

THE LACK OF SCOPE AMBIGUITY IN CHINESE

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1. INTRODUCTION

The following English sentences may have two scope readings (cf. May 1977, 1985):

- (1). Every man saw a dog.
 - a. [A E] b. [E A]
- (2). Someone loves everyone.
 - a. [E A] b. [A E]

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On the other hand, few Chinese sentences are scopally ambiguous (cf. Huang 1982). The problem for the UG oriented linguist is thus: why is there such a difference? This paper is directed to this problem.

May (1977, 1985) argues that all sentences that have two or more quantifiers are potentially ambiguous, and that scope ambiguities can be accounted for by a universal

rule QR^{3,4}.

1. I would like to thank J.Higginbotham, R.Larson, K.Hale, D.Steriade, R.Kayne and H.Larsnik for discussions. I also would like to thank L.Holmes, Z.M.Bao, Y.F.Li and K.Sloan for the lengthy time they spent on listening to and commenting on my story.

2. Aoun & Li (forthcoming) argues that although Chinese active sentences do not have scope ambiguity, Chinese passive sentences do. We return to their argument in Appendix 2.

3. It will become clear later that, for our argument, it does not in fact matter how scope ambiguity (in English and similar languages) is best accounted for, by May (1977, 1985), or Aoun & Li (forthcoming), or else.

4. Not all people consider sentences with two or more quantifiers, like (1)-(2), basically ambiguous. Kroch (1973) and Reinhart (1976), for example, consider all sentences to have a natural scope reading, in which the scope order of quantifiers reflects their SS linear or c-command order. Additional scope reading, if any, are either entailed by the normal reading or are marked cases, subject to accounts by language-particular rules and/or pragmatics. For them, Chinese probably represents the norm, free of marked rules, while (1) and (2) represent the exception. It is true that given a scopally ambiguous sentence, not all readings are equally available. The availability of the number, and the naturalness, of the readings depends on many factors, including contexts and pragmatics. A change of the verb, for example, may

If May's QR is universal, what prevents it from applying to Chinese the way May specifies it, the way that leads to scope ambiguities? Of course we do not have to assume a single, universal way of QR. One may, for example, propose that the May-style QR applies to English, but a different way of QR applies to Chinese. But this proposal is undesirable in that it has no explanatory power, and from a "principles and parameters" point of view one would like to see as much a part of an "invisible" component of grammar as possible to be universal. A better approach to this problem is to aim at reducing the difference between English and Chinese to some single

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parameter (or a few), in the fashion of L. Rizzi (1982).

Huang (1982) believes that nothing prevents the May-style QR from applying to Chinese. With the aim that QR be universal, the assumption that (1)-(2) are scopally ambiguous, and the fact that Chinese lacks scope ambiguity, Huang concludes that the May-style QR must be abandoned. Instead, Huang proposes a universally rigid QR that strictly observes the SS hierarchical (c-command) order of quantifiers/quantified expressions: this SS order is the LF scope order. Scope ambiguities in English do not come from QR. Rather, they come from a universal rule restructure-alpha, which freely operates (mostly) at SS on every sentence and produces, INVISIBLE to the eye, a

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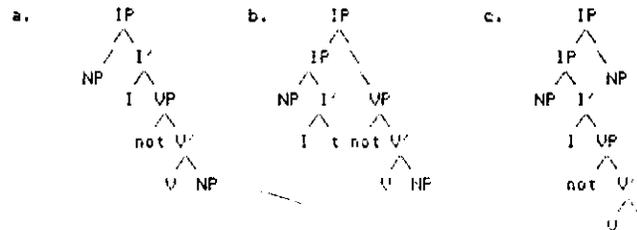
multiplicity of SS structures which have different hierarchical orders. Chinese on

alter the naturalness and possibly the number of available scope readings. However, J.Higginbotham and R.Larson (p.c.) point out that from a methodological point of view, it is preferable to assume that UG permits as many scope readings as possible for each sentence, while syntax, context and pragmatics, among other things, weed out some of the potential readings. The alternative assumption that UG permits no scope ambiguity faces the problem of why and how, as a matter of fact, some languages, like English, tolerate scope ambiguities, while other languages, like Chinese, do not.

5. R. Larson (p.c.) insisted that I should take this approach.

6. For example, a sentence like (i) is ambiguous in structure at least in three ways (assuming for convenience that NEG is in VP):

(i). Every student did not own a car.



(ia) is the original SS structure. (ib)-(ic) are derived by applying restructure-alpha to (ia). The difference between (ia)-(ic) is invisible in that the SS

the other hand does not allow such a restructuring rule due to what Huang calls an "X-bar constraint".⁷

Aoun & Li (forthcoming) agree with Huang that May's QR cannot explain the difference between English and Chinese, yet they argue that Huang's restructure-alpha is untenable. Instead, they propose two modifications to May's QR, the Minimal

Binding Requirement and the Scope Principle.⁸ The difference between English and Chinese w.r.t. scope ambiguity is attributed to the alleged difference between the two languages in the position of the subject. In English, the subject originates from the SPEC of V and is raised to the SPEC of INFL. In Chinese, on the other hand, the subject remains in the SPEC of V and cannot raise to SPEC of INFL, since the Chinese

INFL is weak and so does not have a SPEC node.⁹

In what follows I argue that both Huang and Aoun & Li have ignored a very important yet well observed phenomenon in Chinese, namely, all preverbal NPs in Chinese must be interpreted as definite, similar to English NPs with the article "the". This requirement is most likely due to the fact that Chinese completely lacks all articles. To compensate, Chinese uses the preverbal position to mark

definiteness, which in English is marked by the definite article "the".¹⁰ The requirement that preverbal NPs in Chinese be definite has to be accounted for by anybody's theory. If this requirement holds also in LF (and since existentially quantified NPs are indefinite, as we will argue in part 3), the domain of QR is seriously restricted, and the lack of scope ambiguity in Chinese follows free of any additional stipulations. Both Huang and Aoun & Li ignore the definiteness of Chinese NPs and both of them have to make additional stipulations.

In part 2 we look at the definiteness of Chinese NPs. In part 3 we discuss the definiteness of quantified NPs. Part 4 discusses how in Chinese the definiteness of NPs leads to the lack of scope ambiguity. Conclusions and remaining problems are given in part 5.

linear order has not changed, and the PF outputs of (ia-ic) need not be different.

7. For a brief review of Huang's account, see Appendix 1.

8. The formulations are as follows:

- (i). Minimal Binding Requirement:
Variables must be bound by the most local potential A'-binder.
- (ii). The Scope Principle:
A quantifier A may have scope over a quantifier B in case A c-commands a member of the chain containing B.

9. For a review of Aoun & Li, see Appendix 2.

10. I am indebted to Loredana Holmes for the idea that Chinese uses word order to compensate for the lack of articles.

2. THE DEFINITENESS CONDITION IN CHINESE (DC)

2.1. PREVERBAL NP IS DEFINITE

In English, all NPs are either definite or indefinite. Definite NPs are either intrinsically definite (e.g. proper names), or are NPs with demonstratives (e.g. "this" and "that") or are NPs marked by the article "the". Indefinite NPs are those marked by "some", "a", "an", or "0" (the zero article):

	INDEFINITE NPs	DEFINITE NPs
Marked by articles	people a man three people	the people the man the three men
Otherwise marked	some people	John that man

There being no articles in Chinese, the Chinese NP is either intrinsically definite (e.g. proper names), or marked as definite by demonstratives (e.g. "nei"="that"), or marked as indefinite by the indefinite determiner "yixie"="some", or simply

unmarked (bare):¹¹

	INDEFINITE NPs	DEFINITE NPs
Otherwise marked	yixie ren (=some people)	neige ren (=that man)
marked		Zhangshan
Unmarked (bare)	ren (=man/people)	
	sange ren (=3 people)	

However, it would be a surprise that bare Chinese NPs, much larger in number than marked ones, simply lacked definiteness. In fact, bare Chinese NPs have definite

and indefinite interpretations. It is well observed that unmarked (bare) Chinese NPs are interpreted as definite preverbally but indefinite postverbally.¹² Let us

11. H.B. Chinese NPs do not show plurality.

12. Cf. e.g. Chao (1948, 1968), Zhu (1982), Chu (1983), Li & Thompson (1981).

13. This is the dominant view among scholars of Chinese. As we will see below, this is true not only for subject and topic, but also for all preverbal NPs, including NP adverbials and the so called "preposed object", with or without "ba", as in [S ba O V]

- (10). *yixie keren lai le
 some guest come ASP
 "Some guests have come."

An NP with a bare numeral modifier cannot occur as subject unless it is interpreted as definite. For example, without context, the following are bad:

- (11). *liangben shu ta bu xihuan
 two book he not like
 "Two books he does not like."

- (12). *liangge keren lai le
 two guest come ASP
 "Two guests have come."

But if an NP with a bare numeral modifier can be interpreted as definite (within an appropriate context), then it may occur preverbally:

- (13). wo mai le liangtiao yu , san he doufu.
 I buy ASP two fish three box tofu

liangtiao yu wu kuai . san he doufu san kuai.
 two fish five dollar three box tofu three dollars

"I have bought two fish and three boxes of tofu. The two fish cost five dollars. The three boxes of tofu cost three dollars."

In the second and third sentences above, the subject NPs "liangtiao yu" and "san he doufu", each having a bare numeral modifier, occur preverbally alright, since the context gives them a definite interpretation, "the two fish" and "the two boxes of tofu" respectively.

DC may be formalised in various ways. (Reuland (1987), for example, proposes that non-specific NPs can only be licenced in A-positions. This would mean that the English subject position is an A-position while the Chinese one is not, a prediction

contrary to Aoun & Li). Here I will only discuss one possibility. Suppose that all VP external nodes are marked with [+definite] in Chinese, and that any element inserted under them or moved to them must have the corresponding [+definite], due to a feature matching constraint. Then to convey that a bare NP is definite, the Chinese speaker may place the NP preverbally (i.e. VP externally). This achieves the same ends as the use of the definite article. On the other hand, VP internal bare NPs, by default, will be interpreted by the hearer as indefinite. The feature matching constraint prevents indefinite NPs from being base generated preverbally, or moved to preverbal positions later by move-alpha. It is plausible to further assume that this constraint on move-alpha applies to QR, which is but a subcase of move-alpha.

 16. I am indebted to H.Lasnik, who suggested this idea to me (p.c.).

call this fact the Definiteness Condition (henceforth DC). Consider the following:

- (5). lai keren le
 come guest ASP
 "Here has come a guest."

- (6). keren lai le
 guest come ASP
 "The guest has come."

- (7). keren maile shu
 guest bought book
 "The guest(s) bought some books/a book."

- (8). shu keren maile
 "The guest(s) bought the book(s)."

Notice Chinese NPs do not show plurality; in the English gloss number is given arbitrarily. "keren", when postverbal, is interpreted as "(some) guests" or "a guest". But when preverbal, "keren" is interpreted as "the guest(s)". The same is

true for "shu".

An indefinite NP marked by "yixie"="some" cannot occur preverbally in Chinese:

- (9). *yixie shu ta bu xihuan
 some book he not like
 "*Some books he does not like."

 or simply [S O V]. However, Fan (1985) offers a collection of sentences from contemporary publications which read perfectly natural yet whose subject looks like an indefinite NP, mostly of the form [numeral N]. We do not discuss Fan's data here, although I think they do not constitute serious counterexamples to the standard view.

14. The positions of ASP need not concern us here.

15. Bare nouns, both pre- and postverbal, may be interpreted as generic:

- (i). ta xihuan xiao dongwu
 he like small animals
 "He likes small animals."

- (ii). laohu hui youyong.
 tiger can swim
 "The tiger/Tigers can swim."

The fact that Chinese generic expressions may manifest as either a definite NP (preverbal) or an indefinite (bare) NP (postverbal) should not be a surprise. English generic expressions may also manifest as either an indefinite NP or a definite one.

There is an important moral to be drawn here. In English, [numeral N] is always indefinite and so is always seen as a quantified NP. In Chinese, however, the status of [numeral N] depends on its position. If it is postverbal, it is indefinite and quantificational. If it is preverbal, it is definite and non-quantificational.

In summary, Chinese does not allow indefinite preverbal NPs. How then does one say (2) in Chinese? What happens, in general, if one wants to say a sentence with an indefinite subject, like "yixie ren" = "some people", or a bare NP like "liangge ren" = "two people" without context? The way to do it is to place the word "you" before the NP. We look at this now.

2.2. THE VERB "YOU"

If we place "you" before an indefinite NP, then it may occur preverbally:

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- (14). you yixie keren lai le
 have some guest come ASP
 Literally: "[e] have some guests who have come."
 "There are some guests who have come."
- (15). you liangge keren lai le
 have two guest come ASP
 "There are two guests who have come."

The pre-subject "you" is generally considered a verb, meaning "have" (here with an empty subject, probably "the universe") or "there be" or "there exist". Notice in the English "there be/exist NP" structures, the postverbal NP is the subject, because it agrees with "be/exist" and because the NP may optionally occur before "be/exist". Chinese does not have "there be/there exist" structures; instead, it has the structure "NP1 you NP2", meaning "NP1 have/has NP2". Here NP1 (which could be empty) rather than NP2 is the subject. There are two reasons. First, NP1 and NP2 cannot switch positions (or the sentence will mean "NP2 have/has NP1"). Second, NP1 cannot be replaced by a locative PP. In English, however, "PP be/exist NP" is OK, but "NP1 be/exist NPs" is bad (excluding the equivalent meaning of "be"). Therefore, syntactically "you" corresponds to the English "have" rather than "(there) be/exist".

One reason for considering "you" a verb is that it is orthographically, phonetically, and semantically the same as the "you" that cooccurs in a regular "NP1

17. A contracted form of "you yixie" is "you xie".

18. For discussion, cf. Chao (1968), Zhu (1982), Chu (1983), Li & Thompson (1981), among others.

19. I am indebted to J. Higginbotham for pointing out this distinction.

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have NP2" sentence :

(16).a. fangjian limian you haoduo ren.
 room inside have many man
 Lit.: "The inside of the room has many people."

b. wo you yiben shu.
 I have a book

Another reason is that, negation, adverbs and modals, which usually occur before

the verb and after the subject, may also precede "you", but not a subject NP without "you":

- (17). Adverbs:
 a. henshao you yichang dianying hen jingcai
 rarely have one movie very exciting
 "There is/was rarely a movie which is/was very exciting."

20. There is some debate on the status of a few so called "locational words", which occur after an NP. Some consider them postpositions, others consider them nouns:

- (i).
 a. postposition: li wai shang xia
 in on top below
 b. noun : inside outside topside downside

There are three arguments against considering them postpositions. First, Chinese has prepositions like "cong"="from". It is unlikely that Chinese should have both prepositions and postpositions. Second, a free variation of the locative words is to add "mian"="side" to each of them, and no one considers this variation postpositions:

- (ii). limian waimian shangmian xiamian
 inside outside topside downside

Third, [NP + locative word] behave like an NP:

- (iii).a. wo you yiben shu
 I have a book
 b. zuo shang you yiben shu
 table top has a book
 c. ??zai zuo shang you yiben shu
 on table top have a book

(iiic) is bad because the subject is a PP. Both (iiia-b) are good, indicating that the subject is an NP in (iiib).

21. Nominal adverbials, like "zhuotian"="yesterday", "qu nian"="last year", may occur before the subject.

b. *henshao nei ren lai (Cf. nei ren henshao lai)
rarely that man comes
"That man rarely comes."

(18). Negation:

a. mei you yichang dianying hen jingcai
not have
"There is/was not a (single) movie which is/was very exciting."

b. *mei nei yichang dianying hen jingcai
not that
"That movie is/was not very exciting."

(19). Modal:

a. hui you yichang dianying hen jingcai
will have
"There will be a movie which is very exciting."

b. *hui nei yichang dianying hen jingcai
will that
"That movie will be very exciting."

The (b) sentences are bad because the adverb/negation/modal occurs before the subject. But the (a) ones are good. If "you" is a verb, the contrast is explained. The third reason is that "you" never occurs after a verb that selects an NP:

(20).a. *wo maile you yiben shu
I bought have one book
*"I bought there is a book."

b. wo maile yiben shu
I bought one book

If "you" is a verb, the explanation is simple: the verb "maile" = "bought" requires an NP object instead of an S, so (20a) is bad.

Like the indefinite subject, an indefinite object cannot appear preverbally, unless it is introduced by "you":

22. Huang (1982) considers "you" not as a verb but as an "existential marker" that obligatorily goes with indefinite preverbal NPs yet cannot, by stipulation, go with postverbal NPs. If "you" is a verb, it cannot be maintained that Chinese NP is strictly head final, as (17)-(19) show.

23. This is true not only for an object that is preposed to the beginning of the sentence, which may be considered the "topic", but also for an object that is preposed to a position between the subject and the verb:

(21). *yixie/liangben shu ta bu xihuan
some / two book he not like
*"Some/Two books he does not like."

(22). you yixie/liangben shu ta bu xihuan
have some / two book he not like
"There are some/two books he does not like."

What we have said about NPs apply to nominal adverbials, too. Consider the following:

(23).a. wo tile liang ci men
I kicked two times door

b. wo tile men liang ci
door two times

(24). *liang ci wo tile men
two times

(25). you liang ci wo tile men
have two times
"There are two times I kicked the door."

(26). nei liang ci wo tile men
those two times
"The two times (each person is allowed to kick)
I kicked the door."

In (23), the adverbial NP is indefinite, and has to be postverbal, otherwise the sentence is bad, as in (24). To prepose the indefinite adverbial, it has to be introduced by "you" as in (25). If the adverbial NP is definite, however, it may occur preverbally without "you", as in (26).

(i). *ta yixie/liangben shu bu xihuan
he some / two books not like
"He does not like some/two books."

(ii). ta nei yixie/liangben shu bu xihuan
he that some / two books not like
"He does not like those/those two books."

(iii). ta you yixie/liangben shu bu xihuan
he has some / two books not like
"He has some/two books which he does not like."

24. (23) violates Huang's X-bar constraint. Whether there is an X-bar constraint or not, DC certainly overrides it, and hence must be more fundamental in nature.

In summary, DC seems to hold generally in Chinese. If the subject is indefinite, it must be introduced by the existential verb "you", so that in effect we have a bi-clausal sentence, in which all preverbal NPs are still definite. This property of Chinese is probably due to the fact the Chinese lacks articles, and as a result sentence positions are utilised for the same ends.

2.3. THE DISTRIBUTIVE ADVERB "DOU"

Before we end part 2, it will be useful to take a look at the word "dou".²⁵ "dou" is an adverb with the distributive meaning of "each". For example:

- (27). women shi MIT de zuqiu dui
we are 's football team
- (28). *women dou shi MIT de zuqiu dui
each
**We are each MIT's football team."

There are three conditions on the use of "dou":

- (29). a. "dou" must follow the NP in question;
b. the NP "dou" goes with must be plural;
c. "dou" must immediately precede the verb.

The first two conditions also holds for the English adverbial "each":²⁶

(30). "Each"/"dou" must follow the NP:

- a. tamen dou lai le
they each come ASP
"They have each come."
- b. *dou tamen lai le
**Each they have came."

(31). "Each"/"dou" goes with a plural NP:

- a. women dou lai le.
"We each/all have come."

25. There are two "dou"s in Chinese. One meaning "even" (as in "Even John came."), one meaning "each". Only the latter may be read with a stress. We discuss the latter "dou" only.

26. We discuss the adverbial "each", not the nominal "each".

- b. *wo dou lai le.
**I each have come."

The third requirement that "dou" must occur before the verb follows from the fact that Chinese adverbials generally occur before the verb:

- (32). a. wo zuotian kanjianguo ta.
I yesterday saw him
- b. *wo kanjianguo ta zuotian.
yesterday

If "dou", being an adverb, has to occur before the verb yet after the subject, the only place for it to be is immediately preceding the verb.²⁷ Also, since only definite NPs occur preverbally, "dou" in effect occurs only with definite NPs. The following shows this to be true:

- (33). liangge keren dou lai le
two guest come ASP
"The two guests have each (both) come."
- (34). liang ci wo dou tile men
two time I kicked door
"Each of the two times I kicked the door."
- (35). liangben shu ta dou xihuan
two book he like
"He likes each of the two books."

where the unmarked NPs that go with "dou" all get a definite interpretation. On the other hand, an indefinite NP, marked by "yixie"="some", cannot occur with "dou":

- (36). *yixie ren dou maile yiben shu
some people each bought one book
?"Some people each bought a book."

This is because the subject must be definite, but an NP marked by "yixie"="some" cannot be interpreted as definite.²⁸

27. More accurately, "dou" cannot be separated from the verb by an NP, though it can be by other adverbs or modals, like "jingchang"="often" and "hui"="will".

28. A question arises: can one say (i) in Chinese?

- (i). Some students each ate two fish.

where the distributive adverbial goes with an indefinite subject. The Chinese for (i) is interesting, as the following shows:

In summary, "dou" is a distributive adverb that occurs with definite NPs only.

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3. THE DEFINITENESS OF QUANTIFIED NPs

The definiteness of English quantified NPs (Q-NPs) may be roughly analysed as follows:

	Definite	Indefinite
Existential		a man some man three men
Universal	?	?
Un-quantified	the two men	?cats

Indefinite NPs, apart from perhaps bare plurals like "cats" (which we will not discuss), are generally considered existential Q-NPs. Definite NPs are not Q-NPs. Whether universal Q-NPs are definite or indefinite is yet to be decided.

One test of definiteness is to see whether an NP may occur in a "there be" sentence (Milsark 1977):

- (i).a. *There is each/every man in the garden.
b. *There are all of the men in the garden.

This shows that at least some universal Q-NPs are definite. On the other hand, definite NPs certainly may occur with universal quantifiers:

- (38). The people/They each/all have a dog.

However, indefinite NPs may also occur with universal (adverbial) quantifiers:

- (39).a. A man and a woman each bought a dog.
b. ?Some students each took two exams.

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Without going into too much detail, let us tentatively say that both definite and indefinite NPs may be universally quantified in English.

In Chinese, we may safely assume that only indefinite NPs can be existentially quantified. As for universal Q-NPs, it seems that they are all definite, since not only can they occur as the subject, but also they cannot be introduced by the existential "you":

- (40). meige/suoyoude ren dou maile shu.
every/all man each bought book
"Every man/All men each bought some books."

- (ii). *you yixie xuesheng dou chile liangtiao yu
have some students each ate two fish
(iii). you yixie xuesheng mei(ge) ren dou chile liangtiao yu
every person

It is not clear why (ii) is bad but (iii) good. (ii) differs from (iii) only in that (iii) has an additional phrase "meige ren"="every person". (ii) and (iii) may be analysed as (iva) and (ivb) respectively:

- (iv).a. [e you [yixie xuesheng [O [t dou chile liangtiao yu]]]]
NP CP IP
Lit.: [e has [some students [who [t each ate two fish]]]]

- b. [e you [yixie xuesheng [O [[t meige ren] dou chile liangtiao yu]]]]
NP
Lit.: [e has [some students [who [[every one of t] each ate two fish]]]]

Notice extraction out of subject NP in Chinese it generally OK (cf. Huang 1982). The difference between (iva) and (ivb) is that the embedded subject of (iva) is empty, but that of (ivb) is lexical. One may suggest that "dou" has to go with a lexical NP. But this does not seem to hold:

- (v). zhaxie shu Zhangshan shuo [t dou shi tade]
these books says each be yours
"Zhangshan says that these books are all yours."

where "dou" goes with t in the embedded clause. I have to leave it open as to why (ii) and (iii) differ in grammaticality.

29. I do not want to attempt a definition of quantifiers, but will simply follow the usual practice and discuss "standard" quantifiers like "every", "all", "some", "three man", and so on.

- (41). *you meige/suoyoude ren dou maile shu.
 exist
 *There is every man/all men who each bought some books."

There is a peculiar property about the Chinese NP quantified by "meige" = "every". It does not normally occur in the object position, and when it occurs before the verb, it must co-occur with "dou":

- (42). ??wo kanjianle meige ren.
 I saw every man

- (43). *meige ren wo kanjianle.
 every man I saw

- (44). meige ren wo dou kanjianle.
 each

An explanation is that "meige" is intrinsically distributive, and distributive NPs must be marked by "dou", so "meige" must occur preverbally (cf. section 2.4.). "suoyoude"="all", on the other hand, may occur postverbally and need not co-occur with "dou":

- (45). ?wo kanjianle suoyoude ren.
 I saw all men

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This suggests that "suoyou" is not strongly distributive. Since a finer contrast between quantifiers is not directly relevant to our discussion, we pursue it no

further.

31. The English counterparts "each" and "all" show the same contrast:

- (i). Each of the people altogether cleaned two rooms.
 (ii). All of the people altogether cleaned two rooms.

where "each" tends to give a distributive reading but "all" a collective one.

32. The literal meaning of "suoyoude ren", usually glossed as "all (the) people", may be of interest here:

- (i). suo you de ren
 place have REL people

"de" is the standard relativiser in Chinese. A plausible analysis of (i) is (ii), a relativised NP:

- (ii). [[suo you t] de ren]
 NP S i i

In summary, existential Q-NPs are indefinite but universal quantifiers are definite (at least in Chinese).

4. WHY DOES CHINESE LACK SCOPE AMBIGUITY?

4.1. WHEN DOES SCOPE AMBIGUITY ARISE?

Before we answer why Chinese lacks scope ambiguity, let us see when scope ambiguity arises in English. There are three general conditions:

- (46). Conditions for Scope Ambiguity:
 a. There must be at least two quantifiers in a sentence.
 b. The quantifiers do not commute.
 c. Q-NPs in the matrix clause have scope over Q-NPs in the embedded clause. (QR is clause bound.)

Notice these conditions must be met not only for May, but for anybody who adopts the

Lit.: "(the) people that the place has"

- (iii). [[wo you t] de shu]
 NP S i i
 I have book
 Lit.: "(the) books that I have"

Structurally, (ii) parallels (iii), point by point, which is a standard relativised NP. In this analysis, "suo you de ren" is no longer a QP but merely a bare NP (i.e. NP unmarked for definiteness). It may be interpreted as definite preverbally but indefinite postverbally, just as "wo you de shu" does.

33. I am indebted to J. Higginbotham for sharpening this second condition. Two quantifiers Q1 and Q2 commute if the two scopes [Q1 Q2] and [Q2 Q1] do not make any difference in meaning. All universal quantifiers commute. Some existential quantifiers commute, some do not.

34. We restrict our discussion to real quantifiers only. When wh-phrases and quantifiers interact, it seems QR may cross S:

- (i). What do you think everyone bought for Mary?
 a. [W A] b. [A W]

where both (ia) and (ib) are possible. However, to get (ib) "everyone" need not QR to the matrix S; K. Sloan (p.c.) argues (ib) may be derived simply by the interaction of the trace of "what" with "everyone" in the downstairs CP.

notion of scope ambiguity (whether via QR or not). For the first condition, ...

- (47). a. A man came.
b. Some man saw the dogs.

which are not scopally ambiguous, since in each there is only one quantifier. Notice for May definite (non-quantified) NPs (like "they", "the three people") do not cause scope ambiguity, either because they do not interact with scope, or because they

always take the widest (contextual) scope .

For the second condition, consider:

- (48). Every mother showed every toy to every child.

There are three quantifiers, all universal, but the sentence is semantically unambiguous. In general, universal quantifiers commute, so their scope orders do not make any difference in meaning .

The third condition is supported by the following:

- (49). There is a man who saw every movie.

Although there are two quantifiers, the sentence is unambiguous. Given that QR is

35. This is May's assumption, which I follow for the sake of argument. However, definite NPs seem to cause scope ambiguities, too. Consider:

- (i). Those people swept one room.

For some speakers, "one room" may take wide scope, so that all people swept the same room. Or "one room" takes narrow scope, so that each person swept a room, possibly different from those swept by others. In this respect, Chinese is similar to English, with both readings possible. J. Higginbotham (p.c.) suggests that in (i) there is an additional quantifier "e" (for "event") that interacts with "one room", giving rise to the two ambiguities. Since this paper intends to explain the difference (rather than similarities) between English and Chinese, I will ignore such cases.

36. An apparent problem arises when there are two existential quantifiers. May predicts there to be two scope readings, but in fact there seems to be one:

- (i). Two men swept three rooms.
a. [2m 3r] b.??[3r 2m]

In the (ia) reading, there could be up to six rooms. In the (ib) reading, there could be up to six men. To my ear, and to most speakers I consulted, (ib) is unavailable. In other words, (i) shows a subject-object asymmetry, whereby the subject rather than the object tends to take wide scope. However, J.Higginbotham (p.c.) finds both readings available, and attributes the unnaturalness of (ib) to the unnatural situation one has to call to mind. If so, there is no problem for May.

consider:

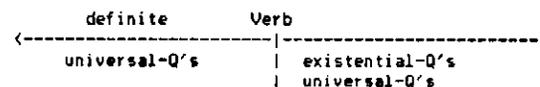
clause bound, "a man" has scope wider than "every movie".

In short, putting aside minor problems, it seems generally true that for there to be scope ambiguity, the three conditions must all be met.

4.2. THE LACK OF SCOPE AMBIGUITY IN CHINESE

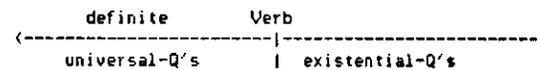
It should be clear by now why Chinese lacks scope ambiguity. Recall that in Chinese preverbal elements must be definite, and that universal Q-NPs are definite while existential Q-NPs indefinite (in Chinese at least), we have the following situation:

- (50). At SS:



Assuming free QR of May (1977) , and assuming that DC holds in LF too in Chinese, after QR we have :

- (51). At LF:



where universal-Qs are adjoined to S but existential-Qs to VP . The order of the preverbal universal-Qs do not make any difference in meaning. The only source of ambiguity is among the order of VP internal existential-Qs. Thus, the number of ambiguities is greatly reduced. The Chinese equivalent of (1) is unambiguous:

- 37. It does not affect our argument very much if QR of May (1985) is assumed instead.

- 38. Assuming QR to S, unless otherwise restricted. We return to this later. Also I ignore whether QR is pied-piping.

- 39. May (1985) allows QR to VP. The following is also evidence (E.Williams, 1977):

- (i). Everybody saw some movie, and John did, too.

where "some movie" must be within the deleted VP (unless one proposes reconstruction). Further, May (1985) assumes that quantifiers adjoined to VP nevertheless have scope over the entire sentence. Here I assume that quantifiers adjoined to S has scope wider than those adjoined VP internally.

(52). meige ren dou kanjianle yitiao gou
 every man each saw a dog
 a.[A E] b.*[E A]

Next we consider the indefinite subject. Recall that it has to be introduced by the existential verb "you". The Chinese for (2) is thus:

(53). [e you [yige ren [t ai suoyoude ren]]
 S NP i S i
 have a man love all man
 "There is someone who loves everyone."
 a.[E A] b.*[E A]

Since "you" makes the sentence bi-clausal, there is again no scope ambiguity.

For all [NP V NP] sentences, no scope ambiguity arises in Chinese. We now turn to double object constructions.

4.3. THE DOUBLE OBJECTS CONSTRUCTION

In 4.2. we mentioned that scope ambiguity may arise in Chinese when there are two (or more) postverbal existential quantifiers. This case, however, does not happen. Consider:

(54).a. wo geile tamen/neige ren/meige ren yiben shu
 I gave them /that man/every man a book

b.*wo geile sange ren yiben shu
 I gave three men a book

To me (54b) is bad, unexpectedly. In general, indefinite indirect objects make the sentence bad in Chinese. Notice also in (54a), "meige ren", which normally only occur

in subject position, sits after the verb alright. I will suggest that double objects form a small clause (cf. Kayne 1984), in which the indirect object is the subject, and so must be filled by a definite NP by DC. This explains why "meige ren" may occur as the indirect object, and why indefinite NPs usually cannot occur as

40. Z.M.Bao (p.c.) accepts (54b) as a good. Further, he considers it to be ambiguous, with two readings, [3m bk] and [bk 3m]. This confirms my prediction made in 4.2. On the other hand, my own judgement, discussed below, is also consistent with my prediction.

41. Cf. the address of (i)

(i). ??wo kanjianle meige ren.
 I saw every man

indirect object. There is evidence in English in favor of this claim, too. Consider:

(55). They each bought a car.
 (56). *I saw them each. (cf. I saw each of them.)
 (57). I gave them each a book.
 (58). *I showed him the rooms each. (cf. I showed him each of the rooms.)

The pattern is that the adverbial "each" goes with the subject or the indirect object, but not with the simple object or the direct object. If the indirect object is the subject of a small clause, we can generalise that the adverbial "each" goes with

subjects only.

If double objects form a small clause, it follows that there cannot be any scope ambiguity at all in Chinese, which agrees with the well established observation. To see why, let us take a concrete case. First, we will extend DC a little, and propose instead that in Chinese all pre-predicate elements are definite. Now consider the double objects construction with three quantifiers:

(59). meige ren dou geile meizhi mao yitiao yu
 every man each gave every cat a fish

[Am Ac Ef]

This sentence has only one scope reading as shown. Below is the analysis:

42. When the direct object is preposed, as say under topicalisation, the small clause seems to be destroyed. Thus, an indefinite indirect object seems possible, while "meige ren" becomes bad:

(i). ?neixie shu wo geile yige ren
 those books I gave a man
 (ii). *neixie shu wo geile meige ren
 every
 (iii). neixie shu wo geile suoyoude ren
 all

43. Not only double objects may form a small clause. Consider:

(i). I saw them each two times.
 (ii). *?I two times saw them each.

If "two times" is an adverbial, (ii) should be good. But if "them two times" form a small clause, the use of "each" in (i) is justified, but (ii) should be odd, since the small clause is destroyed.

44. The so-called passive constructions, claimed by Aoun & Li to have scope ambiguities, is discussed in Appendix 2.

(60). (definite) Predicate1 (definite) Predicate2
 [<-----|----->] [<-----|----->]
 S1 S2
 meige ren | meizhi mao | yitiao yu

After QR, "meige ren" is adjoined to S1, "meizhi mao" to S2, and "yitiao yu" (being indefinite) predicate2 internally, giving the only scope reading.

Before we end this section, let us consider a trivial case of ambiguity in Chinese. Recall that "dou" goes with a plural preverbal NP. If there are two such NPs, "dou" may go with either of them:

(61). neixie fangjian tamen dou shaole
 those rooms they each swept
 a. They each swept those rooms.
 b. They swept each of those rooms.

However, this ambiguity is not scope ambiguity.

4.4. WH PHRASES

May considers WH words to be quantifiers. They seem to interact in scope with other quantifiers:

(62). Who did everyone see?
 a. [WH A] b. [A WH]

Assuming all wh words have to raise to COMP at some level, and assuming wh words are indefinite, this seems a violation to the requirement that preverbal elements must be definite in Chinese. However, not all wh words behave the same way. Consider:

(63). Which person did everyone see? unambiguous

One explanation is that some wh words are definite and some indefinite. Definite wh

45. In fact, without the small clause analysis, there is still no ambiguity:

(i). At SS: definite Verb
 <-----|----->
 meige ren | meizhi mao yitiao yu

(ii). At LF: definite Verb
 <-----|----->
 meige ren | yitiao yu
 meizhi mao |

where the order of the universal-Qs at LF is immaterial to meaning.

words like "which" do not cause scope ambiguity, either because they are not quantifiers, or because definite quantifiers always commute. Compare also:

(64). a. I know what there is in the garden.
 b.*I know which person there is in the garden.

Following the DR (definiteness restriction) of Milsark (1977), "who" would be indefinite and "which person" definite. If definiteness indeed applies to wh words, it seems that all Chinese wh's are definite. First of all, wh phrases may occur preverbally:

(65).a. shenme cai zui haochi?
 which dish most tasty
 b. shei yao lai?
 who will come
 c. ni shenme shihou qu?
 you what time go

This agrees with the standard rule that preverbal elements in Chinese be definite. If all Chinese wh words are of the "which" type, the prediction will be that all Chinese [Q V WH] sentences are unambiguous. This seems true:

(66).a. ?meige ren dou maile shenme? unambiguous (same thing)
 every man bought what
 b. ?meige ren dou kanjianle shei? unambiguous (same person)
 saw who

Note (66a-b) are not very good. A better version is to use "dajia", which has the similar meaning of "all the people":

(67).a. dajia dou maile shenme? unambiguous (same thing)
 b. dajia dou kanjianle shei? unambiguous (same person)

There is, however, a structure in which the object wh phrase takes ONLY narrow scope:

(68).a. meige ren dou maile yixie shenme?
 some what
 Lit. "Which thing did everyone buy some of?"
 b. meige ren dou kanjianguo yixie shenme ren?
 some what man
 Lit. "Which people did everyone see some of?"

The derivation in LF is unproblematic. Take (68b) for example. The wh phrase "which people" move to COMP. The Q-phrase "some t" adjoin to VP. The final scope order is [wh A E], [A wh E], or [A E]. The first two are equivalent, assuming definite quantifiers commute. The third one is on the assumption that definite wh are not quantifiers.

We have shown how the difference between English and Chinese w.r.t. scope

ambiguity may be derived from a single fact that Chinese lacks articles. This account stands irrespective of how scope ambiguities in English are derived, by QR or otherwise.

5. CONCLUSIONS

I have argued how the difference between English and Chinese w.r.t. scope ambiguity may be derived from a single parameter, the fact that Chinese lacks articles. To compensate, Chinese uses the preverbal position to mark definiteness. Existential Q-NPs, being indefinite, cannot therefore occur preverbally (or be moved there) either at SS or at LF. The only case when scope ambiguity is possible is when there are two or more existential Q-NPs after the verb. To many speakers, even this case does not arise, due probably to the formation of a small clause by the postverbal

elements. In addition, our discussion of why Chinese lacks scope ambiguity does not

46. We should not, however, expect there to be a lack-of-scope-ambiguity parameter, originating from the lacking of articles. Suppose Korean and Japanese also lack articles, we should not predict that they will lack scope ambiguity the way Chinese does, since these languages are both verb final and so the pre- and post-verbal mechanism is not available. It may be predicted, however, that if a language lacks articles AND is SVO, it may resemble Chinese w.r.t. scope ambiguity. But this need not be the case, either. That language may resort to some other available mechanism.

47. In fact, the definiteness effect seems to play a much greater role in Chinese than we have discussed. It appears to be a general case that each Chinese clause may contain at most one indefinite NP. Consider:

(i)a. ta tile liangjiao men
he kicked twice door
"He kicked the door twice."

b.*ta tile liangjiao yixie men
some doors

(ii)a. ta tile men liangjiao
door twice
"He kicked the door twice."

b.*ta tile yixie men liangjiao
some doors

(iii)a. wo dengle keren liang xiaoshi
I waited guest two hours
"I waited for the guests for two hours."

b.*wo dengle yixie keren liang xiaoshi
a few guests

rest on how the scope ambiguity in English is accounted for (by QR or otherwise).

There are two areas I have not gone into in this paper. First, I did not discuss "inverse-linking" (or in Huang's words "quantifier containment"), as in:

(69). I bought a picture of every body.
a.[E A] b.[A E]

where the Q-NP "every body" is contained in the Q-NP "a picture of every body". (69) has two readings, as shown. May (1985) argues that all such sentences are scopally ambiguous. While inverse-linking is quite common in English, it is not clear whether Chinese exhibits the phenomenon. To see the problem, consider the closest Chinese for (69a-b):

(70). wo maile yizhang shouyou/*meige ren de zhaopian
I bought one all / every man 's picture
Reading: [E A]

(71). wo shouyou/meige ren de zhaopian dou maile yizhang
I all /every man 's picture each bought one
Reading: [A E]

Not only are the orders of the two sentences for each reading radically different, but there is also the difference between "meige" and "suoyou" ("each" and "all"). The reason why it is bad to use "meige" in (70) is probably because "meige", being distributive, has to go with the distributive marker "dou", but in (70) there is no proper place for "dou" to occur (recall that "dou" has to occur before the verb but after the NP it associates with). Before further understanding is gained about the structure of and constraints on the Chinese NP, I will not venture a premature account

of NP internal quantifiers.

The bare NPs "men" and "keren" in the (a) sentences are interpreted as definite. An indefinite NP, on the other hand, makes the (b) sentences bad. This one-indefinite-NP-per-clause constraint is yet to be explained.

48. Huang claims that two quantifiers may occur in any order in a Chinese NP (which is usually head final), so the two readings in (69) correspond to:

(i).a. wo maile yizhang suoyou ren de zhaopian
I bought one all man 's picture
b. wo maile meige ren de yizhang zhaopian
every man 's one

where (ia) gives [E A], and (ib) gives [A E]. I find the case more complicated than Huang stated. First of all, (ib) is bad to me. As said above, the intended [A E] reading is best expressed in (71). Also consider the following:

(ii).a. meige ren de zhaopian

Second, I did not discuss adverbial quantifiers (apart from "dou"="each"). One reason is that I think adverbial quantifiers behave rather differently from Q-NPs. Also the judgement on adverbial scopes is more subtle. For example,

- (72).a. ta xiaowu jingchang lai
 he afternoon often come
- b. ta jingchang xiaowu lai
 often afternoon

It seems not impossible to get both scope readings on both sentences, though the difference between the two readings is rather hard to grasp. Another point is that definiteness seems to affect adverbials, too. We have seen that in Chinese adverbials generally occur preverbally, but indefinite adverbials must occur postverbally (cf. (23)-(25)). The exact position of adverbials, whether VP internal, or adjoined to IP, or to VP, or else, is yet another problem. In this short paper, these interesting questions have to be left out.

APPENDIX 1

-
- every man 's picture
- b. suoyou ren de zhaopian
 all men
- (iii).a. *meige ren de yizhang zhaopian
 every one
- b. *suoyou ren de yizhang zhaopian
 all one
- (iv).a. maige ren de neizhang zhaopian
 every that
- b. suoyou ren de neizhang zhaopian
 all that
- (v). a. *eizhang meige ren de zhaopian
 that every
- b. neizhang suoyou ren de zhaopian
 that all
- (vi).a. *yizhang meige ren de zhaopian
 one every
- b. yizhang suoyou ren de zhaopian
 one all

which show that there is considerable constraint on NP internal quantifiers.

Huang (1982) argues that, as a universal rule, QR observes the SS c-command order of quantifiers. In (1) "every man" c-commands "a dog", giving [A E] in LF. To derive the [E A] reading, we applying restructure-alpha to (1), and get:

- (i). [[every man saw t] a dog]

in which "a dog" c-commands "every man", so in LF we will get [E A] reading.

For the Chinese case, Huang proposes an X-bar constraint, which in simple terms says that the Chinese V and I allow only one XP to its right (within their own projections). Let us see how this affects scope ambiguity. First of all, Huang assumes the Chinese IP to be similar to the English IP:

- (ii). [NP [I [V NP]]]
 IP I' VP

The Chinese for (1) is (iii):

- (iii). meige ren dou kanjianle yitiao gou
 every man each saw a dog

where "dou" is obligatory for the distributive "meige"="every", as discuss in 2.4. In (iii) "meige" c-commands "yitiao", giving [A E] in LF. Now applying restructure-alpha to (iii) we get:

- (iv). *[[meige ren dou [kanjianle t]] yitiao gou]
 IP IP VP

In (iv), within VP, V has one XP to its right, i.e. "t". However, within IP, I (which is empty) has two XP's to its right: one is VP and the other is the postposed NP. Thus (iii) violates the X-bar constraint, and the [E A] reading unobtainable.

Although it is hard to refute Huang's restructure-alpha (which is invisible in that it does not disturb the SS word order and does not have to cause any phonetic side effect), there seems to be little reason to believe its existence. The X-bar constraint for Chinese is also very questionable. It is true that in Chinese the verb usually has only one sister to its right (assuming double objects to form a small clause), but this result is largely due to the fact that all adverbs and most adverbials cannot occur after the verb, even if the verb has no sister to its right; it is not due to any X-bar constraint. What is more, some sentences clearly violate the X-bar constraint:

- (v). ta tile liangjiao men
 he kicked twice door
 "He kicked the door twice."
- (vi). ta tile men liangjiao
 door twice
- (vii).wo dengle ni liang xiaoshi
 I waited you two hours
 "I waited for you for two hours."

(v)-(vii) are all good, yet there are two XP's after the verb, which I guess cannot form a small clause. (My own speculation on this point is that indefinite adverbials have to occur after the verb.) Also consider adverbial of purpose:

(viii). ta maile yi ping jiu guo nian
 he bought a bottle wine pass year
 "He bought a bottle of wine to spend New Year's Day."

where it is hard to consider the purpose adverbial "to spend New Year's Day" to be part of the object NP, of form a small clause with it. Rather, the purpose adverbial is better viewed as adjoined to VP or IP.

Many sentences that do not violate the X-bar constraint are still bad:

(ix). *wo laile zuotian
 I came yesterday
 (x). a. *wo zai jia zhule zuotian.
 I at home spent yesterday
 b. wo zai jia zhule yi tian.
 one day

It seems to me that what kind of elements can occur after the verb is far from clear, but evidently it has little to do with the X-bar constraint. Huang's argument for the X-bar constraint is based on analysing (xi) as (xii):

(xi). ta qi de hen kuai
 he ride very fast
 (xii). [ta [qi [I de [hen kuai]]]]
 IP VP CP IP
 he rides COMP very fast

which is a very questionable analysis.

APPENDIX 2

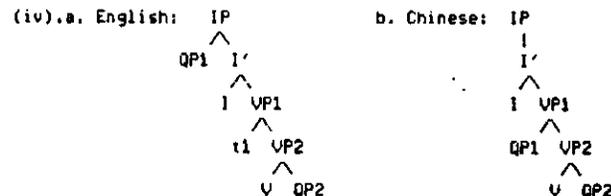
Aoun & Li (forthcoming) propose the following principles:

- (i). Minimal Binding Requirement (MBR):
 Variables must be bound by the most local potential A'-binder.
- (ii). The Scope Principle (SP):
 A quantifier A may have scope over a quantifier B in case A c-commands a member of the chain containing B.

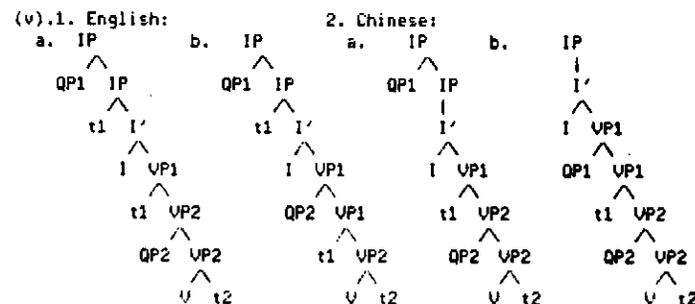
The MBR allows (iii)a) but bans (iii)b-c):

(iii).a. ... Q1...t1...Q2...t2...
 b. *... Q1...Q2...t1...t2...
 c. *... Q2...Q1...t1...t2...

In (iii)b) Q2, the most local A'-binder, binds both t1 and t2, leaving Q1 vacuous and violating the bi-jection principle. Similarly, in (iii)c) Q1 binds t1 and t2, leaving Q2 vacuous and violating the bi-jection principle. In effect, MBR serves the same purpose as Huang's rigid QR. To account for the scope ambiguity difference between English and Chinese, Aoun & Li propose that English and Chinese have different structures for an SVO sentence:



Note that although Aoun & Li draw the Chinese I to be sentence initial, it may be better to place it sentence finally. For Aoun & Li, Q-NP is QR'd to either IP or VP. Note that here Aoun & Li use two VP nodes, VP1 and VP2, instead of VP and V'. This is because they need VP2 to be an adjunction site for QRing the object. For the English case, there are two way of QR, as in (v.1a-b), and for the Chinese there are also two ways, as in (v.2a-b):



Note that a QP need not be QR'd to the closest VP/IP; as long as MBR is observed, a QP may be QR'd to higher VP/IP, as QP2 in (v.1b) and QP1 in (v.2a) are. (v.1a) and (v.2a-b) are straightforward, allowing no ambiguity. But in (v.1b), QP2 c-commands the lower t1, a member of the chain [QP1 t1 t1], which also contains QP1. By SP, QP2 may optionally have scope over QP1. So (v.1b) is ambiguous. Notice the lower t1 in (v.1b) is an NP trace instead of a variable, and so MBR is not violated.

Aoun & Li also claim that passive Chinese sentences like (vi) are ambiguous in scope:

(vi). mei wan fan dou BEI yige ren chile
 every bowl rice each by one man ate
 "Every bowl of rice was eaten by a man."

(xiii).a.*?yingyu bei henduo ren shuo
 English many men speak
 "English is spoken by many people."
 (*?"English undergoes many people's speaking.")

b.*?zhe shu bei women shangdian mai
 this book our store sell
 "This book is sold by our store."
 (*?"This book undergoes our shop's selling.")

c.*?yuyanxue bei ta jiao
 linguistics he teach
 "Linguistics is taught by him."
 (*?"Linguistics undergoes his teaching.")

If "bei" construction is like the English passive construction, the contrast between the bad Chinese examples and the good English ones are unexplained. But if "bei" is a verb, meaning "undergo" or "suffer", there seems to be a simple explanation: the meaning "undergo" or "suffer" does not fit in any of the sentences in (xiii), as the translations in brackets show.

My purpose here is not to show that my theory handles the "bei" construction in a simple way. Rather, I hope to show that the "bei" construction is still poorly understood, and so cannot be reliably used to support any theory. Further, I claim is that DC suffices to account for the difference between English and Chinese w.r.t. scope ambiguities. In Aoun & Li's theory, DC has to be accounted for independently. In my theory there is no need to assume different IP structures for English and Chinese.

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