of the English comparative in (2) is actually sentence (6) in terms of pragmatic function and there is no close English equivalent to the Chinese comparative sentence in (1). It is based on this assessment that the current chapter attempts to examine Chinese comparatives from a different approach.

The goal of this chapter is to provide a comprehensive description of Chinese comparatives associated with *bi* 'than' and to establish an accurate generalization about their properties. The analysis of this chapter is theoretically neutral in the sense that it is not carried out under any particular theoretic framework but the findings should be, hopefully, useful to further studies in any theory.

## 2. THE DERIVATION OF CHINESE COMPARATIVES

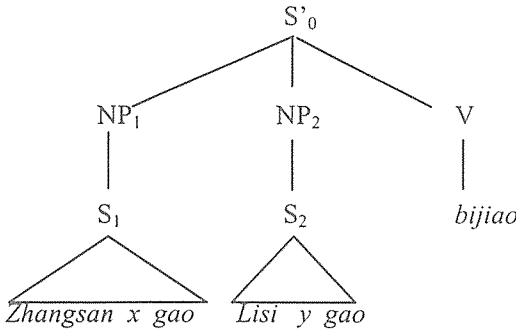
In the early days of generative transformational grammar, there were several analyses in which Chinese comparatives were derived via processes similar to the derivation of English comparatives (e.g., Hashimoto 1966, Fu 1978, J. Hou 1979). Fu (1978), for example, adopts an analysis for English comparatives by Bresnan (1973) and proposes that Chinese comparative sentences are generated in the Deep Structure with a bi-clausal structure.

Like their English counterparts, Chinese comparatives are believed to make comparison between two statements that are represented by two clauses with very similar structures. The surface sentence in (7) therefore has the Deep Structure of (8). Via a very complicated transformational process, the  $S_2$  in (8) is moved into a position between the subject and VP of  $S_1$  and a morpheme *bi* 'than' is added in front of  $S_2$ .  $S_2$  is then truncated by an Identity Deletion rule to get rid of the redundant elements. Some other

transformational rules are also applied to take care of the nodes that are no longer needed. The final product will be the surface form sentence (7).

- (7) *Zhangsan bi Lisi gao.*  
 Zhangsan than Lisi tall  
 'Zhangsan is taller than Lisi.'

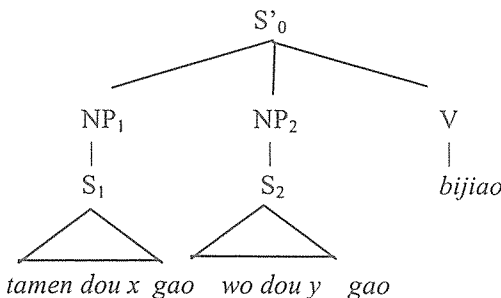
(8)



An assumption necessarily underlying this line of analysis is that whatever occurs in one clause in the Deep Structure should be able to occur in the other, otherwise the identical constituent truncation would not take place. There is, however, strong evidence that many elements of a comparative sentence cannot occur in both clauses. The adverb *dou* 'all' in (9a), for example, is a legitimate part of the comparative sentence but it cannot occur inside the second clause in the Deep Structure representation of (9b). The apparent reason is that *dou* 'all' must have scope over a plural or dividable NP on its left (S. Huang 1996) but *wo* 'I' is singular and non-dividable.

- (9) a. *Tamen dou bi wo gao.*  
 they all than I tall  
 'They all are taller than I.'

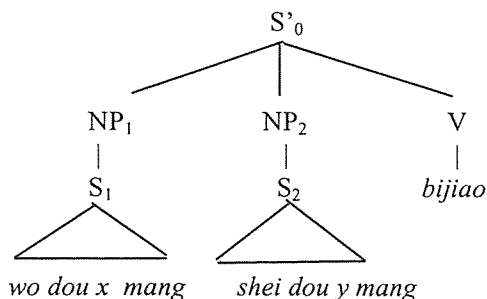
b.



It is of course possible to alter the analysis and stipulate that the adverb *dou* 'all' only occurs in the first clause but does not appear in the second clause in the Deep Structure. The stipulation has its own share of problem, though. In comparative sentences like (10a), the adverb *dou* 'all' has scope over a universal quantifier like *shei* 'anyone' and is therefore a legitimate part of the surface form. However, there is no plural NP in the first clause to license the adverb *dou* 'all' in this case. The Deep Structure in (10b) is not acceptable either.

- (10) a. *Wobi shei dou mang.*  
 I than anyone all busy  
 'I am busier than everybody.'

b.



Negation presents another problem for the deletion analysis. Comparative sentences usually have negated forms, as in the case of (11a). If the negation morpheme occurs in both clauses as mandated by the deletion analysis, the result will be an absurd and unacceptable representation, as roughly shown in (11b).

- (11) a. *Wo cai bu he jiu bi ni duo ne.*  
 I really not drink liquor than you much Part.  
 'I do not drink more liquor than you do.'
- b. \**Wo cai bu he jiu bi ni bu*  
 I really not drink liquor than you not  
*he jiu duo ne.*  
 drink liquor much Part.

This kind of problems will not occur in the analysis of L. Li (1986), whose reasoning is similar to that of Hashimoto (1966). The essence of his analysis is that Chinese comparatives like (12a) and (13a) have a structure comparable to embedded clauses with the part after *bi* 'than' functioning as a clause. Certain elements inside the clause are then deleted because they are

identical to those in front of *bi* 'than'. The remains of the truncation will be normal comparative sentences like (12b) and (13b).

- (12) a. *Wode gangbi bi nide gangbi haoshi.*  
           my pen than your pen easy-to-use  
           'My pen is easier to use than your pen is.'  
       b. *Wode gangbi bi nide haoshi.*  
           my pen than your easy-to-use  
           'My pen is easier to use than yours.'
- (13) a. *Ta ban shi bi wo ban shi renzhen.*  
           he do things than I do things serious  
           'He is more serious in doing things than I am in doing things.'  
       b. *Ta ban shi bi wo renzhen.*  
           he do things than I serious  
           'He is more serious in doing business than I am.'

The problem for L. Li's (1986) analysis comes from comparative sentences with complex predicate like (14a). The part after the morpheme *bi* is not likely to be a clause because there is no predication relation between the NP *ni* 'you' and the AdjP *duo* 'much'. Since the AdjP is actually in a predication relation with the verb *chi* 'eat', a sentence like (14b) would be posited by L. Li's analysis as the original form of (14a). However, unlike (12a) and (13a), (14b) is not an acceptable comparative sentence. The deletion analysis will not work in this case.

- (14) a. *Wo chi fan chi-de bi ni duo.*  
           I eat meal eat-DE than you much  
           'I eat more than you do in eating meals.'  
       b. ??*Wo chi fan chi-de bi*  
           I eat meal eat-DE than  
           *ni chi fan chi-de duo.*  
           you eat meal eat-DE much

### 3. THE ITEM BEING COMPARED

C. Li and Thompson (1981) use the schema in (15) to represent Chinese comparative sentences. The X in the schema refers to the item being compared, the Y refers to the item being compared with and the comparative word refers to morphemes like *bi*, *gen*, *you* and so on. They then stated that X can only be the subject or topic of comparative sentences.

- (15) X comparative word Y (adverb) dimension

The generalization that the X in (15) is either subject or topic has met some challenges. McCawley (1989), for example, argues that the generalization is valid only when an NP is functioning as the subject and the topic of a comparative sentence at the same time, as in cases like sentence (1). If the topic is different from the subject, as in the case of (16a) and (16b), the comparative sentence will not be acceptable. He thus claims that topic cannot be the item being compared.

- (1) *Xiao Hua bi Xiao Ming congming.*  
 Xiao Hua than Xiao Ming smart  
 'Xiao Hua is smarter than Xiao Ming.'
- (16) a. \**Gou bi mao wo xihuan.*  
           dog than cat I like  
           ('I like dogs more than I like cats.')
- b. \**Gou wo bi mao xihuan.*  
           dog I than cat like  
           ('I like dogs more than I like cats.')

LaPolla (1990) goes one step further than C. Li and Thompson (1981) do in claiming that the X in (15) can only be the topic. His argument is a natural consequence of his belief that the syntactic categories subject and object have not been grammaticalized in Chinese and his evidence in this regard comes mainly from comparative sentences like (17), where the NP *xiang* 'elephant' is clearly the item being compared and its function is apparently the topic.

- (17) *Xiang bi xiong bizi chang.*  
 elephant than bear nose long  
 'Elephants have longer noses than bears.'  
 (Lit. 'Elephants, noses are longer than (those of) bears.')

In order to account for the counterexamples cited by McCawley (1989), LaPolla claims that 'in the comparative construction there is always a topic about which a comment is being made, but there can only be one (this does not include the "object" of the comparative verb/preposition *bi*). The examples in (2.12) [i.e., examples in (16)] are bad because there are two topics outside the scope of the assertion' (LaPolla 1990:44).

There is, however, evidence that such a stipulation is too restricted. The comparative sentence in (18) has a structure identical to that of (16b) and is therefore supposed to have two topics outside the scope of the assertion. The sentence is nevertheless perfectly acceptable.

- (18) *Gou wo bi ni xihuan.*  
 dog I than you like  
 'I like dogs more than you do.'

The same can be said about the comparative sentences in (19). There are an agent NP and a temporal NP before the *bi* phrase in (19a) while there are a patient NP, an agent NP and a locative PP in front of the *bi* phrase in (19b). In terms of LaPolla's (1990) analysis, there are at least two topics outside the scope of the assertion in these sentences and they are supposed to be ungrammatical, although they are actually acceptable. It seems that McCawley's (1989) argument against the schema (15) given in C. Li and Thompson (1981) does hold to a certain extent.

- (19) a. *Wo jintian bi zuotian mang.*  
 I today than yesterday busy  
 'I am busier today than I was yesterday.'  
 b. *Zhezongshiqing wo zai Meiguo bi shei dou jian-de duo*  
 this kind thing I at US than any one all see-DE many  
 'I have seen more things like this in the US than anybody has.'

There is another problem for the schema in (15) and the generalization that comes with it. Although all the examples cited by C. Li and Thompson (1981) can be considered having a subject as the item being compared, there are cases where the item being compared is neither the subject nor the topic. In sentence (20), for example, the comparison is obviously made between *zai jia* 'at home' and *zai xuexiao* 'at school'. Pre-verb PPs are usually treated as adverbials, even in the framework of C. Li and Thompson (1981). There seems to be no compelling reason to analyze the PP *zai jia* 'at home' in (20) in any other way. The generalization given in C. Li and Thompson (1981) apparently does not hold in this case.

- (20) *Wo zai jia bi zai xuexiao hai mang.*  
 I at home than at school even busy  
 'I am even busier at home than I am at school.'

#### 4. THE ITEM BEING COMPARED AND THE ITEM BEING COMPARED WITH

The generalization that the X in (15) can only be the subject or topic faces yet another challenge when sentences like (21) are examined. The comparison in (21) is apparently carried out between *wo* 'I', the specifier of

the subject NP, and *ni* 'you', the NP in the *bi* phrase. Although such a comparison is subject to certain non-structural constraints and is not always obtainable in sentences with similar structures, as in the case of (22), comparatives like (21) are acceptable and are not ambiguous (Lü 1986).

- (21) *Xianzai wode xuesheng bi ni duo.*  
 now my student than you many  
 'I have more students than you do now.'  
 (lit. 'Now my students are more than you.')
- (22) *Xianzai wode xuesheng bi ni nianqing.*  
 now my student than you young  
 'My students are younger than you are now.'

The challenge posed by sentences like (21) is that the item being compared in these cases is not likely to have the status of subject or topic in the usual sense (cf. C. Li and Thompson 1981, LaPolla 1990). The generalization given by C. Li and Thompson (1981) is therefore not likely to hold. Sentences like (21) will not be a problem for the analysis of Paul (1993), who establishes a structural requirement to regulate the relationship between the X and Y in the schema of (15). The essence of her analysis is that the X in (15) must c-command or cyclically c-command the Y. C-command and cyclic c-command are popular Government and Binding theory concepts in the eighties, which are defined in (23) and (24).

- (23) For  $\alpha$ ,  $\beta$  nodes in a tree,  $\alpha$  c-commands  $\beta$  iff every branching node dominating  $\alpha$  dominates  $\beta$ , and neither  $\alpha$  nor  $\beta$  dominates the other (Lasnik and Uriagereka 1988:32)
- (24) A cyclic c-commands  $\beta$  iff:  
 (a)  $\alpha$  c-commands  $\beta$ , or  
 (b) if  $\gamma$  is the minimal cyclic node (NP or S') that dominates  $\alpha$ , then  $\gamma$  c-commands  $\beta$  (J. Huang 1982:394).

Paul's (1993) main concern is to rule out comparatives like (25), where the presence of the pronoun *ta* 'he' after *bi* is believed to render the sentence unacceptable. Her argument is that if the pronoun *ta* 'he' appeared after *bi*, there would be two non-conjoined NPs after *bi*, which the item being compared, namely, the sentence initial *ta* 'he', would not be able to cyclically c-command. Comparatives like (25) will then be ruled out by the cyclic c-command requirement.

- (25) *Ta jintian bi \*(ta) zuotian gaoxing.*  
 he today than he yesterday happy  
 'He is happier today than he was yesterday.'

This line of analysis has its own share of problems, though. The sentence in (26), for example, has a structure identical to that of (25) and has two non-conjoined NPs after *bi* as well. If the cyclic c-command requirement is correct, the comparative in (26) should be ruled out. The sentence is nevertheless acceptable and has a definite interpretation. The cyclic c-command requirement apparently makes an incorrect prediction.

- (26) *Ta     jintian bi     ni     zuotian     mang.*  
       he     today than you     yesterday     busy  
       ‘He is busier today than you were yesterday.’

There seems to be a ready explanation for the contrast between (25) and (26). The first *ta* ‘he’ in (25) should have the status of subject and, given the usual simplex sentence analysis for comparatives, should c-command the second *ta* ‘he’ right after *bi*. If the two pronouns *ta* ‘he’ are interpreted as having the same reference, a Binding Principle B violation (Chomsky 1981) will occur and the sentence will not be acceptable. The two pronouns in (26), on the other hand, cannot refer to the same person and will not lead to binding condition violations. Sentence (26) should therefore not be ruled out as (25) is.

## 5. AN ALTERNATIVE

Any reasonable analysis of Chinese comparatives should be based on an accurate generalization that is derived from detailed descriptions of a wide range of data. The first thing to be considered in this respect is the predicate of comparatives. Four types of predicates can be identified in Chinese that can take a *bi* phrase and allow a comparative reading (e.g., Liu et al 1983). The first type of predicate has an adjective as the head, such as the adjective *congming* ‘smart’ in (1) and the noun *shikuai* ‘philistine’ in (27) which is being used as an adjective in this particular context.

- (1) *Xiao Hua     bi     Xiao Ming     congming.*  
       Xiao Hua     than     Xiao Ming     smart  
       ‘Xiao Hua is smarter than Xiao Ming.’  
       (lit. ‘Xiao Hua is smart in comparison with Xiao Ming.’)
- (27) *Ni     bi     shikuai     hai     shikuai.*  
       you     than     philistine     even     philistine  
       ‘You are even more sordid than a philistine is.’

Adjectives that can head the predicate in comparative sentences are scalable ones, namely, those describing properties that can be measured by

various degrees. Non-scalable adjectives, such as the *huo* 'alive' in (28), cannot function as the head of a comparative predicate.

- (28) \**Yu bi haixing hu.*  
       fish than sea-star alive

Being scalable is apparently a necessary condition for a predicate to be comparative. Sometimes a verb can head a comparative predicate as long as it is scalable, namely, represents an action that can be measured by degrees. They are the head of the second type of comparative predicates. Most verbs in this category are so-called *qinggan* 'emotional' verbs, such as the *milian* 'indulge' in (29) and the so-called *shengli zhuangtai* 'physiological status' verbs, such as the *kun* 'feel sleepy' in (30). Other emotional verbs include *ai* 'love', *xihuan* 'like', *taoyan* 'dislike', *hen* 'hate' and other physiological verbs include *que* 'become lame', *long* 'become deaf' and *bing* 'become sick' (Liu et al. 1983).

- (29) *Wo didi bi wo hai milian diannao-youxi.*  
       I brother than I even indulge computer-game  
       'My brother is even more addictive to computer games than I am.'  
 (30) *Woxianzai bi shenme shihou dou kun.*  
       I now than any time all feel sleepy  
       'I am sleepier now than any time.'

Physiological verbs are usually intransitive in nature but most emotional verbs can take an NP as object. It is worth noticing that when a comparative sentence has an emotional verb as the head of its predicate, the object can never function as the item being compared. The Chinese sentence in (31) therefore does not allow the reading of the English comparative in (32), even though it does allow the absurd reading of (33).

- (31) \**Wo bi mao xihuan gou.*  
       I than cat like dog  
 (32) I like dogs more than I like cats.  
 (33) I like dogs more than cats do.

Certain Chinese V-NP combinations, such as the *you-xingqu* 'have-interest, be interested at' in (34), represent an action involving human emotion and the action can affect an entity represented by the oblique object of a preposition, usually *dui* 'towards'. That is, these V-NP combinations can be considered semantic equivalents of emotional verbs although they have the structure of a VP syntactically. Like emotional verbs, the semantic content of these V-NP combinations is scalable and they can be part of the predicate of comparative sentences, as in (34) and (35).

- (34) *Wo dui gunyaoyue bi ni geng you-xingqu.*  
 I to rock-and-roll than you more have-interest  
 'I am more interested at rock and roll than you are.'
- (35) *Wo dui gunyaoyue bi dui geju geng you-xingqu.*  
 I to rock-and-roll than to opera more have-interest  
 'I am more interested at rock and roll than operas.'

Note that the oblique object NP *gunyaoyue* 'rock and roll' in (35) is functioning as the item being compared and the sentence is acceptable. The contrast between (31) and (35) indicates that there is no intrinsic semantic reason to stop the object of an emotional verb from becoming the item being compared in Chinese. What prevents the object of an emotional verb from functioning as the item being compared is therefore likely to be some structural constraints.

There is a potential counterexample to the generalization that the object of an emotional verb cannot be the item being compared. As pointed out by a referee, (36) (2.14 of LaPolla 1990) is an acceptable comparative sentence in Chinese and the item being compared might be the object.

- (36) *Wo xihuan ta bi wo xihuan ni duo.*  
 I like he than I like you more  
 'I like him more than I like you.'
- (37) *Wo xihuan ta duo (yi dian).*  
 I like he more (a little).  
 'I like him a little more.'

The structure of this type of sentences is more complicated than that of their English counterparts. As shown in the corresponding non-comparative sentence (37), the matrix predicate in these sentences is an adjective phrase, *duo* 'more' in (37). The subject of the predicate is a clause, namely, *wo xihuan ta* 'I like him' in (37). There is no exact English equivalent for this construction and the closest English gloss for (37) is perhaps 'My liking him is (a little) greater.' The item being compared with in (36) is therefore the subject clause *wo xihuan ta* 'I like him', not the nominal phrase *wo* 'I' or *ta* 'he' inside the clause. The item being compared in (36) is the clause *wo xihuan ni* 'I like you.'

The item being compared in this type of comparatives can be a clause as in (36), but it can also be a single nominal phrase as in (13b). In either case, the item being compared is not the object.

- (13) b. *Ta ban shi bi wo renzhen.*  
 he do things than I serious  
 'He is more serious in doing business than I am.'

In the third type of comparative predicates, the matrix verb itself is not scalable but certain element in the predicate brings in the scalability so that the predicate can sustain comparatives. Some modals, like the *neng* 'can' in (38) and the *hui* 'be capable of' in (39), denote human abilities which are scalable and can therefore sustain a comparative.

- (38) *Xiao Wang bi shei dou nengchi.*  
 Xiao Wang than anyone all can-eat  
 'Xiao Wang can eat more than anyone else does.'
- (39) *Wo meimei bi wo hui shuo Fayu.*  
 my sister than I capable speak French  
 'My sister can speaker French better than I do.'

The scalability of a comparative predicate may also be brought in by its adverbial. The matrix verb *zou* 'leave' in (40), for example, does not represent an action that is scalable but the adverbial phrase *xian* 'early, ahead of' denotes a time span that can be measured by various length and is therefore scalable. The whole predicate thus becomes scalable and can sustain a comparative sentence.

- (40) *Xiaozhang bi wo xian zou.*  
 principal than I early leave  
 'The principle left earlier than I did.'

Note again that if the matrix verb in comparatives like (38), (39) and (40) is transitive and takes an object, the object can never become the item being compared. Sentence (41) is therefore not acceptable and will not yet the reading correspondent to that of the English sentence in (42). The same can be said about the Chinese comparative in (43) and the English one in (44).

- (41) \**Wo meimei bi Yingyu hui shuo Fayu.*  
 my sister than English capable speak French
- (42) My sister can speak French better than English.
- (43) \**Wo bi cai duo chi-le yidian rou.*  
 I than vegetable more eat Asp. a little meat
- (44) I ate a little more meat than vegetables.

The scalability of the fourth type of comparative predicates comes from a secondary predicate, namely, the *buyu* 'complementary' introduced by the particle *de*. In the comparative sentence of (45), for example, the matrix verb *zheng* 'open' itself is not scalable but the secondary predicate *da* 'big' is. The predicate can thus support a comparative.

- (45) *Ta ba yanjing zheng-de bi shei dou da.*  
 he BA eyes open-DE than anyone all big  
 'He opened his eyes to such an extent that they were bigger than  
 anyone's eyes.'

When the comparison is sustained by a secondary predicate, the object of the matrix verb can sometimes become the item being compared. The NP *lumian* 'road surface' in (46) is such an example. It is the object of the matrix verb *dong* 'freeze' but is also the item being compared, since it represents the entity that was harder than rock. The apparent reason for this type of objects to become the item being compared is that they are in a predication relation with the secondary predicate. In other words, semantically they are the 'subject' of the *buyu* 'complementary' phrase and the comparison is obtained in this predication relation.

- (46) *Lianri yanhan dong-de lumian bi shitou hai ying.*  
 several-day severe-cold freeze-DE road-surface than rock even  
 hard  
 'The severe cold of the past few days froze the road so that it was  
 harder than rock.'

Apparently, the item being compared cannot be an object unless it has a non-object status in another predication relation. An obvious question to ask in this regard is whether the constraint is structurally determined or is determined by semantic factors (cf. LaPolla 1990). To be more precise, the issue to be addressed is whether there is a semantic constraint against taking a patient NP as the item being compared. The answer seems to be no. In the comparative sentence of (47), the item being compared is the subject NP *Ye Jihuan*. The subject of a passive sentence usually bears the thematic role of patient (Shi 1997) and the one in (47) is no exception, as shown in the related active sentence (48). Notice also that the semantic equivalent of patient NP in (35) can function as the item being compared as well. It seems reasonable to assume that the constraint is not semantically determined.

- (47) *Ye Jihuan bi Da Fuhao xian bei jingfang buhuo.*  
 Ye Jihuan than Da Fuhao early BEI police arrest  
 'Ye Jihuan was arrested by the police earlier than Da Fuhao was.'
- (48) *Jingfang xian buhuo Ye Jihuan.*  
 police early arrest Ye Jihuan.  
 'The police arrested Ye Jihuan first.'

- (35) *Wo dui gunyaoyue bi dui geju geng you-xingqu.*  
 I to rock-and-roll than to opera more have-interest  
 'I am more interested at rock and roll than operas.'

It is worth noticing that the active comparative sentence corresponding to (47) is not acceptable, as shown in (49). The determining factor seems to be the structural position of the item being compared.

- (49) \**Jingfang bi Da Fuhao xian buhuo Ye Jihuan.*  
 police than Da Fuhao early arrest Ye Jihuan

The most interesting fact in this regard is that the topic-comment construction corresponding to (49), namely, the comparative sentence in (50), is not acceptable either. On the other hand, if the comparative sentence in (47) is embedded and its subject topicalized, the result is still acceptable, as shown in (51).

- (50) \**Ye Jihuan, jingfang bi Da Fuhao xian buhuo.*  
 Ye Jihuan, police than Da Fuhao early arrest
- (51) *Ye Jihuan baozhishang shuo bi Da Fuhao*  
 Ye Jihuan newspaper-top say than Da Fuhao  
*xian bei jingfang buhuo.*  
 early BEI police arrest  
 'Ye Jihuan, the newspapers said that (he) was arrested by the police earlier than Da Fuhao was.'

It seems obvious that whether a topic can be the item being compared depends on the position that is related to the topic but not the thematic role born by the topic. The topic comment constructions (52) and (53), which are corresponding to the comparative sentences (41) and (43) respectively, are thus not acceptable either.

- (52) \**Fayu wo meimei bi Yingyu hui shuo.*  
 French my sister than English capable speak  
 ('French, my sister speaks it better than English.')
- (53) \**Rou wo bi cai duo chi-le yidian.*  
 meat I than vegetable more eat-Asp. a little  
 (Meat, I ate a little more than vegetable.')
- (41) \**Wo meimei bi Yingyu hui shuo Fayu.*  
 my sister than English capable speak French  
 ('My sister speaks French better than English.')

- (43) \**Wo bi cai duo chi-le yidian rou.*  
 I than vegetable more eat Asp. a little meat  
 ('I ate a little more meat than vegetables.')

The same applies to the topic-comment construction in (16b), which is corresponding to the comparative sentence in (31).

- (16) b. \**Gou wo bi mao xihuan.*  
 dog I than cat like  
 ('I like dogs more than I like cats.')
- (31) \**Wo bi mao xihuan gou.*  
 I than cat like dog  
 ('I like dogs more than I like cats.')

A reasonable explanation for this pattern is that topic-comment constructions are derived from some basic sentence structures. If the item in a particular position cannot function as the item being compared in the basic structure, the topic related to that position will not be the item being compared either. Topic itself is not directly involved in the syntactic process of comparison.

A related issue is the structural position of the *bi* phrase and its scope. Given the schema in (15) and the generalization that the X in (15) can be topic (C. Li and Thompson 1981), the *bi* phrase should be able to appear in front of the subject of a comparative sentence.

- (15) X comparative word Y (adverb) dimension

The distribution of *bi* phrases shows a different pattern, though. In the comparative sentence of (54), for example, the *bi* phrase appears between the subject *wo* 'I' and the VP. When the *bi* phrase is put between the initial temporal adverbial and the subject in (55), the sentence becomes unacceptable. Note that the *bi* phrase has scope over the sentence initial adverbial *jinnian* 'this year' in (54), that is, the NP *qunian* 'last year' in the *bi* phrase is being compared with the adverbial *jinnian* 'this year'.

- (54) *Jinnian Zhou Hua bi qunian pang-duo le.*  
 this year Zhou Hua than last year fat-much Part.  
 'Zhou Hua is heavier this year than she was last year.'
- (55) \**Jinnian bi qunian Zhou Hua pang-duo le.*  
 this year than last year Zhou Hua fat-much Part.

The contrast between (56) and (57) presents a similar pattern. The *bi* phrase occurs legitimately between the subject and the adverbial in (56) but

cannot appear between the topic and the subject in (57). Note also that the topic *píjiu* 'beer' in (56) is not in the scope of comparison, apparently because it is related to the object position of the verb *he* 'drink'.

- (56) *Píjiu wo bi ni geng ai he.*  
 beer I than you more like drink  
 'As for beer, I like to drink it more than you do.'
- (57) \**Píjiu bi ni wo geng ai he.*  
 beer than you I more like drink

It is obvious that the *bi* phrase in a comparative sentence can only occur after the subject no matter whether it has scope over something before the subject or not, as in the cases of (54) and (56) respectively. Even when it occurs between the subject and the VP, the distribution of *bi* phrase is still subject to many constraints. When the NP *zuotian* 'yesterday' occurs before the *bi* phrase in (58a), for example, it functions as a temporal adverbial modifying the VP. When the same NP occurs after the *bi* phrase in (58b), it can no longer function as an adverbial but can only be part of the *bi* phrase.

- (58) a. *Wo zuotian bi ni qi-de zao.*  
 I yesterday than you get-up-DE early  
 'I got up earlier yesterday than you did.'
- b. *Wo bi ni zuotian qi-de zao.*  
 I than you yesterday get-up-Asp. early  
 'I got up earlier (today) than you did yesterday.'  
 (not 'I got up earlier yesterday than you did.')

A similar pattern can be found in the ordering of *bi* phrase and locative adverbials. When the PP *zai gongsili* 'in the company' occurs before the *bi* phrase in (59a), it modifies the VP as a locative adverbial. When the same PP appears after the *bi* phrase in (59b), it can only be part of the *bi* phrase and cannot modify the VP.

- (59) a. *Li Ming zai gongsili bi ni mang.*  
 Li Ming in company-inside than you busy  
 'Li Ming is busier in the company than you are.'
- b. *Li Ming bi ni zai gongsili mang.*  
 Li Ming than you in company-inside busy  
 'Li Ming is busier (here/somewhere) than you are in the company.'  
 (not 'Li Ming is busier in the company than you are.')

A reasonable explanation for the above pattern would be that the *bi* phrase has a structural position between subject and VP, and that position is

lower than the temporal and locative adverbial. An apparent problem for this generalization comes from sentences like (17) in which the *bi* phrase seems to occur between the topic and the subject (cf. LaPolla 1990).

- (17) *Xiang bi xiong bizi chang.*  
 elephant than bear nose long  
 'Elephants have longer noses than bears.'  
 (Lit. 'Elephants, noses are longer than (those of) bears.')

Note that the topic-comment construction in (17) belongs to a special type commonly known as double nominative constructions, namely, those in which the topic and subject can form one large NP connected by the morpheme *de* (cf. Teng 1974). To put it slightly differently, sentence (17) has a special status because its topic and subject seem to be so closely related semantically that they can form a single NP *xiang de bizi* 'elephant's nose'. Tsao (1990) points out that there are two types of double nominative sentences, represented by (60a) and (61a) respectively.

- (60) a. *Wang Taitai tou teng.*  
 Wang Mrs. head ache  
 'Mrs. Wang has a head ache.'  
 (Lit. 'Mrs. Wang, head aches.')
- (61) a. *Li Taitai nüer piaoliang.*  
 Li Mrs. daughter beautiful  
 'Mrs. Li's daughter is beautiful.'  
 (Lit. 'Mrs. Li, daughter is beautiful.')

In the first type of double nominative sentences, the relationship between the two nominatives is rather loose while that between the second nominative and the predicate is very tight. An adverbial or a modal can therefore occur between the two nominatives in the first type, as in (60b) and (60c) respectively. Tsao (1990) argues that the second nominative has actually undergone some re-analysis process and has become part of the predicate. Given the re-analysis, it comes as no surprise that a *bi* phrase can appear between the two nominatives in a related comparative sentence, as in (60d).

- (60) b. *Wang Taitai jingchang tou teng.*  
 Wang Mrs. often head ache  
 'Mrs. Wang often has a head ache.'
- c. *Wang Taitai bu hui tou teng.*  
 Wang Mrs. not will head ache  
 'Mrs. Wang will not have a head ache.'

- d. *Wang Taitai bi Li Taitai hai jingchang tou teng.*  
 Wang Mrs. than Li Mrs. even often head ache  
 'Mrs. Wang has head aches more often than Mrs. Li does.'

The two nominatives in sentences like (61a) are very close to each other and do not allow re-analysis to separate them. No adverbial or modal can appear between them, as shown in (61b) and (61c) respectively. No *bi* phrase can occur between them in related comparative sentences like (61d), either.

- (61) b. \**Li Taitai feichang nüer piaoliang.*  
 Li Mrs. extremely daughter beautiful  
 ('Mrs. Li's daughter is extremely beautiful.')
- c. \**Li Taitai bu hui nüer piaoliang.*  
 Li Mrs. not will daughter beautiful  
 ('Mrs. Li's daughter is extremely beautiful.')
- d. \**Li Taitai bi Wang Taitai nüer piaoliang.*  
 Li Mrs. than Mrs. Wang daughter beautiful  
 ('Mrs. Li's daughter is more beautiful than Mrs. Wang's daughter.')

If Tsao's (1990) analysis is on the right track, an account for the comparative sentence in (17) will be available. The relationship between *xiang* 'elephant' and *bizi* 'nose' in (17) is apparently similar to that between *Wang Taitai* 'Mrs. Wang' and *tou* 'head' in (58d). It is therefore expected that a *bi* phrase is allowed between *xiang* 'elephant' and *bizi* 'nose' in (17).

Another issue about the *bi* phrase is its syntactic status. In most analyses, the morpheme *bi* is treated as a preposition (e.g., LaPolla 1990, Paul 1993, X. Hou 1998). Under the preposition analysis, *bi* can only take an NP as complement. Apart from the problems discussed in sections 3, a serious challenge to this line of analysis is that what *bi* takes may be larger than a phrase but smaller than a clause. The elements being compared with in (62), for example, are an NP *wo* 'I', a PP *zai guonei* 'inside the country' and another NP *yibeizi* '(my) entire life'. The three phrases apparently do not belong to a single phrase but they do not form a clause, either. The same can be said about what *bi* takes in (63).

- (62) *Ni bi wo zai guonei yibeizi*  
 you than I in country-inside whole-life  
*hai zhuan-de duo.*  
 even make-DE much  
 'You are making more money (in one month) than what I would be able to make inside the country in my entire life.'

- (63) *Wo yige ren yong jiqi yitian jiu neng bi*  
 we one Cl.person with machine one-day already can than  
*nimen yong shou yinian hai bo-de duo.*  
 you with hand one-year even shell-DE more  
 'I can shell more (peanuts) with the machine in one day than what  
 you could do by hand in a whole year.'

Apparently, the elements inside the *bi* phrase may not form a constituent but the whole *bi* phrase does function as one unit. To account for this unique feature it will be assumed in this chapter that *bi* is a connective on a par with *yin* 'because of' and *wei* 'for the sake of'. Like other connectives, *bi* may introduce a proposition. The *bi* phrase functions as a degree adverbial and therefore has an intrinsic order with respect to other adverbials. As an adverbial, the *bi* phrase modifies the predicate and has a scope on things to its left on a par with some other scope adverbials such as *dou* 'all'.

The adverbial analysis of the *bi* phrase entails that the Chinese comparative sentences are not syntactic counterparts of the English comparatives. This may not be an unwelcome result given the facts discussed in the introduction section of this chapter.

## 6. SOME SPECULATION

The adverbial analysis provides a simple account for the issues discussed in this chapter but it has a problem of its own. The vague concept of proposition is adopted here to avoid lengthy argumentation. It is possible to adopt an assumption made by Tsao (1987, 1990) that Chinese may have dummy verbs comparable with the English *do*, namely, verbs that can occupy the VP position of a clause. The Chinese dummy verbs may have no phonetic content at all. If this is on the right track, the next step would be to assume that what follows a *bi* is a clause with a dummy verb as the head of the predicate. In other words, the visible part of the *bi* phrase could be all the constituents before the verb, namely, subject NP, temporal adverbial, locative adverbial, instrumental adverbial and so on.

The dummy verb analysis resembles in spirit the deletion analysis discussed in section 1 in the sense that both assign the status of clause to what *bi* takes. On the other hand, it differs from the deletion analysis in that it does not require the clause in question to have certain elements. This is compatible with the analysis that the *bi* phrase is actually an adverbial.

The technical detail of the dummy verb analysis has to be worked out in the near future.

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# **-de NOMINALS AND ARGUMENT STRUCTURE**

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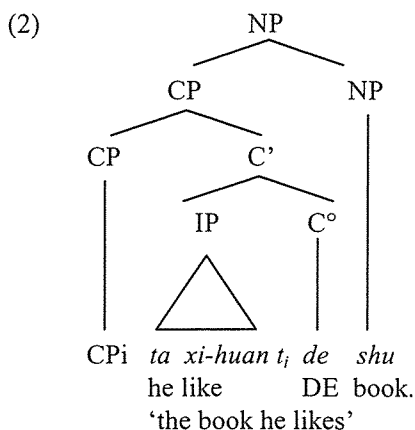
## **1. INTRODUCTION**

This chapter demonstrates how argument structure constrains the formation and interpretation of deverbal nominal compounds in Chinese marked by the nominal suffix *-de* in such formations as *kai-che-de* “driver/driving device”, *jiu-huo-de* “fire-fighter/fire-extinguisher”, *pao-de* “runner” and *chi-de* “things to eat”. It argues that such nominals are lexically derived from the argument structure of the base verb. It shows that a *-de* nominal of this type yields a nonevent reading in contrast to relativized *-de* constructions expounded in Ning (1993), which involves an event reading. Furthermore, the well-formedness of this type of nominals is shown to be subject to constraints intrinsic to the argument structure of the verb. A deverbalized *-de* nominal exclusively refers to the external argument of the verb. The internal argument of a verb can be referred to only when it undergoes externalization as a lexical process.

## **2. THE SYNTACTIC APPROACH**

Ning (1993) proposes a syntactic analysis of the *-de* nominal constructions such as the one in (1). The analysis takes *-de* in (1) as a functional head, which forms an operator-variable chain with the head noun and its trace as illustrated by the diagram in (2).

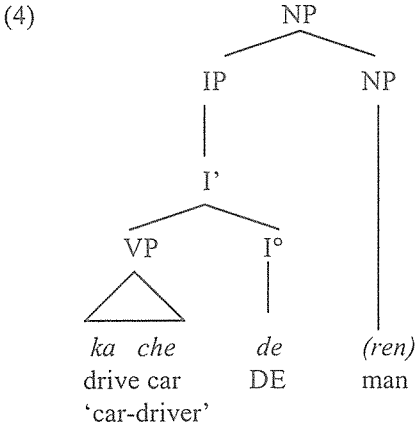
- (1) *ta xi-huan de shu*  
 he like DE book.  
 'the book he likes'



Ning observes that one property of the complement clause preceding *-de* is that it must contain a gap corresponding to the argument co-indexed with the head noun. The head noun is free in co-indexing with either the subject or the object argument position; thus, a clause containing two gaps in these positions is likely to be ambiguous. The example in (3) exhibits such an ambiguity, as indicated by the English translations.

- (3) *kanjian de ren*  
 see DEman  
 'the man who saw (someone)'  
 'the man who (someone) saw'

I argue in this chapter that a non-event reading of deverbal *-de* nominals such as *kai-che-de* "car-driver or driving device", *pao de* "runner" and *chi-de* "things to eat", are not derived through relativization, instead they are lexically formed on the basis of the argument structure of the head verb. The overall structure of such a deverbal *-de* compound can be taken as an infinitival phrase, shown by the tree diagram in (4).



### 3. ARGUMENT STRUCTURE

The notion of argument structure originates from Gruber (1965) and Jackendoff (1972) and it is embodied in the Theta Theory in Chomsky's (1981) GB framework. But the exact nature of argument structure has been subject to debate. Following Hale and Laughren (1983), and Hale and Keyser (1987), proponents of the lexical semantic theory conceive the lexicon as containing two levels of representations. One is the Lexical Conceptual Structure (LCS), relevant to the semantic interpretation of the lexical items and the other is the Predicate-Argument Structure (PAS), relevant to the lexical syntactic representation (Rappaport, Laughren and Levin 1987, Rappaport and Levin 1988 and Levin and Rappaport 1988). PAS provides an explicit representation of hierarchical relations between the verb and its arguments. In other words, PAS contains variables, which serve as placeholders for arguments and these placeholders can be distinguished in terms of the manner of theta-role assignment to the argument NPs. The external argument is assigned its theta-role via predication outside the maximal projection of the verb (Williams 1980, Rothstein 1983); the internal arguments are assigned theta-roles within the maximal projections of the verb. Furthermore, the direct internal argument is assigned its theta-role directly by the verb and the indirect internal argument gets its theta-role via a preposition (Marantz 1984). Crucially, Levin and Rappaport (1988) argue that their predicate-argument structure or PAS differs from other semantic representations of the argument structure in that it does not contain theta-role labels, which bear a semantic rather than syntactic relation to the predicator (cf. Jackendoff 1972, 1983; Talmy 1985, Grimshaw 1990).

Levin and Rappaport (1988) use the nominal suffix *-er* as a probe to support their claim on the necessity of predicate-argument structure. They, first, show that the *-er* nominals refer not only to the agentive role of the predicate as those in (5a), in which all the *-er* nominals refer to the doer of the act designated by the verb, but also to the instrumental role, as the examples in (5b) can testify. In the latter cases, the *-er* nominals, instead of referring to the doer of the act, stand for some instrument with which the act is accomplished.

- (5) a. an admirer of the Greek poets, a receiver of compliments, a loser of the 200-yard dash, a bearer of heavy burdens, a lover of French cuisine,...
- b. accumulator, assembler, compiler, generator, loader, washer, dryer, toaster, broiler...

Undoubtedly, arguments bearing the instrumental role can and often do occur as the external argument of the predicate.<sup>1</sup> This fact is in favor of Levin and Rappaport's (1988) claim that the behavior of *-er* nominals is governed by the PAS and not by semantically labelled theta-roles. More interestingly, they demonstrate that *-er* nominals are compatible with unergative verbs but not with unaccusative verbs. Unergative verbs such as verbs of manner only have an external argument. The examples in (6a) are all based on unergative verbs. However, unaccusative verbs such as verbs of existence and appearance can not form *-er nominals* in English. They have only one internal argument and no external argument. The examples in (6b), which are all based on unaccusative verbs, are considered to be ill-formed.

- (6) a. honker, speaker, tweeter, buzzer, warbler, firecracker, rattler, squeaker, ...
- b. \*diappearer, \*dier, \*laster, \*ender, \*waner, \*exister, \*happener, \*occurrer, \*collapser...

The pattern of existence of the well-formed *-er* nominals based on unergative verbs in (6a) and the ill-formed ones based on unaccusative verbs in (6b) provides strong justification for the postulation of PAS, for such a pattern becomes predictable on the basis of PAS. Levin and Rappaport also make a distinction between the *event* reading and the *nonevent* reading of *-er* nominals. The event reading of an *-er* nominal involves the aspectual properties of the verb. Take the phrase *the destroyer of the city* for instance. The expression receives an event interpretation only if someone who has actually participated in the act of destroying the city. The person who is called *the destroyer of the city* must have actually carried out the destruction. However, in the non-event reading of the expression, *destroyer* can be

interpreted as something, particularly, a warship intended for destroying the enemy forces, without presupposing the act of destroying has occurred.

The present study offers fresh evidence from deverbal *-de* nominals in Chinese on the presence of argument structure (or what Levin and Rappaport refer to as PAS). The distinction between the event reading and the non-event reading of deverbal *-de* nominals is also observed and the discussion is focused on the non-event readings of such nominals. With these preliminary remarks on the theoretic framework, we now turn to examine the behavior of the deverbal *-de* nominals in Chinese.

#### 4. THE *-DE* SUFFIX AND ARGUMENT STRUCTURES OF VERBS

##### 4.1. Transitive Verbs

We first look at di-transitive verbs, which possess two arguments: an internal argument and an external argument. A deverbalized *-de* formation with its internal argument is interpreted either as referring to the doer of the act or as some instrument with which the act is accomplished, as the examples listed under (7) can bear witness.

| (7)             | <u>agentive</u>              | <u>instrumental</u>            |
|-----------------|------------------------------|--------------------------------|
| kai che de      | "car-driver"                 | "instrument for driving"       |
| fan niu de      | "cowherd"                    | "something for herding cattle" |
| zuo fan de      | "cook"                       | "cooking utensil"              |
| ban jia de      | "house-mover"                | "a tool for moving house"      |
| shao huo de     | "fire-maker"                 | "something for making a fire"  |
| da yu de        | "fisherman"                  | "a tool for fishing"           |
| mie huo de      | "fire-fighter"               | "fire-extinguisher"            |
| zhi bing de     | "doctor"                     | "pain-healer"                  |
| cui mian de     | "hypnotist"                  | "hypnotiser"                   |
| shou fei de     | "toll-collector"             | "toll-collecting device"       |
| ca pixie de     | "shoe-polisher"              | "shoe-polisher"                |
| fashi daodan de | "missile launching operator" | "missile launcher"             |

Take the expression *mie huo de* in the above list as an example. It can be interpreted as a "fire-fighter", that is, a "person who puts out fires" or a "fire-extinguisher", that is, a "tool used for putting out fires". These two

interpretations are possible because both the “agent” and the “instrument” can serve as the external argument of a sentence, as demonstrated by the sentences in (8a) and (8b):

- (8) a. *Xiaofang duiyuan hen kuai ba da huo mie le.*  
       fire-fighters very quickly BA big fire put-out ASP  
       ‘The fire-fighters put out the big fire very quickly.’  
    b. *Sashui qi hen kuai ba da huo mie le.*  
       sprinkler very quickly BA big fire put-out ASP  
       ‘The sprinklers put out the big fire very quickly.’

Notice that confronted with instances like those (8), it would be rather complicated to define the external argument in terms of labelled semantic roles such as “agent”, “patient” and “instrument”. More importantly, we can tentatively formulate a constraint on the interpretation of the *-de* nominals, given in (9). We can call it the **EXTERNAL ARGUMENT CONSTRAINT** (or EAC for short). In the rest of this chapter, we will take the EAC as a null hypothesis and put it to the test with other classes of verbs.

(9) **EXTERNAL ARGUMENT CONSTRAINT (EAC)**

The non-event reading of deverbal *-de* nominals can only designate the external argument of the verb.<sup>2</sup>

Another point to note is that neither the agentive nor the instrumental interpretation entails an *event* reading for the deverbal nominal. For instance, when a person or a device is referred to as *mie-huo-de*, that person or object need not have participated in the action of “putting out the fire”. All it means is that the person may be professionally trained to do the work or the object is intended for that particular purpose. This is compatible with our view that the deverbalized *-de* nominals involve only an infinitival phrase rather than a tensed clause. This is a major interpretive difference between the deverbalized *-de* nominal and the *-de* relative clause, for the latter necessarily entails an *event* reading.

The deverbal *-de* nominal is also more tightly constrained than the relative clause in the sense that when referring to the external argument in the *-de* nominal such as *mie-huo-de* the internal argument must be present. Compare this with the example in (3), in which the expression *kanjian-de (ren)* can be legitimately interpreted as referring to the agent in the absence of the internal argument in the relative clause.

## 4.2. Unergative Verbs

According to the Unaccusative Hypothesis (Perlmutter 1978, Burzio 1986), intransitive verbs fall into two classes: *unergative* verbs and *unaccusative* verbs. The single argument of an unergative verb is an external argument and that of an unaccusative verb is a direct internal argument. In this section, we focus on the structure and interpretation of deverbal *-de* nominals with unergative verbs. As we have seen in the previous section, the interpretation of the deverbal *-de* nominals are limited to the external argument. If this pattern is an across-the-board constraint on deverbal *-de* nominals, we expect to find such formations with unergative verbs. The examples in (10), which are commonly found in Chinese, support this claim.

| (10)       | <u>event reading</u>                | <u>non-event reading</u> |
|------------|-------------------------------------|--------------------------|
| a. jiao de | “someone who is screaming”          | screamer                 |
| rang de    | “someone who is shouting            | shouter                  |
| zuo de     | “someone who is walking”            | walker                   |
| pao de     | “someone/something that is running” | runner                   |
| tiao de    | “someone/something that is jumping” | jumper                   |
| b. xiao de | “someone who is laughing”           | ---                      |
| ku de      | “someone who is crying”             | ---                      |

The examples in (10) are all legitimate formations and can be interpreted as referring to the only argument of the base verb, which is the external argument. Like the examples with transitive verbs in (7), most of the examples in (10a) can have either an event reading or a non-event reading. On the event reading, we can interpret, for example, *jiao-de* as “someone who is screaming”, *pao-de* as “someone who is running” and *tiao-de* as “someone who is jumping”; on the non-event reading, we can interpret them as the “screamer”, “runner” and “jumper”, respectively. The difference between the event and the non-event interpretation, as we said earlier, is that only the event reading entails the action is being executed and the non-event reading is free from this condition. We regard the event reading being derived through relativization and the non-event reading being derived through lexical compound formation.

Expressions such as *xiao-de* and *ku-de*, which we list under (10b), are interpreted on the event reading as “someone who is laughing” and “someone who is crying”, and the non-event readings for these expressions are very hard to come by. Indeed, English dictionaries would contain such terms as the “laugher” or the “cryer”, if the scenarios denoted by such terms were commonly observed. Nevertheless, such a situation is not inconceivable.

Suppose in a drama, someone plays a part who constantly laughs or cries throughout the play, then it is natural to refer to such a part as “the laughter” or “the cryer” in the play. Therefore, the absence of the non-event interpretation of these deverbal nominals in Chinese is not the result of any syntactic constraint but rather conditioned by the real world knowledge.

#### 4.3. Unaccusative Verbs

Syntactically, an unaccusative verb has only one argument, which may appear in the subject position in the surface form, but which is the underlying direct internal argument. Semantically, unaccusative verbs include verbs that designate change of state, change of location, appearing/disappearing and directed motion (see Levin and Rappaport 1995). Therefore, the verb *lai* “arrive” *si* “die”, *ting* “park”, *luo* “fall” and *chen* “sink” in the examples sentences in (11), (12) and (13) are taken to be unaccusative verbs.

- (11) *Jia li lai le yi-wei ke-ren*  
 home in arrive ASP one-CL guest  
 ‘A guest arrives at (one’s) house.’
- (12) *Cun li si le yi-ge lao-ren.*  
 village-in die ASP one-CL old man  
 ‘An old man died in the village.’
- (13) *Menkou ting le yi-liang jipu che.*  
 doorway park ASP one-CL jeep  
 ‘A jeep is parked at the door.’
- (14) *Di shang luo le yi-ceng xue.*  
 ground on fall ASP one-CL snow.  
 ‘The ground is covered with a coat of fallen snow.’
- (15) *Haimian shang chen le yi-tiao chuan.*  
 sea-surface on sink ASP one-CL ship.  
 ‘A ship sank at the sea.’

In addition, the unaccusative verbs also include those designating extrinsic properties of the internal argument, which set them apart from unergative verbs (Levin and Rappaport 1995). The verbs in the examples in (16)-(20), the so called “decausativized” verbs, typically represent some extrinsic force acting upon the referent of the internal argument and they pattern syntactically with the examples in (11)-(15) in taking a locative external argument.

- (16) *Di shang da le yi-ge reshui ping.*<sup>3</sup>  
 ground on break ASP one-CL thermos battle  
 ‘There is a broken thermos bottle on the ground.’

- (17) *Jiao shang zha le yi-ge kouzi.*  
 foot on cut ASP one-CL puncture  
 'He had a cut on his foot.'
- (18) *Zhuo shang chui le yi-ceng tu.*  
 desk on blown ASP one-CL dust  
 'The desk is covered with a coat of blown dust.'
- (19) *Yifu shang si le yi-ge kulong.*  
 clothes on tear ASP one-CL hole.  
 'The clothes is torn with a hole in it.'
- (20) *Shan shang wa -le yi-ge dong.*  
 hill on dig ASP one-CL hole  
 'There is a cave dug out on the hill.'

If EAC holds true on the non-event interpretation of all deverbal *-de* nominals, then we would expect that such interpretations not available with unaccusative verbs for the obvious reason that such verbs lack an external argument. We find that this is, indeed, the case. All the examples listed in (21) can be interpreted on the event reading only. The referent of the internal argument in these deverbal compounds must have undergone some changes brought about by the action designated by the verb. One cannot possibly address a person or an animate being as *si-de* unless he manifests all the biological and physiological symptoms of being dead; likewise, one cannot refer to a thermos bottle as *da-de* if it is not broken.

| (21)                | <u>event reading</u>    | <u>non-event reading</u> |
|---------------------|-------------------------|--------------------------|
| lai de (keren)      | a arrived guest         | ---                      |
| si de (laoren)      | a deceased old man      | ---                      |
| ting de (jipu che)  | a parked jeep           | ---                      |
| chen de (chuan)     | a sunken boat           | ---                      |
| da de (reshui ping) | a broken thermos bottle | ---                      |
| zha de (kulong)     | a punctured hole        | ---                      |
| chui de (chentü)    | blown dust              | ---                      |
| si de (kouzi)       | a torn opening          | ---                      |
| wa de (dong)        | a dug-out hole          | ---                      |

#### 4.4. Internal Argument of Transitive Verbs

We have said earlier that, deverbal *-de* nominals with transitive verbs can only refer to the external argument and we have also seen that this claim is also valid with regard to the two subclasses of intransitive verbs: unergative

and unaccusative verbs. We expect such deverbal nominals being prohibited from referring to the internal argument of a transitive verb. However, we see from (22) that not only the event reading is present with internal argument of these transitive verbs, but the non-event reading is also available with a number of the these transitive verbs.

| (22)                | <u>event reading</u> | <u>nonevent reading</u>  |
|---------------------|----------------------|--------------------------|
| ca de (pixie)       | polished shoes       | shoes to polish          |
| kan de (shu)        | books read           | books to read            |
| chuan de (yifu)     | clothes worn         | clothes to wear          |
| dun de (ji)         | stewed chicken       | chicken to stew          |
| chao de (shi)       | hand-copied poems    | poems to copy            |
| chi de (yao)        | medicine taken       | medicine for oral intake |
| zhao de (xiangpian) | photos taken         | *pictures to photograph  |
| jian de (qianbao)   | a picked-up wallet   | *a wallet to pick up     |

The contrast between the event reading and non-event reading is brought out quite sharply by the pairs of examples in (23) and (24)

- (23) a. *Ta ba chi de (yao) quan-dou tu chulai le.*  
 he BAeat/take DE(drug) all throw out ASP  
 “He threw out everything he has taken.(or eaten).”
- b. *Zhei yai shi chi de; nei yao shi tu de.*  
 this drug is eat/take DE that drug is oil DE.  
 “this drug is for oral intake; that drug is for oiling.”
- (24) a. *Ta chuan de shi yi-jian hen gui de xizhuang.*  
 he wear DE is one-CL very expensive DE suit  
 “What he wore was a very expensive suit.”
- b. *Ta taitai gei ta mai le yi-jian chuan de.*  
 his wife for him buy ASP one-CL wear DE  
 “His wife bought him something to wear.”

There are *-er* nominals in English, which parallel those examples in (23) and (24) in that the *-er* nominals also seem capable of referring to the internal argument of the verb, despite the general constraint on the interpretation of the *-er* nominals. Here are some English examples taken from Levin and Rappaport (1988):

- (25) broiler “chicken for broiling”  
 dunker “a type of doughnut”  
 sipper “a drink”  
 dipper “vegetable or fruit to be used with dips”

Levin and Rappaport note that these verbs can undergo middle construction, as shown by the example in (26):

- (26) This chicken broils well.

All the verbs whose internal argument can be referred to by the deverbal nominals as those shown in (22) are also capable of undergoing middle construction. The examples in (27)–(28) can bear witness to this claim.

- (27) *Zhei shu kan qilai hen you yisi.*  
 this book read GM very amusing  
 ‘This book reads well.’
- (28) *Nei yao chi qilai hen ku.*  
 that drug eat/take GM very bittler  
 ‘That drug tastes bitter.’
- (29) *Zhei ji dun qilai hen xiang.*  
 this chicken stew GM very flavourful  
 ‘This chicken stews well.’

Assuming that middle construction is a lexical process, which alters the argument structure of the verb by externalizing its internal argument, we have a natural explanation for the non-event reading of the deverbal *-de* nominals in (22), which seem to have violated EAC in (9) in referring to the internal argument of the verb. The above discussion shows that EAC is not violated in these cases and that internal argument can be referred to only when it is externalized in a way similar to middle construction.

Transitive verbs that cannot be converted to middle constructions do not submit themselves to the non-event interpretation when they occur as base verbs in deverbal nominals. For example, we do not find non-event readings for *zhao-de (xiangpian)* ‘pictures to take’ and *jian-de (qianbao)* ‘wallet to pick up’, for these verbs cannot form middle constructions, a fact that is borne out by the examples in (30) and (31).

- (30) \**Xiangpian zhao qilai hen piaoliang.*  
 photos take GM very good-looking  
 (‘The photos takes well.’)
- (31) \**Qianbao jian qilai han rongying.*  
 wallet pick-up GM very easily  
 (‘The wallet picks up easily.’)

At this point, it is interesting to compare the examples in (22) with those in (21). Those in (22) are capable of rendering the non-event reading because they possess an argument which undergoes externalization thus changing

their argument structure. However, even when the unaccusative verbs in (21) undergo subject-raising as shown by the sentences in (32), the non-event reading is still unavailable.

- (32) a. *Laoren si le.*  
           old-man die ASP  
           'The old man has died.'  
       b. *Chuan chen le.*  
           boat sing ASP  
           'The boat sank.'  
       c. *Reshui ping da le.*  
           thermos bottle break ASP  
           'The thermos bottle broke.'

We believe the reason lies in the fact that subject-raising of these unaccusative verbs takes place in syntax and, therefore, it has no effect on the interpretation of the deverbal *-de* nominals, whose constraint is based on the argument structure of the verb.

## 5. CONCLUSION

The above analysis demonstrates the existence of deverbalized *-de* nominals in Chinese in addition to the relativized *-de* clause construction. Furthermore, we have seen that the deverbal *-de* nominal is always associated with the non-event reading while the relativized *-de* clause is associated with the event-reading. Most important of all, we have pointed out that the argument structure of the base verb plays an important role in the interpretation of these deverbal nominals. It forms the basis for EAC, as stated in (9), which dictates that such nominals can only refer to the external argument of the base verb. To the extent that the above analysis is valid, it lends support to the existence of argument structure<sup>4</sup> as a level of syntax-related representation in the lexicon and to the lexical semantic approach in general.

## ACKNOWLEDGMENTS

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I would also like to thank the audience at the Forum for their valuable comment.

## NOTES

<sup>1</sup> In the English sentence: “*The pistol shot him dead*”, for example, the external argument “the pistol” designates an instrument.

<sup>2</sup> Throughout this discussion, we make use of lexically-based notions such as external and internal arguments rather than the more traditional notions such as “subject” and “object” in order to avoid unnecessary complications associated with the latter.

<sup>3</sup> Notice that the postverbal NP in these sentences must be indefinite. A definite NP cannot occur in this position.

<sup>4</sup> That is PAS in Levin and Rappaport’s (1988) term.

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# NP REITERATION IN CHINESE TEXTS

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## ABSTRACT

The present study attempts to give a cognitive account of the use of anaphoric lexical reiteration (i.e., same NP repetition, alternative NPs, pronouns, and zero anaphora) in staging the different participants in Chinese texts. It is postulated that the alternation among NP reiteration forms in referent tracking is largely triggered by two major mechanisms: The Accessibility Condition (AC) and The Variability Condition (VC). The AC defines the ease with which a given entity can be retrieved from the mental representation of the discourse for interpreting the referring expressions. Same NP repetition and alternative NPs are found to be low Accessibility Markers, whereas pronouns are intermediate Accessibility Markers, and zero anaphora is high Accessibility Marker. The parameters as subsumed under the AC are identified as: availability vs. unavailability of competing entities, low vs. high in discourse continuity, low vs. high in semantic prominence, and low vs. high in NP Accessibility Hierarchy. The VC supplements the AC in explaining the alternation between same NP repetition and alternative NPs. Variability refers to the relative ease with which an alternative referential expression can be retrieved from the mental representation for coding a given entity. Same NP repetition is taken as low Variability Marker, while alternative NPs are high Variability Markers. The parameters bearing on the VC have been identified as: simple proper NP vs. other types of NP, introduction of an entity with general terms vs. with specific terms, non-frequent vs. frequent mention of an entity in discourse, and unavailability vs. availability of standardized labels.

## 1. INTRODUCTION

Most studies on nominal reference and on the factors influencing referential choice in Chinese (e.g., Chen 1984 & 1986, Huang 1994, Li 1985, Li & Thompson 1979, Xu 1995) have concentrated on the choice between a full noun, a pronoun, and zero--which are confined to what Halliday and Hasan (1976) called "grammatical cohesive devices". The use of "lexical cohesive devices" (e.g., same or partial repetition, synonym or near synonym, subordinate or superordinate, and general word) in staging the different participants in the discourse has been largely ignored.

The present study thus advances a preliminary exploration of the largely neglected field mentioned above, incorporating anaphoric lexical reiteration in the study of participant anaphora in Chinese texts.<sup>2</sup> The forms of NP reiteration to be examined include: same NP repetition, alternative NPs, pronouns, and zero. Alternative NPs refer to any forms of anaphoric lexical reiteration apart from same NP repetition, which include structures of partial repetition, demonstrative plus noun, synonym or near synonym, subordinate or superordinate, and general word.

## 2. BASIC ASSUMPTIONS AND METHODOLOGY

As pointed out by Chu (1998), previous studies in Chinese have approached the problem of nominal anaphora from various perspectives--anaphora as a structural device (e.g., Li 1985), as an encoding mechanism (e.g., Chen 1986), and as a decoding mechanism (e.g., Xu 1995). The present study postulates that these perspectives are in fact intimately related in the sense that the whole process of anaphora resolution and production is a multi-fold task which cannot be fulfilled without a consideration of the structure in which it takes place, and of how it can be decoded by the reader/hearer and encoded by the writer/speaker. The aim of this chapter is, by integrating these different perspectives, to specify the possible mechanisms that trigger the process.

The present study also postulates that alternation among different NP reiteration forms in referent tracking is largely governed by universal cognitive constraints. Based on an examination of the distributional characteristics and the referential patterns of the different types of referring expressions used in Chinese texts, we find that the choice among NP reiteration forms is largely triggered by two major mechanisms/cognitive constraints: The Accessibility Condition (AC) and The Variability Condition (VC). On the one hand, choice of NP reiteration is dependent upon an evaluation of the relative ease or difficulty with which a given entity can be

retrieved from the mental representation of the discourse for interpreting the referring expressions (i.e., The Accessibility Condition). On the other hand, it is also governed by an evaluation of the relative ease or difficulty with which an alternative expression can be retrieved from the mental representation for coding a given entity (i.e., The Variability Condition).

It is also postulated that the evaluation process of anaphora draws upon information from syntactic, lexico-semantic as well as discourse levels and that the final choice of an NP reiteration form is dependent upon the combined value of an entity assigned respectively by each of the constituent parameters. Previous studies on anaphora tend to over-emphasize the role of one factor/level, regarding the other factors/levels as derivative of or peripheral to this one major factor. But in the present study, the parameters that constitute both the AC and the VC involve consideration of syntactic, lexico-semantic, and discourse factors. Each of the parameters is independently motivated in the sense that they can be checked separately in the discourse. Further discussion of the conditions and their constituent parameters is presented in the section 3.

### 3. MECHANISMS TRIGGERING NP REITERATION

#### 3.1. The Accessibility Condition (AC)

Accessibility refers to the ease with which a given entity can be retrieved from the mental representation of the discourse for the interpretation of the referring expressions. As Chafe (1976:32) has indicated, our memory-span is limited, and “as new ideas come into it, old ones leave.” Therefore, an entity which has just been mentioned in the discourse is likely to be easily accessible in our mental representation of the discourse, whereas an entity which was mentioned long-time ago is less accessible. Adopting the cognitive account by Ariel (1990) who views referring expressions as Accessibility Markers coding the degree of Accessibility of the mental representation of the entity referred to in the structure of memory, the present study treats the NP reiteration forms in the Chinese texts also as the Accessibility Markers. The Hierarchy of Accessibility Markers (HAM) is as follows: same NP repetition & alternative NPs < pronouns < zero anaphora. In other words, zero anaphora is high Accessibility Marker, pronouns are intermediate Accessibility Markers, and same NP repetition or alternative NPs are low Accessibility Markers.

The parameters subsumed under the AC are identified as: availability vs. unavailability of competing entities, low vs. high in discourse continuity, low vs. high in semantic prominence, and low vs. high in NP Accessibility

Hierarchy. The following sections will explain each of these parameters in detail.

### 3.1.1.1. AVAILABILITY VS. UNAVAILABILITY OF COMPETING ENTITIES

When there are more than one entity with similar semantic content in the discourse context, confusion may result (Chen 1984 & 1986). In this case, the degree of Accessibility for each of the entities is decreased, markers along the lower end of HAM such as same NP reiteration or alternative NPs are likely to be used than markers along the higher end of HAM such as pronouns or zero anaphora. For example, in illustration (1.g)-(1.l), there are two competing entities, *Qianlong* 'Qianlong' and *yi wei hucong* 'one attendant', both sharing the semantic features of "HUMAN" and "AGENT", therefore the entities have to take the form of alternative NPs--*huangdi* and *nei wei suixing* 'that attendant'--in the following clauses<sup>1</sup>.

- (1.a) *Jide nali biji you yi duan,*  
remember there notebook have one segment
- b) *shuo Qianlong you Jiangnan,*  
say Qianlong tour Jiangnan
- c) *you yi tian deng gao guang hai,*  
have one day ascend height watch sea
- d) *kangjian hai shang ji bai tiao chuanbo,*  
see sea on several hundred CL boat
- e) *zhang fan wang lai, huo wang bei, huo wang nan,*  
stretch sail go come either go north or go south
- f) *po xing renao*  
very appear busy
- g) *Qianlong wen zuoyou:*  
Qianlong ask suite
- h) *"Na ji bai tiao chuan dao na qu?"*  
those several hundred CL boat reach where go
- i) *You yi wei hucong suikou dadao:*  
have one CL entourage casually answer
- j) *"Wo kangjian zhi you liang tiao chuan."*  
I see only have two CL boat
- k) *"zhenyang shuo?" Huangdi wen.*  
how say emperor ask
- l) *Nei wei suixing de shuo:.....*  
that CL attendant DE say

'I remember that there is a stretch in the notebook which talks about Qianlong touring Qiangnan. One day, as he ascended a height to view the sea, he saw (on the sea) several hundred boats. They were coming and going with their sails fully stretched.

Some were heading north while others were heading south, bustling with noise and excitement. Qianlong asked his suite: "Where are those several hundred boats going?" One person in the entourage replied casually: "I can see only two boats." "Why?" the emperor asked. That attendant said...

(extracted from Lunqu by Yutang Lin, 1980)

Nevertheless, when there are more than one entity in the discourse segment but the entities are not in competition, i.e., do not share similar semantic content, e.g., *Qianlong* 'Qianlong' (HUMAN, AGENT) versus *hai* 'sea' (NON-HUMAN, PATIENT) in (1.c), *Qianlong* 'Qianlong' still maintains high accessibility and can be linguistically represented by high accessibility marker--zero anaphora.

### 3.1.2. LOW VS. HIGH IN DISCOURSE CONTINUITY

Another parameter relevant to the AC is discourse continuity, which involves continuity both in time and space. An entity, which was just mentioned in the preceding clause, demonstrates high continuity in time and thus has a higher degree of Accessibility than an entity, which was introduced in the discourse earlier with elapse of a few clauses. For example, in clause (1.c), which immediately follows clause (1.b) where *Qianlong* 'Qianlong' was mentioned, high accessibility marker--zero anaphora--is used. But in clause (1.g) where a few clauses elapse without mention of the entity, low accessibility marker--same NP repetition--*Qianlong* 'Qianlong'--is used.

In addition to continuity in time, discourse continuity in space also constitutes another major component of Accessibility. The notion of discourse continuity in space includes the notions of "topic chain", "episode boundary", "paragraph boundary", "theme development", and "semantic continuity" which have been proposed and dealt with in details by Chen (1984 & 1986), Chu (1998), Li (1985), Xu (1995), etc. An entity demonstrates high discourse continuity in space when it is presented within the same event structure without change to another event or information structure. For example, *Qianlong* 'Qianlong' in (1.c)-(1.d) is presented within the same event structure (i.e., ascended a height, viewing the sea) and is realized with zero anaphora--the high accessibility marker. But in (1.g), *Qianlong* 'Qianlong' is presented in a slightly changed event structure (i.e., his becoming curious about the hundreds of boats in the sea), is thus low in Accessibility, and has to be linguistically represented by same NP repetition.

### 3.1.3. LOW VS. HIGH IN SEMANTIC PROMINENCE

An entity is semantically prominent if it is animate rather than inanimate. It is my postulation that an entity which is high in semantic prominence

increases its degree of Accessibility, while an entity low in semantic prominence decreases its Accessibility. For example, in illustration (1.e), *ji bai tiao chuanbo* 'several hundred boats' is animate, and even though it involves a change from being a non-topic to a topic entity, it manages to maintain high in Accessibility and is realized with high accessibility marker--zero anaphora. In contrast, *huiyi* 'forum' in illustration (2.d) is inanimate--low in semantic prominence, and therefore has to take low accessibility marker--alternative NP *zheci huiyi* 'this forum' in the subsequent mention in (2.e).

- (2.a) *Wo guo shijie jingji xueke guihau huiyi yu qi*  
 our country world economy subject plan forum at seven
- b) *yue shiyi hao dao ershi hao zai Beijing zhaokai.*  
 month eleven date to twenty date at Beijing convene
- c) *Zhongguo Shehui Kexue yuan shijie jingji yanjiu*  
 China social science academy world economy study  
*suo*  
 institute
- d) *suozhang Qiang Junrui zhuchi le huiyi.*  
 director Qiang Junrui chair LE forum
- e) *Zheci huiyi zhuzhong taolun, he xiugai le*  
 This forum focus discuss and revise LE
- f) *yi jiu ba wu nian qian de shijie jingji xueke*  
 one nine eight five year before DE world economy subject
- g) *guihua caoan.*  
 planning draft

'The National Forum on the Subject in World Economy convened in Peking from July eleventh to the twentieth. The director of the Institute of the World Economy of the Academy of Sciences, Qian Junrui, chaired the forum. This forum focused on discussing and revising the planning draft of pre-1985 World Economy Subject.'

(extracted from the data pool by Okurowski, 1987)

### 3.1.4. LOW VS. HIGH IN NP ACCESSIBILITY HIERARCHY

The different position in which an entity occupies in the sentence also contributes to its degree of Accessibility. Chen (1984 & 1986), based on Keenan and Comrie (1977)'s Accessibility Hierarchy, suggests the following hierarchy for determining the use of zero anaphora in Chinese: Topic/Subject > Direct Object > Indirect Object > Pivotal Object > Oblique Object. To rephrase this principle in the present postulation, an entity with topic and/or subject status is higher in Accessibility than one with non-topic and/or non-subject status, and therefore is more likely to take high accessibility markers; and vice versa. For example, in illustration (1.c) and (1.d), *Qianlong*

'Qianlong' occupies the topic and subject positions in the clause, therefore is high in Accessibility and can take zero-anaphora, whereas *hai* 'sea' is located in non-topic and non-subject positions, and therefore is low in Accessibility and has to take same NP repetition.

In addition to what Chen has put down in his Accessibility Hierarchy, we find that the positioning of an entity as head versus as modifier of an NP also contributes to its degree of Accessibility. An entity occupying the head position of an NP is higher in Accessibility than an entity located in the non-head position. For example, *yijian ben* 'suggestion book' in (3.b) is in non-head position and thus is low in Accessibility and has to be reiterated with same NP repetition.

- (3.a) *bu shao shangdian dou you yijian ben*  
not few shop all have comment book
- b) *yijian ben de zuoyong tongchang shi tongguo guangda*  
comment book DE function usually be through numerous  
*guke*  
customers
- c) *de yanguang he pingyu jiandu yingye yuan de fuwu*,  
DE eyesight and comment monitor sales clerk DE service  
*taidu*  
attitude,
- d) *genghao di wei guke fuwu*  
better DE for customers serve
- e) *ciwai, hai ying kandao*,  
besides, also should see,
- f) *yijian ben ye shi lianxi guke de qiaoliang*  
comment book also be connect customers DE bridge

'Many shops provide suggestion books. The function of suggestion books is to monitor employees' performance through customers' perspective and comments so that they can provide better service for the customers. Besides, (we) should also recognize that suggestion books serve as a bridge in connecting the customers.'

(extracted from the data pool by Liao, 1992)

In summary, the AC of the anaphora indicates how easily an entity can be accessed from the mental representation of the discourse, which significantly affects the choice of NP reiteration forms. Same NP repetition and alternative NPs are found to be low Accessibility Markers, pronouns are intermediate Accessibility Markers, and zero anaphora is high Accessibility Marker.

The extent of Accessibility of an entity can be evaluated by examining its distribution and function in the discourse involved in terms of the four

parameters: availability vs. unavailability of competing entities, low vs. high in discourse continuity, low vs. high in semantic prominence, and low vs. high in NP Accessibility Hierarchy. It should be noted that among all the entities in illustration (1), the entity *Qianlong* 'Qianlong' in (1.c)-(1.d) demonstrates the highest value of Accessibility, as it meets all the criteria of the AC, i.e., it does not meet any competing entity in the discourse segment, it is high in discourse continuity, it is semantically prominent, and it is high in NP Accessibility Hierarchy. Therefore, it can take zero anaphora without creating any confusion about its identity. In comparison, other entities in illustration (1) have lower degree of Accessibility, e.g., the entity *Qianlong* 'Qianlong' in (1.i)-(1.l) meets a competing entity *yi wei hucong* 'one attendant'; *ji bai tiao chuanbo* 'several hundred boats' in (1.d) and *hai* 'sea' in (1.c) and (1.d) are both low in NP Accessibility Hierarchy. Nevertheless, in contrast to *hai* 'sea', *ji bai tiao chuanbo* 'several hundred boats' in (1.d) is semantically prominent and changes into a topic entity in (1.e) and therefore is able to take high Accessibility marker--zero anaphora--in (1.e). All this suggests that the final choice of NP reiteration forms is determined by the combined effect of the parameters rather than by the effect of only one parameter.

### 3.2. The Variability Condition (VC)

From section 3.1, we can observe that same NP repetition and alternative NPs share the same degree of Accessibility Marking, and alternation between the two in referent tracking cannot be fully explained by the AC alone. The Variability Condition (VC) is thus established to supplement the AC explanation. Variability refers to the relative ease with which an alternative referential expression can be retrieved from the mental representation for coding a given entity. I propose that in addition to being Accessibility Markers, NP reiteration forms are Variability Markers--marking the degree of variability of an entity in our mental representation. Same NP repetition is low Variability Marker, while alternative NPs are high Variability Markers.

The parameters bearing on the VC are identified as: simple proper NP vs. other types of NP, introduction of an entity with general terms vs. with specific terms, non-frequent vs. frequent mention of an entity in discourse, and unavailability vs. availability of standardized labels. The following sections will further explain each of these parameters.

#### 3.2.1. SIMPLE PROPER NP VS. OTHER TYPES OF NP

The criteria for simple NPs are: 1) they are short, and 2) they contain no more than one informational unit, e.g., *guke* 'customer' in illustration (3.d).

It is postulated<sup>3</sup> that while it is unlikely for simple proper NPs to be coded with a variety of expressions, other types of NPs (e.g., simple but not proper NPs and complex NPs) can enjoy different alternative expressions. In other words, simple proper NPs are low in Variability and are likely to take same NP repetition in successive mentions, while other NPs are high in Variability and are likely to take alternative NPs. For example, *Guo* 'Guo' in illustration (4) is simple and proper NP and always has to be reiterated with the same NP. But *zitiao* 'note' and *dizhu* 'landlord' in illustration (5) are simple but not proper NPs and can therefore switch to alternative NPs in subsequent clauses respectively as *tiaozi* 'note' in (5.d) and *zhe ge dizhu* 'this landlord' in (5.c). In illustration (6), *Zhongguo Guojia Nanzi Lanqiu Dui* 'China National Men Basketball Team' is complex NP; and even though it is proper NP, it can be reiterated with alternative NPs--*Zhongguo Nan Lan* 'China Men Basketball' in clause (6.e) and *Zhongguo Dui* 'China Team' in clause (6.h).

- (4.a) *shanyu zai dianying jie zhizaode re dian de Eying*  
famous at movie field produce hot point DE Eying  
*daoyan*  
director
- b) *Wang Jixing ri qian dai zhe ta de xin zhurengong*  
Wang Jixing day before bring ZHE his DE new protagonist  
*Guo*  
*Guo*
- c) *yiqi jin Jing,*  
together enter Beijing
- d) *Guo shenghuo zai Laoniangtu.*  
Guo live in Laoniangtu
- e) *yu san nian qian suzao*  
with three year before portray
- f) *zhi san zhi mei de Qiaoyuluu butong,*  
very good very beautiful DE Qiaoyuluu different
- g) *Laoniangtu li de Guo chongman maodun, yinci,*  
Laoniangtu inside DE Guo fill-with contradiction, therefore,
- h) *Laoniangtu zai Beijing shiying yinqi de zhengyi*  
Laoniangtu in Beijing preview cause DE dispute
- i) *duoyu Qiao ju de hongdong.*  
more Qiao drama DE stir
- j) *mei ge guanzhong zai yingpian de qian ban bu*  
every CL audience in film DE previous half section  
*zhong*  
middle
- k) *dou you keneng chengwei Dalao Zhuang de yi ge*  
all have possibility become Dalao Village DE one CL

*shanliang*  
kind-hearted

- l) *cunmin, kan zhe Guo zai Guandi Miao chusheng,*  
villager, see ZHE Guo in Guandi Temple birth,
- m) *kan ta guer bugu de tongnian*  
see him orphan not-alone DE childhood.
- n) *...Guo he gongke guo yiqi zhangda, ....*  
...Guo and republic country together grow-up.....
- o) *yushi, kan guo ci pian de bu shao ren dou zai*  
therefore watch GUO this film DE not few people all ZAI  
*sisuo....*  
think...

‘Wang Jixing, Eying Director, who is good at producing movies for heated discussion, brought his new character Guo into Beijing. Guo lives in Laoniangtu. Different from the perfect character Qiaoyulu created three year ago, Guo in Laoniangtu is full of contradiction. Therefore, when Laoniangtu was previewed in Beijing, it aroused more dispute than the stir by the Qiao drama. In the first part of the film, every audience may possibly identify themselves as one of the kind-hearted villagers in Daolao Village, witnessing Guo's birth in the Guandi Temple, and his orphan but not lonely childhood.....Guo grows up together with the Republic..... Therefore, many people who have watched the film will think.....’

(extracted from Beijing Wanbao, 31 August, 1992)

- (5.a) *congqian, you ge qiongren xie le yi zhang zitiao*  
once-upon-a-time, have CL poor-man write LE one CL note
- b) *xiang dizhu zhu yi tiao niu yong,*  
to landlord rent one CL ox use
- c) *zhe ge dizhu yi zi bu shi,*  
this CL landlord one word not know
- d) *tiaozi song qu de shihou, ta zheng zai pei ke.*  
note send to DE time he right ZAI entertain guest.

‘Once, a poor man wrote a note to a landlord requesting an ox to be used. But the landlord was not literate at all. When the note was sent to him, he was entertaining guests.’

(extracted from 'Minjian Xiaohua Daguang')

- (6.a) *Zhongguo Guojia Nanzi Lanqiu Dui*  
China Nation Man basketball team
- b) *yi jiu ba si nian si yue ershi ba ri wan*  
(one nine eight four year four month twenty eight day night

- c) *zai faguo kangbulei yi jiushi yi bi bashi si*  
in France Cambrai with ninety one against eighty four
- d) *zaici zhansheng nansilafu lubueryana dui,.....*  
again win Yugoslavia Lubueryana team,.....
- e) *Zhongguo Nan Lan shi zai canjiale*  
China Men Basketball be at participate
- f) *faguo guoji lanqiu yaoqing-sai*  
France international basketball invitational-tournament  
*zhihou,*  
afterwards,
- g) *yingyao dao faguo qita chengshi fangwen de.*  
accept-invitation to France other city visit DE
- h) *Zhongguo Dui jiang yu wu yue yi ri qianwang*  
China team will at five month one day go-to  
*bolan*  
Poland
- i) *canjia lingyici guoji lanjiu*  
participate another international basketball  
*yaoqing-sai*  
invitational-tournament

‘China Men Basketball Team once again defeated Yugoslavia Team in France .....It was after attending the International Invitational Tournament in France that China Men Basketball was invited to visit other cities in France. The team will attend another international invitational tournament in Poland on first of May.’

(extracted from the data pool by Liao, 1992)

### 3.2.2. INTRODUCTION OF AN ENTITY WITH GENERAL TERMS VS. WITH SPECIFIC TERMS

In addition to the parameter of simple proper NP vs. other types of NP, I find that an entity which is introduced into the discourse with general terms is low in Variability and is likely to take same NP repetition. But an entity introduced with specific or subordinate-level term is high in Variability and alternative NPs are usually used in successive references. Work by Rosch et al. (1976) in psycholinguistics lends support to the claim here. Rosch et al. (1976) propose that “of the many levels of abstraction at which any given thing can be classified, there is one basic level of abstraction at which the organism can obtain the most information with the least cognitive effort.” For example, chair, which is the basic level category in a hierarchy of abstraction, is used more frequently than its superordinate furniture or its subordinates kitchen chair, armchair, high chair, etc.

Applying Rosch's findings to the present postulation, I propose that the superordinate or subordinate terms are higher in Variability than the general or basic-level lexemes and therefore are more likely to be retrieved in the form of alternative NPs in successive references. For example, after the entities are introduced with more specific terms *zitiao* 'paper note' in (5.a) and *luyin di* 'camp site' in (7.a), they are reiterated with more general terms respectively as *tiaozi* 'note' in (5.d), and *suaying di* 'lodging site' in (7.c).

- (7.a) {*Huangshi*} *gongyuan nei huading henduo luying di*,  
*Huangshi park inside designate many camp site*,  
 b) *bian hao ru zuo*.  
 assign number enter seat  
 c) *suaying di xu zai song shan mi lin zhong*,  
 lodge site although in high mountain thick forest inside,  
 d) *danshi yecan zuo deng, luzi, weisheng shebei*,  
 but picnic table bench, stove, sanitation facility,  
*zilai shui*  
 tap water  
 e) *yiying juquan*.  
 all equip

'Inside Yellowstone Park, there are a lot of campsites which are marked with numbers. Although the lodging sites are located in thick forest, picnic tables and benches, stoves, running water and sanitation facilities are provided there.'

(extracted from the data pool by Liao, 1992)

### 3.2.3. NON-FREQUENT VS. FREQUENT MENTION OF AN ENTITY IN DISCOURSE

It is also my observation that to avoid monotony as well as to provide continuity in discourse, the writer is likely to code a frequently mentioned entity with alternative NPs rather than with a non-frequently mentioned entity. Therefore, an entity frequently mentioned in the discourse is high in Variability and can often take alternative NPs, while an entity which is not frequently referred to in the discourse is low in Variability and is often settled with same NP repetition. For example, in illustration (4), the frequently mentioned entity *Laoniangtu* 'Laoniangtu' is reiterated in different forms--*yingpian* 'film' in (4.j) and *ci pian* 'this film' in (4.p). In illustration (5), the frequently mentioned entity *Zhongguo Guojia Nanzi Lanqiu Dui* 'China National Man Basketball Team' takes different forms in successive references--*Zhongguo Nan Lan* 'China Men Basketball' in clause (6.e), and *Zhongguo Dui* 'China Team' in clause (6.h).

### 3.2.4. UNAVAILABILITY VS. AVAILABILITY OF STANDARDIZED LABELS

The last parameter I postulate as subsumed under the VC depends on the number of standardized labels and their “well-knownness”. An entity is high in Variability if it embraces a number of lexical options to be used in the discourse context and the options are familiar to the encoder; and it is low in Variability if the number of lexical alternatives is limited and/or they are not familiar to the encoder. For example, in illustration (1), *Qianlong* ‘Qianlong’ and *hucong* ‘entourage’ are high in terms of the availability of standardized labels, and are reiterated with alternative NPs respectively as *huangdi* ‘emperor’ in (1.k) and *suixing* ‘attendant’ in (1.l). But in illustration (3), *yijian ben* ‘suggestion book’ and *guke* ‘customer’ are low in Variability and have to be repeated simply in the subsequent mentioning as in clause (3.b), (3.d), and (3.f).

## 4. CONCLUSION

The present study advances a preliminary exploration of how anaphoric lexical reiteration is used in staging the different participants in Chinese texts. The forms of NP reiteration examined include: same NP repetition, alternative NPs, pronouns, and zero anaphora. It is postulated that the alternation among NP reiteration forms in referent tracking is largely triggered by two major mechanisms/cognitive constraints: The Accessibility Condition (AC) and The Variability Condition (VC).

Accessibility refers to the ease with which a given entity can be retrieved from the mental representation of the discourse for interpreting the referring expressions. Adopting the approach by Ariel (1990), the study takes the NP reiteration forms as Accessibility Markers which code the degree of accessibility of the mental representation of the entity referred to in the discourse. Same NP repetition and alternative NPs are found to be low Accessibility Markers, whereas pronouns are intermediate Accessibility Markers, and zero anaphora is high Accessibility Marker. The parameters as subsumed under the Accessibility Condition (AC) are identified as: availability vs. unavailability of competing entities, low vs. high in discourse continuity, low vs. high in semantic prominence, and low vs. high in NP Accessibility Hierarchy.

The Variability Condition (VC) is established to supplement the AC in explaining the alternation between same NP repetition and alternative NPs, as they share the same degree of Accessibility. Variability refers to the relative ease with which an alternative referential expression can be retrieved for coding a given entity. I propose that in addition to being Accessibility

Markers, the NP reiteration forms are Variability Markers--marking the degree of variability of an entity in our mental representation. Same NP repetition is low Variability Marker, while alternative NPs are high Variability Markers. The parameters bearing on the VC have been identified as: simple proper NP vs. other types of NP, introduction of an entity with general terms vs. with specific terms, non-frequent vs. frequent mention of an entity in discourse, and unavailability vs. availability of standardized labels.

It is my conjecture that the final choice of an NP reiteration form is dependent upon the combined value of an entity assigned respectively by each of the parameters constituting the two conditions. Nevertheless, due to the limitation of time and resource for the present study, the conjecture has not been further verified and supported by quantitative evidence based on a much larger and more representative samples of data. Apparently, further work is needed in our understanding of the anaphoric lexical reiteration in Chinese texts.

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## NOTES

<sup>1</sup> The following abbreviations are used in this chapter: CL (classifier), LE (perfective marker), DE (possessive/modifier/complementizer marker), ZAI (progressive marker), ZHE (imperfective non-progressive marker), GUO (the experiential marker).

<sup>2</sup> The genres dealt with in the present study are confined to the written genres in Chinese such as prose, newspaper articles, formal business documents or notes, and the discussion and findings can only be applicable to these types of texts. As pointed out by many researchers such as Fox (1986), different discourse types can have local anaphoric patterns that do not necessarily agree in detail with those in other discourse genres.

<sup>3</sup> Please also read Liao (1992:53) for some similar observation.

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# A CONSTRUCTIONAL ANALYSIS OF THE EXISTENTIAL STRUCTURE

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## 1. THE INTRODUCTION

The existential construction (*there is a book on the table*), the locative construction (*On the table is a book*), and the *have* possessive (*John has a book*) are shown to be systematically related to one another within many languages “in word-order, in the verbs used, and in their locative nature” (Clark, 1978; Freeze, 1992). The universality and the multi-facet nature of systematic relatedness have aroused avid interest among linguists seeking for universal “underlying structure and independently established principles” (Freeze, 1992, p. 553). Many linguists have delved into every aspect of the locative inversion or existential structure with the hope that some general principles and important parameters will be found. Huge amount of work has been done and many assumptions have been made but there are still problems unsolved, especially when we look at languages which are typologically distant from English and its closely related languages. In this chapter we are not concerned with the derivational relationship of the three structures. We will only focus on the existential construction. We argue that

the residual problems of the various analyses can be solved if we distinguish proto-existentials and quasi-existentials and take a constructional approach to the quasi-existentials.

### 1.1. Existential Sentences in Chinese

Many linguists have described the functions and forms of the existential sentences in Chinese and have tried to classify them (Nie (1989); Song (1991); Lei (1993); Hu (1995); Huang (1987); and Pan (1996) among others). Summarizing what these linguists have done and focusing on only those, which are generally regarded as existential sentences, we preliminarily group existential sentences into the following groups according to verb types.<sup>1</sup>

In the following discussion, the numbers as they appear for each type will be used as the type number for the sake of convenience.

- (1) *you* 'have' type
  - a. *You gui* (subject position empty)  
have ghost  
'There is/are a ghost(s)'
  - b. *Fangjianli you yige ren.* (subject position filled)  
room-in have one-Cl. man  
'There is a man in the room.'
- (2) (dis)appearance type
  - a. *Lai-le yige ren.* (subject position empty)  
come-Perf. one-Cl. man  
Lit. 'Came a man.'
  - b. *Jiali lai-le yige ren* (subject position filled)  
home-in come-Perf. one-Cl. man  
Lit. 'Home came a man.'
- (3) placement verb (see Li & Thompson (1981)) type
  - a. *Zhuo-shang fang-le yiben shu* (with perfective marker)  
table-on place-Perf. one-Cl. book  
'There is a book on the table.'
  - b. *Zhuo-shang fang-zhe yiben shu* (with durative marker)  
table-on place-Dur. one-Cl. book  
'There is a book on the table.'
- (4) Treatment verb type
  - a. *Guo-li zhu-le yixie tudou* (with perfective marker)  
pot-in cook-Perf. some potato  
Lit: 'The pot has some potatoes cooking in it.'
  - b. *Guo-li zhu-zhe yixie tudou* (with durative marker)  
pot-in cook-Dur. some potato  
Lit: 'The pot has some potatoes cooking in it.'

- (5) Posture verb (see Li & Thompson (1981)) type
- a. *Chuang-wai zhan-le yi ge ren.* (with perfective marker)  
window-out stand-Perf. one-Cl. man  
'Outside the window stood a man.'
  - b. *Chuang-wai zhan-zhe yi ge ren.* (with durative marker)  
window-out stand-Dur. one-Cl. man  
'Outside the window is/was standing a man.'
- (6) Emission of light, smoke verb type
- a. *Qiaotou-shang liang-le* (with perfective marker)  
bridge-on glimmer-Perf.  
*yi-ge yàn tou.*  
one-Cl. cigarette  
Lit. 'On the bridge glimmered a cigarette.'
  - b. *Qiaotou-shang liang-zhe* (with durative marker)  
bridge-on glimmer-Dur.  
*yi-ge yàn tou.*  
one-Cl. cigarette  
Lit. 'On the bridge is glimmering a cigarette.'
- (7) Production verb type
- a. *Heiban-shang xie-le yi-ge zi* (with perfective marker)  
blackboard-on write-Perf. one-Cl. character  
Lit. 'On the blackboard has been written a character.'
  - b. *Heiban-shang xie-zhe yi-ge zi* (with durative marker)  
blackboard-on write-Dur. one-Cl. character  
Lit. 'On the blackboard is written a character.'
- (8) Movement verb type
- Shui-li you-zhe yi-tiao yu.*  
water-in swim-Dur. one-Cl. fish  
Lit. 'In the water is swimming a fish.'
- (9) Other verb type
- a. *Tai-shang chang-zhe daxi*  
stage-on perform-Dur. opera  
Lit. 'On the stage is performing an opera.'
  - b. *Wu-li kai-zhe hui.*  
room-in hold-Dur. a meeting  
Lit. 'In the room is holding a meeting.'

Just a glance at the rough classification will tell us that we have a much more complex situation to deal with in Chinese than in many other languages.

## 1.2. Problems and Proposed Solutions

First, the first two types (1-2) allow the subject position to be optionally filled. All the other types require the subject position be lexically filled. The null subject can be regarded as corresponding to the empty expletive (in Italian) or an overt expletive such as *there* in English. The locative NPs in the subject position have been argued to be semantic subjects by Huang (1987), Li (1990) and Qu (1993). In a like manner, Bresnan and Kanerva (1989) also argue that the locative NP in the subject in Chichewa is not a dummy subject. If locative NPs are semantic subjects, then they cannot form a chain with the NPs in the object position. That means both the locative NPs and the NPs in the object position need Case. This poses a problem for unaccusative verbs which are usually involved in existential sentences because unaccusative verbs are thought to lack the ability to assign Case (Burzio (1986); Perlmutter (1978)). To solve this problem, Li (1990) assumes that all verbs in Chinese, either unergative or unaccusative, assign Case. We will take this assumption as true without further argument in this chapter.

Second, the types from (3) to (7) are compatible with both the perfective marker *-le* and the durative marker *-zhe*, while type (2) can only co-occur with the perfective marker *-le* and types (8-9), the durative marker *-zhe*. By applying Vendler's (1967) and Dowty's (1979) aspectual classification of verbs, Hu (1995) tries to explain the co-occurrence relationship of verb types and aspect markers and the meaning differences caused by the alternation. Although Hu (1995) does not look at our last type (9), his approach can be extended to sentences of this type. In this chapter no further discussion of this phenomenon will be made.

Third, the Definiteness Effect (DE)<sup>2</sup> has been observed to obtain in some of the above-mentioned types, especially the first two types of the existential sentences (also the first two types of Huang's (1987) grouping<sup>3</sup>), but not in most of the other types:

- (10) *you* 'have' verb type  
*You gui* /\*Zhangsan/\*neige ren /\*ta/\*meige ren.  
 have ghost/Zhangsan /that-Cl.man /he /every man  
 'There is/are a ghost(s)/\*Zhangsan/\*that man/he/everybody.'  
 Compare<sup>4</sup>: *Zheli you-mei-you zheben shu?*  
 here have-not-have this-Cl. book  
 'Is there (a copy of) this book here?'

## (11) (dis)appearance verb type

*Lai-le liangge ren /\*Lisi/\*ta/\*neige ren /\*meige ren le.*  
 come-Perf two-Cl. man/\*Lisi/\*he/\*that-Cl.man/\*every man Prt  
 Lit. 'Came two men/\*Lisi/\*he/\*that man/\*every man.'

## (12) Other types

*Shu-xia zuo-zhe yige ren /Zhangsan/neige xiaohai*  
 tree-bottom sit-Dur one-Cl.man /Zhangsan /that-Cl. child  
 'Under the tree sits a man/Zhangsan/that child.'

The presence or absence of DE cannot be explained by the unbalanced  $\theta$ -chain theory proposed by Safir (1982) and Reuland (1983), because, as Huang (1987) points out, DE obtains in the second type ((dis)appearance verb type) of existential sentences even when the subject position is filled and no unbalanced chain is formed. On the other hand, Belletti's (1988) hypothesis that unaccusative verbs assign optional inherent Case -- the partitive Case-- does not explain the facts in Chinese, either, because DE is not consistently present for all types of existential sentences that involve unaccusative verbs. It seems that pure syntactic approaches cannot explain the full range of data, and some other explanations have to be sought. Huang adopts a lexical-semantic approach and argues that the presence or absence of DE in Chinese may depend on the degree of existentiality inherent in the verbs involved. Verbs with more existential meaning will induce DE and verbs that do not express existence originally will not. Huang's assumption seems to cover a large range of data, but his degree of existentiality is very vague in nature and cannot explain why, for types where DE generally obtains, an indefinite NP is much better than a definite NP, as exemplified in (13) below.

- (13) a. *Xiao lu-shang pao-zhe yi-qun ren.*  
       side path-on run-Dur. one-group man  
       Lit. 'One the side path is running a group of men.'  
       b. ??*Xiao lu-shang pao-zhe na-qun ren.*  
       side path-on run-Dur. that-group man  
       Lit. 'One the side path is running that group of men.'

Finally, verbs involved in existential sentences do not seem to fall nicely into any syntactic or semantic group. Verbs involved in Types 2, 5, 6, and 7 are intransitive, whereas verbs in Types 3, 4, and 8 are transitive. All the intransitive verbs can be regarded as verbs which assign a *theme* role to the sole argument, but the transitive verbs cannot be unaccusative verbs. This seems very special to Chinese, because in many languages, such as English, Finnish, Chichewa, etc., only unaccusative verbs are involved in the

existential construction. This unusual phenomenon poses problems to either the syntactic movement theory or the Lexical Mapping Theory, because both theories are based on the assumption that the existential construction involves only unaccusative verbs. According to the syntactic movement theory, unaccusative verbs do not assign Case so the only argument has to move to the subject position to receive Case or to receive Case from a coindexed expletive subject. As mentioned earlier, the locative NPs in the subject of existential sentences in Chinese are not dummy subjects so the syntactic movement theory does not work for Chinese data. The Lexical Mapping Theory as proposed by Bresnan and Kennerly (1989) and Bresnan (1994) does not work for Chinese data, either, because their theory predicts that only verbs that have a thematic structure with the *theme* role as the highest role can undergo existential and locative alternation. Pan (1996) tries to maintain Bresnan & Kennerly's model by proposing that the durative marker *-zhe* has the function of deleting the *agent* role under certain conditions, but this deletion rule has many exceptions and the generalization seems to lie somewhere else.

## 2. A NEW APPROACH: TOP-DOWN AND BOTTOM-UP

The top-down and bottom-up approach is the one adopted by people who work in the framework of Construction Grammar (Fillmore 1988; Fillmore et al. 1988; Goldberg 1992). The basic idea is that "basic sentences instantiate valence constructions, i.e. form-meaning correspondences, that exist independently of particular verbs. It is argued that the constructions themselves, independently of the words in the sentence, carry meaning and specify syntactic structure" (Goldberg 1992). Linguists in this framework admit that the generally accepted lexically-based or bottom up approach is well-motivated, but fails to explain the full range of language data. There are constructions in natural languages that are associated with a family of distinct but related senses. These senses are not strictly predictable from our knowledge of the rest of the grammar. According to Construction Grammar linguists, these constructions should be taken as units of language.

We feel that the existential construction should be just one of the special constructions in Chinese. It has its own structure and meanings. It imposes certain constraints, and elements can be mapped onto the construction only if all the constraints are observed.

### 3. THE SYNTACTIC CONFIGURATION AND CONSTRUCTIONAL MEANING

#### 3.1. Syntactic Configuration

The existential sentences in (1-9) take either of the following two syntactic forms:

(14) V + NP

(15) NP<sub>loc</sub> + V + NP

Although there is no locative NP in (14), the relevant sentence is always interpreted as introducing an entity into a deictic domain/location.

#### 3.2. Two Types of Existential Sentences

In section 1.1, we preliminarily divide the existential sentences into eight types. Now we will examine them from different perspectives and argue that they should be divided into two basic groups: our preliminary types (1) and (2) are proto-existentials and our other preliminary types are quasi-existentials,<sup>5</sup> and the Chinese examples of these two types are given in APPENDIX A at the end of this chapter. For the sake of convenience, we will call them proto-group and quasi-group in the following discussion. We have syntactic, semantic and discursal evidence to support this division.

Syntactically, as Huang (1987) has noted, only the proto-group existential sentences can alternate between the form in (14) and that in (15), whereas the other types in the quasi-group only take the form in (15).

Semantically, as Huang (1987), Hu (1995), Nie (1989) and others have observed, the verb *you* 'have' used in the first type of the proto-group is a pure existential verb and the verbs in the second type of this group are (dis)appearance verbs, which basically denote (either in existential sentence form or in other sentence forms) existence or coming into/out of existence of some entity with respect to a location. On the other hand, verbs involved in all the types of the quasi-group do not denote existence or coming into/out of existence of some entity; rather they have basic meanings such as placement, treatment, movement, posture, emission, and so on.

Discoursally, the two types in the proto-group always introduce some entity into/from a domain and the entity is necessarily new information<sup>6</sup>; the other types may present the existence of an new entity or just present a new space-entity relation, so the entity may not be new discursal information:

- (16) *Cunli lai-le yi-ge ren*  
village come-Perf. one-Cl. person  
Lit. 'In village came a person.'
- (17) *Qiangshang gua-le yi-fu hua*  
wall-on hung-Perf. one-Cl. picture  
Lit. 'On the wall hungs a picture.'
- (18) *Chuangshang tang-zhe wo jiejie*  
bed-on lie-Dur. my sister  
Lit. 'In the bed is lying my sister.'

In (16), a proto-existential sentence, *yi-ge ren* 'a person' is new information introduced into the discourse. In (17), a quasi-existential sentence, *yi-fu hua* 'a picture' is also new information. However, *wo jiejie* 'my sister' in (18), also a quasi-existential sentence, is not new information. This sentence just introduces a new space-entity relationship between *wo jiejie* and *chuangshang* 'on the bed'.

From the above discussion, we can see that the proto-existentials share the basic properties found in existential sentences across languages:

- i. DE obtains (as in English (Milsark, 1974; Safir, 1982; Reuland, 1983), Italian (Balletti, 1988), Finnish, Russian, Chamorro, Tagalog, Hindi (Freeze, 1992),
- ii. The verbs involved are unaccusative verbs (as in English, Chichewa (Bresnan & Kanerva 1989; Bresnan 1994), Finnish, Russian, Chamorro, Tagalog, Hindi (Freeze, 1992));
- iii. In the subject position, we find either a locative NP or an expletive (a null one as in Russian, Finnish, Tagalog, Hindi (Freeze, 1994)), or a overt one (as in English, Catalan, Palestinian Arabic, Palaun (Freeze, 1994).

Therefore, we consider proto-existentials typical, true and original existential sentences as the name we give them suggests.

When we call the proto-existentials true and original existential sentences, we of course presume that there are quasi existential sentences. The quasi existential sentences are modeled on the proto existential sentences and share some but not all of the properties of the proto-existentials. Only truly existential verbs (like *you* 'have' and the (dis)appearance verbs can occur in the proto-existentials, but verbs of many different kinds can occur in the quasi-existentials. This is possible because some fixed constructions in languages develop meanings of their own and they can accommodate different verbs with their arguments as long as the lexical meaning of the verb in question and its arguments can somehow be geared into the meaning of the construction (See Goldberg, 1992 for more relevant discussion). In

other words, verbs other than true existential verbs can inherit constructional meanings and present the existence of some entities in the existential construction.

### 3.3. The Meanings and Functions of the Existential Construction

The existential construction expresses a relation where an entity is established or presented with respect to a location. In other words, we assume that the existential construction in Chinese has a meaning of establishing some entity in/into/from a domain or of presenting the existence of some entity in a domain. The constructional meaning can be formalized as (19):

$$(19) P (\chi_{loc}, \gamma_e)$$

where  $P$  is the property denoted by the verb in question,  $\gamma_e$  is the entity introduced or presented and  $\chi_{loc}$  is the location predicated.

The constructional meaning suggests that the construction performs one or more of the following three basic functions: i.) introduce some new entity into the discourse domain; ii.) introduce new space-entity relationship; and iii.) provide relevant predication about the space itself. The first two functions match the two types of existential sentences described by Lakoff (1987): “nuclear” type [  $Y$  exists ] and “extended” type [  $Y$  exists with reference to  $Z$  ]. The first type necessarily establishes a new entity into/from a domain but the second type focuses on a new relationship between  $Y$  and  $Z$ . The semantics of the third type can be formulated as [An on-going action  $Y$  exists in  $Z$  ].

## 4. IMPLICATIONS OF THE CONSTRUCTIONAL ANALYSIS

### 4.1. Definiteness Effect Explained in the New Model

Of the three constructional functions of the existential construction, the proto-existentials mainly serve the first, that is: establish some new entity in/into/from a domain [  $X$  exists ]. The fact that only pure existential and highly existential (dis)appearance verbs are involved in this group is evidence of this. This major function of the proto-existentials determines that DE obtains in this type of existentials:

- (20) a. *\*Wu-li you Zhangsan*  
           room-in have Zhangsan  
           (\*‘There is Zhangsan in the room.’)  
       b. *Wu-li you ren*  
           room-in have someone  
           (\*‘There is someone in the room.’)
- (21) a. *\*Cun-li si-le Zhangsan*  
           village-in die-Perf. Zhangsan  
           (\*‘In the village died Zhangsan.’)  
       b. *Cun-li si-le yi-ge ren*  
           village-in die-Perf. one-Cl. person  
           Lit. ‘In the village died a person.’

As we mentioned before, the subject position of this type of existential sentences can be empty. This shows that the focus of these sentences is to establish the existence or the cease of existence of some entity. The manner of existence or any predication about the space itself is not the focus.

The quasi-existentials involve verbs which are not true existential verbs, but they can present existence by describing the manner of existence or saying something about the location. Existential sentences of this type can serve both functions of the construction. This is why both indefinite and definite NPs can occur in them. (22) introduces an entity into the domain by describing the manner of existence:

- (22) *Chuang-shang tang-zhe yi-ge ren*  
       bed-on lie-Dur. one-Cl. person  
       Lit. ‘On the bed is lying a person.’

In (23) both the location and *Zhangsan* are known information, but the existence of *Zhangsan* in the location of the bed is new information:

- (23) *Chuang-shang tang-zhe Zhangsan*  
       bed-on lie-Dur. Zhangsan  
       Lit. ‘On the bed is lying Zhangsan.’

In sentences that serve the third function, the emphasis is on the existence of an on-going action. The entities involved are not emphasized. There is no resultant state, nor a change of state of any entity. Therefore, usually only a mass NP will occur after the verb.

- (24) *Tai-shang chang-zhe daxi*  
       stage-on perform-Dur. opera  
       Lit. ‘On the stage is performing opera.’

## 4.2. Perfective and Durative Markers

The use of the perfective and durative markers depends on the aspectual nature of the verbs and the chosen viewpoint of the speaker. The pure existential verb *you* 'have' is stative so the perfective *le* and the durative *zhe* do not usually co-occur with it, though for different reasons. *Le* requires endpoints in the sentence (Li & Thompson (1981), Yang (1995)), but a stative situation does not have an endpoint. *Zhe* does not usually occur with stative verbs for the reason that stative verbs are stative and durative and do not need the help of *zhe* to make them durative.<sup>7</sup> However, *you* 'have' can be made to denote a change from the non-existence to the existence of some entity (the changing point is the endpoint). In situations like this the perfective *le* is used:

- (25) *Zhe-jian yiyuan congci you-le zugou de yisheng.*  
 this-Cl. hospital since then have-Perf. enough DE doctors  
 'Since then there are enough doctors in this hospital.'

*Zhe* is used with *you* 'have' only when the entity in question is abstract and its existence needs emphasis:

- (26) *Zhe-ge chengshi you-zhe guangrong de geming chuantong*  
 this-Cl. city have-Dur. glorious DE revolutionary tradition  
 'In this city there is glorious revolutionary tradition.'

The (dis)appearance verbs are Accomplishment verbs and their function in the existential sentences (focusing on some entity coming into or out of some domain) suggests that only the perfective *le* is possible with them.

The placement verbs, treatment verbs, and production verbs can all produce some resultant state so both *le* and *zhe* can occur with them depending on whether the speaker wants to emphasize just the resultant state or the change from the previous state to the resultant state.

- (27) *Chuang-shang tang-zhe yi-ge ren*  
 bed-on lie-Dur. one-Cl. person  
 Lit. 'On the bed is lying a person.'

- (28) *Chuang-shang tang-le yi-ge ren*  
 bed-on lie-Perf. one-Cl. person  
 Lit. 'On the bed is lying a person now.'  
 (implying the state was not true in the past).

*Zhe* is used when only the resultant state is emphasized (27) and *le* is used when the change is emphasized (28) (cf. Hu, 1995 for more relevant discussion).

The (light, smoke) emission verbs may be just activity verbs like *miman* 'permeate' or verbs that have dual aspectual properties -- describing activities or indicating change of state -- like *liang* 'shine'. Only *zhe* is compatible with the former, but both *le* and *zhe* are compatible with the latter.

The non-directional movement verbs, like *you* 'swim', *fei* 'fly', etc., are activity verbs and do not lead to any natural endpoint, so they are only compatible with the durative marker *zhe*.

Finally, if the speaker focuses on the on-goingness of an action, only the durative marker *zhe* can be used.

To sum up, the choice of *-le* and *-zhe* depends on the aspectual properties (telic or atelic) of the verb and the viewpoint of the speaker.

## 5. CONSTRAINTS ON THE CONSTRUCTION

We have shown that the existential construction has constructional meanings which verbs can inherit, but it is not the case that any sentence with the basic existential structure is grammatical. There are some constraints on the well-formedness of the existential sentences.

### 5.1. Informativity Constraint

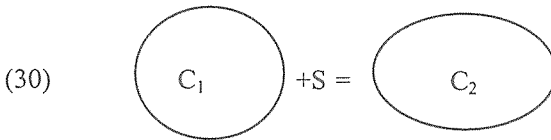
The first constraint is that the sentence in question should be informative enough in discourse. The following sentence is not acceptable because it does not make sense to say there is a bus in London when we all know that there are many buses in London.

- (29) a. \**London you yi-liang gong-gong qiche*  
           London have one-Cl. public automobile  
           ('\*There is a bus in London.')

Huimo (1996) proposes the immediate scope constraint to explain this, meaning the location should be the immediate space that contains the entity introduced. This immediate scope, however, is rather vague. The immediate space for a bus produced at the beginning of this century may be a garage somewhere in London, but, unlike the sentence in (29a), the following sentence is acceptable:

- (29) b. *Lundun you yi-liang ben shiji chu zao de*  
 London have one-Cl. this century beginning produce DE  
*gonggong qiche*  
 public automobile  
 'There is in London a bus produced at the beginning of the  
 century.'

Although London is not the immediate scope of the bus, but mentioning a special bus does provide some new information about London. Based on this observation we propose our informativity constraint below. Suppose we have two context sets before and after the utterance of the existential sentence S, as given in (30), and the condition for uttering S is (31).



- (31)  $C_1 \neq C_2$

(31) suggests the context set after the utterance will contain something new that is not contained in the context set before the utterance.

## 5.2. Compatibility Constraint

As many linguists have observed, not all types of verbs can occur in the existential construction. Only the verbs that are compatible with the basic meanings of the construction can occur in the construction. To qualify as a possible candidate for the construction, a verb must satisfy one of the following semantic requirements:

- (32) a. presenting existence or introducing an entity into or from a domain (including *you* 'have', *si* 'die', *fasheng* 'happen', *chuxian* 'emerge', all directional movement verbs *lai* 'come', *qu* 'go' and all motion verbs that are made directional *feilai* 'fly come', *youzou* 'swim away', *zhujin* 'squeeze into', *tiaochu* 'jump out', etc.)
- b. producing a resultant state of some entity in some location (including *fang* 'place', *gua* 'hang', *zhu* 'cook', *xie* 'write', etc.)
- c. describing manner of existence (including static manners like *zhan* 'stand', *tang* 'lie', *zuo* 'sit' and dynamic manners like *you* 'swim', *piao* 'float', *miman* 'permeate')

- d. describing a function a location is meant for (*tai--daxi* 'chang--stage perform opera', *fangjian--kaihui* 'room--having a meeting').

The compatibility of the constructional meaning and the meanings of verbs in (i) is self-evident. The verbs in (ii) have been discussed by many linguists and their compatibility with the meanings of the existential construction is also obvious. Only the verbs in (iii) and (iv) need further elaboration.

By static manner of existence verbs we mean those verbs which describe some static posture of the entity in question.<sup>8</sup> Any static posture will be the true manner of existence of that entity, even if just for a short while. That is why all static posture verbs can occur in the existential structure. By dynamic manner of existence verbs, we mean those verbs which describe typical, major type of movement of the entity in question. *Swimming* is a typical movement of the fish, so the following sentence is acceptable:

- (33) *Shui-li you-zhe yi-tiao yu*  
water-in swim-Dur. one-Cl. fish  
Lit. 'In the water is swimming a fish.'

(34) is not acceptable because *swimming* is not a typical movement of human beings, whereas *running* is a typical movement of a human being, so sentence (35) is acceptable:

- (34) \**Shui-li you-zhe yi-ge ren*  
water-in swim-Dur. one-Cl. man  
(\*'In the water is swimming a man.')
- (35) *Xiaolu-shang pao-zhe yi-ge ren*  
bypath-on run-Dur. one-Cl. man  
Lit. 'On the bypath is running a man.'

*Crying* is not a typical movement of a human being, so (36) is out:

- (36) *Xiaolu-shang ku-zhe yi-ge ren*  
bypath-on cry-Dur. one-Cl. man  
Lit. 'On the bypath is crying a man.'

The last compatibility requirement (iv) makes sure that the on-going action, whose existence is presented in the existential sentence, should be the function the location is meant for. A stage is for performance, so (24) *tai-shang chang-zhe daxi* 'On stage is performing opera' is acceptable. A market is for selling goods, so (37) is acceptable:

- (37) *Shichang-shang mai-zhe henduo pianyì huò*  
 market-on sell-Dur. many cheap commodities  
 Lit. 'On the market are sell many cheap commodities.'

Therefore, we can see that verbs have to satisfy one of the four requirements in (32) to be able to occur in the existential construction.

### 5.3. Predication Constraint

The verb and the NP after the verb should be predicated of the locative NP, that is to say the verb in question should establish the existence of something that will affect the location (See Pan (1996), and Huumo (1996) for more relevant discussion). This constraint also entails that an internal argument that is established by the verb must be present in the existential construction. As noted in previous sections, both intransitive verbs and transitive verbs can occur in the existential construction in Chinese. If we examine the intransitive verbs that can occur in the existential construction, we find that their only argument is an internal argument. The only argument of verbs in proto-existentials has the *theme* role and is therefore the internal argument. The only argument of the movement, posture and light emission verbs may have dual roles: *agent* and *theme*, and only the *theme* role is possible in the existential construction because of the presentational nature of the existential sentence.<sup>9</sup> For transitive verbs the internal argument must occur in the construction, otherwise the sentence is unacceptable. For example, *chang* 'perform' assigns both an *agent* role and a *theme* role, but if the *agent* role occurs in the construction instead of the *theme* role, we get an unacceptable sentence:

- (38) *\*Tai-shang chang-zhe xuesheng men*  
 stage-on perform-Dur. students PL.<sup>10</sup>  
 ('\*On the stage are performing students.')

## 6. CONCLUSION

We have adopted ideas from the linguists mentioned throughout the chapter. Our chief contributions are as follows: i.) a clearer distinction of two types of existential sentences: proto-existentials and quazi-existentials; ii.) the assumption that some constructional meanings develop out of the proto-existentials and make possible the derivation of quazi-existentials; iii.) a new explanation of the DE; and iv.) the proposal of a set of constraints on

the existential construction. We have shown that our analysis can better explain both the universal and the special properties of the existential sentences in Chinese.

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## NOTES

<sup>1</sup> The following abbreviations are used in the chapter: Cl.= classifier; Perf. = perfective aspect marker; Par. = sentential particle; Dur. = durative aspect marker; Prog. = progressive aspect marker.

<sup>2</sup> For more discussion on the definite and indefinite distinction and the Definite Effect, see Milsark (1974, 1977); Heim (1988, 1989); Gil (1989); Safir (1989); Keenan (1989); and Reuland (1983), etc.

<sup>3</sup> Huang's third type corresponds to our Type 3 and Type 5. His fourth type like *Wo jiao-guo yige xuesheng* 'I have taught a student' can be considered a sentence type that introduces some entity into the discourse but is not closely related to the rest of the existential sentences in terms of the verbs used and the locative nature of the existential construction, so we don't include this type in our discussion.

<sup>4</sup> When the subject position is filled, a definite NP may occur after the verb but as Huang points out, this NP is only syntactically definite but not semantically so.

<sup>5</sup> Hu (1995) also divides existential sentences into two basic types: (dis)appearance and existence, but he was only concerned with the aspectual nature of the verbs involved. He also uses the term *quasi* to describe a subtype of the existential sentences, the verbs of which take the perfective marker *-le*.

<sup>6</sup> As Huang (1987) points out, the definite NP in a sentence like the following is definite syntactically but indefinite semantically:

*Tushuguan you zhe ben shu*  
library have this-Cl. book  
Lit. 'In library is a copy of this book.'

<sup>7</sup> Carlson (1997) points out that the progressive *-ing* in English does not co-occur with state verbs because the state verbs are durative in nature. Pan (1996) makes similar observation about Chinese durative marker *zhe*.

<sup>8</sup> The same verbs can also present activities, for instance: "He stood up."

<sup>9</sup> See Bresnan & Kennerly (1989) for more relevant discussion.

<sup>10</sup> Pl. = plural morpheme.

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## APPENDIX A

## TYPE ONE

1. 房間裡有一個人。
2. 這張臉上曾有過一些美的東西。(Song)
3. 圖書館裡有這本書。(Huang)
4. 中國沒有那至高無上的教會，可是有那至高無上的禮教。(Song)
5. 家裡來了一位客人。(Hu)
6. 小李家跑了一隻鴿子。(Hu)
7. 村裡死了一個人。
8. 荃灣發生了一起車禍。
9. 院裡鑽出一條大狗。(Hu)
10. 林子裡飛出一些美麗的鳥。(Hu)

TYPE TWO<sub>I</sub>

11. 桌子上放了一本書。
12. 牆上掛了一幅畫。
13. 鍋裡煮了你昨天賣來的土豆。
14. 缸裡醃了那一百公斤雪裡紅。(Nie)

TYPE TWO<sub>II</sub>

15. 桌子上放著一本書。
16. 天上嵌著無數顆星星。(Hu)
17. 床上躺著張三。
18. 小路上跑著一群人。
19. 水裡游著無數的魚。
20. 天上飛著一隻鳥。
21. 地上爬著那只烏龜。
22. 臺上唱著大戲。
23. 房間裡開著會。
24. 橋頭上隱隱約約亮著一個煙頭。
25. 草原上瀰漫著晨霧。(Nie)
26. 高空中飄動著搖搖晃晃的馬燈。(Nie)
27. 渾身散發著一股牛勁。(Nie)

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# THE TOPIC-PROMINENCE PARAMETER

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## ABSTRACT

This chapter aims to recast the properties of topic-prominent languages and their differences from subject-prominent languages as documented in the functionalist literature into the framework of the Principles-and-Parameters approach. It provides a configurational definition of the topic construction called Topic Phrase (TP), with the topic marker as its head. The availability of TP enables topic prominent languages to develop various topic structures with properties such as morphological marking; cross-categorial realization of topics and comments; and multiple application of topicalization. The chapter elaborates the notion of topic prominence. A topic prominent language is characterized as one that tends to activate the TP and to make full use of the configuration. Typically, it has a larger number and variety of highly grammaticalized topic markers in the Lexicon and permits a variety of syntactic categories to occur in the specifier position and the complement position of TP.

## 1. INTRODUCTION

The distinction between topic-prominent languages (TPL) and subject-prominent languages (SPL) was first introduced in Li and Thompson (1976) and has since been widely accepted by linguists as a typology to classify languages. This chapter aims to recast the properties of TPL and their

differences from SPL into the framework of the Principles-and-Parameters approach. Following Li and Thompson, we take Chinese as a typical example of TPL and expect our proposal applies to other TPL as well.

The properties of TPL are well documented in the literature of functionalist grammar, notably in Li and Thompson (1976) and Tsao (1979). From the structural point of view, a typical TPL distinguishes itself from other languages in the following respects:

- A topic is related either to a particular constituent within the comment that follows or to the comment as a whole.
- Such a relation is characterized by unbounded dependency and exemption from the familiar island conditions is commonplace.
- Multiple application of topicalization is permissible.
- Syntactic categories other than noun phrases can be topicalized.
- A topic may occur clause internally as well as initially.
- A topic may be morphologically or lexically marked.

The means should be available in Universal Grammar (UG) for languages to develop various topic structures to realize these and other properties. A language that activates such means is parametrically different from one that chooses not to.

This chapter is an elaboration of the Topic-Prominence Parameter. It concentrates on the common properties of the topic construction, with little attention to the differences between various topic structures.<sup>1</sup> It is organized as follows. Section 2 is a summary of some of the important facts observed in the literature about the relation between topic and comment in Chinese. Section 3 compares three alternative ways to designate the structural position of the topic, with a view to providing a basic syntactic configuration to represent the topic construction in general. Section 4 demonstrates how languages like Chinese may make full use of the configuration to develop properties characteristic of TPL. Our proposal provides a unified account of a number of structures that can be subsumed under the topic construction. A summary is made in Section 5.

## 2. TOPIC AND COMMENT

The facts presented in this section constitute the basis for proposing a syntactic configuration to represent the topic construction in Chinese.

The topic sentence in Chinese contains three elements in the following order: (i) a topic, which is typically a noun phrase, but can be other syntactic categories as well; (ii) a topic marker adjacent to the topic; and (iii) a comment, which is typically, though not necessarily, a clause. It will be

shown later that whatever syntactic form it takes, semantically a comment is a predication or contains a predication. A topic marker need not be phonetically realized, though phonetic realization is always possible. This implies that what cannot be followed by a topic marker is not a topic. So the marker is not a filler, which can be inserted anywhere in a sentence to mark a pause. Whereas the topic marker can be empty, the topic itself cannot. Neither can the comment. Throughout the chapter we do not consider expressions that do not occur initially but can be defined as topics in terms of information structure. We claim that structurally the conjunction of (i), (ii) and (iii) is a necessary and sufficient condition for a topic construction.

A semantic relation exists between the topic and the comment, which is often characterized roughly as aboutness. The comment is, in a broad sense, about the topic.<sup>2</sup> The aboutness relation shows itself in one of the following ways.

The topic may be related to an empty element in the comment. A typical example is provided in (1a) below, in which the topic is most naturally interpreted as the understood object. A topic marker may be used as an indication as in (1b). A comma will be placed after a topic marker or a topic in the example sentences. However, it should not always be interpreted as a pause in speaking or a punctuation mark in writing.

- (1) a. *Shuiguo, wo xihuan*  
       fruit     I   like  
       'Fruit, I like.'  
       b. *Shuiguo me,     wo xihuan*  
       fruit     TOP<sup>3</sup> I   like

The topic may be coreferential with an overt element, a pronoun or a full noun phrase, as well as a null expression in the comment.

- (2) *Zhangsan, wo bu xihuan ta/ zhege ren*<sup>4</sup>  
       Zhangsan I   not like   him this   person  
       'Zhangsan, I don't like him/this person.'

There may exist a relation other than coreferentiality between the topic and an expression in the comment. It is a part-whole relation in (3) and an inclusive relation in (4) below.

- (3) *Zheke shu, yezi   da*  
       this   tree leaves large  
       'The leaves of this tree are large.'  
       (4) *Shuiguo, wo xihuan pingguo*  
       fruit     I   like   apple  
       'As for fruit, I like apples.'

Leaves are part of a tree and apples form a subset of fruits. Where there is an inclusive relation, the topic is always the superordinate term, while the expression in the comment is its hyponym. The reverse order is not acceptable.

- (5) \* *Pingguo, wo xihuan shuigguo*  
apple I like fruit

Topic structures exemplified by (3) and (4) have no word-for-word translations in English. Various attempts have been made to solve the so-called "double subject" problem.<sup>5</sup> For instance, Schlobinski and Schütze-Coburn (1992) argue that the first NP in (3) is syntactically and semantically a modifier of the adjacent NP, thus denying the sentence the status of a topic structure. But their proposal does not apply to (4) and many other sentences similarly structured as (3) or (4). Furthermore, the topics in (3) and (4) cannot be analyzed, without obvious manipulation of the structure, as the result of some element originally in the comment being moved to the front for some reason.<sup>6</sup>

Finally, the topic may be related to the comment as a whole, but not specifically to a single expression in it. A classic example that has been repeatedly cited by linguists working on Chinese topicalization since Chao (1968) is (6).

- (6) *Neichang da huo, xingkui xiaofangdui lai de zao*  
that big fire fortunately fire-brigade came early  
'As for that big fire, fortunately the fire brigade came early.'

The topic here is what Chafe (1976) calls a Chinese style topic, which is not found in grammatical sentences in English and other European languages.

Recently Shi (1992) and Yuan (1996) independently argued that (6) is incomplete by itself. To make it complete, the hearer must make his contribution by supplying an understood sequel, for instance:

- (7) *cai mei zaocheng sunshi*  
consequently not cause damage  
'consequently (it) didn't cause damage.'

When the topic structure (6) is expanded to include (7), an empty element appears and can be interpreted as coreferential with the topic in (6). Obviously, their objective is to show that a topic must be related to a particular expression in the comment and, if possible, to prove that a topic invariably binds a trace.

It is not clear how completeness on the extra-sentential level is defined. On that level, island conditions on topic movement, that have been

developed exclusively for sentence grammar, are no longer relevant anyway. The point at issue is whether the topic is relevant to the comment, not whether the comment is complete or not. Even if one could define completeness, the proof Shi (1992) and Yuan (1996) have in mind does not follow from the requirement of completeness. When the comment is expanded, the relevance between the topic and the comment can become more transparent. But transparency can be achieved without a slot anaphoric to the topic. It takes little reflection to see that (7) is merely one of the possible sequels to (6). Alternatives such as (8) serve the purpose of completeness equally well.

- (8)    *women cai*                      *mei sunshi shenme*  
       we        consequently not lose    anything  
       ‘consequently we lost nothing.’

There is no empty category in (8) coreferential to the topic in (6). One may argue that it contains an implicit argument, which is the potential causer of loss. Similarly, it is possible to introduce an implicit adjunct in other cases. But this sort of explanation simply shows that the topic is required to be semantically, not syntactically, related to an element within the comment.

Aware of this problem, Shi (1992) tries to draw a distinction between (6) + (7) and (6) + (8) by assigning the following interpretations respectively:

- (9) a. = (6) + (7)    As for that big fire, fortunately the fire brigade came early, Consequently, it did not cause damage.  
       b. = (6) + (8)    At the time of that big fire, fortunately the fire brigade came early. Consequently, we lost nothing.

But other Chinese speakers do not feel the contrast and accept the alternative interpretations without difficulty:

- (10) a. At the time of that big fire, fortunately the fire brigade came early, Consequently, it did not cause damage.  
       b. As for that big fire, fortunately the fire brigade came early. Consequently, we lost nothing.

Whether *neichang da huo* ‘that big fire’ is interpreted as an entity or as an event is one thing, and whether the topic binds a single constituent in the comment or not is quite another. There is no correlation between them. In our opinion, whichever way the topic is interpreted, it is a topic as long as it occurs in the topic position and can be followed by a topic marker.

Maintaining the observation and analysis made by Chao (1968) and accepted by Li and Thompson (1976) and many other grammarians, we regard the following as a semantic condition on the topic:

- (11) A topic is semantically related to an expression, null or overt, in the comment or to the comment as a whole. The relation between them can be one of coreferentiality, inclusion, part-whole, etc.

Henceforward, we will use this semantic requirement as one of the diagnostics for the topic construction.

### 3. CONFIGURATION OF TOPIC CONSTRUCTION

There are at least three ways that have been proposed in the current literature to represent the topic construction, with the topic occurring in the specifier position of CP, or in a position adjoined to IP, or in the specifier position of another functional phrase called Topic Phrase (TP). We prefer the latter.

#### 3.1. Topic as Spec of CP?

In Huang (1982)'s representation of the Chinese topic construction, a topic is analyzed as taking the complementizer position (COMP) of S'. In the current theory of phrase structure, a moved *wh*-phrase takes the specifier position of CP, as the head position is reserved for C itself. However, placement of a topic in Spec of CP in Chinese is not well-motivated since one can hardly identify C or CP in Chinese.

For years grammarians have been trying hard to find a complementizer or complementizers in Chinese. Tang (1989) considers sentence final particles expressing modality, such as *ba*, *le*, *ma*, *ne*, the most likely candidates<sup>7</sup>. However, Chinese sentence-final particles differ from complementizers in English and other languages in two important respects.

First, Chinese sentence-final particles do not have the property that motivates the category. A complementizer introduces an embedded clause by definition. So it does in English and in other languages. It is argued in Ouhalla (1992) that a complementizer is basically a nominalizer, whose function is to nominalize an otherwise verbal clause, thus turning it into a complement. This is why it occurs only in an embedded clause or in a sentential subject, but never in a main clause. It also explains why a gerundive clause, which is already nominal in nature, does not need a complementizer. In Chinese, on the contrary, a sentence final particle occurs in a main clause, rather than an embedded clause. It therefore does not make a clause a complement.<sup>8</sup>

Secondly, two sentence final particles can co-occur in a single clause in Chinese. In English, *that* introduces a statement and *whether* a yes-no question. As no clause can be semantically a statement and a question at the same time, they never co-occur. Sentence final particles in Chinese form a relatively large class, each member having its own specific modality meaning and the meanings they carry are not always mutually exclusive. Thus they may co-occur.

- (12) *Ni chi wanle fan le ma*  
 you eat finish rice SFP SFP  
 'Have you eaten the rice?'

As more than one sentence final particles in Chinese can appear together, they are unlike complementizers in other languages.

Law (1990) in her study on Cantonese final particles, identifies the issue and tries to solve the problem of doubly-filled COMP by claiming that while *le* is situated in the head position of CP, *ma* is in the specifier position of CP. However, if this proposal is adopted, a topic can take neither the head nor the Spec position of CP. Which position can the topic *na ben shu* 'that book' in (13) take?

- (13) *Na ben shu, ni yijing zai du le ma?*  
 that CL book you already ASP read SFP SFP  
 'That book, are you already reading?'

Since the functional category C cannot be found in Chinese, there is no basis for its projection CP and no justification for placing a topic in Spec of CP.

### 3.2. Topic Adjunction to IP?

From the beginning of studies in generative grammar, adjunction of YP to XP has had an important place as an easy device for elements put away from the positions in which they are interpreted. The analysis of topic as adjoined to IP dates back to Baltin (1982). As the theory evolved, movement and rearrangement tended to bifurcate. On the one hand, the movement operation may be formulated as Move  $\alpha$ , for which adjunction, if used at all, is mainly for theory internal purposes. On the other hand, adjunction is now restricted to operations such as scrambling, extraposition, VP-adjunction, etc. which Chomsky (1995:324) suggests should be excluded from the framework of principles as something beyond the core computational properties of the language faculty. Chinese topicalization cannot be

identified with *wh*-movement. As has been shown earlier, at least some topic structures obviously do not involve movement. We next consider whether it is possible to treat all topics in Chinese as the result of displacement, rearrangement, scrambling? If so, adjunction may be the right analysis.

Scrambling is common in Germanic languages and Japanese. Unlike Japanese, Chinese has no case markers to distinguish scrambling from topicalization. *Prima facie*, the Chinese topic construction does share some of the properties of scrambling in Germanic languages discussed in Müller and Sternefeld (1993). Whereas topicalization can take place only once, scrambling can be reiterated in Germanic languages. Chinese has multi-topic structures. For instance, the following sentence involving scrambling from Müller and Sternefeld (1993:480) can be rendered into Chinese.

- (14) *dass dem Fritz<sub>i</sub> die Geschichte<sub>j</sub> [<sub>IP</sub> niemand <sub>t<sub>i</sub> t<sub>j</sub></sub> glaubt]*  
 that the-DAT Fritz the story nobody-NOM believes  
 'that nobody believes Fritz's story.'  
 (15) *Zhangsan a, tade shuofa me [mei ren xiangxin]*  
 Zhangsan TOP his story TOP no person believe

In (15) *Zhangsan* is a topic indicated by a topic marker and the preposed object *tade shuofa* is another topic, also followed by a topic marker. We will address multi-topic structures further in Section 4.2.

There is another apparent similarity between the topic construction in Chinese and scrambling in Germanic languages. In most Germanic languages, embedded topicalization is licensed only in special contexts, following a small number of bridge verbs, while no lexically-based restriction applies to scrambling.<sup>9</sup> In Chinese topics occur freely in embedded clauses.<sup>10</sup>

Despite the above similarities, the topic construction in Chinese differs from scrambling in Germanic languages and Japanese in two crucial respects, permission of resumptive pronouns and unbounded dependency. The existence of an optional resumptive pronoun coreferential with the topic is illustrated in (2). The similarity between the German topic structure in (16) and the Chinese topic structure in (17) shows that like Germanic topicalization, but unlike Germanic scrambling, the Chinese topic construction is not clause-bound.

- (16) *Pudding glaube ich [dass sie mögen würde]*  
 pudding believe I that she would like  
 'Pudding, I believe she would like.'  
 (17) *Buding, wo xiangxin [ta hui xihuan]*  
 pudding I believe she would like  
 'Pudding, I believe she would like.'

Furthermore, when two elements in the embedded clause are topicalized, one or both of them can appear at the beginning of the main clause. All three sentences below are grammatical.

- (18) *Zhejiang shi, [ta shuo [youxie ren [ta mei gaosu]]]*  
 this matter he say some people he not tell  
 ('\*This matter, he said that, some people, he didn't tell.')
- (19) *youxie ren, [ta shuo [zhejiang shi [ta mei gaosu]]]*  
 some people he say this matter he not tell  
 ('\*Some people, he said that, this matter, he didn't tell.')
- (20) *zhejiang shi, youxie ren, [ta shuo [ta mei gaosu]]*  
 this matter some people he say he not tell

We have shown that although the topic construction in Chinese has some properties of scrambling in Germanic languages, but it is quite different from it in some other respects. We therefore prefer not to treat the topic construction as the result of scrambling and not to analyze topics as adjoined to IP. In TPL like Chinese, the topic construction represents the canonical form. It does not merely result from scrambling or other minor rearrangement of word order.

### 3.3. Topic Phrase

We now consider the third alternative, analyzing the topic construction in Chinese, as a functional phrase called Topic Phrase, abbreviated as TP. This is the analysis proposed in Gasde and Paul (1996).

Compared with the two alternative analyses discussed in subsections 3.1 and 3.2 respectively, their treatment does full justice to the prevalence and abundance of topic structures in TPL. In SPL the relative linear or hierarchical order of subject, verb and object is the backbone of the sentence structure. Any deviation from the norm of a language is a derivation resulting from operations of movement or re-arrangement of a certain constituent. *Wh*-movement and IP-adjunction are mechanisms used to give rise to syntactic variation. In TPL, however, the topic is as important as, if not more important than, the subject in the sentence structure. If UG provides CP for SPL, it should provide TP for TPL as well. Alternatively, one may say that CP and TP are one and the same maximal projection above IP. Individual languages may choose to exploit either or both.

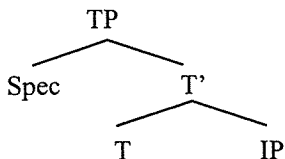
Now we look into the internal structure of TP. Since it is not clear how agreement and tense are represented in Chinese or what roles AGR and TNS play in Chinese sentential structures, throughout this chapter we use Inflection Phrase (IP), without breaking it into Agreement Phrase and Tense

Phrase. Thus TP is used here exclusively to stand for Topic Phrase, not Tense Phrase.

Following Gasde and Paul (1996), we take TP as the maximal projection of its head, a functional category T, which is the topic marker (e.g. *ne*, *me*). What immediately precedes T and is marked by it, is the topic itself, which occurs in the specifier position under TP. Henceforward, we define topicalization of a constituent as attaching a topic marker, overt or null, to it, without movement. We will take the capability of taking a topic marker as another diagnostic for a topic in addition to the semantic condition stated in (11). However, the topic marker is not required to be obligatorily present in TP, just as C is not obligatorily present in CP in English. The complement of T, typically IP, is the sister of T. Deviating from Gasde and Paul (1996), we prefer not to represent CP either above TP or below it in the analysis of topic structures in Chinese for the reason stated earlier, that is, one cannot identify C at all.<sup>11</sup>

The configuration of TP is as follows.

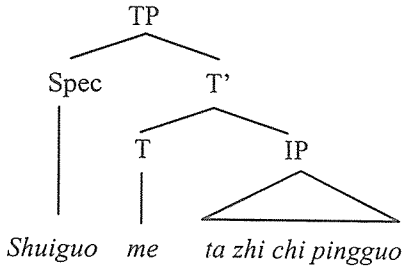
(21)



The topic structure in (22) can be represented as (23) with details under IP unspecified.

- (22) *Shuiguo me, ta zhi chi pingguo*  
 fruit TOP he only eats apples  
 'As for fruits, he eats apples only.'

(23)



In the Minimalist Program, syntactic structures are built up through generalized transformation that joins already formed trees. In this spirit, one may assume that a topic structure is formed in the following manner. In the computational component of the grammar, an IP may be targeted by the computational system to expand and project. Another constituent formed by lexical items from the Lexicon may be inserted above the IP as its topic, resulting in a larger tree, TP. Alternatively, if the IP is not targeted for expansion, the sentence will not have a topic. Later in Section 4 it will be shown that TPL are such that they expand IP into TP more frequently, expand categories other than IP into TP, and insert categories other than NP when forming TP.

TP is not grammatical without an overt complement. In other words, a topic cannot exist without a comment, just as CP in English cannot consist of C alone. This requirement can be satisfied by feature checking. The complement feature of T indicates that it requires a [-null] complement. It is then checked against the head feature of its complement and is erased if they are compatible.

It should be noted that other devices are also available in Chinese to indicate a topic. A topic can be introduced by an element with more lexical meaning than the purely grammatical forms which we call topic markers, e.g. *shuodao* 'speaking of', *guanyu* 'as for'. They can co-exist with topic markers, which means they should not be regarded as topic markers.

- (24) *Shuodao zhege wenti me, wo you yijian*  
 speak-of this problem TOP I have opinion  
 'Speaking of this problem, I have my opinion.'
- (25) *Guanyu zhege wenti me, wo you yijian*  
 speak-of this problem TOP I have opinion  
 'As for this problem, I have my opinion.'

## 4. PROPERTIES OF TPL

With (21) as the basis, we will show that the parametric variations of TPL from SPL arise as the natural consequences of expansion, projection, generalized transformation, etc. of the constituents in (21).

### 4.1. Head of TP

UG recognizes a number of functional heads as universal, but not all of them are lexicalized or morphologically marked in all languages. An example readily available is that Chinese lacks lexical or morphological forms of AGR. Likewise, not all languages have lexical or morphological forms of T. A parametric variation across languages with regard to topic prominence is that some languages or dialects have a richer T system than others, just as some languages have richer AGR than others. Taking this view, one may attribute the parametric variation between languages to the lexical differences of their functional heads in the spirit of the Minimalist Program.

The use of topic markers is well documented in the literature of traditional grammar. Other TPLs have topic markers as well. Another typical example, cited in Li and Thompson (1976), is Lisu, a language spoken in Thailand. The Lisu topic marker is *nya*. Topic markers have priority over subject markers in many TPLs. According to Cheng (1991), Bunun, an Austronesian language spoken in Taiwan also has topic markers *qai*, *a*, etc. It has subject and object markers as well. However, when an expression is the subject and the topic at the same time, the subject marker is subdued but the topic marker survives.

The Lexicon of TPL typically contains a syntactic category of functional words or morphemes that can be inserted under the head of TP in the same way as the Lexicon of SPL possesses a category of AGR morphemes. Mandarin makes use of a number of topic markers, *a*, *ba*, *me*, *ne*, *ya*, etc. They constitute a category, which can be called topic particle. But they also serve as sentence final particles and may occur elsewhere in sentences. The fact that they have other functions does not disqualify them as topic markers. Similarly, the English word *that* is a complementizer, but it has other grammatical functions as well. In most Chinese dialects, the members of the set of topic markers may overlap with those that belong to the set of sentence-final particles. Alternatively, one may assume that they belong to one single lexical set and may take either a positive or a negative value of the feature [TOP] in a sentence.

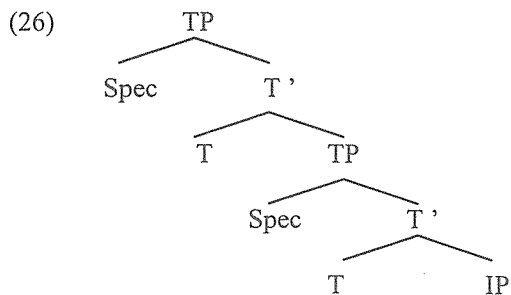
A richer T system has a larger number and variety of topic markers. It also has forms exclusively used for the purpose of marking topics. The Wu Dialect of Chinese has forms that mark topics only. Shanghainese, a representative of Wu, uses a number of topic markers, *a*, *meq*, *neq*, *to*, *zy*, the last two of which are used as topic markers only. This fact correlates with other TPL properties. Shanghainese is more typically topic-prominent than Mandarin in terms of the variety of topic structures used and the frequency of their occurrence.

## 4.2. Complement in TP

In a typical TPL, constituents other than IP can also be targeted by the computational system of the grammar to expand into TP.

### 4.2.1. TP AS COMPLEMENT IN TP

To derive multi-topic structures, TP can be recursive, where T takes another TP as its complement.



The example cited in (15) has this configuration. The following sentences are more typical illustrations of double-topic structures.

- (27) *Zhejiang shi, youxie ren, ta mei gaosu*  
 this matter some people he not tell  
 'This matter, some people, he didn't tell.'
- (28) *Zaocan, mianbao, ta zhi chi yi pian*  
 breakfast bread he only eats one slice  
 'As for breakfast, he eats one slice of bread only.'

Recently Shyu (1995:110) argued that Chinese generally does not allow multiple application of topicalization. In her terminology, *zaocan* 'breakfast'

and *mianbao* 'bread' in (28), are not topics but what she calls major subjects. To deny the grammaticality of multi-topic structures, one should explain why sentences like (27) are grammatical, where both the direct object and the indirect object precede the subject. Some sentences containing two topics may be unacceptable for other reasons. Consider Shyu's example.

- (29) \**Gei Lisi, cong meiguo, Zhangsan jile yiben shu*  
       to Lisi from USA Zhangsan send one book  
       'To Lisi, from the USA Zhangsan sent a book.'

This sentence sounds unacceptable because out of context one can hardly see the motivation of using such a double-topic structure. Imagine a context in which *Zhangsan's* parents are complaining that he sends presents to his wife but not to them, and, in particular, they are unhappy because he sent them nothing from the US. The following would then be grammatical.

- (30) *Gei fumu, cong meiguo, ta queshi mei ji sheme, keshi cong*  
       to parents from USA he indeed not send anything but from  
       *biede difang ta jile bu shao dongxi*  
       other place he send not little thing  
       'To his parents, from the USA, he didn't send anything, but from  
       other places he did send them a lot of things.'

Reiteration of topicalization is available in Chinese.

#### 4.2.2. VP AS COMPLEMENT IN TP

The system of grammar can target a VP to expand into a TP by generalized transformation. There are several types of VP structures that have TP over them.

One type is the kind of sentences involving what is referred to as object preposing in Ernst and Wang (1995). An illustration is provided in (31).

- (31) *Wo zaocan, bu chi*  
       I breakfast not eat  
       'Breakfast, I don't eat.'

Ernst and Wang compare two hypotheses for deriving sentences like (31). One, which they call the double topicalization hypothesis, involves two-step movement: starting from (32), moving the object NP to the sentence-initial position, resulting in (33), and then moving the subject NP across the one moved, resulting in (31).

- (32) *Wo bu chi zaocan*  
 I not eat breakfast  
 'I don't eat breakfast.'
- (33) *Zaocan, wo bu chi*  
 breakfast I not eat  
 'Breakfast, I don't eat.'

An alternative analysis, called the VP-adjunction hypothesis, derives (31) directly from (32) by moving the object NP and adjoining it to the VP, thus skipping the intermediate structure.

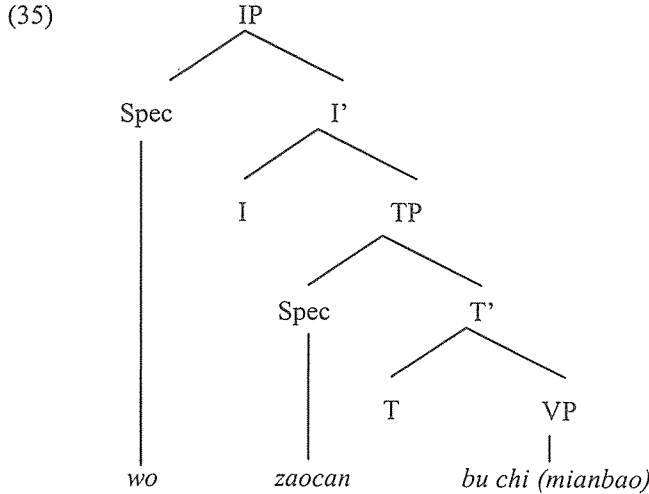
Providing a number of convincing arguments, e.g. topicalization analysis, adjunct distribution, presence of emphatic markers, restrictions on embedded topicalization, position of modals, etc. to support the latter against the former, they conclude that at least some object-preposed sentences cannot be derived by two-step movement.

But at least some NPs preceding the verb cannot be derived by one-step movement, either, for other reasons. Compare (34) with (31).

- (34) *Wo zaocan, bu chi mianbao*  
 I breakfast not eat bread  
 'I don't eat bread for breakfast.'

In (34), since the verbal complement position is occupied by another NP *mianbao*, it is impossible to move *zaocan* back as *mianbao zaocan* 'bread breakfast' or *zaocan de mainbao* 'breakfast's bread.'

We, therefore, propose to represent the structure of (31) and (34) uniformly as follows.



Another type of TP-over-VP construction is the double object construction. The sentence below is a typical example.

- (36) *Ta gei erzi yizhuang fangzi*  
 he give son one house  
 'He gave his son a house.'

The dative object can be made a topic by inserting a topic marker like *me* after it.

- (37) *Ta gei erzi me, yizhuang fangzi; nuer me, yizhi zuanjia*  
 he give son TOP one house daughter TOP one diamond-ring  
 'He gave his son a house and gave his daughter a diamond ring.'

One may question whether the NP *erzi*, once followed by a topic marker, must be analyzed as a topic and no longer as a dative object. This is comparable to the case where the subject in a simple SVO construction is topicalized by inserting a topic marker.

- (38) *Erzi me, you yizhuang fangzi*  
 son TOP have one house  
 'The son has a house.'

There have always been conflicting views among traditional grammarians. Some take *erzi* in (38) to be a topic, followed by an empty subject. Others prefer not to invoke the notion of empty subject. In the latter analysis, *me* marks a subject as well as a topic. A better example to show that a TP may top a VP in a double object construction is one in which the topicalized NP has a dative object following it and semantically related to it in the way stated in (11). An example is given below.

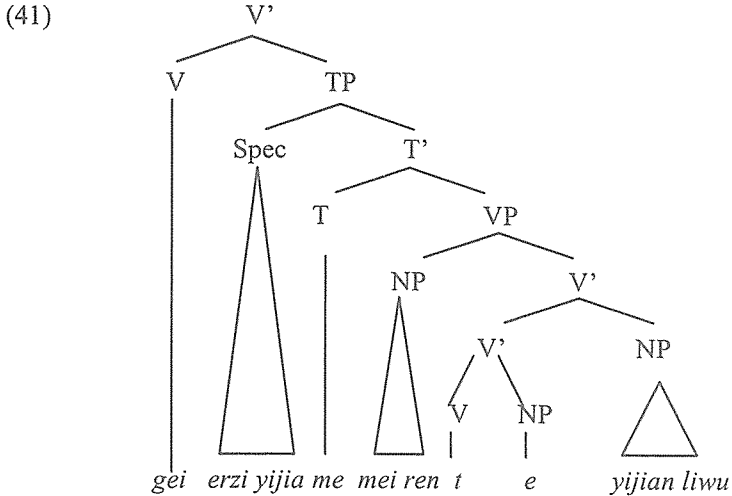
- (39) *Ta gei erzi yijia me, mei ren yijian liwu*  
 he give son family TOP every person one gift  
 'He gave everybody in his son's family a gift.'

In (39) the NP with the topic marker is semantically related to another NP *mei ren* 'everybody', which is the dative object of the verb *gei* 'give'. The kind of aboutness relation is typical of the topic construction, parallel to the relation between the topicalized NP and *mei ren* in (40).<sup>12</sup>

- (40) *Erzi yijia me, mei ren dele yijian liwu*  
 son family TOP every person got one gift  
 'In his son's family, everybody got a gift.'

If *erzi yijia* in (40) is a topic, so is the same expression in (39).

How should such a topic structure be syntactically represented? One way is to adopt the VP shell analysis proposed in Larson (1988). Thus *mei ren* in (39) is within an inner VP which is the complement of a TP as in (41).<sup>13</sup>



The complement of T in TP is required to be an instance of predication in a broad sense at least to avoid overgeneration.<sup>14</sup> This is why TP cannot top a double object structure where the positions of the two objects are reversed. In Mandarin Chinese, the indirect object must precede the direct object, if it is not introduced by a preposition. But in Cantonese, the order is reversed.

- (42) a. *Deidih bei mh baak man keuih*  
 dad gave five hundred dollars him  
 'Dad gave him five hundred dollars.'  
 b. *\*Deidih bei keuih mh baak man*  
 dad gave him five hundred dollars

The direct object in (42a) cannot take a topic marker as the two NPs appearing in such an order is not a small clause in terms of Kayne's (1991, 1993) theory of possessive *have* and *be*, and cannot be regarded as an instance of predication even in a broad or loose sense. What happens if for some reason, e.g. to show contrast, the indirect object must be topicalized? Interestingly, it is forced to adopt the Mandarin word order, preceding the direct object.

- (43) *Deidih bei Mingh-jai ne, jauh mh baak man,*  
 dad gave Mingh (m) TOP MOD five hundred dollar  
*Fan-neui ne, jauh yat baak man*  
 Fan (f) TOP MOD one hundred dollar  
 'Dad gave his son Mingh five hundred dollars and his daughter  
 Fan one hundred.'

In the Wu dialect, represented by Shanghainese, both the Mandarin and Cantonese orders are available.

- (44) a. *Baba peq ng paq kue i*  
 dad gave five hundred dollar him  
 'Dad gave him five hundred dollars.'  
 b. *Baba peq i ng paq kue*  
 dad gave him five hundred dollar

Again, a topic marker is found only when the indirect object comes first.

- (45) a. *Baba peq ngitsy meq, ng pa kue; noeng meq, iq*  
 dad gave son TOP five hundred dollar daughter TOP one  
 paq kue  
 hundred dollar  
 'Dad gave his son five hundred dollars and his daughter one  
 hundred.'  
 b. *\*Baba peq ng pa kue meq, ngitsy;*  
 dad gave five hundred dollar TOP son  
 iq paq kue meq, noeng  
 one hundred dollar TOP daughter  
 'Dad gave his son five hundred dollars and his daughter one  
 hundred.'

The above facts show that in spite of their difference in word order in all the three dialects only the indirect object can be the topic because only the direct object can be a predication.

There is a third type of TP-over-VP construction to be discussed shortly in Section 4.3.3.

#### 4.2.3. NP AS COMPLEMENT IN TP

An NP can be a comment occurring in the complement position of TP, if it has the property of predication. It is observed in Tang (1992) that in the following sentences the NP in the form of a numeral plus a classifier has such property:

- (46) *Ta maile bi san zhi shu liang ben*  
 he bought pen three CL book two CL  
 'He bought three pens and two books.'

Arguably, the quantificational expression in (46) is predicative in traditional grammar; the NP before it can take topic markers:

- (47) *Ta maile bi me, san zhi shu me, liang ben*  
 he bought pen TOP three CL book TOP two CL

The so-called frequency expression is also said to be predicative. As expected, a topic marker can be added to its preceding noun phrase.

- (48) *Wo jianguo neige ren me, san ci*  
 I saw that person TOP three times

That the postverbal NP has the property of predication receives the following supporting evidence.

- (49) a. *Wo jianguo neige ren me, you san ci*  
 I saw that person TOP have three times  
 b. *Wo jianguo neige ren me, cai san ci*  
 I saw that person TOP only three times

The verb *you* may be inserted before *san ci* as in (49a). In (49b) one finds the adverbial *cai*, which usually appears before a predicate, not a nominal expression.

### 4.3. Specifier of TP

Another property of TPL is that various categories of constituents can play the role of topic. The specifier position of TP is not limited to NPs.

#### 4.3.1. PP AS SPECIFIER

It is well-known that a locative expression in the form of a prepositional phrase or postpositional phrase can be topicalized. So is a temporal expression as either PP or NP.

- (50) *Huocheshang me chengke keyi zai canche li yongshan*  
 train on TOP passenger may PREP dining-car in dine  
 'On the train, passengers can dine in the dining-car.'

The semantic relation between the topic *huoche shang* and another PP *zai canche li* in the comment is a part-whole relation. The latter can be replaced by a proform like *zai nar* 'there', or by an empty category. Any of these forms, full PP, proform, empty category are common, in topic structures.

The existence of sentences like (50) does not alter the fact that NP is the basic form for the topic.<sup>15</sup> Although both forms in (51) and (52) are acceptable, the preference of a bare NP in (51) and one with the preposition *zai* in (52) is well-known and the contrast is significant.

- (51) a. *Huayuan li xuduo lao ren da taijiquan*  
garden in many old people play shadow-boxing  
'In the garden, many old people are playing shadow-boxing.'  
b. *Zai huayuan li xuduo lao ren da taijiquan*
- (52) a. *Xuduo lao ren huayuan li da taijiquan*  
many old people garden in play shadow-boxing  
b. *Xuduo lao ren zai huayuan li da taijiquan*

While (51a) is preferable to (51b), (52b) is preferable to (52a). Evidently, an NP is more appropriate in the sentence-initial topic position and a PP more appropriate in the VP- initial adverbial position. But (52a) is perfect when *huayuan li* is interpreted as a topic over VP, when, for instance, a contrast between the garden and another place is intended.

#### 4.3.2. IP AS SPECIFIER

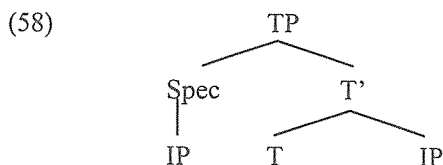
It is also well-documented that a clause can be a topic. Recently Gasde and Paul (1996) showed that causal adjunct clauses and conditional clauses are base-generated in Spec of IP. Analysis of conditional clauses as topics dates back to Haiman (1978). But other IPs can be topicalized as well.

- (53) *Zhangsan hui pianren, wo bu xiangxin*  
Zhangsan capable cheat I not believe  
'That Zhangsan is capable of cheating, I don't believe.'  
(54) *Zhangsan hui pianren, wo bu xiangxin zhezhong shuofa*  
Zhangsan capable cheat I not believe this story  
'(Zhangsan is capable of cheating)<sup>16</sup> I don't believe the story.'  
(55) *Zhangsan hui pianren, wo bu xiangxin ta hui zheyang zuo*  
Zhangsan capable cheat I not believe he will so do  
'(Zhangsan is capable of cheating) I don't believe he will do so.'  
(56) *Zhangsan hui pianren, wo xiang ta zhi hui hong xiaohar*  
Zhangsan capable cheat I think he only will hoodwink children

‘(Zhangsan is capable of cheating) I think he can only hoodwink children.’

- (57) *Zhangsan hui pianren, xingkuai women zaoyi you fangbei*  
 Zhangsan capable cheat fortunately we already have precaution  
 ‘(Zhangsan is capable of cheating) fortunately, we have already taken precautions.’

In each of the above sentences, the initial clause can be followed by a topic marker and is related to the rest of the sentence in one of the ways summarized in (11). It is most naturally analyzed as a sentential topic in the following configuration.



#### 4.3.3. VP AS SPECIFIER

A VP can also be a topic sitting above another VP. The following three examples are from three different dialects, Mandarin, Cantonese and Shanghainese respectively.

- (59) *Ta zuo shi, zongshi zuo de yitahutu*  
 he do things always do RSP messy  
 ‘Whatever he does, he makes a mess of it.’
- (60) *Mohng, jauh gam mohng la*<sup>17</sup>  
 hope then so hope SFP  
 ‘Well, that’s what we hope.’
- (61) *I gong euo meq, gong veqle*  
 he speak words TOP speak not  
 ‘He can’t speak well.’

This construction is sometimes analyzed as derived by the operation of a verb copying rule, cf. Tai (1989), Hsieh (1992). The term verb copying is not general enough, however, to cover cases where the two verbs involved are not identical.

- (62) *Ta shaozai me, buguoshi cao jidan, zhu baicai*  
 he cook TOP merely scramble eggs boil cabbage  
 ‘As for cooking, he can only scramble eggs and boil cabbage.’

The first VP is more general in meaning and the second one more specific. The two of them are related, again, in a manner described in (11). To reverse the order of the superordinate expression and the hyponymous expression would result in an ungrammatical sentence. It is a typical semantic property of the topic construction.

To summarize, we have shown in Section 4 that in a typical TPL like Chinese other constituents than NP, namely, TP, VP, IP, PP can also take a topic marker and be joined as a topic to another constituent tree to form a TP syntactically and enter into an aboutness relation with the comment semantically.

## 5. SUMMARY

- Syntactically, a topic construction contains a functional category called Topic Phrase, a configuration with a topic marker as its head, illustrated in (21).
- Semantically, in a topic construction there is an aboutness relation between the topic and the comment, which is a predication or contains a predication. The aboutness relation can be realized in various ways as exemplified and summarized in (11).
- Some languages have a comparatively richer T system than other languages in the similar sense as some languages have a comparatively richer AGR system than other languages. Hence the Topic-Prominence Parameter.
- A language is topic-prominent if it has a larger number and variety of topic markers in the Lexicon, and permits a variety of syntactic categories to occur in the specifier position and the complement position of TP.

## ACKNOWLEDGMENTS

The draft of this chapter was written before the publication of Xu and Liu (1997), the second chapter of which deals with some of the issues addressed here. I am grateful to Dieter Gasde, Randy LaPolla, Liu Danqing, Pan Haihua, Jonathan Webster, and an anomalous reviewer for their comments and suggestions.

## NOTES

<sup>1</sup> In this chapter “topic construction” is used as a general term covering a variety of topic structures. A syntactic configuration beginning with a topic is called a Topic Phrase. The internal structure of a Topic Phrase will be shown later.

<sup>2</sup> For other views on the topic-comment relation, see Schlobinski and Schütze-Coburn (1992).

<sup>3</sup> Glosses used in the examples are: ASP-aspectual marker, CL-classifier, DAT-dative, MOD-modality particle, NOM-nominative, RSP-resultative particle, SFP-sentence final particle, TOP-topic marker.

<sup>4</sup> The use of full noun phrases coreferential with topics is subject to some general constraints on nominal expressions as anaphors. For instance, the two nominal expressions in (2) cannot exchange positions, even though they refer to the same person. Similarly, we don’t say *Zhangsan, wo buxihuan Lisi de laoshi* ‘As for Zhangsan, I don’t like Lisi’s teacher’, even if Zhangsan is Lisi’s teacher. An anaphoric expression cannot be too informative. This is not a constraint on the topic construction, but one on discourse anaphora in general.

<sup>5</sup> In traditional Chinese grammar the first two noun phrases are both analyzed as subjects, no matter what thematic role they play. Hence the term “double subject”.

<sup>6</sup> In early transformational grammar, it was proposed in Thompson (1973) that the deep structure of (4) is *wo xihuan pingguo shuiguo* ‘\* I like apples fruit.’ Later it was proposed in C.-T. Huang (1982) that such a topic structure is derived by an operation identical to the movement of *wh*-phrases in forming interrogative sentences in English. There has been a heated debate as to whether topic structures in Chinese results from *wh*-movement. It is not the main concern of this chapter whether the relation between the topic and the relevant expression in the comment is subject to the island conditions. Readers are referred to the articles representing both views, C.-T. Huang (1982), C.-T. Huang and Li (1995), etc. on the one hand, and Xu and Langendoen (1985), C.-R. Huang (1991), etc. on the other. But it should be clear from the facts documented in the literature that a topic binding a trace or variable in the comment is not a necessary requirement of the topic construction in Chinese. One may choose to treat some topics as derived by movement, if one wishes. Evidently, it is difficult to maintain the position that all topics, including the ones in (3), (4), (6), etc., originate from somewhere in the comment.

<sup>7</sup> But in the end he rejects the analysis, according to Gasde and Paul (1996:286).

<sup>8</sup> The only exception is *de*, which can occur in an inner clause. But it occurs at the end position of any categories that function as modifiers, APs, NPs, PPs as well as clauses.

<sup>9</sup> Japanese has long-distance scrambling, but we will not address the issue here, cf. Saito (1992).

<sup>10</sup> It has been observed in Lu (1994) and Fu (1994) that topicalization in some types of embedded clauses is not as free as in main clauses. But such limitation does not alter the fact that topicalization does apply to a large variety of embedded clauses in Chinese.

<sup>11</sup> In Chomsky (1977), a topic structure is derived from the base rules:  $S'' \rightarrow \text{TOP } S'$ ,  $S' \rightarrow \text{COMP } S$ . In Gasde and Paul (1996), TP is below CP. There is no empirical evidence in favor of either of the options. We have shown that there is no complementizer in Chinese. Even if one assumes that sentence final particles are C. In Chinese the topic and the particle never meet. While CP is head-final, TP always takes a complement to the right of the head. Thus a topic occurs at the beginning of a sentence and a particle at its end. There is no way to decide which is over which.

<sup>12</sup> Although *erzi yijia* and *meige ren* can enter into a possessive relation with or without a possessive marker *de* in between, in (41) such a relation is ruled out by the presence of the topic marker *me*.

<sup>13</sup> For simplicity, the original position of the moved V under V' is not represented in the tree diagram of (41).

<sup>14</sup> We will not be concerned with the various definitions and implementations of predication proposed by linguists, for instance, in the chapters in Cardinaletti and Guasti (1995).

<sup>15</sup> Traditionally, *huoche shang* 'train + on' is analyzed as an NP rather than a PP, where *shang* is a special subcategory of noun. More recently, some grammarians proposed from the typological point of view that it can be analyzed as a postposition, comparable to the English preposition *on* in the phrase *on the train*. They argue that in Chinese PP, like NP, is head final and that the addition of this syntactic category simplifies rather than complicates Chinese grammar. We are not concerned the details of their arguments here.

<sup>16</sup> Since English does not have a topic structure corresponding to the Chinese sentence, meaning: I don't believe the story that Zhangsan will cheat, we put the topic in brackets in the translation of this and the following sentences. The English translations of the examples may sound acceptable with a pause and rise in intonation. However, they are not on the same status as the Chinese counterparts.

<sup>17</sup> This example is cited from Matthews and Yip (1994: 75).

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