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CHAPTER 2
RECENT GENERATIVE STUDIES IN CHINESE SYNTAX

1. INTRODUCTION

Unlike some sub-fields of Chinese linguistics, the study of Chinese grammar, in particular of Chinese syntax, is quite young. The first step was taken only about a century ago, in 1898 during the Ching Dynasty, with the publication of Jianzhong Ma's first comprehensive Chinese grammar. Although it only has a short history, Chinese syntax is nevertheless now regarded as one of the most active and accomplished areas of Chinese linguistics.

Since the first step was taken, important progress has been made. Studies by Ma, Jingxi Li and Shuda Yang from 1898 to the 1930s laid important foundation for the productive scholarly activities in China in the 1950s and 1960s. During this period there were very lively discussions of the notions of grammatical categories (parts of speech) and of grammatical functions (e.g., subject, object, etc.). Extensive studies of the structural aspects of Chinese based on immediate-constituent analyses and on the notion of endocentricity produced several monumental works, including the comprehensive grammars written by Li Wang, Shuxiang Lü, Y.-R. Chao and Dexi Zhu, and shorter contributions made by these and other scholars.

In America, the fruits of this period of grammatical research were first seen in Chao's *Mandarin Primer* in 1948. Important progress of this period and of Chao's own work culminated at the publication of his classic, *A Grammar of Spoken Chinese,* in 1968. This work constituted the foundation for most of the work on Chinese grammar from 1960 to the early 1980s in the West, a period that was marked by very lively and productive research by scholars, many of whom saw the need to describe Chinese grammar in formal and theoretical terms. The works of this period were made possible partly by the emergence of early trans-formational grammar, which aroused great interest in the study of syntax within a formal model of Universal Grammar. Some of the most important writings demonstrated how the nature of Chinese syntax may

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be better understood in certain ways than had been treated in Chao's descriptive grammar. Others, along with other transformational grammarians, saw the inadequacy of the early model of generative grammar (the 'standard theory' or generative semantics) and explored Chinese grammar along alternative formal or functional perspectives. This period was of special importance because of the large number of original works produced, including Yue-Hashimoto (1971), T. Tang (1977), Mei (1972), Tai (1969), Li (1971), Teng (1975) and Li and Thompson (1981). Many of the authors who contributed during this period are still among the most active scholars of the field.

We have so far very briefly gone over three stages in the development of Chinese grammatical studies: the first step taken by Ma and other scholars in the 1930s; the second step by scholars who produced monumental works that are still read as classics today, the most influential being Chao's (1968) grammar; the third step by scholars in the U.S. between 1968 and 1981, in which Li and Thompson's reference grammar on Chinese was published. These three periods roughly correspond to the three periods of development in grammatical theory in the west, representing the rise and fall of traditional grammar, structural grammar, and (early) transformational grammar.

The focus of this chapter is to discuss the current state of Chinese grammatical studies. We shall describe the current period as the period that started after the publication of Li and Thompson's 1981 reference grammar. This period has seen a revival of and intensified interest in the study of Chinese grammar, and a shift of interest and attention, from doing Chinese syntax as a consumer of general linguistic theory, to being an active contributor to it. On the quantitative aspect, we saw the expansion of Chinese linguistics programs, such as the establishment of several graduate programs offering the doctoral degree in linguistics in Taiwan, the concentration on Chinese or East Asian linguistics in linguistics programs or East Asian language departments in America, and there are now large numbers of graduate students of linguistics who concentrate especially on Chinese linguistics. Regional workshops and national or international conferences are being held regularly, and the number of contributions on Chinese grammar published or presented at conferences has increased as never before.[1]

In addition to this general increase in the number of scholarly activities, Chinese linguistics (especially Chinese syntax) has also gained unprecedented attention in the field of general linguistic theory. A large

(often the largest) proportion of papers presented at any Chinese linguistics conference deals with Chinese syntax in theoretical perspective. An increasing number of papers on Chinese linguistics are presented at conferences devoted to general theoretical issues. Original works are accepted by major publishers and are appearing in general, theoretically-oriented journals.[2]

The liveliness of the field these days is also demonstrated by the diversity in the theoretical orientation of current research. In formal approaches to Chinese syntax, a large number of works have been carried out in the framework of the Government and Binding theory, and some of these will be discussed in some detail below. In the mean time, significant works have appeared within the framework of Lexical Functional Grammar (e.g. C.-R. Huang (1987), Her (1990), and subsequent works), in Categorial Grammar and recent developments of the GPSG and HPSG framework (Liu (1988), Sheu (1991), etc.). In addition to these formal approaches, many important contributions to Chinese grammar have been made from the functional perspective, as discussed in the chapter by Biq, Tai and Thompson in this volume. There are also important efforts to bring formalism and functionalism together, showing that a thorough understanding of Chinese grammar, and of grammar in general, requires not only an investigation of both its formal and functional properties, but also a thorough look at the interaction of these properties. The most significant of these efforts is represented by the 'interaction theory' proposed by Hsieh (1986, 1991, 1992a, 1992b) and developed by his colleagues (Chang, 1991; Her, 1991, and references cited).

With the breadth and depth of the Chinese grammatical studies these days, it is obviously impossible to describe the spirit of each line of research in any depth. Our focus in this chapter is on formal approaches to Chinese grammar. In order to at least convey the spirit of some of the recent and current formal research, we shall concentrate on the generative grammatical studies in the Government and Binding framework in comparison to the earlier transformational studies. We take this line of research to be the focus of this chapter, not only because of our own familiarity with it, but also because the works in this framework most significantly characterize this period and have received greater attention in the past decade. Note that, because of familiarity, we will also concentrate more on our own work, at the risk of missing some important works.

We will discuss four areas of current generative works on Chinese syntax together with their distinguishing properties; properties that were not obvious or were not discussed in earlier works. The discussion of these characteristics will also enable us to sketch certain issues being addressed in this decade of generative grammatical studies.

2. LANGUAGE AS A SYSTEM OF INTERACTING MODULES

The first characteristic is the notion of modularity; that is, language is a system of components that interact with each other. This contrasts with the view held by earlier transformational grammarians that the grammar of a language consists of its own list of construction-specific rules: a rule for each construction. Thus, to form a relative clause, we needed a relativization transformation rule; to form a topicalized structure, we needed a topicalization transformation rule; etc. Each rule is independent of others. A rule of this type, like the question formation rule in English below, describes an observed phenomenon, more or less in its entirety:

(1) SD: Q + X + NP + Y
1 2 3 4
SC: 1 3 + 2 4

In contrast, recent generative grammarians hold the view that construction-specific rules and rule-specific constraints should not have a role in core grammar. The grammar of a language is a system of general rules or principles that interact with each other. In the case of movement structures, for instance, the fact that they are all observed to involve the movement of a category from some place to another is expressed generally by a single movement rule, called Move α, which simply says that some movement takes place, of anything anywhere. Such a rule is vastly simpler or more general than the description given in (1), though it will certainly allow many unwanted derivations and yield many ill-formed structures. In the modular theory, such over-generations are not ruled out by any stipulation built into the rule itself, but by general well-formedness constraints on all movement processes and derived representations. Move α will generate topicalization, relativization, question structures, as well as many other non-existent structures. The well-formedness conditions on movement and derived representations will rule out the undesirable derivations and representations. This

amounts to saying that, in this framework, one rule (such as Move α) or one principle does not account for a particular construction (such as relativized structures) specifically and completely. Rules and principles together derive many different constructions. That is, the grammar of a language is a system of rules and principles interacting with each other. An observed grammatical phenomenon, e.g., relativization, is the result of such interactions.

This change of view of the nature of grammars can be further illustrated by many other good examples. Consider the issue of word order and constituent structures. In the earlier transformational framework, constituent structures are expressed by a list of rules of the following form:

(2) $A \rightarrow B + C$

This rule schema has two functions: (i) to specify the constituents contained in phrasal categories (B and C contained in A), and (ii) to specify the ordering between the constituents (B precedes C in this case). According to (2), languages may have rules like those in (3), rules like those in (4), or a combination of the two:

(3) a. $VP \rightarrow V + NP$
b. $PP \rightarrow P + NP$

(4) a. $VP \rightarrow P + NP$
b. $PP \rightarrow V + NP$

Obviously, the predictions of (2) in (4) are not desirable. Intuitively, we would want to say that natural languages should not have rules like those in (4). The schema in (2), however, cannot rule them out. Even though the predictions are not desirable, one may argue that at least the phrase structure rules of the form (2) can be observationally adequate in capturing the word order and constituent structures of any language: just list all the possible combinations in a language (such as (3)) and do not list any of the impossible combinations (such as (4)); i.e., constituent structures of languages are simply lists of construction-specific and language-specific rules. This approach, however, misses many significant generalizations. For instance, it does not capture the fact that a VP projection must contain a V (call it the head of the phrasal projection VP) and a PP projection must contain a P; namely, all phrasal projec-

tions must contain a head. Secondly, the listing of phrase structure rules with the mechanism in (2) misses generalizations among different lexical categories. Although (3a) and (3b) are the same in the sense that the object of the V and the P occurs on the same side of the head, this similarity is not expressed by the mechanism. Not only does (2) not capture the cross-categorial similarities, it also misses cross-linguistic generalizations, such as those observed by language typologists (Greenberg, Comrie, Hawkins, among others). Greenberg (1961) observes some word order correlations existing in the several dozen languages he studied: for instance, SOV languages tend to be post-positional and VSO languages tend to prepositional. Hawkins (1983) studied a much larger number of languages and concluded with a good number of cross-categorial and cross-linguistic word order generalizations. Without going into the details, the listing of phrase structure rules with the schema in (2) misses both cross-linguistic generalizations and important cross-categorial generalizations within a language.

The advance of X'-theory corrected most of these problems. Chomsky (1970) proposes that all languages have phrase structure rules stated in terms of X' projections: any phrasal projection XP (maximal projection) consists of a head X and its complement(s) and specifier, where X represents any category in the grammar:

(5) a. XP → SPECIFIER + X'
    b. X' → X + COMPLEMENT

In the X'-projections, the head X may precede its complements (head-initial language) or follow its complements (head-final language).

Turning now to the issue of Chinese word order and constituent structures, the traditional transformational approach, with the schema in (2), will need at least rules in (3a-b) (6a-c) (plus a lot more):

(6) a. NP → Det + N
    b. NP → NP + N
    c. NP → S + N

Based on Greenberg's typological studies of word order, Tai (1973) and T. Tang (1979) further suggested that the phrase structure rules such as those in (3) and (6) need not represent the surface linear order of constituents. Instead, constituents of a phrase may occur in one order and

change their order via transformational rules. For instance, Chinese basic phrase structures may reflect most of the properties of typical SOV languages. Transformations will yield certain constructions exhibiting word order typical of SVO languages. In this way, the mixed SOV and SVO properties of Chinese with respect to typological universals as observed in Greenberg (1961) and Hawkins (1980, 1982, and 1983) can be 'harnessed'.

Although attention was paid to generalizations of word order, the mechanism of the form in (2) handicapped the linguist attempting to express the generalizations in an explicit manner. This problem became solvable with the advance of X'-theory. C.-T. J. Huang (1982) proposed an X'-theoretic treatment of Chinese phrase structure in terms of the condition (7):

(7) The X'-structure of Chinese is of the form
   a. $[_{X^n}\ X^{n-1}\ YP^*]$ iff $n = 1$, $X \neq N$
   b. $[_{X^n}\ YP^*\ X^{n-1}]$ otherwise

(7a) provides that at the X' (single-bar) level a non-nominal category has its head preceding its complement(s); (7b) requires that at all other levels of expansion, and at the X' level of a nominal category, the head must follow the non-head elements.

Assuming that all branching structures are binary, the X'-Structure Condition in effect allows at most one constituent to occur after a verb or a preposition and only where the constituent is a complement. This accounts for the fact that Chinese is an essentially head-final language, except for the object of verbs, object of prepositions and a limited number of complements (for more details, see C.-T. J. Huang, 1982):

(8) Ta zai jia-li jingjingde kan shu.
   he at home-in quietly read book
   'He is reading books quietly at home.'

(9) Ta kan shu *(kan) henduo ci/hen jiu.
   he read book read many times/very long
   'He read books many times/for a long time.'

Huang's formulation of the X'-Structure condition directly stipulates two exceptional properties: the lowest-branching level differs from higher levels, and Ns behave differently from Vs, Ps (and As). Building upon this

attempt to relate Chinese word order to universal word order principles, Koopman (1984), Travis (1984) and Y. A. Li (1990) argue that the exceptions can be derived in a principled way as the result of a directionality requirement on Case assignment. Suppose the close relation between the object of a V or P is expressed by a Case assignment relation from the V/P head to the object. Since Vs and Ps in Chinese must assign Case to their right, their objects must follow them in order to receive Case. This accounts for the exceptional head-initial structures. All other categories and structures do not involve structural Case assignment, so they are all head-final by default.

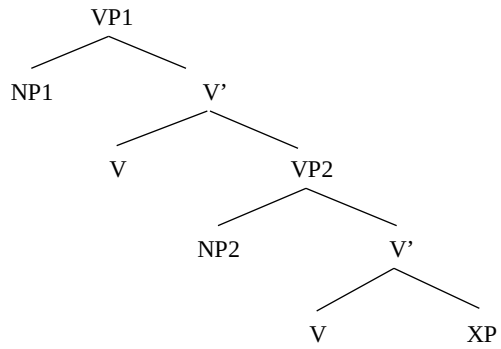
This account of word order consists only of general rules which capture the general patterns in the language. In fact, this approach to word order assumes that word order within a language must have general patterns. Any deviation from such patterns is the result of interactions from other components of the grammar. Cross-linguistically, it now becomes fairly easy to compare the similarities or differences between languages. For instance, a language may be head-initial or head-final; it may assign Case to the right or to the left. Other considerations may play a role (for instance, whether a language requires a directionality constraint on theta-role assignment (Koopman, 1984; Travis, 1984)). In such a framework, language similarities and differences are straightforwardly accounted for as results of the interacting general principles and rules and the limited number of parameters associated with them.[3]

Other recent studies of Chinese phrase structures suggest that the factors involved in the determination of word order may be defined differently. These include Liu's (1990) scope and order rules, Goodall's (1990) investigation of X'-structures, Case and theta-relations, J. Tang's (1990) directionality requirement on c-selection, Sybesma's (1992) study of complement structures, C.-T. J. Huang's (1992) proposal of V-V movement and the proposal that arguments may be arranged differently depending on their referentiality. (See also P. Huang, 1990.) The fundamental spirit of the research remains the same, however: word order in a language should not be described by a set of language specific rules. It is the result of the interaction of different modules. Language variations are the result of different interactions of the same set of modules.

Before we leave the subject of word order and constituent structures, it should be noted here that this topic has been of great interest to many Chinese linguists for decades. First, since Greenberg's study of word order correlations, there have been heated debates on the basic word order of

Chinese and whether Chinese is undergoing word order change from SVO to SOV (see Li and Thompson, 1974, 1975, etc.; S.-F. Huang, 1978, among others). Second, following the introduction of the X'-Structure Constraint (7) in Huang (1982), the theoretical status of Chinese word order has again been the center of much work on parametric theory (as just described). The third wave came after Pollock (1989) and Chomsky (1991) suggest that functional categories should have a full-fledged structure: complementizers should have their Specifier and Complement. The traditional inflectional elements, such as tense, agreement, aspect, negation, etc., also have their own full projections. In Chinese, we see the use of Aspect phrases with Specifier and Complement by Cheng (1990), the use of such functional categories as Agreement Phrase, Predicate Phrase, Classifier Phrase, Determiner Phrase, and Kase Phrase with their full projections by J. Tang (1990), the use of Negation Phrase with the full projections by Cheng and Y. Li (1991), and the use of Tense Phrase, Nominative Phrase, Accusative Phrase, Agreement of Subject, Agreement of Object Phrase by Chiu (1992) and Qu (1994). Not only is there a proliferation of functional categories, a traditional VP node has also become much more complicated. It is 'shredded' into different layers of VPs with the V being raised from the lowest V position to the higher V, as in (10):

(10)



In contrast to V-raising, there are also suggestions of affix-lowering, as in Cheng (1990). In other places, there are proposals for the obligatory raising or non-raising of a subject from a position within a VP projection to a position outside the VP projection (see Aoun and Li, 1989; Wible, 1990; C.-T. J. Huang, 1993, etc.). These recent developments show that

the focus of phrase structure research has shifted from the investigation of word order to the exploration of the following issues:

(a) The inventory of categories: are Aspect, Agreement (of the subject and/or the object), Tense and, Negation and other functional categories independent categories in Universal Grammar? If they are, how do we determine and predict which categories may overtly manifest themselves in given languages? Are missing categories in a given language best treated as being non-existent in that language, or do they actually exist in non-overt form?

(b) The existence of projections: do Tense, Aspect, Agreement, etc., head their own projections? Similarly within noun phrases: do Determiners, Numbers, Classifiers (and Measure words) head their own projections? How does one determine whether a given functional category projects to a full phrase in a given grammar?

(c) The hierarchical structures: some languages seem to have a Negation projection higher than an Agreement projection; whereas in other languages the hierarchical order is the reverse. What sort of facts would determine the correct structure if abstract Agreement projections are assumed to exist in a language like Chinese?

(d) The distinction between Complements and Specifiers: even though the distinction between Specifiers and Complements was never made very clearly in the literature, the distinction did play a role in the most recent word order accounts. The assumption generally was that subcategorized elements occur in the Complement position. For Specifiers, it is less clear. Some propose a semantic basis for Specifiers, defining them as those elements having a specification function. Others simply assume that any elements occurring on the opposite side of Complements are Specifiers. With the introduction of VP-shells (see Larson, 1988), however, the distinction between Specifiers and Complements becomes either insignificant or an anarchy. Take a VP-shell structure (10) for example. Arguments are arranged in NP positions from the bottom up according to their position in the Thematic Hierarchy (Jackendoff, 1972; Larson, 1988; J. Tang, 1990; C.-T. J. Huang, 1994): the lowest in the hierarchy takes the lowest NP position, the next one higher in the hierarchy takes the next higher NP position, and so on. No distinction now is made about whether an element is a Complement of V or a Specifier in terms of whether it is subcategorized or not. Complements and Specifiers are nothing but formal indications of two positions: one as

sister of the X^0 category and the other as the immediate daughter of XP or sister of an X'-projection.

Recent works have generated great interest in a wide range of empirical issues relevant to order and constituency, such as the ones just indicated above, which will remain a topic of interest for years to come.

The modular approach can be illustrated with much other work in this period. Another example is C.-T. J. Huang's (1991a) study of Chinese A-not-A questions, exemplified by the paradigm in (11) below:

(11) a. ta xihuan zheben shu bu xihuan zheben shu?
he like this book not like this book
'Does he like this book or doesn't [he] like this book?'

b. ta xihuan bu xihuan zheben shu?
he like not like this book
'Does he like or doesn't [he] like this book?'

c. ta xihuan zheben shu bu xihuan?
he like this book not like
'Does he like this book or doesn't [he] like [it]?'

d. ta xi-bu-xihuan zheben shu?
he like-not-like this book
'Does he like or not like this book?'

Earlier studies (represented by Wang, 1967 and Lin, 1974) described this paradigm as a special construction by deriving these sentences through conjunction deletion from the underlying source below:

(12) ta xihuan zheben shu (haishi) ta bu xihuan zheben shu?
he like this book or he not like this book
'Does he like this book or doesn't he like this book?'

Huang argued, however, that a proper synchronic treatment should dissociate the A-not-A questions in (11) from the disjunctive question in (12), and that the A-not-A questions themselves belong to two sub-types. In one type, illustrated by (11b) and (11d), the question is formed by a process of reduplication of the initial element of a predicate, and in the other type, illustrated by (11c), the question is formed by a process of ellipsis which omits an element (the object of the second verb) on identity with a preceding constituent. That is, what appears to be a single

phenomenon in (11)-(12) is in fact three distinguishable phenomena. This approach solves a number of problems with respect to otherwise general principles regarding island conditions, preposition stranding, lexical integrity, and the directionality and immediate-dominance constraints on identity deletion first proposed in Sanders and Tai (1972). The distinction between the reduplicative type and the elliptical type is also supported by striking comparative data across Chinese dialects, as shown by Chao (1947), Zhu (1985, 1989), Zhang (1990), Yue-Hashimoto (1992), and others. (For further studies on the subject, see Dai, 1990; Ernst, 1994; Guo, 1992; and McCawley, 1993.)

3. PRINCIPLES AND PARAMETERS— LANGUAGE SIMILARITIES AND VARIATIONS

Our discussion of phrase structures in Section 2 naturally leads us to the second important property of recent generative research: the view that languages exhibit similarities because they are subject to the same rules or principles of UG, and where languages differ, the variations are not random, but highly systematic, resulting from interactions of rules and principles with a small number of parameters provided by UG. To say that the emphasis on language similarities and variations is a distinguishing property of recent generative research is not to say that language comparisons and contrasts did not exist. It is embodied in any current linguistic theory whose aim is to adequately describe all human languages. What sets the recent generative research apart is the strong emphasis that languages share a core set of rules and principles. Language variations are not random but are systematic and principled. The discussion of the word order issues in the previous section indicates how this line of research enables us not only to express similarities among languages but also to state clearly the generalizations concerning their variations. Furthermore, it makes strong predictions concerning options that are available or unavailable to human language.

There are many other studies by Chinese generative grammarians illustrating the working of the notions of principles and parameters. Let us take the research on Chinese *wh*-constructions as an example. The surface realizations of *wh*-constructions suggest that English and Chinese are very different. In English, *wh*-questions must overtly move the *wh*-words from their base-generated position to a clause-initial position—the Specifier (Spec) of Complementizer (Comp) position:

(13) a. What$_i$ did John think Mary saw t_i?
b. John wonders what$_i$ Mary saw t_i.

Chinese, however, does not have such a movement. The *wh*-words stay in their base-generated position:

(14) a. Zhangsan yiwei Mali kandao shenme?
Zhangsan think Mali see what
'What is the *x* such that Zhangsan thought Mali saw *x* ?'

b. Zhangsan xiang zhidao Mali kandao shenme?
Zhangsan want know Mali see what
'Zhangsan wonders what is the *x* such that Mali saw *x*'

The contrast between the English sentences in (13) and the Chinese sentences in (14) can easily lead us to conclude that Chinese and English *wh*-constructions are very different. However, they share too many properties to be treated in an unrelated way.

C.-T. J. Huang (1982) discusses a number of such shared properties, and concludes that Chinese constituent questions also involve movement at some level of abstraction. Some of these properties are discussed below.

3.1. *Selectional Restrictions and Interpretations*

In English, a verb such as *think* selects a non-interrogative clause as its complement:

(15) a. What does he think John bought?
b. *He thinks what John bought.

In contrast, a verb like *wonder* requires an interrogative complement:

(16) a. *What does he wonder John bought?
b. He wonders what John bought.

The *wh*-element thus cannot occur in the embedded clause if the matrix verb is *think* (15a-b) and must do so if the matrix verb is *wonder* (16a-b). If the selectional requirement is satisfied by a [+wh] or [-wh] feature in

the (Spec of) Comp position of the complement clause, the movement of *wh*-words in (15)-(16) fulfills this requirement.

(17) a. [$_{CP1}$ He wonders [$_{CP2}$ what$_i$ [you bought x_i]]]
b. [$_{CP1}$ What$_i$ does [he think [$_{CP2}$ you bought x_i]]]?

Chinese has exactly the same distinction. The Chinese counterpart of *think* cannot take an interrogative complement and the counterpart of *wonder* must take one.

(18) a. ta yiwei Zhangsan mai le shu.
he think Zhangsan buy ASP book
'He thought Zhangsan bought the book.'

b. ta yiwei Zhangsan mai le shenme?
he think Zhangsan buy ASP what
'What did he think Zhangsan bought?'

c. *ta xiang zhidao Zhangsan mai le shu.
he want know Zhangsan buy ASP

d. ta xiang zhidao Zhangsan mai le shenme.
he want know Zhangsan buy ASP what
'He wonders what John bought.'

If the selectional properties in the English sentences (15)-(16) are to be accounted for by movement of *wh*-elements, it follows that the same properties observed in Chinese can be captured by raising the *wh*-elements. A property of scope also follows: the *wh*-element in (18b) must have a matrix scope interpretation, since the *wh*-element must be moved from the embedded clause; and the *wh*-element (18d) must have an embedded scope interpretation, since the *wh*-element must stay in the embedded clause to satisfy the selectional requirements.

3.2. *Weak Crossover Effects*

In English, the movement of *wh*-elements induces so-called Weak Crossover effects.

(19) *Who$_i$ does his$_i$ mother like x_i?

The account for such Weak Crossover effects is attributed to the fact that *what* in (19a) is coindexed with both the pronoun and the variable (the trace left by the movement of *what*) (see the Leftness Condition of Chomsky (1976) and subsequent treatments). In turn, the existence of Weak Crossover effects has been used as a diagnostic for a movement process.

The Chinese counterpart displays the Weak Crossover effects, despite *wh*-elements stay *in situ*:

(20) *xihuan (ta_i) de ren kandao $shei_i$?
like he DE man saw who
'Who did the person that likes him see?'

The unacceptability of (20) suggests that the *wh*-elements in Chinese also undergo a movement process.

3.3. *Scope*

The recent accounts for the interaction of scope between *wh*-operators and QPs are based on the assumption that *wh*-elements *in situ* undergo raising (see May, 1985 and Aoun and Li, 1989, 1993a). For instance, consider the contrast between the unambiguous sentence in (21) and the ambiguous one in (22):

(21) Who saw everything? —unambiguous

(22) What did everyone see? —ambiguous

The contrast between (21) and (22) has been attributed to the different possibilities of movement, due to the well-formedness constraint on the derived representations, the Path Containment Condition of Pesetsky (1982), according to May (1985) or the Minimal Binding Requirement according to Aoun and Li (1989, 1993a). That is, the well-formed representations of (21) and (22) are (23) and (24) respectively.:

(23) $[_{CP}$ who$_i$ $[_{IP}$ t_i $[_{VP}$ everything$_j$ $[_{VP}$ saw $t_j]]]]$

(24) $[_{CP}$ what$_j$ $[_{IP}$ everyone$_i$ $[_{IP}$ t_i $[_{VP}$ t_j $[_{VP}$ see $t_j]]]]$

Representation (24) will yield two interpretations, whereas (23) yields only one interpretation, according to the Scope Principle either defined in May (1985) or Aoun and Li (1989).

Either May's or Aoun and Li's account for the contrast between the English sentences (21) and (22) indicates the relevance of variables, i.e., the relevance of the LF movement of *wh*-elements and QPs. In Mandarin Chinese, a contrast similar to the one discussed in (21)-(22) occurs.

(25) a. shei kandao le meige dongxi? —unambiguous
Who see ASP every thing
'Who saw everything?'

b. meigeren dou kandao le shenme dongxi? —ambiguous
everyone all see ASP what thing
'What did everyone see?'

Under the assumption that *wh-in-situ* raises at LF, sentences (25a-b) will have LF representations similar to (21)-(22) and will be subject to the same analysis. Thus, the Chinese facts can be used to support the existence of a *wh*-movement process.

3.4. *Specificity Effects*

The movement of *wh*-elements in English displays Specificity effects: they cannot be extracted from specific NPs:

(26) a. Who$_i$ have you read reviews of t_i?
b. *Who$_i$ have you read this review of t_i?

Fiengo and Higginbotham (1981) and C.-T. J. Huang (1982) suggest that sentence (26b) is not acceptable because a variable, generated by the movement of the *wh*-element, is left free (the variable is not bound by its binder/antecedent) within the specific NP. The Specificity effects thus can be a test for the existence of movement. This test shows that *wh*-elements in Chinese should also undergo movement, as the Chinese counterpart in (27) also displays the Specificity effects, as observed by C.-T. J. Huang (1982):

(27) a. ni kan guo shei de pinglun?
you read ASP who DE review

'Who have you read reviews of?'

b. *ni kan guo napian shei de pinglun?
you read ASP that who DE review
'Who have you read that review of?'

The behavior of *wh*-constructions with respect to selectional restrictions, Weak Crossover effects, scope and Specificity effects shows that *wh*-elements in Chinese also display properties of movement. Obviously, the movement cannot occur overtly in the same way it does in English. C.-T. J. Huang (1982) proposes that this occurs as a covert movement process at a more abstract level, the interpretive level called Logical Form (LF). Under this view, English and Chinese do not differ in whether or not they have a rule of *wh*-movement, but in where this rule applies: at S-Structure (in English) or at LF (in Chinese). The fact that both grammars embody a *wh*-movement process captures their shared properties discussed in Sections 2.1.-2.4. Their difference with respect to where the rule applies, furthermore, also captures some interesting differences between the two languages, as we turn to next.

3.5. *Locality Conditions*

A well-known fact of movement structures is that they are subject to a set of island constraints: elements cannot be extracted from certain islands. The islands include complex NPs, sentential subjects, adjunct clauses and clauses containing another *wh*-element. Sentences (28)–(31) illustrate the island constraints on *wh*-movement in English:

(28) *Wh*-island
a. *Who$_i$ does he wonder [why$_j$ [x_i bought x_j]]?
b. *Why$_i$ does he wonder [who$_j$ [x_j left x_i]]?

(29) Sentential subject
a. *Who$_i$ is that [x_i come] the best?
b. *'Why$_i$ is that [he came x_i] is the best?'

(30) Complex NP
a. *Who$_i$ do you like [the book x_i wrote]?
b. *Why$_i$ do you like [the book he wrote x_i]?

(31) Adjunct clause
a. *What$_i$ was he angry [because you said x_i]?
b. *Why$_i$ was he angry [because you said something x_i]?

There exist several accounts for the island effects, including Subjacency (elements cannot be moved across more than one of certain types of boundaries such as a clause or an NP), the requirement that the variable generated by the movement should be close enough to its antecedent (the moved category itself), or to a lexical head. See Chomsky (1981, 1986a), Lasnik and Saito (1984, 1992), C.-T. J. Huang (1982), Aoun (1985, 1986), Aoun *et al*. (1987), Stowell (1986), Rizzi (1990), among others. Disregarding the technical details, the island effects are accounted for by the well-formedness conditions on the relation between the variable and its binder, the raised *wh*-element. The island effects thus have been diagnostic of movement (see Chomsky, 1977).

In Chinese, the island conditions are obeyed in the sense that adjunct *wh*-elements (*how* and *why*) cannot occur within islands and be interpreted as having scope outside the island. What is significant is that argument *wh*-elements (*who* and *what*) can occur within islands and be interpreted as having scope outside the island; i.e., island violations are possible with Chinese argument *wh*-elements, as observed in C.-T. J. Huang (1982):

(32) *Wh*-island
a. ta xiang zhidao shei mai-le shenme?
he want know who bought what
'He wonders who bought what.'
'What does he wonder who bought?'
'Who does he wonder bought what?'

b. ta xiang zhidao shei weishenme likai le.
he want know who why leave ASP
'*He wonders who left why?'
'*Why does he wonder who left?'
'Who does he wonder left why?'

(33) Sentential Subject
a. shei lai zui hao?
who come most good
'Who is the *x* that [*x* come] is the best?'

b. *ta weishenme lai zui hao?
he why come most good
'Why (*x*) such that [he came *x*] is the best?'

(34) Complex NP

a. ni xihuan shei xie de shu?
you like who write DE book
'Who is the *x* such that you like the book *x* wrote?'

b. *ni xihuan ta weishenme xie de shu?
you like he why write DE book
'Why (*x*) such that you like the book he wrote for *x*?'

(35) Adjunct Clause

a. ta yinwei ni shuo shenme hua hen shengqi?
he because you say what word very angry
'What is the *x* such that he was angry because you said *x*'

b. *ta yinwei ni weishenme shuo hua hen shengqi?
he because you why say word very angry
'Why (*x*) such that he was angry because you said words *x*'

The fact that adjunct *wh*-elements cannot have island-external scope interpretations suggests that these *wh*-elements undergo covert movement, just like the overt movement of their counterparts in English. The acceptability of island violations by argument *wh*-elements in Chinese, in contrast to the unacceptability in the English cases, does not necessarily show that the movement analysis is incorrect. Rather, it shows that movement at different levels may exhibit different properties, as argued for in C.-T. J. Huang (1982), Fiengo *et al*. (1988). The same contrasts can be found within English with *wh*-elements staying in their base-generated position, which behave like Chinese *wh*-elements in (32)-(35). Chinese relativization involves overt *wh*-movement and behaves like the English *wh*-questions in (28)–(31).

In brief, the *wh*-questions in English and Chinese share too many properties to be different, even though *wh*-elements undergo movement in one but not the other. The similarities argue for a similar analysis—i.e., Chinese *wh*-elements also undergo movement. The movement occurs at the interpretive level, LF, in contrast to English which moves its *wh*-elements at S-Structure. This difference in the level

where *wh*-elements are moved accounts for the difference in the acceptability of island violations.

This proposal of *wh*-raising in Chinese has led to important further works by others both in general theoretical linguistics and in Chinese syntax. In general linguistic theory, although the syntax of interrogative sentences played a major role in generative grammar, the theory of UG had been constructed primarily on the basis of the syntax of interrogative sentences that exhibit overt *wh*-movement. *Wh-in-situ* languages had played virtually no role in shaping the theory of the syntax and semantics of questions, nor in the construction of the theory of movement constraints. The LF movement hypothesis offered a refreshing look into the syntax and semantics of questions in *wh-in-situ* languages, and important research results appeared on languages as diverse as Japanese, Korean, Egyptian Arabic and Navajo. In the general theory of movement and movement constraints, the research in this area led to two prominent lines of research in generative grammar concerning the nature of barriers and proper government, and the status of island constraints in LF. In the former case, the theory of proper government underwent considerable revisions in somewhat different directions which culminated in the proposals of Chomsky (1986a), Lasnik and Saito (1992), Rizzi (1990) and Cinque (1990). In the latter case, the status of Subjacency and Huang's Condition on Extraction Domain (CED) in LF was examined from various viewpoints (see Nishigauchi, 1990; Pesetsky, 1987; and Fiengo *et al*. 1988, among others). The relevant questions are based on facts, observed in Chinese and English, that a whole range of island effects do not seem to obtain with LF movement. One line of research directly stipulates this as a property of Subjacency and the CED. Another line maintains that such island conditions apply in LF as well as in overt Syntax, but that their effects are, in principle, invisible, due to other independent asymmetries between LF and overt Syntax.[4]

The study of *wh-in-situ* has, of course, given rise to further research on Chinese. The distinction between argument and adjunct *wh*-phrases has been further examined by Lin (1992) and Tsai (1989, 1991), who discuss systematic differences between *weishenme* ‘why’ and *zenme* ‘how’ and show that, either within a Lasnik-Saito type of approach or along Aoun's system of generalized binding, the differences have important implications for head government, minimality, and the notion of referentiality. The notion of proper government is also taken up in D.

Chen (1991) and Wible (1990), who explore a variety of other issues in Chinese phrase structure and extraction.

3.6. *Non-Interrogative Wh*

More recently, other authors have drawn attention to the non-interrogative aspects of *wh*-phrases and propose alternative approaches to the syntax and semantics of *wh-in-situ*. It has been observed that *wh*-words are not inherently interrogative; rather, they are indeterminate in meaning, and may be interpreted either as interrogative words or quantifiers (universal or existential), depending on the nature of the licensers that occur in construction with them (C.-T. J. Huang, 1982; Cheng, 1991; and Y. A. Li, 1992). The non-interrogative uses are illustrated below:

(36) shei dou renshi Lisi.
who all know Lisi
'Everyone know Lisi.'

(37) ni you-mei-you mai shenme?
you have-not-have buy what
'Did you buy something?'

Y. A. Li (1992) and Cheng (1991) both developed a theory of licensing by which a given *wh*-word is appropriately interpreted as an interrogative, universal, or existential quantifier. In particular, a *wh*-word is interpreted as an existential quantifier if occurring in an affective (non-positive) context (see Y. A. Li, 1992, for details of various contexts), a universal quantifier in the environment of a following *dou* 'all', and an interrogative phrase in the domain of a (possibly covert) question particle. Recognizing the multiple interpretations of *wh*-phrases and providing a unified analysis, Aoun and Li (1993b-c) advance an *in-situ* hypothesis for *wh*-phrases in Chinese. *Wh*-questions thus have a representation where a covert question operator binds an *in-situ wh*-element (also see Cole Hermon, 1994; Shi, 1994; and Tsai, 1992). A similar, though not identical, pattern of facts has been observed for Japanese by Nishigauchi (1990). Watanabe (1992) has also advanced the thesis that *wh*-questions in Japanese involve the movement of a covert operator in overt Syntax, and that the *wh*-phrases in fact stay *in situ* at LF. In contrast, Cheng

(1991) and Tsai (1994) claim that certain *wh*-phrases in Chinese still undergo *wh*-raising.

The treatment of *wh*-elements in Chinese as polarity items of sorts lends considerable support to the theory of 'unselective binding' developed in Discourse Representation Theory (Heim, 1982 and Kamp, 1981), based among other things on an observation by Lewis (1976) concerning 'adverbs of quantification', illustrated below:

(38) If I see a donkey, I always beat it.

(39) If I see a donkey, I sometimes beat it.

(40) If I see a donkey, I never beat it.

Each of the three sentences contains an identical occurrence of the indefinite NP *a donkey*. However, the quantificational aspect of this NP seems to change depending on the kind of adverb that occurs in the main clause, as illustrated by the following paraphrases:

(41) Every donkey *x* is such that if I see it, I beat it.

(42) Some donkeys *x* are such that if I see them, I beat them.

(43) No donkey *x* is such that if I see it, I beat it.

That is, the adverbs *always, sometimes, never* cause the NP *a donkey* to acquire the force of a universal, a positive existential, and a negative existential (monotone-decreasing) quantifier, respectively. This fact can be captured if the indefinite *a donkey* is treated not as an inherent quantifier (as the traditional Russellian approach would have it), but as an *indeterminate* whose quantificational force is determined by the adverbial licenser that binds it in LF. It is easy to see that the treatment of *wh*-phrases just described fits well within this theory of 'unselective' binding. In fact, *wh*-phrases are widely used in 'donkey sentences' of the sort illustrated here. Cheng and Huang (1993) show that there are two types of donkey sentences involving *wh*-phrases. The first is illustrated by the paradigm below:

(44) a. ni xihuan shei, wo jiu piping shei.
you like who I then criticize who
For all persons *x*, if you like *x* then I will criticize *x*.
(Literally, 'If you like who then I will criticize who.')

b. *ni xihuan shei, wo jiu piping ta.
you like who I then criticize him

c. *ni xihuan shei, wo jiu piping [e].
you like who I then criticize

d. *ni xihuan shei, wo jiu piping nage ren.
you like who I then criticize that person

Sentence (44a) is in the form of a conditional sentence. As indicated in the translation, the *wh*-phrase is interpreted as having the force of a universal quantifier. One important characteristic of this paradigm is that there are two identical occurrences of a *wh*-phrase, one in the antecedent and the other in the consequent clause. The second *wh*-phrase cannot take the form of an overt or empty pronoun, or that of a definite description. In fact, even a *wh*-phrase which is semantically the same as, but morphologically differs from, the first is unacceptable:

(45) *ni xihuan shei, wo jiu piping shenme ren.
you like who I then criticize what person
(Literally, 'If you like who then I will criticize what person.')

This paradigm contrasts with those in (46) and (47):

(46) a. *ni jiao shei jin lai, wo dou yuanyi jian shei.
you ask who come in I all willing see who

b. ni jiao shei jin lai, wo dou yuanyi jian ta.
you ask who come in I all willing see him
'Whoever you ask to come in, I will see him.'

c. ni jiao shei jin lai, wo yuanyi dou jian [e].
you ask who come in I willing all see
'Whoever you ask to come in, I will see him.'

d. ni jiao shei jin lai, wo dou yuanyi jian zhege ren.
you ask who come in I all willing see this person
'Whoever you ask to come in, I will see this person.'

(47) a. *ruguo ni jiandao-le shei, qing jiao shei lai jian wo.
if you see-ASP who please tell who come see me

b. ruguo ni jiandao-le shei, qing jiao ta lai jian wo.
if you see-ASP who please tell him come see me
'If you see someone, please tell him to come see me.'

c. ruguo ni jiandao-le shei, qing jiao [e] lai jian wo.
if you see-ASP who please tell come see me
'If you see someone, please tell him to come see me.'

d. ruguo ni jiandao-le shei, qing jiao nage ren lai jian wo.
if you see-ASP who please tell that person come see me
'If you see someone, please tell that person to see me.'

These sentences exhibit a reverse pattern from (44). The element in the consequent clause related to the *shei* in the antecedent clause must take the form of an anaphoric element, but not that of a repeated *shei*. Cheng and Huang (1993) argue that the difference between (44) and (46)–(47) derives from the way *shei* gets its quantificational force in these paradigms. In (44) the two instances of *shei* are at once locally bound by a (covert) necessity operator (NEC), as in Heim's treatment of donkey sentences without overt adverbs of quantification. Both are variables locally bound by NEC and neither is referentially dependent on the other, so the second occurrence cannot occur in anaphoric form. In (46)–(47), the first *shei* derives its universal and existential force from *dou* and *ruguo*, respectively. Each then acts as the antecedent of an NP in the consequent clause; hence the latter NP occurs only in anaphoric form but not in the form of an R-expression. To account for this contrast between (44) and (46)–(47), Cheng and Huang propose that whereas (44) involves unselective binding of the sort proposed by Heim, in (46)–(47) the *wh*-phrase derives its quantificational force internally (not from an external NEC), and antecedes an E-type pronoun or epithet, in the spirit of Evans (1980).

The fact that Chinese exhibits two distinct patterns of donkey sentences has important consequences for the theory concerning the proper analysis of donkey sentences in semantic theory, especially concerning the debate between Heim's Discourse Representation analysis and the E-type analysis of Evans (1980). As Cheng and Huang show, the pattern exemplified by (44) argues in favor of the need for unselective binding, but the differences between (44) and (46)–(47) show that an E-type analysis is also necessary. And ironically, although Chinese data argue for the existence of unselective binding, they also show that it is

those sentences without donkey pronouns that motivate this analysis. Donkey sentences with anaphoric pronouns should be analyzed as E-type pronouns and not as bound variables.

Again, our discussion in this section does not include all work that has been carried out on the syntax of quantifiers and *wh*-phrases in Chinese, and does not represent all approaches that have been proposed in the literature. Suffice it to say that there has been an explosion of work in this area in the past decade, both on Chinese and on other languages. As far as Chinese syntax is concerned, despite the differences among various authors, a distinct property of work in this period is that it has not only profited from general linguistic theory, but has also contributed significantly to the shaping of a general theory of Universal Grammar.

4. ANAPHORA AND BINDING

Anaphora is a persistent topic of syntactic theory. In Chinese syntax, there was occasional work on anaphora in the 1970s. The most interesting works include those by Li and Thompson (1981), Chen (1980) on zero anaphora, and those on resumptive pronouns in several studies of relativization and topicalization (e.g., T. Tang, 1979; Tsao, 1979; Mei, 1979; C.-T. J. Huang, 1980, etc.). Little work concentrated on the fundamental properties of pronouns and reflexives that have persistently occupied the attention of generative grammarians. A fundamental assumption in generative theory was that the reference of pronouns and anaphors (including reflexives) depends crucially on the distance and relative prominence of their intended antecedents in relation to them, and that the domain in which to define the reference of anaphors is in complementary distribution to the domain in which to define the reference of pronouns. Chomsky (1981) captures this complementarity with the two principles given in (48) (known as 'condition A' and 'condition B' of the binding theory):

(48) a. An anaphor is bound in its governing category.
b. A pronominal is free in its governing category.

A governing category is, roughly, a clause or an NP. Thus the joint requirements of (48a) and (48b) predict that the environment in which a reflexive must have a c-commanding antecedent is precisely that one in which a pronoun cannot have such an antecedent.

(49) a. John$_i$ criticized himself$_i$/*him$_i$.
b. John$_i$ said that I criticized *himself$_i$/him$_i$.
c. John$_i$ said that *himself$_i$/he$_i$ criticized me.

(50) a. I$_i$ heard [John$_j$'s criticism of *myself$_i$/himself$_i$].
b. I$_i$ heard [John$_j$'s criticism of me$_i$/*him$_j$].

Although this pattern obtains generally for Chinese and many other languages, the Chinese counterpart of (49c) does not exhibit the complementarity shown in English. In (51) either the embedded pronoun or the reflexive can refer to the matrix subject:

(51) Zhangsan shuo [ziji/ta piping-le Lisi].
Zhangsan said self/he criticize-ASP Lisi
'Zhangsan said that he criticized Lisi.'

Furthermore, contexts like the following allow both a pronoun and a reflexive:

(52) Zhangsan mai-le [ziji-de/ta-de shu].
Zhangsan sell-ASP self's/his book
'Zhangsan sold his (own) books.'

Facts like these seem to indicate that a reflexive may in some cases be bound in a larger domain than the domain in which a pronoun must be free. Intuitively, since reflexives need to look for an antecedent, the theory allows it to be bound in the smallest domain in which it *can* have a legitimate antecedent, but since pronouns do not need to find an NP from which it is disjoint, no such relaxation of the domain condition is allowed. To capture this generalization, C.-T. J. Huang (1982) proposed that the definition of a governing category should be relativized to the notion of a domain in which a given condition *can* be satisfied. This idea is adopted in Chomsky (1986b) who defines the binding domain for an anaphor or a pronominal to be the minimal 'Complete Functional Complex (CFC)' in which a given anaphor or pronominal can be bound or free, respectively.

Reflexive pronouns in Chinese present additional problems for the theory of binding. In Chinese these elements may take the form of a bare reflexive *ziji* or a compound form like *taziji* 'himself', *woziji* 'myself', etc. In general, the compound reflexive seems to be well-behaved with respect to Binding Theory, as the following shows:

(53) Zhangsan$_i$ shuo Lisi$_j$ chang piping taziji$*_{i/j}$.
Zhangsan say Lisi often criticize himself
'Zhangsan said that Lisi often criticized himself.'

A number of people (including Y.-H. Huang, 1984; Wang and Stillings, 1984; Battistella, 1987; and Battistella and Xu, 1990) have observed, however, that the bare reflexive exhibits long-distance binding in cases like the following, in apparent violation of the binding principle (48a).

(54) Zhangsan$_i$ shuo Lisi$_j$ chang piping ziji$_{i/j}$.
Zhangsan say Lisi often criticize self
'Zhangsan said that Lisi often criticized himself/him.'

(55) Zhangsan$_i$ juede Lisi$_j$ conglai bu xihuan ziji$_{i/j}$.
Zhangsan feel Lisi ever not like self
'Zhangsan feels that Lisi never likes himself/him.'

Such long-distance binding is subject to the restriction that the remote antecedent of *ziji* must agree with all its closer potential antecedents in person (and number). If this restriction is not met, only local binding is possible. The following sentences illustrate what has come to be known as the 'blocking effects':

(56) Zhangsan$_i$ shuo wo$_j$ chang piping ziji$*_{i/j}$.
Zhangsan say Lisi often criticize self
'Zhangsan said that I often criticized myself.'

(57) ni$_i$ juede Lisi$_j$ conglai bu xihuan ziji$*_{i/j}$.
you feel Lisi ever not like self
'You feel that Lisi never likes himself.'

Another well known property of Chinese reflexives is that they are 'subject-oriented', their antecedent must be a subject, a property that has been observed of long-distance reflexives for many other languages as well. An additional property is the phenomenon of 'subcommand' (J. Tang, 1989). This has to do with the fact that the antecedent of a reflexive may be considerably embedded within an NP without itself c-commanding the reflexive, as long as it is contained in a certain subject NP that meets the c-command requirement.

(58) Zhangsan de shuxue kao-le 100-fen de shi shide ziji hen-kaixin.
Zhangsan's math test-ASP 100-point DE fact cause self happy
'That fact that Zhangsan's math got 100 points in the test delighted self [him] very much.'

These properties of Chinese reflexives pose nontrivial questions of analysis both within Chinese grammar and for (48a) as a principle of UG. J. Tang (1989) addressed these properties in considerable detail, showing that the relevant facts can be accounted for within a theory that incorporates a process of reindexing and the notion of 'subcommand'. Battistella (1989), building on Tang's generalizations, shows that the properties of Chinese reflexives argue for the existence of head-movement in LF. In particular, he suggested that bare reflexives, being X^0s, may move to the head position of a c-commanding $Infl^0$, and successively to higher $Infl^0$ nodes. Thus, the sentence (54) may have the structure (59) or (60) in LF:

(59) Zhangsan I^0 shuo $Lisi_i$ I^0-$ziji_i$ chang piping t_i.
Zhangsan said Lisi self often criticize

(60) $Zhangsan_i$ I^0-$ziji_i$ shuo Lisi I^0-t_i chang piping t_i.
Zhangsan self said Lisi often criticize

Under this movement hypothesis, local binding is obtained when the LF-moved *ziji* stops at the $Infl^0$ of its immediate clause, as in (59), and long-distance binding is obtained when *ziji* continues to move up into a higher $Infl^0$, as in (60). Under this analysis, binding of *ziji* is strictly local (by *Lisi* in (59) and by *Zhangsan* in (60)) in accordance with Binding Theory, and apparent long-distance binding is treated as a result of successive local movement in LF. Most of the other properties of short and long-distance reflexives are claimed to follow.

This sort of analysis is also developed in Cole, Hermon, and Sung (1990), and Sung (1990) which address extensive questions that arise from Battistella's initial suggestion. In a similar spirit, Huang and Tang (1991) also developed a movement approach, though they argued that the bare reflexive moves as an NP, and adjoins itself to a clausal node in LF (as an instance of QR, treating the bare reflexive but not the compound reflexive as an operator). Cole, Hermon and Sung (1992) and subsequent works further develop a formal theory of feature percolation

which accounts for the subcommand phenomenon, among other things, discuss the problem of islandhood raised by Huang and Tang (1991), and address a variety of cross-linguistic facts in a general theory of principles and parameters of long-distance anaphora.

These are by no means the only works that have been produced on the Chinese reflexive. Aoun and Li (1990), for instance, argue for the non-movement of compound reflexives, in contrast to the movement of bare reflexives, based on the facts concerning the interaction of reflexives and bound pronouns. More recent works by Progovac (1992) and J. Tang (1994) point to the possibility that long-distance binding arises not as a result of successive movement, but because of the possibility of successive binding of an empty Agr^0 in Chinese-type languages. Still, there are some properties of Chinese reflexives that appear to resist any strictly syntactic analysis. Some such facts suggest the relevance of the notion of logophoricity, and others point to the role of pragmatics and lexical semantics. (See P. Chen, 1992; Yu, 1991; Xu, 1992; and Pan, 1994 for discussion of some such cases.) A distinctive feature of works in this period is that they bear on important issues of a general theory of anaphora. In particular, the seemingly peculiar properties of Chinese reflexives argue against a parametric theory that directly relaxes the domain of binding for certain elements, and their analysis has interesting consequences for both a general theory of binding and for the overall organization of grammar.

5. FULL REPRESENTATIONS AND EMPTY CATEGORIES

5.1. *Movement and Traces*

The theory of anaphora discussed in the previous section concerns the reference of certain overt anaphoric elements. In the Government and Binding theory, this theory of overt anaphora also applies to a whole range of empty categories. For example, under the trace theory of movement, each time movement takes place a trace of the moved category is left in the movement site. A trace in such a construction is a phrase without phonetic content, but which otherwise behaves like overt phrases. A passive structure in English, for example, contains a trace of the subject in its postverbal D-Structure position:

(61) John$_i$ was hit t_i.

The distribution of NP-traces is similar to that of overt anaphors (cf. (48a)).

On the other hand, traces of *wh*-movement behave on a par with referential expressions like *John* and *the boy* in sentences like (62-63):

(62) *He$_i$ said I saw John$_i$.

(63) *Who$_i$ did he$_i$ say I saw t_i?

The ill-formedness of sentences like (62) has motivated the following principle in UG (known as 'condition C', in addition to the two principles of (48a–b)).

(64) An R-expression is free.

The coindexing shown in (62) cannot obtain because the r(eferential)-expression *John* is bound under this coindexing. In (63) the coindexing relation between *who* and *he* is not per se in violation of any principle, but if the trace of *who*, as a variable bound by the quantifier, is assumed to be an R-expression, then (63) is also straighforwardly ruled out by condition C, with the *wh*-trace bound by *he*. In other words, the phenomenon of 'strong crossover' is reduced to a case of condition C violation.

In Chinese syntax, the assumption that certain sentences are derived from or related to others via a movement process dates back to the very beginning of transformational grammar, and was popular among Chinese syntacticians in the 1970s. For example, Wang (1965) proposed a rule of Affix Hopping to account for the *-le/you* alternation of the perfective aspect. P. Wang (1970), and much subsequent work, assumed that the passive and the *ba*-constructions are derived via movement processes. Much of this assumption has been carried over, mutatis mutandis, to the 1980s; so this way of looking at certain sentence types is not a distinctive feature of work in the past decade. This is not to say that no new work was produced in this area. Goodall (1987, 1989) provides interesting new arguments for the movement analysis of *ba*-constructions. Y. A. Li (1990) argues for the existence of raising in several constructions, and provides an 'unaccusative' analysis for a range of existential and locational sentences. Other properties of unaccusative sentences are discussed in Zhou (1988), Cheng (1988), C.-T. J. Huang (1987), Gu

(1992), and other works. C.-T. J. Huang (1989) provides an analysis of *shi* 'be' and *you* 'have' in which raising plays a crucial role. At the same time, it is worthwhile noting that all the movement analyses did not go unchallenged. Yue-Hashimoto (1971) and Hashimoto (1969) argued that the elements *ba* and *bei* are better treated as higher verbs rather than as prepositions, and that passive and *ba* constructions involve some process of identity deletion in a bi-sentential underlying structure. The non-movement approach to *ba* is also defended by Cheng (1986) C.-T. J. Huang (1988, 1992) and Y. A. Li (1990). More recent work on *ba* has revived Yue-Hashimoto's original analysis according to which *ba* is the head of its own projection which takes a clausal complement, but in a somewhat different form. In line with recent proposals for the recognition of certain functional categories between VP and IP, Zou (1992) proposes that *ba* is the head of a functional phrase which takes the VP as its complement. Sybesma (1992) argues that *ba* occurs in the head position of a causative phrase in a sentential structure that represents accomplishments as one of the Aristotelian events (see Vendler, 1967; Dowty, 1949, etc.). In these treatments the status of *ba* is akin to that of an auxiliary. The assignment of such a status to *ba* (and arguably to other 'co-verbs' including *bei*, *zai*, etc.) offers a good solution to the tension between the two approaches that treat them as pure prepositions and main verbs, respectively, and seems to capture very well the fact that these elements exhibit certain verbal properties but lack certain others.

Despite these different approaches to *ba* and *bei* constructions, it still seems that, with the work in recent years, there is now general acceptance of the unaccusative analysis of existential and locational sentences, and of the existence of raising structures in Chinese.

As regards *wh*-traces, early transformational grammarians, of course, did not assume the existence of *wh*-movement for Chinese constituent questions, but it was common to assume what amounts to such a process for relative clauses and certain topicalized sentences. S.-F. Huang (1972) and Sanders and Tai (1972) were quite explicit about this hypothesis. The latter was among the few earlier works that showed that an analysis of Chinese data could shed new light on general linguistic theory, in this case on the theory of movement as a process of copying and deletion, on movement constraints, and on parametric theory. Others took the alternative of treating relativization and topicalization as involving identity deletion only. Furthermore, Li and Thompson (1974) and others

took the strong position that topicalization involves no movement at all and that topic structures are base-generated, as they are in surface form. Central to Li and Thompson's arguments were (a) that there are topic-comment structures that clearly cannot have been derived by movement or deletion, and (b) the surface form of a topic structure differs considerably from its underlying structure with respect to the definiteness of an NP. The former point is illustrated by the well- known sentence (65), and the latter by (66):

(65) neichang huo, xingkui xiaofangdui lai de zao.
that-CL fire fortunately fire-brigade come DE early
'That fire, fortunately the fire brigade arrived early.'

(66) a. wo kan-le shu le.
I read-ASP book ASP
'I read books.'

b. shu, wo kan-le.
book I read-ASP
'The book(s), I read.'

Li and Thompson's former point argues for the independent need for a base-generated topic, and their latter point shows the difficulty for the movement hypothesis in a framework of grammar according to which the referential properties of NPs are determined at underlying structure.

In what has turned out to be the most influential paper on topic structures in this period of research, Li and Thompson (1976) proposed a theory of typology according to which languages are topic-prominent, subject-prominent, or both, or neither. The distinctive properties of Chinese argue for its characterization as a topic-prominent language, whereas English-type languages are better characterized as being subject-prominent, etc. In a similar spirit, Tsao (1979) developed a typology based on Chinese-English comparative data, which distinguishes discourse-oriented from sentence-oriented languages.

The lack of general agreement concerning the existence of movement in relative and topic sentences continued into the last decade. In the area of relativization, T. Tang (1979), C.-T. J. Huang (1980) and Jiang (1991) developed a theory according to which the relativized argument is first topicalized before relativization takes place, but the issue of the existence of movement is not itself a central theoretical issue. In most

recent work, Shi (1989) argues that a topic chain consisting of a topic and several comment clauses must be analysed as a syntactic unit which involves movement of the topic NP from the comment clauses. Ning (1993), based on the differential properties of topic and relative structures, argues that while some topic structures may not involve movement, all relativized constructions exhibit crucial properties that call for an analysis involving 'gaps' of some sort. Concerning topic structures, C.-T. J. Huang (1982) argued, contra Li and Thompson, that, for sentences of the kind exemplified by (66b), some analysis involving a 'gap' is needed—either a trace of movement or a base-generated empty category that gets identified as a variable (an R-expression). Such a strategy is required to properly account for contrasts like the following:

(67) Zhangsan$_i$, ta$_i$ lai-le.
Zhangsan he come-ASP
'Zhangsan, he came.'

(68) *Zhangsan$_i$, ta$_i$ renshi.
Zhangsan he know
'*Zhangsan, he knows.'

(69) Zhangsan$_i$, ta$_i$ shuo Lisi lai-le.
Zhangsan he say Lisi come-ASP
'Zhangsan, he said Lisi came.'

(70) *Zhangsan$_i$, ta$_i$ shuo Lisi renshi.
Zhangsan he say Lisi know
'*Zhangsan, he said Lisi knew.'

Within a theory that postulates movement or empty categories, (68) and (70) would contain an empty category in the object position, construed as a variable, that is bound by the pronoun *ta* 'he', but no such empty category would exist in (67) and (69). Examples (68) and (70) are thus straightforwardly ruled out by condition C of Binding Theory. No non-*ad-hoc* account of these contrasts would be available, however, within a theory that does not postulate full representations with abstract, empty categories.

Despite this argument, however, Li and Thompson's position has continued to be influential. Xu and Langendoen (1985) claim that a range of properties of topic structures can be accounted for under the simple

'aboutness' requirement that the comment says something about the topic. Xu (1986) recognizes the existence of an empty category, but develops a theory essentially indistinguishable from Li and Thompson's account without the postulation of an empty category. The reader is referred to these works, plus the discussion of Xu's theory in C.-T. J. Huang (1987), Y. A. Li (1990) and the references cited there.

5.2. *Empty Pronouns*

One prominent area of research on anaphora in Chinese concerns the distribution and reference of empty pronouns. Two kinds of empty pronouns have been recognized in the generative literature. One kind, referred to as PRO, occurs in the subject of infinitival constructions. In earlier transformational terms, such empty pronouns are the result of 'Equi-NP deletion':

(71) John$_i$ wanted [PRO$_i$ to win].

(72) John persuaded Bill$_i$ [PRO$_i$ to major in linguistics].

The existence of PRO seems to be universal. The other kind, referred to as 'pro', occurs in the subject position of tensed sentences in such languages as Italian and Spanish, but does not occur in English or French. Thus, whereas the Spanish sentence (73) is grammatical, its English counterpart is not:

(73) José sabe que [pro ha sido visto por Maria].
José know that has been seen by Maria
'José knows that [he] has been seen by Maria.'

(74) a. *John knows (that) [e] has been seen by Maria.
b. *John says [e] will be here tomorrow.

The comparative data observed here point to a typological distinction known as the Pro Drop or the Null Subject Parameter. Languages differ in the extent to which they require certain elements to be overtly expressed, a typology that mirrors Marshall McLuhan's 'hot-cool' division of the media. TV commercials are hot, with every message given explicitly (and excessively repeated) for the viewer; but an Oriental painting is cool, with a lot left for the viewer to fill in. English-type languages are relatively

hot, and Spanish-type languages are relatively cool, with respect to pro drop. The question for linguistic theory is why pro drop is allowed in one particular language but not another. The most plausible theory ties the parameter to a cross-linguistic difference in the 'richness' of agreement markings on finite verbs. In a language like Spanish and Italian, where the verb is heavily marked for agreement with its subject, a subject pronoun may drop because, in general, its content (say, being a third person, singular, masculine pronoun) is recoverable from the agreement marking on the verb. In English, on the other hand, pro drop is impossible because, in general, the agreement markings on its finite verbs are too meager to recover the pronoun's content. This theory also explains why object pronouns cannot drop even in Spanish-type languages—since the verb only agrees with the subject, but not with the object. The same theory also correctly predicts that in a language exhibiting object agreement (Georgian, Pashto, etc.), the object pronoun can drop just in case object agreement is present.

The significance of Chinese to this theory is that it appears to strongly falsify this otherwise highly plausible theory of pro drop. Chinese allows not only a subject but also a non-subject. Given a question like (75), the speaker may reply with both, either, or neither of the parenthesized pronouns in (76a) or (76b):

(75) Zhangsan kanjian Lisi le ma?
Zhangsan see Lisi ASP Q
'Did Zhangsan see Lisi?'

(76) a. (ta) kanjian (ta) le.
(he) see (him) ASP
'(He) saw (him).'

b. Zhangsan shuo [(ta) kanjian (ta)] le.
Zhangsan say (he) see (him) ASP
'Zhangsan said (he) saw (him).'

Chinese is thus even 'cooler' than languages like Italian and Spanish. The problem is, however, that Chinese is a language with no agreement whatsoever. This state of affairs poses a severe problem for the agreement-based theory of the pro drop parameter. C.-T. J. Huang (1984b) argues, however, that the problem presented by Chinese should be divided into two cases: the case where a zero pronoun may take an

argument as its antecedent, and the case where it must take a topic, or some other NP introduced in previous discourse, as its antecedent. Central to this distinction is the fact that although a subject zero pronoun may be argument-bound, an object pronoun cannot. Thus, when uttered without a context, (77a) is acceptable with the null subject referring to the matrix subject, but (77b) is not with the null object bound by the matrix subject:

(77) a. Zhangsan$_i$ shuo [e$_i$ bu renshi Lisi].
Zhangsan say not know Lisi
'Zhangsan said that [he] did not know Lisi.'

b. *Zhangsan$_i$ shuo [Lisi bu renshi e$_i$].
Zhangsan say Lisi not know
'Zhangsan said that Lisi did not know [him].'

Without overt pronouns, there is no subject-object asymmetry:

(78) a. Zhangsan$_i$ shuo [ta$_i$ bu renshi Lisi].
Zhangsan say he not know Lisi
'Zhangsan said that he did not know Lisi.'

b. Zhangsan$_i$ shuo [Lisi bu renshi ta$_i$].
Zhangsan say Lisi not know him.
'Zhangsan said that Lisi did not know him.'

The well-formedness of (78b) shows that there is nothing wrong with an overt pronoun in object position. The contrast between (77) and (78) shows that a subject pronoun can drop freely, but an object pronoun cannot. The same overt-covert contrast is illustrated in (79):

(79) a. Zhangsan de pengyou piping-le ta.
Zhangsan DE friend criticize-ASP him.
'Zhangsan's friend criticized him.'

b. *Zhangsan$_i$ de pengyou piping-le e$_i$.
Zhangsan DE friend criticize-ASP.
'Zhangsan's friend criticized [him$_i$].'

These facts suggest that the null object is not a real pro and therefore does not present a problem to the theory of pro drop *per se*. Only the

occurrence of the null subject is a genuine problem for the theory of pro drop. To solve this problem, C.-T. J. Huang (1984b, 1989) argued that the agreement-based theory is too narrow, and should be generalized to allow for null subjects in contexts where no agreement is present. This, he argued, could be achieved by generalizing the theory of control to accommodate both PRO and pro. A simplified version of the relevant rule is given in (80):

(80) The Generalized Control Rule
Coindex an empty pronominal (PRO or pro) with the closest potential antecedent.

The empirical effect of this rule is that an empty pronominal is allowed if, in the central cases, its content can be 'sufficiently' recovered, either by a rich enough agreement marking (acting here as an antecedent), or by a true antecedent NP.

A null object, under this theory, is not allowed as an empty pronominal, but belongs to a different kind of empty category. Such an empty category is more akin to a topic-bound variable, though an overt topic is not required. C.-T. J. Huang (1984b) suggested that it was bound by a null topic, but in C.-T. J. Huang (1991b) he also suggested that it could be directly treated as the null counterpart of an epithet, or an E-type or donkey pronoun--in a word, an element that is a pronoun by form but an R-expression in theory (whether in the sense of Binding Theory, or in Heim's Discourse Representation Theory, or by the E-type analysis of donkey pronouns). Finally, the appearance of such a category in Chinese but not in English is attributed to a different parameter, called the null topic parameter, which is in turn tied to the Li-Tompson-Tsao parameter concerning topic prominence and discourse orientation. The two descriptive parameters, pro drop and null topic, predict the existence of four types of languages: English and French allow neither pro drop nor null topics, Italian and Spanish have pro drop but not null topics, Chinese and Portuguese exhibit both types of null elements, while German exhibits null topics but no pro drop.

Huang's theory, if correct, would reduce the theory of pro drop to control theory, and argue for the recognition of a separate parameter concerning the distribution of discourse bound zero pronouns. The theory, however, has been the subject of heated debate in the literature. Cross-linguistically, both support for the theory's claim for universality

and evidence against it have been presented, the former from Portuguese (Raposo, 1986) and American Sign Language (Lillo-Martin, 1988), and the latter from Imbabura-Quechua (Cole, 1987), Chamorro (Chung, 1984), etc. Hasegawa (1984/85) cites evidence from Japanese for a theory of null objects similar to Huang's, which confirms earlier observations by Kuroda (1965). Other works, however, point to important problems (Kegeyama, 1986; Whitman, 1987), though their discussions are not exhaustive. In the area of Chinese syntax, Huang's theory, while supported by some, has also been challenged by others. Literally dozens of works have addressed the issue of whether the null object should be analyzed as an R-expression or not. A large proportion of papers read at the 2nd Harbin Conference on Generative Grammar (1987) were devoted to discussion of this issue. Numerous others were written during this period. The main opponent of Huang's position is Xu (1986), who denies the existence of a general subject-object asymmetry as shown in (77), citing the example (81) with a null object that appears to be subject-bound:

(81) haizi shuo mama yao zeguai-le.
child say mother will blame-ASP
'The child said that the mother will blame [him].'

But others maintain that the co-reference is inferred from a null object that refers to an affair whose reference has been made salient in the preceding discourse, and not a result of argument binding. Xu also challenges the Generalized Control theory, and denies the existence of subject-object asymmetries of the sort illustrated by (82)–(83):

(82) a. Zhangsan$_i$, [[e$_i$ chang ge de shengyin] hen haoting].
Zhangsan sing song DE voice very charming
'Zhangsan, the voice with which [he] sings is charming.'

b. *Zhangsan$_i$,[wo xihuan [e$_i$ chang ge de shengyin]].
Zhangsan I like sing song DE voice
Zhangsan, I like the voice with which [he] sings.

(83) a. Zhangsan$_i$, [[piping e$_i$ de ren] hen duo].
Zhangsan criticize DE person very many
'Zhangsan, people who criticized [him] are many.'

b. *Zhangsan$_i$, [wo renshi hen duo [piping e$_i$ de ren]].
Zhangsan I know very many criticize DE person
'Zhangsan, I know many people who criticized [him].'

Both of the (b) sentences are unacceptable unless the gap is replaced by a resumptive pronoun, as in (84) and (85):

(84) Zhangsan$_i$, [wo hen xihuan [ta$_i$ chang ge de shengyin]].
Zhangsan I very like he sing song DE voice
Zhangsan, I like the voice with which he sings.

(85) Zhangsan$_i$, [wo renshi hen duo [piping ta$_i$ de ren]].
Zhangsan I know very many criticize him DE person
'Zhangsan, I know many people who criticized him.'

Xu (1986) points to examples like (86) which apparently do not exhibit a subject-object asymmetry:

(86) a. nei-ben shu$_i$, [[kan-bu-dong e$_i$ de ren] henduo].
that-CL book can't-understand DE person many
'That book, people who can't read [it] are many.'

b. nei-ben shu$_i$, [wo renshi henduo [kan-bu-dong e$_i$ de ren]].
that-CL book I know many can't-understand DE person
'That book, I know many people who can't read [it].'

These examples differ from those in (82)-(83) in that the gap here is bound by an inanimate NP. Note that overt pronouns in Chinese may take only animate NPs as antecedents, so an overt resumptive pronoun in the place of [e] in (86b) renders the sentence unacceptable, in contrast to (84)–(85):

(87) *nei-ben shu$_i$, [wo renshi henduo [kan-bu-dong ta de ren]
that-CL book I know many can't-understand it DE person
'That book, I know many people who can't read [it].'

Although the symmetry displayed in (86) poses a problem for the Generalized Control rule, one possible explanation (cf. Ning, 1993) may be that the gap in (86b) is in fact a resumptive pronoun, on a par with the overt pronouns in (84)–(85), assuming that inanimate pronouns are always phonetically empty. There is still an asymmetry in (86), in other

words, but it is invisible since an inanimate resumptive pronoun is indistinguishable from a pro. This explanation may seem plausible, but it has important consequences and raises other issues that are yet to be explored. See Qu (1994) for arguments against a resumptive pronoun.

Despite the heated controversies over the status of the null object, the Generalized Control Theory, and Subjacency in Chinese, the dust appears to have settled now. This does not mean, however, that all issues were resolved. It does appear that there is general agreement that the postulation of a Free Empty Category for the null object is not justified. There is much less agreement, however, as to whether the null object is to be analyzed as an R-expression or as a pro. Although there is no consensus on the solution to the relevant issues, at least these past few years' research has served to sharpen the issues. Proponents of the R-expression hypothesis must strive for an explicit theory of pragmatic inference to account for the lack of Condition C effects in sentences like (81), whereas those who regard it as a pro are in need of an adequate theory of its reference that will account for contrasts of the sort observed in (77), and (82)–(83). There is significant further work in recent years that deals with the real issues (see Mei, 1990 and Cheng, 1989 for example), but the topic, on the whole, has now received less attention. The reason for this state of affairs seems natural: the study of research in Chinese syntax has reached a significant plateau in this and a few other areas, and scholars have now moved on to a number of other areas of research, among them the syntax of argument structure (Y. Li , 1990, 1992; Gu, 1992, etc.), of event structure (C.-T. J. Huang, 1992; Sybesma, 1992), of head movement (Gu, 1992; C.-T. J. Huang, 1992, etc.), the topic of Quantification (Aoun and Li, 1993a; C.-T. J. Huang, 1982; Ernst, 1991; Lee, 1986; Liu, 1990, and S. F. Huang, 1981), the topic of syntax-morphology interface (Aoun and Li, 1993c; Dai, 1992; C.-T. J. Huang, 1984a; Paul, 1988, etc.), syntax-phonology interface (Zhang, 1992), and of polarity sensitivity in a theory of licensing and interpretation (Cheng, 1991; Y. A. Li, 1992; Cheng and Huang, 1993, among others). There has been considerable further work in each of these areas, each with promising results, and each deserving further discussion. But to discuss work in each of these areas would require a lengthy digression beyond the scope of this chapter.

6. SUMMARY AND CONCLUSION

In this chapter we have described a number of major areas of Chinese syntactic research in the last decade. We saw that this period may be described as the fourth period in a century-old history of syntactic research on Chinese languages. The first period, 1898-1938, marked the birth of Chinese syntax as a sub-field of Chinese linguistics, through the introduction of Western models for grammatical description. Sensing the inadequacies of analyzing Chinese grammar on the basis of the grammar of Western languages, linguists in the second period, 1938-1968, strove for observational and descriptive adequacy and produced monumental documents that are read as classics even today. Scholars of this period emphasized the differences between Chinese and the western languages and felt a strong need to search for an independent model for Chinese grammar. With the emergence of the transformational grammar, scholars in the third period, 1968–1981, demonstrated the need for a formal model of Universal Grammar as they re-analyzed the vast amount of descriptive data provided in the earlier period. The description of the Chinese grammar again was affected by the model created for English, but the field benefited considerably, as a consumer of early generative grammatical theory, from valuable insights through the application of transformational grammar to Chinese. Coming to the current period, we saw that the study of the Chinese grammar, though also affected by the model developed on facts of English, has in turn been a significant source for the formulation of Universal Grammar—it has not only been an active consumer of modern general linguistic theory of today, but has also started to contribute to it in significant ways. For instance, the word order facts of Chinese and their analysis were partially responsible for the formulation of Case theory in UG. The study of *wh*-constructions has important implications for the notion of parameters, the nature of Logical Form, and the theory of movement constraints, and it laid the foundation for much theoretical discussion outside of Chinese linguistics. The study of anaphora in Chinese has been the center of much work on the revision of binding domains, and in discussions of long-distance anaphora. The study of zero pronouns in Chinese has important implications for control theory and the theory of empty categories, and it has formed the basis of much further research in both Chinese and other Asian and non-Asian languages. Chinese syntax now occupies a firm position in research on Universal Grammar.

The qualitative difference in syntactic research of the last period has been accompanied by a radical increase in quantity as well (see notes 1, 2).

At the same time, the study of Chinese syntax has branched into several other new areas of research, concerning argument structure, morphology, licensing, functional categories, etc. There is also an increasing amount of work on comparative grammar across Chinese dialects, another fertile area awaiting further research. With this momentum, the field of Chinese syntax may well be ready to blossom again.

NOTES

[1] An annual North American Conference on Chinese Linguistics was launched in 1989. The First Summer Institute of Chinese Linguistics was held in the summer of 1991 at the University of California at Santa Cruz. The International Association of Chinese Linguistics was created in Singapore in 1992, with annual conferences scheduled at locations throughout the world. In addition, in 1990 Academia Sinica in Taiwan launched an annual International Symposium on Chinese Languages and Linguistics.

[2] Such as *Journal of Linguistics*, *Language*, *Linguistic Inquiry*, *Linguistics*, and *Natural Language and Linguistic Theory*. *Linguistics* published a special issue on theoretically-oriented work on Chinese in 1990. In 1992, Kluwer Academic Publishers launched the *Journal of East Asian Linguistics*, devoted to theoretical work on Chinese and other East Asian languages.

[3] Because of this approach to UG and linguistic variation, Government and Binding theory is also known as Principles and Parameters theory.

[4] Still another line of research is to keep *wh*-elements *in-situ* to be *in-situ* still at LF (Aoun and Li, 1993b-c). This is interestingly related to the non-interrogative interpretation of *wh*-elements as discussed in the next section.

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